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Deanne Forrest
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Sydney Infrastructure Development
Infrastructure and Place
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Level 7 27-31 Argyle Street
Parramatta NSW 2150

9 August 2022

Ref: EWEMP Gas Prot Rev H

Dear Deanne,

RE: ER Approval of Minor Amendment M12 Motorway – Early Works Environmental Management Plan (Gas Protection) Revision H

Thank you for providing the following document for Environmental Representative (ER) approval of minor amendments as required by the Condition of Approval A34 (i) of the M12 Motorway approval (SSI 9364):

- M12 Motorway – Early Works Environmental Management Plan (Gas Protection) Revision H

I have reviewed the minor amendments made to the document by Zinfra and Transport for NSW. Changes include updates to include two minor ancillary facilities within the Early Work footprint.

As an approved ER for the M12 Motorway project, I am satisfied the minor amendments to include two minor ancillary facilities within the Early Work footprint do not increase impacts and are consistent with the terms of the approval including the Minor Ancillary Facility definition and project documents. Therefore, I approve the minor amendments to the subject Early Works Environmental Management Plan.

Yours sincerely

George Kollias
Environmental Representative – M12 Motorway

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7 June 2022

Ref: EWFFMP Gas Prot Rev G

Dear Deanne,

RE: ER Approval of Minor Amendment M12 Motorway – Early Works Flora and Fauna Management Sub-Plan (Gas Protection) Revision G

Thank you for providing the following document for Environmental Representative (ER) approval of minor amendments as required by the Condition of Approval A34 (i) of the M12 Motorway approval (SSI 9364):

- M12 Motorway – Early Works Flora and Fauna Management Sub-Plan (Gas Protection) Revision G

I have reviewed the minor amendments made to the document by Transport for NSW. Changes include updates to increase the Early Works footprint around Elizabeth Dr. Additional clearing of approx. 600m2 of additional Cumberland Plain Woodland in the Sydney Basin Bioregion needs to be trimmed/removed as part of this amendment. The clearing is within the assessed and approved M12 Project construction boundary.

Further consultation was undertaken with the Environment and Heritage Group (formerly Environment, Energy and Science) within the Department of Planning and Environment (DPE), who advised there is no need to refer the amended Sub-Plan for their review.

As an approved ER for the M12 Motorway project, I am satisfied the minor amendments to increase the Early Works footprint, do not increase impacts and are consistent with the terms of the approval and project documents. Therefore, I approve the minor amendments to the subject Sub-Plan of the Early Works Environmental Management Plan.

Yours sincerely

George Kollias
Environmental Representative – M12 Motorway

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Parramatta NSW 2150

9 August 2022

Ref: EWSEMP Gas Prot Rev G

Dear Deanne,

RE: ER Approval of Minor Amendment M12 Motorway – Early Works Site Establishment Management Plan (Gas Protection) Revision G

Thank you for providing the following document for Environmental Representative (ER) approval of minor amendments as required by the Condition of Approval A34 (i) of the M12 Motorway approval (SSI 9364):

- M12 Motorway – Early Works Site Establishment Management Plan (Gas Protection) Revision G

I have reviewed the minor amendments made to the document by Zinfra and Transport for NSW. Changes include updates to include two minor ancillary facilities within the Early Work footprint.

As an approved ER for the M12 Motorway project, I am satisfied the minor amendments to include two minor ancillary facilities within the Early Work footprint do not increase impacts and are consistent with the terms of the approval including the Minor Ancillary Facility definition and project documents. Therefore, I approve the minor amendments to Early Works Site Establishment Management Plan.

Yours sincerely

George Kollias
Environmental Representative – M12 Motorway

Early Works Environmental Management Plan

Early Works for M12 Motorway – Protection of High-Pressure Gas Mains

August 2022

Transport for New South Wales

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Document control

File Name	M12PPW-ADAP-ALL-EN-PLN-000057_EWEMP_RevH
Title	M12 Motorway Early Works Environmental Management Plan Zinfra Early Works
Document Number (Teambinder)	M12PPW-ADAP-ALL-EN-PLN-000057

Approval and authorisation

Plan reviewed by:	Plan reviewed by:	Plan reviewed by
Sheila Anderson	Thomas Tu	Kimberly Nguyen
TfNSW Senior Environment and Sustainability Manager	TfNSW Utilities Manager	Zinfra Project Manager
Date 05/08/2022	Date 5/8/2022	Date 08/08/2022
Signed Sheila Anderson	Signed	Signed

Revision history

Revision	Date	Description
A	06/04/2021	First draft for TfNSW review
B	19/04/2021	Second draft for TfNSW review
C	11/08/2021	Update following ER review and Jemena comments
D	16/09/2021	Update following TfNSW review
E	20/10/2021	Update following TfNSW and ER review
F	11/05/2022	Update to increase AF18 footprint and minor administrative amendments
G	26/05/2022	Update to increase Early Works footprint
H	05/08/2022	Update to include two minor ancillary facilities

List of emergency and key contacts

Position / Organisation	Name	Phone
EPA pollution hotline	n/a	131 555
Fire and Rescue NSW	n/a	000 (for pollution incidents that present an immediate threat to human health or property) 1300 729 579 (for pollution incidents that do not present an immediate threat to human health or property)
NSW Health – South Western Sydney Local Health District	n/a	(02) 8738 5755
SafeWork NSW	n/a	131 050
Fairfield City Council	Kerren Ven	(02) 9725 0222
Liverpool City Council	Charles Waife	0417 175 763
24 hour community information line	n/a	1800 517 155
Project Manager – East	Kurt Bridde	0428 685 863
Project Manager – Central	Easwaran Veeragathipillai	0400 561 753
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TfNSW M12 WHS Partner	David Langdon	0477 748 401
TfNSW Environment and Sustainability Officer	Shannon Schofield	0419 824 104
TfNSW Senior Sustainability Advisor	Kalyani Wakhare	0403 564 070
Jemena Senior Environmental / HSE Advisor	Stephen Masters	0417 585 513
Zinfra Project Manager	Kimberly Nguyen	0432 102 483

Position / Organisation	Name	Phone
Department of Planning and Environment	Lee McCourt (post approvals) Damien Smith (Compliance)	02 9274 6283
Sydney Metro – Western Sydney Airport	Mark Rivet	0448 603 183
Western Sydney Parklands - access	Adam Hughes	0427 716 736
Western Sydney Parklands – Environment Manager	David Kirkland	0408 536 268
University of Sydney	David Schofield	9563 6804
Western Sydney International Airport	Richard Longman	0439 994 506

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Glossary/Abbreviations

Abbreviation	Expanded text
ACM	Asbestos Containing Material
ARCP	Asbestos Removal Control Plan
ARSR	Amendment Report Submissions Report
ASO	Aboriginal Site Officer
CEMS	Contractors Environmental Management System
CLM Act	*Contaminated Land Management Act 1997*
CMS	Complaints Management System
CoA	Conditions of Approval
Commonwealth CoA	Federal Conditions of Approval under the EPBC Act
Construction	Includes all activities required to construct the CSSI as described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding Low Impact Work which is carried out to complete prior to the approval of the CEMP, works approved under a Site Establishment Management Plan, demolition of acquired residential houses, structures and sheds, and works specified in Appendix B of the Infrastructure Approval and approved under an environmental management plan(s) in accordance with Condition A24.
CSSI	Critical State Significant Infrastructure
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DEC	NSW Department of Environment and Conservation, now EES
DECC	Commonwealth Department of Environment and Climate Change, now DAWE
DPC Heritage	Department of Premier and Cabinet (Heritage)
DPE	Department of Planning, Industry and Environment (former Department of Planning, Infrastructure and Environment)
EAP	Environmental Audit Program
Early Works	Works specified in Appendix B of the Development Consent which are required to be approved under an Early Works Environmental Management Plan required under Condition A24.
EWFFMP	Early Works Flora and Fauna Management Sub-plan
Ecologically sustainable development	Using, conserving and enhancing the community's resources so that the ecological processes on which life depends are maintained and the total quality of life now and in the future, can be increased (Council of Australian Governments, 1992).
EIS	Environmental Impact Statement
EEC	Endangered Ecological Community
EHG	Environment and Heritage Group(a part of NSW DPE)
EMM	Environmental Management Measure as outlined in the project EIS documentation
EMS	Environmental Management System

Abbreviation	Expanded text
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 Assessment Documentation	Collective reference to the M12 EIS, Submissions Report and Amendment Report and supplementary reports
Environmental event	A report-only event, non-compliance, regulatory action or environmental incident
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 environmental incident is an event or set of circumstances, as a consequence of which pollution (air, water, noise, or land) or an adverse environmental impact has occurred, is occurring, or is likely to occur. Adverse environmental impact includes contamination, harm to flora and fauna (either individual species or communities), damage to heritage items and adverse community impacts. An unexpected find that is not managed in accordance with relevant procedures / guidelines is also considered an environmental incident.
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 (ER)	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	*Environmental Planning and Assessment Act 1979* (NSW)
EPA	NSW Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPBC CoA	Federal Conditions of Approval under the EPBC Act
EPL	Environmental Protection Licence
ESCP	Erosion and Sediment Control Plan
ESM	TfNSW Environment and Sustainability Manager
EWEMP	Early Works Construction Environmental Management Plan
EWMS	Environmental Work Method Statement
Federal Approval	Approval (EPBC 2018/8286) for carrying out the M12 Project under Part 8 of the Environmental Protection and Biodiversity Conservation Act 1999 subject to specific CoA as detailed in Annexure A of the approval.
Highly Noise Affected	Highly noise affected level represents the point above which there may be strong community reaction to noise (above 75 dB(A)) as defined in the ICNG (EPA, 2009)

Abbreviation	Expanded text
Highly Noise Intensive Work	Works which are defined as annoying under the Interim Construction Noise Guideline (DECC, 2009) including: • 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 • Bitumen milling or profiling • Jackhammering, rock hammering or rock breaking • Impact piling.
Hold point	Is a verification point that prevents work from commencing prior to approval from TfNSW and Jemena
Infrastructure Approval	Approval (SSI 9364) for carrying out of the M12 Project under Section 5.19 of the *Environmental Planning and Assessment Act 1979* subject to specific CoA as detailed in Schedule 2 of the approval.
Investigation	The process by which the cause(s) of an environmental incident is examined and identified.
ISCA	The Infrastructure Sustainability Council of Australia who issues IS Ratings valuating sustainability across the construction phases for the Project
Minister, the	Minister of the NSW Department of Planning and Environment (or delegate)
MNES	Matters of Environmental Significance
NCR	Non-conformance report
Non-compliance	A failure to comply with any condition of approval (CoA), revised environmental management measure (REMM), licence condition (where applicable), permit or any other statutory approval relevant to the activity and/or area where the activity occurs
Non-conformance	Failure to conform to the requirements of Project system documentation including this EWEMP or supporting documentation.
Notifiable Event	Any environmental incident, report-only event or non-compliance that triggers a specific statutory requirement to notify a regulatory authority.
NSW CoA	NSW Conditions of Approval
OCS	Overarching Communication Strategy
OEH	NSW Office of Environment and Heritage, now EE
OOHW	Out-of-hours work
Primary CoA/REMM	CoA that are specific to the development of this Plan
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Pollution	Pollution (including air pollution, water pollution, noise pollution and land pollution) as defined in the dictionary to the POEO Act

Abbreviation	Expanded text
Pollution incident	Has the same meaning as defined in the dictionary to the POEO Act.
Project, the	M12 Motorway Project
QA	Quality Assurance
RAP	Registered Aboriginal Party
Regulatory action	Any formal regulatory response from an environmental regulator including but not limited to penalty notices, clean-up notices, prevention notices, official cautions, show cause notices and formal warnings.
REMM	Revised Environmental Management Measures
Report-only event	An environmental incident or unexpected find resulting from circumstances outside the scope of controls and of an activity.
ROL	Road Occupancy Licence
SAP	Sensitive Area Plan
SEAR's	Secretary's Environmental Assessment Requirements
Secondary CoA/REMM	CoA that are related to, but not specific to, the development of this Plan
Secretary	Secretary of the NSW Department of Planning and Environment, or delegate
SEMP	Site Establishment Management Plan
SGSPAA	SGSP (Australia) Assets
Significant incident	An environmental incident that is likely to receive a classification of C3, C2 or C1, OR the history of the project, past performance and/or previous regulatory interest, indicate the project is likely to receive a penalty notice or be subject to prosecution, and therefore requires escalation to the Secretary and other TfNSW senior management.
TECs	Threatened Ecological Communities
TfNSW	Transport for New South Wales (formerly Roads and Maritime Services) who will also be acting as the Principal for initial vegetation clearing and associated works
Unexpected find	An unexpected discovery such as a heritage item, threatened species, contamination, asbestos or hazardous substance.
Work	Any physical work to build or facilitate the building of the CSSI, including low impact work, environmental management measures and utility works. However, it does not include activities that inform or enable detailed design of the CSSI and generate noise that is no more than 5 dB(A) above the rating background level at any sensitive receiver.
WSIA	Western Sydney International Airport
Zinfra	Principal for gas wrapping and associated works (excluding initial vegetation clearing)

1 Introduction

1.1 Background

Transport for New South Wales (TfNSW) is planning to construct and operate the M12 Motorway (the Project) to provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network. The M12 Motorway will run between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham for about 16 kilometres and is expected to be opened to traffic prior to opening of the WSIA.

The Project will be constructed in three separate stages under four separate construction contracts:

- M12 West (construct only contract) – between The Northern Road, Luddenham and about 250 metres east of Badgerys Creek
- M12 Central (construct only contract) – between about 500 metres west of South Creek and the Western Sydney Parklands at Duff Road Road, Cecil Park
- M12 East (construct only contract) – Elizabeth Drive connections, south of Cecil Park
- M12 East (design and construct contract) – the M7/M12 interchange.

The Project is subject to an approval under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as Critical State Significant Infrastructure (CSSI) (SSI-9364). The Project is also a controlled action under Section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), requiring a separate approval from the Australian Minister for the Environment.

An Environmental Impact Statement (EIS) was prepared to describe and assess the Project and recommend management measures to address impacts. The EIS was exhibited by the NSW Department of Planning and Environment (DPE) for 34 days from 16 October 2019 to 18 November 2019 to give the community and stakeholders the opportunity to provide comment.

In accordance with Section 5.17 of the EP&A Act, the Secretary requested TfNSW to provide a response to submissions. These were addressed within the Submission Report. Due to design developments since the exhibition of the EIS, an Amendment Report was developed to assess the impacts of these amendments. The Amendment Report was exhibited by DPE for 14 days from 21 October 2020 to 4 November 2020. Following exhibition of the Amendment Report, an Amendment Report Submissions Report (ARSR) was developed in December 2020 to provide a response to submissions on the Amendment Report. Further, supplementary information was provided via an amendment to the ARSR in March 2021. Collectively the EIS, Submission Report, Amendment Report, ARSR and ARSR amendment are herein referred to as Environmental Assessment Documentation.

Approval for the Project under the EP&A Act was granted by the Minister for Planning on 23 April 2021 (SSI 9364). The framework for the approval of the Project allows for certain works to occur at early stages, to prepare the Project site for future construction and facilitate its timely delivery. These works have been defined as Early Works in Appendix B of the Infrastructure Approval and are the subject of this Early Works Environmental Management Plan (EWEMP).

Approval for the Project under the EPBC Act was granted by the Federal Minister for the Environment on 03 June 2021 (EPBC 2018/8286). A detailed description of the Project as it relates to Early Works is provided in Section 2.

1.2 Purpose of this EWEMP

This Early Works Environmental Management Plan (EWEMP or Plan) and associated Early Works Flora and Fauna Management Plan (EWFFMP) and Site Establishment Management Plan (SEMP) provides a management system to ensure that best practice controls are established and maintained to manage potential environmental impacts during Early Works.

The Early Works covered by this EWEMP relate to the protection of high pressure gas mains and associated activities within the Project Early Works footprint.

The strategies defined in this EWEMP have been developed to address the NSW and Commonwealth Conditions of Approval (CoA) and the management measures presented in the Environmental Assessment Documentation applicable to Early Works.

This EWEMP has been prepared to outline and describe how the NSW Minister for Planning's CoA and the Federal Minister for the Environment's CoA will be complied with during Early Works.

This EWEMP is consistent with:

- NSW Minister's Infrastructure Approval dated 23 April and Federal Minister for the Environment Approval dated 3 June 2021
- Zinfra's Contract Environmental Specifications
- TfNSW Guidelines
- Environmental Management Plan Guideline – Guideline for Infrastructure Projects (DPIE, April 2020)
- AS/NZS ISO 14001: Environmental Management Systems (EMS)
- ISO 9001: Quality Management Systems
- AS/NZS 4801: Safety Management Systems.

The purpose of this EWEMP is to provide a structured approach to the management and minimisation of environmental risks and issues during Early Works. The EWEMP outlines the requirements, controls and management procedures that provide an overall approach to the Early Works. It also provides requirements for, and directs the Early Works contractors and suppliers regarding specific measures that will be adopted for their work on the Project. Implementing this EWEMP effectively will ensure that TfNSW, Zinfra and their suppliers and sub-contractors to the Project meet regulatory and policy requirements in a systematic manner and continually improve environmental performance.

The EWEMP provides:

- A description of activities to be undertaken during Early Works
- Details of environmental policies, guidelines and principles to be followed
- Details of internal auditing
- A program for analysis of the key environmental risks arising from Early Works

- Details of how the Early Works component of the Project will be constructed to meet the performance outcomes stated in the Environmental Assessment documentation (see glossary) and to manage the identified risks
- An inspection program detailing the activities to be inspected and frequency of inspections
- A protocol for managing and reporting any incidents and non-compliances with the NSW and Federal approvals and with statutory requirements
- Procedures for rectifying non-compliances during compliance auditing, incident management or at any time during Early Works
- A description of the roles and environmental responsibilities for TfNSW, construction personnel and their relationship with the independent Environmental Representative (ER)
- Details of training, inductions and awareness programs for construction personnel working on the Early Works, in relation to environmental and compliance obligations
- A mechanism for periodic review and update of the EWEMP and associated plans and programs, ensuring continual improvement.

This EWEMP will be available to all personnel via the Project document control management system and onsite. The EWEMP will be available for public inspection on the Project website (refer to Section 5.5.4). Confidential information, which may include the location of threatened species, Aboriginal objects or places and personnel contact details, will be removed from all documents before being made available to the public.

1.3 Scope of Works

This EWEMP has been developed specifically for the protection of high-pressure gas mains in proximity to Elizabeth Drive and within Western Sydney Parklands. The works will be carried out by:

- TfNSW who will act as Principal for initial clearing activities and associated works to be conducted by the Early Works Vegetation Clearing Contractor
- Zinfra who will act as Principal for all other Early Works activities associated with gas wrapping to be undertaken by their appointed contractor

Early Works locations are shown in Figure 3 of Appendix B of the Infrastructure Approval, and Figure 2-1 of this EWEMP.

All works will be managed in accordance with this EWEMP and associated Sub-plans.

1.4 Conditions of Approval

This EWEMP provides a consistent approach to address the requirements of both the State and Federal approvals in a single document. The requirements of the State conditions relevant to the development of this EWEMP are shown in Table 1-1. These are defined as “primary CoA” and specifically related to the EWEMP. Secondary CoA relevant to, but not specific to the development of this Plan, have been listed in Appendix A1. A cross reference is also included to indicate where the CoA is addressed in this Plan or other Project management documents.

If a proposed action has the potential to significantly impact on Matters of National Environmental Significance (MNES) or the environment of Commonwealth land it must be referred to the Australian Minister for the Environment. As the Project has potential to significantly impact on listed threatened species or communities (Section 18 and Section 18A of the EPBC Act) the Project is considered a

controlled action under the EPBC Act and is therefore subject to Commonwealth CoA's. The requirements of Federal conditions and where they are met in this EWEMP is shown in Table 1-2.

Table 1-1: NSW CoA relevant to the EWEMP

No.	Requirement	Reference
A24	Before undertaking early works specified in **Appendix B**, the Proponent must prepare an **Early Works Environmental Management Plan.** The Plan must include:	This plan
A24 (a)	a description of the activities to be undertaken and the scheduling and duration for each activity;	Section 2
A24 (b)	a site establishment management plan for any proposed construction ancillary facilities (excluding minor construction ancillary facilities established under **Condition A20**) consistent with the requirements of **Condition A16**;	Appendix B1 Section 2.3
A24 (c)	figures illustrating the proposed location(s) of the early works and the closest sensitive receiver(s);	Appendix B1 Figure 2-1 Appendix A4
A24 (d)	a flora and fauna management sub-plan (prepared in consultation with the EES) which includes - (i) details of the measures to avoid and minimise disturbance to native vegetation, and other habitat of native flora and fauna species, (ii) details of the proposed management and mitigation measures for the affected species listed in Table 3, (iii) procedures for undertaking pre-clearing surveys for native fauna, including surveys by a suitably qualified and experienced ecologist to determine the presence of native fauna in the area impacted by the early works, and procedures and measures to manage their relocation, and (iv) unexpected finds protocol for flora and fauna;	Appendix B2
A24 (e)	details of measures to avoid and minimise noise and vibration, soil, water and air quality impacts; and	Appendix A8
A24 (f)	Unexpected finds procedures for heritage and contamination.	Appendix B3, B4
A25	The **Early Works Environmental Management Plan** required under **Condition A24** must be endorsed by the **ER** and then submitted to the Planning Secretary for approval at least one (1) month before the commencement of the early works specified in **Appendix B**. The early works specified in **Appendix B** must not commence until the environmental management plan is approved. The environmental management plan must be implemented for the duration of the early works which are the subject of the plan. Nothing in this condition prevents the Proponent from preparing individual environmental management plans for one or more of the early works specified in **Appendix B**.	Section 1.9
A16	Before establishment of a construction ancillary facility(ies) (excluding minor construction ancillary facilities established under **Condition A20**), the	Appendix B1

No.	Requirement	Reference
	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 facility(ies). The **Site Establishment Management Plan** must be prepared in consultation with the relevant council(s) and relevant State government agencies. The Plan must be endorsed by the **ER** and then submitted to the Planning Secretary for approval one (1) month before the establishment of the construction ancillary facility(ies). The **Site Establishment Management Plan** must detail the management of the construction ancillary facility(ies) and include:	
A16 (a)	a description of activities to be undertaken during establishment of the construction ancillary facility(ies) (including scheduling and duration of work to be undertaken at the site);	
A16 (b)	figures illustrating the proposed site layout and the location of the closest sensitive receiver(s);	
A16 (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 before the commencement of site establishment work;	
A16 (d)	details of how the site establishment activities described in subsection (a) of this condition will be carried out to: (i) meet the performance outcomes stated in the documents listed in **Condition A1**, and (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and	
A16 (e)	a program for monitoring the performance outcomes, including a program for noise monitoring consistent with the requirements of **Condition C14**.	
A34	For the duration of Work until the commencement of operation, or as agreed with the Planning Secretary, the approved **ER** must:	Section 1.10 Section 5.1.1 Section 7.2
A34 (i)	Consider any minor amendments to be made to the **CEMP**, **CEMP Sub-plans**, **Construction Monitoring Programs**, **Site Establishment Management Plans** and **Early Works Environmental Management Plan** that involve updating or are of an administrative nature and do not increase impacts to nearby sensitive receivers, and ensure they are consistent with the terms of this approval and the documents approved by the Planning Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval.	
C14	The **Construction Noise and Vibration Monitoring Program** must include, but not be limited to:	Appendix B1
C14 (a)	noise and vibration monitoring at representative residential and other locations (including at the worst- affected residences), subject to property owner approval, to confirm construction noise and vibration levels;	
C14 (b)	noise monitoring during the day, evening and night time periods throughout the construction period, covering the range of activities (including worst-case construction noise levels) being undertaken;	

No.	Requirement	Reference
C14 (c)	method and frequency for reporting monitoring results; and	
C14 (d)	procedures to identify and implement additional mitigation measures where monitoring indicates noise and/or vibration levels in excess in excess of noise and vibration criteria.	

Table 1-2: Commonwealth CoA relevant to the EWEMP

No.	Requirement	Reference
5	For the protection of protected matters the approval holder must:	
5 (a)	Implement conditions A24 of Part A, Schedule 2 and C4, C5, C8, C9 and C10 of Part C, Schedule 2 of the State Infrastructure approval, where they relate to monitoring, managing, avoiding, mitigating, recording, or reporting on, impacts to protected matters.	This EWEMP Appendix B2 Appendix A8
5 (b)	Implement biodiversity conditions E2 to E10 of Part E, Schedule 2 of the State Infrastructure approval where they relate to monitoring, managing, avoiding, mitigating, offsetting, recording, or reporting on, impacts to protected matters.	Appendix B2
6	The approval holder must notify the Department in writing of the date of commencement of the action within 10 business days after the date of commencement of the action.	Section 1.8
8	The approval holder must maintain accurate and complete compliance records.	Section 7.3.4
9	If the Department makes a request in writing, the approval holder must provide electronic copies of compliance records to the Department within the timeframe specified in the request. *Note: Compliance records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, and or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the Department's website or through the general media.*	
10	The approval holder must prepare a compliance report for each 12 month period following the date of commencement of the action, or otherwise in accordance with an annual date that has been agreed to in writing by the Minister. [Note that CoA 10a-e (i.e. the publishing of compliance reporting) are not the responsibility of the Early Works Contractors so has been excluded from this Plan]	
11	The approval holder must notify the Department in writing of any: incident affecting protected matters; non-compliance with the conditions; or non-compliance with the commitments made in plans required in accordance with conditions 5a or 5b. The notification must be given as soon as practicable, and no later than 2 business days after becoming aware of the incident affecting protected matters or non-compliance. The notification must specify:	Appendix A5
11 (a)	any condition which is or may be in breach	

No.	Requirement	Reference
11 (b)	a short description of the incident affecting protected matters and/or non-compliance	
11 (c)	the location (including co-ordinates), date, and time of the incident affecting protected matters and/or non-compliance. In the event the exact information cannot be provided, provide the best information available.	
12	The approval holder must provide to the Department the details of any incident affecting protected matters or non-compliance with the conditions or commitments made in plans required in accordance with conditions 5a or 5b as soon as practicable and no later than 10 business days after becoming aware of the incident affecting protected matters or noncompliance, specifying:	Appendix A5
12 (a)	any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future;	
12 (b)	the potential impacts of the incident affecting protected matters or non-compliance; and	
12 (c)	the method and timing of any remedial action that will be undertaken by the approval holder.	
16	The approval holder must:	Section 1.10 Section 5.5.4
16 (a)	submit plans electronically to the Department for information;	
16 (b)	unless otherwise agreed to in writing by the Minister, publish each plan on the website within 20 business days of the date:	
	i. that the plan was approved under the State Infrastructure approval, if the plan requires approval under the State Infrastructure approval; or	
	ii. that the plan was finalised and provided to the NSW Planning Secretary, if the plan is required for information under the State Infrastructure approval.	
16 (c)	exclude or redact sensitive ecological data from plans that are to be published on the website or provided to a member of the public; and	
16 (d)	keep plans published on the website for the period for which this approval has effect, or as otherwise agreed by the Department in writing.	

1.5 Revised Environmental Management Measures

The primary and secondary requirements of the Revised Environmental Management Measures (REMM) presented in the EIS and updated in the Amendment Report Submissions Report relevant to the development of this EWEMP are listed in Appendix A1.

1.6 Sustainability

TfNSW places high importance on ensuring key sustainability outcomes during the delivery of the Project are achieved. Addressing sustainability requirements will be an ongoing process throughout the life cycle of the Project.

Governance, monitoring, reporting and corrective action processes applicable to sustainability will also be detailed in Zinfra's management system.

Delivery of the Early Works for the Project will be in accordance with relevant objectives, targets and initiatives outlined in the Sustainability Strategy 2019 – 2023 (Roads and Maritime, 2019). Key initiatives outlined in Sustainability Strategy 2019 – 2023 that are relevant to Early Works are listed in Table 1-3.

Table 1-3: Key initiatives of Sustainability Strategy 2019 – 2023 relevant to Early Works

Focus Area	Key initiative
Energy and carbon management	Educating and raising awareness in employees, contractors and our supply chain regarding the need for increased energy efficiency and reductions in carbon emissions.
	Using solar panels to power roadside signage, alert and messaging systems when cost effective and fit for purpose.
Climate change resilience	Consulting and partnering with key stakeholders to reduce vehicle carbon emissions and supporting new technologies to reduce road transport carbon emissions.
	Minimising the carbon impacts associated with vegetation clearance by reducing project footprints where possible.
Air quality	Actively monitoring and minimising non-road diesel emissions from our activities.
	Ensuring non-road diesel plant and equipment used in our activities comply with relevant EU or US EPA emissions standards.
Resource use and waste management	Identifying where there is potential to recover and reuse materials on site.
	Substituting non-renewable materials with recycled or reused materials where they are fit for purpose, cost effective and affordable.
	Managing waste to minimise transport related risks and impacts by using local disposal facilities where feasible and appropriate.
	Maximising the use of non-potable water in preference to potable water where feasible.
Pollution control	Fostering a proactive reporting culture that promotes transparency in managing and reporting incidents internally and with regulators.
	Keeping our roads and waterways clean through litter and debris collection and removal.
Biodiversity	Minimising impacts by applying best practice approaches to unavoidable habitat loss (eg following pre-clearing processes, establishing exclusion zones and careful management of weeds and pathogens).

Focus Area	Key initiative
	Avoiding the spread of weeds, pests and diseases outside of our sites through appropriate management of mulch and vegetation wastes generated, reused or removed from our sites.
Sustainable procurement	Where possible, procuring from small and medium-sized enterprises Aboriginal businesses and Australian disability enterprises by including such requirements in procurement strategies and policies.
	Supporting local suppliers to minimise haulage distances of construction materials when feasible.

1.7 Consultation

Consultation with relevant stakeholders and Government agencies was not required to be undertaken as part of the development of this EWEMP. However, DAWE will be notified of the commencement of Work within 10 business days of the commencement date. It is noted that this may not be required should another package of Early Works outlined in Section 2.2 commence prior to the Early Works within the scope of this EWEMP.

The Early Works Flora and Fauna Management Plan (EWFFMP) was consulted on with the Environment, Energy and Science (EES) Group in accordance with the requirements of the NSW CoA C24(d).

In accordance with NSW CoA A5, where a CoA requires consultation with identified parties, details of the consultation undertaken, matters raised by the parties, and how the matters were considered will accompany the strategies, plans, programs, reviews, audits, protocols and the like submitted to the Secretary. This information is detailed within the EW FFMP in Appendix B2.

Consultation with the community, relevant stakeholders and agencies by TfNSW, Zinfra and the Early Works Vegetation Clearing Contractor will continue throughout Early Works where required. The approach to community consultation is documented in the Project's Overarching Communication Strategy (OCS) that will be developed in accordance with NSW CoA B1. Where relevant, the outcomes of this consultation will be documented in subsequent revisions of the EWEMP (refer to Section 1.10 and Section 7).

1.8 EWEMP endorsement and approval

This EWEMP has been reviewed by the TfNSW Utilities Manager and Environment and Sustainability Manager and endorsed by the ER prior to submission to the Secretary of the Department of Planning and Environment (DPE) in accordance with NSW CoA A25. This EWEMP has also been reviewed by the appropriate Zinfra Environmental Site Representative (or delegate).

The EWEMP will be submitted to the Secretary for approval no later than one month prior to commencement of Early Works, in accordance with NSW CoA A25. Additionally, TfNSW will notify DPE in writing of the date of Early Works commencement at least one month prior to that date in accordance with NSW CoA A36. This is only required if another package of Early Works (Section 2.2) has not commenced prior to the Works within the scope of this EWEMP.

The EWFFMP prepared under NSW CoA A24(d) the SEMP prepared under NSW CoA A24(b) and A16 will also be endorsed by the ER and submitted to the Secretary for approval no later than one month prior to commencement of Early Works, in accordance with NSW CoA A25.

Early Works will not commence before approval of the EWEMP, EWFFMP and SEMP by the Secretary in accordance with NSW CoA A25.

In addition, in accordance with Commonwealth CoA 16, TfNSW will submit the EWEMP, EWFFMP and SEMP electronically to DAWE for information.

1.9 EWEMP submission requirements

The EWEMP, EWFFMP and SEMP submission and re-submissions must be provided in the following formats:

- 1 copy in MS Word version original document
- 1 copy in Word version with tracked changes showing edits or markups since previous submission
- 1 copy in Word version updated clean version, no track changes
- 1 copy in final with all appendices
- A spreadsheet i.e. comments tracking register showing how TfNSW and other input parties' (e.g. councils, Environmental Representative and Planning Secretary) comments have been addressed and status – Open / Closed.

1.10 EWEMP revision

The Early Works environmental management system review process described in Section 6.8 ensures that environmental documentation is updated as required.

The EWEMP will be reviewed:

- Following environmental incidents categorised as C1 to C6 in accordance with the TfNSW environmental incident classification and reporting procedure
- On identification of new risks, including risks identified during risk register updates
- When non-compliances are identified
- Following environmental audits that identify matters that require attention
- In response to Project change (including modifications)
- Within one month of any of the above occurrences, or as otherwise agreed with the Secretary
- As part of a continuous improvement process.

Should the review process identify any issues or items within the environmental documentation that require updating, it is the responsibility of Zinfra and the Early Works Vegetation Clearing Contractor to update the EWEMP as applicable.

The updated EWEMP will be submitted to TfNSW for review. Following a review period of 10 days by TfNSW, all comments made by TfNSW on the updated EWEMP must be addressed, before resubmission of the EWEMP for a second review. Following endorsement from TfNSW, the updated EWEMP will be submitted to the ER for review and comment. All submissions to the ER must also

be provided to the TfNSW. A minimum 10 working day review period may be required each time the ER is required to review the EWEMP. The final approved and updated EWEMP would then be submitted to TfNSW for release of the Hold Point.

All issues and comments raised by TfNSW and other parties will be responded to in a spreadsheet at every stage of review. To aid in the approval process for the updated EWEMP, EWFFMP and/or SEMP, Zinfra and/or the Early Works Vegetation Clearing Contractor must provide the tabulated responses for each issue or comment to TfNSW when submitting the revised EWEMP.

Any revisions to the EWEMP will be endorsed by the ER. In accordance with NSW CoA A34(i) the ER can approve minor changes to the EWEMP, including those that:

- Are editorial in nature e.g. staff and agency/authority name changes
- Do not increase the magnitude of impacts on the environment when considered individually or cumulatively
- Do not compromise the ability of the Project to meet approval or legislative requirements.

Amendments to the EWEMP which are not considered minor (based on the items above), will be forwarded to the Planning Secretary for approval and copies provided to the agencies required to be consulted in the preparation in the EWEMP (refer Section 1.8). The EWEMP will also be made available to DAWE upon request.

Revised versions of the EWEMP will be made available through the document control process described in Section 7.6.2. Revised versions of the EWEMP will be made available on the website in accordance with NSW CoA B10.

2 Early Works Description

2.1 Overview

The works will include protection of high pressure gas mains (gas mains) in proximity to Elizabeth Drive and within Western Sydney Parklands (Figure 2-1). The gas mains include the eastern gas pipeline (EGP) and Jemena gas network (JGN Lic 1). The protection works will involve:

- Site establishment activities including ancillary facility establishment in accordance with the SEMP and installation of safety and environment controls
- Excavation (including shoring and access) to expose about 585 metres of gas mains
- Carrying out visual inspection of the coating of the gas mains
- Carrying out tests by the checklist that applies to the Zinfra specification for corrosion anomalies and coating defects (Coating Spec 001-MAN-00009-001)
- Taking soil samples around every 50 metres to identify the soil type, physical and chemical composition and pH level surrounding the gas mains
- Either overcoating exposed pipeline sections with Jemena approved coating system or removing the entire pipeline coating and applying new Jemena approved coating system for the gas mains
- Inspection and repair of any pipe defects, including metal loss, construction defects, dents, gouges, mill defects, weld defects and cracks
- Installation of a strike slab at the eastern Gas Pipeline crossing of Elizabeth Drive of about 35m long by 3.5m wide and 100mm thick with mesh
- Backfilling excavation, removing surplus material, and stabilising the work area.

Further detail of early works activities relating to the protection of high-pressure gas mains is provided in Section 2.2. The overall duration of works is anticipated to take about nine months. Details on working hours are provided in Section 5.4.

Figure 2-1: Early Works for the protection of high pressure gas mains

Figure 2-1: Early Works for the protection of high-pressure gas mains

2.2 Early Works Activities and Program

Early Works is expected to begin in late Quarter 4 of 2021 and conclude in late Quarter 4 2022. Should the Overarching Construction Environmental Management Plan be approved during the course of Early Works activities, the EWEMP would continue to be implemented until Early Works are complete.

An indicative Early Works sequence is provided in Table 2-1; the indicative duration of activities and associated program is outlined in Table 2-2.

Additional Early Works (to be carried out by others and not covered by this EWEMP) relating to the Project are detailed in Appendix B of the Infrastructure Approval and are subject to separate Early Works Management Plans. These include:

- Relocation of electrical infrastructure along Luddenham Road and Elizabeth Drive, and the installation of a new Sydney Water pipeline along Elizabeth Drive, in the vicinity of Western Sydney International Airport. These works will be carried out under an EWEMP specific to the work (document reference number: M12PPW-ADAP-ALL-EN-PLN-000060). This EWEMP meets the requirements of NSW CoA A24 and A25. These works are due to commence in Q3 2021
- Establishment of a temporary roundabout within the western extent of the electrical work on Elizabeth Drive (as shown in Appendix B of the Infrastructure Approval). The work is expected to be carried out under an EWEMP specific to the work (document reference number M12PPW-ADAP-ALL-EN-PLN-000064). This EWEMP will meet the requirements of NSW CoA A24 and A25. These works are due to commence in Q3 2021.

Table 2-1: Indicative construction sequence

Phase No.	Construction phase	Activities	Plant and equipment
1	Early works preparation	• Establish temporary ancillary facility AF7 (Early Works) and/or AF18 (Early Works) as well as minor AF a, b and c • Establish site access (in consultation with Western Sydney Parklands Trust) • Install safety barriers and traffic control devices for protection of the work area. • Erect temporary fencing around early works construction footprint perimeter • Install environmental controls • Remove vegetation from early works construction footprint	• Traffic control • Temporary fencing
2	Protection of high pressure gas mains, involving excavation works (to expose pipeline), inspection, removal and replacement of the coating systems on the high pressure gas mains	• Strip topsoil and stockpile for later reuse • Excavate a trench about 1.5 metres wide by up to 2 metres deep to expose about 585 metres of Jemena-owned gas pipeline in four separate locations; two locations will extend about 400 - 430 metres and two locations would extend about 100 metres. Stockpile excavated material adjacent to the excavation. The trench may be wider if benching is required based on site conditions and WHS requirements, • Stockpile excavated material adjacent to the excavation if space permits, otherwise it will be stockpiled at AF7 (Early Works) and AF18 (Early Works) • Carry out the excavation in accordance with *Pipeline Excavation Procedure* – GAS-999-PR-HSE-008 • Carry out a visual inspection of existing pipeline coating and record pipe location, condition, terrain and existing backfill type. • Complete tests (e.g. Holiday testing, pH testing) as required by the checklist that applies to *Corrosion anomalies and coating defects.* • *Procedures: Coating Spec 001, GTS-999-PR-IN-001*	• 24 tonne excavator (or smaller) • Scaffold Benching or Shoring as required by site conditions and WHS requirements • Plate compactors and small roller • Sand blaster • Site vehicles, tippers and bogies • Semi-trailers • Traffic control • Water cart

Phase No.	Construction phase	Activities	Plant and equipment
		Remove the existing coating where defects are detected, to undertake further testing and inspections – Procedure *MIS Document 005166* • Complete a survey (*Procedure: GTS-960-SP-GP-001*) of the section of pipeline to be repaired/re-coated Preparing the section of pipeline for application of overcoat, applying new overcoat, and carrying out testing of new coating in accordance with *Coating Spec 001- High Voltage spark (Holiday) testing specification* • Repair pipeline if defect found using pipeline repair guidelines procedure (*GTS-999-OM-PL-001*), welding procedure (*WPS-087-088*) and welder performance qualification procedure (*WQ-24-09-18-GTAW-MMAW-W10*) • Recoat the repaired section of the pipeline in accordance with Jemena approved coating system procedure – *Coating Spec 002* • Backfill excavated areas in accordance with Backfill specification, Procedure for Backfilling Rev 0 Note: Install the strike slab at the Eastern Gas Pipeline crossing at Elizabeth Drive of about 35m long by 3.5m wide and 100mm thick with mesh	
3	Finishing works	• Temporarily stabilise the site prior to main construction work commencing (for example with hydro seed / spray grass, polymer) • Make-good AF7 (Early Works), AF18 (Early Works) and Minor AF a-c so that it is suitable for continued use through the construction phase of the Project • Removal of temporary environmental controls if required (based on timing of forthcoming main construction works)	• Traffic control Hydroseeding unit consisting of pump mounted on a truck

Table 2-2: Indicative early works program

Phase No.	Early Works activity	M12 indicative early works program							
		2021				2022			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Establish temporary ancillary facilities								
1	Establish site access								
1	Erect temporary fencing								
1	Install environmental controls								
1	Remove vegetation								
2a	Protection of high pressure gas mains								
3	Finishing works								

2.3 Ancillary Facilities

Ancillary facilities will be established to support site-based construction personnel during Early Works. The ancillary facilities to be used for these Early Works are identified and assessed by the Environmental Assessment Documentation as ancillary facility AF7 and AF18. For the purposes of these Early Works, the ancillary facilities will be referred to as AF7 (Early Works) and AF18 (Early Works).

AF7 (Early Works) and AF18 (Early Works) are located at the eastern extent of the Project. AF7 (Early Works) is located west of the M7 in the north east corner of the Western Sydney Parklands. AF18 (Early Works) is located adjacent the western verge of Wallgrove Road covering about 1.1 hectares.

Further detail regarding AF7 (Early Works) and AF18 (Early Works) are included within the SEMP in Appendix B1.

AF7 (Early Works) and AF18 (Early Works) will comprise of:

- Hardstand parking areas with capacity for all construction workers expected at any site
- Staff amenities, including office accommodation, meeting rooms and light vehicle parking
- Materials laydown and storage areas, including purpose-built temporary structures as required
- Perimeter fencing, including visual screening of construction compounds where necessary

In accordance with NSW CoA A20, additional minor ancillary facilities, including lunch sheds, office sheds and portable toilet facilities can be established and used by the Early Works contractors if they have been assessed in the following documents:

- M12 Motorway Environmental Impact Statement (dated October 2019)
- M12 Motorway Submissions Report (dated October 2020)
- M12 Motorway Amendment Report (dated October 2020)
- M12 Motorway Amendment Report - Submissions Report (dated December 2020)
- M12 Motorway Amendment Report – Submission Report – Amendment (dated 8 March 2020).

Or if they satisfy the following criteria:

- Are located within or adjacent to the construction boundary
- Have been assessed by the ER to have:
  - Minor amenity impacts to surrounding residences and businesses, after consideration of matters such as compliance with the *Interim Construction Noise Guideline* (DECC, 2009), traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and
  - Minor environmental impact with respect to waste management, soil, water and flooding, and
  - No impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of Infrastructure Approval.

Any ancillary facility that is not minor, and is not identified by description and location in the Environmental Assessment Documentation, may only be established and used if they have been assessed to meet the following criteria outlined in NSW CoA A15:

- They are located within or immediately adjacent to the construction boundary; and
- They are not located next to a sensitive receiver(s) (including where an access road is between the facility and the receiver(s)), unless the sensitive receiver(s) (both the landowner(s) and occupier(s)) have given written acceptance to the carrying out of the relevant facility in the proposed location; and
- They have no impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval; and
- The establishment and use of the facility can be carried out and managed within the outcomes set out in the terms of the Infrastructure Approval, including in relation to environmental, social and economic impacts.

Before the establishment of an ancillary facility, a SEMP must be prepared that meets the requirements of NSW CoA A16. The SEMP must be endorsed by the ER and submitted to the Secretary for approval one month before the establishment of the ancillary facility. Only ancillary facilities which do not meet the criteria under NSW CoA A20 require approval by the Secretary. An assessment of AF7 (Early Works) and AF18 (Early Works) in accordance with NSW CoA A16 is provided in Appendix B1.

Three minor ancillary facilities (Minor AF a-e) (Figure 2-1) will be established to support the Early Works described in Section 2.1. The minor ancillary facilities will consist of lunch sheds and/ or portable toilet facilities to be utilised by site personnel for the duration of the Early Works. These minor ancillary facilities are in accordance with NSW CoA A20. Further information is provided in Appendix B1.

Temporary stockpiling will be required during Early Works to store excavated material, until it is reused for backfilling upon the completion of protection works. Temporary stockpiles will be located within AF7 (Early Works) and AF18 (Early Works) only and will include environmental protection measures such as sediment controls to minimise impacts on sensitive receivers from dust and receiving waters from erosion and sedimentation. Stockpile sites within each AF will be established and managed in accordance with a stockpile management procedure, to be informed by the *TfNSW Stockpile Site Management Guideline* (2011).

Small laydown areas for short term temporary placement of material will be located at either end of the work areas within the Early Works boundary. These are part of the work zone rather than ancillary facilities.

2.4 Haulage Routes

In order to transport materials to the Early Works site and access ancillary facilities, heavy vehicles will utilise the following haulage routes:

- AF7 (Early Works): M7 Motorway and Elizabeth Drive
- AF18 (Early Works): M7 Motorway, Elizabeth Drive and Wallgrove Road

No local roads beyond those assessed in the Environmental Assessment Documentation are expected to be utilised to access these ancillary facilities.

NSW CoA E93 requires the Planning Secretary's approval before any heavy vehicles used for spoil and fill haulage or concrete deliveries (for the purpose of the Project) are driven on local roads within one (1) kilometre of the Early Works and that are not identified for use by heavy vehicles in the Environmental Assessment Documentation.

All requests to the Planning Secretary for approval to use local roads in accordance with NSW CoA E93, will include a traffic and pedestrian impact assessment prepared in consultation with the relevant local council as required by NSW CoA E94. The assessment will be undertaken by an appropriately qualified and experienced person and must include a swept path analysis if required by DPE.

The traffic and pedestrian impact assessment will:

- Demonstrate that the use of local roads will not compromise the safety of the public and have no more than minimal amenity impacts
- Provide details as to the date of completion of the road dilapidation surveys for the subject local roads; and
- Describe the measures that will be implemented to avoid where practicable the use of local roads past schools, aged care facilities and childcare facilities during peak times for operation.

3 Environmental Management Systems Overview

3.1 Environmental Management System

The EWEMP has been prepared in accordance with the overarching environmental management principles outlined in Figure 3-1.

Figure 3-1: Overview of the Project environmental management principles

Source: http://www.environmentalmanagementsystem.com.au/what-is-an-environmental-management-system.html

The EWEMP prepared in accordance with these principles provides an overarching structure to the environmental management of the Project.

3.2 Environmental Policy

SGSP (Australia) Assets (SGSPAA) Health, Safety, Environment and Quality Policy provided in Figure 3-2 outlines Zinfra's commitment to environmental protection and sustainability. Zinfra will display the Policy at their work site and communicate it to staff and other interested parties through the induction process.

TfNSW's environmental policy specifies TfNSW's commitment to continual improvement in environmental performance and compliance with applicable legal requirements. TfNSW's environmental policy is provided in Appendix A2. TfNSW's environmental policy will be displayed on the Project website and at the Project site offices and communicated to staff and other interested parties via inductions and ongoing awareness programs (refer to Section 5.3).

SGSP AUSTRALIA ASSETS

Health, Safety, Environment & Quality Policy

The safety, wellbeing and satisfaction of our teams, customers, the public and the environments and communities in which we operate are paramount to our success. We bring energy to life reliably, affordably and sustainably through continued learning and creating safe, environmentally aware, collaborative and customer focussed work environments.

We do this by:

- Doing it safely every time
- Speaking up, listening, sharing and learning
- Focusing on managing critical risks
- Keeping it simple to enable safe, high quality outcomes

Wherever we are, we will:

People	• Provide safe, healthy and supportive work environments for our internal and contractor teams. • Empower our team members to stop work for a health, safety, environmental or quality (HSEQ) concern. • Consult and communicate with our teams, customers, and other stakeholders on HSEQ issues and opportunities. • Ensure our teams are trained, competent and understand how to implement customer and compliance obligations effectively. • Lead with a focus on the management of health and wellbeing, personal and process safety. • Proactively assist injured and ill team members to return to work.
Assets	• Proactively minimise asset lifecycle risks during asset planning, design, commissioning, maintenance and decommissioning.
Equipment	• Provide the appropriate plant, tools and equipment to deliver safe, high quality outcomes.
Stakeholders	• Exceed customer expectations by developing tailored work programs based on specific customer needs. • Comply with statutory, industry and customer standards and obligations.
Improvement	• Encourage frontline innovation to eliminate/ mitigate risks to as low as is reasonably practicable. • Establish objectives and targets to continuously improve our HSEQ performance. • Respond to incidents and conduct thorough, timely and meaningful investigations, implement corrective actions and share lessons learned internally and with industry. • Pursue best practice and continued improvement through regular review and evaluation of the effectiveness of our HSEQ management system.

Wherever we are, our internal and contractor teams will:

- Be trained, competent, authorised and fit to undertake their activities safely and effectively.
- Report health, safety, environment and quality hazards and unsafe work practices.
- Comply with health, safety, environment and quality obligations.

Jodie Blake

Executive General Manager, PSL & CAM
Jemena Limited
May 2021

Frank Tudor

Managing Director
Jemena Limited
May 2021

Figure 3-2: SGSPAA Environmental Policy

3.3 EWEMP

This EWEMP is the overarching management plan for a suite of environmental management documents for the Early Works described in Section 2 of this plan, as shown in Figure 3-2 below.

Figure 3-3: Project Environmental Management Document System overview

This EWEMP addresses the requirements of the EMS described in Figure 3-1 in the following sections:

- TfNSW Environmental Policy — Appendix A2
- SGSPAA Environmental Policy — Section 3.2
- Planning — Sections 4.1 to 4.3
- Implementation and operation — Sections 5.1 to 5.6 and Appendices
- Checking — Section 6
- Management review — Section 6.8

In addition to the EWEMP plans, additional documentation is required to support the delivery of the Early Works. This documentation is detailed in the following sub-sections.

3.3.1 Environmental Management Sub-plans

Aspect-specific Environmental Management Sub-plans required under NSW CoA A24 support the EWEMP; these documents have been prepared to identify requirements and processes applicable to specific impacts or aspects of the activities described in Section 2. They address requirements of the NSW and Commonwealth Infrastructure Approval and mitigation measures identified in the environment assessment documentation. The Early Works Sub-plans and their approval requirements are identified in Table 3-1. Management of the environmental aspects as required by NSW CoA A24(e) are included within Appendix A8.

Table 3-1: Environmental Management Sub-plans

NSW-CoA Reference	Appendix	Document name	Approval
CoA A24(b) and CoA A16	Appendix B1	Site Establishment Management Plan (SEMP)	Secretary of DPE approval
CoA A24(d) B1	Appendix B2	Early Works Flora and Fauna Management Sub-plan (EWFFMP)	Secretary of DPE approval

3.3.2 Environmental Work Method Statements (EWMS)

EWMS will be prepared to manage and control high risk activities that have the potential to negatively impact on the environment. EWMS will be prepared by the Zinfra Environmental Site Representative (or delegate) and the Early Works Vegetation Clearing Contractor as required and reviewed by the TfNSW Project Manager, TfNSW Environment and Sustainability Manager (or delegate) and ER before commencement of the Early Works activities to which they apply.

EWMS incorporate appropriate mitigation measures and controls. They also identify key procedures to be used concurrently with the EWMS. EWMS are specifically designed to communicate requirements, actions, processes and controls to construction personnel using plans, diagrams and simple written instructions.

As a minimum, EWMS will be prepared for the following activities:

- Activities that impact on environmentally sensitive areas, including on Aboriginal and non-Aboriginal archaeological sites
- Topsoil stripping including temporary stockpiling and disposal of excavated material and protocols for the management of materials containing asbestos
- Activities that involve work in waterways or that pose a risk to receiving water quality, for example:
    - Vegetation clearing and grubbing
    - Activities where construction water may be discharged into natural waterways
    - Construction and operation of concrete wash out areas
    - Construction of temporary waterway crossings.
- Activities that involve Highly Noise Intensive Work, or the use of vibration intensive plant (where there are nearby receptors)
- All works in proximity to any utility assets that have vibration and water runoff limits.

The EWMS will include at least the following elements:

- Description of the work activity, including any plant and equipment to be used
- Outline of the sequence of tasks for the activity, including interfaces with other construction activities
- Identification of any environmental and/or socially sensitive areas, sites or places
- Identification of potential environmental risks/impacts due to the work activity
- Mitigation measures to reduce the identified environmental risk, including assigned responsibilities to site management personnel
- Process for assessing the performance of the implemented mitigation measures.

All personnel and sub-contractors undertaking a task governed by an EWMS must participate in training on the EWMS as detailed in Section 5.3, and acknowledge that they have read and understood their obligations by signing an attendance record prior to commencing work.

As outlined in Section 6 of this EWEMP, regular monitoring, inspections and auditing of compliance with the EWMS will be undertaken by Project management, quality and environmental personnel to ensure that all controls are being followed and that any non-conformances are recorded and corrective actions implemented. Where appropriate, improvements will be incorporated following reviews as described in Sections 1.10 and Section 7.

The EWMS must be signed by the relevant Project Manager and Environmental Site Representative (or delegate) and submitted to the ER and TfNSW for review at least 20 working days prior to commencement of the Works and any Temporary Work referred to in the EWMS. The appropriate regulatory authority, the ER and TfNSW must be advised of any proposed changes to EWMS before the changed work method is adopted. Each EWMS must be submitted to Zinfra and TfNSW for approval.

3.3.3 Erosion and Sediment Control Plans (ESCP)

ESCPs are planning documents for managing erosion and sedimentation and show the site layout and the location of erosion and sediment control mitigation on-site. They cover all construction

stages from initial vegetation clearing through to rehabilitation when erosion and sediment control are no longer required and are removed. Zinfra will be responsible for ensuring that ESCPs will be developed by a person with demonstrated skills and experience in preparing the ESCP in accordance with the 'Blue Book' guidelines (Landcom, 2004) and implemented for Early Works.

ESCPs will be developed in consultation with the Superintendent, Site Engineers, Foreman/ Site Supervisor and other relevant site personnel as required. The ESCP must be signed and approved by the Environmental Site Representative, Construction Superintendent and Project Manager before submitting the Plans to TfNSW for review at least 10 working days before disturbance occurs. Zinfra / TfNSW must review the Plans before releasing the hold point.

ESCPs will be modified to reflect current site conditions. For updates to the plans and minor changes thereafter, the ESCP will be approved by the appropriate Zinfra Environmental Site Representative. For any major changes the ESCP will be reviewed again by a person with demonstrated skills and experience in the Blue Book's guidelines (Landcom, 2004).

3.3.4 Dewatering Procedure

A dewatering procedure for all identified dewatering activities (i.e. any activity that involves the removal of stormwater or infiltrated groundwater from any location on Site (including from ponded areas and trenches) and the subsequent reuse or discharge of that water), must be prepared as part of the ESCP. This procedure must be approved by the appropriate Zinfra Environmental Site Representative and include:

- A map showing areas that will require dewatering
- Sequence of steps to determine the best method for dewatering (including on-site reuse hierarchy) and discharge
- Description of onsite water reuse requirements
- A map showing proposed discharge locations for any offsite discharge
- Sampling, testing, recording and monitoring requirements prior to, during and after any dewatering activities take place (these must be in line with POEO Act and Blue Book requirements)
- Design requirements for each off Site discharge location to prevent erosion at the discharge location or in the receiving environment
- Water quality objectives relevant to the type of dewatering activity (refer to Table 7-1). Discharge water quality criteria have been derived from the ANZECC Guidelines for NSW Lowland Rivers and the Blue Book:
    - pH: 6.5-8.5
    - Total Suspended Solids: 50 NTU
    - Oil and grease: no visual identification
- Description of the water quality treatment techniques to be used
- Measures to prevent potential release and potential disposal of exotic aquatic fauna/ flora and pathogens during dewatering into waterbodies
- Procedures to manage dewatering should construction activities encounter groundwater or contaminated water
- EPA, Fisheries and Water Management Permits (as applicable) and their requirements with respect to site dewatering

- Pumping personnel and risk mitigation strategies
- Animal care and ethics requirements including reference to procedures for fauna (including fish and turtle) capture, storage, relocation and release (if required) through the use of a suitably qualified Early Works Ecologist
- A Permit to Pump that provides a system for ensuring pumping of water does not occur without approval by the Zinfra Project Manager prior to any water pumping operations.

ESCPs may be produced in conjunction with EWMS to provide more detailed site-specific environmental mitigation measures and will be developed before commencing activities within each catchment for the Early Works.

3.3.5 Stockpile Management Procedure

A Stockpile Management Procedure must be prepared to form part of the ESCP which includes, but is not limited to:

- Identification of locations of stockpile sites
- Quantities and types of different materials to be stockpiled
- Measures to ensure separation of different materials
- Controls to protect stockpiles from stormwater runoff particularly any acid sulfate materials
- Stabilisation of stockpiles left for more than 20 days
- Measures to ensure the capacity of the work area is not exceeded, vegetation is not encroached and stockpile boundary and height restrictions are not exceeded
- Identification of and procedures for the control of other materials proposed for use which may pose environmental risk e.g. recycled bedding sand, lime, gypsum, stabilised sand etc.
- Stockpile monitoring and testing requirements (e.g. pH for stockpiles containing potential or actual acid sulfate

3.3.6 Tannin Management Procedure

A Tannin Management Procedure must be prepared to form part of the ESCP. The procedure must outline how stockpiled mulch on Site will be used and managed to reduce the risk of tannin leachate from mulch flowing into waterways, and be included within the ESCP.

3.3.7 Sensitive Area Plans (SAP)

Early works are located amongst and in proximity to sensitive areas and sites. To assist pre-construction planning and on-site construction management, these site constraints are shown on Sensitive Area Plans (SAPs), which include:

- Mapped areas of the following Threatened Ecological Communities (TECs):
  - Moist Shale Woodland in the Sydney Basin Bioregion (endangered)
  - Cumberland Plain Woodland in the Sydney Basin Bioregion (critically endangered)
- Known locations of the following threatened flora species:
  - *Pultanaea parviflora*
  - *Pimelea spicata*
  - *Marsdenia viridiflora subsp. viridiflora*
- Known locations of the following threatened fauna species:

- Eastern Bentwing Bat
- Grey-headed Flying-fox
- Cumberland Plain Land Snail

- Threatened fauna habitat:
  - Hollow-bearing trees
  - Southern Myotis breeding habitat
  - Cumberland Plain Land Snail habitat
- Noise sensitive receivers, specifically residential and commercial receivers
- Known heritage locations.

SAPs for the Early Works are presented in Appendix A4. The SAPs will be a working element of this EMP and will be revised throughout early work to reflect true ground conditions and the most up-to-date information available on sensitive sites e.g. if any additional exclusion zones are required following pre-clearing surveys. SAPs will be used in conjunction with EWMS to help identify key risk areas and to promote ongoing communication with construction personnel. Updated SAPs will be used to inform the next stage of construction activities.

3.3.8 Site Establishment Management Plan

As required by CoA A24(b), before undertaking early works, a site establishment management plan for any proposed construction ancillary facilities (excluding minor construction ancillary facilities established under CoA A20) consistent with the requirements of CoA A16 must be prepared.

The SEMP details the management of the ancillary facilities and includes:

- A description of activities to be undertaken during construction (including scheduling of construction)
- Figures illustrating the proposed site layout and locations of the closest sensitive receivers
- A program for ongoing analysis of the key environmental risks arising from the site establishment activities, including an initial risk assessment undertaken before the commencement of site establishment works
- Details of how the site establishment activities will be carried out to:
  - Meet the performance outcomes stated in the Environmental Assessment documentation
  - Manage the risks identified in the risk analysis
- A program for monitoring the performance outcomes, including a program for construction noise monitoring of site establishment activities.

The SEMP is provided in Appendix B1.

3.3.9 Environmental system, procedures, forms and other documents

The Project Environmental Management System procedures, forms and other documents provide instructions and records related to both environmental and non-environmental activities throughout the Project.

A register of relevant environmental procedures and forms is in Appendix A3.

4 Planning

4.1 Environmental aspects and impacts

Potential environmental impacts associated with early works are identified in Table 4-1.

Table 4-1: Potential environmental impacts associated with Early Works

Environmental Aspect	Potential impact
Biodiversity	• Removal of vegetation, trees and habitat from the following locations: - . Approximately 0.15 ha of native vegetation will require removal. It is noted that this number is based on areas mapped within the Environmental Assessment Documentation. However, as Early Works are to take place within an existing easement, vegetation is highly disturbed, and it is likely that the majority of clearing will consist of tree trimming. This trimming may require impact to the Cumberland Plain Woodland in the vicinity of the Early Works. • Noise impacts on fauna
Traffic and access	• Site traffic resulting in changes/disruptions to local traffic movements • Traffic-related safety incidents during work (workers and road users) if management measures are not implemented • Temporary disruption to pedestrian access within Western Sydney Parklands where pedestrians will be excluded from and detoured around the early works site
Noise and vibration	• Road traffic noise due to vehicle movements/haulage routes • Noise from associated with physical works and type of plant and equipment proposed including impacts out of standard construction hours
Air quality	• Dust associated with excavation including from exposed surfaces, spoil stockpiles or backfilling trenches • Exhaust emissions from equipment, machinery and construction vehicles.
Non-Aboriginal heritage	• Indirect damage to identified non-Aboriginal heritage items including the Upper Canal System and Cecil Park School, Post Office and Church School. • Unexpected impacts on unknown heritage items (e.g. archaeological items) during work
Aboriginal Heritage	• Unexpected finds encountered while undertaking the Works.
Soils and water	• Erosion of soils resulting in offsite sedimentation
Flooding	• Potential impacts on construction activities due to flooding.
Socio-economic, land use and property	• All work would be completed within TfNSW land or Western Sydney Parklands which TfNSW would lease from the Western Sydney Parklands Trust • Potential changes to, or requirements for, easement arrangements for utilities • Minor and temporary loss of access to community open space within the Western Sydney Parklands

Environmental Aspect	Potential impact
Landscape character and visual amenity	• Minor and temporary adverse visual and landscape character impacts during work on site (e.g. vegetation clearing, trenching, stockpiling of materials, parking/use of construction plant and vehicles, fencing etc.) • Light spill from out-of-hours works during Early Works
Hazard and risk	• Transport and storage of hazardous substances and dangerous goods • Potential strikes of existing underground utilities • Risk of bushfires • Asbestos containing material finds during excavation
Resource use and waste management	• Increased demand on water supply for dust suppression during works • Impacts associated with unexpected waste volume or types.
Sustainability	• Emissions of greenhouse gases as a result of construction activities.
Cumulative impacts	• Noise, amenity and traffic related impacts associated with other construction sites in proximity to the works.

Where relevant, the requirements from the TfNSW Specifications, CoA and REMMs will be incorporated into the environmental risk assessment, particularly in developing the agreed activity specific site controls.

The Zinfra Project Manager and the Early Works Vegetation Clearing Contractor are responsible for ensuring environmental risks of Early Works are identified and included in the risk register and appropriate mitigation measures implemented throughout early works (refer to Section 5.1.3).

Where new risks are identified, these will be included in the risk register, assessed and control measures put in place to eliminate or minimise the level of risk. Monitoring and review of the effectiveness of control measures will be carried out during weekly environmental inspections and may include consultation with site personnel involved in managing the identified risks.

4.1.1 Cecil Park School, Post Office and Church School

The Early Works will require excavation within the non-Aboriginal heritage site, Cecil Park School, Post Office and Church School. It is noted within the Environmental Assessment Documentation that the site would be impacted by the Project despite being on local significance. The site was identified as a site of archaeological potential in the EIS however, in response to the Amendment Report, Heritage NSW advised that it would be unlikely for 'relics' within the meaning of the *Heritage Act 1977* to be disturbed and no further archaeological excavation is required at the Cecil Park Complex site. Furthermore, as the Early Works are to take place within an existing easement, it is likely that any potential heritage item within the area has already been damaged or entirely removed during the installation of the gas mains. Therefore, impacts as a result of ground disturbance and the use of vibration intensive plant is unlikely to exceed the impacts predicted in the Environmental Assessment Documentation.

In accordance with NAH09, a suitably qualified archaeologist will be present during the excavation of the area occupied by the Cecil Park Archaeological site to confirm that the significance of artefacts and remains are in line with the findings of the test excavations already completed. If remains with the potential to be considered ‘relics’ (as defined in the *Heritage Act 1977*) are found, then works will stop and the unexpected finds procedure (Appendix B4) will be followed.

4.1.2 Noise and Vibration Impact Statement

A Noise Screening Assessment (Appendix A10) has been undertaken to determine whether a Noise and Vibration Impact Statement (NVIS) must be prepared for the Early Works in accordance with NSW CoA E40.

An NVIS is required for any work that may exceed the Noise Management Levels (NML) outside of standard hours identified in Section 5.4 (i.e. out of hours works), or where receivers will be Highly Noise Affected (defined by the *Interim Construction Noise Guideline* (ICNG) (EPA, 2009) as the point above which there may be strong community reaction to noise, nominated as 75 dB(A) ($L_{Aeq(15\ minutes)}$).

An NVIS will also be required should the vibration criteria outlined in the following documents be exceeded:

- Vibration criteria established using *the Assessing vibration: a technical guideline* (DEC, 2006) (for human exposure);
- *BS 7385 Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2"* as they are "applicable to Australian conditions"; and
- Vibration limits set out in the *German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures* (for structural damage).

The noise screening assessment has been undertaken for the Early Works and is discussed in Section 4.1.3. Should a NVIS be required, this will be prepared by the Zinfra in liaison with TfNSW and provided to the ER prior to the commencement of the nominated work.

As required by NSW CoA E41, if the potential vibration criteria exceedance is to occur more than once or extend over a period of 24 hours, sensitive receivers will be provided with a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the sensitive receiver.

As required by NSW CoA E39 any noise generating work in the vicinity of potentially-affected community, religious, educational institutions, noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) resulting in noise levels above the NMLs must not be timetabled within sensitive periods, unless offers of other reasonable arrangements have been made to the affected institutions and are implemented at no cost to the affected institution.

4.1.3 Noise Screening Assessment

The Early Works may result in potential noise and vibration impacts through the use of heavy machinery.

The nearest residential receiver to the Early Works for the protection of high pressure gas mains is located 30 metres from the Early Works boundary within Noise Catchment Area (NCA) 04.

The noise screening assessment (Appendix A10) is summarised in Table 4-2. The assessment assumes a worst case noise impact scenario for plant and equipment for undertaking site establishment and utility, property and service adjustment at the façade of the nearest residential receiver

The calculated Sound Pressure Level is less than 75 dB(A) for any of the assessed scenarios. In accordance with NSW CoA E40 an NVIS will not be required for works that occur within standard construction hours and approved extended hours. However, the noise screening assessment indicates that NMLs will be exceeded in OOHW periods assuming the same plant and equipment would be used. It is noted that a specific screening assessment would be undertaken based on actual plant and equipment to be used in an OOHW scenario.

Table 4-2: Potential Highly Noise Affected exceedances for the protection of high pressure gas mains

Noise Management Level (NML) exceedance ($L_{Aeq(15min)}$ (dBA))					
	Noise Management Level (RBL+10dB(A))	Site Establishment		Utility, Property, service Adjustment	
		Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Management Level (NML) (dB(A))	Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Management Level (NML) (dB(A))
Day[1]	64	72	8	73	9
Day[2] (Approved extended hours)	64	72	8	73	9
Out-of-hours work					
Morning[3] Shoulder	59	72	13	73	14
Day[4]	59	72	13	73	14
Evening[5]	53	72	19	73	20
Evening [6]shoulder	53	72	19	73	20
Night[7]	42	72	30	73	31

Early Works will occur during standard construction hours or approved extended hours where possible, however some works may be required outside these hours. Should out of hours works be

[1] *Daytime period is the standard construction hours of 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm Saturday.*
[2] *Approved extended hours include Saturday from 1:00 pm to 6 pm*
[3] *Morning shoulder period is 6:00 am to 7:00 am Monday to Friday. Where the morning shoulder RBL is higher than the daytime RBL, the daytime RBL was adopted.*
[4] *Daytime OOH period is 7:00 am to 8:00 am and 1.00pm to 6.00pmSaturday and 8:00 am to 6:00 pm Sunday and Public Holidays.*
[5] *Evening period is 7:00 pm to 10:00 pm Monday to Friday and 6:00 pm to 10:00 pm Saturday, Sunday and Public Holidays*
[6] *Evening shoulder period is 6:00 pm to 7:00 pm Monday to Friday. Where the evening shoulder RBL is higher than the evening RBL, the evening RBL was adopted.*
[7] *Night-time period is 10:00 pm to 6:00 am Monday to Friday, 10:00 pm to 7:00 am Saturday and 10:00 pm to 8:00 am Sunday and Public Holidays.*

required, a NVIS would be developed in accordance with NSW CoA E40. Construction hours as approved in the CoA are provided in Section 5.4.

Works outside of standard construction hours or approved extended hours may be needed for activities such as the delivery of oversize items. Works outside of these hours will be permitted providing they meet the requirements of NSW CoA E36 or if they are undertaken as per the Out-of-Hours Work Protocol (as per NSW CoA E37) with the prior approval of the Planning Secretary.

Activities that result in high noise impacts will be subject to respite periods as outlined in NSW CoA E37 and CoA E45-E47.

4.1.4 Upper Canal System

The Upper Canal System (Pheasants Nest Weir to Prospect Reservoir) is located within the Early Works boundary. While existing mostly underground one element of the pipeline, Cecil Hills Tunnel Shaft 4 was observed within the study area in the M7 road median (Lot 1 DP603946). There will be no impact to the Cecil Hills Tunnel Shaft 4 as a result of Early Works activities.

A potential additional tunnel shaft (Tunnel Shaft 3) located within the nominated construction boundary was identified by TfNSW through review of historic plans of the Upper Canal. The indicative location (as shown in Appendix A4) has been predicted based on the results of both dilapidation and ground penetrating radar surveys at the approximate location of Tunnel Shaft 3. Tunnel Shaft 3 is predicted to be around 1.5 – 2 metres underground. TfNSW is currently seeking a permit to excavate and identify the location of Tunnel Shaft 3 and will produce a findings report. Should it be required, the EWEMP will be revised to include the details within the “findings report in accordance with the process outlined in Section 1.10.

Prior to the commencement of Early Works. appropriate vibration criterion of a peak particle velocity (PPV) will be determined in consultation WaterNSW and based on previous dilapidation surveys completed by TfNSW of the Upper Canal System. An exclusion zone will be established that delineates the safe working distances for Tunnel Shaft 3.

Should Early Works activities be required within the exclusion zone, trench compactors and plate compactors will be used to minimise vibration impacts. The canal itself is about 32 metres underground (in tunnel), thus the use of vibratory rollers will not exceed the safe working distances for cosmetic damage. Vibration monitoring will be carried out when vibration intensive tasks are occurring within the Upper Canal System curtilage. Where the monitoring identifies exceedances in the relevant criteria, a different construction method with lower source vibration levels will be used, where feasible.

4.1.5 Residential receivers

Noise impacts for nearby residential receivers are assessed in Section 4.1.3. The closest residential receiver is located approximately 30m from the Early Works boundary. To minimise vibration impacts to this receiver vibratory rollers no greater than four tonnes will be utilised to ensure that safe working distances for cosmetic damage and human response are not exceeded.

Any noise and vibration impacts during Early Works will be managed in accordance with the environmental management measures listed in Appendix A8 of the EWEMP.

4.2 Regulatory requirements and compliance

4.2.1 Legislation

A register of legal requirements for the Early Works is contained in Appendix A1. This register will be maintained by Zinfra and the Early Works Vegetation Clearing Contractor. Zinfra and the Early Works Vegetation Clearing Contractor will review the register at regular intervals, such as during management reviews (refer to Section 7), and update with any applicable changes. Any changes

made to the legal requirements register will be communicated to the wider project team, including sub-contractors where necessary, through toolbox talks, specific training and other methods detailed in Section 5.3.2 of this EWEMP.

4.2.2 Approvals, permits and licences

A number of approvals, permits and licenses have and/or will be obtained for Early Works. The following approvals and licences have been or will be obtained by TfNSW:

- Infrastructure Approval under Part 5, Division 5.2 of the EP&A Act – SSI 9364 granted by the Minister for Planning on 23 April 2021
- A Commonwealth controlled action approval from the Department of Agriculture, Water and the Environment (DAWE) under Part 8 of the EPBC Act – EPBC 2018/8286 granted by the Minister for Environment on 3 June 2021.

Zinfra will obtain the following licences, approvals or exemptions:

- Road Occupancy Licence (ROL) under Section 138 of the *Roads Act 1993*
- An aquifer interference approval under the *Water Management Act 2000* if Early Works requires intersection of a groundwater source
- Exemptions to allow hot works to be undertaken on Total Fire Ban days as detailed under Section 99 of the *Rural Fires Act 1997*
- Specific Resource Recovery Exemptions, where determined.

Environmental approvals, permits and licences applicable under the legislation are also noted within the register in Appendix A1.

All necessary licences, permits and approvals required for the development of the Early Works will be obtained and maintained as required throughout the life of the Early Works. No condition of the Infrastructure Approval removes the obligation for TfNSW, Zinfra or the Early Works Vegetation Clearing Contractor to obtain, renew or comply with such necessary licences, permits or approvals except as provided under Section 5.23 of the EP&A Act.

4.3 Environmental and sustainability objectives and targets

Environmental objectives and targets have been established as a means of assessing environmental performance during Project delivery. The objectives and targets have been developed with consideration of the key issues identified through the environmental assessment and risk assessment process. The objectives and will assist in monitoring whether Project commitments are being met. The performance of the Early Works will be monitored against the objectives and targets and documented in monthly reports (refer to Section 6.2) and as part of the management review (refer to Section 6.8).

Environmental objectives and targets for the Project are provided in Table 4-3.

Table 4-3: Environmental and sustainability objectives and targets

Objective	Target	Measurement tool
Carry out the work in accordance with environmental approvals	• Full compliance with statutory approvals	Audits, reporting, management reviews

Objective	Target	Measurement tool
Compliance with all legal requirements	• No regulatory infringements (PINs or prosecutions) • No formal regulatory warning	Audits, reporting, management reviews
Implement a rigorous and comprehensive EMS that meets the requirements of AS/NZS ISO 14001	• Address non-conformances and corrective actions within specific timeframes	Audits, management reviews
Engage with the affected and broader community, minimise complaints and respond to any complaints within a suitable timeframe	• Disseminate regular Project updates and other information through the Project website and other tools identified in the Overarching Communication Strategy • Record and respond to complaints within the timeframe specified in the Overarching Communication Strategy	Review complaints register, reporting, audits
Continuously improve environmental performance	• Capture and disseminate lessons learnt from environmental incidents to minimise repeat issues • Update of the aspects and impacts register, legal register and environmental induction where required	Audits, reporting, management reviews Revisions of management plans in response to incidents or non-conformance reports (NCRs) Risk register
Implement sustainability initiatives on the Project	• Adopt sustainability leadership and continual improvement • Integrate governance, environmental, social and economic considerations into decision-making processes within the Project • Enhance positive environmental, social and economic outcomes wherever possible, while minimising adverse impacts, resource use and embodied impacts • Apply relevant key initiatives from the Sustainability Strategy 2019-2023 (RMS, 2019)	Audits, reporting, management reviews

4.4 Existing Environment

The existing environment spans the boundary of Cecil Park and Cecil Hills, and is characterised by semi-rural residential, commercial and recreational land uses (contained within Western Sydney Parklands). Existing vegetation is generally classified as woodland or cleared grassland, with woodland communities including patches of two Threatened Ecological Communities listed under the BC Act; Cumberland Plain Woodland in the Sydney Basin Bioregion and Moist Shale Woodland

in the Sydney Basin Bioregion. Woodland communities offer habitat to a number of threatened flora and fauna species, and contain specific fauna habitat features for threatened species. These environmental values are shown on the Sensitive Area Plans provided in Appendix A4.

Two non-Aboriginal heritage items are located within the Early Works boundary including the Upper Canal System and the Cecil Park School, Post Office and School Church. One Aboriginal heritage site complex, the Cecil Hills Complex is also located within and adjacent to the Early Works boundary.

The Unnamed tributary of Ropes Creek is around 24 metres from the Early Works boundary north of Wallgrove Road. It is identified as Key Fish Habitat (KFH) however, field assessment confirmed that the waterway is an ephemeral first order drainage line with no aquatic habitat.

There is one minor unnamed drainage line around 29 metres southeast of the Early Works boundary. This drainage line is a first order stream which is not considered KFH and has minimal channel definition. This drainage line feeds into a SEPP Coastal Wetland (ID117).

One commercial receiver (PGH Bricks and Pavers) and a number of residential receivers are located near the early works, mainly in Cecil Park.

5 Implementation and operation

5.1 Resources, roles, responsibilities and authority

The key environmental management roles and responsibilities for Early Works are described below. The general structure of these roles is shown in Figure 5-1. Zinfra and the Early Works Vegetation Clearing Contractor will provide sufficient resources to implement the requirements of this EWEMP.

Figure 5-1: Project organisation structure

5.1.1 Independent Environmental Representative (ER)

The environmental responsibilities of the ER during early works are detailed in NSW CoA A34 and include:

- Receive and respond to communication from the Secretary in relation to the environmental performance of the Project
- Consider and inform the Secretary on matters specified in the terms of the Infrastructure Approval
- Consider and recommend to TfNSW any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community
- Review documents identified in NSW CoA A9, A13, A16, A24, C1, C4 and C11 and any other documents that are identified by the Secretary, to ensure they are consistent with requirements in or under the State Infrastructure Approval and if so:
  - Make a written statement to this effect before submission of such documents to the Secretary (if those documents are required to be approved by the Secretary) or
  - Make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Secretary/Department for information or are not required to be submitted to the Secretary/Department)
- Regularly monitor the implementation of the documents listed in NSW CoA A9, A13, A16, A24, C1, C4 and C11 to ensure implementation is being carried out in accordance with the document and the terms of the Infrastructure Approval
- As may be requested by the Secretary, help plan, attend or undertake audits of the Project commissioned by the Department including scoping audits, programming audits, briefings and site visits, but not independent environmental audits required under NSW CoA A38 and A41
- As may be requested by the Secretary, assist the Department in the resolution of community complaints
- Assess the impacts of minor ancillary facilities as required by NSW CoA A20
- Consider any minor amendments to be made to the CEMP, CEMP Sub-plans, Construction Monitoring Programs, SEMPs and EWEMP that involve updating or are of an administrative nature, and are of an administrative nature and do not increase impacts to nearby sensitive receivers, and ensure that are consistent with the terms of the Infrastructure Approval and the documents approved by the Secretary and, if satisfied such amendment is necessary, approve the amendment, (this does not include modification to the Infrastructure Approval)
- Prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an ER Monthly Report providing the information set out in the ER Protocol under the heading “Environmental Representative Monthly Reports.” The ER Monthly Report must be submitted within seven (7) days following the end of each month for the duration of the ER’s engagement for the Project.

Zinfra and the Early Works Vegetation Clearing Contractor will:

- Facilitate ER Inspections (refer to Section 7.1.3)
- Notify the ER of any environmental incidents such that the ER can meet the requirements of NSW CoA A35 and identify any incident with significant off-site impacts on people or the biophysical environment which will be reported to the Secretary

- Provide the ER with all information and documents, allow the ER to attend meetings and audits of this Plan and access such premises as may be necessary or reasonably required by the ER to allow the ER to perform its functions under the Project Approval
- Update this Plan to address any relevant requirements and recommendations of the ER
- Review and analyse the cause of any non-conformances raised by the ER and develop a plan of corrective action to minimise the likelihood of recurrence
- Comply with the lawful requirements of the ER, so as to allow the ER to discharge any functions under the Planning Approval.

5.1.2 TfNSW roles

The roles and responsibilities of TfNSW personnel, relevant to early works, are outlined in Table 5-1.

Table 5-1: Roles and responsibilities of TfNSW personnel

Role	Responsibilities
TfNSW Project Director	• Evaluate and advise on high risk compliance issues relating to Zinfra and TfNSW environmental requirements • Provide Zinfra management with environmental advice and/or directions, in consultation with TfNSW environmental staff.
TfNSW Utilities Manager	• Evaluate and advise on high risk compliance issues relating to utilities work and TfNSW environmental requirements • Provide Zinfra management with environmental advice and/or directions, in consultation with TfNSW environmental staff.
TfNSW Project Director or Deputy Director	• Evaluate and advise on high risk compliance issues relating to Zinfra and TfNSW environmental requirements • Review and endorse documentation to be submitted to the Secretary of DPE and the Commonwealth Minister of the Environment for approval • Have oversight of the review and approve any Environmental Management Plans for the Project or related activities that are not required to be approved by the Secretary of DPE in consultation with TfNSW environmental staff and the ER. • Provide Zinfra management with environmental advice and/or directions, in consultation with TfNSW environmental staff.
TfNSW Project Managers	• Evaluate and advise on compliance with TfNSW environmental requirements • Review and approve any Environmental Management Plans for the Project or related activities that are not required to be approved by the Secretary of DPE • Manage scope of works related to the Early Works Vegetation Clearing Contractor and as relevant to the gas protection work

Role	Responsibilities
	• Provide Zinfra staff and the Early Works Vegetation Clearing Contractor with environmental advice and/or directions, in consultation with TfNSW environmental staff.
TfNSW Environment and Sustainability Officers	• Review any Environmental Management Plans and related documents prepared for the Project • Review and consider minor project refinements that are consistent with the Project environmental assessment in accordance with the TfNSW EP&A Act Part 5.1 environmental assessment procedure • Monitor the environmental performance of the Project in relation to TfNSW requirements • Provide guidance and where appropriate, monitor compliance with DPE post approval document submission requirements.
Project Ecologist	• Undertake pre-clearing surveys prior to vegetation clearing • Implementation of Unexpected Finds Procedure during clearing activities • Prepare and distribute the Pre-clearing Survey Report • Prepare and distribute Post-clearing Report • Ensure monitoring records in relation to clearing are appropriately maintained, reviewed and any non-compliance issues addressed.

5.1.3 Zinfra Roles

The environmental responsibilities of Zinfra are provided in Table 5-2. It is noted that TfNSW will directly manage the Early Works Vegetation Clearing Contractor, and as such this is not part of Zinfra's responsibilities.

Table 5-2: Zinfra Roles and Responsibilities

Role	Responsibilities
Project Manager	• Ensure Early Works personnel are trained in their environmental obligations and the content and responsibilities outlined in the project environmental documentation • Ensure subcontractors comply with statutory, client, contractual and site-specific environmental requirements • Ensure environmental inspections are undertaken and corrective actions are implemented satisfactorily • Ensure overall implementation of project environmental documentation during Early Works delivery • Ensure Zinfra Construction Manager adequately understands requirements of this project environmental documentation

Role	Responsibilities
	• Liaise with TfNSW and Zinfra Environmental Site Representative on environmental issues • Point of contact in the event of an environmental site emergency • 24-hour person of contact for environmental regulatory authorities.
Construction Manager	• Understand requirements of Project environmental documentation • Ensure construction contractors comply with Project environmental documentation • Provide on-site environmental direction to sub-contractors as required • Notify Zinfra Project Manager of any environmental incidents • May suspend work until adequate environmental safeguards have been implemented • Point of contact in the event of an environmental site emergency • 24-hour person of contact for environmental regulatory authorities.
Zinfra HSE Business Partner/ Quality Site Supervisor And/or Jemena Senior Environmental / HSE Advisor (*nominated Environmental Site Representatives*)	• Assist in the development of the Early Works environmental documentation and review/amend as appropriate • Ensure environmental inductions are undertaken • Organise, facilitate and/or supervise environmental audits of the Early Works • Provide support to Project Manager and Construction Manager on environmental issues • Develop, review and approve ESCPs in consultation with the Site Engineers, Foreman / Site Supervisor and other relevant site personnel, as required • Undertake environmental compliance reporting in accordance with Project approvals and TfNSW requirements • Prepare reports on a monthly basis outlining the works undertaken and the achievements that have been met, as well as identifying those areas where improvements were made • Monitor contractor performance and compliance with Project environmental documentation • Liaise with regulatory authorities/stakeholders • Provide support to construction personnel on all environmental issues
Project Field Engineers, and Supervisors	• Ensure environmental considerations are integral to decision making for all construction activities. • Ensure that the environmental controls and procedures contained in the Project environmental documentation are implemented.

Role	Responsibilities
	• Develop EWMS in consultation with Zinfra's Environmental Site Representatives (or delegate) • Co-ordinate the implementation and maintenance of pollution control measures • Identify resources required for implementation of the EWEMP • Support the Zinfra's Environmental Site Representatives (or delegate) in achieving the project environmental objectives, including on ground implementation of the EWMS and ESCP • Report any activity that has resulted, or has the potential to result, in an environmental incident immediately to the Zinfra's Environmental Site Representatives (or delegate) • Conduct regular checks of the site to ensure environmental controls such as sediment controls and dust suppression are functioning effectively • Ensure subcontractors and all personnel onsite comply with the requirements of Project environmental documentation • Have regard to weather conditions when programming daily work activities • Participate in environmental inspections, monitoring and audits as required • Carry out maintenance on environmental controls as required
All Project Personnel	• Responsible for environmental performance of their activities • All persons associated with the Project have a duty of care under Environmental legislation. Specifically, all personnel must not carry out any activity that causes, or is likely to cause, environmental harm, unless the person takes all reasonable care to prevent and minimise environmental harm • All persons associated with the Project will be held accountable for compliance with their particular environmental responsibilities under Project environmental documentation and Procedures.
Contractors	• Observe all legislative and statutory requirements relating to environmental protection • Nominate site representatives to liaise with the HSE Representative with respect to, and take responsibility for, environmental requirements for all site activities • Adhere to this EWEMP as it applies to their operations on the site • Cooperate fully with site incident and reporting procedures.

5.1.4 Early Works Vegetation Clearing Contractor

The responsibilities of the Early Works Vegetation Clearing Contractor are provided in Table 5-3.

Table 5-3: Early Works Vegetation Clearing Contractor responsibilities

Role	Responsibilities
Clearing Contractor	• Liaise with TfNSW and Zinfra as required • Follow the direction of Early Works Ecologist • Ensure clearing works comply with relevant regulatory and Early Work requirements, including compliance with the approvals, licence for scheduled development work, REMMs, TfNSW specifications • Ensure the requirements of this EWEMP are fully implemented • Install environmental controls as required • Stop work immediately if an unacceptable impact on the environment is likely to occur • Ensure all site workers conducting clearing activities attend an environmental induction prior to the commencement of works • Prepare, manage and coordinate site-specific documentation and reports as required by this EWEMP and Sub-plans • Assist all site staff with issues concerning clearing environmental matters • Notify TfNSW and Zinfra in the event of an environmental incident • Clear any trees 10m either side of pipe in work areas within Early Works boundary.

5.1.5 Regulator Roles

The environmental responsibilities of Regulators are provided in Table 5-4.

Table 5-4: Regulator Roles and Responsibilities

Role	Responsibilities
DPE	• Assessing compliance with the Concept Plan and Project Approval • Assessing and approving any documents under the Project Approval which require the specific approval • Assessing any proposed modifications to the Project Approval that are not consistent with the Project Approval. • Liaising with TfNSW during fortnightly meetings
EPA	• Providing comment on the environment and planning documents as specified in the Project Approval.

5.2 Sub-contractor management

Zinfra and TfNSW will be responsible for environmental performance of any contractor and will specify environmental requirements and responsibilities to sub-contractors in the contract documentation. The Zinfra Environmental Site Representative (or delegate) and TfNSW will

participate in the tender assessment and selection process where it is deemed necessary due to associated environmental risks. All sub-contractors are required to complete a sub-contractor questionnaire or similar. As part of the sub-contractor selection process, consideration will be given to past environmental performance.

Zinfra, TfNSW, contractors and sub-contractors will determine how environmental management controls will interact.

All sub-contractors are required to work in accordance with the approved EWEMP. Zinfra and TfNSW will monitor sub-contractors to ensure compliance with the EWEMP and sub-plans is achieved.

All sub-contractors are required to attend Early Works and/or site inductions where the requirements and obligations of the EWEMP are communicated. A record of all sub-contractors inducted will be maintained as part of the Early Works induction and training register.

Zinfra and TfNSW will regularly review and keep a record of:

- The sub-contractor's general work practices
- The effectiveness of the sub-contractor's environmental protection measures
- The sub-contractor's compliance with the requirements of this EWEMP
- The maintenance of environmental measures.

All environmental documentation submitted by sub-contractors will be subject to review and approval by Zinfra and/or TfNSW to ensure compliance with contract requirements and the CoA and REMMs before works may begin.

5.3 Competence, training and awareness

To ensure that this EWEMP is effectively implemented, each level of management is responsible for ensuring that all personnel reporting to them are aware of the requirements of this EWEMP. The Environmental Site Representatives (or delegate) will coordinate the environmental training in conjunction with other training and development activities (e.g. safety).

5.3.1 Environmental induction

Construction personnel, including sub-contractors will be required to attend a project induction prior to commencing work. The induction program includes environmental and heritage components designed to ensure that all personnel are aware of their environmental and heritage responsibilities. The induction will be modified depending on target audience (e.g. supervisors, crew) to ensure it remains relevant. The induction will include:

- Site hazards in an operational facility on a high-pressure gas site
- Relevant legislation and legislative requirements
- TfNSW and Zinfra Environmental Policies
- Standard construction hours and the process for seeking approval for out of hours works, including consultation
- Roles and responsibilities
- General awareness of environmental and heritage management protocols and procedures
- Incident reporting, spill management and response

- Air quality and dust management
- Noise and vibration management controls
- Management of sensitive areas and Aboriginal/Historic heritage
- Vegetation and habitat management including fauna
- Biosecurity and declared weeds
- Waste management
- Water management
- Access conditions including stakeholder and public communication
- Emergency response
- Traffic management.

A record of all environment inductions will be maintained in an Early Works induction and training register and kept on-site. The training register will identify who is trained, when trained, the trainer and what they were trained in.

Zinfra and TfNSW will provide refresher environmental awareness training as required, based on the environmental risk assessment and turnover of project personnel. Refresher environmental awareness training will be included on the register of environmental training.

Zinfra and TfNSW may authorise amendments to the induction where required to address Early Works modifications, legislative changes or amendments to this EWEMP or related documentation.

The ER will review and endorse the induction program before the induction is delivered and will monitor implementation.

5.3.2 Toolbox talks, training and awareness

Toolbox talks will include relevant environmental management awareness training as well as site-specific environmental information that may be required to undertake a particular construction activity or task. Toolbox talks will also be delivered to continuously improve performance and in response to an environmental incident or non-conformance observed on the project or similar projects.

Toolbox talks will be scheduled as per the requirements of the EWEMP. Attendance Record sheets will be used to record attendance at Toolbox talks.

Minutes of the meetings will be maintained and any actions raised are recorded and tracked to their completion. Feedback on progress will be provided to managers, contractors, employees / subcontractors at subsequent Toolbox talks or as required dependent on the urgency of the issue.

5.3.3 Daily Pre-Start Meetings

Daily pre-start meetings will be held prior to commencing works each shift. This meeting itemises the work that will be undertaken during the day and where applicable the following environmental related components:

- Weather observations / forecast
- Work area restrictions, activities that may affect the works

- Environmental focus for the day (e.g. Housekeeping/ litter clean-up, water management, dust control, etc.)
- Feedback on environmental issues that have recently occurred within the area or other areas of the Early Works
- Notices about up and coming events such as environment and community meetings, audits, environmental inspections
- Feedback on previous day's work practices
- Feedback from environment, community and stakeholder meetings.

All personnel undertaking work within the construction crew will sign onto the pre-start Attendance Record form.

5.4 Working hours

5.4.1 Hours of work

In accordance with NSW CoA E34, work will be undertaken during standard construction working hours:

- 7:00 am to 6:00 pm Monday to Friday
- 8:00 am to 6:00 pm Saturday (subject to prior approval from TfNSW)
- At no time on Sunday or public holidays.

Any application to work between 8:00am and 6:00pm on Saturdays (the allowable work hours on Saturdays identified in the Infrastructure Approval) must be submitted to the TfNSW no later than 12:00 pm on the Thursday immediately prior to the Saturday proposed to undertake work. The application must include the details of the work activities to be undertaken. Approval is at the discretion of TfNSW.

As required by NSW CoA E35, except as permitted by an EPL, highly noise intensive works that result in an exceedance of the applicable NML at the relevant receiver must only be undertaken:

- Between 8:00 am to 6:00 pm Monday to Friday
- Between 8:00 am to 1:00 pm Saturday
- In continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.

'Continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing the work.

5.4.2 Variation to hours of work

Works associated with the delivery of the Project may be undertaken outside the hours of work identified in Section 5.4.1 in the following circumstances, in accordance with NSW CoA E36:

- Safety and emergencies:
    - For the delivery of materials required by the NSW Police Force or other authority for safety reasons
    - 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 material environmental harm

On becoming aware of the need for emergency works, Zinfra and/or the Early Works Vegetation Clearing Contractor will notify the TfNSW Project Manager, the Planning Secretary, the ER and the EPA of the need for those works. Zinfra and the Early Works Vegetation Clearing Contractor will use its best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works.

- Work that causes:
  - $L_{Aeq(15\ minute)}$ noise levels:
  - No more than 5 dB(A) above the rating background level at any residence in accordance with *Interim Construction Noise Guideline (DECC, 2009*) and
  - No more than the "Noise affected" noise management levels specified in Table 3 of the *Interim Construction Noise Guideline (DECC, 2009)* at other sensitive land uses and
  - $LAF_{max(15\ minute)}$ noise levels no more than 15 dB(A) above the rating background level at any residence during the night time period; and
  - Continuous or impulsive vibration values, measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of *Assessing Vibration: a technical guideline (DEC, 2006)* and
  - Intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline (DEC, 2006)*
- By approval:
  - Where different construction hours are permitted or required under an EPL in force in respect of the Project
  - Work not subject to an EPL that are approved under an Out-of-Hours Work Protocol in accordance with NSW CoA E37
  - Negotiated agreements with directly affected residents and sensitive land user(s).

Zinfra and/or its sub-contractor will prepare an OOHW Protocol, in accordance with the *Construction Noise and Vibration Guidelines (Roads and Maritime, 2016)*. The procedure will be prepared to address the requirements of NSW CoA E37 relating to OOHW and will include:

- Identification of low and high-risk activities and an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where:
  - the ER reviews all proposed out-of-hours activities and confirm their risk levels
  - low risk activities can be approved by the ER
  - high risk activities that are approved by the Planning Secretary
- A process for the consideration of OOHW against the relevant NML and vibration criteria
- A process for selecting and implementing mitigation measures for residual impacts in consultation with the community at each affected location, including respite periods consistent with the requirements of NSW CoA E47. The measures must take into account the predicted noise levels and the likely frequency and duration of the out-of-hours works that sensitive land user(s) would be exposed to, including the number of noise awakening events
- Procedures to facilitate the coordination of OOHW including those approved by an EPL or undertaken by a third party, to ensure appropriate respite is provided

- Notification arrangements for affected receivers for all approved OOHW and notification to the Secretary of approved low risk OOHW.

The OOHW Protocol will be prepared in consultation with the ER and approved by the Planning Secretary before commencement of OOH work. Approvals for any changes to the construction hours outlined in Section 5.4.1 above will be attached to this EWEMP.

5.5 Communication

5.5.1 Internal Communication

Zinfra's Early Works team will meet regularly to discuss any issues with environmental management on-site, any amendments to plans that might be required or any new/changes to construction activities. Regular meetings will also occur with the ER and TfNSW environment staff. These meetings will discuss ongoing environmental performance and identify any issues to be addressed.

In addition, Zinfra's Early Works team members will participate in regular toolbox talks to communicate on environmental performance, advise on any upcoming sensitive environmental matters for future work areas and to receive feedback from on-site personnel.

Further internal communications regarding environmental issues and aspects will be through awareness training and pre-start meetings as described in Section 5.3.

5.5.2 Liaison with EPA, government authorities or other relevant stakeholders

Zinfra's Environmental Site Representative (or delegate), will be the main point of contact regarding specific environmental issues and is responsible for reporting on the ongoing environmental performance of the Project to TfNSW and the ER. Zinfra's Project Manager will report regularly to TfNSW on progress and any key environmental matters.

Two Early Works team members have been nominated as 24-hour contacts for environmental regulatory authorities and are identified in Section 5.1.3. They have the authority to halt the progress of the work if necessary and are the key emergency response personnel during an environmental site emergency.

TfNSW will be immediately notified on each occasion that the site is visited by EPA and/or other relevant agencies. Zinfra will prepare a report for each occasion when the Site is visited by the EPA and/or other relevant agencies, notifying TfNSW of the purpose and outcome of the EPA and/or other relevant agencies visit, and of all actions taken by Zinfra in response to the EPA visit and/or other relevant agencies. The report will be provided to TfNSW within one working day of the visit.

Zinfra's Environmental Site Representative (or delegate) will report to the EPA in the event of an occurrence or set of circumstances that causes or threatens to cause material harm.

5.5.3 Community liaison and/or notification

Overarching Communication Strategy

TfNSW has prepared an Overarching Communication Strategy (OCS) in accordance with the requirements of NSW CoA B1 to document the approach to stakeholder and community communications for the Project by TfNSW. The OCS will identify opportunities for providing information and consulting with the community and stakeholders during the construction of the

Project. Zinfra and the Early Works Vegetation Clearing Contractor will support the delivery of the OCS.

The OCS will be implemented for the duration of the Early Works and for 12 months following the completion of all construction stages of the Project.

The OCS includes:

- Principles to guide the overall approach to community and stakeholder involvement
- Identification of the stakeholders and groups to be consulted during the Project
- Procedures and tools for the distribution of information about the Project, such as regular updates about construction activities, the program for construction activities and key milestone dates.
- A process for communication with adjacent/nearby developments for the management of potential cumulative impacts or emissions (noise, air or odour) from their sites
- Opportunities for the community to visit Project construction sites
- Methods for involving construction personnel in engaging with the local community
- Methods and tools for engaging with the local community, including community forums to discuss key environmental management issues of concern for the Project
- Procedures and mechanisms:
  - Detailing how the community can discuss or provide feedback in relation to the Project
  - Detailing how the Project team will respond to community enquiries and feedback
  - Describing how issues will be resolved or disputes meditated in relation to environmental management and construction of the Project.
- Procedures to consult with local communities potentially affected by the impacts of multiple projects in addition to the Project.

The OCS also provides details on the requirements for coordination and communication between the Early Works Contractors working on the Early Works stages which will include:

- Liaison meetings
- Mailing list for all communications (including Community Updates)
- Email communication
- Project briefings.

Where relevant, the TfNSW Community and Stakeholder Engagement Advisor and Zinfra's Environmental Site Representative (or delegate) will undertake consultation with proponents of other nearby developments to increase the overall awareness of project timeframes and impacts.

A range of communication tools will be defined in the OCS, and may include:

- Targeted community open days
- Media releases and advertisements in local and metropolitan papers
- Public displays
- Door-knocks
- Letterbox drops

- Community update newsletters, information brochures and fact sheets
- Community information sessions and community forums
- Signage at construction sites
- Construction updates (including for councils, emergency services and bus operators)
- Project website
- Project 1800 number, email address and postal address.

The OCS will be submitted for approval to the Planning Secretary at least one month prior to the commencement of Works, as required by NSW CoA B3. Work on the Project will not commence until the OCS has been approved by the Secretary.

Complaints management

TfNSW has developed a Complaints Management System (CMS) to document the overall approach to complaints management for the Project. The CMS will be consistent with AS-ISO 10002-2006 Complaints Handling in accordance with the requirements of NSW CoA B6, B7, B8 and B9. Zinfra will adopt the requirements of the CMS, including reporting requirements.

The CMS will be provided to the Secretary for information before any work commencing on the Project.

All community enquiries and complaints related to the Project activities will be referred to the 24-hour toll free community information line (1800 517 155). The Project postal address (Transport for NSW, PO Box 973 Parramatta CBD NSW 2124) and email address (m12motorway@rms.nsw.gov.au) are also available for receipt of enquiries and complaints.

Details of the telephone number, postal address and email address for enquiries and complaints related to the Project will be on the Project website, one month before the commencement of work, as required under NSW CoA B7.

The CMS includes a Complaints Register in accordance with NSW CoA B8 which will record the details of all complaints relating to the Project including the following as a minimum:

- Date and time of the complaint
- Method by which the complaint was made
- Any personal details of the stakeholder
- Number of people affected in relation to a complaint
- Nature of the complaint
- Action taken in relation to the complaint, means by which the complaint was addressed and any follow up
- Whether resolution was reached, with or without mediation
- If no action taken, reasons why
- The status of resolution of the complaint.

The Complaints Register will be provided to the Secretary on request in accordance with NSW CoA B9. In accordance with NSW CoA A35(a), the Complaints Register will be provided to the ER on the day complaints are received.

Attempts will be made to resolve all complaints in accordance with the CMS. Figure 5-2 provides a flow chart of the complaints management process provided in the CMS. All complaints will be investigated and the source of the complaint determined immediately, with a phone call made to the complainant (when received by phone) within two hours. An initial response will be provided during this phone call, unless the complainant agrees otherwise.

An initial written response to email complaints will be provided within 24 hours (or during the next business day if received out-of-hours) and a resolution provided within seven business days, if the complaint cannot be resolved in the initial contact.

The complainant will be kept informed and updated of the progress until the complaint is resolved.

All complaints will be recorded in the Complaints Register (Consultation Manager) within 24 hours. The ER will have access to the Complaints Register on a daily basis in accordance with the requirements of NSW CoA A35(a).

An initial internal escalation process will be followed for the resolution of complaints which requires escalation to the TfNSW Communication and Stakeholder Engagement Advisor and TfNSW Project Director and following that to the next level which includes the ER as per the Complaints Management Process (refer to Figure 5-2).

TfNSW will set up a mediation system for complaints unable to be resolved before the commencement of Early Works (within one month of NSW Infrastructure Approval). The mediation system will be available for the duration of the Project. Further details of the mediation system are provided in the OCS.

Zinfra's Environmental Site Representative (or delegate) and the Early Works Vegetation Clearing Contractor will apply an adaptive approach to ensure that corrective actions are applied in consultation with the appropriate construction staff to allow modifications and improvements in the management of any environmental issues resulting in community complaints.

Figure 5-2: Complaints management process

5.5.4 Project website

A website has been established for the Project (***https://www.rms.nsw.gov.au/projects/m12-motorway/index.html***) and will be regularly maintained during construction of the Project. The website will be kept up to date with the latest Project information, environmental assessments, and will include all community updates. Zinfra will provide TfNSW will all relevant documents that are required to be published on the Project website. The Project website will also publish methods to communicate feedback, enquiries and complaints related to the Project.

In accordance with NSW CoA B10, the following information will be maintained on the Project website:

- Information on the current implementation status of the Project
- The Environmental Assessment Documentation and any documentation relating to any modifications made to the Project
- A copy of the Infrastructure Approval in its original form, a current consolidated copy of the Approval (including any approved modifications to its terms), and copies of any approval granted by the Minister to a modification of the terms of the Infrastructure Approval;
- A copy of each statutory approval, licence or permit required and obtained in relation to the Project and
- A current copy of each document required under the terms of the Infrastructure Approval
- A copy of any audit reports required under NSW CoA A38 and A41.

Where the information/document relates to a particular Work or is required to be implemented, it must be published before the commencement of the relevant Work to which it relates or before its implementation.

Relevant Project information will be published on the website for the duration of works.

As required by Commonwealth CoA 16(b), the EWEMP, EWFFMP and SEMP will be published on the Project website within 20 business days of the date of their approval date, unless otherwise agreed to in writing by the Federal Minister for the Environment.

Confidential information, which may include the location of threatened species, Aboriginal objects or places and personnel contact details, will be removed from all documents provided before being made available to the public.

The EWEMP, EWFFMP and SEMP will remain published on the Project website for the period of which the Federal approval has effect, or as otherwise agreed by DAWE in writing in accordance with Commonwealth CoA 16(d).

5.6 Environmental Management Measures

Appendix A8 contains a list of environmental management measures relevant to Early Works that will be implemented to minimise the environmental impact of Early Works.

6 Emergency and incident planning, management and reporting

The M12 Environmental Incident Procedure (refer to Appendix A5) outlines the procedure to be followed if, during an activity being carried out there is:

- A report-only event
- A non-compliance
- Regulatory action received
- An environmental incident.

The Procedure sets out the steps for the identification, classification and reporting of report-only events, non-compliances, regulatory action and environmental incidents. The M12 Environmental Incident Procedure (refer to Appendix A5) has been modified to be made site-specific and includes requirements under the NSW CoA and the Federal CoA for this Project. The following sections summarise the requirements.

6.1 Emergency preparedness

Emergency planning and awareness training will be undertaken for the Early Works and based upon the M12 Environmental Incident Classification and Reporting Procedure in Appendix A5. All site personnel will be inducted on the incident management process detailed in Appendix A5. Zinfra and the Early Works Vegetation Clearing Contractor will ensure that the following equipment will be available to all site personnel to utilise in the event of an incident:

- Protective gloves for certain types of corrosive chemicals
- Other personal protective equipment required for the handling of hazardous chemicals and radioactive substances
- Cleaning equipment (i.e. brooms, bags, bins, etc.)
- Spill kits
- Stormwater drain guards
- Alarms for when there are issues with processes
- Firefighting equipment
- Up-to-date safety data sheets for any chemicals or fuels used or stored at the premises
- Hard hats for designated ‘emergency controllers’
- Eye-wash stations

Zinfra and the Early Works Vegetation Clearing Contractor will ensure that all site personnel are aware of where the equipment listed above is located on site and appropriately trained on the use of all equipment.

6.2 Incident identification

Section 3 of the M12 Environmental Incident Classification and Reporting Procedure provides the actions to be undertaken for incident response.

6.3 Incident classification

Section 3.1.1 of the M12 Environmental Incident Classification and Reporting Procedure details environmental incident classification based upon three risk areas (see Appendix A5):

- Environment
- Reputation and integrity
- Regulation and compliance.

Table 6-1 provides the definitions of each type of environmental incident/issue.

Table 6-1: Incident definitions

No.	Requirement
Environmental event	• A report-only event, non-compliance, regulatory action or environmental incident
Environmental incident	• An environmental incident is an event or set of circumstances, as a consequence of which pollution (air, water, noise, or land) or an adverse environmental impact has occurred, is occurring, or is likely to occur. • Adverse environmental impact includes contamination, harm to flora and fauna (either individual species or communities), damage to heritage items and adverse community impacts. • An unexpected find that is not managed in accordance with relevant procedures / guidelines is also considered an environmental incident
Non-compliance (as per the M12 Environmental Incident Classification and Reporting Procedure)	• A failure to comply with any CoA, REMM, licence condition (where applicable), permit or any other statutory approval relevant to the activity and/or area where the activity occurs
Notifiable event	• Any environmental incident, report-only event or non-compliance that triggers a specific statutory requirement to notify a regulatory authority i.e. under NSW CoA A44 – A48 and Federal CoA 11 and 12
Report-only event	• An environmental incident or unexpected find resulting from circumstances outside the scope of controls and of an activity
Significant incident	• An environmental incident that is likely to receive a classification of C3, C2 or C1, OR the history of the project, past performance and/or previous regulatory interest, indicate the project is likely to receive a penalty notice or be subject to prosecution, and therefore requires escalation to the Secretary and other TfNSW senior management.
Incident affecting protected matter (s)	• An event that has the potential to, or does impact, Matters of National Environmental Significance

6.4 Incident notification

All Early Works and subcontractor personnel shall report all environmental incidents and near misses no matter how minor or regardless of size to their Supervisor immediately.

Reporting of environmental incidents will also be in accordance with Section 3.2 of the M12 Environmental Incident Reporting Procedure, specifically Figure 2-1 and utilising the Environmental Event Reporting Form (624/400).

Potential class C1, C2 or C3 incidents will be notified verbally immediately to the ER and the TfNSW Environment and Sustainability Manager (or delegate). Incident reports will be provided to TfNSW Project Manager and the ER in accordance with the TfNSW procedure, including lessons learnt from each potential C1, C2 or C3 environmental incident and proposed measures to prevent the occurrence of a similar incident. All efforts will be undertaken immediately to avoid and reduce impacts of incidents and suitable controls put in place. Incidents will be closed out as quickly as possible, taking all required action to resolve each environmental incident.

Incidents that meet the criteria outlined in the Commonwealth CoA will also be notified verbally immediately to the ER and TfNSW Environment and Sustainability Manager. Incident reports will be provided to TfNSW Project Manager and ER. TfNSW will provide written notification to DAWE in accordance with the procedure outlined in Appendix A5. In accordance with NSW CoA A44, the Planning Secretary must be notified in writing via the Major Projects website as soon as possible and no later than 12 hours after the Contractor/TfNSW become aware of the incident. NSW CoA A45 also requires additional written notification within seven days and a detailed report within 30 days of the incident occurring. Further information on incident reporting for DPE can be found in Appendix A5. TfNSW. Zinfra and the Early Works Vegetation Clearing Contractor will undertake an investigation where required and implement corrective action to minimise the impact of the incident where possible.

6.4.1 Notifiable Events

Section 3.3 of the M12 Environmental Incident procedure outlines the requirements for the notification of any environmental incident, report-only event or non-compliance that triggers a specific statutory requirement to notify an authority.

Table 6-2: Summary of requirements for incident notification and reporting

Incident type	Notify	Notification timeframe	Notification responsibility	Written report	Written report timeframe	Written report responsibility
Regulatory action (material harm under the POEO Act)	EPA environment line Fire and Rescue NSW Ministry of Health SafeWork NSW Fairfield Council Liverpool Council TfNSW Project Manager and Environment and Sustainability Manager (or delegate)	Immediately	Zinfra / Early Works Vegetation Clearing Contractor	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor
	Secretary of DPE	As soon as possible, and no later than 12 hours after TfNSW becomes aware of an incident.	TfNSW (via the major projects portal)	In accordance with NSW CoA A44 and A45: • Written notification report • Detailed incident report	In accordance with NSW CoA A44 and A45: • Within 7 days • Within 30 days	TfNSW / Zinfra / Early Works Vegetation Clearing Contractor
Regulatory action (other than material harm under the POEO Act): Discovery of Aboriginal objects	TfNSW Project Manager and Environment and Sustainability Manager (or delegate)	As soon as possible, and no later than 12 hours after TfNSW becomes aware of an incident.	Zinfra / Early Works Vegetation Clearing Contractor / TfNSW	In accordance with Section 3.2 of the reporting procedure in Appendix A5.	In accordance with Section 3.2 of the reporting procedure in Appendix A5.	Zinfra / Early Works Vegetation Clearing Contractor

Incident type	Notify	Notification timeframe	Notification responsibility	Written report	Written report timeframe	Written report responsibility
	RAPs Heritage NSW					
Discovery of all human remains	NSW Police	Immediately	Zinfra / Early Works Vegetation Clearing Contractor	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor
If TfNSW activities have contaminated land or if TfNSW owns land that has been contaminated	EPA	Immediately	Zinfra / Early Works Vegetation Clearing Contractor / TfNSW	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor / TfNSW
The location of a relic once a relic has been discovered or located	TfNSW Project Manager and Environment and Sustainability Manager (or delegate) Heritage NSW	Immediately	Zinfra / Early Works Vegetation Clearing Contractor / TfNSW	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor
The inability to extinguish any fire burning during a bush fire danger period applicable to the land	An appropriate officer of the NSW Rural Fire Service	Immediately	Zinfra / Early Works Vegetation Clearing Contractor	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor / TfNSW
Environmental incident with the potential for unapproved impacts on a drinking water supply	Local water supply authority EPA	Immediately	Zinfra / Early Works Vegetation Clearing	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing

Incident type	Notify	Notification timeframe	Notification responsibility	Written report	Written report timeframe	Written report responsibility
			Contractor / TfNSW			Contractor / TfNSW
TfNSW Incident Classification C1, C2, C3 (excluding material harm)	TfNSW Project Manager and Environment and Sustainability Manager (or delegate) ER	Immediately	Zinfra / Early Works Vegetation Clearing Contractor	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor
Significant Incident (C1, C2, C3) with potential for: • regulatory action (e.g. EPA Penalty Infringement Notice) and/or • reputational damage (e.g. media coverage) and/or • significant environmental harm.	TfNSW Director Environment TfNSW Chief Executive and relevant Executive Director ER	Immediately	TfNSW Director Environment Operation	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor
TfNSW Incident Classification C4, C5, and C6	TfNSW PM and Environment and Sustainability Manager (or delegate) ER	Immediately	Zinfra / Early Works Vegetation Clearing Contractor	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor

Incident type	Notify	Notification timeframe	Notification responsibility	Written report	Written report timeframe	Written report responsibility
Report-only events	TfNSW PM and ESM (or delegate)	Immediately	Zinfra / Early Works Vegetation Clearing Contractor	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor
Any incident (as defined in the NSW Infrastructure approval)	Secretary DPE Minister for DAWE ER	As soon as possible and no later than 12 hours after TfNSW becomes aware of an incident.	TfNSW / Zinfra / Early Works Vegetation Clearing Contractor	In accordance with NSW CoA A44 and A45: • Written notification report Detailed incident report	In accordance with NSW CoA A44 and A45: • Within 7 days Within 30 days	Zinfra / Early Works Vegetation Clearing Contractor / TfNSW
Any incident that affects or could affect the Upper Canal System, including the pipeline corridor	TfNSW Project Manager and Senior Environment Officer (or delegate) WaterNSW	ASAP, at least within 24 hours of the incident	TfNSW / Zinfra	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / TfNSW
Incident affecting protected matters	TfNSW PM and Environment and Sustainability Manager (or delegate) ER	Immediately	Zinfra / Early Works Vegetation Clearing Contractor	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing Contractor
	DAWE	As soon as practicable, and no later than 2 business days after becoming	TfNSW	In accordance with Section 3.2 of the reporting procedure in Appendix A5	In accordance with Section 3.2 of the reporting procedure in Appendix A5	Zinfra / Early Works Vegetation Clearing

Incident type	Notify	Notification timeframe	Notification responsibility	Written report	Written report timeframe	Written report responsibility
		aware of the incident.				Contractor / TfNSW

6.5 Incident investigation

An environmental investigation may include the following basic elements depending on the size and severity of the incident:

- Identifying the cause, extent and responsibility of the incident
- Identifying and implementing the necessary corrective action
- Identifying the personnel responsible for carrying out the corrective action
- Implementing or modifying controls necessary to avoid a repeat occurrence of the incident
- Recording any changes in written procedures required
- Advising the relevant stakeholders, if any substantial pollution has occurred (reporting of incidents to regulatory authorities).

Investigations will take place as soon as possible after the incident has occurred. All incident investigations will focus on identifying the causes of the incident so that appropriate remedial and preventative control measures can be identified and implemented.

The Root Cause Analysis process will be used in incident investigation to determine the cause(s) of an incident or near miss, so that a repeat of the incident can be avoided. The “root” causes of an incident are system level causes that can reasonably be identified and that we have control to fix or rectify.

The depth of the investigation, the composition of the investigation team and the reporting requirements will vary subject to an assessment of the actual and the potential severity of consequences. Final investigation reports will be completed with a time-frame appropriate for complexity of the incident or as per project contractual requirements.

Upon the completion of the investigation, the findings and recommendations must be distributed to the relevant work groups for discussion at a toolbox meeting. All incidents and the results of the subsequent investigation will be tabled and reviewed at the next project management review meeting.

7 Monitoring and review

7.1 Environmental inspections

The purpose of the inspections is to identify and minimise environmental risk. A summary of the overarching approach to inspections are provided in the sections below.

Copies of all environmental inspection reports prepared by Zinfra will be kept with the Early Works records and closed out within the agreed timeframes.

COVID-19 protocols will be implemented on site during inspections to protect the wellbeing of inspection participants. Inspection participants to be informed of COVID-19 management measures during the pre-start briefing.

7.1.1 Weekly and post-rainfall inspections

Zinfra's Environmental Site Representative (or delegate) and TfNSW/Early Works Vegetation Clearing Contractor will carry out weekly and post rainfall inspections of the work sites to evaluate the effectiveness of environmental controls. Weekly inspections will also inspect work next to or within sensitive areas and high-risk activities.

Zinfra's Environmental Site Representative (or delegate) and TfNSW/Early Works Vegetation Clearing Contractor will record inspection findings on an inspection checklist form. Observed deficiencies in maintenance, environmental controls or standard of environmental performance will be recorded. Details of any maintenance required, the nature of the deficiency, any actions required and an implementation priority will be recorded. Actions will be closed out in accordance with the identified priority and evidence of close out will be kept on file.

7.1.2 Wet weather preparation inspections

Zinfra will undertake an inspection of environmental controls where a wet weather event is predicted. The wet weather event is 10 mm or more of rain within 24 hours recorded at the Badgerys Creek AWS Bureau of Meteorology (BoM) gauge (#067108). This definition has been adopted as a wet weather trigger preparedness.

Erosion and sediment controls and preventions will be inspected by Zinfra where wet weather event is expected to occur. These measures include erosion / sedimentation controls, protection of disturbed ground from erosion and the prevention of pollution incidents are in place. Following the wet weather event, a post wet weather inspection will be undertaken to review site performance and repair controls as required.

7.1.3 Environmental Representative and TfNSW inspections

The ER and TfNSW Project Managers (or delegates) and TfNSW Environment and Sustainability Manager (or delegate) will carry out regular inspections of work sites and critical activities throughout the early Works. Inspections by the ER and TfNSW will typically occur on a fortnightly basis depending on the complexity and anticipated risks associated with the stage of construction. Inspections will be carried out in accordance with the TfNSW inspection procedure.

The Zinfra's Environmental Site Representative (or delegate) and Project Engineer and/ or Superintendent and/ or Foreman/ Site Supervisor will participate in all ER and TfNSW inspections and will maintain appropriate records. Deficiencies and required actions will be analysed and

prioritised at the completion of the inspection and timeframes for implementation of corrective actions agreed in accordance with the TfNSW inspection procedure. Timeframes for Zinfra and the Early Works Vegetation Clearing Contractor to close out issues will be nominated on the inspection form.

7.1.4 Inspections by EPA and other agencies

Zinfra and/or the Early Works Vegetation Clearing Contractor will prepare a report on each occasion that the site is visited by the EPA and/or other relevant agencies. The report will advise TfNSW of the purpose and outcome of the EPA and/or other relevant agencies visit, and of all actions taken by Zinfra and/or the Early Works Vegetation Clearing Contractor in response to the EPA visit and/ or other relevant agencies. The report will be provided to TfNSW within one working day of the visit.

7.1.5 Pre-work inspections

Before the commencement of each shift, Zinfra's representative and the Early Works Vegetation Clearing Contractor's representative will inspect the environmental controls in place for the work to ensure they are operating as designed. Zinfra's representative and the Early Works Vegetation Clearing Contractor's representative will also ensure that all resources required to perform the works effectively are available and in place. Works will not commence unless inspections are found to be satisfactory.

7.1.6 Shutdown inspections

Prior to any period where the Early Works will be shut down for more than four days (i.e. long weekends, the Christmas period, etc.) or a significant weather event is forecast (e.g. storm event requiring shutdown of the site), a shutdown inspection will be undertaken to identify any additional environmental controls needed to minimise the potential for environmental impacts during the site shutdown period.

7.1.7 Start-up inspections

Start-up inspections will be conducted following the shutdown period if significant weather event has occurred during this time. This will be prior to the recommencement of construction works to ensure no damage to environmental controls have occurred during the significant weather event.

7.2 Environmental monitoring

Monitoring will be undertaken to validate the impacts predicted for the early works, to measure the effectiveness of environmental controls and implementation of this EWEMP and to address approval requirements. The monitoring requirements for required aspects are included in the relevant issue-specific environmental management plans and summarised in Table 7-1.

Table 7-1: Summary of CoA and REMMs environmental monitoring requirements

NSW CoA and REMM	Description	Relevant plan	Reporting requirements
A16 (e)	A program for monitoring the performance outcomes, including a program for noise monitoring of site establishment activities consistent with the requirements of **NSW CoA C14** This must be consistent with NSW CoA C13 and C14.	Site Establishment Management Plan	The results of the monitoring program must be submitted to the Planning Secretary, and relevant government agencies, for information in the form of an Early Works Noise Monitoring Report at the frequency identified in the relevant Early Works Noise Monitoring Program.
E42 REMM NV04 REMM NV10 REMM NV11	Monitoring will be carried out at the start of high noise and vibration activities to confirm that actual noise and vibration levels are consistent with the noise and vibration impact predictions. Attended vibration monitoring will be undertaken at sensitive receivers (including residents, vibration-sensitive businesses and critical working areas, and heritage structures) during vibration generating activities Monitoring undertaken throughout the duration of the Early Works will be done so in accordance with the Noise and Vibration Monitoring Program outlined in Appendix C of the SEMP.	Site Establishment Management Plan EWEMP	The results of the monitoring program must be submitted to the Planning Secretary, and relevant government agencies, for information in the form of an Early Works Noise Monitoring Report at the frequency identified in the relevant Early Works Noise Monitoring Program.
N/A	Discharge water quality monitoring of: • pH: 6.5-8.5 • Total Suspended Solids: 50 NTU • Oil and grease: no visual identification.	EW EMP	None.

NSW CoA and REMM	Description	Relevant plan	Reporting requirements
	These values are derived from the ANZECC Guidelines for NSW Lowland Rivers and the Blue Book.		

The Early Works Construction Monitoring Programs will be prepared in consultation with relevant government agencies and council(s) as identified in Table 7-2.

Table 7-2: Consultation requirements for Construction Monitoring Programs

NSW CoA	EWEMP Plan	Agency to be consulted	EWEMP Ref
CoA C14 (A16(e))	Early Works Noise and Vibration Monitoring Program	Relevant council	Appendix B1

The Early Works Noise and Vibration Monitoring Program will be endorsed by the ER and submitted to the Secretary for approval at least one month before commencement of Early Works.

Early Works will not commence until the Secretary has approved the Monitoring Programs required, and all relevant baseline data for the specific construction activity has been collected.

The Monitoring Programs, as approved by the Secretary including any minor amendments approved by the ER, will be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Secretary, whichever is the greater.

The ER, TfNSW Project Manager and Environment and Sustainability Manager (or delegate) will be advised of any non-conformances from monitoring and details reported in the Monthly Environmental Reports.

Should a non-conformance be detected or monitoring results directly attributable to the Early Works exceed the target set in the monitoring programs, the process described in Section 5.6 will be implemented. Steps in the process will include:

- Analysis of the results by the appropriate Zinfra/Early Work Vegetation Clearing Contractor site representative in more detail with a view of determining possible causes for the non-conformance
- Site inspection by the Zinfra's Environmental Site Representative (or delegate) and TfNSW
- Advising relevant personnel of the problem
- Identifying and agreeing on actions to resolve or mitigate the non-conformance
- Implementing actions to rectify or mitigate the non-conformance.

A non-conformance Environmental Incident Report and/or Environmental Improvement Notice may be issued by the TfNSW Environment and Sustainability Manager (or delegate) or the TfNSW Project Manager in response to the non-conformance if it is found to be construction related. The timing for any improvement will be agreed between the relevant Zinfra's Project Engineer/ Supervisor and TfNSW Environment and Sustainability Manager (or delegate) based on the level of risk (e.g. a significant risk will require immediate action). The ER will be kept informed of any non-conformance, any Environmental Incident Report and/or any Environmental Improvement Notice issued, and the status of implementation or improvement actions.

All environmental monitoring equipment will be maintained and calibrated according to manufacturers' specifications and appropriate records kept.

7.3 Compliance management

A non-compliance is defined as a failure to comply with any CoA, revised environmental management measure, licence condition (where applicable), permit or any other statutory approval relevant to the activity and/or area where the activity occurs. As outlined in Table 7-3 the M12 State Infrastructure Approval and the M12 Federal Approval describe what constitutes a non-compliance under these approvals in more detail.

All non-compliances must be reported using the TfNSW Environmental Event Reporting Form (624/400) as detailed in Appendix A5. The State Infrastructure Approval, and Federal Approval have additional requirements for reporting non-compliances as detailed in Section 7.3.1 and Section 7.3.2.

Table 7-3: Types of non-compliances

Approval	Description of non-compliance
Non-compliance under the State Infrastructure Approval	An occurrence, set of circumstances or development that is a breach of the NSW approval but is not an incident (as defined in the State Infrastructure Approval).
Non-compliance under the Federal Approval	An occurrence, set of circumstances or development that is a breach of the Federal approval but is not an incident affecting protected matters.

7.3.1 Reporting a non-compliance under the State Infrastructure Approval

In accordance with CoA A46, the Planning Secretary must be notified in writing via the Major Projects website within seven days after TfNSW becomes aware of any non-compliance.

As required by NSW CoA A47, a non-compliance notification must identify the Project and the application number for it, set out the condition of approval that the Project is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. The ER will also be informed of any non-compliance.

As specified in NSW CoA A48, a non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

7.3.2 Reporting a non-compliance under the Federal Approval

In accordance with Commonwealth CoA 11, TfNSW must notify DAWE in writing of a non-compliance with the Commonwealth CoA, or with commitments made in plans required under NSW CoA A24, where they relate to monitoring, managing, avoiding, mitigating, recording, or reporting on, impacts to protected matter(s). The notification must be given as soon as practicable and no later than 2 business days after becoming aware of the non-compliance. Refer to Appendix A5 for the reporting requirements for Federal non-compliances.

7.3.3 Reporting a non-compliance under the TfNSW Environmental Incident Procedure

A non-compliance as defined in the TfNSW Environmental Incident Procedure must be reported in accordance with Appendix A5.

7.3.4 Compliance records

The Zinfra Environmental Site Representative (or delegate) and the Early Works Vegetation Clearing Contractor are responsible for maintaining compliance records as current at the point of use.

In accordance with Commonwealth CoA 8, TfNSW are required to maintain accurate and complete compliance records. Zinfra and the Early Works Vegetation Clearing Contractor will provide TfNSW with a copy if all compliance records to satisfy the requirements of the Commonwealth CoA.

If DAWE makes a request in writing, TfNSW must provide electronic copies of compliance records to DAWE within the timeframe specified in the request.

Annual compliance reporting required under Commonwealth CoA 10 will be prepared and submitted by TfNSW. Compliance records provided to TfNSW by Zinfra and the Early Works Vegetation Clearing Contractor will be included within the compliance report for the twelve month period within which the Early Works were undertaken.

7.3.5 Non-conformances

A non-conformance is the failure or refusal to comply with the requirements of project system documentation including this EWEMP and supporting documentation that does not result in a non-compliance with the NSW or Commonwealth CoA.

Non-conformances may be identified through the review of compliance (refer to Section 6.3), environmental auditing (refer to Section 7.4) or incident management (refer to Section 6).

There are two types of non-conformances; Minor and Major. Minor non-conformances occur when isolated discrepancies are found between what has/is required and what has/is occurring. A minor non-conformance does not have the potential to cause significant adverse environmental effects. A Major non-conformance occurs when the ability to control the process or product has been significantly reduced.

Any member of the Early Works project team may raise a non-conformance. The ER, TfNSW Utilities Manager, Project Manager, Environment and Sustainability Manager (or delegate) or a representative of a public authority may also raise a non-conformance or improvement opportunity using the same process.

Non-conforming activities may be stopped, if necessary, by the Environmental Site Representative (or delegate) or Project/Site Engineers following consultation with the Construction Manager or delegate. The ER may also stop works in these circumstances, in which case a non-conformance report will be prepared by Zinfra and/or the Early Works Vegetation Clearing Contractor.

In the event that the client issues a non-conformance to the Early Works, it will be managed as per the Contract and closed out within the agreed timeframe

7.3.6 Corrective and preventative action

For each non-conformance identified, the Zinfra and/or Early Works Vegetation Clearing Contractor will implement corrective/preventative actions. In addition, any environmental management improvement opportunities can be initiated as a result of incidents or emergencies, monitoring and measurement, review of compliance, audit findings or other reviews. Improvement opportunities

may also result in the implementation of corrective/preventative actions. Zinfra and the Early Works Vegetation Clearing Contractor will provide this information to TfNSW in monthly reports.

Corrective/preventative actions and improvement opportunities will be entered into the Zinfra's quality system database and include detail of the issue, action required and timing and responsibilities. The record will be updated with date of close out and any necessary notes. The database will be reviewed regularly to ensure actions are closed out as required.

Procedures for corrective actions will include a process for verification of how the non-conformance has been closed out and to confirm that it is effective in addressing the non-conformance.

7.4 Auditing

7.4.1 Independent audits

Independent audits are not required for Early Works and would be conducted within 12 weeks of the commencement of construction.

7.4.2 Internal audits

Regular internal auditing will be undertaken by Zinfra as per the Zinfra HSE Audit Schedule during construction of the Early Works to verify compliance with:

- This EWEMP and Sub-plans
- Approval requirements (CoAs, REMMS)
- Any relevant legal and other requirements (e.g. licenses, permits, regulations, TfNSW contract documentation, including specifications).

An audit checklist will be developed and amended as necessary to reflect changes to this EWEMP, subsequent approvals and changes to Acts, regulations or guidelines.

All internal environmental audits will be undertaken in accordance with AS/NZS ISO 19011.

7.4.3 Audit of the ER's exercise of its functions

The Secretary may at any time commission an audit of an ER's exercise of its functions under NSW CoA A28. TfNSW, Zinfra, the Early Works Vegetation Clearing Contractor and the ER will facilitate and assist the Secretary in any such audit.

Table 7-4 summarises the auditing to be undertaken for the Early Works.

Table 7-4: Early Works audit requirements

Audit	Requirement	Timing	Responsibility	Recipient
Internal audit	Verify compliance with approval and legal requirements, TfNSW specifications and construction documentation	As per the Zinfra HSE Audit Schedule. The final submitted within five working days of contract completion date.	Zinfra's Site Environmental Representatives or delegate	Project manager TfNSW ER
ER NSW CoA A28	Audit of the ER's exercise of it functions	As required by the Secretary	TfNSW and the ER to facilitate and assist with the audit	Secretary DPE

7.5 Reporting and identified records

In accordance with Zinfra and the Early Works Vegetation Clearing Contractor Document Management procedure project records will be maintained to provide evidence of conformity to contractual requirements, regulatory requirements and to demonstrate the effective implementation of the Early Works environmental requirements.

Such records may include, but are not limited to the following:

- Correspondence to /from the Client and interested parties
- Permits To Work, Licenses and Approvals
- Induction and Training Records
- Inspection and test documentation, including daily/weekly inspection checklists and monitoring results
- Environmental Action Tracking Register (ATR)
- Project Environmental Matrix
- Meeting Records
- Non-conformance & Corrective Action Registers / Reports
- Public complaints and responses
- Environmental Incidents
- National Greenhouse and Energy Reporting records (NGERS)
- Waste Management and recyclable content data
- Monthly environmental reports
- Internal and external reviews and Audit Reports

Records shall be legible, identifiable and accessible to those persons required to maintain records to show conformance to meeting contractual and legislative requirements.

Zinfra and the Early Works Vegetation Clearing Contractor will maintain accurate records substantiating all activities associated with the Early Works or relevant to the conditions of approval, including measures taken to implement all management plans. Records will be made available to DPE and DAWE upon request, within the timeframe nominated in the request.

Table 7-5: Early Works reporting requirements

Report	Requirement	Timing	Responsibility	Recipient
Reporting to TfNSW under the Contract				
Monthly environmental report	For incorporation in Project Monthly Reports including environmental statistics (i.e. incidents, regulatory action, complaints on environmental issues), regulatory and authority considerations, monitoring program performance, compliance report and key environmental issues.	Monthly	Zinfra's Environmental Site Representative (or delegate)	TfNSW ER (for information)
Inspection reports (not related to CoA)				
EPA or any other Agency inspection report, other than for arranged inspections	The report will detail the purpose, outcome and actions pertaining to the visit and will be submitted to the TfNSW Project Manager	Within one working day of the EPA or any other Authority visit, other than for arranged inspections	Zinfra's Environmental Site Representative (or delegate)	TfNSW EPA ER (for information)
TfNSW environmental inspection reports	Response to matters raised in TfNSW site inspections Refer Section 7.1.3	As required. Typically, every two weeks for TfNSW inspection reports	Zinfra's Environmental Site Representative (or delegate)	TfNSW
Reporting under the NSW Infrastructure Approval				
Part A - Administrative				
Site Establishment Management Plan NSW CoA A16	Refer Section 3.3.7 and Appendix B1	Prior the installation of any ancillary facilities	Zinfra	ER (for endorsement) DPE (for Approval)
Early Works Environmental Management Plan NSW CoA A24	This Plan	Prior to the commencement of Early Works	Zinfra's Environmental Site Representative (or delegate)	DPE (for approval)

Report	Requirement	Timing	Responsibility	Recipient
Notification of incident NSW CoA A48	Refer Section 5.6	As early as possible and within 24 hours of the incident	TfNSW and Zinfra	DPE, DAWE and ER (for information)
Part B - Communication Information and Reporting				
Complaints Register NSW CoA B10	Refer Section 5.5	On request during construction	Zinfra's Environmental Site Representative (or delegate)	DPE (for information) TfNSW ER
Part C – Construction Environment Management				
Construction Noise and Vibration Monitoring Programs NSW CoA C14	Refer Section 5.7 and Appendix B1	Results from the Construction Noise and Vibration Monitoring Program will be included in the Zinfra's Monthly Environmental Report	Zinfra's Environmental Site Representative (or delegate)	ER (for endorsement) DPE (for Approval)
Part E – Key Issues				
Heritage				
Unexpected Heritage Finds and Human Remains Procedure NSW CoA E31	Refer Appendix B4	One month prior to commencement of construction	Zinfra's Environmental Site Representative (or delegate)	Secretary (for approval)
Noise and Vibration				
Out of Hours Protocol NSW CoA E37	Refer to Section 5.4.2	Prior to the commencement of out of hours work	Zinfra's Environmental Site Representative (or delegate)	ER (for endorsement)

Report	Requirement	Timing	Responsibility	Recipient
Noise and Vibration Impact Statements NSW CoA E40	Refer to Section 4.1.2	Upon request	TfNSW	ER (for endorsement)
Soils/Contamination				
Unexpected Contaminated land and Asbestos Finds Procedure NSW CoA A24(f) and E89	Refer to Appendix B3	Prior to the commencement of work	Zinfra's Environmental Site Representative (or delegate)	Secretary (for approval under A24(f))
Transport and Traffic				
Use of local roads for spoil and fill haulage and concrete deliveries NSW CoA E93	Refer to Appendix A8	Prior to the use of local roads	TfNSW	Secretary (for approval)
Waste				
Waste Tracking Register NSW CoA E104	Refer to Appendix A9	Prior to commencement of work	Zinfra's Environmental Site Representative (or delegate)	TfNSW (for review) Secretary and EPA (for Information)

7.6 Records of environmental activities

7.6.1 Environmental records

The Environmental Site Representative (or delegate) is responsible for maintaining the environmental management documents and records as current at the point of use. Types of documents and records include:

- Monitoring, inspection and compliance reports/records
- Correspondence with public authorities
- Internal and external audit reports
- Induction and training records
- Reports on environmental incidents, other environmental non-conformances, complaints and follow-up action
- Community engagement information
- Minutes of Environmental Management System review meetings and evidence of any action taken
- The EWEMP and Sub-plans
- EWMS.

Environmental management documents are subject to ongoing review and continual improvement. This includes times of change to scheduled activities or to legislative or licensing requirements.

This documentation will be held for five years after the actual completion date and be available to TfNSW and EPA upon request.

The TfNSW Environment and Sustainability Manager (or delegate) is responsible for maintaining TfNSW's environmental records.

7.6.2 Document control

Zinfra's Environmental Site Representative (or delegate) will coordinate the preparation, review and distribution of environmental documents and records listed in Section 7.5. The Zinfra Environmental Site Representative (or delegate) and Project Managers will coordinate the preparation, review and distribution of the EWEMP and Sub-plans. The distribution list for the EWEMP and Sub-plans is provided in Section 1.9.

Table 7-5 identifies the recipients for the Early Works documentation.

During the Early Works, Zinfra's and the Early Works Vegetation Clearing Contractor environmental documents and records will be stored AF7 (Early Works) and AF18 (Early Works). The documents required to be prepared under the Infrastructure Approval will be made available on the Project website (refer to Section 5.5.4).

Zinfra and the Early Works Vegetation Clearing Contractor will implement a document control procedure to control the flow of documents within and between TfNSW, stakeholders and sub-contractors. The procedure will ensure that documentation is:

- Developed, reviewed and approved prior to issue

- Issued for use
- Controlled and stored for the legally required timeframe
- Removed from use when superseded or obsolete
- Archived.

A register and distribution list will identify the current revision of documents, records or data. The Document Register is maintained in Appendix A3.

7.7 Environmental Management System review

Continuous improvement of the EMS will be achieved through ongoing monitoring and evaluation, implementation of preventative and corrective actions, communication with internal and external stakeholders and measuring progress against objectives and targets and program milestones. Opportunities for improvement will be implemented through changes to the relevant project environmental document as appropriate.

Environmental documentation will be revised if:

- There are relevant changes to environmental conditions or generally accepted environmental management practices
- Previous unforeseen environmental risks are identified
- Previously unidentified areas of contamination are discovered
- There is a change in relevant legislation that impacts on either the design outputs or construction activities
- There is a formal request made by DPE or other key stakeholders to make modifications
- There is a non-conformance relevant to the EWEMP (not of minor nature).

Periodic reviews of the Project Environmental Management System will be undertaken as part of the continual improvement process for the Early Works through meetings of relevant personnel. Table 7-6 sets out the purpose, frequency and attendees for the Environmental Management System review meetings.

The outcomes of the management, environmental group and senior management reviews could include amendments to this EWEMP, Sub-plans and related documentation, revision to the Project's Environmental Management System, review of the risk assessment, re-evaluation of the Early Works objectives and targets as well as input into other Early Works documents. For further details on the EWEMP revision process, refer to Section 1.10.

Table 7-6: Project Environmental Management System reviews

Meeting	Purpose	Frequency	Attendees
Management review	• Identification of areas of opportunity for improved environmental performance • Analysis of the causes of nonconformities and deficiencies, including those identified in environment inspections and audits • Verification of the effectiveness of corrective and preventative actions • Highlight any changes in procedures resulting from process improvement • A review of the aspects and impacts register, legal register and environmental induction	Quarterly	At minimum: • Zinfra's Project Manager, Construction Manager, Supervisor and Environmental Site Representative (or delegate) • Early Works Vegetation Clearing Contractor's Project Manager and Environmental Representative (where required)
Senior management review	• Review of EWEMP Zinfra • Effectiveness of environmental management documentation implementation • Management effectiveness • Potential improvements to the environmental management documentation • Adequacy of resources • Findings of audits • Environmental objectives and targets • Environmental performance • Compliance with legal and other requirements • Critical non-conformance or repeated non-conformances • Organisation changes • Effectiveness of training and inductions	Once throughout the duration of Early Works	• Zinfra's Project Manager, Construction Manager, Supervisor and Environmental Site Representative (or delegate) • Early Works Vegetation Clearing Contractor's Project Manager and Environmental Representative (where required)

7.7.1 Project refinements

Modifications or refinements to the Project may result from detailed design refinement or changed circumstances during construction. TfNSW is responsible for formally seeking approval from the Secretary for any Project modifications and for documenting refinements that are consistent with the approved Project.

The TfNSW Senior Environment and Sustainability Manager (or Zinfra) is responsible for the assessment of Project refinements and management of the consistency assessment process. Zinfra's Environmental Site Representative (or delegate) is responsible for incorporating any new environmental impacts and/or new statutory approval requirements into the appropriate environmental management documentation.

Any proposed design changes or changes in scope of works will be communicated to the Zinfra Environmental Site Representative (or delegate). Zinfra's Environmental Site Representative (or delegate) will undertake an environmental assessment and consistency review for the proposed changes in consultation with the TfNSW Senior Environment and Sustainability Manager (or delegate) to determine if a Project modification may be required.

Should the consistency review determine that a Project modification may be required i.e. the impacts are of a nature and scale that it is not considered consistent with the Project approval, the Environmental Representative will be informed immediately and a modification application under Section 5.25 of the EP&A Act will be prepared and submitted to the Secretary for determination.

TfNSW will approve all refinements that are deemed consistent with the Infrastructure Approval. The ER will be provided information on the refinement and provide advice on the adequacy of management measures.

Appendix A1

Legal and Other Requirements Register

M12 Motorway Early Works – Protection of High Pressure Gas Mains

August 2022

Transport for New South Wales

Legal requirements

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
General					
Environmental Planning and Assessment Act, 1979	All	Comply with the terms Minister for Planning's approval for the project. Obtain the Minister's approval for any project modifications that are not consistent with the planning approval.	S5.14 S5.25	Yes	Section 1.4
Water					
Water Management Act 2000 With the exception of controlled activity approvals, the *Water Management Act 2000* (WM Act) only applies in relation to those water sources covered by operational water sharing plans – these areas cover most of the State's major regulated river systems.	Water access and use.	Do not take water from a water source (a lake, river or estuary or place where water occurs naturally on or below the surface of the ground, and includes coastal waters) without an access licence. Do not use of water on land (unless supplied by a water utility, irrigation corporation etc or in accordance with basic landholder rights) without a water use approval.	S56 S60A S89 S91A	No	N/A

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
Water Management Act 2000	Water management works	Do not construct/use a water supply work, drainage work or flood work without the appropriate approval.	S90 S91B S91C S91D	No	N/A
Water Management Act 2000	Waterfront land.	Do not deposit material, excavate, or remove material within a watercourse bank, shore or bed, or on land 40 metres inland, or interfere with the likely flow of water to such a body, without a controlled activity approval.	S91	No Public authorities are exempt from the need to obtain a controlled activity approval. Water Management (General) Regulation 2011 (cl.38)	N/A
Water Management Act 2000	Water access and use	An aquifer interference approval/licence may be required under Section 91(3) if construction requires intersection of a groundwater source	S91	Yes	Section 4.2.2
Water Act 1912 Note that this Act is being progressively repealed by the WM Act.	Surface water	Obtain a licence or permit for construction or use of 'work' for purposes including the taking and using of water	S21B	Yes	Section 4.2.2
	Groundwater	Obtain a licence where interference with groundwater is likely to occur.	S112 S121A	S112 does not apply to the Crown. TfNSWis therefore not required	N/A

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
With the exception of controlled activity approvals, the WM Act only applies in relation to those water sources covered by operational water sharing plans – these areas cover most of the State's major regulated river systems.				to obtain a licence under this provision.	
	Floodplains	Obtain an approval for controlled works. These include works which occur on a designated floodplain, which can prevent land from being flooded or which can affect water flow to or from a river or lake.	91D	An exemption in relation to roads potentially applies – see clause 41E of the Water Management (Regulation) 2011.	N/A
Protection of the Environment Operations Act 1997	Water pollution	Do not cause water pollution (other than to a sewer), except in accordance with the conditions of an Environment Protection Licence or Scheduled Development Licence.	S120 S122	Yes	Section 3.3.3 Section 3.3.4 Section 3.3.5 Section 3.3.6
Noise					
Protection of the Environment Operations Act 1997	Plant maintenance and operation	Do not operate plant if it emits noise caused by poor maintenance or operation.	S139	Yes	Appendix A8
Protection of the Environment Operations Act 1997	Materials management	Do not cause noise by failing to properly and efficiently deal with materials.	S140	Yes	Appendix A8

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
Contaminated material					
Protection of the Environment Operations Act 1997	Land pollution	Do not cause or permit land pollution other than under authority of a licence or regulation. (However it is not a land pollution offence to place virgin excavated natural material or lawful pesticides and fertilisers on land, or by placing matter on land that has been notified to the EPA as an unlicensed landfill and which is operated in accordance with the regulations.)	S142A – S142E	Yes	Section 3.3.2 Section 3.3.4 Section 4.2 Appendix A8 Appendix B3
Contaminated Land Management Act 1997	Reporting contamination	Notify the EPA if; Contaminants exceed thresholds contained in guidelines or the regulations where contamination has entered or will foreseeably enter neighbouring land, the atmosphere, groundwater or surface water. Contaminants in soil are equal to or exceed guideline levels with respect to the current or approved use of the land. Contamination meets other criteria that may be prescribed by the regulations.	S60	Yes	Table 6-2

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
Biodiversity					
Biodiversity Conservation Act 2016	Fauna	Do not harm any animal that is; of a threatened species, that is part of a threatened ecological community or is a protected animal, unless authorised under other legislation (e.g. planning approval).	S2.1 S2.8	Yes	EWFFMP
Biodiversity Conservation Act 2016	Habitat	Do not damage habitat of a threatened species or ecological community unless authorised under other legislation (e.g. planning approval).	S2.4 S2.8	Yes	EWFFMP
Biodiversity Conservation Act 2016	Biodiversity	Do not damage declared areas of outstanding biodiversity value unless authorised under other legislation (e.g. planning approval).	S2.3 S2.8	Yes	EWFFMP
Biodiversity Conservation Act 2016	Flora	Do not pick a plant that is; of a threatened species, that is part of a threatened ecological community or is a protected plant, unless authorised under other legislation (e.g. planning approval).	S2.2 S2.8	Yes	EWFFMP

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
Biodiversity Conservation (Savings and transitional) Regulation 2017	Flora and fauna conservation	The regulation is in place to assist with repealing and replacing of the previous biodiversity legislation, including the *Threatened Species Conservation Act 1995*, *and* the *Native Vegetation Act 2003.* The biodiversity assessment for the Project was carried out under the *Framework for Biodiversity Assessment* which was the standard method for assessing impacts of major projects on biodiversity and determining offsetting requirements.	Part 4, Part 6	Yes	EWFFMP
Biosecurity Act 2015	Weeds	Manage weeds on site in accordance with the relevant Regional Strategic Weed Management Plan.	S22	Yes	EWFFMP
Biosecurity Regulation 2017	Pests and Diseases	Notify the presence any pest or disease listed in Schedule 1 of the Biosecurity Regulation 2014, within one working day after suspecting or becoming aware of the pest or disease.	Regulation cl.7 Schedule 1	Yes	EWFFMP
Fisheries Management Act 1994	Fish passage	Do not block fish passage without a permit	S219	No	N/A

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
Environment Protection Biodiversity Conservation Act, 1999 (Commonwealth)	Flora and fauna conservation	Do not kill, injure or take a member of a listed threatened species without a permit.	Part 13	Yes	EWFFMP
		Comply with the terms of any EPBC Act approval for the project.		Yes	EWFFMP
Waste					
Protection of the Environment Operations Act 1997	Littering	Do not litter in a public place or an open private place. Do not litter from a vehicle. Only deposit advertising material in receptacles provided for mail or newspapers or under the door of the premises. Do not deposit advertising material on or in vehicles.	Part 5.6A	Yes	Appendix A8
Protection of the Environment Operations Act 1997	Waste and transportation	Do not undertake a scheduled waste activity unless in accordance with an environmental protection licence. A licence must be obtained when construction and demolition wastes are applied to land under certain circumstances. This includes the reincorporation of crushed road base material back into roads and the placing	Part 3.2 Schedule 1	Yes	Appendix A8

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
		of excess fill material onto properties. A licence is not required if the material: • Is VENM. • Does not exceed 200 tonnes in the Sydney, Newcastle and Wollongong areas, or 20,000 tonnes outside these areas. • Is covered by a "general exemption". Current exempted materials are ENM, recycled aggregates and raw mulch. These exemptions are conditional and require some chemical testing of materials before they are placed onto land. • A licence must be obtained if more than 2,500 tonnes (or cubic metres) is stored on a stockpile site at any one time, or more than 30,000 tonnes of waste is received per year from off site.			
		Only transport waste to a facility that can lawfully accept the waste.	S143	Yes	Appendix A8
		Do not dispose of waste in a manner that harms or is likely to harm the environment.	S115	Yes	Appendix A8

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
Protection of the Environment Operations (Waste) Regulation 2005	Waste and transportation	Comply with general requirements for the transport of waste. For example, any vehicle used by the person to transport waste must be kept in a clean condition and be maintained so as to prevent spillage of waste. For some wastes only licensed transporters can be used.	Regulation cl.49	Yes	Appendix A8
		Comply with record keeping requirements in relation to the transport of certain types of waste.	Regulation Part 3	Yes	Appendix A8
Heritage					
Heritage Act 1977	Heritage	Do not undertake an activity that will affect a place, building, work, relic, moveable object or precinct which is subject to an Interim Heritage Order or is listed on the State Heritage Register without approval from the Heritage Council.	S56-57	No	N/A
		Do not disturb or excavate land with knowledge or reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed; or	S139	No	N/A

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
		Do not disturb or excavate land on where a relic has been discovered or exposed.			
		Notify the heritage Council on discovery of a relic	S146	Yes	Appendix A8
National Parks and Wildlife Act 1974	Aboriginal places and objects	Do not harm or desecrate an Aboriginal object or Aboriginal place without consent.	S86 S90	No	N/A
		Notify the NPWS within reasonable time of becoming aware of the location or discovery of certain Aboriginal objects.	S89A	Yes	Appendix A8
Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth)	Protection of areas and objects	Report any discovery of Aboriginal remains to the Federal Minister for the Environment and Heritage.	S20	Yes	Appendix A8
		Comply with the provisions of any declaration in relation to a significant Aboriginal area or object.	S22	Yes	Appendix A8
General					
Protection of the Environment Operations Act 1997	Harming the environment	Do not risk harming the environment by wilfully or negligently: • Disposing of waste unlawfully.	S115 S116 S117	Yes	Section 6

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
		• Causing any substance to leak, spill or otherwise escape (whether or not from a container); or • Emitting an ozone depleting substance.			
Protection of the Environment Operations Act 1997	Control equipment	Properly and efficiently maintain and operate any installed pollution control equipment (including monitoring devices).	S167	Yes	Section 6
Protection of the Environment Operations Act 1997	Notification of pollution incidents	Notify the EPA immediately of pollution incidents where material harm to the environment is caused or threatened.	S148	Yes	Section 5.5.4
Protection of the Environment Operations Act 1997	Site licensing	Do not carry out or allow an activity listed in Schedule 1, or carry out work to enable such an activity, unless the premises are licensed by the EPA. This applies to: • Road construction: meaning the construction, widening or re-routing of roads if it results in the existence of four or more traffic lanes (other than bicycle lanes or lanes used for entry or exit) for one kilometres of their length in the metropolitan area, or five kilometres in length in any	S47 S48	Yes	N/A for Early Works

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
		other area, where the road is classified, or proposed to be classified, as a freeway or tollway under the *Roads Act 1993.*			
Environmentally Hazardous Chemicals Act, 1985	Hazards and risks	Obtain a licence to undertake prescribed activities involving environmentally hazardous chemicals or declared chemical wastes.	S28	Yes	Appendix A8
Dangerous Goods (Road and Rail Transport) Act 2008	Hazards and risks	Ensure that dangerous goods are transported in a safe manner.	S9	Yes	Appendix A8
Rural Fires Act 1997	Bushfire risk	The Act provides for the prevention, mitigation and suppression of bush and other fires in local government area. Exemptions can be sought to allow hot works to be undertaken on Total Fire Ban days	Division 6 S99	Yes	Appendix A8
National Greenhouse and Energy Reporting Act, 2007 and Regulations 2008	Greenhouse gas emissions	Accounting and reporting of greenhouse gases produced and energy consumed during construction. Applicability dependent on thresholds.	-	Yes	Appendix A8
Land Acquisition (Just Terms and	Property acquisition	Applies to the acquisition of any land required for the project.	-	Yes	Appendix A8

Act	Activity / aspect	Requirement	Reference	Division 5.2 applicability	Relevant Section of EWEMP or supporting documentation
Compensation) Act 1991 (Land Acquisition Act)					
Pesticides Act 1999	Hazards and risks	Use pesticides in an environmentally sensitive manner. Do not use an unregistered pesticide without a permit. Read the label or permit for the pesticide. Use registered pesticides in accordance with instructions on the label. Do not use any restricted pesticide unless authorised by a certificate of competency or a pesticide control order under the Act. • Compliance with pesticide codes of practice is required.	S12 S13 S14 S15 S17	Yes	EWFFMP
Western Sydney Parklands Act 2006	Land acquisition	The *Western Sydney Parklands Act* applies to the land located within the Western Sydney Parklands and establishes certain land to be Trust Land. Trust Land affected by the project would be subject to the Land Acquisition Act.	-	Yes	Appendix A8

Secondary NSW and Commonwealth CoA and REMMs

The primary NSW CoA and REMMs specifically relevant to the development of this Plan are listed in Table 1-1 and Table 1-2 respectively. Secondary conditions that are related, but not specific to, the development of this Plan have been listed in the tables below. A cross reference is also included to indicate where the CoA is addressed in this Plan or other Project management documents.

NSW CoA

CoA No.	Condition Requirements	EWEMP Reference
A1	The CSSI must be carried out in general accordance with the terms of this approval and in accordance with the description of the CSSI in the EIS, the Response to Submissions on the EIS, the Amendment Report and Response to Submissions on the Amendment Report	Section 1.1
	a) M12 Motorway Environmental Impact Statement (dated October 2019);	
	b) M12 Motorway Submissions Report (dated October 2020);	
	c) M12 Motorway Amendment Report (dated October 2020);	
	d) M12 Motorway Amendment Report - Submissions Report (dated December 2020); and	
	e) M12 Motorway Amendment Report - Submissions Report - Amendment (dated 8 March 2021).	
A2	The CSSI must only be carried out in accordance with all procedures, commitments, preventative actions, performance outcomes and mitigation measures set out in the documents listed in Condition A1 unless otherwise specified in, or required under, this approval.	Section 1.1
A3	In the event of an inconsistency between:	This EWEMP
	a) The terms of this approval and any document listed in Condition A1, the terms of this approval will prevail to the extent of the inconsistency; and	

CoA No.	Condition Requirements	EWEMP Reference
	b) Any document listed in **Condition A1**, the most recent document will prevail to the extent of the inconsistency.	
A4	The Proponent must comply with all written requirements or directions of the Planning Secretary, including in relation to:	This EWEMP
	a) The environmental performance of the CSSI;	
	b) Any document or correspondence in relation to the CSSI (including the provision of such documentation or correspondence);	
	c) Any notification given to the Planning Secretary under the terms of this approval;	
	d) Any independent appointment or withdrawal of an appointment made in relation to the CSSI;	
	e) Any audit of the construction or operation of the CSSI;	
	f) The terms of this approval and compliance with the terms of this approval (including anything required to be done under this approval);	
	g) The carrying out of any additional monitoring or mitigation measures; and	
	h) In respect of ongoing monitoring and management obligations, and following consultation with the Proponent, compliance with an updated or revised version of a guideline, protocol, Australian Standard or policy required to be complied with under this approval.	
A5	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken and submitted to the Planning Secretary, and the terms of this approval require the document, monitoring program or review to be prepared/undertaken in consultation with identified parties, evidence of the consultation must be submitted to the Planning Secretary with the relevant document, monitoring program or review. The evidence must include:	Section 1.7 Section 5.5.2 Appendix A7
	a) Documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;	

CoA No.	Condition Requirements	EWEMP Reference
	b) A log of the dates of engagement or attempted engagement with the identified party;	
	c) Documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations;	
	d) Outline of the issues raised by the identified party and how they have been addressed; and	
	e) A description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	
A15	Construction ancillary facilities (excluding minor construction ancillary facilities established under Condition A20) that are not identified by description and location in the documents listed in Condition A1 may only be established and used in each case if:	Section 2.3 Appendix B1
	a) They are located within or immediately adjacent to the construction boundary; and	
	b) They are not located next to a sensitive receiver(s) (including where an access road is between the facility and the receiver(s)), unless the sensitive receiver(s) (both the landowner(s) and occupier(s)) have given written acceptance to the carrying out of the relevant facility in the proposed location; and	
	c) They have no impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval; and	
	d) The establishment and use of the facility can be carried out and managed within the outcomes set out in the terms of this approval, including in relation to environmental, social and economic impacts.	
A17	Where a construction ancillary facility(ies) has been established for any early works listed in Appendix B and is to be used for construction, a new or revised Site Establishment Management Plan must be prepared where additional activities are required to establish the site for the purposes of construction or there is a change to the site layout. The new or revised Site Establishment Management Plan must be prepared in accordance with Condition A16 and approved by the Planning Secretary before commencement of the additional activities or change to site layout.	Section 2.3 Appendix B1
A18	The use of a construction ancillary facility for construction (excluding minor construction ancillary facilities established under Condition A20 and construction ancillary facilities established for the purposes of early works in accordance with Condition A24) must not	Section 2.3

CoA No.	Condition Requirements	EWEMP Reference
	commence until the CEMP required by Condition C1, relevant CEMP Sub-plans required by Condition C4 and relevant Construction Monitoring Programs required by Condition C11 have been approved by the Planning Secretary. This condition does not apply to the use of construction ancillary facilities where the ER has determined that the use of the facility will have a minimal impact on the environment and community.	Appendix B1
A19	Construction ancillary facilities established for the purposes of early works in accordance with Condition A24 cannot be used for construction until the CEMP required by Condition C1, relevant CEMP Sub-plans required by Condition C4 and relevant Construction Monitoring Programs required by Condition C11 have been approved by the Planning Secretary. This condition does not apply to the use of construction ancillary facilities where the ER has determined that the use of the facility will have a minimal impact on the environment and community.	Section 2.3 Appendix B1
A20	Lunch sheds, office sheds, portable toilet facilities, and the like, can be established and used where they have been assessed in the documents listed in Condition A1 or satisfy the following criteria:	Section 2.3 Appendix B1
	a) Are located within or adjacent to the construction boundary; and	
	b) Have been assessed by the ER to have -	
	i. Minor amenity impacts to surrounding residences and businesses, after consideration of matters such as compliance with the Interim Construction Noise Guideline (DECC, 2009), traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and	
	ii. Minor environmental impact with respect to waste management, soil, water and flooding, and	
	iii. No impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval.	
A21	Boundary screening must be erected around all construction ancillary facilities that are adjacent to sensitive receivers for the duration of construction of the CSSI unless otherwise agreed with affected residents, business operators and landowners.	Appendix B1

CoA No.	Condition Requirements	EWEMP Reference
A22	Boundary screening required under **Condition A21** of this approval must minimise, as far as practicable, visual impacts on adjacent sensitive receivers.	Appendix B1
A30	Work must not commence until an Environmental Representative (ER) has been approved by the Planning Secretary and engaged by the Proponent	Section 5.1.1
A31	The Planning Secretary's approval of an ER must be sought no later than one (1) week before the commencement of Work.	Section 5.1.1
A32	The proposed ER must be a suitably qualified and experienced person who was not involved in the preparation of the documents listed in Condition A1, and is independent from the design and construction of the CSSI. The ER must meet the requirements set out in the Environmental Representative Protocol (Department of Planning and Environment, October 2018).	Section 1.9
A33	The Proponent may engage more than one ER for the CSSI, in which case the functions to be exercised by an ER under the terms of this approval may be carried out by any ER that is approved by the Planning Secretary for the purposes of the CSSI.	Section 1.9
A34	For the duration of Work until the commencement of operation, or as agreed with the Planning Secretary, the approved ER must:	Section 1.11 Section 5.1.1
	a) Receive and respond to communication from the Planning Secretary in relation to the environmental performance of the CSSI;	
	b) Consider and inform the Planning Secretary on matters specified in the terms of this approval;	
	c) Consider and recommend to the Proponent any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community;	
	d) Review the documents identified in Conditions A9, A13, A16, A24, C1, C4 and C11 and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this approval and if so:	
	i. Make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or	

CoA No.	Condition Requirements	EWEMP Reference
	ii. Make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary / Department for information or are not required to be submitted to the Planning Secretary / Department);	
	e) Regularly monitor the implementation of the documents listed in Conditions A9, A13, A16, A24, C1, C4 and C11 to ensure implementation is being carried out in accordance with the documents and the terms of this approval;	
	f) As may be requested by the Planning Secretary, help plan, attend or undertake audits of the CSSI commissioned by the Department including scoping audits, programming audits, briefings and site visits, but not independent environmental audits required under Conditions A38 and A41 of this approval;	
	g) As may be requested by the Planning Secretary, assist the Department in the resolution of community complaints;	
	h) Assess the impacts of minor construction ancillary facilities, as required by Condition A20 of this approval;	
	i) Consider any minor amendments to be made to the CEMP, CEMP Sub-plans, Construction Monitoring Programs, Site Establishment Management Plans and Early Works Environmental Management Plan that involve updating or are of an administrative nature and do not increase impacts to nearby sensitive receivers, and ensure they are consistent with the terms of this approval and the documents approved by the Planning Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval;	
	j) Prepare and submit to the Planning Secretary and relevant regulatory agencies (where requested by those agencies), for information, an Environmental Representative Monthly Report providing the information set out in the Environmental Representative Protocol under the heading “Environmental Representative Monthly Reports.” The Environmental Representative Monthly Report must be submitted within seven (7) days following the end of each month for the duration of the ER’s engagement for the CSSI.	
A35	The Proponent must provide the ER with all documentation requested by the ER in order for the ER to perform their functions specified in Condition A34 (including preparation of the ER monthly report), as well as:	Section 5.1.1
	a) The complaints register for any complaints received (on the day they are received); and	Section 5.5.3

CoA No.	Condition Requirements	EWEMP Reference
	b) A copy of any assessment carried out by the Proponent of whether proposed Work is consistent with the approval (which must be provided to the ER before the commencement of the subject Work).	Section 5.1.1
A36	The Department must be notified in writing of the dates of commencement of early works, construction and operation at least one (1) month before those dates.	Section 1.8
A44	The Planning Secretary must be notified in writing via the Major Projects Website as soon as possible and no later than 12 hours after the Proponent becomes aware of an incident. The notification must identify the CSSI (including the application number and the name of the CSSI) and the date, time, location and nature of the incident.	Section 6.4 Appendix A5 (Section 3.2.2)
A45	Subsequent notification must be given, and reports submitted to the Planning Secretary in accordance with the requirements set out in Appendix A.	Section 6.4 Appendix A5 (Section 3.2.2)
A46	The Planning Secretary must be notified in writing via the Major Projects website within seven (7) days after the Proponent becomes aware of any non-compliance.	Section 6.4 Appendix A5 (Section 3.2.2)
A47	A non-compliance notification must identify the CSSI and the application number for it, set out the condition of approval that the CSSI is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.	Section 7.3.1 Appendix A5 (Section 3.2.2)
A48	A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	Section 6.4.1 Section 7.3.1 Appendix A5 (Section 3.2.1)

CoA No.	Condition Requirements	EWEMP Reference
B1	A Communication Strategy must be prepared to provide mechanisms to facilitate communication about Work, construction and operation of the CSSI with:	Section 5.5.3
	a) The community (including adjoining affected landowners and businesses, and others directly impacted by the CSSI); and	
	b) The relevant councils and relevant government agencies.	
	The Communication Strategy must address who (the Proponent, Independent Appointments and/or construction contractor) will engage with the community, relevant councils and agencies, how they will engage and the timing of engagements.	
B2	The Communication Strategy must:	Section 5.5.3
	a) Identify people, organisations, councils and agencies to be consulted during the design and Work phases;	
	b) Identify details of the community demographics;	
	c) Set out procedures and mechanisms for the regular distribution of accessible information, including to Language Other than English and Culturally and Linguistically Diverse and vulnerable communities, about or relevant to the CSSI;	
	d) Detail the measures for advising the community in advance of upcoming Work, including utility works and upcoming out-of-hours work as required by Condition E47;	
	e) Provide for the formation of issue or location-based community forums that focus on key environmental management issues of concern to the relevant community(ies); and	
	f) Set out procedures and mechanisms -	
	i. Through which the community can discuss or provide feedback to the Proponent 24 hours a day, seven days per week;	
	ii. Through which the Proponent will respond to enquiries or feedback from the community; and	

CoA No.	Condition Requirements	EWEMP Reference
	iii. To resolve any issues and mediate any disputes that may arise in relation to the environmental management and delivery of the CSSI, including disputes regarding rectification or compensation.	
B3	The Communication Strategy must be submitted to the Planning Secretary for approval no later than one (1) month before the commencement of any Work.	Section 5.5.3
B4	Work for the purposes of the CSSI must not commence until the Communication Strategy has been approved by the Planning Secretary.	Section 5.5.3
B5	The Communication Strategy, as approved by the Planning Secretary, must be implemented for the duration of Work and for 12 months following the completion of construction.	Section 5.5.3
B6	A Complaints Management System must be prepared and implemented before the commencement of any Work and maintained for the duration of construction and for a minimum for 12 months following completion of construction of the CSSI. The Complaints Management System must require complainants to be advised that:	Section 5.5.3
	a) The Complaints Register may be forwarded to Government agencies, including the Department, to allow them to undertake their regulatory duties;	
	b) By providing personal information, the complainant authorises the Proponent to provide that information to government agencies;	
	c) The supply of personal information by the complainant is voluntary; and	
	d) The complainant has the right to contact government agencies to access personal information held about them and to correct or amend that information (Collection Statement).	
	The Collection Statement must be included on the Proponent's or project website to make prospective complainants aware of their rights under the *Privacy and Personal Information Protection Act 1998*. For any complaints made in person, the complainant must be made aware of the Collection Statement.	Section 5.5.3 Section 5.5.4

CoA No.	Condition Requirements	EWEMP Reference
B7	The following information must be available to facilitate community enquiries and manage complaints one (1) month before the commencement of Work and for 12 months following the completion of construction:	Section 5.5.3 Section 5.5,4 Section 7.5
	a) A 24- hour telephone number for the registration of complaints and enquiries about the CSSI;	
	b) A postal address to which written complaints and enquires may be sent;	
	c) An email address to which electronic complaints and enquiries may be transmitted; and	
	d) A mediation system for complaints unable to be resolved.	
	This information must be accessible to all in the community regardless of age, ethnicity, disability or literacy level and must be provided on the website required under Condition B10.	
B8	A Complaints Register must be maintained recording information on all complaints received about the CSSI during the carrying out of any work and for a minimum of 12 months following the completion of construction. The Complaints Register must record the:	Section 5.5.3
	a) Number of complaints received;	
	b) The date and time of the complaint;	
	c) The method by which the complaint was made;	
	d) Any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect	
	e) Nature of the complaint;	
	f) Means by which the complaint was addressed and whether resolution was reached, with or without mediation; and	

CoA No.	Condition Requirements	EWEMP Reference
	g) If no action was taken, the reason(s) why no action was taken.	
B9	The Complaints Register must be provided to the Planning Secretary upon request, within the timeframe stated in the request.	Section 5.5.3
B10	A website or webpage providing information in relation to the CSSI must be established before commencement of Work and be maintained for the duration of construction, and for a minimum of 24 months following the completion of construction. The following up-to-date information (excluding confidential, private, commercial information or any other information that the Planning Secretary has approved to be excluded) must be published before the relevant Work commencing and maintained on the website or dedicated pages including:	Section 5.5.3 Section 5.5.4
	a) Information on the current implementation status of the CSSI;	
	b) A copy of the documents listed in Condition A1 of this approval, and any documentation relating to any modifications made to the CSSI or the terms of this approval;	
	c) A copy of this approval in its original form, a current consolidated copy of this approval (that is, including any approved modifications to its terms), and copies of any approval granted by the Minister to a modification of the terms of this approval (ordered in a logical sequence and easy to navigate);	
	d) A copy of each statutory approval, licence or permit required and obtained in relation to the CSSI;	
	e) A current copy of the final version of each document required under the terms of this approval; and	
	f) A copy of the audit reports required under Conditions A38 and A41 of this approval.	
	Where the information / document relates to a particular Work or is required to be implemented, it must be published on the Proponent's website before the commencement of the relevant Work to which it relates or before its implementation.	
E1	In addition to the performance outcomes, commitments and mitigation measures specified in the documents listed in Condition A1, all practicable measures must be implemented to minimise and manage the emission of dust and other air pollutants during the construction of the CSSI.	Appendix A8

CoA No.	Condition Requirements	EWEMP Reference
E25	Construction and operation of the CSSI should aim to not diminish the potential of the following heritage items for nomination to the State Heritage Register beyond the impacts to significance already identified in the documents listed in Condition A1: McGarvie Smith Farm, McMaster Field Station and Fleurs Radio Telescope Site.	These heritage items will not be impacted upon during Early Works
E31	An Unexpected Heritage Finds and Human Remains Procedure must be prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW and Heritage NSW. The Procedure must be prepared in consultation with Heritage NSW and form part of the Heritage CEMP Sub Plan required by Condition C4.	Appendix B4
E32	The Unexpected Heritage Finds and Human Remains Procedure, as submitted to the Planning Secretary, must be implemented for the duration of Work.	Appendix B4
E33	Where previously unidentified Aboriginal objects are discovered, all work must immediately stop in the vicinity of the affected area. Works potentially affecting the previously unidentified objects must not recommence until Heritage NSW has been informed. The measures to consider and manage this process must be specified in the Unexpected Heritage Finds and Human Remains Procedure required by Condition E31 and include registration in the Aboriginal Heritage Information Management System (AHIMS).	Appendix B4
E34	Work must only be undertaken during the following hours:	Section 5.4.1
	a) 7:00 am to 6:00 pm Mondays to Fridays, inclusive;	
	b) 8:00 am to 6:00 pm Saturdays; and	
	c) At no time on Sundays or public holidays.	
E35	Except as permitted by an EPL, highly noise intensive works that result in an exceedance of the applicable noise management level (NML) at the same receiver must only be undertaken:	Section 5.4.2
	a) Between the hours of 8:00 am to 6:00 pm Monday to Friday;	

CoA No.	Condition Requirements	EWEMP Reference
	b) Between the hours of 8:00 am to 1:00 pm Saturday; and	
	c) If continuously, then not exceeding three hours, with a minimum cessation of work of not less than one hour.	
	For the purposes of this condition, 'continuously' includes any period during which there is less than one hour between ceasing and recommencing any of the Work.	
E36	Notwithstanding Condition E34 and E35, Work may be undertaken outside the hours specified in any of the following circumstances:	Section 5.4.2
	a) Safety and Emergencies, including:	
	i. For the delivery of materials required by the NSW Police Force or other authority for safety reasons; or	
	ii. 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.	
	On becoming aware of the need for emergency work in accordance with Condition E36(a), the Proponent must notify the ER, the Planning Secretary and the EPA of the reasons for such emergency work. The Proponent must use best endeavours to notify all noise and/or vibration affected sensitive land user(s) of the likely impact and duration of the emergency work.	
	b) Work that causes:	
	i. LAeq(15 minute) noise levels: • No more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG, and • No more than the 'Noise affected' NMLs specified in Table 3 of the ICNG at other sensitive land user(s); and	
	ii. LAFmax(15 minute) noise levels no more than 15 dB(A) above the rating background level atany residence during the night time period; and	

CoA No.	Condition Requirements	EWEMP Reference
	iii. Continuous or impulsive vibration values, measured at the most affected residence, thatare no more than the preferred values for human exposure to vibration, specified in Table 2.2 of *Assessing Vibration: a technical guideline* (DEC, 2006); and	
	iv. Intermittent vibration values measured at the most affected residence that are no morethan the preferred values for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline* (DEC, 2006).	
	c) By Approval, including:	
	i. Where different construction hours are permitted or required under an EPL in force in respect of the CSSI; or	
	ii. Works which are not subject to an EPL that are approved under an Out-of-Hours Work Protocol as required by Condition E37; or	
	iii. Negotiated agreements with directly affected residents and sensitive land user(s).	
E37	An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of Work which is outside the hours defined in Condition E34, and that are not subject to an EPL. The Protocol must be approved by the Planning Secretary before commencement of the out-of-hours Work. The Protocol must be prepared in consultation with the ER. The Protocol must provide:	Section 5.4.2
	a) Identification of low and high-risk activities and an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where:	
	i. The ER reviews all proposed out-of-hours activities and confirm their risk levels,	
	ii. Low risk activities can be approved by the ER, and	
	iii. High risk activities that are approved by the Planning Secretary;	
	b) A process for the consideration of out-of-hours work against the relevant NML and vibration criteria;	

CoA No.	Condition Requirements	EWEMP Reference
	c) A process for selecting and implementing mitigation measures for residual impacts in consultation with the community at each affected location, including respite periods consistent with the requirements of Condition E47. The measures must take into account the predicted noise levels and the likely frequency and duration of the out-of-hours works that sensitive land user(s) would be exposed to, including the number of noise awakening events;	
	d) Procedures to facilitate the coordination of out-of-hours Work including those approved by an EPL or undertaken by a third party, to ensure appropriate respite is provided; and	
	e) Notification arrangements for affected receivers for all approved out-of-hours Work and notification to the Planning Secretary of approved low risk out-of-hours Work.	
	This condition does not apply to Work where the requirements of Condition E36(a) or (b) are met.	
E38	Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration objectives:	Section 4.1.2 Section 4.1.3 Appendix A8
	a) Construction 'Noise affected' NML established using the Interim Construction Noise Guideline (DECC, 2009);	
	b) Vibration criteria established using the *Assessing vibration: a technical guideline* (DEC, 2006) (for human exposure);	
	c) BS 7385 Part 2-1993 *"Evaluation and measurement for vibration in buildings Part 2*" as they are "applicable to Australian conditions"; and	
	d) The vibration limits set out in the German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures (for structural damage).	
	Any construction or early works identified as exceeding the noise management levels and/or vibration criteria must be managed in accordance with the respective Noise and Vibration CEMP Sub-plan or Early Works Environmental Management Plan. *Note: The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction NML.*	

CoA No.	Condition Requirements	EWEMP Reference
E39	Noise generating work in the vicinity of potentially-affected community, religious, educational institutions, noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) resulting in noise levels above the NMLs must not be timetabled within sensitive periods, unless offers of other reasonable arrangements have been made to the affected institutions and are implemented at no cost to the affected institution.	Section 4.1.1
E40	Noise and Vibration Impact Statements (NVIS) must be prepared for any Work that may exceed the noise management levels and vibration criteria specified in Condition E38 at any residence outside the construction hours identified in Condition E34, or where receivers will be highly noise affected. The NVIS must include specific mitigation measures identified through consultation with affected sensitive land user(s) and the mitigation measures must be implemented for the duration of the Work. A copy of the NVIS must be provided to the ER prior to the commencement of the associated Work. The Planning Secretary may request a copy/ies of the NVIS.	Section 4.1.1
E41	Owners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before Work that generates vibration commences in the vicinity of those properties. If the potential exceedance is to occur more than once or extend over a period of 24 hours, owners and occupiers must be provided with a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the owner and occupier. These properties must be identified and considered in the Noise and Vibration CEMP Sub-plan required by Condition C4 and the Communication Strategy required by Condition B1.	Section 4.1.1 Section 4.1.2
E42	The Proponent must conduct vibration testing during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In addition, vibration monitoring must be undertaken during construction for relevant remaining Fleurs Radio Telescope structures, the Upper Canal (in consultation with WaterNSW) and McMaster Farm and McGarvie-Smith Farm group of remaining buildings. In the event that the vibration testing and attended monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.	Appendix A8 Appendix C of the SEMP
E43	Advice from a heritage specialist must be sought on methods and locations for installing equipment used for vibration, movement and noise monitoring at heritage-listed structures.	Appendix A8 Appendix C of the SEMP
E44	Before conducting at-property treatment at any heritage item identified in the documents listed in Condition A1, the advice of a suitably qualified and experienced built heritage specialist must be obtained and implemented to ensure such work does not have an adverse impact	No at property treatment required

CoA No.	Condition Requirements	EWEMP Reference
	on the heritage significance of the item.	
E45	All Work undertaken for the delivery of the CSSI, including that undertaken by third parties (such as utility relocations), must be coordinated to ensure respite periods are provided. The Proponent must:	Section 4.1.2 Appendix A8
	a) Reschedule any work to provide respite to impacted noise sensitive land user(s) so that the respite is achieved in accordance with Condition E47; or	
	b) Where respite outlined in Condition E47 cannot be achieved, consider the provision of alternative respite or mitigation to impacted noise sensitive land user(s); and	
	c) Provide documentary evidence to the ER in support of any decision made by the Proponent in relation to respite or mitigation.	
	The consideration of respite must also include all other CSSI, SSI and SSD projects which may cause cumulative and/or consecutive impacts at receivers affected by the delivery of the CSSI.	
E46	Mitigation measures such as temporary alternative accommodation or other agreed mitigation measures, must be offered/ made available to residents affected by out-of-hours Work (including where utility works are being undertaken for the CSSI or under a road occupancy licence) where the construction noise levels between:	Appendix A8
	a) 10:00 pm and 7:00 am, Monday to Friday;	
	b) 10:00 pm Saturday to 8:00 am Sunday; and	
	c) 6:00 pm Sunday and public holidays to 7:00 am the following day unless that day is Saturday then to 8:00 am, are predicted to exceed the NML by 25 dB(A) or are greater than 75 dBA (LAeq(15 min)), whichever is the lesser and the impact is planned to occur for more than two (2) nights over a seven (7) day rolling period.	
	The NML must be reduced by 5 dB where the noise contains annoying characteristics and may be increased by 10 dB if the property has received at-property noise treatment. The noise levels and duration requirements identified in this condition may be changed through an EPL applying to the CSSI.	

CoA No.	Condition Requirements	EWEMP Reference
E47	In order to undertake out-of-hours Work outside the hours specified under Condition E34, the Proponent must identify appropriate respite periods for the out-of-hours work in consultation with the community at each affected location on a regular basis.	Section 5.4.2 Appendix A8
	This consultation must include (but not be limited to) providing the community with:	
	a) A progressive schedule for periods no less than three (3) months, of likely out-of-hours Work;	
	b) A description of the potential Work, location and duration of the out-of-hours Work;	
	c) The noise characteristics and likely noise levels of the Work; and	
	d) Likely mitigation and management measures which aim to achieve the relevant noise management levels and vibration criteria under Condition E38(a) and (b) (including the circumstances of when respite or relocation offers will be available and details about how the affected community can access these offers).	
	The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hour Work must be provided to the ER, EPA and the Planning Secretary for information prior to Work scheduled for the subject period being undertaken. *Note: Respite periods can be any combination of days or hours where out-of-hours work would not be more than 5 dB(A) above the rating background noise level at any residence*.	
E62	The CSSI must be constructed and operated with the objective of minimising light spillage to surrounding properties. All lighting associated with the construction and operation of the CSSI must be consistent with the requirements of *Australian Standard 4282-2019 Control of the obtrusive effects of outdoor lighting,* relevant Australian Standards in the series *AS/NZ 1158 – Lighting for Roads and Public Spaces,* and the *National Airports Safeguarding Framework (NASF) Guideline E: Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports.*	Appendix A8
E75	The Proponent must identify the utilities and services (hereafter “services”) potentially affected by Work to determine requirements for diversion, protection and/or support. Alterations to services must be determined by negotiation between the Proponent and the service providers. The Proponent in consultation with service providers must ensure that disruption to services resulting from the CSSI are avoided where possible and where unavoidable, customers are advised in accordance with the Communication Strategy required under Condition B1.	Section 1.8 Section 5.5.3 Appendix A8

CoA No.	Condition Requirements	EWEMP Reference
E76	The Proponent must offer pre-construction surveys to the owners of surface and sub-surface structures and other relevant assets identified at risk from vibration, including all listed heritage items and buildings/structures of heritage significance as identified in the documents listed in Condition A1. Where the offer is accepted, the survey must be undertaken by a suitably qualified and experienced engineer and/or building surveyor prior to the commencement of vibration- generating works that could impact on the structure/asset. The results of each survey must be documented in a Pre-construction Condition Survey Report and the report must be provided to the owner of the item(s) surveyed no later than one (1) month before the commencement of all other potentially impacting works.	Section 4.1.3 Appendix A8
E81	The Proponent must have regard to the Upper Canal Pheasants Nest to Prospect Reservoir Conservation Management Plan (NSW Public Works Governments Architect's Office, 2016) and Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines (WaterNSW, 2020) when constructing the CSSI.	Appendix A8
E82	Construction and operation of the CSSI must not destroy, modify or otherwise cause direct or indirect damage to the Upper Canal System, including the Cecil Hills Tunnel, and Tunnel Shafts 3 and 4.	Section 4.1.4
E83	Any property access that is physically affected by the CSSI must be reinstated to at least an equivalent standard, in consultation with the landowner or alternative access provided in consultation with the landowner.	Appendix B1
E84	All reasonably practicable erosion and sediment controls must be installed and appropriately maintained to minimise water pollution. When implementing such controls, any relevant guidance in the *Managing Urban Stormwater, Soils and Construction Vol.1 (Landcom, 2004) and Vol. 2D Main Road Construction* (DECC, 2008) must be considered.	Section 3.3.3 Appendix A8
E85	Prior to the commencement of any Work that would result in the disturbance of potential or contaminated soils, materials, groundwater or sediments, a Detailed Site Investigation Report(s) must be prepared, or reviewed and approved, by consultants certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme. The Detailed Site Investigation Report(s) must be prepared in accordance with guidelines made or approved under section 105 of the *Contaminated Land Management Act 1997*. *Note: Where Preliminary and Detailed Site Investigations have already been undertaken for contaminated soils, materials, groundwater or sediments they do not need to be undertaken again for the purposes of this condition.*	Section 4.1.1 Not required for Early Works
	The Detailed Site Investigation Report(s) must provide details on:	

CoA No.	Condition Requirements	EWEMP Reference
E86	a) Primary sources of contamination, for example potentially contaminating activities, infrastructure (such as underground storage tanks, fuel line, sumps or sewer lines) or site practices	Not required for Early Works
	b) Contaminant dispersal in air, hazardous ground gases, surface water, groundwater, soil vapour, separate phase contaminants, sediments, infrastructure (e.g. concrete), biota, soil and dust	
	c) Contaminant characterisation and behaviour (volatility, leachability, speciation, degradation products and physical and chemical conditions on-site which may affect how contaminants behave);	
	d) Potential effects of contaminants on human health, including the health of occupants of built structures (for example arising from risks to service lines from hydrocarbons in groundwater, or risks to concrete from acid sulphate soils) and the environment;	
	e) Potential and actual contaminant migration routes including potential preferential pathways;	
	f) The adequacy and completeness of all information available for use in the assessment of risk and for making decisions on management requirements, including an assessment of uncertainty	
	g) The review and update of the conceptual site model from the preliminary and detailed site investigations;	
	h) Nature and extent of any existing remediation (such as impervious surface cappings); and/or	
	i) Whether the land is suitable (for the intended final land use) or can be made suitable through remediation.	
E89	An Unexpected Contaminated Land and Asbestos Finds Procedure must be prepared before the commencement of Work and must be followed should unexpected contaminated land or asbestos (or suspected contaminated land or asbestos) be excavated or otherwise discovered during Work. The procedure must include details of who will be responsible for implementing the unexpected finds procedure and the roles and responsibilities of all parties involved.	Appendix B3
E90	The Unexpected Contaminated Land and Asbestos Finds Procedure must be implemented throughout the duration of Work.	Appendix B3
E93	The Planning Secretary's approval is required before any heavy vehicles used for spoil and fill haulage or concrete deliveries (for the purpose of the CSSI) are driven on local roads within one (1) kilometre of early works, construction and construction ancillary facilities and	Section 2.4

CoA No.	Condition Requirements	EWEMP Reference
	that are not identified for use by heavy vehicles in the documents listed in Condition A1. The local roads must be identified in the Early Works Environment Management Plan and Traffic Management CEMP Sub-plan.	Section 7.5
E94	All requests to the Planning Secretary for approval to use local roads in accordance with Condition E93, must include a traffic and pedestrian impact assessment and be prepared in consultation with the relevant local council(s). The assessment must be undertaken by an appropriately qualified and experienced person and must include a swept path analysis if required by the Department. The traffic and pedestrian impact assessment must:	Section 2.4 Section 7.5 Appendix A8
	a) Demonstrate that the use of local roads will not compromise the safety of the public and have no more than 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 childcare facilities during peak times for operation.	
	The outcomes and recommendations of the traffic and pedestrian impact assessment must be incorporated into the Site Establishment Management Plan or Traffic Management CEMP Sub-plan as relevant.	Appendix A8 Appendix B1
E95	Before any local road is used by a heavy vehicle for the purposes of the CSSI, a Road Dilapidation Report must be prepared for the road unless otherwise agreed by the relevant road authority. A copy of the Road Dilapidation Report must be provided to the relevant road authority within three (3) weeks of completion of the survey and at least two (2) weeks before the road is used by heavy vehicles associated with the construction of the CSSI.	Appendix A8
	If damage to roads occurs as a result of the construction of the CSSI, the Proponent must rectify the damage to restore the road to at least the condition it was in pre-construction in consultation with the relevant road authority. Rectification works must be undertaken within three (3) months of the subject road no longer being used for the construction of the CSSI unless an alternative timeframe is agreed to by the relevant road authority.	
E96	During construction, all reasonably practicable measures must be implemented to maintain pedestrian and vehicular access to, and parking in the vicinity of, residences, businesses and affected properties. Disruptions are to be avoided, and where avoidance is not possible,	Appendix A8

CoA No.	Condition Requirements	EWEMP Reference
	minimised. Where disruption cannot be minimised, alternative pedestrian and vehicular access, and parking arrangements must be developed in consultation with affected residents, businesses and affected property owners and implemented before the disruption. Adequate signage and directions to businesses must be provided before, and for the duration of, any disruption.	
E99	Safe pedestrian and cyclist access must be maintained around work sites during Work. In circumstances where pedestrian and cyclist access is restricted or removed due to Work, an alternate route which complies with the relevant standards must be provided and signposted.	Appendix A8
E100	Waste generated during Work and operation must be dealt with in accordance with the following priorities:	Appendix A8 Appendix A9
	a) Waste generation must be avoided and where avoidance is not reasonably practicable, waste generation must be reduced;	
	b) Where avoiding or reducing waste is not possible, waste must be re-used, recycled, or recovered; and	
	c) Where re-using, recycling or recovering waste is not possible, waste must be treated or disposed of.	
E101	The importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste must comply with the conditions of an EPL for the CSSI, or be done in accordance with a Resource Recovery Exemption or Order issued under the Protection of the Environment Operations (Waste) Regulation 2014, as the case may be.	Appendix A8 Appendix A9
E102	Waste must only be exported to a site licensed by the EPA for the storage, treatment, processing, reprocessing or disposal of the subject waste, or in accordance with a Resource Recovery Exemption or Order issued under the Protection of the Environment Operations (Waste) Regulation 2014, or to any other place that can lawfully accept such waste, except in accordance with Condition E15.	Appendix A8 Appendix A9
E103	All waste generated by Works must be classified in accordance with the EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes.	Section 7.5
E104	The Proponent must develop and implement a waste tracking register prior to waste generated by Work that details:	Section 7.5 Appendix A8
	a) The quantity of each type of waste generated, its classification and source location (recorded using latitude and longitude coordinates);	

CoA No.	Condition Requirements	EWEMP Reference
	b) The destination location(s) for all wastes generated during Work;	Appendix A9
	c) The quantities of any waste types imported onto the CSSI site, including their classification and emplacement location (recorded using latitude and longitude coordinates);	
	d) The quantities and types of wastes that are subject to a Resource Recovery Order and/or Exemption; and	
	e) Disposal records demonstrating that receiving facilities have lawfully accepted the waste type	
	The waste tracking register must be made available to the Planning Secretary and EPA on request, within the timeframe stated in the request.	

REMMs

Secondary REMMs related, but not specific to the development of this Plan are listed in the table below. A cross reference is also included to indicate where the REMM is addressed in this Plan or other Project management documents.

ID	Measure/requirement	Timing	EWEMP Reference
G01	A Community Communication Strategy will be prepared for the project to facilitate communication with the local community including relevant Government agencies, Councils, adjoining affected landowners and businesses, and other relevant stakeholders that may be affected by the project. The strategy will:	Prior to Early Works	Section 1.7 Section 5.5.3
	• Identify people or organisations to be consulted during the delivery of the project		
	• Set out procedures and mechanisms for the regular distribution of information about the project		
	• Outline mechanisms to keep relevant stakeholders updated on site construction activities, schedules and milestones		
	• Outline avenues for the community to provide feedback (including a 24-hour, toll free project information and complaints line) or to register complaints and through which TfNSW will respond to community feedback		
	• Outline a process to resolve complaints and issues raised.		
	The Community Communication Strategy will include a Construction Fatigue Protocol to minimise impacts associated with construction fatigue. The Protocol will include consideration of noise attenuation and restriction of out-of-hours work or use of noise intensive equipment where reasonable and feasible.		
B19	Emergency response protocols and procedures will be included in the Project CEMP and implemented in the event of a contaminant spill or leak.	During Early Works	Section 6 Appendix A5

ID	Measure/requirement	Timing	EWEMP Reference
B20	Spill kits will be located to allow for timely response to uncontained spills. Site inductions will include a briefing on the use of spill kits.	During Early Works	Section 6.1 Section 5.3.2
TT03	Movements of haulage vehicles will be planned to minimise movements on the road network during the AM and PM peak periods where practicable.	Prior and during Early Works	Appendix A8
TT07	Existing property access would be maintained at all times.	Detailed design Prior and during Early Works	Appendix A8
	Any changes to access arrangements or alternative access that are necessary during construction will be done with consultation with the landowner. Any changes to access will provide the same equivalent pre-existing level of access unless agreed to by the land owner. Property access that is physically affected by the project will be reinstated to at least an equivalent standard, in consultation with the landowner.		
LVIA05	Project elements such as ancillary facility hoardings will be designed and maintained to minimise impacts on landscape character and visual amenity. This will include selecting colours and materials that are visually recessive and blend into the surrounding landscape where practicable, and the prompt removal of graffiti	Detailed design, prior to Early Works and during Early Works	Appendix B1
LVIA07	Temporary and permanent lighting will be designed and implemented with consideration of:	Detailed design, prior to Early Works and during Early Works	Appendix B1 Appendix A8
	• The need to orientate lighting to minimise light spill and glare impacts on nearby receivers		
	• The need to minimise vandalism and maintenance requirements		
	• Requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) for operational lighting		
	• Opportunities to implement sustainability initiatives in design such as energy efficient or solar lighting		

ID	Measure/requirement	Timing	EWEMP Reference
SLP01	Areas of land leased for the purposes of construction will be reinstated at the end of the lease to at least equivalent standard in consultation with the landowner	During Early Works	Appendix B1
SLP02	All partial and full acquisitions and associated property adjustments will be carried out in accordance with the requirements of the Land Acquisition (Just Terms Compensation) Act 1991 and the Land acquisition reform 2016 in consultation with landowners.	Prior to Early Works	Appendix B1
SLP04	Property adjustments, including replacement of farm infrastructure (such as fencing) and relocation of property access, prior to work that impact the property will be carried out in consultation with property owners/ business managers.	Prior and during Early Works	Appendix B1
SLP06	Utility owners and/or providers of services will be identified and consulted with before works start, to determine the requirements for access to, protection of, or relocation of services. Disruption to existing services will be minimised where feasible and local residents and businesses will be notified before any planned disruption.	Prior to Early Works	Appendix A8 Appendix B1
NAH03	Impacts on Non-Aboriginal heritage items will be avoided or minimised where reasonable and feasible. Where impacts are unavoidable, works will be carried out in accordance with the measures for individual Non-Aboriginal heritage items outlined in measures NAH04 to NAH11.	Detailed design, prior to Early Works and during Early Works	Appendix A8 Appendix C of SEMP
NAH06	Guidelines and associated safe working distances to be adhered to for heritage structures as outlined in Appendix K of the EIS	When carrying out vibration intensive tasks	Appendix A8 Appendix C of SEMP
NAH09	A suitably qualified archaeologist will be present during the excavation of the area occupied by the Cecil Park Archaeological site to confirm that the significance of artefacts and remains are in line with the findings of the test excavations already completed. If remains with the potential to be considered 'relics' (as defined in the Heritage Act 1977) are found, then works will stop and the unexpected finds procedure (RMS, 2015) will be followed.	During earthworks within the Cecil Park Archaeological site	Appendix A8 Appendix B1

ID	Measure/requirement	Timing	EWEMP Reference
NV03	Detailed noise assessments will be carried out for ancillary facilities with the potential to involve high noise generating activities (including batching plant operations). The assessments 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 criteria.	Prior to Early Works	Section 4.1.2
	The assessments will also consider the requirement for appropriate noise mitigation within ancillary facilities and adjacent to construction works, depending on the predicted noise levels. Any mitigation measures required will be implemented before the start of activities that generate noise and vibration impacts.		Appendix A8
NV06	Activities that generate vibration will be managed to avoid impacts on structures and sensitive receivers. This includes implementing appropriate safe working distances where practicable.	Prior and during Early Works	Section 4.1.2 Appendix A8 Appendix C of SEMP
NV07	The use of alternatives to vibration generating equipment will be considered where vibration impacts are predicted.	During Early Works	Appendix A8
NV08	Where works are within the minimum working distances and considered likely to exceed the cosmetic damage objectives (as shown in Figure 7-3 of Appendix G of the amendment report), construction works will not proceed unless:	During vibration activities	Appendix A8
	• A different construction method with lower source vibration levels is used, where feasible		
	• Attended vibration measurements are carried out at the start of the works to determine the risk of exceeding the vibration objectives.		
NV10	Surveys will be carried out to confirm the existing condition of the WaterNSW Upper Canal System and Jemena high pressure gas pipelines to determine appropriate vibration criteria. This will also include consideration of distances from the vibration intensive activity (piling, rock-breaking and vibratory rolling), as well as ground	Prior to carrying out vibration intensive works	Appendix A8

ID	Measure/requirement	Timing	EWEMP Reference
	conditions. A vibration criterion of a peak particle velocity (PPV) will be determined in consultation with the relevant utility/service providers, including WaterNSW. In-situ monitoring will be carried out to confirm the vibration levels and assess the impact of vibration. Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, additional mitigation measures will be identified and implemented to appropriately manage impacts.		
NV11	The following structures have the potential to be within the safe working distances for sensitive structures (Group 3 from DIN 4150): • Item 4: Upper Canal System A detailed survey will be completed to determine the potential for vibration impacts and to define appropriate criteria for each heritage item. Vibration monitoring will be carried out when vibration intensive tasks are occurring within the minimum working distances to heritage structures. Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, additional mitigation measures will be identified and implemented to appropriately manage impacts.	Prior to carrying out vibration intensive tasks within the minimum working distances	Appendix A8
NV12	Construction vehicle movements (both on and offsite) will be managed to minimise noise impacts. Where feasible, this will include (but not be limited to):	During Early Works	Appendix A8
	• Establishment and use of internal haul routes, or existing major roads where this is not feasible		
	• Restriction of heavy vehicle movements to standard construction hours		
	• Locating traffic marshalling areas away from residences to minimise noise impacts from idling vehicles		
	• Instructing workers on the operation of heavy vehicles entering and exiting the site to minimise noise.		
NV13	The likelihood of cumulative construction noise impacts will be considered during detailed design when detailed construction schedules of other projects are available. Construction works will be scheduled with the aim of	Prior and during Early Works	Appendix A8

ID	Measure/requirement	Timing	EWEMP Reference
	minimising concurrent works near sensitive receivers where possible in consultation with managers of other nearby projects that are likely to result in a cumulative impact. This will include the coordination of respite between the various construction projects where receivers are likely to experience concurrent construction impacts where feasible. Coordination between project teams would be carried out throughout construction.		
SWH01	A construction soil and water management plan (CSWMP) will be prepared for the project. The plan will outline measures to manage soil and water impacts associated with the construction works, including contaminated land. The CSWMP will provide:	Prior to Early Works	Section 3.3.3
	• Measures to minimise/manage erosion and sediment transport both within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans (ESCP) for all progressive stages of construction		
	• Measures to manage waste including the classification and handling of spoil		Appendix A8
	• Procedures to manage unexpected contaminated finds including asbestos which would be outlined in the contaminated land management plan and asbestos management plan to be prepared for the project		Appendix A8 Appendix B3
	• Measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation		Section 3.3.3 Section 3.3.5 Appendix A8
	• Measures to manage groundwater de-watering and impacts including mitigation required		Section 3.3.4 Appendix A8
	• Processes for de-watering of water that has accumulated on site and from sediment basins, including relevant discharge criteria		Section 3.3.4
	• Measures to manage potential tannin leachate		Section 3.3.6

ID	Measure/requirement	Timing	EWEMP Reference
			Appendix A8
	• Measures to manage accidental spills including the requirement to maintain materials such as spill kits		Appendix A8
	• Measures to manage potential saline soils		Appendix A8
	• Details of surface water and groundwater quality monitoring to be carried out before, throughout, and following construction		Appendix A8
	• Controls for sensitive receiving environments including SEPP Coastal Wetlands which may include but not be limited to:		N/A
	◦ Designation of 'no go' zones for construction plant and equipment		Appendix B1
	◦ Creation of catch/diversion drains and sediment fences at the downstream boundary of construction activities where practicable to ensure containment of sediment-laden runoff and diversion toward sediment sump treatment areas (not sediment basins) to prevent flow of runoff to the SEPP Coastal Wetland.		
	• Erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (NSW Department of Environment, Climate Change and Water 2008), commonly referred to as the "Blue Book", as well as relevant TfNSW Guidelines.		Section 3.3.3
SWH04	Stockpiles will be managed to minimise the potential for mobilisation and transport of dust and sediment in runoff in accordance with TfNSW Stockpile Sites Management Guideline (Roads and Maritime, 2015). This will include:	During Early Works	Section 3.3.5 Appendix A8
	• Minimising the number of stockpiles, area used for stockpiles, and time that they are left exposed		

ID	Measure/requirement	Timing	EWEMP Reference
	• Locating stockpiles away from drainage lines, waterways and areas where they may be susceptible to wind erosion		
	• Stabilising stockpiles, establishing appropriate sediment controls and suppressing dust as required.		
AQ02	Dust generation will be minimised during construction where possible. Where practicable, specific measures will include (but not be limited to):	During Early Works	Section 3.3.3 Section 3.3.4
	• Regularly watering exposed and disturbed areas including stockpiles, especially during inclement weather conditions		Section 3.3.5 Appendix A8
	• Adjusting the intensity of activities based on measured and observed dust levels, weather forecasts and the proximity of and direction of the works in relation to the nearest surrounding receivers		Appendix A8 Appendix B1
	• Ensuring loads are covered, and any loose materials/debris are removed before vehicles exit the site		Appendix A8 Appendix B1
	• Minimising the number of stockpiles and amount of material stockpiled where practicable		Section 3.3.5 Appendix A8
	• Positioning stockpiling areas as far as possible from surrounding receivers, including potentially ecologically sensitive receivers		Section 3.3.5 Appendix A8
	• Limiting stockpiling activities during conditions where winds are blowing strongly in the direction(s) from the stockpiling location to nearby receivers		Section 3.3.5
	• Consultation with nearby developers to co-ordinate and plan activities where practicable to minimise the potential for cumulative dust-related impacts		Appendix B1

ID	Measure/requirement	Timing	EWEMP Reference
	• The planning and undertaking of demolition activities, including the removal of hazardous building materials in a manner that minimises dust generation. This will also include the removal of hazardous building materials before the start of general demolition works.		Appendix B1
HS02	Measures to mitigate and manage bushfire risk will be developed and included as part of site specific hazard and risk management measures within the WHSMP. Measures will include the maintenance of ancillary facilities in a tidy and orderly manner and the storage and management of dangerous goods and hazardous materials in a safe location.	Prior to Early Works	Appendix B1 Appendix A8
HS03	An incident response management plan will be developed and implemented. The response to incidents within the road will be managed in accordance with the memorandum of understanding between TfNSW and the NSW Police Service, NSW Rural Fire Service, NSW Fire Brigade and other emergency services.	Prior to Early Works	Section 6 Appendix A5 Appendix A8
HS04	Storage, handling and use of dangerous goods and hazardous substances would be in accordance with the Work Health and Safety Act 2011 and the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005).	During Early Works	Appendix A8
HS05	Secure, bunded areas will be provided around storage areas for oils, fuels and other hazardous liquids.	During Early Works	Appendix A8
HS06	Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite before their arrival.	During Early Works	Appendix A8
HS07	All hazardous substances will be transported in accordance with relevant legislation and codes, including the *Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998* and the '*Australian Code for the Transport of Dangerous Goods by Road and Rail'* (National Transport Commission, 2008).	During Early Works	Appendix A8
W03	Wherever feasible and reasonable, construction material will be sourced from within the Sydney region.	During Early Works	Appendix A8

ID	Measure/requirement	Timing	EWEMP Reference
W04	Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage.	During Early Works	Appendix A8
GG03	Vegetation removal will be minimised where practicable.	Detailed design and during Early Works	EWFFMP Appendix A8
GG04	The procurement of goods and services will consider goods and services that:	Detailed design and during Early Works	Appendix A8
	• Are from local suppliers		
	• Make use of recycled materials or materials with a low embodied energy content		
	• Are energy efficient or have low embodied energy		
	• Minimise the generation of waste.		
GG05	Construction plant and equipment will be well maintained to maximise fuel efficiency.	Detailed design and during Early Works	Appendix A8
CU01	Regular consultation will be carried out with nearby/adjoining projects and key stakeholders during the detailed design and construction phase to review potential cumulative impacts and integrate designs and construction methodologies (including traffic impacts and noise management), as far as practicable to minimise cumulative impacts.	Detailed design and during Early Works	Section 1.7

ID	Measure/requirement	Timing	EWEMP Reference
CU02	Communication strategies across relevant TfNSW projects will be managed to be consistent in their messaging to the community to avoid confusion.	Detailed design and during Early Works	Section 5.5.3

Health, Safety, Environment & Quality Policy

The safety, wellbeing and satisfaction of our teams, customers, the public and the environments and communities in which we operate are paramount to our success. We bring energy to life reliably, affordably and sustainably through continued learning and creating safe, environmentally aware, collaborative and customer focussed work environments.

We do this by:

- Doing it safely every time
- Speaking up, listening, sharing and learning
- Focusing on managing critical risks
- Keeping it simple to enable safe, high quality outcomes

Wherever we are, we will:

People	▪ Provide safe, healthy and supportive work environments for our internal and contractor teams. ▪ Empower our team members to stop work for a health, safety, environmental or quality (HSEQ) concern. ▪ Consult and communicate with our teams, customers, and other stakeholders on HSEQ issues and opportunities. ▪ Ensure our teams are trained, competent and understand how to implement customer and compliance obligations effectively. ▪ Lead with a focus on the management of health and wellbeing, personal and process safety. ▪ Proactively assist injured and ill team members to return to work.
Assets	▪ Proactively minimise asset lifecycle risks during asset planning, design, commissioning, maintenance and decommissioning.
Equipment	▪ Provide the appropriate plant, tools and equipment to deliver safe, high quality outcomes.
Stakeholders	▪ Exceed customer expectations by developing tailored work programs based on specific customer needs. ▪ Comply with statutory, industry and customer standards and obligations.
Improvement	▪ Encourage frontline innovation to eliminate/ mitigate risks to as low as is reasonably practicable. ▪ Establish objectives and targets to continuously improve our HSEQ performance. ▪ Respond to incidents and conduct thorough, timely and meaningful investigations, implement corrective actions and share lessons learned internally and with industry. ▪ Pursue best practice and continued improvement through regular review and evaluation of the effectiveness of our HSEQ management system.

Wherever we are, our internal and contractor teams will:

- Be trained, competent, authorised and fit to undertake their activities safely and effectively.
- Report health, safety, environment and quality hazards and unsafe work practices.
- Comply with health, safety, environment and quality obligations.

Jodie Blake

Executive General Manager, PSL & CAM
Jemena Limited
May 2021

Frank Tudor

Managing Director
Jemena Limited
May 2021

Appendix A3

Document Register Template

M12 Motorway Early Works – Protection of High Pressure Gas Mains

August 2022

Transport for New South Wales

Environmental Management Document	Document No.	Approval Requirement	Agency Correspondence
SGSPAA Environmental Policy	[Insert document number]	Insert relevant Contractor personnel with approval authority, if endorsed by ER, if submitted to Secretary for approval, etc]	[Insert requirement for any external consultation or provisions of notice, eg government authorities, local council]
Zinfra Environmental Management System			
M12 Early Works Environmental Management Plan			
M12 Early Works Site Establishment Management Plan			
M12 Early Works Flora and Fauna Management Plan			
Overarching Communication Strategy			
Unexpected Contaminated Finds Procedure			
Unexpected Heritage Finds Procedure			
XXXX			

Construction boundary (ARSR Dec, 2020)
Early Works boundary
The refined project ancillary facilities (May, 2022)
Property boundary
Waterways
Coastal Wetland drainage lines

Western Sydney Parklands
Minor ancillary facility
Receivers
Residential
Distance to nearest receiver
Areas of environmental interest
Aboriginal heritage sensitve area

Assessed Non-Aboriginal heritage significance
State
Local
Aboriginal heritage site complex (potential area of sensitivity)
Aborigional sites impacted from the main construction works
Existing motorway

4 - Upper Canal System (Pheasants Nest Weir to Prospect Reservoir)
4a - Predicted Shaft 3 location
8 - Cecil Park School, Post Office and Church site
6 - PGH Bricks and Pavers
Aboriginal heritage sensitive area refers to sites where Aboriginal objects are likely to occur in subsurface deposits. An Aboriginal site complex refers to a grouping of sites that occur in close proximity and appear to be associated with specific landform features.

Imagery: Aerometrex August 2020

Figure A4-1: Sensitive Area Plan for the protection of High pressure gas mains

Appendix A5

M12 Environmental Incident Classification and Reporting

M12 Motorway Early Works – Protection of High Pressure Gas Mains

August 2022

Transport for New South Wales

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Document control

File Name	M12 Environmental Incident Classification and Reporting
Title	M12 Environmental Incident Classification and Reporting

Approval and authorisation

Plan reviewed by:	Plan reviewed by:	Plan reviewed by:
Sheila Anderson	Thomas Tu	Kimberly Nguyen
TfNSW Senior Environment and Sustainability Manager	TfNSW Utilities Manager	Zinfra Project Manager
Date 05/08/2022	Date 5/8/2022	Date 08/08/22
Signed Sheila Anderson	Signed	Signed

Revision history

Revision	Date	Description
A	06/04/2021	First draft for TfNSW review
B	19/04/2021	Second draft for TfNSW review
C	10/08/2021	Update in accordance with new TfNSW Environmental Incident Classification and Reporting Procedure
D	16/09/2021	Update following TfNSW review
E	20/10/2021	Update following TfNSW and ER review
F	11/05/2022	Update to increase AF18 footprint and minor administrative amendments
G	26/05/2022	Update to increase Early Works footprint
H	05/08/2022	Update to include two minor ancillary facilities

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Definitions

All terminology in this Procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning. Acronyms are as per the EWEMP.

Term	Definition
Environmental event	A report-only event, non-compliance, regulatory action or environmental incident
Environmental incident (*as per the TfNSW Environmental Incident Procedure*)	An environmental incident is an event or set of circumstances, as a consequence of which pollution (air, water, noise, or land) or an adverse environmental impact has occurred, is occurring, or is likely to occur. Adverse environmental impact includes contamination, harm to flora and fauna (either individual species or communities), damage to heritage items and adverse community impacts. An unexpected find that is not managed in accordance with relevant procedures / guidelines is also considered an environmental incident
Investigation	The process by which the cause(s) of an environmental incident is examined and identified.
Non-compliance (*as per the TfNSW Environmental Incident Procedure*)	A failure to comply with any condition of approval, environmental assessment safeguard / mitigation measure, licence condition, permit or any other statutory approval relevant to the activity and/or area where the activity occurs
Notifiable event	Any environmental incident, report-only event or non-compliance that triggers a specific statutory requirement to notify a regulatory authority.
Pollution	Pollution (including air pollution, water pollution, noise pollution and land pollution) as defined in the dictionary to the POEO Act
Pollution incident	Has the same meaning as defined in the dictionary to the POEO Act. NB: a pollution incident as defined in the POEO Act does not include an incident or a set of circumstances involving only the emission of noise.
Regulatory action	any formal regulatory response from an environmental regulator including but not limited to penalty notices, clean-up notices, prevention notices, official cautions, show cause notices and formal warnings.
Report-only event	An environmental incident or unexpected find resulting from circumstances outside the scope of controls and of an activity.
Significant incident	An environmental incident that is likely to receive a classification of C3, C2 or C1, OR the history of the project, past performance and/or previous regulatory interest, indicate the project is likely to receive a penalty notice or be subject to prosecution, and therefore requires escalation to the Secretary and other TfNSW senior management.
Unexpected find	An unexpected discovery such as a heritage item, threatened species, contamination, asbestos or hazardous substance.

1 Introduction

The M12 Environmental Incident Classification and Reporting Procedure (the Procedure) is based upon the TfNSW Environmental Incident Classification and Reporting Procedure and amended to ensure applicability to the M12 Motorway Project (the Project) and associated State and Federal approvals.

1.1 Purpose

The Procedure aims to ensure that all personnel employed to work on the Project understand how to classify, respond to and report environmental incidents that occur as a result of Project activities.

The purpose of this Procedure is to set out the process to be followed if, during an activity being carried out, there is:

- A report-only event
- A non-compliance
- Regulatory action received
- An environmental incident
- An incident as defined under the State Infrastructure Approval
- An incident affecting protected matter(s) or non-compliance with the Federal Approval.

The Procedure sets out the steps for the:

- Identification
- Classification
- Reporting.

1.2 Scope

The Procedure is applicable to all Project activities where report-only events, non-compliances, regulatory action and environmental incidents may occur. The requirements of the Procedure must be communicated to all Project personnel (e.g. during inductions) who undertake those activities.

This includes (but is not limited to):

- Activities undertaken by contractors on behalf of TfNSW
- Temporary activities, such as preliminary investigations (e.g. geotechnical and environmental surveys)
- Construction and maintenance of TfNSW assets
- Activities at TfNSW properties and facilities.

Guidance on management responses and corrective actions required following environmental incidents and non-compliances, are detailed in the Early Works Environmental Management Plan (EWEMP) and will be addressed by those with responsibility for the activity that caused the incident or non-compliance.

It is noted that the TfNSW E&S Branch is available to provide advice on appropriate responses and corrective actions in relation to individual incidents or non-compliances.

2 Emergency Preparedness and Response

Emergency planning and awareness training will be undertaken for the Early Works based upon this Procedure. All site personnel will be inducted on the incident management process detailed herein. The following equipment will be available to site personnel to utilise in the event of an incident:

- Protective gloves for certain types of corrosive chemicals
- Other personal protective equipment required for the handling of hazardous chemicals and radioactive substances
- Cleaning equipment (i.e. brooms, bags, bins, etc.)
- Spill kits
- Stormwater drain guards
- Alarms for when there are issues with processes
- Firefighting equipment
- Up-to-date safety data sheets for any chemicals or fuels used or stored at the premises
- Hard hats for designated 'emergency controllers'
- Eye-wash stations.

The locations of the equipment will be detailed in the site induction. Relevant personnel will be appropriately trained on the use of all equipment. The procedure to follow in the event of an incident is detailed in Figure 2-1.

INCIDENT RESPONSE

STOP the work immediately and **CHECK** for danger.

DELEGATE Senior member of the team present when an incident occurs is to take charge and be the Emergency Controller and delegate the main assisting roles of the emergency response.

CONTACT Site Emergency Response Team and await further assistance if this is required.
CONTACT emergency services (000) If an incident presents an immediate threat to human health or property

WEAR appropriate PPE.

CONTROL the source of the incident e.g. stop dust emitting activity, right an upturned drum
ELIMINATE sources of danger

CONTAIN the incident e.g. use earth or sand bunds to control spills.
CHECK the incident does not have the potential to cause further harm (e.g. check spill has not reached any nearby watercourse / sensitive areas)

INTERNAL NOTIFICATION of the incident to the TfNSW Environmental Officer
External notification and reporting requirements detailed in the "Reporting Process Flowchart"

INVESTIGATE – undertake / cooperate with incident investigation

REPORT – prepare incident report

TRAIN AND TEST – brief all relevant staff on investigation findings and lessons learnt. Update procedure with finding and retest

Figure 2-1 Incident Response Process

2.1 Emergency and key contacts

The TfNSW Senior Environment Manager is the first point of contact for enquiries relating to environmental incidents. Current contacts for relevant M12 personnel are provided in Table 2-1.

Table 2-1 Emergency and key contacts

Position / Organisation	Name	Phone
EPA pollution hotline	n/a	131 555
Fire and Rescue NSW	n/a	000 (for pollution incidents that present an immediate threat to human health or property) 1300 729 579 (for pollution incidents that do not present an immediate threat to human health or property)
NSW Health – South Western Sydney Local Health District	n/a	(02) 8738 5755
SafeWork NSW	n/a	131 050
Penrith City Council	Ari Fernando	02 4732 7569
Liverpool City Council	Charles Waife	0417 175 763
24 hour community information line	n/a	1800 517 155
Project Manager – East	Kurt Bridde	0428 685 863
Project Manager – Central	Easwaran Veeragathipillai	0400 561 753
Project Manager – West	Kandiah Mahendran	0438 190 969
TfNSW Project Director	Deanne Forrest	0409 838 479
TfNSW Utilities Manager	Ibrahim El-jamal	0429 506 118
TfNSW Senior Environment & Sustainability Manager	Sheila Anderson	0466 526 045
TfNSW Senior Environment & Sustainability Officer	Foster Walker	0429 782 717
TfNSW M12 Community and Stakeholder Engagement Representative	Catherine Field	0439177755
TfNSW M12 WHS Partner	David Langdon	0477 748 401
TfNSW Environment & Sustainability Officer	Shannon Schofield	0419 824 104
TfNSW Sustainability Advisor	Kalyani Wakhare	0426 177 747
Jemena Senior Environmental / HSE Advisor	Michael Moroney	0403 564 070

Position / Organisation	Name	Phone
Zinfra Project Manager	Kimberly Nguyen	0432 102 483
Department of Planning and Environment	Lee McCourt (post approvals) Alex McGuirk (compliance)	02 9274 6283
Sydney Metro – Western Sydney Airport	Mark Rivet	0448 603 183
Western Sydney Parklands - access	Adam Hughes	0427 716 736
Western Sydney Parklands – Environment Manager	David Kirkland	0408 536 268
University of Sydney	David Schofield	9563 6804
Western Sydney International Airport	Richard Longman	0439 994 506

2.2 Accountabilities

Table 2-2: Key accountabilities for implementing this Procedure

Requirement	Detail
TfNSW Environment Director	• Oversee compliance with the procedure and make the final determination on the classification of all environmental incidents, report-only events and non-compliances
TfNSW Environment reporting team	• Recording of all environmental incidents, report-only events, non-compliances and regulatory action, confirm / amend the classification of environmental incidents, report-only events and non-compliances in accordance with section 3.1 and monitor compliance with the Procedure
TfNSW Executive Director Environment and Sustainability	• Make determinations on whether an environmental incident will be considered a Significant Incident (see section 3.1.2). Assume the role of Information Distributor when a Significant Incident has occurred (see Appendix A).
Observer of environmental incident, report-only event, non-compliance or regulatory action	• Immediately report in accordance with this Procedure (Figure 2-1)
Person/s responsible for environmental incident, report-only event, non-compliance or regulatory action	• Report and respond in accordance with this Procedure (Figure 3-1)
Project Manager	• Provide appropriate resources to respond to an environmental incident, report-only event, non-compliance or regulatory action in accordance with this Procedure
Zinfra Environmental Site Representative (or delegate)	• Notify TfNSW and relevant authorities in the event of an environmental incident and manage close-out of these • Stop activities where there is an actual or immediate risk of harm to the environment, or to prevent environmental non-conformances, and advise the Zinfra's Project Manager, Construction Manager and Superintendent • Report and respond in accordance with this Procedure
Early Works Vegetation Clearing Contractor	• Notify TfNSW and relevant authorities in the event of an environmental incident and manage close-out of these • Stop activities where there is an actual or immediate risk of harm to the environment, or to prevent environmental non-conformances • Report and respond in accordance with this Procedure

3 Requirements

3.1 Environmental incidents, report-only events, non-compliances and regulatory action

This Procedure is applicable to a range of environmental incidents, report-only events, non-compliances and regulatory action that may occur during Project activities. Each of these events and their reporting requirements are described in the following sections.

Personnel using this Procedure should consider the definitions of each of these events when reporting. Definitions are provided in the definitions table at the beginning of this Procedure.

Note that a set of circumstances may be both a non-compliance and an environmental incident. An environmental incident could also result in regulatory action.

3.1.1 Environmental incidents

Environmental incident classifications are described in Table 3-1. The classification system is aligned to the consequence levels (C6 – C1) from the TfNSW Enterprise Risk Management Standard and considers the key risk areas of:

- Environment
- Reputation and Integrity
- Regulations and Compliance.

The appropriate consequence level for each of the three key risk areas will be recorded for each incident, but only the highest recorded consequence level will be used as the incident classification for reporting purposes.

Note that not all criteria described for each consequence level in Table 3-1 need to be met in order to assign an incident classification – the most appropriate criteria should be considered when determining the consequence level for each key risk area for each incident.

Table 3-1: TfNSW Environmental Incident Classification

	Incident Category					
Key risk area	**C6 Insignificant**	**C5 Minor**	**C4 Moderate**	**C3 Major**	**C2 Severe**	**C1 Catastrophic**
Environment	No appreciable changes to environment.	Change from existing conditions that can be rectified immediately (< 1 day) with available resources.	Short-term (< 1 year) and/or well-contained environmental impact. Minor remedial actions probably required.	Short to medium term (between 1 and <5 years) environmental impact. Considerable remedial actions probably required.	Medium-term (>5 years) environmental impact. Extensive remedial actions probably required.	Long-term (>10 years) large-scale environmental impact. Extensive and ongoing remedial actions probably required.
Reputation and integrity	Single negative article in local media. Limited social media commentary. Goodwill, confidence and trust retained. Confined to the Branch. Local council may want to discuss.	Series of negative articles in local media (District / electorate based adverse media). Some social media commentary. Confidence remains - minor loss of goodwill. Confined to Branch but requiring notification to Division. Council requires written explanation. Recoverable with little effort or cost. Some continuing scrutiny/attention.	Extended local media coverage with some broader Regional media coverage. Extended negative social media coverage. Confidence and trust of stakeholders dented (recoverable at modest cost within existing budget and resources). Division formal response needed to State Government/Regulator .	State media coverage, short term negative national media coverage. Widespread social media coverage Confidence/trust impaired. Project/activity credibility under question. TfNSW and/or Ministers Department requires update.	Sustained negative State media coverage. Regular 'talk-back' programs questioning credibility and capability. Confidence and trust are severely damaged. Widespread negative social media coverage. Regular updates demanded by Minister. Stakeholders withdraw their support recoverable at considerable cost, time and staff effort.	Sustained, high profile media attention at National level. Material change in the public perception of the Agency. Extensive negative social media coverage Confidence and trust non-existing. Government forced to reverse decision. Stakeholders are actively campaigning against the organisation.

Regulations and compliance	Low-level/Technical non-compliance with legal and/or regulatory requirement or duty by individuals or TfNSW- not reportable. Minor non-compliance to a low impact contract clause – little or no interest by either party to pursue or rectify.	Non-compliance with whole or significant aspects of Government policy not reportable but requiring internal activity to put in place. Formal investigation and/or formal notification to regulator. Minor breach of contract by either party rectified through local management discussion.	Non-compliance with key Government policy - reportable and/or explanation required – need to put in place as soon as possible. Non-compliance – key obligation. Formal notification to regulator. Agency on notice. Breach of contract by either party rectified at Branch level management discussion. Small fine and no disruption to services.	Technical non-compliance with a minor Government Policy - not reportable. Low level non-compliance. Technical non-conformance. Minor non-compliance to a low impact contract clause – little or no interest by either party to pursue or rectify. Substantial fine and no disruption to services.	Non-compliance with high profile, outward facing Government policy or Ministerial decree - immediately reportable to Government body (e.g. Treasury) and action to put in place required immediately (high priority). Continuous breach resulting in prohibition notices. Breach of significant, key aspects of contract by either party leading to lodgement (threat) to sue and recompense at severe financial levels Cessation of contract may occur. Large fines as a result of non-compliance. Licence or accreditation restricted or conditional affecting ability to operate.	Non-compliance with high profile Government policy or Ministerial decree - immediately reportable to Ministerial level requiring actions to put in place immediately (high priority) and progress to be reported to the Minister on an agreed and appropriate schedule. Litigation and potentially imprisonment. Loss of Operating licenses. Continued breach cannot be tolerated. Major contract breach by either party leading to significant litigation and financial costs . Total breakdown and cessation of contract. Criminal prosecution as a result of non-compliance.

3.1.2 Significant environmental incidents

Significant Incidents are environmental incidents that are serious in nature and have significant consequences warranting escalation to TfNSW senior management.

An environmental incident is to be defined and treated by the TfNSW Environment Manager as a potential Significant Incident if it meets one or both of the following:

- The severity of the incident is likely to be classified as C3, C2, or C1 in accordance with Table 3-1
- The history of the project, past performance and/or previous regulatory interest, indicate the project is likely to be the subject of a penalty notice or prosecution

Potential Significant Incidents are escalated by TfNSW to the Executive Director Environment and Sustainability, who will determine whether the incident is deemed to be a Significant Incident and require further escalation to the Secretary and other senior management, to ensure they are aware of the incident and can implement or authorise any required responses.

3.1.3 Incidents affecting protected matter(s)

In the Commonwealth Approval, incident affecting protected matter(s) means any event which has the potential to, or does, impact on one or more protected matter(s), other than as authorised by the Commonwealth Approval. Protected matter means Matters of National Environmental Significance (MNES) as outlined in Part 3 of the *Environmental Protection and Biodiversity Conservation Act 1999 (*EPBC Act). These include:

- World Heritage sites
- National Heritage sites
- Wetlands of International Importance (RAMSAR Wetlands)
- Listed threatened species and communities
- Listed migratory species
- Marine environments

Should an incident directly or indirectly impact protected matter(s) identified by the EPBC Act, the procedure outlined in the procedure outlined below should be followed.

3.1.4 Report-only events

Examples of report-only events include:

- Environmental incidents caused by weather events that are beyond the design capacity of environmental controls and/or mitigation measures in accordance with project specific requirements
- Environmental incidents caused by persons or entities not associated with an activity being undertaken by the Project
- Pre-existing conditions not associated with an activity being undertaken by the Project
- Unexpected finds that are managed in accordance with relevant procedures / guidelines.

Report-only events can be considered to be unavoidable and so not reflecting the performance of a site, and will not be included in performance reporting. However, the response to a report-only event

should be taken into account when considering site performance, as a deficient or inappropriate management response could result in a non-compliance and/or an environmental incident.

Where a report-only event relates to an unexpected find and the same issue can then reasonably expected to be found at the same location in future, additional finds from that location need not be reported.

3.1.5 Non-compliances

A non-compliance is a failure to comply with any condition of approval, environmental assessment safeguard / mitigation measure, licence condition, permit or any other statutory approval relevant to the activity and/or area where the activity occurs.

A non-compliance could also be an environmental incident.

3.1.6 Regulatory action

Regulatory action includes, but is not limited to:

- Prosecutions
- Penalty notices
- Clean up notices
- Prevention notices
- Official cautions
- Formal warnings
- EPA show cause notifications.

Copies of any regulatory action issued by an environmental regulator must be provided as part of the reporting that is undertaken in accordance with this Procedure.

3.2 Reporting Process

3.2.1 Standard Notification and Reporting

All Early Works and subcontractor personnel shall report all environmental incidents and near misses no matter how minor or regardless of size to their Supervisor immediately.

The standard reporting process for all environmental incidents, significant environmental incidents, report-only events, non-compliances and regulatory action is detailed in Figure 3-1.

Where the reporting process requires submission of a written report to TfNSW, the person making the report must use the Environmental Event Reporting Form (624/400).

Initial notification

Initial notification of the environmental event must be submitted to TfNSW within 24 hours of the incident. The Environmental Event Reporting Form must be completed and submitted within 48 hours for environmental incidents, non-compliances and report-only events.

Information included in reporting must be factual and accurate.

For the initial 24-hour email notification, the following information must be provided:

- Date of event
- Project / site name
- Type of event that has occurred (i.e.- environmental incident, incident and non-compliance, non-compliance, report-only or regulatory action)
- Description of the event
- Quantity / volume
- Immediate response actions that were implemented
- Notification/s undertaken.

In the case that regulatory action is received relating to a previously reported environmental incident, non-compliance or report-only event, reference to the relevant event must be made in the report for the regulatory action.

Environmental Event Reporting Form

All Environmental Incident Reporting Forms must be populated, signed and submitted electronically (never printed / signed / scanned etc.) to enable TfNSW to electronically capture the information entered in the form.

Completed Environmental Event Report Forms should be submitted by the Zinfra Environmental Site Representative (or delegate) and/or the Early Works Vegetation Clearing Contractor to the Environment Operations mailbox:

- envops@transport.nsw.gov.au

It is essential that a clear and consistent subject line convention is used to allow tracking of correspondence about each incident. All emails about an incident between all parties should structure the subject line as follows:

- Category X - project name / incident location - date
- For example, Category 1 – Main Road Upgrade – dd/mm/yy.

Where information cannot be gathered within the timeframes set out in this Procedure, the incident form should be submitted to the mailbox as a 'draft', whether or not the information contained is fully completed.

- For example, Category 1 – Main Road Upgrade – dd/mm/yy (DRAFT).

The Zinfra Environmental Site Representative (or delegate) and/or the Early Works Vegetation Clearing Contractor should then request further information from the person making the report, and the final report should be submitted within the next 24 hours.

3.2.2 NSW Infrastructure Approval

In addition to the reporting requirements outlined in Section 3.2.1 an incident that meets the criteria outlined in Schedule 1 of the Infrastructure Approval must also be reported in accordance with NSW CoA A44 and A45.

An 'incident' as defined by the State Infrastructure Approval includes 'an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance'.

Material harm is defined within the State Infrastructure Approval as harm that:

1. Involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or

2. 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).

TfNSW are responsible for notifying the Planning Secretary of an incident in writing via the Major Projects Website as soon as possible and no later than 12 hours after becoming aware of an incident.

In accordance with Appendix A of the NSW Infrastructure approval:

1. Additional written incident notification addressing the requirements set out below must be submitted to DPE via the Major Projects website within seven days after becoming aware of an incident. The incident notification must include the following:
    a. Identify the CSSI and application number
    b. Provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident)
    c. Identify how the incident was detected
    d. Identify when the Proponent became aware of the incident
    e. Identify any actual or potential non-compliance with conditions of approval
    f. Describe what immediate steps were taken in relation to the incident
    g. Identify further action that will be taken in relation to the incident
    h. Identify a project contact for further communication regarding the incident.
2. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, TfNSW must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested:
    a. A summary of the incident
    b. Outcomes of an incident investigation, including identification of the cause of the incident
    c. Details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence
    d. Details of any communication with other stakeholders regarding the incident.

3.2.3 Commonwealth incident reporting

Should an event occur that has the potential to, or does impact Matters of National Environmental Significance other than as authorised by the Commonwealth Approval, the Department of Agriculture, Water and Environment (DAWE) will require notification as outlined in Commonwealth CoA 11 and 12. MNES relevant to the Early Works are outlined in Section 4.2 of the EWFFMP and include:

- Grey-headed Flying-fox habitat

In the event of an incident that has the potential to impact or does impact a protected matter other than as authorised by the Commonwealth approval Zinfra and/or the Early Works Vegetation Clearing Contractor will verbally notify the Environmental Representative (ER) and the TfNSW Senior Environment Officer (or delegate) immediately.

Zinfra and/or the Early Works Vegetation Clearing Contractor will submit an Environmental Event Report Form as outlined in Section 3.2 of this procedure.

In accordance with the Commonwealth Approval, TfNSW must notify DAWE in writing as soon as practicable and no later than 2 business days after becoming aware of the incident. The notification must specify:

- Any condition which is or may be in breach
- A short description of the incident affecting protected matters and/or non-compliance
- The location (including co-ordinates), date, and time of the incident and/or non-compliance. In the event the exact information cannot be provided, provide the best information available.

TfNSW will be responsible for providing DAWE with further details of the incident as soon as practicable and no later than 10 business days after becoming aware of the incident.

The details to be provided to DAWE include:

- Any corrective action or investigation which TfNSW has already taken or intends to take in the immediate future
- The potential impacts of the incident affecting protected matters or non-compliance
- The method and timing of any remedial action that will be undertaken by TfNSW.

3.2.4 Other TfNSW notification requirements

When reporting in accordance with this procedure, TfNSW project management teams should also undertake the following internal notifications as appropriate:

- Corporate Communications / Media for any environmental incidents, report-only events, non-compliances and regulatory action that have potential for negative community or media attention;
- Legal Branch, for any environmental incidents, report-only events, non-compliances and regulatory action that could result in a (further, in the case of the latter) regulatory response against TfNSW. In these instances, limit written commentary on the incident by all staff, including emails;
- Safety Branch for any incidents that involve actual or potential risks to the health and safety of workers or the general public.

Figure 3-1 Reporting Process

3.3 Notifiable incidents – POEO Act

A notifiable event is any environmental incident, report-only event or non-compliance that triggers a specific statutory requirement to notify an authority.

The key notification requirements are described in Section 3.3. Note each statutory requirement to notify may specify a particular person who is responsible to make the notification as well as the timing of when this must occur.

3.3.1 Material Harm pollution incidents

Under Part 5.7 of the POEO Act, there is a duty to immediately notify (i.e. promptly and without delay) each relevant authority (refer to Section 3.3.3) of a pollution incident where material harm to the environment is caused or threatened.

The POEO Act states that a pollution incident should be considered Material Harm if:

> *"(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
>
> *(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000"*

Material Harm only relates to pollution incidents. Other environmental incidents, such as conservation, heritage and planning breaches, are not included in the definition of a pollution incident.

Material Harm pollution incidents require notification to the NSW Planning Secretary as required by NSW CoA A44 and A45.

3.3.2 Determination of Material Harm

The determination on whether a pollution incident should be considered Material Harm should be made in accordance with Table 3-2.

Table 3-2 Determination of Material Harm pollution incidents

Project delivery	Material Harm determination
Activities undertaken by contractors	The M12 project team will make the determination (and any associated notifications) on whether a pollution incident should be considered Material Harm. The relevant TfNSW Environment Manager or Environment Branch Director may contact the DES to assist in making an assessment of the incident, to aid the contractor in determining if the pollution incident should be considered Material Harm. Where TfNSW believes a pollution incident should be considered Material Harm but the contractor disagrees, TfNSW is required by law to notify EPA, NSW DPE and other relevant authorities. In this instance the DES or DE would make a determination on whether the incident should be notified by Transport for NSW as Material Harm. Transport for NSW would provide details of any notifications made to the contractor.

Even if only limited information is available for a pollution incident being considered Material Harm, each relevant authority must be immediately notified with the information available and updates provided as soon as further relevant information becomes available.

In circumstances where there is doubt about the need to notify a pollution incident as Material Harm, Transport for NSW and its contractors should always err on the side of notification.

3.3.3 Notification of Material Harm pollution incidents

The relevant authorities that must be notified for a Material Harm pollution incident are listed in Table 3-3 and Table 3-4 below. It is important to note the order of notification and phone numbers to use can vary depending on the nature of the pollution incident, as detailed in Table 3-3 and Table 3-4.

All of the authorities listed (whether considered relevant or not) must be contacted for each Material Harm pollution incident to satisfy POEO Act requirements. Serious penalties apply to both individuals and corporations for failing to notify Material Harm pollution incidents:

- Maximum penalty for individuals - $500,000
- Maximum penalty for corporations - $2,000,000.

Table 3-3: Authorities to notify for Material Harm pollution incidents that present an immediate threat to human health or property

Order	Authority	Contact Number
1	Fire and Rescue NSW	000
2	NSW EPA environment line	131 555
3	Ministry of Health (via the local Public Health Unit)	Contact 1300 066 055 to be directed to the local Public Health Unit, or visit the NSW Health Website
4	SafeWork NSW	131 050
5	The Appropriate Regulatory Authority, being either: • Local council • DPE	Local council - contact Office of Local Government on 4428 4100, or visit the Office of Local Government website Via the Major Projects Portal

Table 3-4: Authorities to notify for Material Harm pollution incidents that do NOT present an immediate threat to human health or property

Order	Authority	Contact Number
1	NSW EPA environment line	131 555
2	Fairfield City Council	02 9725 0222
3	Liverpool City Council	1300 362 170
4	Penrith City Council	02 4732 7777
5	Ministry of Health (via the local Public Health Unit)*	Contact 1300 066 055 to be directed to the local Public Health Unit, or visit the NSW Health Website
6	SafeWork NSW	131 050
7	Fire and Rescue NSW	1300 729 579
8	DPE (Mike Pereira)	Via the Major Projects Portal or (02) 9995 6038

Figure 3-2: LGA boundaries

Relevant information to provide

Section 150 of the POEO Act provides the information that needs to be notified, being:

a) The time, date, nature, duration and location of the incident

b) The location of the place where pollution is occurring or is likely to occur, the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known

c) The circumstances in which the incident occurred (including the cause of the incident, if known)

d) The action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known

e) Other information prescribed by the regulations.

Only known information should be provided when notifying of a Material Harm pollution incident. If further information becomes known after the initial notification, that information must immediately be notified to all authorities in accordance with Section 150. The immediate verbal notification is to be followed by written notification to each relevant authority within seven days of the date on which the incident occurred.

Complying with these notification requirements does not remove the need to comply with any other legislative requirements for incident notification (e.g. requirements under the conditions of an EPL or the Work Health and Safety Act 2011).

Relevant information required for notification to DPE in accordance with NSW CoA A44 and NSW CoA A45 is outlined in Section 3.2.2.

3.3.4 Summary of other regulatory agency notification requirements

Specific statutory requirements relating to the notification of environmental incidents to relevant regulatory agencies are summarised in Table 3-5. Additional requirements adopted by TfNSW are indicated in *italics*. Any notification to regulatory agencies should be indicated in the Environmental Event Report Form to confirm that any required notifications have been initiated.

Table 3-5: Regulatory agency notification requirements

Legislation / issue	Regulating authority	Section / requirement
Commonwealth Aboriginal and Torres Strait Islanders Heritage Protection Act 1984	Department of Agriculture, Water and Environment	Section 20 – requirement to notify the Minister of the discovery of Aboriginal remains.
Contaminated Land Management Act 1997	EPA	Section 60 – requirement to notify if Transport for NSW activities have contaminated land or if Transport for NSW owns land that has been contaminated.
Heritage Act 1977	Heritage NSW	Section 146 – requirement to notify the Heritage Council of the location of the relic once a relic has been discovered or located.
National Parks and Wildlife Act 1974	Environmental, Energy and Science (a part of NSW DPE)	Section 89A – requirement to notify the location of an Aboriginal object that is the property of the Crown.

Legislation / issue	Regulating authority	Section / requirement
Protection of the Environment Operations Act 1997	EPA and other relevant authorities	Section 148 – requirement to immediately notify pollution incidents that cause or threaten Material Harm to the environment (see Section 3.3.3)
	EPA	*Pro-active reporting to the local EPA officer of offsite pollution incidents that occur as a result of Transport for NSW activities is encouraged as soon as practicable after the pollution incident occurs.*
Rural Fires Act 1997	NSW Rural Fire Service	Section 64 – requirement to notify an appropriate fire officer of the inability to extinguish any fire burning during a bush fire danger period applicable to the land.
Incidents as defined under the NSW Infrastructure Approval or the Commonwealth Approval	Department of Planning, Industry and Environment (DPE) Department of Agriculture, Water and Environment (DAWE)	NSW CoA A44 and A45 Commonwealth CoA 11 and CoA12
Water supply catchment areas	Local water supply authority	If an environmental incident has the potential for unapproved impacts on a drinking water supply, the relevant water supply authority must be advised.

3.4 Requests for written reports from regulatory authorities

Should Zinfra and/or the Early Works Vegetation Clearing Contractor directly receive a request from a regulatory authority for a written report regarding an environmental incident, the TfNSW Senior Environment Manager must be immediately contacted for advice. No further correspondence (including email) about the incident should be distributed either internally or externally until advice is received. The TfNSW Senior Environment Manager will then assist the Contractor to:

- Assist in the investigation of the incident
- Provide legal advice to the project
- Co-ordinate the preparation of the written response to the regulatory authority.

4 Significant incident escalation process

Where a TfNSW Environment Manager believes that a Significant Incident has occurred, they must immediately phone the relevant TfNSW Environment Director. The TfNSW Environment Director will consult with the TfNSW Executive Director Environment and Sustainability, who will determine whether the incident will be considered a Significant Incident. Once a Significant Incident has been determined, the escalation process will commence as outlined below.

4.1 Significant incident information management

Following determination of a Significant Incident, it is essential that there is fast, consistent and accurate reporting of information to the TfNSW senior management. As such, clear roles and responsibilities must be established in two key areas, as described in Table 4-1.

Table 4-1: Roles and responsibilities during a Significant Incident

Role	Who	Responsibilities
Information Controller	TfNSW Environment Manager (or relevant TfNSW Environment Officer in their absence)	• Liaise between the on-site TfNSW project management team and the Information Distributor (below) • Be the single point of contact to provide information and updates about the status of the Significant Incident to the Information Distributor
Information Distributor	TfNSW Executive Director Environment and Sustainability (or relevant TfNSW Environment Director in their absence)	• Identify the relevant members of the TfNSW Executive and other TfNSW senior management that will form the distribution group to be informed about the Significant Incident • Consolidate information from the Information Controller, and distribute it to the distribution group • Provide key ongoing updates to the distribution group as it becomes available • Respond to enquiries from the distribution group, ensuring all members of the distribution group are copied into every response

4.2 Parties to be notified

The Information Distributor must identify relevant TfNSW senior management from delivery and client divisions that will form the distribution group to be informed about the Significant Incident, including ongoing updates. Table 4-2 provides the key positions that must be included (at a minimum), depending on who is undertaking the activity. Depending on the type and location of the activity, there may be other areas of TfNSW that should be included in the distribution group.

The distribution group should all be notified concurrently in a single email that a Significant Incident has occurred. The email should be sent by the Information Distributor within five minutes of making the determination of the Significant Incident.

Table 4-2: TfNSW Distribution group to be notified of a Significant Incident

	Greater Sydney
Transport executive notification	• Secretary
SER executive notification	• Deputy Secretary, Safety Environment and Regulation
Client executive notification	• Deputy Secretary, Greater Sydney • Executive Director, Community and Place • Director Western Parkland City
Delivery executive notification	• Deputy Secretary, Infrastructure and Place • Head of Sydney Project Delivery • Executive Director Western Sydney Project Office
Project Team notification	• M12 Project Director • M12 Deputy Project Director • M12 Senior Project Manager • M12 Project Manager • M12 Environment Manager

5 Corrective Actions

There are a variety of scenarios in which an environmental event may occur. It is important that corrective actions are:

- specific to the incident that has occurred
- meaningfully address the root cause(s) of the incident
- designed to prevent incident reoccurrence.

Corrective actions could include (but are not limited to) the following:

- physical works to install, augment or rectify controls or a site issue
- testing and/or monitoring
- review and improvement of construction methods or work practices
- review and update of management plans, procedures or other tools
- communication, training and awareness initiatives for workers.

In most cases it will not be sufficient to simply notify workers of correct systems / procedures (e.g. via toolbox talk). A review should be undertaken by Zinfra and/or the Early Works Vegetation Clearing Contractor following an incident or non-compliance to determine why the systems / procedures failed (or alternatively a formal investigation), and necessary changes made to ensure they do not fail in future. Site personnel should then be made aware of the changes and trained as necessary.

Immediate/short-term corrective actions including timeframes for completion must be clearly described in incident/non-compliance reporting. Updates about longer-term corrective actions including timeframes for completion can be provided to the TfNSW Environment Officer and TfNSW Project Management Team post submission of the incident/non-compliance report.

6 Investigations

All incidents must be investigated to prevent further incidents from occurring.

An environmental investigation may include the following basic elements depending on the size and severity of the incident:

- Identifying the cause, extent and responsibility of the incident;
- Identifying and implementing the necessary corrective action;
- Identifying the personnel responsible for carrying out the corrective action;
- Implementing or modifying controls necessary to avoid a repeat occurrence of the incident;
- Recording any changes in written procedures required;
- Advising the relevant stakeholders, if any substantial pollution has occurred (reporting of incidents to regulatory authorities).

Investigations will take place as soon as possible after the incident has occurred. All incident investigations will focus on identifying the causes of the incident so that appropriate remedial and preventative control measures can be identified and implemented.

The Root Cause Analysis process will be used in incident investigation to determine the cause(s) of an incident or near miss, so that a repeat of the incident can be avoided. The “root” causes of an incident are system level causes that can reasonably be identified and that we have control to fix or rectify.

A root cause analysis investigation must be completed by Zinfra and/or the Early Works Vegetation Clearing Contractor for all environmental incidents with a classification of C1, C2 or C3, or any other environmental incidents or non-compliances as determined by TfNSW.

The scope of the investigation will be determined by the TfNSW Environment Officer or Environment Manager. Zinfra and/or the Early Works Vegetation Clearing Contractor must provide TfNSW with a final investigation report within three weeks of the environmental incident or non-compliance being identified. The report must include the minimum information described in Table 6-1.

Table 6-1: Investigation report

Element	Description
Sequence of events	The sequence of events that led to the incident or non-compliance
Findings	Given the sequence of events, what are the key findings of the investigation (i.e. what are the main causes of the incident or non-compliance).
Management methods	A record of the management methods to be changed and/or implemented to avoid the incident or non-compliance reoccurring.
Key learnings	Describe the key learnings from the investigation into the incident or non-compliance. Detail which learnings may be relevant to other transport projects.

Environmental Work Method Statement

Template

Delete this page prior to submission

 # Delete this page prior to submission #

EWMS guidance notes:

1. An EWMS is a planning and communication tool to help site crews manage their environmental impact during construction. Site crews should be trained in, and sign-on to, the EWMS (see section 3) before commencing the associated construction activity. Language used in the EWMS should be suitable for the audience that are expected to implement it.
2. This EWMS template should be completed to describe the methods and sequence of a construction activity (e.g.- clearing, earthworks, drainage works), the environmental hazards or risks associated with each step of the activity, and the corresponding site specific environmental controls that need to be implemented to manage the associated risks.
3. The template provides the minimum information that should be included in the EWMS - the level of detail included should be appropriate for the scale and risk of the activity.
4. A map that summarises key aspects of the activity, including identification of known environmentally sensitive areas, must be included in the appendix and cross-referenced throughout the document. The level of detail in the map should be appropriate for the scale and risk of the activity.
5. Other visual aids such as diagrams and photos should also be included in the document and/or attached in the appendices to illustrate how this EWMS will be implemented – the text content may be minimised by cross-referencing the visual aids
6. Additional sections can be added as necessary, and relevant information can be attached in Section 4.
7. The EWMS is a live document, and **must be updated** (see section 1.12) to address changed circumstances and ensure adequate mitigation of environmental impacts. The Revision History should be used to reflect updates.
8. While this is the current TfNSW template for EWMS, when developing your own EWMS, TfNSW requires that Zinfra and the Early Works Vegetation Clearing Contractor consider how the document will succinctly and effectively communicate the key risks and management measures to engage staff on site. In relation to this requirement, Zinfra and the Early Works Vegetation Clearing Contractor is to collaborate with TfNSW and the ER on the proposed approach.

Environmental Work Method Statement

<insert activity>

Approval				
Approved by (name)	**Position**	**Company**	**Signature**	**Date**
<insert environment rep>				
<insert construction rep>				

Revision History		
Version	**Release date**	**Description**

1. ACTIVITY DETAILS

1.1 Description of the activity

<insert a summary of the activity, including the scope and how it fits into the broader construction program>

1.2 EWMS objectives

The objectives for this specific EWMS are <insert objectives>.

1.3 Key environmental elements

The key environmental elements that could be affected by construction impacts and need to be protected are:

- <insert key environmental element>
- <insert key environmental element>
- <insert key environmental element>
- <insert key environmental element>

Known environmentally sensitive areas are detailed in the map at Attachment A.

1.4 Construction method

<clearly describe the construction method that will be used. Cross-reference the attached map where relevant>

1.5 Location of the activity

<insert activity> will occur at <insert appropriate location detail corresponding to the scale of the activity, and consider using chainages, street intersections or appropriate landmarks>.

A map showing the key features of the activity, and the environmentally sensitive areas, is included at <insert Attachment name>.

1.6 Timing of works and expected duration

<insert activity> will commence on <insert date> and is expected to be completed by <insert date>.

Hours of operation for the activity are:

Day/s	Hours of operation
Monday to Friday	
Saturday	
Sunday	
Public holidays	

Other timing restrictions include <include other timing restrictions, such as noise respite periods>.

1.7 Approvals / permits / licences required

The key environmental approvals / licences / permits required to undertake <insert activity> are:

- <insert environmental approval>
- <insert environmental approval>
- <insert environmental approval>
- <insert environmental approval>

1.8 Consultation / communication required

The stakeholder consultation that will be undertaken before, during or after this activity is as follows:

Consultation / communication activity	Stakeholder	Timing	Responsibility
Eg- Notification of start of works	*Local residents and businesses*	*>5 days prior to commencing works*	*Communications manager*

1.9 Incident response

Environmental incidents will be managed in accordance with the incident procedure detailed in the <insert document name (eg- CEMP)> and the <insert relevant TfNSW incident procedure name>.
The key step on-site is immediate notification of environmental incidents to:

- <insert name>, <insert title>, <insert phone number>

1.10 Relevant documents

The key documents that relate to this activity are:

<insert project name> CEMP	<insert document name>
<insert document name>	<insert document name>
<insert document name>	<insert document name>
<insert document name>	<insert document name>

1.11 Training

All personnel undertaking <insert activity> will be trained in this EWMS. Training will be delivered by <insert name/title of trainer> via <insert detail of how training will be delivered (eg- toolbox talk)>. EWMS training will cover all aspects of this EWMS.

The EWMS sign-on sheet (see <insert section number>) will be completed by all personnel who have undertaken training and will be filed for record-keeping on <insert record keeping method>.

Relevant staff will also have the following training in order to effectively implement this EWMS:

Training	Relevant Personnel
Eg- Erosion and Sediment Control	*Leading hands, foreman*

1.12 Updates to this EWMS

The implementation of this EWMS and the effectiveness of environmental controls will be reviewed <insert review frequency> by <insert process that will be used to review EWMS>.

The EWMS will also be reviewed if the scope of works, construction methods, site conditions and/or required environmental controls change.

EWMS reviews, and any required updates, will be undertaken by <insert person>.

EWMS updates will be approved by <insert person>.

The updated EWMS will be provided to the Principal and re-communicated to all personnel involved in the activity, in accordance with section 1.11.

2. RISK ASSESSMENT AND ENVIRONMENTAL CONTROLS

 # Delete this text box prior to submission #

Instructions for completing 'Table 2.3: Risk Assessment and Environmental Controls'

1. Identify the sequential tasks for the activity, and the plant / equipment required to complete the tasks. Photos / maps / plans / diagrams can be included and cross-referenced to help illustrate the tasks (and also the environmental controls in Step 4) and reduce the amount of text required.
2. Identify the corresponding hazards for each task
3. Determine the initial environmental risk for each activity, in the absence of any environmental controls. To determine the risk you may use the risk matrix included in this template (Table 2.1). You may also delete this table and include an equivalent risk matrix.
4. Clearly describe the site-specific environmental controls that will be implemented to manage each hazard. These controls should be consistent with the safeguards / mitigation measures included in the project's environmental assessment (eg- REF). Controls should be practical to implement. The hierarchy of controls, from highest level of environmental protection to lowest, is as follows: Eliminate→Substitute→Engineering controls→Administrative controls
5. Determine the residual risk level that will remain after implementation of the environmental controls.
6. Table 2.2 describes the risk tolerance that can be accepted. Use Table 2.2, or an equivalent table, to determine the residual risks in the Risk Assessment that are acceptable. If the residual risk is deemed to be too high, review and adjust controls or adopt an alternative methodology with an acceptable risk level.

Note: In some cases a formal risk assessment may not be required – consult your EWMS approver (eg- the Principal) to discuss. Where it is agreed that a risk assessment is not required, remove Tables 2.1 and 2.2 and simply populate Table 2.3 without including the initial risk and residual risk.

Table 2.1: Risk Matrix

		Consequence →	Insignificant	Minor	Moderate	Major	Severe	Catastrophic
			C6	C5	C4	C3	C2	C1
Likelihood ↓			No appreciable changes to environment.	Change from existing conditions that can be rectified immediately (< 1 day) with available resources.	Short-term (< 1 year) and/or well-contained environmental impact. Minor remedial actions probably required.	Short to medium term (between 1 and <5 years) environmental impact. Considerable remedial actions probably required.	Medium-term (>5 years) environmental impact. Extensive remedial actions probably required.	Long-term (>10 years) large-scale environmental impact. Extensive and ongoing remedial actions probably required.
Almost Certain	**L1**	Expected to occur frequently during time of activity or project. There is a very strong chance of this risk occurring. History shows that it is something that occurs frequently.	Low	Medium	High	Very High	Very High	Very High
Very Likely	**L2**	Expected to occur occasionally during time of activity or project. There is a good chance of this risk occurring. History shows that the risk occurs unacceptably too often.	Low	Medium	High	High	Very High	Very High
Likely	**L3**	More likely to occur than not occur during time of activity or project. There is a chance of this risk occurring in the current period. History shows that the risk has occurred on a number of occasions.	Low	Medium	Medium	High	High	Very High
Unlikely	**L4**	More likely not to occur than occur during time of activity or project. There is a chance of this risk occurring but not very often. History shows that this risk does happen but not very frequently.	Low	Low	Medium	Medium	High	High
Very Unlikely	**L5**	Not expected to occur during the time of activity or project. There is only an unusual chance of this risk occurring. History shows that this risk rarely happens, usually under unusual circumstances.	Low	Low	Low	Medium	Medium	High
Almost Unprecedented	**L6**	Not expected to ever occur during time of activity or project. There is very little or no real chance of this risk occurring. History shows that this risk hardly ever happens, if at all.	Low	Low	Low	Low	Medium	Medium

Table 2.2: Risk Tolerance and Response	
Risk rating	**Tolerance and Response**
Very High	**Very High** risks are generally intolerable and should be avoided except in extraordinary circumstances. An alternative solution must be found and all necessary steps must be taken to reduce the risk below this level.
High	**High** risks are undesirable. They can only be tolerated if it is not reasonably practicable to reduce the risk further. High risks are considered to be on the verge of being unacceptable and must be given immediate priority.
Medium	**Medium** risks are typically tolerable if it is not reasonably practicable to reduce the risk further. Additional controls should be sought if significant benefit can be demonstrated and/or there is an additional treatment measure which is recognised as good practice in other like environments.
Low	**Low** risks are considered to be broadly acceptable. If options for further risk reduction exist and costs are proportionate to the benefit, then implementation of such measure should be considered.

<Insert contractor / project name>	**ENVIRONMENTAL WORK METHOD STATEMENT**	EWMS	#
	<INSERT ACTIVITY>	REV.	
		DATE	

Table 2.3: Risk Assessment and Environmental Controls

	Sequence of tasks	**Plant / equipment**	**Hazard**	**Initial risk**	**Site-specific Environmental Controls**	**Residual risk**	**Responsibility for managing environmental risks**
1	*Eg- Install orange flagging (bunting) with star pickets to delineate construction boundary*	*Hand tools only*	*Flagging installed in wrong area, resulting in clearing outside construction boundary*	*VH*	*Survey used to confirm construction boundary*	*L*	*Environment Mgr, Survey*
2							
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20							

3. SIGN-ON

Training in this EWMS delivered by:				
Name	**Position**	**Company**	**Signature**	**Date**

EWMS Sign-on: Personnel signing on to this EWMS confirm they understand the content of the EWMS and will implement the environmental controls contained within				
Name	**Position**	**Company**	**Signature**	**Date**

4. ATTACHMENTS

Attachments to this EWMS are:

A. Map of activity, including known environmentally sensitive areas
B. Diagram of environmental controls
C. <insert attachment (eg- photos of sensitive area/s)>
D. <insert attachment (eg- toolbox package)>
E. <insert attachment>

Appendix A7

EWEMP and Sub-plans Consultation Evidence

M12 Motorway Early Works – Protection of High Pressure Gas Mains

August 2022

Transport for New South Wales

Table 1 Evidence of consultation

Environmental Management Document	Document No.	Revision	Date submitted	Organisation	Comment	How addressed	Status
As per NSW CoA A24 consultation was required on the Early Works Site Establishment Management Plan and the Early Works Flora and Fauna Management Plan. Evidence of consultation is contained in these documents. No specific consultation was required for other Early Works Environmental Management Plan documentation.							

Appendix A8

Environmental Management Measures

M12 Motorway Early Works – Protection of High Pressure Gas Mains

August 2022

Transport for New South Wales

Noise and Vibration

In accordance with NSW CoA E38, the mitigation measures detailed in the table must be implemented with the aim of achieving the following NML and vibration objectives:

(a) Construction 'Noise affected' NML established using the *Interim Construction Noise Guideline* (DECC, 2009)
(b) Vibration criteria established using the *Assessing vibration: a technical guideline* (DEC, 2006) (for human exposure)
(c) BS 7385 Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*" as they are "applicable to Australian conditions"
(d) The vibration limits set out in the *German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures* (for structural damage).

Any early works identified as exceeding the NML and/or vibration criteria must be managed in accordance with this Plan.

Table 1: Noise and Vibration Environmental Management Measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
Noise and Vibration						
Training						
NV1	All employees, contractors and subcontractors are to receive a Project induction prior to commencing work on site. The induction will include: • Existence and requirements of this NVMP • Relevant legislation and guidelines • Normal construction hours and exemptions • The process for seeking approval for out-of-hours works, including consultation • Location of noise sensitive areas • Complaints reporting and recording • How to implement noise and vibration management measures Specific responsibilities to minimise impacts on the community and built environment from noise and vibration associated with the works	Induction material	Prior to starting on site Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Standard industry practice	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV2	Training will be provided to relevant Project personnel, including relevant subcontractors, on noise and vibration requirements from this Plan, toolboxes or targeted training	Training matrix/records Toolbox talk sign on sheets	Prior to starting on site Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Standard industry practice	N/A
NV3	No swearing or unnecessary shouting or loud stereos / radios on site. Dropping of materials from height, throwing of metal items and slamming of doors will also be avoided	Induction material Toolbox material Site inspection records	Early Works	Site Foreman / Site Supervisor Early Works Vegetation Clearing Contractor	Standard industry practice	N/A
Ancillary Facility						
NV4	Screening assessments have been conducted for Early Works Activities. Should the scope of Early Works change, including the potential to involve high noise generating activities, the noise assessment will be recalculated. Any management measures detailed within the noise assessment will be implemented.	Screening assessment	Prior to establishment of Ancillary Facilities	Zinfra Environmental Site Representative (or delegate)	Best practice management measure	EWEMP Appendix A10 SEMP Section 5.4.1 SEMP Appendix D of the SEMP
NV5	A Noise and Vibration Monitoring Program will be developed and implemented in accordance with NSW CoA C14 for Site Establishment activities	Noise and Vibration Monitoring Protocol	Prior to Early Works	TfNSW	NSW CoA C14	Appendix C of the SEMP

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
Working hours						
NV6	Work must only be undertaken during the following hours: (a) 7:00 am to 6:00 pm Mondays to Fridays, inclusive (b) 8:00 am to 6:00 pm Saturdays; and at no time on Sundays or public holidays.	Induction material Toolbox material	During Early Works	Project Manager Construction Manger	NSW CoA E34	N/A
NV7	Highly noise intensive works, such as use of power saws, vibratory rolling, bitumen milling or profiling, or concrete grinding that result in an exceedance of the applicable NML 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) If continuously, then not exceeding three hours, with a minimum cessation of work of not less than one hour.	Induction material Toolbox material	During Early Works	Site Supervisor Construction Manger	NSW CoA E35	N/A
NV8	Works can be undertaken outside of normal working hours as detailed in Section 5.4.	Induction material	Prior to the commencement of OOH	Zinfra Environmental Site Representative (or delegate)	NSW CoA E36	EWEMP Section 5.4

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV9	Prior to the commencement of Out-of-Hours Work, an Out of Hours Works protocol will be prepared in consultation with the ER to identify a process for the consideration, management and approval of Work. The protocol will be approved by the Secretary prior to the commencement of out of hours work. The OOHW Protocol will be developed in accordance with NSW CoA E37 and consider the requirements of NSW CoA E46 and E47.	OOHW Protocol	Prior to the commencement of OOH	Zinfra Environmental Site Representative (or delegate)	NSW CoA E37	EWEMP Section 5.4
NV10	Works will be timetabled outside of sensitive periods where works result in exceedances to the NML in the vicinity of potentially affected community, religious, educational institutions, noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres). If this is not possible, offers of other reasonable arrangements will be made to the affected institutions (at no cost to the affected institution).	Work programming	During Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor TfNSW	NSW CoA E39	Section 4.1.3 of the EWEMP Overarching Communication Strategy
NV11	A noise screening assessment has been completed and presented within the EWEMP. Should the scope of works change, the screening assessment will be rerun and a noise and vibration impact statement (NVIS) will be prepared where OOHW exceeds the noise management level AND vibration criteria specified in NSW CoA E38 at any residence or where receivers will be highly noise affected.	Screening Assessment NVIS	Prior to OOHW	Zinfra Environmental Site Representative (or delegate)	NSW CoA E40	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV12	Works will be scheduled with the aim of minimising concurrent works near sensitive receivers where possible in consultation with managers of other nearby projects that are likely to result in a cumulative impact. This will include: • Coordination of respite between the various construction projects where receivers are likely to experience concurrent construction impacts where feasible • Coordination between project teams • Rescheduling of work to provide respite to impacted noise sensitive land user(s) so that respite is achieved during OOHW • Consideration to the provision of alternative respite or mitigation to impacted noise sensitive land users where OOHW respite as per NSW CoA E47 cannot be provided.	Work programming Consultation with adjacent projects	During Early Works	Construction Manager	NSW CoA E45	Section 5.4 of EWEMP

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
Upper Canal System						
NV13	Detailed surveys will be carried out to confirm the existing condition of the WaterNSW Upper Canal System and the Jemena high pressure gas pipelines to determine potential vibration impacts and appropriate vibration criteria. This will also include consideration of distances from the vibration intensive activity (piling, rock-breaking and vibratory rolling), as well as ground conditions.	Monitoring Records	Prior to carrying out vibration intensive works	TfNSW / Zinfra	REMM NV10 REMM NV11	Heritage Findings Report
NV14	A vibration criterion of a peak particle velocity (PPV) will be determined in consultation with WaterNSW.	Monitoring Records	Prior to carrying out vibration intensive works	TfNSW / Zinfra	REMM NV10	N/A
NV15	Vibration monitoring will be carried out when vibration intensive tasks are occurring within the minimum working distances to the Upper Canal System. Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, Zinfra will review work methodologies and additional mitigation measures will be identified and implemented to appropriately manage impacts.	Monitoring Records	Prior to carrying out vibration intensive works	Zinfra	REMM NV11 *Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines* (WaterNSW, 2020)	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV16	For noise and vibration monitoring at the Upper Canal System, a heritage specialist will be engaged to advise on the methods and locations for installing equipment.	Monitoring records Engagement of heritage specialist	Prior to monitoring	Zinfra Environmental Site Representative (or delegate) Heritage Specialist	NSW CoA E43	Section 4 of the Noise and Vibration Monitoring Program
NV17	Guidelines and associated safe working distances to be adhered to for the Upper Canal System as outlined in the *German Standard DIN 4150* and the *Roads and Maritime Construction Noise and Vibration Guideline.*	Monitoring records	During Early Works	Zinfra	REMM NAH06	Section 4 of the Noise and Vibration Monitoring Program
NV18	An exclusion zone will be established that delineates the vibration safe working distances for Tunnel Shaft 3. Should Early Works activities be required within the exclusion zone, trench compactors and plate compactors will be used to ensure no vibration impacts.	Site inspection	During Early Works	Zinfra	Heritage Findings Report	N/A
Monitoring						
NV19	Monitoring will be carried out in accordance with Section 4 of the Noise and Vibration Monitoring Program	Monitoring records	As per Section 4 of the Noise and Vibration Monitoring Program	Zinfra Environmental Site Representative (or delegate)	NSW CoA C14	Section 4 of the Noise and Vibration Monitoring Program

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV20	Where the monitoring identifies higher levels of noise and vibration compared to predicted levels, or where mitigation is shown to be ineffective against measured noise and vibration levels, additional mitigation measures will be identified and implemented to appropriately manage impacts where feasible and reasonable.	Monitoring records	During monitoring activities	Zinfra Environmental Site Representative (or delegate)	Best practice management measure	Section 4 of the Noise and Vibration Monitoring Program
NV21	Attended vibration monitoring will be undertaken at sensitive receivers (including residents, vibration-sensitive businesses and critical working areas, and heritage structures) during vibration generating activities. Minimum working distances established by TfNSW to prevent cosmetic damage. Where exceedances are identified, a review of construction methodology and provision of additional mitigation measures will be investigated.	Monitoring records	During vibration activities	Zinfra Environmental Site Representative (or delegate)	NSW CoA E42 REMM NV06 REMM NV08	Section 4 of the Noise and Vibration Monitoring Program

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV22	Monitoring will be carried out at the start of high noise and vibration activities to confirm that actual noise and vibration levels are consistent with the noise and vibration impact predictions. Where mitigation measures were included, measurements will be carried out to confirm the effectiveness. Where the monitoring identifies higher levels of noise and vibration compared to predicted levels, or where mitigation is shown to be ineffective against measured noise and vibration levels, additional mitigation measures will be identified and implemented to appropriately manage impacts where feasible and reasonable.	Monitoring records	During Early Works	Zinfra Environmental Site Representative (or delegate)	REMM NV04	N/A
Complaints						
NV23	Noise complaints must be recorded, reported and investigated in accordance with the M12 Incident Classification and Reporting Procedure (Appendix A5).	Incident Reporting	During Early Works	Zinfra Environmental Site Representative (or delegate)	G-EN-PR-00055 Construction Noise and Vibration Management Procedure	N/A
NV24	All concerns/complaints shall be resolved in a timely manner, by considering all practicable means to mitigate noise/vibration impacts, either through changes of work schedule, use of alternative construction techniques, quieting and/or relocation of key equipment or the construction of effective temporary noise barriers.	Incident Reporting	During Early Works	Project Manager Zinfra Environmental Site Representative (or delegate)	G-EN-PR-00055 Construction Noise and Vibration Management Procedure	N/A
General						

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV25	The use of alternatives to vibration generating equipment will be considered where vibration impacts are predicted.	Procurement records Meeting minutes	During Early Works	Zinfra Environmental Site Representative (or delegate) Construction Manager	REMM NV07	N/A
NV24	No swearing or unnecessary shouting or loud stereos / radios on site. Dropping of materials from height, throwing of metal items and slamming of doors will also be avoided	Induction material	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
NV25	All construction plant and equipment used on site will be fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications	Procurement records	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV26	All construction plant and equipment used on the site will be maintained in an efficient condition, in accordance with the manufacturers' specification. If a piece of plant or equipment is found to exceed the noise levels included in modelling, the following will occur: • If available and appropriate, a quieter piece of plant or equipment will be utilised in place of the offending plant / equipment; • On-site mitigation (e.g. noise blankets) will be reviewed; and /or • The noise assessment will be repeated with the accurate noise level of the plant / equipment.	Pre-start documentation Procurement documentation Noise assessment (if required)	During Early Works	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
NV27	All construction plant and equipment used on the site will be operated in a proper and efficient manner.	Pre-start documentation Induction material	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
NV28	Non-tonal movement alarms will be used in place of tonal reversing alarms for Contractor owned plant and subcontract plant used at night or during the day.	Procurement documentation Inspection records	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
NV29	Plant and machinery will be switched off when it is not in use for more than 15 minutes	Inspection records Induction material	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
NV30	Stationary noise sources such as generators, stationary concrete cutters, stationary asphalt corers, stationary vacuum trucks, and stationary jack hammers will be enclosed or shielded where reasonable and feasible.	Inspection records Induction material	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
NV31	Additional temporary screening or enclosures will be considered for plant and equipment where additional measures are required to meet relevant NMLs, or where plant and equipment is known to exceed the NMLs	Inspection records Induction material	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
NV32	For out of hours works, community notifications will be provided to receivers where the ground-borne noise levels are predicted (through screening assessments) to exceed the evening and night-time NML.	Community notification Screening assessment NVIS (where applicable)	During Early Works	Zinfra Environmental Site Representative (or delegate) TfNSW	Best practice management measure	Overarching Communication Strategy

Traffic and Transport

Table 2: Traffic and transport environmental management measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/ Source	Additional information
Traffic and Transport						
Notification						
TT1	Notify any changes in traffic conditions on roads or paths to road users, emergency services, public transport operators, and other relevant stakeholders	Notification letter	Prior to changes in traffic conditions	Project Manager Construction Manger	REMM 01	Overarching Communication Strategy
TT2	Consultation will be carried out with WSIA and Sydney Metro – Western Sydney Airport for traffic and access interfaces	Meeting minutes	Prior to Early Works	TfNSW	REMM 01	Overarching Communication Strategy
TT3	Consultation will be carried out with TfNSW, Liverpool Council, Fairfield Council and other relevant stakeholders regarding the development of specific Traffic Management Plans and associated elements such as Traffic Control Plans	Meeting minutes	Prior to Early Works	Project Manager Construction Manger	Best practice management measure	Overarching Communication Strategy
TT4	If required, businesses will be notified where existing signage is obscured/no longer visible or where customers are required to use alternative access to reach the businesses during Early Works	Notification letter	Prior to impact on business	Project Manager Construction Manger	NSW CoA E96 REMM TT08	Overarching Communication Strategy
Access						
TT5	Existing property access will be maintained at all times. However, if required, in consultation with the landowner, any property access physically affected by the works must be: • Reinstated to at least an equivalent standard, or	Consultation notes Meeting minutes Notification	Prior to impact on property access	Project Manager Construction Manger	NSW CoA E83 NSW CoA E96	Overarching Communication Strategy

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/ Source	Additional information
	• Alternative access provided. Any changes to access will provide the same equivalent pre-existing level of access unless agreed to by the landowner. Notification will be provided at least 5 working days before commencing work affecting residents. Pedestrian and vehicle access and parking will be maintained in the vicinity of the affected properties.				REMM TT07 G36	
TT6	Should any changes to bus stops be required, this will be implemented in consultation with TfNSW, with Fairfield City Council, Liverpool City Council, and relevant bus operators. Alternate temporary bus stops will be provided with appropriate signage to direct commuters. Safe access will be provided in accordance with relevant safety and accessibility standards.	Meeting minutes Site photographs	Prior to impact on bus stops	Project Manager Construction Manger	REMM TT02	Overarching Communication Strategy
TT7	Safe pedestrian and cyclist access will be maintained around Early Works activities with adequate signage and pathways provided. In circumstances where pedestrian and cyclist access is restricted or removed, an alternate route will be provided and sign posted in accordance with the relevant standards.	Site photographs Notification	During Early Works	Project Manager Construction Manger	NSW CoA E99	N/A
Heavy Vehicles						
TT8	Prior to impact on local roads, a Road Dilapidation Report will be prepared in consultation with Fairfield City Council, Liverpool City Council and other relevant stakeholders i.e. relevant road authority. The report will document the existing condition of local roads and outline measures to repair damage to roads from heavy vehicle movements associated with the Project. The Road Dilapidation Report will be provided to the relevant road authority within three weeks of completion of the survey and at least two weeks before theroad is used by heavy vehicles.	Road Dilapidation Report	Prior to impact on local roads	Project Manager Construction Manger	NSW CoA E95 REMM TT06	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/ Source	Additional information
TT9	Movements of haulage vehicles during the AM and PM peak periods will be minimised where practicable.	Program	During Early Works	Construction Manger	REMM TT03	N/A
TT10	Prior to using any local road not identified in the Environmental Assessment Documentation for spoil and fill haulage or concrete deliveries within 1km of Early Works, DPIE approval will be obtained and the EWEMP updated. Information as per NSW CoA E94 will be provided to DPIE.	DPIE approval	Prior to use of local roads within 1km of Early Works not identified in the Environmental Assessment Documentation	Construction Manager Zinfra Environmental Site Representative (or delegate) TfNSW	NSW CoA E93 NSW CoA E94	N/A
Traffic Management						
TT11	When planning and carrying out traffic management, comply with the TfNSW Traffic Control at Work Sites Manual (TCWS).	Traffic inspections	Prior to and during Early Works	Project Manager Construction Manger	Best practice management measure	N/A
TT12	Where works on roads are required, a site specific Traffic Management Plans (TMP) conforming to the RMS Traffic Control at Worksites manual will be developed for the works.	TMP	Prior to works on roads	Construction manager	Best practice management measure	N/A
TT13	Where works on roads are required, Traffic Staging Plans conforming to the RMS Traffic Control at Worksites manual will be developed showing signs and devices arranged to warn traffic and to guide it around, past or if necessary, through a work site or temporary hazard.	Traffic Staging Plans	Prior to works on roads	Construction manager	Best practice management measure	N/A
TT14	Where applicable, Vehicle Movement Plans and Pedestrian Movement Plans will be developed and prepared with Traffic Control Plans.	Vehicle Movement Plans and Pedestrian Movement Plans	During Early Works	Construction manager	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/ Source	Additional information
TT15	A Traffic Incident Management Plan will be developed and implemented. The Traffic Incident Management Plan will be developed in consultation with the Traffic Management Centre, Fairfield City Council and Liverpool City Council.	Traffic Incident Management Plan	During Early Works	Construction manager	Best practice management measure	N/A
TT16	Construction vehicle movements (both on and offsite) will be managed to minimise noise impacts. Where feasible, this will include (but not be limited to): • Establishment and use of internal haul routes, or existing major roads where this is not feasible • Restriction of heavy vehicle movements to standard construction hours • Locating traffic marshalling areas away from residences to minimise noise impacts from idling vehicles • Instructing workers on the operation of heavy vehicles entering and exiting the site to minimise noise.	Vehicle movement plan	During Early Works	Project Manager Construction Manger	REMM NV12	N/A
TT17	Sufficient parking will be provided such that construction vehicles (including staff vehicles) parking, idling and queuing on public roads will be minimised.	Ancillary Facility Layout	During Early Works	Project Manager Construction Manger	Best practice management measure	N/A

Soil, Water and Contamination

The management measures listed below will enable the Early Works to be carried out in a manner so as to either maintain the NSW Water Quality Objectives where they are being achieved as of 23 April 2021 and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved in accordance with NSW CoA 105.

Table 3: Soil, water and contamination environmental management measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
Soil, Water, Contamination						
Erosion and Sediment Control Plans						
SW1	An Erosion and Sediment Control Plan (ESCP) will be prepared by a person with demonstrated skills and experience in preparing the ESCP in accordance with the Blue Book guidelines (Landcom, 2004).	Erosion and Sediment Control Plan	Prior to Early Works	Zinfra Environmental Site Representative (or delegate) Supervisor	Best practice management measure.	N/A
SW2	Erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (NSW Department of Environment, Climate Change and Water 2008) and relevant TfNSW Guidelines.	Erosion and Sediment Control Plan	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	NSW CoA E84	N/A
SW3	ESCPs will be updated to reflect site conditions at the time of works and include a procedure for updating the drawings, a register of all such drawings with the dates of submission, approval, and commencement of work on that section.	Erosion and Sediment Control Plan	During Early Works	Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A

[1] CoA: Condition of Approval
REMM: Revised Environmental Management Measure

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
SW4	A procedure will be prepared for all identified dewatering activities as part of the ESCP.	Erosion and Sediment Control Plan	During Early Works	Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A
SW5	Erosion and sediment controls will be installed prior to the commencement of works where possible, including prior to stockpiling material.	Erosion and Sediment Control Plan	Prior to stockpiling material	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	REMM SWH04	N/A
Stockpile Management						
SW6	Stockpiles will be managed in accordance with *TfNSW Technical Guideline EMS-TG-010: Stockpile Site Management* (Roads and Maritime, 2015) and the *Blue Book guidelines.* Stockpile materials will only be in designated stockpile sites in accordance with your approved CEMP, with appropriate erosion and sediment controls.	Erosion and Sediment Control Plan Inspection records	Prior to and during Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM SWH04	N/A
SW7	The number of stockpiles, area used for stockpiles, and exposure time of the stockpile will be minimised.	Erosion and Sediment Control Plan	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM SWH04 REMM AQ01	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
SW8	Stockpiles will be located outside of the tree protection zone of trees or native vegetation identified for retention and delineated in accordance with AS 4970. A zone of at least 5 metres from retained trees and outside the drip line will be maintained.	Erosion and Sediment Control Plan Sensitive Area Plans	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM SWH04	N/A
SW10	Stockpiles will be located at least 50 m from areas of likely concentrated water flows and at least 10 m from waterways that are classified as Class 1 and Class 2 from the DPI Fisheries guideline "Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings".	Erosion and Sediment Control Plan	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM SWH04	N/A
SW11	Stockpile heights will be to no greater than 2 m, unless otherwise approved by TfNSW, and slopes to no steeper than 2:1. Stockpiles will be managed such that that any slump of the stockpile will not affect erosion and sediment control measures.	Erosion and Sediment Control Plan	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM SWH04	N/A
SW12	Stockpiles (including temporary stockpiles) in place for more than 20 days will be stabilised. Stockpiles susceptible to erosion will be stabilised within 5 days of forming each stockpile.	Erosion and Sediment Control Plan	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM SWH04 REMM AQ01	N/A
SW13	Dust generation will be minimised through use of stabilisation, regularly watering of exposed and disturbed areas especially during inclement weather conditions.	Erosion and Sediment Control Plan	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM AQ01 REMM AQ02	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
SW14	Topsoil that is not contaminated by noxious weeds will be retained and stockpiled for later spreading on fill batters and other areas.	Erosion and Sediment Control Plan	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A
SW15	If any stockpile site is to be located on private land, an approved notice under s.143 of the PoEO 1997 will be obtained from the landowner.	Approved notice under s.143	Prior to commencement of stockpiling	Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A
SW16	Mulch will be managed in accordance with *TfNSW Environmental Direction 25: Management of Tannins from Vegetation Mulch.*		Prior to Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	Best practice management measure	TfNSW Environmental Direction 25: Management of Tannins from Vegetation Mulch.
SW17	The growth of weeds in topsoil stockpiles will be managed through active management i.e. seeding or covering and removal/treatment if identified.	Inspection records	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A
General						
SW18	Refuelling operations will be attended at all times.	Monitoring records	During Early Works	Supervisor Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
Dewatering Activities						
SW19	Approvals will be obtained from relevant authority for the chosen source(s) before commencing water abstraction.	Erosion and Sediment Control Plan	Prior to Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A
SW20	Should water abstraction from a local waterway be required, a qualified aquatic ecologist will be engaged to assess if it is suitable for water abstraction and for when pumping should cease.	EWMS	Prior to water abstraction from local waterway	Supervisor Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A
SW21	Any pumps sumps used in natural waterways will be screened with mesh no greater than 5mm.	Erosion and Sediment Control Plan	During water abstraction	Supervisor Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A
SW22	Gypsum is the preferred flocculant to settle suspended sediments. The application rate, method of application will be detailed within the ESCP.	Erosion and Sediment Control Plan	Prior to Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A
SW23	Gypsum will be applied within 24 hours of the conclusion of each rain event causing runoff.	Erosion and Sediment Control Plan	During Early Works	Supervisor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
SW24	The dewatering system, including intakes and outlets, pumping and discharge locations will be inspected prior to the commencement, and during dewatering.	Inspection records	Prior to commencement of dewatering	Supervisor	Best practice management measure	N/A
SW25	Dewatering activities will be supervised.	Monitoring records	Prior to commencement of dewatering	Supervisor	Best practice management measure	N/A
SW26	The following records will be kept in relation to dewatering: • Dewatering procedure • Date and time for each discharge at each location • Water quality test results for each discharge • Personnel approving the dewatering activities • Evidence of discharge monitoring, or risk assessment and mitigation measures used to eliminate the risks of pollution or erosion	Dewatering Management Plan	Prior to Early Works	Supervisor	Best practice management measure	N/A
SW27	A Dewatering procedure will be prepared and outline the dewatering methodology, testing requirements, supervision requirements, staff responsibilities and training, and approvals required before any de-watering activity begins. The personnel responsible for approval and/or carrying out dewatering activities must be adequately trained and inducted on the use of the dewatering procedure.	Dewatering procedure	Prior to Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM SWH11	N/A
SW28	Water will only be discharged under a permit to discharge. A permit will only be issued once water quality criteria have been met: • pH = 6.5-8.5 • Total Suspended Solids = <50 mg/l • No visible oil and grease	Erosion and Sediment Control Plan Environmental records	Prior to water discharge	Supervisor Zinfra Environmental Site Representative (or delegate)	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
Dangerous Goods and Hazardous Substances						
SW29	Storage, handling and use of dangerous goods and hazardous substances will be in accordance with the *Work Health and Safety Act 2011* and the *Storage and Handling of Dangerous Goods Code of Practice* (WorkCover NSW, 2005).	Inspection records	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
SW30	Secure, bunded areas will be provided around storage areas for oils, fuels and other hazardous liquids.	Inspection records	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
SW31	Safety Data Sheets will be obtained for dangerous goods and hazardous substances. The Safety Data Sheets will be stored onsite before the arrival of the dangerous goods and/or hazardous substances.	Safety Data Sheets	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
SW32	All hazardous substances will be transported in accordance with relevant legislation and codes, including the Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998 and the 'Australian Code for the Transport of Dangerous Goods by Road and Rail' (National Transport Commission, 2008).	Waste transport dockets	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
SW33	Chemicals, fuel and lubricants will be stored in suitably located and bunded areas to minimise the impact of any spillage or contamination on the Site and adjoining areas. Storage of chemicals, fuel and lubricant will be 50 m from any aquatic habitat, flood prone areas, or on slopes steeper than 1:10.	Inspection records	During Early Works	Supervisor Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
Spill Response						
SW34	The spill response procedure detailed in the EWEMP will be implemented.	Spill response procedure	Prior to Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	EWEMP Appendix A5
SW35	Spill clean-up kits will be maintained on-site in agreed locations that are accessible and known to all site workers. Adequate quantities of suitable material to counteract spillage will be readily available.	Inspection records	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
SW36	All personnel to participate in induction about use of spill kits prior to commencing works on site.	Induction material	Induction	Supervisor Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
SW37	Spill prevention and response will comply with the following: • Relevant legislation and Australian Standards • EPA "Bunding and Spill Management Guidelines" contained within EPA Environmental Protection Manual for Authorised Officers" • TfNSW "Code of Practice for Water Management" • Worksafe NSW Guidelines and Codes of Practices.	EWMS	During Early Works	Project Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
SW38	Any activity which may result in spillage of a chemical, fuel or lubricant which drains directly to waters or environmentally sensitive area, will not be undertaken unless appropriate temporary impervious bunding is provided.	Inspection records	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
Monitoring						
SW39	Monitor onsite weather conditions using the Badgerys Creek AWS BOM gauge (#067108) and/or an onsite installed AWS.	Inspection records	During Early Works	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
SW40	Pre and post rainfall event inspections will be conducted.	Inspection records	Pre, during and post rainfall	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source[1]	Additional information
Contamination						
SW41	Should contaminated material be identified, suitable hardstand or lined areas will be identified to allow for its stockpiling. The stockpile will be stabilised and bunded.	Erosion and Sediment Control Plan	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	REMM W02	N/A
SW44	The Unexpected Contaminated Land and Asbestos Finds Procedure will be followed should unexpected contaminated land or asbestos (or suspected contaminated land or asbestos) be excavated or otherwise discovered during construction.	Environmental management records	Prior to and during Early Works	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	NSW CoA E89	Appendix B3 of EWEMP
SW45	The Unexpected Contaminated Land and Asbestos Finds Procedure will be implemented where required.	Environmental management records	During Early Works	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	NSW CoA E90	Appendix B3 of EWEMP

Heritage

Table 4: Heritage environmental management measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
Heritage						
Prior to Early Works						
HE1	At least 5 working days prior to commencing Physical Work on Site in or near an environmentally sensitive area (including heritage sites), an EWMS will be prepared which include the details of the environmental protection measures to be implemented at that location. Clearly delineate the environmentally sensitive area and signpost the locations and boundaries.	EWMS	Prior to Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
HE2	Prior to the commencement of Early Works, an Unexpected Heritage Find and Human Remains Procedure will be prepared. This procedure will be based on the content and processes outlined in the *Unexpected Heritage Items: Heritage Procedure 02* (RMS, 2015), which was prepared by suitably qualified professionals in consultation with Heritage NSW. This will be implemented as required during Early Works.	Unexpected Heritage Find and Human Remains Procedure (Appendix B4)	Prior to Early Works	Zinfra	NSW CoA A24 NSW CoA E31	N/A
HE3	All employees, contractors and subcontractors are to receive a Project induction prior to commencing work on site. The induction will include: • Responsibilities under the *Heritage Act 1977 (NSW)* • Responsibilities pertaining to the Aboriginal Heritage provisions of the *National Parks and Wildlife Act 1974 (NSW)*	Induction material	Prior to starting on site Early Works	Zinfra Environmental Site Representative (or delegate)	Standard industry practice	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
	• Other relevant legislation and guidelines • Location of all Aboriginal archaeological sites and areas of cultural sensitivity identified • Location of all non-Aboriginal heritage sites/areas, including cultural plantings, and areas of archaeological potential • Implementing the Unexpected Heritage Find and Human Remains Procedure • Safe working distance for sensitive structures			Early Works Vegetation Clearing Contractor		
HE4	All site personnel will undergo Aboriginal cultural awareness training delivered by a traditional owner or an appropriate member of the local Aboriginal community.	Training matrix/records	Prior to impact on heritage items	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
Delineation of Aboriginal and non-Aboriginal heritage sites						
HE5	Environmentally sensitive areas will be clearly delineated and the locations and boundaries will be signposted.	Site inspection report	Prior to Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
				Clearing Contractor		
Upper Canal System						
HE6	Detailed surveys will be carried out to confirm the existing condition of the WaterNSW Upper Canal System and the Jemena high pressure gas pipelines to determine potential vibration impacts and appropriate vibration criteria. This will also include consideration of distances from the vibration intensive activity (piling, rock-breaking and vibratory rolling), as well as ground conditions.	Monitoring Records	Prior to carrying out vibration intensive works	TfNSW / Zinfra	REMM NV10 REMM NV11	Heritage Findings Report
HE7	A vibration criterion of a peak particle velocity (PPV) will be determined in consultation with WaterNSW.	Monitoring Records	Prior to carrying out vibration intensive works	TfNSW / Zinfra	REMM NV10	N/A
HE8	Vibration monitoring will be carried out when vibration intensive tasks are occurring within the minimum working distances to the Upper Canal System. Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, Zinfra will review work methodologies and additional mitigation measures will be identified and implemented to appropriately manage impacts.	Monitoring Records	Prior to carrying out vibration intensive works	Zinfra	REMM NV11 *Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines* (WaterNSW, 2020)	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
HE9	For noise and vibration monitoring at the Upper Canal System, a heritage specialist will be engaged to advise on the methods and locations for installing equipment.	Monitoring records Engagement of heritage specialist	Prior to monitoring	Zinfra Environmental Site Representative (or delegate) Heritage Specialist	NSW CoA E43	Section 4 of the Noise and Vibration Monitoring Program
HE10	Guidelines and associated safe working distances to be adhered to for the Upper Canal System as outlined in the *German Standard DIN 4150* and the *Roads and Maritime Construction Noise and Vibration Guideline.*	Monitoring records	During Early Works	Zinfra	REMM NAH06	Section 4 of the Noise and Vibration Monitoring Program
HE11	An exclusion zone will be established that delineates the safe working distances for Tunnel Shaft 3. Should Early Works activities be required within the exclusion zone, trench compactors and plate compactors will be used to ensure no vibration impacts.	Site inspection	During Early Works	Zinfra	Best practice management measure	Findings Report
HE12	Where the monitoring identifies exceedances in the relevant criteria, or where impacts are identified, additional mitigation measures will be identified and implemented to appropriately manage impacts.	Monitoring records	When vibration exceedances identified	Zinfra Environmental Site Representative (or delegate)	REMM NV11	N/A
Cecil Park School, Post Office and Church School						
HE13	A suitably qualified archaeologist will be present during the excavation of the area occupied by the Cecil Park Archaeological	Engagement of archaeologist	During earthworks	Zinfra Environmental	REMM NAH09	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
	site to confirm that the significance of artefacts and remains are in line with the findings of the test excavations already completed. If remains with the potential to be considered 'relics' (as defined in the Heritage Act 1977) are found, then works will stop and the Unexpected Heritage Finds Procedure will be followed.		within the Cecil Park Archaeological site	Site Representative (or delegate)		
Previously unidentified Aboriginal objects						
HE14	Where previously unidentified Aboriginal objects are discovered, all work must immediately stop in the vicinity of the affected area. Works potentially affecting the previously unidentified objects must not recommence. The Unexpected Finds Procedure will be implemented.	Unexpected Heritage Item Recording Form 418	During Early Works	Project Manager Early Works Vegetation Clearing Contractor	NSW CoA E33	EWEMP Appendix B4

Air Quality

Table 5: Air quality environmental management measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
Air Quality						
Training						
AQ1	All employees, contractors and sub-contractors are to receive a Project induction prior to commencing work on site. The induction will include: • Existence and requirements of this EWEMP • Relevant legislation and guidelines • Location of sensitive receivers • Complaints reporting and recording • How to implement air quality management measures Specific responsibilities to minimise air quality impacts on the community associated with construction activities	Induction material	Prior to starting on site Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Standard industry practice	N/A
General						
AQ2	Dust generation will be minimised during Early Works where possible. Where practicable, specific measures will include (but not be limited to): • Regularly watering exposed and disturbed areas including stockpiles, especially during inclement weather conditions • Adjusting the intensity of activities based on measured and observed dust levels, weather forecasts and the proximity of and direction of the works in relation to the nearest surrounding receivers	Site inspection reports	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	REMM AQ02	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
	• Ensuring loads are covered, and any loose materials/debris are removed before vehicles exit the site • Minimising the number of stockpiles and amount of material stockpiled where practicable • Positioning stockpiling areas as far as possible from surrounding receivers, including potentially ecologically sensitive receivers • Limiting stockpiling activities during conditions where winds are blowing strongly in the direction(s) from the stockpiling location to nearby receivers • Consultation with nearby developers to co-ordinate and plan activities where practicable to minimise the potential for cumulative dust-related impacts.					
AQ3	Odorous materials identified on site will be excavated in a staged process and exposed areas of odorous material will be kept to a minimum to reduce the total emissions from the site where feasible.	Site inspection reports	During Early Works	Supervisor Zinfra Environmental Site Representative (or delegate)	REMM AQ03	N/A

Waste and Resources

Table 6: Waste and resources environmental management measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
Waste and Resources						
General						
W1	The waste minimisation hierarchy principles of avoid/reduce/reuse/ recycle/dispose will be used. Waste generation will be avoided, where possible. If avoidance is not reasonably practicable, waste generation will be reduced. Where avoiding or reducing waste is not possible, waste will be re-used, recycled, or recovered. Where re-using, recycling or recovering waste is not possible, waste must be treated or disposed of.	Waste Tracking Register Inspection records	Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	NSW CoA E100	N/A
W2	If required, importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste will be in accordance with a *Resource Recovery Exemption or Order* issued under the *PoEO (Waste) Regulation 2014.*	Waste Tracking Register	During Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	NSW CoA E101	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
W3	Waste will only be exported to the following for the storage, treatment, processing, reprocessing or disposal of the subject waste: • Site licensed by the EPA • Site licenced un accordance with a Resource Recovery Exemption or Order issued under the *Protection of the Environment Operations (Waste) Regulation 2014*, or • To any other place that can lawfully accept such waste (except in accordance with Condition E15).	Waste Tracking Register	During Early Works	Project Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	NSW CoA E102	N/A
W4	All waste will be identified and classified in accordance with *NSW EPA's Waste Classification Guidelines*.	Waste Tracking Register	During Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	NSW CoA E103 REMM SC08	N/A
W5	All appropriate waste records and disposal dockets will be retained for audit purposes.	Waste records Disposal dockets	During Early Works	Project Manager Early Works Vegetation Clearing Contractor	NSW CoA E103 REMM SC08	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
W6	A waste tracking register will be maintained and include the following: • Quantities, classification and source location of each type of waste generated • Destination location(s) for all wastes generated • Quantities, classification, emplacement location of any waste types imported onto the site • Quantities and types of wastes that are subject to a Resource Recovery Order and/or Exemption • Disposal records demonstrating that receiving facilities have lawfully accepted the waste type. The waste tracking register will be made available to the Planning Secretary and EPA on request.	Waste Tracking Register	Prior to and during Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	NSW CoA E104	N/A
W8	All waste will be classified in accordance with the *NSW EPA's Waste Classification Guidelines*, with appropriate records and disposal dockets retained for audit purposes.	Waste Tracking Register	During Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	REMM SC08	N/A
W9	A s143 notice (under the POEO Act) will be obtained from the landowner when transporting or depositing of waste on non-licenced land.	Waste Tracking Register	During Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
W10	The procurement of goods and services will consider goods and services that will minimise the generation of waste.	Procurement records	During Early Works	Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	REMM GC04	N/A
Energy use						
W11	Wherever feasible and reasonable, construction material will be sourced from within the Sydney region.	Procurement records	During Early Works	Project Manager Early Works Vegetation Clearing Contractor	REMM W03	N/A
W12	The procurement of goods and services will consider goods and services that: • Are from local suppliers • Make use of recycled materials or materials with a low embodied energy content. • Are energy efficient or have low embodied energy • Minimise the generation of waste.	Procurement records	During Early Works	Project Manager Early Works Vegetation Clearing Contractor	REMM GG04	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
W13	Construction plant and equipment will be well maintained to maximise fuel efficiency.	Pre-start inspections	During Early Works	Project Manager Early Works Vegetation Clearing Contractor	REMM GG05	N/A

Flooding

Table 7: Flooding environmental management measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
Flooding						
Training						
FL1	All construction personnel will be provided with information/training regarding the importance of flood warning and evacuation requirements	Training matrix/records	Prior to starting on site Early Works	Zinfra Environmental Site Representative (or delegate) Project Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
Ancillary Facility						
FL2	The siting of ancillary facilities will be chosen such that they do not worsen the existing flood characteristics of the area	Sensitive Area Maps	Prior to Early Works	Project Manager	Best practice management measure	N/A
General						
FL3	Minimise the extent of obstructions within flood prone areas as far as practicable at all times during construction	Sensitive Area Maps	Prior to Early Work and during Early Works	Project Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
Monitoring						

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
FL4	Monitor Bureau of Meteorology forecast for heavy rainfall events in order to allow sufficient time to vacate and prepare the site prior to the commencement of heavy rainfall and flood events.	Monthly Environmental Report	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
FL5	Monitor Bureau of Meteorology flood warnings for the Hawkesbury-Nepean catchment	Monthly Environmental Report	During Early Works	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
Heavy rainfall events						
FL6	Relocate waste containers, chemicals and dangerous goods above flood prone areas	Site inspection records	Prior to a heavy rainfall event	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
FL7	Locate plant and equipment on high ground when flooding is expected	Site inspection records	Prior to a heavy rainfall event	Construction Manager Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
FL8	Upon determination of heavy rainfall event, advise staff and workers to prepare for a potential flood event and follow flood procedures for evacuation	Site inspection records	Prior to a heavy rainfall event	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
Return to work						
FL9	Conduct safe walk through to determine whether or not it is safe to return to work.	Site inspection records	After a flood event	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A
FL10	Review and restore erosion and sediment control devices as per the ESCP	Site inspection records	After a flood event	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation	Best practice management measure	N/A

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference or source	Additional information
				Clearing Contractor		
FL11	Any equipment, materials or debris moved by the flood water will be returned to correct area, or disposed of	Site inspection records	After a flood event	Construction Manager Zinfra Environmental Site Representative (or delegate) Early Works Vegetation Clearing Contractor	Best practice management measure	N/A

Urban design, landscape and character

Table 8: Urban design, landscape and character

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/Source	Additional information
Urban design, landscape and character						
Ancillary Facilities						
UD1	Visual impacts of construction ancillary facilities will be minimised through: • Provision of temporary landscaping • Vegetative screening • Retention of existing vegetation where possible • Minimising light spill (refer to UD3) • Retention and use of existing structures and incorporation of architectural treatment and finishes within key elements of temporary structures that reflect the context within which the construction sites are located.	Site Inspection report	During Early Works	Project Manager	NSW CoA E61	SEMP Section 6.1
UD2	Project elements such as ancillary facility hoardings will be designed and maintained to minimise impacts on landscape character and visual amenity. This will include selecting colours and materials that are visually recessive and blend into the surrounding landscape where practicable, and the prompt removal of graffiti.	Site Inspection report	During Early Works	Project Manager	REMM LVIA05	EWEMP

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/Source	Additional information
All Early Works Activities						
UD3	Temporary lighting will be implemented with consideration of: • The need to orientate lighting to minimise light spill and glare impacts on nearby receivers • The need to minimise vandalism and maintenance requirements • Australian Standard 4282-2019 Control of the obtrusive effects of outdoor lighting, relevant Australian Standards in the series AS/NZ 1158 – Lighting for Roads and Public Spaces • Requirements of the National Airports Safeguarding Framework (NASF) (National Airports Safeguarding Advisory Group, n.d.) for operational lighting • Use of energy efficient lighting, solar lighting, or mains connected lighting.	Temporary Lighting Design	NSW CoA E62 REMM LVIA07	During Early Works	Project Manager	N/A

Socio-Economic, Land Use and Property

Table 9: Socio-Economic, Land Use and Property environmental management measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/ Source	Additional information
Socio-Economic, Land Use and Property						
General						
SLP1	Areas of land leased for the purposes of the Project will be reinstated at the end of the lease to at least equivalent standard in consultation with the landowner. Therefore, an inspection/photographs of the site prior to occupation will be undertaken.	Site Inspection Report	During Early Works	Project Manager	REMM SLP01	EWEMP
SLP2	Activities will be planned to minimise disruption to existing agricultural operations/activities in surrounding properties where feasible and reasonable (e.g. stock access, access to farm dams, etc) unless otherwise agreed by the landowner.	Program	During Early Works	Project Manager	REMM SPL07	N/A
SLP3	On-going consultation will be carried out with local business owners that may be impacted during construction (including owners of agricultural businesses) in accordance with the Overarching Communication Strategy.	Notification records	During Early Works	Zinfra Environmental Site Representative (or delegate)	REMM SLP12	Overarching Communication Strategy.
SLP4	Employment opportunities for the project will align with the commitments outlined in the Western Sydney City Deal (2018), including targets for Indigenous, social and local employment and procurement.	Procurement Plan	During Early Works	TfNSW	REMM SLP14	N/A

Health and Safety

Table 10: Health and Safety environmental management measures

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/ Source	Additional information
Health and Safety						
Documentation						
HS1	A Work Health and Safety Plan (WHSMP) will be developed in accordance with REMM HS01.	WHSMP	Prior to Early Works	Safety Manager	REMM HS01	WHSMP
HS2	An incident response management plan will be developed and implemented. The response to incidents within the road will be managed in accordance with the memorandum of understanding between TfNSW and the NSW Police Service, NSW Rural Fire Service, NSW Fire Brigade and other emergency services.	WHSMP	Prior to Early Works	Construction Manager	REMM HS03	WHSMP
HS3	Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite before their arrival.	Site inspection report	During Early Works	Construction Manager	REMM HS06	WHSMP SEMP Section 6.1
Ancillary Facilities						
HS4	Measures to mitigate and manage bushfire risk will be developed and included as part of site specific hazard and risk management measures within the WHSMP and SEMP. Measures will include the maintenance of ancillary facilities in a tidy and orderly manner and the storage and management of dangerous goods and hazardous materials in a safe location.	WHSMP SEMP	Prior to Early Works	Construction Manager	REMM HS02	WHSMP SEMP Section 6.1

ID	Management Measure	Evidence of Implementation	When to Implement	Responsibility for implementation	Reference/ Source	Additional information
HS5	Storage, handling and use of dangerous goods and hazardous substances would be in accordance with the *Work Health and Safety Act 2011* and the *Storage and Handling of Dangerous Goods Code of Practice* (WorkCover NSW, 2005).	Site Inspection Report	During Early Works	Construction Manager	REMM HS04	WHSMP
HS6	Secure, bunded areas will be provided around storage areas for oils, fuels and other hazardous liquids.	Site Inspection Report	During Early Works	Construction Manager	REMM HS05	WHSMP SEMP Section 6.1
HS7	All hazardous substances will be transported in accordance with relevant legislation and codes, including the Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998 and the 'Australian Code for the Transport of Dangerous Goods by Road and Rail' (National Transport Commission, 2008).	Procurement Documentation	During Early Works	Construction Manager	REMM HS07	WHSMP

Appendix A9

Waste Tracking Register Template

M12 Motorway Early Works – Protection of High Pressure Gas Mains

August 2022

Transport for New South Wales

Waste transported off site

Date / time	Source Location		Waste classification	Description of waste (e.g. concrete, asphalt, vegetation)	Quantity of spoil / waste generated (kg/tonnes)	Resource Recovery Order and/or exemption	Transporter (name and waste transport licence, if applicable)	Receiving facility / Destination	Waste use (reused, recycled, stockpiled or disposed)	Invoice no. / tip docket reference
	Longitude	Latitude								

Waste imported to site

Date / time	Emplacement Location		Waste classification	Description of waste (e.g. concrete, asphalt, vegetation)	Quantity of spoil / waste (kg/tonnes)	Transporter (name and waste transport licence, if applicable)	Waste use (reused, recycled, stockpiled or disposed)	Resource Recovery Order and/or Exemption
	Longitude	Latitude						

Activity	Description of Activity	Plant/ Equipment	L_{Aeq} SWL	L_{Aeq} at 7m	Assumptions for quantitative assessment			
					No. Units	Activity total L_{eq} SWL	Activity total L_{A1} SWL	
Mobilisation & Site Establishment	Installing construction boundary hoardings/ fences and traffic barriers	Truck (medium rigid)	103	78	4 per hour	**115**		**116**
		Road truck	108	83	4 per hour			
		Scissor Lift	98	73	1			
		Franna crane	98	73	1			
Utility, property, service adjustment	Adjustment of property boundaries (where required); relocation of services	Excavator (tracked) 35t	110	85	1	**116**		**116**
		Dump truck	110	85	4 per hour			
		Franna crane 20t	98	73	1			
		Pneumatic hammer	113	88	-			
		Concrete saw	118	93	1			
		Vacuum truck	109	84	-			
		Backhoe	111	86	-			
		Power generator	103	78	1			
Corridor Clearing	General land clearing, tree and stump removal, topsoil stripping, loading	Bulldozer D9	116	91	1	**121**		
		Excavator (tracked) 35t	110	85	1			
		Chainsaw 4-5hp	114	89	2		**Not recommended as OOHW**	
		Tub grinder/ mulcher 40-50hp	116	91	1			
		Dump truck	110	85	4 per hour			
	House/ building demolition	Excavator (tracked) 35t	110	85	1	**122**		
		As above + hydraulic hammer	122	97	1		**Not recommended as OOHW**	
		Front end loader 23t	112	87	1			
		Dump truck	108	83	4 per hour			
Rock crushing	Crushing and screening of building waste/ rock material for re-use on site	Rock crusher	118	93	1	**118**		
		Bulldozer D9	116	91	1		**Not recommended as OOHW**	
		Excavator (tracked) 35t	110	85	1			
		Dump truck	110	85	4 per hour			
Bulk earthworks	Formation of road alignment. Excavation of soil and rock, hammering/rock breaking, drilling, loading, haulage, compaction of fill areas, grading	Bulldozer D9	116	91	1	**123**		
		Scraper 651	110	85	1			
		Excavator (tracked) 35t	110	85	1			
		As above + hydraulic hammer	122	97	1			
		Grader	113	88	1		**Not recommended as OOHW**	
		Dump truck	110	85	8 per hour			
		Compactor	106	81	1			
		Roller (large pad foot)	109	84	-			
		Water cart	107	82	-			
Drainage infrastructure	Excavation of trenches and pits; Delivery and placement of precast pipes and pits; filling and compacting.	Backhoe	110	85	-	**115**		**116**
		Franna crane 20t	98	73	1			
		Excavator (tracked) 35t	110	85	1			
		Concrete truck	109	84	4 per hour			
		Truck compressor	75	50	1			
		Vibratory roller	109	84	1			
		Road truck	108	83	4 per hour			
Bridge works	Casting; concrete pours; Placement of pre-cast elements; Piling (mainly bored); and Demolition.	Franna crane 20t	98	73	1	**120**		**124**
		Piling rig - driven	116	91	-			
		Piling rig - bored	112	87	1			
		Power generator	100	75	1			
		Concrete pump	102	77	1		(Piling not recommended as OOHW)	
		Concrete truck	109	84	4 per hour			
		Compressor	109	84	1			
		Pneumatic hammer	115	90	-			
		Welding equipment	105	80	-			
Retaining walls/ noise walls	Construction of retaining walls & noise walls	Piling rig - bored	112	87	1	**119**		**130**
		Power generator	103	78	1			
		Mobile crane	113	88	1			
		Concrete vibrator	113	88	1		(Piling and air track drill not recommended as OOHW)	
		Concrete pump	109	84	1			
		Welding equipment	105	80				
		Excavator (tracked) 35t	112	87	1			
		Air track drill	124	99				
Paving/ asphalting (inc concrete sawing)	Delivery of raw materials.	Pavement laying machine	114	89	1	**118**		**130**
	Placement of surface material.	Dump truck	110	85	4 per hour			
	Saw cutting.	Asphalt truck & sprayer	103	78	1			
		Concrete truck	109	84	1			
		Smooth drum roller	107	82	1			
		Concrete saw	118	93	1			
Compounds	Deliveries.	Front end loader	91	66	1	**114**		**116**
	Plant and equipment.	Excavator (tracked) 35t	110	85	-			
	Maintenance.	Road truck	108	83	4 per hour			
	Office areas.	Compressor	109	84	1			
	Storage areas.	Welding equipment	105	80	1			
		Light vehicles	88	63	12 per hour			
		Power generator	103	78	1			
Road furniture installation	Signposting and line marking	Road truck	108	83	4 per hour	**110**		**116**
		Scissor lift	98	73	1			
		Franna crane 20t	98	73	1			
		Line marking truck	108	83	1			
Construction Compound Site Establishment		Chainsaw 4-5hp	114	89	2	**119**		
		Pneumatic hammer	113	88	-			
		Fixed crane	113	88	1			
		Front end loader	112	87	1			
		Excavator (tracked) 35t	110	85	-			
		Grader	113	88	1			
		Vibratory roller	109	84	-		**Not recommended as OOHW**	
		Concrete truck	109	84	4 per hour			
		Dump truck	110	85	4 per hour			
		Water cart	107	82	-			
		Concrete vibrator	113	88	1			
		Concrete pump	109	84	1			
		Power generator	103	78	1			
		Light vehicles (eg 4WD)	103	78				
Local Roads Works		Bulldozer D9	116	91	1	**120**		**128**
		Excavator (tracked) 35t	110	85	-			
		Chainsaw 4-5hp	114	89	2			
		Tub grinder/ mulcher 40-50hp	116	91	1			
		Front end loader	112	87	1			
		Scraper 651	110	85	1			
		Backhoe	111	86	-			
		Compactor	106	81	1			
		Dump truck	110	85	4 per hour			
		Road truck	108	83	4 per hour			
		Water cart	107	82	-			
Re-surfacing works	Milling the asphalt to expose the underlying concrete, then laying new asphalt	Daymakers	98	73	2	**118**		**123**
		Pavement profiler	117	92	1			
		Dump truck	110	85	4 per hour			
		Front end loader	112	87	1			
		Pavement laying machine	114	89				
		Asphalt truck & sprayer	106	81				
		Smooth drum roller	107	82				

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 Zinfra Early Works
Scenario name	Site Establishment
Receiver address	Wallgrove Road
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		54
	Evening		48
	Night		37
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		64
	Day (OOHW)		59
	Evening		53
	Night		42

Representative distance (m)	30

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Site establishment	115	Yes	0	30	71

Total SPL $L_{Aeq(15minute)}$ (dBA)	***71***

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	64	55	65	55	65	60	75	70
	Day (OOHW)	59	55	65	55	65	60	75	70
	OOHW Period 1	53		65	55	65	60	75	70
	OOHW Period 2	42		65	55			75	70
Level above background (dB(A))	Standard hours	17							
	Day (OOHW)	17							
	OOHW Period 1	23							
	OOHW Period 2	34							
Level above NML (dB(A))	Standard hours	7	16	6	16	6	11		1
	Day (OOHW)	22	16	6	16	6	11		1
	OOHW Period 1	18		6	16	6	11		1
	OOHW Period 2	29		6	16				1
Additional mitigation measures	Standard Hours	-	N, V	-	N, V	-	N, V	-	-
	Day (OOHW)	N, R1, DR	V,N, R1, DR	N, R1, DR	V,N, R1, DR	N, R1, DR	N, R1, DR	-	-
	OOHW Period 1	V, N, R1, DR		N, R1, DR	V,N, R1, DR	N, R1, DR	N, R1, DR	-	-
	OOHW Period 2	AA, V, IB, N, PC, SN, R2, DR		V, N, R2, DR	V, IB, N, PC, SN, R2, DR			-	N

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
9. Identify and implement standard mitigation measures where feasible and reasonble. Include any shileiding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 42 to 44).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 Early Works - Zinfra
Scenario name	Utility adjustment
Receiver address	Wallgrove Road
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		54
	Evening		48
	Night		37
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		64
	Day (OOHW)		59
	Evening		53
	Night		42

Representative distance (m)	30

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Utility, property, service adjustment	116	Yes	0	30	72

Total SPL $L_{Aeq(15minute)}$ (dBA)	*72*

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	64	55	65	55	65	60	75	70
	Day (OOHW)	59	55	65	55	65	60	75	70
	OOHW Period 1	53		65	55	65	60	75	70
	OOHW Period 2	42		65	55			75	70
Level above background (dB(A))	Standard hours	18							
	Day (OOHW)	18							
	OOHW Period 1	24							
	OOHW Period 2	35							
Level above NML (dB(A))	Standard hours	8	17	7	17	7	12		2
	Day (OOHW)	23	17	7	17	7	12		2
	OOHW Period 1	19		7	17	7	12		2
	OOHW Period 2	30		7	17				2
Additional mitigation measures	Standard Hours	-	N, V	-	N, V	-	N, V	-	-
	Day (OOHW)	N, R1, DR	V,N, R1, DR	N, R1, DR	V,N, R1, DR	N, R1, DR	N, R1, DR	-	-
	OOHW Period 1	V, N, R1, DR		N, R1, DR	V,N, R1, DR	N, R1, DR	N, R1, DR	-	-
	OOHW Period 2	AA, V, IB, N, PC, SN, R2, DR		V, N, R2, DR	V, IB, N, PC, SN, R2, DR			-	N

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
9. Identify and implement standard mitigation measures where feasible and reasonble. Include any shileiding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 42 to 44).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Appendix B3

Unexpected Contamination Finds Procedure

M12 Motorway Early Works – Protection of High Pressure Gas Mains

August 2022

Transport for New South Wales

1 Introduction

1.1 Purpose

This Unexpected Discovery of Contaminated Land Procedure details the actions to be taken when potential contaminated soil/material is encountered during excavation/construction activities. In the event that hazardous materials are discovered, this Procedure should be implemented.

This Procedure has been developed in accordance with best practice EPA contamination management guidelines and TfNSW specifications.

1.2 Scope

This Procedure is applicable to all activities conducted by site personnel (including sub-contractors) on the Project that have the potential to uncover/encounter contaminated soil/material. This procedure is not applicable to the identification of soils suspected to be contaminated with plant pathogens.

1.3 Induction / training

Where required, all site personnel (including sub-contractors) are to be inducted on the identification of potential contaminated soil/material along with the requirements of this Procedure during inductions and/or regular toolbox talks. Site personnel should be informed of the potential sources of contamination within the Project and indications of contamination in soil and groundwater, such as:

- Odour
- Discolouration/staining of soils
- Evidence of landfilling/discarded drums.

1.4 Roles and responsibilities

The Zinfra Environmental Site Representative (or delegate) and the Early Works Vegetation Clearing Contractor will ensure that this Procedure is effectively implemented, and all site personnel are aware of the requirements of this Procedure.

The Zinfra Supervisor and the Early Works Vegetation Clearing Contractor will be responsible for ensuring that in the event that contaminated land is discovered, site personnel are informed immediately and all work in the vicinity of the find ceases.

The Zinfra Environmental Site Representative (or delegate) and Early Works Vegetation Clearing Contractor will be advised of any required actions for the control of discovered contamination on site, such as implementation of exclusion zones and signage, and will be responsible for ensuring the actions are undertaken.

The TfNSW Environment and Sustainability Manager will liaise with the relevant authorities (such as EPA and a Contaminated Land Specialist) where required, and will approve the recommencement of works following any remediation undertaken.

1.5 Review

This Procedure will be updated by Zinfra and reviewed by Zinfra's Environmental Site Representative (or delegate), the Early Works Vegetation Clearing Contractor and the TfNSW Environment and Sustainability Manager prior to commencement of construction of the Project.

This Procedure will be updated throughout construction of the Project to include any new identified sites of contamination, if required, and subsequent additional management measures. This Procedure will be reviewed annually, or as required in accordance with the section 6 of the EWEMP.

2 Procedure

The steps to be followed in the event that contaminated material is encountered during construction are outlined below. Indicators of contamination in soils include:

- Discolouration of the soil, including staining and horizontal layers of discolouration
- Odours from soil
- Oily sheen on water leaving soils.

Step 1. Potential contaminated soil/material encountered during construction activities

If potential contaminated soil/material is encountered during excavation/construction activities:

- **Cease work** in the immediate/affected area
- The Zinfra Supervisor and/or the Early Works Vegetation Clearing Contractor will immediately notify the TfNSW Environment and Sustainability Manager and the ER
- Install environmental controls around the site to contain the contaminated material, including diversion of water to minimise potential spread via surface water runoff
- If it is determined that there is a risk of environmental harm from the potential contamination, the EPA will be notified immediately in accordance with the TfNSW Environmental Incident and Classification Procedure (refer to Appendix A5 of the EWEMP)
- Recommence works in an alternate area where practicable.

Step 2. Environmental management and work health safety management

Prior to any contamination investigation, management or remediation activities, appropriate Safe Work Method Statements (SWMS) and EWMS will be prepared by the Zinfra Environmental Site Representative (or delegate) and/or the Early Works Vegetation Clearing Contractor and reviewed by the TfNSW Project Manager, TfNSW Environment and Sustainability Manager.

Personal Protective Equipment (PPE) will be worn as per the relevant Safety Data Sheet/s. This may include, but not be limited, to:

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

Step 3. Undertake a site/area contamination investigation

The Zinfra Environmental Site Representative (or delegate) and/or the Early Works Vegetation Clearing Contractor 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* (EPA, 2014).

If necessary, the Zinfra Environmental Site Representative (or delegate) and/or the Early Works Vegetation Clearing Contractor will liaise with the relevant authorities to determine the appropriate management options.

The Zinfra Environmental Site Representative (or delegate) and/or the Early Works Vegetation Clearing Contractor (in consultation with specialists) will determine the appropriate management measures to be implemented. This may include leaving contamination undisturbed, capping of contamination, treatment or off-site disposal. Material to be disposed of off-site will be transferred to an appropriately licensed waste facility.

If the material is determined to be acid sulfate soil or potential acid sulfate soil, the management procedures outlined in the *Acid Sulfate Soil Manual* (Acid Sulfate Soil Management Advisory Committee, 1998) will be followed.

Step 4. Remedial action

Remedial actions will be incorporated into specific Remediation Action Plans (RAPs). RAPs will be prepared by a suitably qualified and experienced person and in accordance with all guidelines under the *Contaminated Land Management Act* (NSW).

RAPs will be verified by a Contaminated Land Specialist and submitted to the TfNSW Environment and Sustainability Manager for approval prior to commencement of remediation.

Relevant EWMS or SWMS will be reviewed and updated when required.

Step 5. Recommence works

Recommence works once remedial works have been implemented and sampling has validated that the remediation strategy has been successful. The TfNSW Environment and Sustainability Manager will grant approval for Zinfra and/or the Early Works Vegetation Clearing Contractor to recommence works.

3 Asbestos Management Procedure

The following Asbestos Management Procedure will be adopted in the event that potential asbestos containing material (ACM) or actual asbestos is uncovered during the Early Works. Implementation of this procedure will ensure that asbestos is managed in such a way as to avoid harm to site personnel, visitors and the community.

3.1 Asbestos Finds Procedure

Asbestos management for both friable and non-friable asbestos, will be undertaken as follows:

Step 1 – Cease works in the area potentially impacted by ACM as soon as it is safe to do so and move to the upwind side of the area, or away from the area.

Step 2 – Assess the potential immediate risk to human health posed by the unexpected find and move away from the area if required.

Step 3 – Delineate an exclusion zone around the affected area using fencing and/or appropriate barriers and signage. Keep soil/ACM damp to minimise / prevent the release of fibres to air.

Step 4 – Notify the ESR and TfNSW Environment and Sustainability Manager to assess the unexpected find and determine what further assessment and/or remediation works are required. Implement the implement the incident reporting procedure.

Step 5 – ESR in consultation environmental consultant to implement RAP.

Step 6 – NSW EPA accredited site auditor to confirm remedial actions have been successful and confirm works may proceed.

3.2 Asbestos Removal

Asbestos removal will be undertaken by suitably qualified personnel and/ or subcontractors who are licensed by SafeWork NSW.

3.2.1 Asbestos Removal Control Plan (ARCP)

An Asbestos Removal Control Plan (ARCP) is required to be completed in accordance with *Work Health and Safety Regulation 2017* (Regulation 464). The ARCP will be developed prior to undertaking any asbestos removal works. The aim of the plan is to outline the specific methods and processes that will be used to ensure the removal is safe and effective.

Additionally, Safe Works Method Statements (SWMS) will also be generated for individual ACM related activities.

3.2.2 Identification

Friable Asbestos

- Requires Class A License

- Any amount of friable asbestos, ACM, asbestos contaminated dust or debris (ACD) or non-friable asbestos.

Licensed Non-friable asbestos

- Requires class B license
- Greater than 10 metres squared of Non-Friable (bonded) asbestos or ACM
- ACD that is associated with removal to 10 square metres or more of non-friable asbestos or ACM.

Unlicensed Asbestos

- No license required
- 10 meters squared or less of Non–Friable (bonded) asbestos or ACM
- ACD that is not more than a minor contamination and is associated with the removal of 10 square meters or less of non-friable asbestos or ACM.

Asbestos Removal from soil

- May require Class A or Class B license depending on type (Friable or Non-Friable) Asbestos-contaminated soil comprising non-attached pieces of asbestos cement products and other material containing asbestos uncovered in soil.

3.2.3 Notification

Prior to the commencement of licensed asbestos removal works, notification to SafeWork NSW is required. SafeWork NSW requires a minimum of 5 days' notice prior to the removal of asbestos and the notification will include:

- Name, registered business name, ABN, license number and business contact details of the licensed asbestos removalist
- Name and business contact details of the Supervisor who will oversee the removal work
- Client name and contact details
- Name, including registered business or corporate name, of the person with management or control of the workplace
- Workplace address, including specific location if a large workplace
- Kind of workplace where removal work will be performed (workplace type and scope of work)
- Date of notification
- Start date of the removal work and an estimation of how long it will take
- Nature of asbestos to be removed – friable or non-friable
- Type of asbestos, e.g. asbestos-contaminated sheeting, vinyl tiles, lagging, gaskets, etc.
- For friable asbestos (not restricted to soils) the mechanism by which the area will be enclosed
- Estimated quantity of asbestos to be removed

- Number of workers who will perform the removal work and details of their competency to carry out the removal work.

3.2.4 Site Establishment and Signage

The boundaries of the 'Asbestos Works Area' and the 'Asbestos Removal Site' must be determined and defined by the nominated asbestos removal supervisor. All stakeholders must agree on the asbestos removal boundaries before any asbestos removal work commences. In determining the asbestos removal boundaries, consideration shall be given to:

- The use and suitability of various types of enclosures and asbestos removal methods; and
- The impacts of the asbestos removal work, including potential exposures in the surrounding region. In determining the distance between barriers and the asbestos work area a risk assessment should take account of:
- Whether the ACM are friable or non-friable
- Activity around the asbestos work area (other workers, visitors, neighbours, the public, etc.)
- The methods of ACM removal
- Any existing barriers (walls, doors, etc.)
- The quantity of ACM to be removed
- The type of barrier used (e.g. boarding or tape).

The asbestos removal site boundary must be clearly and securely delineated to ensure persons do not enter inadvertently or without authority. Signage must warn persons that asbestos removal work is being carried out, of the dangers of exposure to asbestos and of PPE and other site entry requirements. All boundary delineation and warning/danger signs must remain in place until a clearance to re-occupy has been granted. All warning/danger signage must comply with *AS 1319 Safety signs for the occupational environment*. These signs will be weatherproof, constructed of light-weight material and adequately secured

In circumstances where the erection of fencing or barricades is not feasible, such as on concrete hard stand or within a building, tape may be used as a barrier to define an asbestos work area (for some types of asbestos removal work of short duration). If a sign is not feasible, tape with the words 'asbestos hazard' repeated along its length may be used instead to delineate and communicate the hazard.

3.2.5 Removal Methods

The asbestos removalist will use techniques to eliminate or minimise the generation of asbestos fibres so far as reasonably practicable. They will choose the method of asbestos removal that is most effective at minimising fibre release at the source. The removal methods are listed in preferred order:

- Wet spray method – asbestos fibres are significantly suppressed; however, they are not entirely eliminated so the use of respiratory protective equipment is essential
- Saturation and water injection method – used during friable removal

- Dry method - can only be used if the wet spray method is not suitable, for example if there are live electrical conductors or if equipment could be permanently damaged or made dangerous by contact with water.

The following table outlines the typical removal techniques that may be used to remove ACM in soils.

Table 1: Removal techniques, applications and limitations

Removal Technique	Applicability and Limitations
Hand Picking	• suitable for bonded ACM in near surface soils only (i.e. <10 cm) • raking may enhance removal, although only in sandy soils • not applicable for friable asbestos • less effective in areas of dense vegetation
Tilling	• mechanical tilling to turn over soil followed by hand picking • suitable for bonded ACM in soils to approx. 30 cm in sandy soils • not applicable for friable asbestos • less effective in areas of dense vegetation, or clayey soils
Mechanical Screening	• suitable for large volumes of soil impacted by Bonded ACM • susceptible to generate fibres requiring effective dust/fibre control • not applicable for friable asbestos
Mechanical Excavation	• physical excavation of soil containing ACM where impact extends beneath surface soils • generates larger volume of soil that requires further management (i.e. off-site disposal, screening, spreading and handpicking/tilling)

3.2.6 Air Monitoring

All air monitoring will be conducted by licensed asbestos assessor (LAA) in accordance with the requirements outlined. The location and layout of the air monitors will be detailed within the ARCP. Air monitoring requirements will vary depending on the type of asbestos being removed, the location and position of the asbestos. The following rules should be applied when determine if air monitoring is required (extract from *Safe Work Australia – Code of Practice on How to Safely Remove Asbestos* (2016):

- For friable asbestos removal – Air monitoring is mandatory for all friable asbestos removal. This includes prior to dismantling an enclosure and for the purposes of the clearance inspection.
- For more than 10 m² of non-friable asbestos removal – Air monitoring is not required but may be considered to be carried out by an independent licensed asbestos assessor or

competent person to ensure compliance with the duty to eliminate or minimize exposure to airborne asbestos and to ensure the exposure standard is not exceeded

- Public Location – Air monitoring should be considered where the asbestos removal work is being undertaken in or next to a public location
- Exposure air monitoring – Air monitoring should be carried out at other times to determine a worker's exposure to airborne asbestos if, based on reasonable grounds, there is uncertainty as to whether the exposure standard may be exceeded and a risk assessment by a competent person indicates it is necessary. Since most uses of asbestos are prohibited, exposure monitoring should not be required frequently.

Air monitoring may be required when:

- It is not clear whether new or existing control measures are effective
- There is evidence (for example, dust deposits are outside the enclosure) the control measures have deteriorated as a result of poor maintenance
- Modifications or changes in safe work methods have occurred that may adversely affect worker exposure
- There has been an uncontrolled disturbance of asbestos at the workplace.

Air monitoring of the asbestos work area will be carried out by Zinfra in conjunction with the LAA. Monitors will be placed at several locations by the LAA, prior to the commencement of asbestos work. The results of air monitoring will be made available as soon as possible to all workers on site. The asbestos supervisor will be notified immediately if the fibre count exceeds the recommended level, as set out in Table 2.

Table 2: Exposure standards for asbestos as set out in the National Code of Practice: How to Safely Remove Asbestos

Action level (fibres/mL)	Control/action
Less than 0.01	Continue with current control measures
Greater than and equal to 0.01 and less than or equal to 0.02	Review control measures; investigate the cause and implement controls to eliminate or minimise exposure and prevent further release.

Action level (fibres/mL)	Control/action
Greater than 0.02	Stop removal work, notify the regulator together with air monitoring results by phone followed by fax or written statement. Investigate the cause by conducting a visual inspection of enclosure (if used) and associated equipment in consultation with all workers involved. Implement controls to eliminate or minimise exposure and prevent further release by extending the isolated/barricaded area around the removal area/enclosure as far as reasonably practicable until fibre levels are at or below 0.01 fibres/ml. Wet wipe and vacuum surrounding area and seal any identified leaks. Smoke test the enclosure until it is satisfactorily sealed. Recommence work once further air monitoring confirms fibre levels are at or below 0.01 fibres/ml.

3.2.7 Clearance

Following removal of asbestos / ACM, the licensed asbestos removalist will arrange for a clearance inspection of the area to facilitate the issue of a clearance certificate and allow construction to recommence in the affected area. The clearance inspection is conducted by:

- an independent licensed asbestos assessor, for work that was carried out by a Class A licensed asbestos removalist
- an independent competent person, for asbestos work that is not required to be carried out by a Class A licensed asbestos removalist.

To be independent, the licensed asbestos assessor must not be involved in the removal of asbestos for that specific job and is not involved in a business or undertaking involved in the removal of the asbestos for that specific job.

A clearance certificate will be issued if the independent licensed asbestos assessor or competent person is satisfied that the asbestos removal area and the immediate area are free from visible asbestos contamination. Entry to the area will be permitted following confirmation of certification

3.2.8 Decontamination

Decontamination applies to all workers exiting the asbestos work area, all plant, equipment and tools used in the asbestos work area (at the completion of the asbestos work or at their earlier removal from the area) and, at the completion of the asbestos removal work, the asbestos work area itself.

The methods used for decontamination are based on the *Code of Practice How to Safely Remove Asbestos 2016*

Decontamination of personnel

Personal decontamination must be undertaken each time workers leave the asbestos work area except in extreme emergencies. Personal decontamination shall be done within the asbestos work area in a location where re-contamination cannot occur. This area should be at the entry/exit interface of the site so that workers have to pass through.

Asbestos-contaminated PPE must not be transported outside the asbestos work area except for disposal purposes, after being appropriately decontaminated.

Respiratory protective equipment must be used until all contaminated disposable coveralls and clothing has been vacuum cleaned and/or removed and bagged for disposal, and personal washing has been completed.

Any PPE used while carrying out asbestos work must not be taken home.

Personal hygiene and careful washing are essential. Particular attention shall be paid to the hands, fingernails, face and head.

All contaminated materials, including cleaning rags, plastic sheeting and PPE etc., must be disposed of as asbestos waste.

Decontamination of re-useable PPE

PPE that is to be re-used for asbestos removal work, e.g. boots, helmets, non-disposable respirators, must be fully dismantled and cleaned in a suitable asbestos work area and placed in sealed containers that are labelled 'For asbestos removal work only'. Before removal from the asbestos work area the containers must be decontaminated by vacuuming and/or wiping down with wet cloths. This retained PPE must only be used for asbestos removal work.

Decontamination of plant, equipment and tools

Plant, equipment and tools that are engaged to work within asbestos work areas must be clearly identified during the procurement stage. Providers of plant and equipment to be used in the asbestos work area are to be advised in writing that the plant is required to work within this area. Plant requirements in regard to the operator's cabin air conditioning and air pressurising system filters and other internal combustion engine air filters must be communicated in writing with clear procedures documented on maintenance and decontamination.

After the asbestos removal work is complete, plant equipment and tools must be decontaminated. Any warning tag fitted to plant in respect to the decontamination of air filters must be removed after the contaminated filters have been removed and replaced with new filters for use outside of the asbestos work area.

At the end of the asbestos removal work, all tools should be:

- Decontaminated (i.e. fully dismantled and cleaned) in a suitable asbestos work area; and
- Placed in sealed containers that are labelled 'For asbestos removal work only' (and used only for asbestos removal work); or

- Disposed of as asbestos waste.

3.2.9 Waste Disposal

Asbestos waste will be disposed of as soon as reasonably practicable. Asbestos waste will be disposed at a waste disposal site in accordance with NSW EPA guidelines (including Waste Classification Guidelines (EPA, 2014)) and relevant industry codes of practice.

All ACM materials disposed offsite will be recorded on waste tracking form(s) and documented within the project waste management register. Additionally, disposal of ACM in excess of 10 square metres or 100kg will be tracked using the NSW EPA Waste locate system.

Asbestos waste transported by trucks

The transportation of asbestos waste by trucks must comply with the following requirements;

- Transporter must have the appropriate EPA license to transport asbestos waste
- Asbestos contaminated soils are wetted down
- Any part of any vehicle in which a person transports asbestos waste is covered, and leak proof during transportation
- Bonded asbestos materials must be securely packaged during transportation
- Friable material is kept in a sealed container during transportation

4 Records

Zinfra and the Early Works Vegetation Clearing Contractor will maintain a register of any unexpected contamination finds, including a map of all contaminated and/or remediated sites. The register will be made available to the TfNSW Environment and Sustainability Manager on request for inclusion in Project Monthly Reports.

Appendix B4

Unexpected Heritage Finds and Human Remains Procedure

M12 Motorway Early Works – Protection of High Pressure Gas Mains

August 2022

Transport for New South Wales

1. Introduction

The Unexpected Heritage Items Procedure (Roads and Maritime, 2015) was developed to provide a consistent method for managing unexpected heritage items (both Aboriginal and non-Aboriginal) that are discovered during TfNSW activities. The Procedure includes TfNSWs heritage notification obligations under the *Heritage Act 1977* (NSW), *National Parks and Wildlife Act 1974* (NSW), *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth) and the *Coroner's Act 2009* (NSW).

The discovery of an 'unexpected heritage item' may include:

- Aboriginal objects
- Historic (non-Aboriginal) heritage items
- Human skeletal remains

The following guidelines and policies were referenced during the drafting of the Procedure:

- *Assessing heritage significance* (NSW Heritage Office, 2001)
- *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006)
- *Skeletal remains: Guidelines for management of human skeletal remains* (NSW Heritage Office, 1988)
- *Due diligence code of practice for the protection of Aboriginal objects in NSW* (OEH, 2010)
- *Aboriginal cultural heritage consultation requirement for proponents* (OEH, 2010)
- *Code of practice for the archaeological investigation of Aboriginal objects in NSW* (OEH, 2010)
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011)

2. Unexpected Aboriginal and non-Aboriginal heritage finds procedure

The following procedure has been prepared to accompany the EWEMP. This section outlines the tasks that will be carried out following the discovery of an unexpected heritage item.

This procedure has been prepared in based on the content and processes outlined in the *Unexpected Heritage Items: Heritage Procedure 02* (RMS, 2015) and has been updated to be specific to the Early Works. The RMS procedure was prepared by suitably qualified professionals in consultation with Heritage NSW.

In accordance with the Unexpected Heritage Items Procedure (RMS, 2015), different procedures will be put in place dependent on the items classification. The Unexpected Heritage finds procedure identifies three types of heritage items listed and classified as follows:

1. *Relic: Evidence of past human activity which has local or state heritage significance. It may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse*
2. *Aboriginal object: May include a shell midden, stone tools, bones, rock art or a scarred tree*
3. *Work: A building or standing structure. This may include tram tracks, kerbing, historic road pavement, fences, sheds or building foundations*

Step 1. Stop work, protect item, and inform Environmental Site Representative

If an unexpected heritage item is encountered during excavation/construction activities:

- Stop all work in the immediate area of the item and notify the Project Manager or Environmental Site Representative (or delegate)
- The Project Manager or site supervisor will be responsible for establishing a ‘no-go zone’ around the item, using high visibility fencing where practicable.
- The item will be inspected, documented and photographed using ‘Unexpected Heritage Item Recording Form 418’
- The Project Manager or Environmental Site Representative will engage a suitably qualified heritage specialist to identify whether the item is likely a ‘relic’, ‘Aboriginal object’ or ‘work’
- If the item is determined to be a ‘work’, and it is possible to continue works without causing further disturbance, works will continue, and the completed Form 418 will be submitted to the relevant TfNSW Staff within 24 hours
- TfNSW Environment and Sustainability Manager will advise Zinfra and/or the Early Works Vegetation Clearing Contractor whether TfNSW has an approval or safeguard in place (apart from this procedure) to impact on the item. If yes, work will recommence in accordance with the approval, permit or appropriate safeguard and no further action will be required
- Zinfra and/or the Early Works Vegetation Clearing Contractor will liaise with Traffic Management Centre where the delay is likely to affect traffic flow
- Item will be reported as a ‘Reportable Event’ in accordance with the Transport for NSW Environmental Incident Classification and Reporting Procedure.

Step 2. Contact and engage and archaeologist and, where required, an Aboriginal site officer

- A suitably qualified and experienced archaeological consultant will be engaged to assess the find
- Where the item is likely to be an Aboriginal object, an Aboriginal Site Officer (ASO) will also be engaged to assess the find
- The archaeological consultant (and ASO, if relevant) will be provided with the photographs.

Step 3. Preliminary assessment and recording of the find

- Should the archaeologist (and ASO, if relevant) determine from the photographs that no site inspection is required because no archaeological constraint exists, such advice will be provided in writing and confirmed by Zinfra and/or the Early Works Vegetation Clearing Contractor.
- Site access will be arranged for the archaeologist (and ASO, if relevant) to inspect the item as soon as practicable
- Subject to the archaeologist assessment (and ASO's assessment, if relevant), work will recommence at a set distance from the item
- Should the archaeologist (and ASO, if relevant) provide advice after the site inspection and preliminary assessment that no archaeological constraint exists, such advice should be provided in writing and confirmed by Zinfra and/or the Early Works Vegetation Clearing Contractor
- Should it be required, additional specialist technical advice will be organised
- Should the item be identified as a relic, heritage item or an Aboriginal object the archaeologist will formally record them
- Heritage NSW could be notified informally by telephone at this stage by the archaeologist or project manager. Any verbal conversations with Heritage NSW will be noted on project file for future reference
- If a relic, heritage item or Aboriginal object has been identified, the archaeologist will notify:
    - Heritage NSW (regulator of the Aboriginal Heritage Information Management System (AHIMS)) to formally register the site and
    - Water NSW if the relic found is in proximity to Water NSW Upper Canal.

Step 4. Prepare an archaeological or heritage management plan

- An archaeological or heritage management will need to be prepared in the event of unexpected Aboriginal or non-Aboriginal heritage find
- The archaeological consultant will prepare an archaeological or heritage management plan (with input from the ASO, where relevant) with consideration to the any heritage sub-plans, any conditions of heritage approvals, Minister's Conditions of Approval, and heritage assessment documentation
- The archaeologist will submit this plan as a letter, brief report or email to Zinfra and/or the Early Works Vegetation Clearing Contractor outlining all relevant archaeological or heritage issues

- Zinfra and/or the Early Works Vegetation Clearing Contractor will review the archaeological or heritage management plan.

Step 5. Notify Regulator (if required)

- The archaeological or heritage management plan will be reviewed to confirm if Heritage NSW notification is required
- If yes, a notification letter will be prepared
- The draft notification letter, archaeological or heritage plan and the site recording form will then be sent to TfNSW Environment and Sustainability Manager for review and amended where appropriate
- The signed notification letter, archaeological or heritage management plan and site recording form will be submitted to Heritage NSW and DPIE
- A copy of the final signed notification letter, archaeological or heritage management plan and the site recording form will be kept on file by the Project Manager or Site Supervisor and a copy sent to the TfNSW Environment and Sustainability Manager.

Step 6. Implement archaeological or heritage management plan

- The archaeological or heritage management plan will be modified to take into account any additional advice resulting from notification and discussions with Heritage NSW
- The archaeological or heritage management plan will be implemented. Where impact is expected, this will include such things as a formal assessment of significance and heritage impact assessment, preparation of excavation or recording methodologies, consultation with registered Aboriginal parties, obtaining heritage approvals etc, if required
- Where heritage approval is required, Zinfra and/or the Early Works Vegetation Clearing Contractor will be contacted for further advice and support material
- It will then be assessed whether heritage impact is consistent with the project approval
- Where statutory approval is not required and where recording is recommended by the archaeologist, sufficient will be allowed for this to occur.

Step 7. Review EWEMP and approval conditions

- The EWEMP will be updated as appropriate with any changes resulting from final heritage management (eg retention of heritage item, salvage of item). The updated EWEMP will incorporate additional conditions arising from any heritage approvals, and Aboriginal community consultation if relevant
- Any changes to the EWEMP will be included in site induction material site workers will be updated during toolbox talks
- Where statutory approval is not required and where recording is recommended by the archaeologist, sufficient time will be allowed for this to occur.

Step 8. Resume work

- Zinfra and/or the Early Works Vegetation Clearing Contractor will seek written clearance to resume project work from TfNSW Environment and Sustainability Manager and the archaeologist (and Heritage NSW)

- Archaeological excavation/heritage reporting and other heritage approval conditions will be completed in the required timeframes. This includes artefact retention repositories, conservation and/or disposal strategies
- All heritage/archaeological assessments, heritage location data and its ownership status will be forwarded to the TfNSW Environment and Sustainability Manager. They will ensure all heritage items in Transport for NSW ownership and/or control are considered for the Roads and Maritime S170 Heritage and Conservation Register.

3. Unexpected Human Remains Procedure

This attachment outlines the procedure for handling Aboriginal human remains in accordance with CoA E31, the *Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977* (NSW Heritage Office 1998) and the *Aboriginal Cultural Heritage Standards and Guidelines Kit* (NPWS 1997).

If construction activity reveals possible Aboriginal human skeletal material (remains), the following procedure is to be followed:

1. As soon as remains are exposed, immediately halt all work at that location and immediately notify the TfNSW Environment and Sustainability Manager or Project Manager on site to allow assessment and management
2. Secure the site
3. Contact police as the discovery of human remains triggers a process which assumes that they are associated with a crime. The NSW Police will retain carriage of the process until such time as the remains are confirmed to be Aboriginal or historic
4. Notify DPIE, as the approval authority, when human remains are found
5. Once the police process is complete and if remains are not associated with a contemporary crime contact DPIE. DPIE will determine the process, in consultation with Heritage NSW and/or the Heritage Office as appropriate
6. If the remains are identified as Aboriginal, secure the site and DPIE and notify all RAPs or Aboriginal stakeholders in writing. DPIE will act in consultation with Heritage NSW as appropriate. Notify Heritage NSW in writing according to DPIE instructions.
7. If the remains are identified as Non-Aboriginal (historical) remains, secure the site and contact the DPIE. DPIE will act in consultation with the Heritage Division as appropriate. Notify the Heritage Division in writing according to DPIE instructions.
8. Once the police process is complete and if the remains are identified as not being human and the appropriate clearances have been given, work can recommence.

Appendix B1

Site Establishment Management Plan

M12 Motorway Early Works: Protection of High Pressure Gas Mains

August 2022

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Approval and authorisation

Plan reviewed by:	Plan reviewed by:	Plan reviewed by:
Sheila Anderson	Kimberly Nguyen	Thomas Tu
TfNSW Senior Environment and Sustainability Manager	Zinfra Project Manager	TfNSW Utilities Manager
Date 05/08/2022	Date 08/08/2022	Date 5/8/2022
Signed Sheila Anderson	Signed	Signed

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D	17/09/2021	Fourth draft for TfNSW review
D.02	06/10/2021	Response to ER comments
E	05/11/2021	Response to ER and TFNSW comments
F	11/05/2022	Update to increase AF18 footprint and minor administrative amendments
G	05/08/2022	Update to include two minor ancillary facilities

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Glossary/Abbreviations

Abbreviations	Expanded text
Approved Extended Hours	1.00pm to 6.00pm Saturdays allowable under NSW CoA E34, beyond standard construction hours as per the *Interim Construction Noise Guideline.*
AF7	Ancillary Facility 7
AF18	Ancillary Facility 18
Ancillary Facility	A temporary facility for construction of the Project including an office and amenities compound, construction compound, materials storage compound, maintenance workshop, testing laboratory and material stockpile area.
ARSR	Amendment Report Submissions Report
BC Act	*Biodiversity Conservation Act 2016*
CEMS	Contractors Environmental Management System
CS	Communication Strategy
CLM Act	*Contaminated Land Management Act 1997*
CoA	Conditions of Approval
Construction	Includes all activities required to construct the CSSI as described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding Low Impact Work which is carried out to complete prior to the approval of the CEMP, works approved under a Site Establishment Management Plan, demolition of acquired residential houses, structures and sheds, and works specified in Appendix B and approved under an environmental management plan(s) in accordance with Condition A24.
CSSI	Critical State Significant Infrastructure
DAWE	Commonwealth Department of the Water, Agriculture and Environment
DPE	NSW Department of Planning and Environment (former Department of Planning, Industry and Environment)
Early Works	Works specified in Appendix B of the Infrastructure Approval which are required to be approved under an Early Works Environmental Management Plan required under Condition A24.
EIS	Environmental Impact Statement
EMS	Environmental Management System

Abbreviations	Expanded text
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 Assessment Documentation	All environmental documentation including the EIS, Amendment report, Submissions report and all supplementary reports.
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.
Environmental Representative (ER)	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.
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environmental Protection Licence
ESCP	Erosion and Sediment Control Plan
EWEMP	Early Works Environmental Management Plan
EWFFMP	Early Works Flora and Fauna Management Sub-plan
EWMS	Environmental Work Method Statements
FCC	Fairfield City Council
Highly Noise Affected	Highly noise affected level represents the point above which there may be strong community reaction to noise above 75 dB(A) as defined in the ICNG (EPA, 2009)

Abbreviations	Expanded text
Highly Noise Intensive Works	Works which are defined as annoying under the Interim Construction Noise Guideline (DECC, 2009) including: • 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 • Bitumen milling or profiling • Jackhammering, rock hammering or rock breaking • Impact piling.
ICNG	*Interim Construction Noise Guideline* (Environment Protection Authority, 2009)
LCC	Liverpool City Council
Minister, the	Minister of the NSW Department of Planning, Industry and Environment (or delegate)
Non-conformance	Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation.
Noise affected	The noise affected level represents the point above which there may be some community reaction to noise defined as an exceedance of the NML
NML	Noise Management Level (Rating Background Noise Level + 10dB)
NSW CoA	NSW Conditions of Approval
NVIS	Noise and Vibration Impact Statement
OOHW	Out-of-hours work
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Principal, the	TfNSW Services
Project, the	M12 Motorway Project
Primary CoA/REMM	CoA/REMM that are specific to the development of this Plan
QA	Quality Assurance
REMM	Revised Environmental Management Measures

Abbreviations	Expanded text
Resource	Resource covers energy, fuel, oil, water and other materials used for construction of the Project
SAP	Sensitive Area Plan
SDS	Safety Data Sheet
Secondary CoA/REMM	CoA/REMM that are related to, but not specific to, the development of this Plan
Secretary	Secretary of the NSW Department of Infrastructure, Planning and Environment, or delegate
SEMP (or the Plan)	Site Establishment Management Plan
Standard Working Hours	As defined by the *Interim Construction Noise Guideline*: Monday to Friday 07:00am to 6:00pm Saturday 8:00 am to 6:00 pm At no time on Sunday or public holidays
TfNSW	Transport for New South Wales (formerly Roads and Maritime Services (RMS))
WHSMP	Work Health and Safety Management Plan
WSIA	Western Sydney International Airport
WSPT	Western Sydney Parklands Trust

1 Introduction

1.1 Context

This Early Works Site Establishment Management Plan (SEMP or Plan) forms a Sub-plan to the Early Works Environmental Management Plan (EWEMP) for the M12 Motorway (the Project) protection of high-pressure gas mains in proximity to Elizabeth Drive. The gas mains include the eastern gas pipeline (EGP) and Jemena gas network (JGN Lic 1). The Early Works will be carried out by:

- TfNSW who will act as Principal for initial clearing activities and associated works to be conducted by the Early Works Vegetation Clearing Contractor
- Zinfra who will act as Principal for all other Early Works activities associated with gas wrapping to be undertaken by their appointed contractor.

This SEMP has been prepared to address the requirements of the NSW Minister's Conditions of Approval (CoA), Commonwealth CoA, the environmental management measures detailed in the M12 Motorway Environmental Impact Statement (EIS), Revised Environmental Management Measures (REMMs) detailed in the Amendment Report Submissions Report (ARSR), and all applicable legislation.

1.2 Background and Project description

Transport for New South Wales (TfNSW) is planning to construct and operate the M12 Motorway (the Project) to provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network. The M12 Motorway will run between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham for about 16 kilometres and is expected to be opened to traffic prior to opening of the WSIA.

1.3 Scope of the Plan

This SEMP is related to the Early Works phase only. This includes the establishment and operation of Ancillary Facility 7 - Early Works (AF7 (Early Works)) and Ancillary Facility 18 - Early Works (AF18 (Early Works)) required to support the protection of high-pressure gas mains adjacent to Elizabeth Drive as described in the Early Works Environmental Management Plan (EWEMP).

Construction, as defined by the State Infrastructure Approval is not within the scope of the EWEMP and Sub-plans. It is noted that minor ancillary facilities in accordance with NSW CoA A20 will be located within the Early Works boundary during gas main protection works and have been included in this SEMP to allow for Environmental Representative (ER) assessment.

This SEMP also provides management measures to be implemented specific to works located within Western Sydney Parkland Trust (WSPT) land that is subject to a lease with TfNSW during the tenure of the Project.

1.4 Environmental Management System overview

The Environmental Management System (EMS) for the Project is described in Section 3 of the EWEMP. Zinfra and the Early Works Vegetation Clearing Contractor will have EMSs consistent with the overarching EMS.

This SEMP forms part of the environmental management framework for Early Works of the Project, as described in Section 3.3 of the EWEMP.

Management measures identified in this SEMP may also be incorporated into site or activity specific Environmental Work Method Statements (EWMS). EWMS incorporate appropriate mitigation measures and controls and identify key procedures to be used concurrently with the EWEMP. Further detail on the EWMS is provided in Section 3.3.2 of the EWEMP; a template EWMS for use by Zinfra, their Contractor and the Early Works Vegetation Clearing Contractor is provided in Appendix A6 of the EWEMP.

1.4.1 SEMP preparation, endorsement and approval

This SEMP has been prepared to satisfy the NSW and Commonwealth CoA's in relation to site establishment works during the Project.

This SEMP will be reviewed by the TfNSW Utilities Manger, Zinfra Project Manager and the Environment and Sustainability Manager (or delegate) and endorsed by the ER prior to submission to the Secretary of DPE for approval. This SEMP will be submitted for the approval of the Secretary no later than one month before the establishment of AF7 (Early Works) and AF18 (Early Works) in accordance with NSW CoA A16.

1.4.2 Interactions with other management plans

This Plan has the following interrelationships with other management plans and documents:

- The EWEMP, which forms the overarching environmental management framework for the Early Works, and all environmental management measures to be implemented during Early Work
- The Early Works Flora and Fauna Management Plan (EWFFMP), which describes how potential impacts of Early Works on flora and fauna will be minimised and managed. The EWFFMP is provided in Appendix B2 of the EWEMP
- The Zinfra Contractor's and the Early Works Vegetation Clearing Contractor's Work Health and Safety Management Plans will address the safety requirements associated with the use of herbicides and pesticides.
- Consultation between TfNSW, Zinfra, stakeholders, community and relevant agencies will be undertaken in accordance with the Overarching Communication Strategy (OCS) prepared by TfNSW to address the requirements of NSW CoA B1 and B2
- The Zinfra Contractor's and the Early Works Vegetation Clearing Contractor's environmental documentation.

1.5 Consultation

1.5.1 Consultation for preparation of the SEMP

In accordance with NSW CoA A16, this SEMP has been prepared in consultation with Fairfield City Council (FCC) and Liverpool City Council (LCC).

In accordance with NSW CoA A5 (b), Table 1-1 provides a log of engagement or attempted engagement with FCC and LCC.

Table 1-1 Log of engagement or attempted engagement

Agency	Date	Person Contacted	Comment	Status
Fairfield City Council	14 October 2021	FCC Representative	TfNSW sent a copy of the SEMP to FCC via email requesting comment.	Open
	28 October 2021	TfNSW Representative	FCC emailed TfNSW informing them that they had reviewed the SEMP and that they had no further comments.	Closed
Liverpool City Council	14 October 2021	LCC Representative	TfNSW sent a copy of the SEMP to LCC via email requesting comment.	Open
	29 October 2021	LCC Representative	TfNSW attempted to call LCC as they had yet to receive comments from them regarding the SEMP. Left voicemail.	Open
	29 October 2021	LCC Representative	TfNSW sent a follow up email requesting LCC advise them on whether they intended to provide comment on the SEMP.	Open
	02 November 2021	LCC Representative	TfNSW called LCC and followed with an email to close out consultation as no response had been received.	Closed

In accordance with NSW CoA A5, the consolidated evidence of the consultation undertaken for the preparation of this plan is provided in Appendix A. Appendix A includes:

- Documentation of the engagement with the parties identified above that occurred prior to submitting the document to the Secretary for approval
- Documentation of the follow-up with the identified parties where engagement or feedback has not been provided to confirm that they have no feedback or have not attempted to engage or provide feedback after repeated requests
- An outline of the issues raised by the identified parties, a summary of how they have been addressed and a cross reference to the section or Sub-plan of the EWEMP where the issue has been addressed
- A description of the outstanding issues raised by the identified parties and the reasons why they have not been addressed.

1.5.2 Ongoing consultation during works

TfNSW and Zinfra will undertake consultation with stakeholders, the community, and relevant agencies regarding the management of site establishment within the Project area during the Early Works as required. The process for the consultation will be documented in the OCS.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how site establishment impacts associated with the establishment of AF7 (Early Works) and AF18 (Early Works) will be minimised and managed during Early Works on the Project.

2.2 Objectives

The objective of this SEMP is to ensure that all avoidance, mitigation and management measures relevant to site establishment activities will be implemented, with reference to:

- The EIS, Response to Submissions, Amendment Report, and Submissions Report to the Amendment Report prepared for M12 Motorway
- NSW Conditions of Approval granted to the Project on 23 April 2021
- Commonwealth CoA to the Project 3 June 2021.

2.3 Performance outcomes

Performance outcomes have been established based on the specific sensitivities relevant to AF7 (Early Works) and AF18 (Early Works) to allow for full compliance with the relevant legislative requirements, CoA and environmental management measures. These performance outcomes are outlined in Table 2-1.

Table 2-1: Performance outcomes for AF7 (Early Works) and AF18 (Early Works)

Aspect	Performance outcome	Measurement tool
Noise and Vibration	• Minimise noise and vibration complaints by implementing appropriate management measures	• Complaints Register
Heritage	• Avoid direct and indirect damage to the Upper Canal System, including the Cecil Hills Tunnel, and Tunnel Shafts 3 and 4	• Monthly Environmental Report
Biodiversity	• Vegetation clearing will be undertaken in a manner that avoids and minimises impacts to threatened fauna species	• Pre-clearing survey report
Incident Management	• All environmental incidents will be appropriately managed to minimise their impact on the surrounding environment	• Environmental incident reports
Compliance	• Activities to establish and operate AF7 (Early Works) and AF18 (Early Works) will be compliant with the State and Commonwealth CoA and the Environmental Assessment Documentation	• Compliance records

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this SEMP is included in Appendix A1 of the EWEMP. Legislation considered during the development of this Plan includes:

- *Protection of the Environment Operations Act 1997 (POEO Act)*
- *Environmental Planning and Assessment Act 1979 (EP&A Act)*
- *National Parks and Wildlife Act 1974*
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Contaminated Lands Management Act 1997 (CLM Act)*
- *Biodiversity Conservation Act 2016 (BC Act)*
- *Heritage Act 1977.*

3.1.2 Additional approvals, licences, permits and requirements

Refer to Appendix A1 of the EWEMP. It is noted that the Environmental Protection Authority has confirmed that an EPL is not required for Early Works; evidence of consultation is provided in Appendix A7 of the EWEMP.

Any work being undertaken on Western Sydney Parklands Trust land must be undertaken in accordance with the WSPT Lease Agreement (AQ120616). Relevant details are included within Section 6.2.1, however, the Early Works Contractor and the Early Works Vegetation Clearing Contractor must review the requirements of the lease and implement these as required during the course of Early Works.

3.1.3 Guidelines and standards

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

- 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)*
- Transport for NSW *Construction Noise and Vibration Guidelines (TfNSW, 2016)*
- Transport for NSW *Noise Mitigation Guidelines (TfNSW, 2015)*
- Transport for NSW *Noise Criteria Guideline (TfNSW, 2015)*
- *Interim Noise Construction Guideline* (ICNG) *(EPA, 2009)*
- *Upper Canal Pheasants Nest to Prospect Reservoir Conservation Management Plan* (NSW Public Works Governments Architect's Office, 2016)
- *Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines* (WaterNSW, 2020)
- Interim Noise Construction Guideline (ICNG) (EPA, 2009).

3.2 NSW Conditions of Approval

The primary NSW CoA relevant to this Plan are listed Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents. Where relevant, secondary conditions relevant to this Plan have been listed in Appendix B.

Table 3-1: Conditions of Approval relevant to the SEMP

CoA No.	Condition Requirements	Document Reference
A16	Before establishment of a construction ancillary facility(ies) (excluding minor construction ancillary facilities established under Condition A20), the Proponent must prepare a Site Establishment Management Plan which outlines the environmental management practises and procedures to be implemented for the establishment of the construction ancillary facility(ies). The Site Establishment Management Plan must be prepared in consultation with the relevant council(s) and relevant State government agencies. The Plan must be endorsed by the ER and then submitted to the Planning Secretary for approval one (1) month before the establishment of the construction ancillary facility(ies). The Site Establishment Management Plan must detail the management of the construction ancillary facility(ies) and include:	This SEMP Consultation - Section 1.5.1, SEMP Appendix A Endorsement/approval – Section 1.4.1
	(a) A description of activities to be undertaken during establishment of the construction ancillary facility(ies) (including scheduling and duration of work to be undertaken at the site);	Section 4.1 Section 4.2.1
	(b) Figures illustrating the proposed site layout and the location of the closest sensitive receiver(s);	Figure 5-1
	(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 before the commencement of site establishment work;	Initial Risk Assessment - Table 6-3 Ongoing Analysis – Section 7.5 and 8.1
	(d) Details of how the site establishment activities described in subsection (a) of this condition will be carried out to:	N/A
	(i) Meet the performance outcomes stated in the documents listed in Condition A1, and	EWEMP Appendix A8
	(ii) Manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and	Table 6-3

CoA No.	Condition Requirements	Document Reference
	(e) A program for monitoring the performance outcomes, including a program for noise monitoring consistent with the requirements of Condition C14.	Appendix C
	The Site Establishment Management Plan must be approved before the establishment of a construction ancillary facility(ies) (excluding minor construction ancillary facilities established under Condition A20). Nothing in this condition prevents the Proponent from preparing individual Site Establishment Management Plans for each construction ancillary facility. *Note: Condition A16 does not apply to minor construction ancillary facilities established under Condition A20.*	Section 1.4.1
A17	Where a construction ancillary facility(ies) has been established for any early works listed in Appendix B and is to be used for construction, a new or revised Site Establishment Management Plan must be prepared where additional activities are required to establish the site for the purposes of construction or there is a change to the site layout. The new or revised Site Establishment Management Plan must be prepared in accordance with Condition A16 and approved by the Planning Secretary before commencement of the additional activities or change to site layout.	Section 8.2
A20	Lunch sheds, office sheds, portable toilet facilities, and the like, can be established and used where they have been assessed in the documents listed in **Condition A1** or satisfy the following criteria:	
	(a) are located within or adjacent to the construction boundary; and	Section 4.1.1
	(b) have been assessed by the **ER** to have -	Section 4.1.1 Section 5.3 Section 5.1
	(i) minor amenity impacts to surrounding residences and businesses, after consideration of matters such as compliance with the *Interim Construction Noise Guideline* (DECC, 2009), traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and	
	(ii) minor environmental impact with respect to waste management, soil, water and flooding, and	Section 4.1.1
	(iii) no impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval.	Section 4.1.1 Section 5.9

CoA No.	Condition Requirements	Document Reference
		Section 5.10
A24	Before undertaking early works specified in Appendix B, the Proponent must prepare an Early Works Environmental Management Plan. The Plan must include: (b) a site establishment management plan for any proposed construction ancillary facilities (excluding minor construction ancillary facilities established under Condition A20) consistent with the requirements of Condition A16;	This SEMP
E61	The CSSI must be constructed in a manner that minimises visual impacts of construction ancillary facilities, including but not limited to, 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.	Figure 5-1 Section 5.5

3.3 Revised Environmental Management Measures

The primary REMMs relevant to this Plan are listed Table 3-2 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other project management documents. Where relevant, secondary conditions relevant to this Plan have been listed in Appendix B.

Table 3-2: Primary REMMs relevant to this Plan

REMM	Condition Requirements	Document Reference
LVIA05	Project elements such as ancillary facility hoardings will be designed and maintained to minimise impacts on landscape character and visual amenity. This will include selecting colours and materials that are visually recessive and blend into the surrounding landscape where practicable, and the prompt removal of graffiti.	Section 5.5 Table 6-3
NV03	Detailed noise assessments will be carried out for ancillary facilities with the potential to involve high noise generating activities (including batching plant operations). The assessments 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 criteria. The assessments will also consider the requirement for appropriate noise mitigation within ancillary facilities and adjacent to construction works, depending on the predicted noise levels. Any mitigation measures required will be implemented before the start of activities that generate noise and vibration impacts.	Section 5.3 Appendix C
HS02	Measures to mitigate and manage bushfire risk will be developed and included as part of site specific hazard and risk management measures within the WHSMP. Measures will include the maintenance of ancillary facilities in a tidy and orderly manner and the storage and management of dangerous goods and hazardous materials in a safe location.	Section 5.12 Table 6-3

4 Site establishment works

4.1 Overview

Two ancillary facilities, AF7 (Early Works) and AF18 (Early Works) are proposed to support the protection of high pressure gas mains adjacent to Elizabeth Drive. AF7 (Early Works) is located at the eastern extent of the Project, west of the M7 in the north east corner of the Western Sydney Parklands (Figure 4-1) covering an area of about 1.3 hectares. AF18 (Early Works) is also located at the eastern extent of the Project adjacent the western verge of Wallgrove Road covering about 1.1 hectares.

AF7 (Early Works) and AF18 (Early Works) are identified in the Environmental Assessment Documentation as two of 18 ancillary facilities that will support construction of the Project, and the proposed uses of AF7 and AF18, which are the same as the uses for AF7 (Early Works) and AF18 (Early Works) are listed in Table 4-1 of the Amendment Report.

4.1.1 Minor ancillary facilities assessment

Minor ancillary facilities are proposed to support the Early Works (Figure 4-1) and have been assessed in accordance with NSW CoA A20 in Table 4-1 to Table 4-3. The minor impacts will be managed in accordance with the management measures outlined in Table 6-3. Each minor ancillary facility will consist of the following:

- A trailer site shed (lunch shed)
- Two porta loos
- A small water tank to allow workers to wash hands throughout the day.

Table 4-1: Minor ancillary facilities Assessment – Site A (MAF-A)

Aspect	Discussion
Area occupied (m^2)	98.9
Located within or adjacent to the construction boundary?	Located north of Elizabeth Drive, wholly within the construction boundary.
Are there impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval.	Minor ancillary facility Site A (MAF-A) is located within a listed non-Aboriginal heritage site, the Cecil Park School, Post Office and Church Site (Figure 5-1). It is unlikely that the establishment and use of the MAF-A will require any ground disturbance as lunch sheds will be located on plinths. Should any excavation be required for the establishment of MAF-A, a suitably qualified archaeologist will be present during excavation in accordance with REMM NAH09. As such, it is unlikely that the establishment and use of MAF-A will result in additional impacts beyond those assessed in the Environmental Assessment Documentation. No threatened species, populations or TECs are located within the MAF-A location. Cumberland Plain Land Snail habitat and Cumberland Plain Woodland identified as Grey-headed Flying-fox foraging habitat are located to the west of the MAF-A. These will not be impacted by the establishment or operation of the MAF-A.

Aspect	Discussion
Minor amenity impacts to surrounding residences and businesses	
Noise	The nearest receiver is located around 72 metres east. Installation and operation of the MAF-A would be limited to standard working hours and approved extended hours. A noise screening assessment for MAF-A has been undertaken and is included in Appendix D. The assessment indicates that noise impacts for MAF-A are expected to be minor and that the receiver would not be Highly Noise Affected.
Traffic	MAF-A is directly accessible via Elizabeth Drive, which is identified as a haulage road in the Environmental Assessment Documentation.
Dust	Dust impacts may arise when the portable equipment is being installed, however given the scale, distance to the nearest receivers and management measures proposed, potential dust impacts are expected to be minor.
Odour	Odour impacts may arise from the portable toilet facilities however due to the distance of the residential receiver and standard waste removal frequency, potential odour impacts are expected to be minor.
Visual	MAF-A is located within the boundary screening that would be erected around the Early Works boundaries which will limit visual impacts.
Minor environmental impacts	
Waste	Small amounts of waste such as food, effluent and site office materials may be generated, however given the scale of the minor ancillary facility this is considered to be minor.
Soil, Water and Flooding	There are no waterways located within the vicinity of the MAF-A and MAF-A is not located within flood prone land.

Table 4-2: Minor ancillary facilities assessment – Site B (MAF–B)

Aspect	Discussion
Area occupied (m^2)	100
Located within or adjacent to the construction boundary?	Located south of Wallgrove Road, wholly within the construction boundary.
Are there impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval.	Minor ancillary facility Site B (MAF-B) is located adjacent to an area of the Upper Canal System (Figure 5-1) which is located entirely underground. As no vibration intensive activity or ground disturbance is to occur, no impacts are expected. No threatened species, populations or TECs are located within the MAF-B location. The nearest TEC is Cumberland Plain Woodland located north of Wallgrove Road.

Aspect	Discussion
Minor amenity impacts to surrounding residences and businesses	
Noise	The nearest receiver is located around 282 metres east of MAF-B. Installation and operation of the MAF-B would be limited to standard working hours and approved extended hours. A noise screening assessment for MAF-B has been undertaken and is included in Appendix D. The assessment indicates that noise impacts for MAF-B are expected to be minor and that the receiver would not be Highly Noise Affected.
Traffic	MAF-B is directly accessible via Wallgrove Road, which is identified as haulage road in the Environmental Assessment Documentation.
Dust	Dust impacts may arise when the portable equipment is being installed, however given the scale, distance to the nearest receivers and management measures proposed, potential dust impacts are expected to be minor.
Odour	Odour impacts may arise from the portable toilet facilities however due to the distance of the residential receiver and standard waste removal frequency, potential odour impacts are expected to be minor.
Visual	MAF-B is located within the boundary screening that would be erected around the Early Works boundaries which will limit visual impacts.
Minor environmental impacts	
Waste	Small amounts of waste such as food, effluent and site office materials may be generated, however given the scale of the minor ancillary facility this is considered to be minor.
Soil, Water and Flooding	There are no waterways located within the vicinity of the MAF-B and MAF-B is not located within flood prone land.

Table 4-3: Minor ancillary facilities Assessment – Site C (MAF-C)

Aspect	Discussion
Area occupied (m^2)	100
Located within or adjacent to the construction boundary?	Located south of the Elizabeth Drive and Wallgrove Road intersection, wholly within the construction boundary.

Aspect	Discussion
Are there impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval.	Minor ancillary facility Site C (MAF-C) is located adjacent to an area of the Upper Canal System (Figure 5-1) which is located entirely underground. As no vibration intensive activity or ground disturbance is to occur, no impacts are expected. No threatened species, populations or TECs are located within the facilities location. The nearest TEC is Cumberland Plain Woodland, which has been identified as Grey-headed Flying-fox foraging habitat (Figure 5-1), located around 30m to the south east of the MAF-C.
Minor amenity impacts to surrounding residences and businesses	
Noise	The nearest receiver is located around 283 metres east of MAF-C. Installation and operation of the MAF-C would be limited to standard working hours and approved extended hours. A noise screening assessment for MAF-C has been undertaken and is included in Appendix D. The assessment indicates that noise impacts for MAF-C are expected to be minor and that the receiver would not be Highly Noise Affected.
Traffic	MAF-C is directly accessible via Elizabeth Drive, which is identified as a haulage road in the Environmental Assessment Documentation.
Dust	Dust impacts may arise when the portable equipment is being installed, however given the scale, distance to the nearest receivers and management measures proposed, potential dust impacts are expected to be minor.
Odour	Odour impacts may arise from the portable toilet facilities however due to the distance of the residential receiver and standard waste removal frequency, potential odour impacts are expected to be minor.
Visual	MAF-C is located within the boundary screening that would be erected around the Early Works boundaries which will limit visual impacts.
Minor environmental impacts	
Waste	Small amounts of waste such as food, effluent and site office materials may be generated, however given the scale of the minor ancillary facility this is considered to be minor.
Soil, Water and Flooding	There are no waterways located within the vicinity of the MAF-C and MAF-C is not located within flood prone land.

Table 4-4: Minor ancillary facilities Assessment – Site D (MAF-D)

Aspect	Discussion
Area occupied (m^2)	40

Aspect	Discussion
Located within or adjacent to the construction boundary?	Located south-west of Elizabeth Drive and Wallgrove Road intersection, wholly within the construction boundary.
Are there impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval.	Minor ancillary facility Site D (MAF-D) is located adjacent to an area of the Upper Canal System (Figure 5-1) which is located entirely underground. As no vibration intensive activity or ground disturbance is to occur, no impacts are expected. No threatened species, populations or TECs are located within the facilities location. The nearest TEC is Cumberland Plain Woodland, which has been identified as Grey-headed Flying-fox foraging habitat (Figure 5-1).
Minor amenity impacts to surrounding residences and businesses	
Noise	The nearest receiver is located around 110 metres north of MAF-D. Installation and operation of the MAF-C would be limited to standard working hours and approved extended hours. As MAF-D is only the installation and operation of a port aloo and small ~38m^3 storage container, therefore no noise assessment has been completed.
Traffic	MAF-D is directly accessible via Elizabeth Drive, which is identified as a haulage road in the Environmental Assessment Documentation.
Dust	Dust impacts may arise when the portable equipment is being installed, however given the scale, distance to the nearest receivers and management measures proposed, potential dust impacts are expected to be minor.
Odour	Odour impacts may arise from the portable toilet facilities however due to the distance of the residential receiver and standard waste removal frequency, potential odour impacts are expected to be minor.
Visual	MAF-D is located within the boundary screening that would be erected around the Early Works boundaries which will limit visual impacts.
Minor environmental impacts	
Waste	Small amounts of effluent may be generated, however given the scale of the minor ancillary facility this is considered to be minor. Effluent waste will be removed during maintenance by a waste collection truck.
Soil, Water and Flooding	There are no waterways located within the vicinity of the MAF-D and MAF-D is not located within flood prone land.

Table 4-5: Minor ancillary facilities Assessment – Site E (MAF-E)

Aspect	Discussion
Area occupied (m^2)	40
Located within or adjacent to the construction boundary?	Located south of the Elizabeth Drive and Wallgrove Road intersection, wholly within the construction boundary.
Are there impacts on heritage items (including areas of archaeological sensitivity), threatened species, populations or ecological communities beyond the impacts approved under the terms of this approval.	Minor ancillary facility Site E (MAF-E) is located adjacent to an area of the Upper Canal System (Figure 5-1) which is located entirely underground. As no vibration intensive activity or ground disturbance is to occur, no impacts are expected. No threatened species, populations or TECs are located within the facilities location. The nearest TEC is Cumberland Plain Woodland, which has been identified as Grey-headed Flying-fox foraging habitat (Figure 5-1).
Minor amenity impacts to surrounding residences and businesses	
Noise	The nearest receiver is located around 260 metres northwest of MAF-E. Installation and operation of the MAF-C would be limited to standard working hours and approved extended hours. As MAF-E is only the installation and operation of a port aloo and small ~38m^3 storage container, therefore no noise assessment has been completed.
Traffic	MAF-C is directly accessible via Elizabeth Drive, which is identified as a haulage road in the Environmental Assessment Documentation.
Dust	Dust impacts may arise when the portable equipment is being installed, however given the scale, distance to the nearest receivers and management measures proposed, potential dust impacts are expected to be minor.
Odour	Odour impacts may arise from the portable toilet facilities however due to the distance of the residential receiver and standard waste removal frequency, potential odour impacts are expected to be minor.
Visual	MAF-E is located within the boundary screening that would be erected around the Early Works boundaries which will limit visual impacts.
Minor environmental impacts	
Waste	Small amounts of effluent may be generated, however given the scale of the minor ancillary facility this is considered to be minor. Effluent waste will be removed during maintenance by a waste collection truck.
Soil, Water and Flooding	There are no waterways located within the vicinity of the MAF-D and MAF-D is not located within flood prone land.

4.2 Site Establishment Activities

AF7 (Early Works) will comprise of:

- Internal access tracks and stabilised parking areas with capacity for construction workers
- Staff amenities including demountable office accommodation, toilet blocks and meeting rooms
- Material and equipment laydown and storage areas, including purpose-built temporary structures as required
- Plant servicing workshop
- Perimeter fencing, including visual screening of construction compounds where necessary
- Environmental controls.

AF18 (Early Works) will comprise of:

- Internal access tracks
- Stabilised parking areas with capacity for construction workers
- Staff amenities including demountable office accommodation, toilet blocks and meeting rooms
- Material and equipment laydown and storage areas, including purpose-built temporary structures as required
- Perimeter fencing, including visual screening of construction compounds where necessary
- Environmental controls.

Activities to be undertaken to establish AF7 (Early Works) and AF18 (Early Works) facilities are outlined in Table 4-4.

Table 4-6: Site establishment activities

Stage	Activities
Site clearing works	• Install site perimeter fences and hoarding, where necessary • Installation of site sediment and erosion controls and pollution management measures (prior to any vegetation clearance) • Vegetation clearing and grubbing • Stripping topsoil and vegetation • Stripping and stockpiling of topsoil for reuse, where possible • Adjustment of property access (if required)
General earthworks	• Earthworks to provide platforms for site sheds/offices/toilets/workshops, carparking and laydown/stockpile areas • Construction of sediment ponds (if required)
General pavement works	• Gravel or asphalt base spread to support site facilities, access roads, carpark, building pads and laydown/stockpile areas • Construct hardstand areas

Stage	Activities
Site facilities	• Mobilisation and installation of site facilities including (but not limited to): - Site offices - Toilets - Workshop/maintenance sheds - Storage facilities - Waste facilities - Chemical storage - Site security and lighting • Connection to services e.g., power, phone/internet, sewer, water if required • Installation of lighting • Maintenance of hardstand areas • Delineation of laydown/stockpile areas
Site handover for main construction purposes	• Ensure site is adequate for handover • Rehabilitation by Zinfra if site establishment is completed prior to construction in accordance with the WSPT lease requirements.

4.2.1 Duration of site establishment activities

The site establishment works are scheduled to commence in Q4 of 2021 with the duration of site establishment up to two months. AF7 (Early Works) and AF18 (Early Works) will be used to support the protection of high-pressure gas mains adjacent to Elizabeth Drive. These works are expected to be completed in Q4 of 2022.

While AF7 (Early Works) and AF18 (Early Works) will be used for Early Works, they will continue to be used for construction of the Project. The SEMP will be updated in accordance with NSW CoA A17 if additional activities or a change in site layout is required for the purposes of re-establishing the facility for construction. AF7 (Early Works) and AF18 (Early Works) are expected to be decommissioned before completion of construction in 2025. The site will be rehabilitated by Zinfra if Early Works are completed prior to the commencement of main construction activities.

4.3 Site layout and access

An indicative layout of AF7 (Early Works) and AF18 (Early Works) is provided in Figure 4-1 and Figure 4-2 respectively.

Access to AF7 (Early Works) will be via the Sydney Water tower access road off Elizabeth Drive, which is a private road, and the Western Sydney Parklands fire trail. AF18 (Early Works) and MAF-B will be accessed via Wallgrove Road. MAF-A and MAF-C will be directly accessible via Elizabeth Drive. It is noted that access to AF18 in the Environmental Assessment Documentation was nominated through the construction alignment via access to AF17 from Wallgrove Road. However, as AF17 has not yet been constructed, and the limit of works is significantly reduced for Early Works, access to AF18 (Early Works) through the construction boundary is not possible. Therefore, Wallgrove Road will be used to access AF18 (Early Works). Wallgrove Road has been identified as a heavy vehicle haulage route within the Environmental Assessment Documentation and therefore not expected to result in any additional impacts not already assessed and approved.

For AF7 (Early Works) the closest receiver is around 240 metres to the north of the facility boundary across Elizabeth Drive.

For AF18 (Early Works) the closest receiver is around 48 metres directly north of the facility boundary with another receiver being located around 100 metres directly south of the facility boundary.

In accordance with NSW CoA A21, boundary screening will be erected around the site for the duration of Work. The boundary screening will be provided in the form of chain wire fencing and screening cloth to minimise visual impacts to sensitive receivers in accordance with NSW CoA A22. In accordance with NSW CoA A23 and B7, signs will be displayed at the entrance of AF7 (Early Works) and AF18 (Early Works) that displays the following information:

- The CSSI name: M12 Motorway
- Application number: SSI- 9364
- A 24-hour telephone number for the registration of complaints and enquiries about the CSSI: 1800 517 155
- A postal address to which written complaints and enquires may be sent:
  - Transport for NSW (M12 Motorway), PO Box 973, Parramatta, NSW, 2124
- An email address to which electronic complaints and enquiries may be transmitted: m12motorway@transport.nsw.gov.au.

Figure 4-1: Indicative layout of AF7

Figure 4-2: Indicative layout of AF18 (Early Works)

Figure 4-2: Indicative layout of AF18

4.4 Plant and Equipment

Plant and equipment expected to be used for site establishment of AF7 (Early Works) and AF18 (Early Works) may include:

- 10 Ton Crane
- 20 Ton excavator
- Front-end loaders
- tippers and bogies
- Semi-trailer and steel plates
- Road trucks
- Light vehicles
- Fences
- Lighting towers
- Portable sheds
- Portable ablutions
- Fuel storage
- Generators
- Waste tanks
- Plate compactors and small roller
- Watercart.

4.5 Working hours

In accordance with NSW CoA E34, work will be undertaken during approved extended hours:

- 7:00 am to 6:00 pm Monday to Friday
- 8:00 am to 6:00 pm Saturday (subject to prior approval from TfNSW)
- At no time on Sunday or public holidays.

Application to work between 1:00 pm and 6:00 pm on a Saturday (the allowable work hours on Saturdays identified in the Infrastructure Approval) must be submitted to the Principal no later than 12:00 pm on the Thursday immediately prior to the Saturday for which works are proposed, and must include the details of the work activities proposed to be carried out. Approval is at the sole discretion of TfNSW.

As required by NSW CoA E35, highly noise intensive works that result in an exceedance of the applicable noise management level at the relevant receiver must only be undertaken:

- Between 8:00 am to 6:00 pm Monday to Friday
- Between 8:00 am to 1:00 pm Saturday
- In continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.

'Continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing the work.

In accordance with NSW CoA E37, Zinfra will identify and liaise with TfNSW to consult with receivers identified as being subject to levels that exceed the Highly Noise Affected criteria with the objective of determining appropriate hours of respite unless an agreement is reached with those receivers.

4.5.1 Noise Screening Assessment

A noise screening assessment (Appendix D) has been undertaken to determine whether a Noise and Vibration Impact Statement (NVIS) in accordance with NSW CoA E40 is required to be prepared.

An NVIS is required for any work that may exceed the NML outside of the hours identified in Section 4.5 (i.e. out of hours works), or where receivers will be Highly Noise Affected (defined by the *Interim Construction Noise Guideline* (ICNG) (EPA, 2009) as the point above which there may be strong community reaction to noise, nominated as 75 dB(A) ($L_{Aeq(15\ minutes)}$).

The noise screening assessment has been undertaken for the closest sensitive receiver during site establishment and operational conditions for the ancillary facilities within the scope of this SEMP. The scenarios utilised for the screening assessments adopt a conservative approach, with the assumption that all equipment will be in use at the same time (refer to Section 5.3).

Should a NVIS be required, this will be prepared by Zinfra in liaison with TfNSW and provided to the ER prior to the commencement of the nominated work. The NVIS will include specific mitigation measures identified through consultation with affected sensitive land users and must be implemented for the duration of work.

As required by NSW CoA E41, if the potential vibration criteria exceedance is to occur more than once or extend over a period of 24 hours, sensitive receivers will be provided with a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the sensitive receiver.

4.5.2 Out of Hours Work

Zinfra and/or its appointed contractor will prepare a procedure for Out of Hours Work (OOHW), prepared in accordance with the *Construction Noise and Vibration Guidelines (Roads and Maritime, 2016)*. The procedure will be prepared to address the requirements of NSW CoA E37 relating to OOHW. A Noise and Vibration Impact Statement will be prepared for any activities that may exceed the Project noise management levels and vibration criteria in accordance with NSW CoA E38 and NSW CoA E40.

4.5.3 Variation to hours of work

Works associated with the delivery of the Project may be undertaken outside the hours of work identified in Section 4.5 in the following circumstances, in accordance with NSW CoA E36:

- Safety and emergencies:
    - For the delivery of materials required by the NSW Police Force or other authority for safety reasons
    - 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 material environmental harm

- On becoming aware of the need for emergency works, Zinfra will notify the TfNSW Project Manager, TfNSW Environment and Sustainability Manager, the Planning Secretary, the ER and the EPA of the need for those works. Zinfra will use its best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works.

- Work that causes:
  - $L_{Aeq(15\ minute)}$ noise levels:
  - No more than 5 dB(A) above the rating background level at any residence in accordance with *Interim Construction Noise Guideline (DECC, 2009*) and
  - No more than the "Noise affected" noise management levels specified in Table 3 of the *Interim Construction Noise Guideline (DECC, 2009)* at other sensitive land uses
  - $LAF_{max(15\ minute)}$ noise levels no more than 15 dB(A) above the rating background level at any residence during the night time period
  - Continuous or impulsive vibration values, measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of *Assessing Vibration: a technical guideline (DEC, 2006)* and
  - Intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline (DEC, 2006).*

- By approval:
  - Where different construction hours are permitted or required under an EPL in force in respect of the Project
  - Work not subject to an EPL that are approved under an Out-of-Hours Work Protocol in accordance with NSW CoA E37
  - Negotiated agreements with directly affected residents and sensitive land user(s).

Approvals for any changes to the construction hours outlined in Section 4.5 above will be attached to the EWEMP.

5 Environmental aspects and impacts

This section of the Plan provides an overview of potential environmental aspects and impacts that are related to site establishment activities. Environmental constraints located in or near AF7 (Early Works) and (AF18 Early Works) that will require consideration during site establishment activities are shown in Figure 5-1 and Figure 5-2.

5.1 Traffic and transport

Access to and from AF7 (Early Works) will be off Elizabeth Drive via the Sydney Water access road and Western Sydney Parklands internal roads. AF7 (Early Works) has been located to minimise the need for heavy vehicles to travel through residential areas. On-site worker parking will be available during the site establishment phase at AF7 (Early Works).

No clearing or road formalisation is required for the use of the Sydney Water access road and Western Sydney Parklands internal roads. The use of these roads is allowed under as per the interface deed and permit to enter arrangements between TfNSW and the Western Sydney Parklands Trust (WSPT). Zinfra will be responsible for reinstating the road should damage occur as per a landowner agreement with the WSPT.

Access to and from AF18 (Early Works) will be via Wallgrove Road. AF18 (Early Works) has been located to minimise the need for heavy vehicles to travel through residential areas. On-site worker parking will be available during the site establishment phase at AF18 (Early Works).

Roads identified as potential access routes to AF7 (Early Works) and AF18 (Early Works) in the Environmental Assessment Documentation included the M7 Motorway, Elizabeth Drive and Wallgrove Road. The Sydney Water access road is a private road within Sydney Water's easement within Western Sydney Parklands. Use of the road is by agreement with Western Sydney Parklands Trust and Sydney Water.

The Secretary's approval for the use of local roads by heavy vehicles in accordance with NSW CoA E93 is not required as the use of Elizabeth Drive and Wallgrove Road has been identified in the Environmental Assessment Documentation. Therefore, a traffic and pedestrian impact assessment in accordance is not required for these roads.

In accordance with NSW CoA E95, a Road Dilapidation Report will be prepared before any local road is used by a heavy vehicle for the purposes of the Project, unless otherwise agreed by the relevant road authority.

Any potential traffic and transport impacts will be managed in accordance with the environmental management measures listed in Table 6-3

5.2 Air quality

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

- Dust as a result of ground disturbance (earthworks), vegetation clearing and grubbing, removal and/or stockpiling of topsoil
- Emissions due to the use of plant, machinery and vehicles
- Dust due to the storage of equipment
- Dust due to storage of materials
- Dust due to vehicle access on hardstand (if not sealed).

The Environmental Assessment Documentation concluded that impacts on air quality will be minor in nature. Any potential air quality impacts will be managed in accordance with the environmental management measures listed in Table 6-3

Figure 5-1: Environmental constraints relevant to AF7 (Early Works)

Figure 5-2: Environmental Constraints relevant to AF18 (Early Works)

Figure 5-2: Environmental constraints relevant to AF18 (Early Works)

5.3 Noise and vibration

The proposed site establishment works may result in potential noise and vibration impacts.

Site establishment works will occur during standard construction hours or approved extended hours where possible, however some works may be required outside these hours. Should out of hours works be required, a NVIS would be developed in accordance with NSW CoA E40. Construction hours as approved in the CoA are provided in Section 4.5.

Works outside of standard construction hours or approved extended hours may be needed for activities such as the delivery of oversize items. Works outside of these hours will be permitted providing they meet the requirements of NSW CoA E36 or if they are undertaken as per the Out-of-Hours Work Protocol (as per NSW CoA E37) with the prior approval from the Planning Secretary.

Pre-construction surveys will be carried out for surface and sub-surface structures and other relevant assets identified at risk from vibration in accordance with NSW CoA E76 as outlined in Appendix C of the SEMP.

Noise screening assessments (Appendix D) for site establishment activities and operation of ancillary facilities are summarised in

Table 5-1 and Table 5-2. The assessment assumes a worst-case scenario for plant and equipment for site establishment and operation of the ancillary facility at the façade of the nearest residential receiver.
Any noise and vibration impact during site establishment activities will be managed in accordance with the environmental management measures listed in Table 6-3.

5.3.1 AF7 (Early Works) Screening Assessment

The closest receiver is around 240 metres to the north of the facility boundary across Elizabeth Drive. Although AF7 (Early Works) is located in noise catchment area (NCA) 05, the nearest residential receiver is located in NCA04. Therefore, screening assessments have been done using NMLs established for NCA04.

The sound pressure level was determined to be 56 dBA and 51 dBA for site establishment and operation respectively, below the highly noise affected criteria of 75 DBA. In accordance with NSW CoA E40 a NVIS is not considered necessary for works that fall within standard construction hours and approved extended hours. The screening assessment indicates that NMLs would be exceeded in the evening, evening shoulder and night periods during site establishment and during the night period for operations. Should site establishment and operation of AF7 (Early Works) require out-of-hours work, an NVIS will be prepared.

One State listed heritage item the Upper Canal System (Pheasants Nest Weir to Prospect Reservoir) is located south east of AF7 (Early Works) and has the potential to be impacted by vibration. Prior to the commencement of Early Works, surveys will be carried out to confirm the existing condition of the Upper Canal System to determine appropriate vibration criteria. A vibration criterion of a peak particle velocity (PPV) will be determined in consultation WaterNSW. An exclusion zone will be established that delineates the safe working distances for Tunnel Shaft 3. The use of smaller and less vibratory intense equipment (such as plate compactor and small roller) has been selected to minimise potential indirect impacts. (see Appendix C).

Table 5-1: Summary of Screening Assessment for AF7 (Early Works)

Noise Management Level (NML) exceedance ($L_{Aeq(15min)}$ (dBA))					
	Noise Management Level (RBL+10dB(A))	Site Establishment		Operation of Ancillary Facility	
		Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Management Level (NML) (dB(A))	Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Management Level (NML) (dB(A))
Day[1]	64	56	0	51	0
Day[2] (Approved extended hours)	64	56	0	51	0
Out-of-hours work					
Morning[3] Shoulder	59	56	0	51	0
Day[4]	59	56	0	51	0
Evening[5]	53	56	3	51	0
Evening shoulder[6]	53	56	3	51	0
Night[7]	42	56	14	51	9

5.3.2 AF18 (Early Works) Screening Assessment

The closest receiver is around 48 metres directly north of the facility boundary.

The sound pressure level was determined to be 72 dBA and 67 dBA for site establishment and operation respectively, below the Highly Noise Affected criteria of 75 DBA. In accordance with NSW CoA E40, an NVIS is not considered necessary for works that fall within standard construction hours and approved extended hours. The screening assessment indicates that NMLs would be exceeded in both scenarios. Should site establishment and operation of AF18 (Early Works) require out-of-hours work, an NVIS will be prepared.

[1] *Daytime period is the standard construction hours of 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm Saturday.*
[2] *Approved extended hours include Saturday from 1:00 pm to 6 pm*
[3] *Morning shoulder period is 6:00 am to 7:00 am Monday to Friday. Where the morning shoulder RBL is higher than the daytime RBL, the daytime RBL was adopted.*
[4] *Daytime OOH period is 7:00 am to 8:00 am and 1.00pm to 6.00pm Saturday and 8:00 am to 6:00 pm Sunday and Public Holidays.*
[5] *Evening period is 7:00 pm to 10:00 pm Monday to Friday and 6:00 pm to 10:00 pm Saturday, Sunday and Public Holidays*
[6] *Evening shoulder period is 6:00 pm to 7:00 pm Monday to Friday. Where the evening shoulder RBL is higher than the evening RBL, the evening RBL was adopted.*
[7] *Night-time period is 10:00 pm to 6:00 am Monday to Friday, 10:00 pm to 7:00 am Saturday and 10:00 pm to 8:00 am Sunday and Public Holidays.*

Table 5-2: Summary of Screening Assessment for AF18 (Early Works)

Noise Management Level (NML) exceedance ($L_{Aeq(15min)}$ (dBA))					
	Noise Management Level (RBL+10dB(A))	Site Establishment		Operation of Ancillary Facility	
		Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Management Level (NML) (dB(A))	Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Management Level (NML) (dB(A))
Day	64	72	8	67	3
Day (Approved extended hours)	64	72	8	67	3
Out-of-hours work					
Morning shoulder	53	72	19	67	14
Day	53	72	19	67	14
Evening	53	72	19	67	14
Evening shoulder	53	72	19	67	14
Night	42	72	30	67	25

5.3.3 Minor ancillary facilities

The closest residential receiver identified for AF7 (Early Works) is also the closest residential receiver to both MAF-A (72m),MAF-C (282m), MAF-D (110) and MAF-E (260).

A screening assessment for the site establishment of MAF-A, MAF-B and MAF-C minor ancillary facilities has been done against the NMLs provided in

Table 5-1. An assessment of the cumulative noise impacts was also conducted to account for the noise generated by AF7 (Early Works) and MAF-A and MAF-B at the residential receiver. The screening and cumulative assessment was completed for site establishment only as the noise impacts of the minor ancillary facilities during operation would be negligible and site establishment of minor ancillary facilities is expected to be completed prior to the operation of AF7 (Early Works).

Noise screening assessments were not completed for the establishment and operation of MAF-D and MAF-E as only a portaloo and small storage container will be utilised at each location.

Table 5-3: Cumulative assessment for minor ancillary facilities A and B, and AF7 (Early Works)

Noise Management Level (NML) exceedance ($L_{Aeq(15min)}$ (dBA)) and cumulative assessment						
	Minor Ancillary Facility A		Minor Ancillary Facility B		Cumulative assessment	
	Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Management Level (NML) (dB(A))	Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Management Level (NML) (dB(A))	Calculated Sound Pressure Level $L_{Aeq(15minute)}$	Level above Noise Managemen t Level (NML) (dB(A))
Day	66	2	50	0	68.6	4.6
Day (Approved extended hours)	66	2	50	0	68.6	4.6
Out-of-hours work						
Morning shoulder	66	7	50	0	68.6	9.6
Day	66	7	50	0	68.6	9.6
Evening	66	13	50	0	68.6	15.6
Evening shoulder	66	13	50	0	68.6	15.6
Night	66	24	50	8	68.6	26.6

5.4 Land use

The land to be temporarily leased for the establishment and use of AF7 (Early Works), Lot 3 DP 1087825, is located within the Western Sydney Parklands. Land uses surrounding the site support recreational activities.

The land to be temporarily leased for the establishment and use of AF18 (Early Works), Lot 26B DP 387529, is owned by the WSPT and currently used for rural residential and agricultural purposes.

Any ongoing potential land use and property impacts during site establishment activities will be managed in accordance with the environmental management measures listed in Appendix A9 of the EWEMP and conditions stipulated under the lease agreement between TfNSW and WSPT (refer to Section 6.2.

5.5 Urban design and visual amenity

The ancillary facilities will be constructed in a manner that minimises the visual impacts of the site, including the installation of boundary screening as outlined in Section 4.3 in accordance with NSW CoA A21, A22 and A23

Lighting may be required at night to illuminate office accommodation, meeting rooms, vehicle parking area and/or provide security at AF7 (Early Works) and AF18 (Early Works). Urban design and visual amenity environmental management measures listed in Table 6-3.

5.6 Social and economic

At AF7 (Early Works) and AF18 (Early Works) social impacts will largely be related to traffic and transport (refer to Section 5.1), air quality (refer to Section 5.2), noise and vibration (refer to Section 5.3) and visual amenity impacts (refer to Section 5.5).

These potential impacts will be managed in accordance with the management and mitigation measures for their respective aspects, listed in Table 6-3.

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 early works workforce.

5.7 Soil and water quality

The Environmental Assessment Documentation identified that the key soil and water quality issues as a result of site establishment works will 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 stormwater infrastructure and nearby waterways. A minor drainage line (Ropes Creek) is located more than 50 metres west of AF18 (Early Works). There are no waterways located within the vicinity of AF7 (Early Works).

Any potential soil and water quality impacts will be managed in accordance with the environmental management measures listed in Table 6-3.

5.8 Contamination

The Environmental Assessment Documentation did not identify any sites of contamination risk in or near AF7 (Early Works) and AF18 (Early Works). Any potential contamination impacts will be managed in accordance with the environmental management measures listed in Table 6-3. Key contamination risks include refuelling and potential for hazardous material to enter nearby waterways.

If any unexpected contamination (including asbestos) are encountered, works potentially affecting the find will cease immediately and the Unexpected Contaminated Land and Asbestos Finds Procedure (Appendix B3 of the EWEMP) will be followed. A suitable area will be identified by Zinfra for the stockpiling of unexpected waste materials within AF7 (Early Works) and AF18 (Early Works).

5.9 Biodiversity

AF7 (Early Works) contains around 0.2 hectares of Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (in high condition) (Cumberland Plain Woodland) and 0.12 hectares of revegetation. No threatened flora or fauna species have been identified within the vicinity of AF7 (Early Works). Threatened fauna habitat including three hollow bearing trees and Grey-headed Flying-fox habitat have been identified along the south-eastern portion of AF7 (Early Works).

AF18 (Early Works) contains about 0.02 hectares of Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (in medium condition). It is noted in the Environmental Assessment Documentation that one live individual Cumberland Plain Land Snail was recorded within the Project boundary, northwest of the M7 Motorway interchange and west of the AF18 (Early Works) western boundary. Due to the occurrence of Cumberland Plain Land Snail Habitat within the AF18 (Early Works) footprint, the presence of Cumberland Plain Land Snail is assumed. No threatened flora species or hollow bearing trees were recorded within or adjacent to AF18 (Early Works).

Both AF7 (Early Works) and AF18 (Early Works) contain vegetation mapped within the Environmental Assessment Documentation as potential foraging habitat for the Grey-headed Flying-fox listed as vulnerable under the EPBC Act and BC Act as vulnerable. No potential breeding habitat is expected to be impacted by the Early Works.

Vegetation to be removed from AF7 (Early Works) and AF18 (Early Works) during the early stages of site establishment works (refer to Table 4-4) will comprise of Cumberland Plain Woodland that is listed as a critically endangered Threatened Ecological Community under the BC Act, and grassland habitat that does not conform to any definition of a native Plant Community Type.

Any potential biodiversity impacts will be managed in accordance with the environmental management measures listed in the EWFFMP (Appendix B2 of the EWEMP) and Section 6.2.1 of this document. Zinfra will minimise clearing requirements as far as practicable. Native vegetation be impacted during site establishment activities and will be protected in accordance with the EWFFMP.

5.10 Heritage

The Upper Canal System exists immediately adjacent to the south east boundary of AF7 (Early Works). While existing mostly underground one element of the pipeline, Cecil Hills Tunnel Shaft 4 was observed within the study area in the M7 road median (Lot 1 DP603946). There will be no impact to the Cecil Hills Tunnel Shaft 4 as a result of the establishment of AF7 (Early Works).

Following WaterNSW's review of the Amendment Report, it was identified by TfNSW through review of historic plans of the Upper Canal that there is potentially a shaft (referred to as Tunnel Shaft 3). The indicative location of Tunnel Shaft 3 (as shown in Figure 5-1) has been predicted by TfNSW based on the results of a dilapidation survey, ground penetrating radar survey and review of historic drawings. The location of Tunnel Shaft 3 is located south-east of AF7 (Early Works).

To prevent direct and indirect damage to the Upper Canal System, the use of smaller and less vibratory intense equipment (such as plate compactor and small roller) has been selected. Vibration monitoring and safe working distances outlined in Appendix C will be implemented and advice from a heritage specialist will be sought regarding the methods and locations for installing vibration monitoring equipment at the Upper Canal System. In the unlikely event that the vibration testing indicates that the preferred values for vibration are exceeded, Zinfra will review the construction methodology and, if necessary, implement additional mitigation measures.

The AF7 (Early Works) access road traverses two Aboriginal heritage sensitive areas. As no road formalisation is required as this is a pre-existing road (refer to Section 5.1), site establishment activities will not impact these sensitive areas.

There are no non-Aboriginal heritage items or potential non-Aboriginal heritage items that have been identified within the vicinity of the proposed site establishment works at AF18 (Early Works).

No sites or potential sites of Aboriginal heritage have been identified within the vicinity of the proposed site establishment works at AF18 (Early Works).

Any potential heritage impacts will be managed in accordance with the environmental management measures listed in Table 6-3, in particular, vibratory-intensive activities.

If any unexpected heritage items (including human remains) are encountered, works potentially affecting the find will cease immediately and the Unexpected Heritage Finds Procedure (Appendix B4 of the EWEMP) will be followed.

5.11 Greenhouse gas, resource and waste minimisation

Greenhouse gases in relation to the site establishment activities at the site will be relatively minor, and typically associated with the use of plant, vehicles and electricity use.

Resources used for site establishment works will largely be made up of construction materials (concrete, asphalt, steel, fuel etc.), water and power. The waste generated will largely be made up of unsuitable fill material from earthworks.

Any potential greenhouse gas, resource and waste impacts will be managed in accordance with the environmental management measures listed in Table 6-3. In accordance with NSW CoA E104, a waste tracking register is included in Appendix A10 of the EWEMP to track waste movements associated with the Early Works.

5.12 Hazard and risk

Potential hazard and risk impacts at the site will include accidental spills of fuels and/or chemicals which could result in contamination of soils and/or waterways, mismanagement of contaminated material and emission of gasses from contaminated material.

Additionally, bushfire hazard exists where there is fuel in the form of vegetation, including grass, scrub, bushes and trees. Establishment and operation of AF7 (Early Works) and AF18 (Early Works) have the potential to generate bushfire risk as a result of activities likely to generate sparks. Activities identified as likely to generate sparks include:

- Smoking
- Plant Maintenance
- Driving on site
- Hot works.

Any potential hazard and risks will be managed in accordance with the environmental management and mitigation measures listed in Table 6-3.

6 Site establishment risk assessment and management approach

6.1 Site establishment risk assessment

The risk assessment has been prepared to assess the key environmental risks associated with the site establishment works described in Section 4. The risk management process involved an assessment of all specific activities/aspects 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 Environmental Assessment Documentation. The risk matrix identified in Table 6-2 has been used to undertake the risk assessment located in Table 6-3.

Table 6-1: Likelihood criteria

Likelihood	Definition	Probability
Almost certain	Expected to occur frequently during time of activity or project (10 or more times per year)	>90%
Likely	Expected to occur occasionally during time of activity or project 75% to 90% (1 to 10 times per year)	75% to 90%
Possible	More likely to occur than not occur during time of activity or project 50% to 75% (once per year)	50% to 75%
Unlikely	More likely to not occur than occur during time of activity or project 25% to 50% (once every 1 to 10 years)	25% to 50%
Rare	Not expected to occur during the time of the activity or project 10% to 25% (once every 10 to 100 years)	10% to 25%
Almost unprecedented	Not expected to ever occur during time of activity or project (less than once every 100 years)	<10%

Table 6-2: Risk assessment matrix

Likelihood	Consequence					
	Insignificant	Minor	Moderate	Major	Severe	Catastrophic
Almost certain	Moderate	High	High	Very high	Very high	Very high
Likely	Moderate	Moderate	High	High	Very high	Very high
Possible	Low	Moderate	Moderate	High	High	Very high
Unlikely	Low	Low	Moderate	Moderate	High	High
Rare	Very low	Low	Low	Moderate	Moderate	High
Almost unprecedented	Very low	Very low	Low	Low	Moderate	Moderate

Specific measures and requirements to meet the objectives of this SEMP and to address impacts resulting from AF7 (Early Works) and AF18 (Early Works) are outlined in Table 6-3 and Section 7. Section 7 outlines additional measures specifically associated with works on WSPT leased land. Furthermore, Early Works management measures are detailed in full in Appendix A8 of the EWEMP.

Table 6-3: Site establishment initial risk assessment

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
Site clearing works	Accidental clearing outside of boundary of AF7 (Early Works) and AF18 (Early Works)	Possible	Moderate	Moderate	• Daily pre-start outlining the vegetation areas to be cleared • Clearing will be undertaken in accordance with the staged Vegetation Clearing Procedure (Section 6.1 of the EWFFMP). • All site personnel to undertake site inductions outlining no vegetation or tree removal will be undertaken without prior approval • Exclusion zones will be delineated with flagging (or similar) in accordance the Flagging Protocol (Section 2.2.3 of the Vegetation Clearing Procedure (Appendix C of the EWFFMP)	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, Environmental Site Representative (ESR), Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Impacts on unexpected threatened species	Unlikely	Moderate	Moderate	• Toolbox talks/inductions regarding the potential for unexpected threatened species • Threatened species surveys prior to site establishment activities performed by a suitably qualified ecologist (if required). • Implementation of the Unexpected Threatened Species or EEC Finds Procedures in accordance with Guide 1 of the *Biodiversity Guidelines* (RTA, 2011), TfNSW specifications, Appendix D of the EWFFMP (Appendix B2 of the EWEMP).	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Rare	Moderate	Low
	Spreading of noxious weeds via personnel, plant / equipment, topsoil / mulch	Possible	Moderate	Moderate	• Toolbox talks/inductions regarding the location and treatment of weeds • Works will be carried out such that no noxious weeds are imported to the site or around the site including the washing of wheels of all plant prior to transportation to site • Hygiene protocols outlined in the Weed and Pathogen Management Plan (Appendix E of the EWFFMP) will be implemented throughout site clearing activities.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Generation of dust	Likely	Moderate	High	• Site establishment activities with the potential to generate dust will be modified or ceased during high winds to reduce the potential for dust generation • Access roads within AF7 (Early Works) and AF18 (Early Works) will be maintained and managed to reduce dust generation • Stockpiles that have the potential to result in dust generation will be minimised within AF7 (Early Works) and AF 18 (Early Works) at all times and comply with RMS – Stockpile Site Management Guideline (May 2015) in accordance with SW6 (Appendix A8 of the EWEMP) • During high wind and/or dry conditions, programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties • Adequate dust suppression will be available and applied where required e.g., watercart, misters • In addition to the above mitigation measure, AQ1 – AQ3 Appendix A8 are implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Likely	Minor	Moderate
	Bushfire	Possible	Severe	Very high	• All site personnel are inducted on bushfire hazards and how they are to be managed • Stockpiles must be monitored and turned over as required to avoid spontaneous combustion.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Rare	Severe	Moderate

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
					• Hazardous materials will be appropriately bunded with a volume of 110 per cent of the largest receptacle • All works involving a fire source will have a hot works permit in place with specific controls to prevent fire risk • No smoking (including e-cigarettes) will be allowed on site except at designated areas. Dedicated butt disposals will be located in all designated smoking areas • Cutting, welding or grinding will not be undertaken on total fire ban days, unless the works takes place in an area at least 50 metres away from an ignition source and appropriate fire controls are in place. • Vehicles will not be driven or idled in areas of long grass on fire ban days or after prolonged periods of dry weather.				
	Erosion and sedimentation impacting nearby dams or downstream watercourses due to exposed land, inadequate controls or control failure	Possible	Moderate	Moderate	• Erosion and Sediment Control Plans (ESCPs) will be prepared for all work and implemented in advance of site disturbance • The temporary stockpiling and/or application of mulch during Early Works will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application and/or stockpiling of mulch near waterways where practicable. This will be detailed in the Erosion and Sediment Control Plan • All site personnel will undergo a site induction and ongoing toolbox talks outlining erosion and sediment control management measures • Hardstand areas and surrounding public roads will be cleaned as required, using methods such as street sweepers • In addition to the above mitigation measures management measures SW1 to SW40 from Appendix A8 and those listed in Table 6-5 will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate
	Inappropriate disposal of waste (including, vegetation and contaminated materials) or disposal at an unlicensed waste facility	Possible	Moderate	Moderate	• All site personnel working on-site will undergo a site induction that will detail waste and resource management measures • Additional targeted toolbox talks will be given on waste disposal from time to time • Suitably licensed waste contractors will be used for the collection and transport of all waste 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. • In addition to the mitigation measures specified above, the disposal of waste will be managed in accordance with W3 – W9 in Appendix A8 of the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Moderate	Moderate
	Traffic impacts on local roads	Possible	Minor	Moderate	• Designated haul routes will be used, as identified in the Environmental Assessment Documentation, including the M7 Motorway, Elizabeth Drive and Wallgrove Road for heavy vehicles • Measures identified in the Traffic Control Plan (TCP) (if developed) will be implemented • Safe pedestrian and cyclist access will be maintained around Early Works activities with adequate signage and pathways provided. In circumstances where pedestrian and cyclist access is restricted or removed, an alternate	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
					route will be provided and sign posted in accordance with the relevant standards. • Drivers will be inducted on the haulage roads including the use of Elizabeth Drive and Wallgrove Road and avoidance of other local roads • In addition to the above mitigation measures, TT1 to TT10 of Appendix A8 in the EWEMP will be implemented.				
	Tracking of mud from site on public roads	Possible	Minor	Moderate	• Site exit points will be fitted with appropriate controls to limit tracking of material out of site as soon as possible to limit the amount of material transported off site. Controls may include hardstand material; wheel washes; rumble grids; rip rap etc. • Street sweepers will be used to manage sediment/mud tracking.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Noise and vibration impacts to sensitive receivers	Possible	Minor	Moderate	• Maximise works during the standard construction hours • All construction plant and equipment used on site will be fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications. • Community updates will be provided throughout the site establishment works, when necessary • Activities that result in high noise impacts will be subject to respite periods as outlined in NSW CoA E37 and NSW CoA E45-E47. • The Noise and Vibration Monitoring Program prepared by TfNSW and provided in Appendix C will be implemented throughout the duration of site establishment activities. • In addition to the above mitigation measures, noise and vibration impacts will be managed in accordance with NV1 – NV29 outlined in Appendix A8 of the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Contamination of soil or water due to a spill or leak from plant/equipment or chemicals required for construction purposes	Possible	Moderate	Moderate	• Hazardous substance handling and use will be conducted away from drainage, stormwater lines and waterways and, wherever possible, with the use of bunds • Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite • All site personnel will be responsible for ensuring that refuelling undertaken on site will be undertaken in designated areas only, outside riparian areas and well away from drainage, stormwater inlets or waterways • Storage of chemicals, fuel and lubricant will be 50 m from any aquatic habitat, flood prone areas, or on slopes steeper than 1:10. • Hazardous materials will be appropriately bunded with a volume of 110 per cent of the largest receptacle and covered • Any spills or leaks will be immediately contained and absorbed • Spill kits will be placed at strategic locations (e.g. access points, plant/ machinery storage areas) • In addition to the above mitigation measures, management measures SW29 – SW38 of Appendix A8 of the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate
	Missed opportunities to	Possible	Minor	Moderate	• Resource recovery will be applied to the management of waste and will include the recovery of resources for reuse-reusable materials generated	Zinfra (e.g. Project Manager, Construction	Possible	Insignificant	Low

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
	maximise the beneficial re-use of waste				by the site establishment and will be segregated for reuse on site, or off site, where possible • Recovery of recyclable resources generated during site establishment • 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 • Prior to the commencement of clearing, a Reuse strategy will be prepared by the Early Works Vegetation Clearing Contractor detailing practicable options to reuse native trees or vegetation that are to be removed • Where offsite reuse is proposed, the Early Works Ecologist is to examine the material as per EPA Mulch Order 2016.	Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor			
General earthworks	Complete or partial loss of an unexpected heritage item while undertaking general earthworks	Possible	Moderate	Moderate	• Any excavations, intrusive works or other operations that have the potential to impact areas of known heritage, cultural or archaeological items must not be undertaken without the implementation of appropriate management measures. • Any item of potential Aboriginal archaeological/cultural heritage conservation significance, or human remains discovered during the site establishment works will be managed in accordance with the Unexpected Finds Procedure	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Moderate	Moderate
	Impacts to the Upper Canal System	Likely	Moderate	High	• Limit use and size of vibratory intensive equipment • No vibration intensive work will be undertaken within minimum safe working distances. • Vibration monitoring of the Upper Canal System. *German Standard DIN 4150-3* vibration criteria will be applied. Advice from a heritage specialist will be sought on methods and locations for installing equipment used for vibration monitoring of the Upper Canal System. • In the unlikely event that the vibration testing indicates that the preferred values for vibration are exceeded, Zinfra will review the construction methodology and, if necessary, implement additional mitigation measures • The Noise and Vibration Monitoring Program prepared by TfNSW and provided in Appendix C will be implemented throughout the duration of site establishment activities. • In addition to the above mitigation measures, noise and vibration impacts will be managed in accordance with NV1 – NV29 outlined in Appendix A8 of the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Generation of dust	Likely	Moderate	High	• Site establishment activities with the potential to generate dust will be modified or ceased during high winds to reduce the potential for dust generation • Access roads within AF7 (Early Works) and AF18 (Early Works) will be maintained and managed to reduce dust generation • Stockpiles that have the potential to result in dust generation will be minimised within the Ancillary Facilities at all times and comply *with RMS – Stockpile Site Management Guideline* (May 2015) in accordance with SW6 (Appendix A8 of the EWEMP)	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Likely	Minor	Moderate

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
					• During high wind and/or dry conditions, Zinfra will ensure programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties • Adequate dust suppression will be available and applied where required e.g., watercart, misters • In addition to the above mitigation measures, AQ1 to AQ3 from Appendix A8 of the EWEMP will be implemented.				
	Erosion and sedimentation impacting nearby dams or downstream watercourses due to exposed land, inadequate controls or control failure	Possible	Moderate	Moderate	• ESCPs will be prepared for all work and implemented in advance of site disturbance • The temporary stockpiling and/or application of mulch during Early Works will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application and/or stockpiling of mulch near waterways where practicable. This will be detailed in the Erosion and Sediment Control Plan • All site personnel will undergo a site induction and ongoing toolbox talks outlining erosion and sediment control management measures • Hardstand areas and surrounding public roads will be cleaned as required, using methods such as street sweepers • In addition to the above mitigation measures, SW1 – SW40 from Appendix A8 of the EWEMP and those listed in Table 6-5 will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate
	Inappropriate disposal of waste (including, vegetation and contaminated materials) or disposal at an unlicensed waste facility	Possible	Moderate	Moderate	• All site personnel working on-site will undergo a site induction that will detail waste and resource management measures • Additional targeted toolbox talks will be given on waste disposal from time to time • Suitably licensed waste contractors will be used for the collection and transport of all waste 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. • In addition to the mitigation measures above, disposal of waste will be managed in accordance with W3 to W9 from Appendix A8 of the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Moderate	Moderate
	Traffic impacts on local roads	Possible	Minor	Moderate	• Designated haul routes will be used, as identified in the Environmental Assessment Documentation, including the M7 Motorway, Elizabeth Drive, Sydney Water Access Track and Wallgrove Road for heavy vehicles • Measures identified in the Traffic Control Plan (TCP) (if developed) will be implemented • Drivers will be inducted on the haulage roads including the use of Elizabeth Drive, Wallgrove Road and the Sydney Water Access Track and avoidance of other local roads • Safe pedestrian and cyclist access will be maintained around Early Works activities with adequate signage and pathways provided. In circumstances where pedestrian and cyclist access is restricted or removed, an alternate route will be provided and sign posted in accordance with the relevant standards • In addition to the above mitigation measures, TT1 to TT10 of Appendix A8 in the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
	Tracking of mud from site on public roads	Possible	Minor	Moderate	• Site exit points will be fitted with appropriate controls to limit tracking of material out of site as soon as possible to limit the amount of material transported off site. Controls may include hardstand material; wheel washes; rumble grids; rip rap etc. • Street sweepers will be used to manage sediment/mud tracking.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Noise and vibration impacts to nearby sensitive receivers	Possible	Minor	Moderate	• Maximise works during the standard construction hours • All construction plant and equipment used on site will be fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications. • Erection of temporary acoustic barriers will be undertaken, where required • Community updates will be provided throughout the site establishment works, when necessary • Vibration intensive plant will not be used within minimum safe working distances of the Upper Canal System • Activities that result in high noise impacts will be subject to respite periods as outlined in NSW CoA E37 and NSW CoA E45-E47. • The Noise and Vibration Monitoring Program prepared by TfNSW and provided in Appendix C will be implemented throughout the duration of site establishment activities. • In addition to the above mitigation measures, noise and vibration impacts will be managed in accordance with NV1 – NV29 outlined in Appendix A8 of the EWEMP	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Impacts on visual amenity i.e. light spill	Possible	Minor	Moderate	• Lights will be located as far away as possible and directed away from neighbours/sensitive receivers including sensitive habitat such as Grey-headed Flying-fox habitat. • Boundary screening will be installed in accordance with NSW CoA A21 and A22 • In addition to the mitigation measures above, impacts on visual amenity will be managed in accordance with UD1 to UD3 of Appendix A8 in the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Contamination of soil or water due to a spill or leak from plant/equipment or chemicals required for construction purposes	Possible	Moderate	Moderate	• Hazardous substance handling and use will be conducted away from drainage, stormwater lines and waterways and, wherever possible, with the use of bunds • Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite • All site personnel will be responsible for ensuring that refuelling undertaken on site will be undertaken in designated areas only, outside riparian areas and well away from drainage, stormwater inlets or waterways • Storage of chemicals, fuel and lubricant will be 50 m from any aquatic habitat, flood prone areas, or on slopes steeper than 1:10. • Hazardous materials will be appropriately bunded with a volume of 110 per cent of the largest receptacle and covered • Any spills or leaks will be immediately contained and absorbed	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
					• Spill kits will be placed at strategic locations (e.g. access points, plant/ machinery storage areas)				
	Missed opportunities to maximise the beneficial re-use of waste	Possible	Minor	Moderate	• Resource recovery will be applied to the management of waste and will include the recovery of resources for reuse-reusable materials generated by the site establishment and will be segregated for reuse on site, or off site, where possible • Recovery of recyclable resources generated during site establishment • 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 • Prior to the commencement of clearing, a Reuse strategy will be prepared by the Early Works Vegetation Clearing Contractor detailing practicable options to reuse native trees or vegetation that are to be removed • Where offsite reuse is proposed, the Early Works Ecologist is to examine the material as per EPA Mulch Order 2016.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Insignificant	Low
General pavement works	Generation of dust	Likely	Moderate	High	• Site establishment activities with the potential to generate dust will be modified or ceased during high winds to reduce the potential for dust generation • Access roads within AF7 (Early Works) and AF18 (Early Works) will be maintained and managed to reduce dust generation • Stockpiles that have the potential to result in dust generation will be minimised within AF7 (Early Works) and AF 18 (Early Works) at all times and comply with *RMS – Stockpile Site Management Guideline* (May 2015) in accordance with SW6 (Appendix A8 of the EWEMP) • During high wind and/or dry conditions, the Zinfra will ensure programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties • Adequate dust suppression will be available and applied where required e.g., watercart, misters • In addition to the above mitigation measures, AQ1 to AQ3 from Appendix A8 of the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Likely	Minor	Moderate
	Bushfire	Possible	Severe	Very High	• All site personnel are inducted on bushfire hazards and how they are to be managed • Hazardous materials will be appropriately bunded with a volume of 110 per cent of the largest receptacle. • Stockpiles must be monitored and turned over as required to avoid spontaneous combustion. • All works involving a fire source will have a hot works permit in place with specific controls to prevent fire risk • Smoking (including e-cigarettes) will not be allowed on site except at designated areas. Dedicated butt disposals will be located in all designated smoking areas	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Rare	Severe	Moderate

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
					• Cutting, welding or grinding will not be undertaken on total fire ban days, unless the works takes place in an area at least 50 metres away from an ignition source and appropriate fire controls are in place • Vehicles will not be driven or idled in areas of long grass on fire ban days or after prolonged periods of dry weather.				
	Erosion and sedimentation impacting nearby dams or downstream watercourses due to exposed land, inadequate controls or control failure	Possible	Moderate	Moderate	• ESCPs will be prepared for all work and implemented in advance of site disturbance • The temporary stockpiling and/or application of mulch during Early Works will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application and/or stockpiling of mulch near waterways where practicable. This will be detailed in the Erosion and Sediment Control Plan • All site personnel will undergo a site induction and ongoing toolbox talks outlining erosion and sediment control management measures • Hardstand areas and surrounding public roads will be cleaned as required, using methods such as street sweepers • In addition to the above mitigation measures, SW1 – SW40 from Appendix A8 of the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate
	Inappropriate disposal of waste (including contaminated materials) or disposal at an unlicensed waste facility	Possible	Moderate	Moderate	• All site personnel working on-site will undergo a site induction that will detail waste and resource management measures • Additional targeted toolbox talks will be given on waste disposal where required • HAZMAT surveys will be undertaken and removal of asbestos will be undertaken prior to demolition activities (if required) • Suitably licensed waste contractors will be used for the collection and transport of all waste 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. • In addition to the mitigation measures above, disposal of waste will be managed in accordance with W3 to W9 from Appendix A8 of the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Moderate	Moderate
	Traffic impacts on local roads	Possible	Minor	Moderate	• Designated haul routes will be used, as identified in the Environmental Assessment Documentation, including the M7 Motorway, Elizabeth Drive and Wallgrove Road for heavy vehicles • Measures identified in the Traffic Control Plan (TCP) (if developed) will be implemented • Drivers will be inducted on the haulage roads including the use of Elizabeth Drive and Wallgrove Road and avoidance of other local roads • Safe pedestrian and cyclist access will be maintained around Early Works activities with adequate signage and pathways provided. In circumstances where pedestrian and cyclist access is restricted or removed, an alternate route will be provided and sign posted in accordance with the relevant standards. • In addition to the above mitigation measures, TT1 to TT10 of Appendix A8 in the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
	Tracking of mud from site on public roads	Possible	Minor	Moderate	• Site exit points will be fitted with appropriate controls to limit tracking of material out of site as soon as possible to limit the amount of material transported off site. Controls may include hardstand material; wheel washes; rumble grids; rip rap etc. • Street sweepers will be used to manage sediment/mud tracking.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Noise and vibration impacts to sensitive receivers	Possible	Minor	Moderate	• Maximise works during the standard construction hours • All construction plant and equipment used on site will be fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications. • Erection of temporary acoustic barriers will be undertaken, where required • Community updates will be provided throughout the site establishment works, when necessary • Vibration intensive plant will not be used within minimum safe working distances of the Upper Canal System • Activities that result in high noise impacts will be subject to respite periods as outlined in NSW CoA E37 and NSW CoA E45-E47. • The Noise and Vibration Monitoring Program prepared by TfNSW and provided in Appendix C will be implemented throughout the duration of site establishment activities. • In addition to the above mitigation measures, noise and vibration impacts will be managed in accordance with NV1 – NV29 outlined in Appendix A8 of the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Impacts on visual amenity i.e. light spill	Possible	Minor	Moderate	• Lights will be located as far away as possible and directed away from neighbours/sensitive receivers including sensitive habitat such as Grey-headed Flying-fox habitat. • Boundary screening will be installed, where appropriate, in accordance with NSW CoA A21 and A22 • In addition to the above mitigation measures, impacts on visual amenity will be managed in accordance with UD1 to UD3 of Appendix A8 in the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Contamination of soil or water due to a spill or leak from plant/equipment or chemicals required for construction purposes	Possible	Moderate	Moderate	• Hazardous substance handling and use will be conducted away from drainage, stormwater lines and waterways and, wherever possible, with the use of bunds • Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite • All site personnel will be responsible for ensuring that refuelling undertaken on site will be undertaken in designated areas only, outside riparian areas and well away from drainage, stormwater inlets or waterways • Storage of chemicals, fuel and lubricant will be 50 m from any aquatic habitat, flood prone areas, or on slopes steeper than 1:10. • Hazardous materials will be appropriately bunded with a volume of 110 per cent of the largest receptacle and covered • Any spills or leaks will be immediately contained and absorbed	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
					• Spill kits will be placed at strategic locations (e.g. access points, plant/ machinery storage areas)				
	Missed opportunities to maximise the beneficial re-use of waste such as concrete and asphalt	Possible	Minor	Moderate	• Resource recovery will be applied to the management of waste and will include the recovery of resources for reuse-reusable materials generated by the site establishment and will be segregated for reuse on site, or off site, where possible • Recovery of recyclable resources generated during site establishment • 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 • Prior to the commencement of clearing, a Reuse strategy will be prepared by the Zinfra detailing practicable options to reuse native trees or vegetation that are to be removed • Where offsite reuse is proposed, the Early Works Ecologist is to examine the material as per EPA Mulch Order 2016.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Insignificant	Low
Installation of site facilities	Generation of dust	Likely	Moderate	High	• Site establishment activities with the potential to generate dust will be modified or ceased during high winds to reduce the potential for dust generation • Access roads within AF7 (Early Works) and AF18 (Early Works) will be maintained and managed to reduce dust generation • Stockpiles that have the potential to result in dust generation will be minimised within AF7 (Early Works) and AF18 (Early Works) at all times and comply with *RMS – Stockpile Site Management Guideline* (May 2015) in accordance with SW6 (Appendix A8 of the EWEMP) • During high wind and/or dry conditions, the Zinfra will ensure programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties • Adequate dust suppression will be available and applied where required e.g., watercart, misters • In addition to the above mitigation measures, AQ1 to AQ3 from Appendix A8 of the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Likely	Minor	Moderate
	Bushfire	Possible	Severe	Very High	• All site personnel are inducted on bushfire hazards and how they are to be managed • Hazardous materials will be appropriately bunded with a volume of 110 per cent of the largest receptacle. • Stockpiles must be monitored and turned over as required to avoid spontaneous combustion. • All works involving a fire source will have a hot works permit in place with specific controls to prevent fire risk • Smoking (including e-cigarettes) will not be allowed on site except at designated areas. Dedicated butt disposals will be located in all designated smoking areas	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Rare	Severe	Moderate

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
					• Cutting, welding or grinding will not be undertaken on total fire ban days, unless the works takes place in an area at least 50 metres away from an ignition source and appropriate fire controls are in place • Vehicles will not be driven or idled in areas of long grass on fire ban days or after prolonged periods of dry weather.				
	Erosion and sedimentation impacting nearby dams or downstream watercourses due to exposed land, inadequate controls or control failure	Possible	Moderate	Moderate	• ESCPs will be prepared for all work and implemented in advance of site disturbance • The temporary stockpiling and/or application of mulch during Early Works will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application and/or stockpiling of mulch near waterways where practicable. This will be detailed in the Erosion and Sediment Control Plan • All site personnel will undergo a site induction and ongoing toolbox talks outlining erosion and sediment control management measures • Hardstand areas and surrounding public roads will be cleaned as required, using methods such as street sweepers • In addition to the above mitigation measures, SW1 – SW40 from Appendix A8 of the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate
	Inappropriate disposal of waste (including contaminated materials) or disposal at an unlicensed waste facility	Possible	Moderate	Moderate	• All site personnel working on-site will undergo a site induction that will detail waste and resource management measures • Additional targeted toolbox talks will be given on waste disposal where required • HAZMAT surveys will be undertaken and removal of asbestos will be undertaken prior to demolition activities (if required) • Suitably licensed waste contractors will be used for the collection and transport of all waste 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. • In addition to the mitigation measures above, disposal of waste will be managed in accordance with W3 to W9 from Appendix A8 of the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Moderate	Moderate
	Traffic impacts on local roads	Possible	Minor	Moderate	• Designated haul routes will be used, as identified in the Environmental Assessment Documentation, including the M7 Motorway, Elizabeth Drive and Wallgrove Road for heavy vehicles. • Measures identified in the Traffic Control Plan (TCP) (if developed) will be implemented • Drivers will be inducted on the haulage roads including the use of The Northern Road and avoidance of other local roads • Safe pedestrian and cyclist access will be maintained around Early Works activities with adequate signage and pathways provided. In circumstances where pedestrian and cyclist access is restricted or removed, an alternate route will be provided and sign posted in accordance with the relevant standards. • In addition to the above mitigation measures, TT1 to TT10 of Appendix A8 in the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
	Tracking of mud from site on public roads	Possible	Minor	Moderate	• Site exit points will be fitted with appropriate controls to limit tracking of material out of site as soon as possible to limit the amount of material transported off site. Controls may include hardstand material; wheel washes; rumble grids; rip rap etc. • Street sweepers will be used to manage sediment/mud tracking.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Noise and vibration impacts to sensitive receivers	Possible	Minor	Moderate	• Maximise works during the standard construction hours • All construction plant and equipment used on site will be fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications. • Erection of temporary acoustic barriers will be undertaken, where required • Community updates will be provided throughout the site establishment works, when necessary • Activities that result in high noise impacts will be subject to respite periods as outlined in NSW CoA E37 and NSW CoA E45-E47. • The Noise and Vibration Monitoring Program prepared by TfNSW and provided in Appendix C will be implemented throughout the duration of site establishment activities. • In addition to the above mitigation measures, noise and vibration impacts will be managed in accordance with NV1 – NV29 outlined in Appendix A8 of the EWEMP.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Impacts on visual amenity i.e. light spill	Possible	Minor	Moderate	• Lights will be located as far away as possible and directed away from neighbours/sensitive receivers including sensitive habitat such as Grey-headed Flying-fox habitat. • Boundary screening will be installed, where appropriate, in accordance with NSW CoA A21 and A22 • In addition to the above mitigation measures, impacts on visual amenity will be managed in accordance with UD1 to UD3 of Appendix A8 in the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Contamination of soil or water due to a spill or leak from plant/equipment or chemicals required for construction purposes	Possible	Moderate	Moderate	• Hazardous substance handling and use will be conducted away from drainage, stormwater lines and waterways and, wherever possible, with the use of bunds • Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite • All site personnel will be responsible for ensuring that refuelling undertaken on site will be undertaken in designated areas only, outside riparian areas and well away from drainage, stormwater inlets or waterways • Storage of chemicals, fuel and lubricant will be 50 m from any aquatic habitat, flood prone areas, or on slopes steeper than 1:10. • Hazardous materials will be appropriately bunded with a volume of 110 per cent of the largest receptacle and covered • Any spills or leaks will be immediately contained and absorbed • Spill kits will be placed at strategic locations (e.g. access points, plant/ machinery storage areas)	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
	Missed opportunities to maximise the beneficial re-use of waste	Possible	Minor	Moderate	• Resource recovery will be applied to the management of waste and will include the recovery of resources for reuse-reusable materials generated by the site establishment and will be segregated for reuse on site, or off site, where possible • Recovery of recyclable resources generated during site establishment • 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 • Prior to the commencement of clearing, a Reuse strategy will be prepared by the Early Works Vegetation Clearing Contractor detailing practicable options to reuse native trees or vegetation that are to be removed • Where offsite reuse is proposed, the Early Works Ecologist is to examine the material as per EPA Mulch Order 2016.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Insignificant	Low
Site facilities operation	Traffic impacts on local roads	Possible	Minor	Moderate	• Designated haul routes will be used, as identified in the Environmental Assessment Documentation, including the M7 Motorway, Elizabeth Drive and Wallgrove Road for heavy vehicles • Measures identified in the Traffic Control Plan (TCP) (if developed) will be implemented • Drivers will be inducted on the haulage roads including the use of Elizabeth Drive and Wallgrove Road and avoidance of other local roads • Safe pedestrian and cyclist access will be maintained around Early Works activities with adequate signage and pathways provided. In circumstances where pedestrian and cyclist access is restricted or removed, an alternate route will be provided and sign posted in accordance with the relevant standards. • In addition to the above mitigation measures, TT1 to TT10 of Appendix A8 in the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Tracking of mud from site on public roads	Possible	Minor	Moderate	• Site exit points will be fitted with appropriate controls to limit tracking of material out of site as soon as possible to limit the amount of material transported off site. Controls may include hardstand material; wheel washes; rumble grids; rip rap etc. • Street sweepers will be used to manage sediment/mud tracking.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Impacts on visual amenity i.e. light spill	Possible	Minor	Moderate	• Lights will be located as far away as possible and directed away from neighbours/sensitive receivers including sensitive habitat such as Grey-headed Flying-fox habitat. • Boundary screening will be installed, where appropriate, in accordance with NSW CoA A21 and A22 • In addition to the above mitigation measures, impacts on visual amenity will be managed in accordance with UD1 to UD3 as outlined in Appendix A8 of the EWEMP	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Unlikely	Minor	Low
	Noise and vibration impacts	Possible	Minor	Moderate	• Maximise works during the standard construction hours	Zinfra (e.g. Project Manager, Construction	Unlikely	Minor	Low

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
	to sensitive receivers				• All construction plant and equipment used on site will be fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications • Erection of temporary acoustic barriers will be completed, where required • Community updates will be provided throughout the site establishment works, when necessary • Vibration intensive plant will not be used within minimum safe working distances of the Upper Canal System • Activities resulting in high noise impacts will be subject to respite periods as outlined in NSW CoA E37 and E45-E47 • The Noise and Vibration Monitoring Program (Appendix C) will be implemented throughout the duration of site establishment activities • In addition to the mitigation measures above, noise and vibration impacts will be managed in accordance with NV1 to NV29 of Appendix A8 in the EWEMP will be implemented.	Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor			
	Generation of dust	Unlikely	Moderate	Moderate	• Access roads within AF7 (Early Works) and AF18 (Early Works) will be maintained and managed to reduce dust generation • Stockpiles that have the potential to result in dust generation will be minimised within AF1 (Early Works) at all times and comply *with RMS – Stockpile Site Management Guideline* (May 2015) in accordance with SW6 (Appendix A8 of the EWEMP). • During high wind and/or dry conditions, Zinfra will ensure programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties • Adequate dust suppression will be available and applied where required e.g., watercart, misters • In addition to the above mitigation measure, AQ1 to AQ3 of Appendix A8 in the EWEMP will be implemented.	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Rare	Moderate	Low
	Contamination of soil or water due to a spill or leak from plant/equipment or chemicals	Possible	Moderate	Moderate	• Hazardous substance handling and use will be conducted away from drainage, stormwater lines and waterways and, wherever possible, with the use of bunds • Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage • Safety Data Sheets will be obtained for dangerous goods and hazardous substances stored onsite • All site personnel will be responsible for ensuring that refuelling undertaken on site will be undertaken in designated areas only, outside riparian areas and well away from drainage, stormwater inlets or waterways • Storage of chemicals, fuel and lubricant will be 50 m from any aquatic habitat, flood prone areas, or on slopes steeper than 1:10.. • Hazardous materials will be appropriately bunded with a volume of 110 per cent of the largest receptacle and covered • Any spills or leaks will be immediately contained and absorbed	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Possible	Minor	Moderate

Activity	Potential Impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Responsibility	Likelihood	Consequence	Risk level following mitigation
					• Spill kits will be placed at strategic locations (e.g. access points, plant/ machinery storage areas) • In addition to the above mitigation measures, SW29 to SW38 of Appendix A8 in the EWEMP will be implemented.				
	Bushfire	Possible	Severe	Very High	• All site personnel will be inducted on bushfire hazards and how they are to be managed • Hazardous materials will be appropriately bunded with a volume of 110% of the largest receptacle • Stockpiles must be monitored and turned over as required to avoid spontaneous combustion. • All works involving a fire source will have a hot works permit in place with specific controls to prevent fire risk. • No smoking (including e-cigarettes) will be allowed on site except at designated areas. Dedicated butt disposals will be located in all designated smoking areas. • Cutting, welding or grinding will not be undertaken on total fire ban days, unless the works takes place in an area at least 50 metres away from an ignition source and appropriate fire controls are in place • Vehicles will not be driven or idled in areas of long grass on fire ban days or after prolonged periods of dry weather	Zinfra (e.g. Project Manager, Construction Manager, Supervisor, ESR, Contractor) Early Works Vegetation Clearing Contractor	Rare	Severe	Moderate

6.2 WSPT Lease Management Measures

AF7 (Early Works) and AF18 (Early Works) are located on land owned by WSPT and subject to requirements associated with lease agreement AQ120616.

Agreed works requirements are established within Annexure A of the lease agreement. Those relevant to AF7 (Early Works) and AF18 (Early Works) are outlined in Table 6-4. Areas subject to the agreed work requirements are shown in Figure 5-1 and Figure 5-2.

Table 6-4: Agreed work requirements

Ancillary Facility	Lot/DP	Agreed works requirements
AF7 (Early Works)	3/1087825	Replacement planting of tree, shrubs and groundcovers for any disturbed lands. Replacement of trees and shrubs will be implemented following main construction works for M12 and isn't the responsibility of Zinfra. Zinfra are responsible for stabilising the site with groundcover (such as hydro-seeding or turf) following early work.
		Tree protection for mature or hollow bearing native species - standard tree protection zones regarding compression, drip lines and structural root zones - where possible.
AF18 (Early Works	26B/387529	Replacement planting of tree, shrubs and groundcovers for any disturbed lands. Replacement of trees and shrubs will be implemented following main construction works for M12 and isn't the responsibility of Zinfra. Zinfra are responsible for stabilising the site with groundcover (such as hydro-seeding or turf) following early work.
		Tree protection for mature native species - standard tree protection zones regarding compression, drip lines and structural root zones.

In order to ensure that the terms of the lease are not breached, management measures additional to those outlined in Appendix A8 of the EWEMP and Table 6-2 of the EWFFMP will be implemented. These management measures are only applicable to the site establishment and operation of AF7 (Early Works) and AF18 (Early Works) for the purpose of early works and are detailed in Table 6-5.

Should there be an inconsistency between the NSW or Commonwealth CoA and associated management measures and the management measure(s) within Table 6-5, the most conservative management measure will be adopted.

Table 6-5 Management measures for works within temporarily leased WSPT land

ID	Measure/requirement	Evidence	When to implement	Responsibility for implementation	Reference or source	Additional Information
Prior to Commencement of Site Establishment						
WSP1	Site establishment works for AF7 (Early Works) and AF18 (Early Works) will not commence without approval from WSPT in accordance with the TfNSW / WSPT Permit to Enter process. TfNSW will maintain responsibility for obtaining approval from WSPT.	WSPT approval	Prior to site establishment	TfNSW	WSPT lease agreement (AQ120616).	N/A
WSP2	The Early Works Ecologist will provide a copy of the Pre-clearing Survey Report to TfNSW in accordance with Appendix C of the EWFFMP. The Early Works Ecologist and a suitably qualified arborist will also prepare a report (FF10 of the EWFFMP) that lists any trees identified outside the limits of clearing which are unsound and likely to fall upon the roadway or onto private property.	Ecologist/ Arborist report	Prior to clearing	Early Works Ecologist Arborist	WSPT lease agreement (AQ120616).	Appendix C of EWFFMP
WSP3	TfNSW will use the information provided by the Early Works Ecologist and a suitably qualified arborist to consult with WSPT to obtain agreement for removal or pruning of trees.	WSPT Agreement	Prior to clearing	TfNSW	WSPT lease agreement (AQ120616).	N/A
Vegetation						
WSP4	Zinfra and the Early Works Vegetation Clearing Contractor will not commence clearing or pruning of trees within AF7 (Early Works) and AF18 (Early Works) until receiving approval from TfNSW.	Hold Point release	Prior to clearing	Zinfra Early Works Vegetation Clearing Contractor	WSPT lease agreement (AQ120616).	N/A

ID	Measure/requirement	Evidence	When to implement	Responsibility for implementation	Reference or source	Additional Information
WSP5	Tree protection zones for mature native species will be demarcated in a manner consistent with the TfNSW Flagging Protocol as outlined in Section 2.2.6 of the Vegetation Clearing Procedure (Appendix C of the EWFFMP).	Site inspection report	During clearing	Early Works Vegetation Clearing Contractor	WSPT lease agreement (AQ120616).	Appendix C of EWFFMP
WSP6	Where the removal of a tree stump is required, methodologies involving the grinding out of the tree stump will be utilised.	Ecologist/ Arborist report	During clearing	Early Works Vegetation Clearing Contractor	WSPT lease agreement (AQ120616).	N/A
WSP7	Holes left following the removal of trees and stumps will be backfilled with clean fill and topsoil and covered with the same material as the surrounding ground surface to enable visual integration	Site Diary	During Early Works	Zinfra Early Works Vegetation Clearing Contractor	WSPT lease agreement (AQ120616).	N/A
WSP8	The Early Works Ecologist will document the number of trees cleared in AF7 (Early Works) and AF18 (Early Works) within the Post Clearing Report (Appendix C of the EWFFMP) to be provided to TfNSW.	Post clearing report	During Early Works	Early Works Ecologist	WSPT lease agreement (AQ120616).	Appendix C of the EWFFMP
Drainage						

ID	Measure/requirement	Evidence	When to implement	Responsibility for implementation	Reference or source	Additional Information
WSP9	Zinfra / the Early Works Vegetation Clearing Contractor will ensure that any flows generated on site are discharged to existing drainage lines	Site inspection report	During Early Works	Zinfra Early Works Vegetation Clearing Contractor	WSPT lease agreement (AQ120616).	N/A
WSP10	Where unforeseen drainage and erosion issues arise as a result of site establishment works, Zinfra / the Early Works Vegetation Clearing Contractor stop work and implement the incident reporting procedure outlined in Appendix A5 of the EWEMP.	Incident report	During Early Works	Zinfra Early Works Vegetation Clearing Contractor	WSPT lease agreement (AQ120616).	N/A
WSP11	Where unforeseen drainage and erosion issues arise as a result of site establishment works, TfNSW, Zinfra and/or the Early Works Vegetation Clearing Contractor will undertake assessment of altered overland flow and drainage within or into WSPT lands.	Assessment Report	During Early Works if unforeseen drainage or erosion issues arise.	TfNSW Zinfra Early Works Vegetation Clearing Contractor	WSPT lease agreement (AQ120616).	N/A
Damage to WSPT assets (furniture)						
WSP12	In the unlikely event of damage to any WSPT existing assets during site establishment, Zinfra and/or the Early Works Vegetation Clearing Contractor will install sufficient replacement furniture where required and as appropriate. All replacement furniture will be installed in accordance with the lease agreement and the WSPT Design Manual.	Condition surveys	If damage occurs to any WSPT assets	Zinfra Early Works Vegetation Clearing Contractor TfNSW	WSPT lease agreement (AQ120616).	N/A

ID	Measure/requirement	Evidence	When to implement	Responsibility for implementation	Reference or source	Additional Information
WSP13	Should temporary signage, permanent signage or any other wayfinding infrastructure require replacement, Zinfra and/or the Early Works Vegetation Clearing Contractor will provide the designs to TfNSW. TfNSW will provide the designs to WSPT for review and approval.	Signage design	If damage occurs to any WSPT assets	Zinfra Early Works Vegetation Clearing Contractor TfNSW	WSPT lease agreement (AQ120616).	N/A
Site stabilisation						
WSP14	Should hydroseeding be required for temporary site stabilisation, Zinfra will ensure that only sterile grasses are used.	Site inspection report	Site handover for main construction	Zinfra	WSPT lease agreement (AQ120616).	N/A

7 Compliance management

7.1 Roles and responsibilities

The Project organisational structure and overall roles and environmental responsibilities are outlined in Section 5.1 of the EWEMP. Specific responsibilities for the implementation of environmental management measures during site establishment works are detailed in Table 6-3 and Appendix A8 of the EWEMP.

7.2 Training

All site personnel (including subcontractors) will undergo site induction training relating to site establishment management issues prior to Early Works commencing. The induction training will address elements related to site establishment management, including:

- Existence and requirements of this SEMP and all plans and procedures prepared under the SEMPs
- Relevant legislation, regulations and conditions of approval
- Incident response, management and reporting
- Environmentally sensitive locations and exclusion zones
- Specific species likely to be affected by the works and how these species can be recognised
- Mulch stockpile location and management measures
- Site flagging protocol
- Fauna rescue requirements
- Boundaries for vegetation clearing
- Fauna and fauna habitat management
- Weed control measures
- General site establishment management measures
- Specific responsibilities for the protection of site establishment
- All requirements of Appendices contained within this SEMP.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in site establishment management or those undertaking an activity with a high risk of environmental impact. Site personnel will undergo refresher training at not less than six monthly intervals.

The ER will review and approve the induction training program prior to the commencement of Early Works and monitor implementation.

Daily pre-start meetings conducted by the Zinfra Foreman/ Site Supervisor will inform the site workforce of any environmental issues relevant to site establishment that could potentially be impacted by, or impact on, the day's activities.

Further details regarding staff induction and training are provided in Section 5.3 of the EWEMP.

7.3 Licences and permits

A number of approvals, permits and licenses have and/or will be obtained for early works. The following approvals and licences have been or will be obtained by TfNSW:

- Infrastructure Approval under Part 5, Division 5.2 of the EP&A Act – SSI 9364 granted by the Minister for Planning on 23 April 2021
- A Commonwealth controlled action approval from the Department of Agriculture, Water and the Environment (DAWE) under Part 8 of the EPBC Act – EPBC 2018/8286 granted by the Minister for Environment on 3 June 2021.

7.4 Monitoring

Monitoring will be undertaken to validate the impacts predicted for site establishment, to measure the effectiveness of environmental controls and implementation of this EWEMP and to address approval requirements. In addition to noise and vibration, and water quality monitoring, the Zinfra's Early Work will include an assessment of the ancillary facilities activities against the performance outcomes (outlined in Table 2-1). This will be documented in the Monthly Environmental Report to monitor the environmental performance of AF7 (Early Works) and AF18 (Early Works). Requirements and responsibilities in relation to monitoring are documented in Section 7 of the EWEMP.

In accordance with NSW CoA A16(e) and the requirements of NSW CoA C14, a Noise and Vibration Monitoring Program has been developed that includes:

- Noise and vibration monitoring at representative residential and other locations (including at the worst- affected residences), subject to property owner approval, to confirm noise and vibration levels during site establishment and operation
- Noise monitoring during the day, evening and night time periods for the duration of site establishment and operation, covering the range of activities (including worst-case noise management levels) being undertaken
- Method and frequency for reporting monitoring results
- Procedures to identify and implement additional mitigation measures where monitoring indicates noise and/or vibration levels in excess in excess of noise and vibration criteria.

The Noise and Vibration Monitoring Program is provided in Appendix C.

Monitoring of discharge water quality will be undertaken against the criteria derived from the ANZECC Guidelines for NSW Lowland Rivers and the Blue Book (*Landcom, 2004)*:

- pH: 6.5-8.5
- Total Suspended Solids: 50 mg/l
- Oil and grease: no visual identification.

7.5 Inspections

Inspections of sensitive areas and activities with the potential to be impacted by site establishment will occur for the duration of the Early Works. Requirements and responsibilities in relation to inspections are documented in Section 7 of the EWEMP.

7.6 Auditing

7.6.1 Independent audits

Independent audits are not required for Early Works and will be conducted within 12 weeks of the commencement of construction.

7.6.2 Internal audits

Internal auditing will be undertaken by Zinfra on a six-monthly basis during Early Works to verify compliance with:

- This SEMP
- Approval requirements (CoAs, REMMS)
- Any relevant legal and other requirements (e.g. licenses, permits, regulations, TfNSW contract documentation, including specifications).

An audit checklist will be developed and amended as necessary to reflect changes to this EWEMP, subsequent approvals and changes to Acts, regulations or guidelines.

All internal environmental audits will be undertaken in accordance with AS/NZS ISO 19011.

7.7 Reporting and identified records

Reporting requirements and responsibilities are documented in Section 7.5 of the EWEMP.

Zinfra and the Early Works Vegetation Clearing Contractor will be required to maintain accurate records substantiating all construction activities associated with Early Works or relevant to the conditions of approval, including measures taken to implement this SEMP. Records will be made available to the DPE and DAWE, within the timeframe nominated in the request.

8 Review and improvement

8.1 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.
- Zinfra and the Early Works Vegetation Clearing Contractor will be responsible for ensuring Project environmental risks are identified and included in the risk register and appropriate mitigation measures implemented throughout the construction of the Project as part of the continuous improvement process. The process for ongoing risk identification and management during Early Works is outlined in Section 1.10 of the EWEMP.

8.2 SEMP update and amendment

The processes described in Section 1.10 of the EWEMP may result in the need to update or revise this Plan. Any revisions to the SEMP will be in accordance with the process outlined in Section 1.10 of the EWEMP including submission to the Environmental Representative for approval in accordance with NSW CoA A34(i).

In accordance with NSW CoA A17, a new or revised SEMP must be prepared for the ancillary facilities relevant to this SEMP if, upon the completion of Early Works but prior to construction of the Project, additional activities are required to establish the ancillary facilities relevant to this SEMP or there is a change to the layout of ancillary facilities relevant to this SEMP. In this case, the new or revised SEMP must be prepared in accordance with NSW CoA A16 and approved by the Secretary of DPE before commencement of the additional activities or change to site layout.

Appendix A – Consultation Correspondence

Appendix A

Consultation Correspondence

M12 Motorway Early Works: Protection of High Presseure Gas Mains - Site Establishment Management Plan

August 2022

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1 Introduction

As detailed in Section 1.5 of the SEMP, in accordance with NSW CoA A16, consultation has been undertaken with the following local councils during the preparation of the SEMP:

- Fairfield City Council
- Liverpool City Council

A log of the dates of engagement or attempted engagement with the parties identified above has been included in Section 1.5.1 of the SEMP in accordance with NSW CoA A5(b). Section 2 details the evidence of engagement with each party and responses.

2 Agency and Stakeholder Responses

This section provides consultation documentation undertaken during the consultation period with parties including:

- Engagement with relevant local councils that occurred prior to the submission of the SEMP for approval by the Planning Secretary as required by NSW CoA A5(a)
- A copy of the responses provided during consultation with the required parties
- A summary of the issues raised during consultation and how they have been addressed as required by NSW CoA A5(d). A description of the outstanding issues raised during consultation and why they have not been addressed has also been included where required as per NSW CoA A5(e).

2.1 Fairfield City Council

This section details the engagement and response from FCC regarding the CFFMP prior to submission for approval and a summary of how the issues have been addressed.

2.1.1 Evidence of correspondence

Evidence of correspondence between FCC and TfNSW is provided below.

From: Kerren Ven [mailto:KVen@fairfieldcity.nsw.gov.au]
Sent: Thursday, 28 October 2021 4:15 PM
To: Suzette Graham <Suzette.GRAHAM@transport.nsw.gov.au>
Subject: RE: M12 Motorway (Early Works - Gas Protection) - Site Establishment Management Plan

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Suzette,

Councils officers have reviewed the draft Site Establishment Management Plan and have no issues with the Plan therefore no further comments are required in relation to the matter.

Kind regards,

Kerren Ven
Strategic Planner | Strategic Land Use Planning
City Strategic Planning
PO Box 21, Fairfield NSW 1860
P 9725 0222 |

www.fairfieldcity.nsw.gov.au
mail@fairfieldcity.nsw.gov.au

We acknowledge the Cabrogal of the Darug nation who are the Traditional Custodians of this Land. We also pay our respect to the Elders both past, present and emerging of the Darug Nation.

From: Suzette Graham via InEight Document <system@teambinder.com>
Sent: Thursday, 14 October 2021 10:19 PM
To: Kerren Ven <KVen@fairfieldcity.nsw.gov.au>
Subject: M12 Motorway (Early Works - Gas Protection) - Site Establishment Management Plan

Document Transmittal

Transmittal No: M12PPW-TFNSW-TX-000487

Date: 14 October 2021 10:19 PM

Reason for Issue: Issued For Review

Subject: M12 Motorway (Early Works - Gas Protection) - Site Establishment Management Plan

Contract No: M12PPW - M12 - Project Wide

Message:

Hi Kerren,

Re: Review of M12 Motorway (Early Works - Gas Protection) - Site Establishment Management Plan

The M12 Motorway project will soon be carrying out early gas protection works near Elizabeth Drive and Wallgrove Road to protect high pressure gas mains prior to the main construction work.
Under the NSW Infrastructure Approval Condition A24, TfNSW is required to prepare a site establishment management plan for the ancillary facilities that will be used for the work.
The NSW conditions also require consultation with relevant councils during preparation of the plan.

Please find attached the plan for your review. Comments by 28/10/2021 would be great if possible.

Thanks,

Kind regards,

Suzette Graham
Environment and Sustainability Manager

Sydney Infrastructure Development | Safety, Environment and Regulation

M 0476 828 524 E suzette.graham@transport.nsw.gov.au
Transport for NSW
27 Argyle Street, Parramatta NSW 2150

Please submit your comments by 28 October 2021

Transmitted to:

Company	Name
Fairfield City Council	Kerren Ven

Transmitted cc:

Company	Name
Transport for NSW	Suzette Graham

Click here to download all Transmittal files.

Click on Document Nos to download them individually.

Item	Document No	Rev	Sts	Title	Contract No	Design Package No
1	M12PPW-TFNSW-ALL-EN-PLN-000021	D.01	S3	M12 Motorway (Early Work - Gas Protection) - Site Establishment Management Plan Rev D.2 for consultation	M12PPW	

Transmitted by: Suzette Graham, Transport for NSW

TeamBinder Transmittal Reference: {5EB2ECAC-BE59-4F92-9B72-1EE742D0B87E}

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2.1.2 FCC response

Comments from FCC regarding the CFFMP are provided below.

REVIEW COMMENTS SHEET

DOCUMENT NO.	TITLE	VE	STATU	NO	DATE	COMPAN	RAISED BY	REVIEW DOC. NO	ALL DOCS RELATED TO DESIGN PACKA	REFERENCE	DEED REF	COMMENTS / RESPONSE	COMMENT CATEGOF	CLOSED OUT
M12PPW-TFNSW-ALL-EN-PLN-000021	M12 Motorway (Early Work - Gas Protection) - Site Establishment Management Plan Rev D.2 for consultation	D.01	S3		28.10.2021	Fairfield City Council	Traffic, City Projects and Natural Resources					No issues with the Site Establishment Mgmt Plan.		

2.1.3 How issues raised have been addressed

The table below provides a summary of the issues raised by FCC during consultation and how they were addressed.

Table 2-1: FCC comments and TfNSW response

Section of comment	Comments	TfNSW Response	Section Amended
SEMP	No issues with the site establishment management plan	No action required	N/A

2.2 Liverpool City Council

This section details the engagement and response from LCC regarding the CFFMP prior to submission for approval and a summary of how the issues have been addressed.

2.2.1 Evidence of correspondence

Evidence of correspondence between LCC and TfNSW is provided below. It should be noted that no response was received from LCC.

From: Suzette Graham
To: WlafeC@liverpool.nsw.gov.au
Cc: M12 Detailed Design
Subject: M12 Motorway - Early Work & Construction Environmental Management Plans

Hi Charles,

Thanks for taking my phone call this morning. I just wanted to confirm our discussion and the consultation periods for management plans.

Early Works Plans

Site Establishment Management Plan for M12 East Early Gas Protection Works

- Sent to LCC: 14.10.2021
- Comments due: 28.10.2021
- Consultation now closed

Construction Plans

1) Air Quality Management Plan
   - Sent to Council: 06.10.2021
   - Comments due: 20.10.2021
   - Consultation now closed
2) Soil and Water Management Plan
   - Sent to Council: 21.10.2021
   - Comments due: 04.11.2021
   - Consultation open
3) Traffic and Transport Management Plan
   - Sent to Council: 21.10.2021
   - Comments due: 04.11.2021
   - Consultation open
   - LCC is concerned about cumulative construction traffic impacts including at Elizabeth Drive and Devonshire Road.

Happy to discuss feedback on the SWMP and the TTMP further.

Thanks,

Kind regards,
Suzette Graham (she / her / hers)
A/Senior Manager Environment and Sustainability
Sydney Infrastructure Development | Safety, Environment and Regulation
M 0476 828 524 E suzette.graham@transport.nsw.gov.au
Transport for NSW
27 Argyle Street, Parramatta NSW 2150

I work flexibly. Unless it suits you, I don't expect you to read or respond to my emails outside of your normal work hours.

OFFICIAL

From: Suzette Graham
To: WiafeC@liverpool.nsw.gov.au
Cc: M12 Detailed Design
Subject: RE: M12 Motorway (Early Works - Gas Protection) - Site Establishment Management Plan

Hi Charles,

I am writing to follow up on the consultation on the below Site Establishment Management Plan for M12 Early Works (Gas Protection).
Could you please advise if Council intend to provide comments to TfNSW and if so an expected date?
Comments were due yesterday 28/10/2021.

Thanks,

Kind regards,
Suzette Graham (she / her / hers)
A/Senior Manager Environment and Sustainability
Sydney Infrastructure Development | Safety, Environment and Regulation
M 0476 828 524 **E** suzette.graham@transport.nsw.gov.au
Transport for NSW
27 Argyle Street, Parramatta NSW 2150

I work flexibly. Unless it suits you, I don't expect you to read or respond to my emails outside of your normal work hours.

OFFICIAL

From: Suzette Graham via InEight Document [mailto:system@teambinder.com]
Sent: Thursday, 14 October 2021 10:25 PM
To: Suzette Graham <Suzette.GRAHAM@transport.nsw.gov.au>
Subject: M12 Motorway (Early Works - Gas Protection) - Site Establishment Management Plan

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Document Transmittal

Transmittal No: M12PPW-TFNSW-TX-000488

Date: 14 October 2021 10:24 PM

Reason for Issue: Issued For Review

Subject: M12 Motorway (Early Works - Gas Protection) - Site Establishment Management Plan

Contract No: M12PPW - M12 - Project Wide

Message:

Hi Charles,

Re: Review of M12 Motorway (Early Works - Gas Protection) - Site Establishment Management Plan

The M12 Motorway project will soon be carrying out early gas protection works near Elizabeth Drive and Wallgrove Road to protect high pressure gas mains prior to the main construction work. Under the NSW Infrastructure Approval Condition A24, TfNSW is required to prepare a site establishment management plan for the ancillary facilities that will be used for the work.
The NSW conditions also require consultation with relevant councils during preparation of the plan.

Please find attached the plan for your review. Comments by 28/10/2021 would be great if possible.

Thanks,

Kind regards,

Suzette Graham
Environment and Sustainability Manager

Sydney Infrastructure Development | Safety, Environment and Regulation

M 0476 828 624 E suzette.graham@transport.nsw.gov.au
Transport for NSW
27 Argyle Street, Parramatta NSW 2150

Please submit your comments by 28 October 2021

Transmitted to:

Company	Name
Liverpool City Council	Charles Wiafe

Transmitted cc:

Company	Name
Transport for NSW	Suzette Graham

Click here to download all Transmittal files.

Click on Document Nos to download them individually.

Item	Document No	Rev	Sts	Title	Contract No	Design Package No
1	M12PPW-TFNSW-ALL-EN-PLN-000021	D.01	S3	M12 Motorway (Early Work - Gas Protection) - Site Establishment	M12PPW	

				Management Plan Rev D.2 for consultation		

Transmitted by: Suzette Graham, Transport for NSW

TeamBinder Transmittal Reference: {D0D7667F-3178-4936-8DEB-A3507215EF04}

Appendix B – Secondary CoA and REMMs

Secondary CoA

CoA No.	Condition Requirements	Document Reference
A21	Boundary screening must be erected around all construction ancillary facilities that are adjacent to sensitive receivers for the duration of construction of the CSSI unless otherwise agreed with affected residents, business operators and landowners.	Section 4.3 Section 5.5
A22	Boundary screening required under Condition A21 of this approval must minimise, as far as practicable, visual impacts on adjacent sensitive receivers.	Section 4.3 Section 5.5
A23	The CSSI name; application number; telephone number, postal address and email address required under Condition B7 of this approval must be made available on site boundary fencing / hoarding at the entrance of each ancillary facility before the commencement of construction.	Section 4.3
A34	For the duration of Work until the commencement of operation, or as agreed with the Planning Secretary, the approved ER must:	Section 8.2 Section 1.10 of EWEMP
	(i) Consider any minor amendments to be made to the CEMP, CEMP Sub-plans, Construction Monitoring Programs, Site Establishment Management Plans and Early Works Environmental Management Plan that involve updating or are of an administrative nature and do not increase impacts to nearby sensitive receivers, and ensure they are consistent with the terms of this approval and the documents approved by the Planning Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval.	
E40	Noise and Vibration Impact Statements (NVIS) must be prepared for any Work that may exceed the noise management levels and vibration criteria specified in Condition E38 at any residence outside the construction hours identified in Condition E34, or where receivers will be highly noise affected. The NVIS must include specific mitigation measures identified through consultation with affected sensitive land user(s) and the mitigation measures must be implemented for the duration of the Work. A copy of the NVIS must be provided to the ER prior to the commencement of the associated Work. The Planning Secretary may request a copy/ies of the NVIS.	Section 4.5 Section 5.3 Appendix C
E41	Owners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before Work that generates vibration commences in the vicinity of those properties. If the potential exceedance is to occur more than once or extend over a period of 24 hours, owners and occupiers must be provided with a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the owner and occupier. These properties must be identified and considered in the Noise and Vibration CEMP Sub-plan required by Condition C4 and the Communication Strategy required by Condition B1.	Appendix C Section 4.5.1

CoA No.	Condition Requirements	Document Reference
E42	The Proponent must conduct vibration testing during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In addition, vibration monitoring must be undertaken during construction for relevant remaining Fleurs Radio Telescope structures, the Upper Canal (in consultation with WaterNSW) and McMaster Farm and McGarvie-Smith Farm group of remaining buildings. In the event that the vibration testing and attended monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.	Appendix C Section 5.3.1 Section 5.10
E43	Advice from a heritage specialist must be sought on methods and locations for installing equipment used for vibration, movement and noise monitoring at heritage-listed structures.	Appendix C Section 5.10
E81	The Proponent must have regard to the *Upper Canal Pheasants Nest to Prospect Reservoir Conservation Management Plan* (NSW Public Works Governments Architect's Office, 2016) and *Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines* (WaterNSW, 2020) when constructing the CSSI.	Section 3.1.3 Table 6-3
E82	Construction and operation of the CSSI must not destroy, modify or otherwise cause direct or indirect damage to the Upper Canal System, including the Cecil Hills Tunnel, and Tunnel Shafts 3 and 4.	Section 5.10
E93	The Planning Secretary's approval is required before any heavy vehicles used for spoil and fill haulage or concrete deliveries (for the purpose of the CSSI) are driven on local roads within one (1) kilometre of early works, construction and construction ancillary facilities and that are not identified for use by heavy vehicles in the documents listed in Condition A1. The local roads must be identified in the Early Works Environment Management Plan and Traffic Management CEMP Sub-plan.	Section 5.1 - Only Wallgrove Road will be utilised as identified in the Environmental Assessment Documentation
E94	All requests to the Planning Secretary for approval to use local roads in accordance with Condition E93, must include a traffic and pedestrian impact assessment and be prepared in consultation with the relevant local council(s). The assessment must be undertaken by appropriately qualified and experienced person and must include a swept path analysis if required by the Department. The outcomes and recommendations of the traffic and pedestrian impact assessment must be incorporated into the Site Establishment Management Plan or Traffic Management CEMP Sub-plan as relevant.	Section 5.1 - Only Wallgrove Road will be utilised as identified in the Environmental Assessment Documentation

CoA No.	Condition Requirements	Document Reference
E95	Before any local road is used by a heavy vehicle for the purposes of the CSSI, a Road Dilapidation Report must be prepared for the road unless otherwise agreed by the relevant road authority. A copy of the Road Dilapidation Report must be provided to the relevant road authority within three (3) weeks of completion of the survey and at least two (2) weeks before the road is used by heavy vehicles associated with the construction of the CSSI. If damage to roads occurs as a result of the construction of the CSSI, the Proponent must rectify the damage to restore the road to at least the condition it was in pre-construction in consultation with the relevant road authority. Rectification works must be undertaken within three (3) months of the subject road no longer being used for the construction of the CSSI unless an alternative timeframe is agreed to by the relevant road authority.	Section 5.1

Secondary REMMs

REMM	Condition Requirements	Document Reference
SWH01	A construction soil and water management plan (CSWMP) will be prepared for the Project. The plan will outline measures to manage soil and water impacts associated with the construction works, including contaminated land. The CSWMP will provide:	Table 6-3
	• Measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation.	
SWH04	Stockpiles will be managed to minimise the potential for mobilisation and transport of dust and sediment in runoff in accordance with TfNSW *Stockpile Sites Management Guideline* (Roads and Maritime, 2015). This will include:	Table 6-3
	• Minimising the number of stockpiles, area used for stockpiles, and time that they are left exposed	
	• Locating stockpiles away from drainage lines, waterways and areas where they may be susceptible to wind erosion	
	• Stabilising stockpiles, establishing appropriate sediment controls and suppressing dust as required.	
AQ02	Dust generation will be minimised during construction where possible. Where practicable, specific measures will include (but not be limited to):	Table 6-3
	• Regularly watering exposed and disturbed areas including stockpiles, especially during inclement weather conditions	
	• Adjusting the intensity of activities based on measured and observed dust levels, weather forecasts and the proximity of and direction of the works in relation to the nearest surrounding receivers	
	• Ensuring loads are covered, and any loose materials/debris are removed before vehicles exit the site	
	• Minimising the number of stockpiles and amount of material stockpiled where practicable	
	• Positioning stockpiling areas as far as possible from surrounding receivers, including potentially ecologically sensitive receivers	Section 6.11 of EWFFMP
	• Limiting stockpiling activities during conditions where winds are blowing strongly in the direction(s) from the stockpiling location to nearby receivers.	Appendix A8 of EWEMP
W04	Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage.	Table 6-3

REMM	Condition Requirements	Document Reference
NAH03	Impacts on Non-Aboriginal heritage items will be avoided or minimised where reasonable and feasible. Where impacts are unavoidable, works will be carried out in accordance with the measures for individual Non-Aboriginal heritage items outlined in measures NAH04 to NAH11.	Section 5.10
NAH06	Guidelines and associated safe working distances to be adhered to for heritage structures as outlined in Appendix K of the EIS	Section 5.3 Table 6-3
NAH09	A suitably qualified archaeologist will be present during the excavation of the area occupied by the Cecil Park Archaeological site to confirm that the significance of artefacts and remains are in line with the findings of the test excavations already completed. If remains with the potential to be considered 'relics' (as defined in the Heritage Act 1977) are found, then works will stop and the unexpected finds procedure (RMS, 2015) will be followed.	Table 4-1

Appendix C – Noise and Vibration Monitoring Program

Appendix C

Noise and Vibration Monitoring Program

M12 Early Works: Protection of High Pressure Gas Mains

August 2022

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Document control

File Name	M12PPW-ADAP-ALL-EN-PLN-000059_SEMP_APPENDIX C
Title	M12 Motorway Noise and Vibration Monitoring Program: M12 Early Works– Protection of High Pressure Gas Mains
Document Number (Teambinder)	M12PPW-ADAP-ALL-EN-PLN-000059

Approval and authorisation

Plan reviewed by:	Plan reviewed by:	Plan reviewed by:
Sheila Anderson	Thomas Tu	Kimberly Nguyen
TfNSW Senior Environment and Sustainability Manager	TfNSW Utilities Manager	Zinfra Project Manager
Date 05/08/2022	Date 5/8/2022	Date 08/08/2022
Signed	Signed	Signed
Sheila Anderson		

Revision history

Revision	Date	Description
A	03/05/2021	First draft for TfNSW review
B	19/05/2021	Second draft for TfNSW review
C	6/08/2021	Third draft for TfNSW review
D	17/09/2021	Fourth Draft for TfNSW review
D.02	06/10/2021	Response to ER comments
E	05/11/2021	Response to TfNSW and ER comments
F	11/05/22	Update to increase AF18 footprint and minor administrative amendments
G	05/08/2022	Update to include two additional minor ancillary facilities

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Glossary/Abbreviations

Abbreviation	Expanded Text
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Attenuation	The reduction in the level of sound or vibration
BS	British Standard
CNVG	Construction Noise and Vibration Guideline
CoA	Condition of Approval
DAWE	Commonwealth Department of Agriculture, Water and the Environment
dBA	Decibels using the A-weighted scale measured according to the frequency of the human ear.
DEC	Former NSW Department of Environment and Conservation
DECC	Former NSW Department of Environment and Climate Change
DPE	NSW Department of Planning and Environment (former Department of Industry and Environment
EES	NSW Environment, Energy and Science (a part of DPE)
EIS	Environmental Impact Statement
EMS	Environmental management system
EWEMP	Early Works Environmental Management Plan
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 Assessment Documentation	Collective reference to the M12 EIS, Submissions Report and Amendment Report and supplementary reports
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.
EMM	Environmental Management Measure

Abbreviation	Expanded Text
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 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.
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
ER	Environmental Representative
ERG	Environmental Review Group
EWMS	Environmental Work Method Statements
Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
Highly Noise Affected	The highly noise affected level represents the point above which there may be strong community reaction to noise (above 75dB(A)), as defined in the ICNG (EPA, 2009).
LAeq (15min)	The A-weighted equivalent continuous (energy average) A-weighted sound pressure level of the construction works under consideration over a 15-minute period and excludes other noise sources such as from industry, road, rail and the community.
LA (max)	the A-weighted maximum noise level only from the construction works under consideration, measured using the fast time weighting on a sound level meter.
Monitoring Program, this	Construction Noise and Vibration Monitoring Program
NCA	Noise Catchment Areas
NML	Noise Management Level
Noise Affected	The noise affected level represents the point above which there may be some community reaction to noise, as defined in the ICNG (EPA, 2009).

Abbreviation	Expanded Text
POEO Act	NSW *Protection of the Environment Operations Act 1997*
RBL	The Rating Background Level for each period is the medium value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period (day, evening and night)
SEMP	Site Establishment Management Plan
SWL	Sound Power Level
SPL	Sound Pressure Level
TfNSW	Transport for New South Wales
VDV	Vibration dose value
WSIA	Western Sydney International Airport

1 Introduction

1.1 Background

Transport for New South Wales (TfNSW) is planning to construct and operate the M12 Motorway (the Project) to provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network. The M12 Motorway will run between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham for about 16 kilometres and is expected to be opened to traffic prior to opening of the WSIA.

TfNSW proposes to carry out Early Works, including site establishment activities, before the main construction activities for the Project begin. Accordingly, an Early Works Environmental Management Plan (EWEMP) and associated Early Works Flora and Fauna Management Plan (EW FFMP) and Site Establishment Management Plan (SEMP) have been prepared. These plans provide a management system to ensure that TfNSW establish and maintain best practice controls to manage potential environmental impacts during Early Works.

1.2 Scope of the Program

This Noise and Vibration Monitoring Program (this Monitoring Program) has been developed in accordance with NSW Condition of Approval (CoA) A16(e) and NSW CoA C14. It forms an appendix to the Early Works Site Establishment Management Plan (SEMP) for the protection of high pressure gas main, and describes the environmental noise and vibration monitoring activities to be undertaken by Zinfra during site establishment activities.

The purpose of this Monitoring Program is to:

- Provide a procedure to monitor noise and vibration impacts during site establishment works and operation of Ancillary Facility 7 (AF7 (Early Works)) and Ancillary Facility 18 (AF18 (Early Works)),and in response to complaints
- Meet the requirements of the CoA for the Project
- Meet any relevant legal and other requirements for the Project.

1.3 Responsibilities

Site personnel or sub-contractors with suitable experience and qualifications will undertake the monitoring outlined in this Monitoring Program.

The Zinfra's Construction Manager is responsible for ensuring that all legal and other requirements described in this Monitoring Program are met.

1.4 Approval, review and modification

In accordance with NSW CoA C15, this Monitoring Program will be endorsed by the Environmental Representative (ER), and will be submitted to the Secretary for approval at least one month before commencement of construction.

Site establishment will not commence until the Secretary has approved this required Monitoring Program and all relevant baseline data for the specific construction activity has been collected. This Monitoring Program will be implemented for the duration of use of AF7 (Early Works) and AF18 (Early Works) or for any longer period specified by the Secretary, whichever is the greater.

This Monitoring Program will be reviewed every six months by Zinfra in consultation with TfNSW.

In accordance with NSW CoA C17, minor amendments to this Monitoring Program may be approved by the ER any amendments to the Monitoring Program will be documented in subsequent revisions of this Monitoring Program.

A copy of the updated Monitoring Program and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure outlined in the EWEMP. Site personnel with responsibilities relevant to noise and vibration monitoring will be informed of any amendments to the Monitoring Program and training provided where required.

1.5 Consultation

The following consultation was required for the preparation of this Monitoring Program, in accordance with NSW CoA C11(a):

- Liverpool City Council
- Fairfield City Council.

Refer to Appendix A of the SEMP for a record of the consultation carried out during the development of this Monitoring Program.

1.6 Guidelines

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

- TfNSW Construction Noise and Vibration Guidelines (Roads and Maritime 2016)
- NSW Interim Construction Noise Guideline (ICNG), Department of Environment and Climate Change 2009
- NSW Road Noise Policy, Dept. of Environment, Climate Change and Water 2011
- NSW Noise Policy for Industry, Environment Protection Authority 2017
- NSW Assessing Vibration – a technical guideline (AVTG), (DEC 2006)
- Australian Standard 2659.1 – 1998 Guide to the use of sound measuring equipment – portable sound level meters
- Australian Standard IEC 61672.1 Electroacoustic – Sound Level Meters – Specifications

- Australian Standard 2775 Mechanical Mounting of Accelerometers
- Australian Standard AS/NZS 2107:2000 Acoustics - Recommended design sound levels and reverberation times for building interiors
- Australian Standard 2834-1995 Computer Accommodation, Chapter 2.9 Vibration
- Australian Standard AS 2187.2 Explosives - Storage and use - Part 2 Use of explosives
- Australian Standard 1055 Acoustics – Description and Measurement of Environmental Noise
- Australian Standard AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites
- British Standard BS 6472-2008, 'Evaluation of human exposure to vibration in buildings (180Hz)
- British Standard 7385: Part 2-1993 'Evaluation and measurement of vibration in buildings'
- German Standard DIN4150-1999 Structural vibration Part 3: Effects of vibration on Structures
- *Upper Canal Pheasants Nest to Prospect Reservoir Conservation Management Plan* (NSW Public Works Governments Architect's Office, 2016)
- *Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines* (WaterNSW, 2020)

1.7 Conditions of Approval

The NSW CoA relevant to this Monitoring Program and their applicability to each stage of the Project are listed in Table 1-1. A cross reference is also included to indicate where the condition is addressed in this Monitoring Program or other Project management documents.

Table 1-1: NSW CoA relevant to the preparation of this Monitoring Program

CoA no.	Condition requirement	Reference
A16	Before establishment of a construction ancillary facility(ies) (excluding minor construction ancillary facilities established under Condition A20), 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 facility(ies). The Site Establishment Management Plan must be prepared in consultation with the relevant council(s) and relevant State government agencies. The Plan must be endorsed by the ER and then submitted to the Planning Secretary for approval one (1) month before the establishment of the construction ancillary facility(ies). The Site Establishment Management Plan must detail the management of the construction ancillary facility(ies) and include: (e) a program for monitoring the performance outcomes, including a program for noise monitoring consistent with the requirements of Condition C14.	This monitoring program
A46	The Planning Secretary must be notified in writing via the Major Projects website within seven (7) days after the Proponent becomes aware of any non-compliance.	Section 5.3 Appendix A5 of the EWEMP
A47	A non-compliance notification must identify the CSSI and the application number for it, set out the condition of approval that the CSSI is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.	Section 5.3 Appendix A5 of the EWEMP
C11	The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each to compare actual performance of construction of the CSSI against the performance predicted in the documents listed in Condition A1 or in the CEMP: (a) Noise and Vibration: Relevant Council(s)	Section 1.5 Appendix A of SEMP
C12	Details of all the information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant Construction Monitoring Programs, including copies of all correspondence from those agencies as required by Condition A5.	Section 1.5

CoA no.	Condition requirement	Reference
C13	Each Construction Monitoring Program must provide: a. details of baseline data available; b. details of baseline data to be obtained and when; c. details of all monitoring of the CSSI to be undertaken; d. the parameters of the CSSI to be monitored; e. the frequency of monitoring to be undertaken; f. the location of monitoring; g. the reporting of monitoring results and analysis of results against the relevant criteria; h. procedures to identify and implement additional mitigation measures where results of monitoring indicate unsatisfactory CSSI impacts; i. a consideration of SMART principles j. any consultation to be undertaken in relation to the monitoring programs; and k. Any specific requirements as required by Condition C14.	Section 2 Section 4 Section 5 Section 1.5
C14	The Construction Noise and Vibration Monitoring Program must include, but not be limited to:	
	(a) noise and vibration monitoring at representative residential and other locations (including at the worst- affected residences), subject to property owner approval, to confirm construction noise and vibration levels;	Section 4.1 Section 4.2
	(b) noise monitoring during the day, evening and night time periods throughout the construction period, covering the range of activities (including worst-case construction noise levels) being undertaken;	Section 4.1
	(c) method and frequency for reporting monitoring results; and	Section 5

CoA no.	Condition requirement	Reference
	(d) procedures to identify and implement additional mitigation measures where monitoring indicates noise and/or vibration levels in excess in excess of noise and vibration criteria.	Section 5.3
C15	The Construction Monitoring Programs must be endorsed by the ER and then submitted to the Planning Secretary for approval at least one (1) month before the commencement of construction.	Section 1.4
C16	Unless otherwise agreed with the Planning Secretary, construction must not commence until all of the relevant Construction Monitoring Programs have been approved by the Planning Secretary, and all relevant baseline data for the specific construction activity has been collected.	Section 1.4
C17	The Construction Monitoring Programs, as approved by the Planning Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.	Section 1.4
C18	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, and relevant government agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.	Section 5
E38	Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration objectives:	Appendix A8 of the EWEMP Section 3
	(a) construction 'Noise affected' NML established using the *Interim Construction Noise Guideline* (DECC, 2009);	
	(b) vibration criteria established using the *Assessing vibration: a technical guideline* (DEC, 2006) (for human exposure);	
	(c) BS 7385 Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*" as they are "applicable to Australian conditions"; and	

CoA no.	Condition requirement	Reference
	(d) the vibration limits set out in the *German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures* (for structural damage). Any construction or early works identified as exceeding the noise management levels and/or vibration criteria must be managed in accordance with the respective Noise and Vibration CEMP Sub-plan or Early Works Environmental Management Plan. *Note: The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction NML.*	
E42	The Proponent must conduct vibration testing during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In addition, vibration monitoring must be undertaken during construction for relevant remaining Fleurs Radio Telescope structures, the Upper Canal (in consultation with WaterNSW) and McMaster Farm and McGarvie-Smith Farm group of remaining buildings. In the event that the vibration testing and attended monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.	Section 4.2
E43	Advice from a heritage specialist must be sought on methods and locations for installing equipment used for vibration, movement and noise monitoring at heritage-listed structures.	Section 4.2.1
E76	The Proponent must offer pre-construction surveys to the owners of surface and sub-surface structures and other relevant assets identified at risk from vibration, including all listed heritage items and buildings/structures of heritage significance as identified in the documents listed in Condition A1. Where the offer is accepted, the survey must be undertaken by a suitably qualified and experienced engineer and/or building surveyor prior to the commencement of vibration generating works that could impact on the structure/asset. The results of each survey must be documented in a Pre-construction Condition Survey Report and the report must be provided to the owner of the item(s) surveyed no later than one (1) month before the commencement of all other potentially impacting works.	Section 5.4
E77	Where pre-construction surveys have been undertaken in accordance with Condition E76, subsequent post-construction surveys of the structure / asset must be undertaken by a suitably qualified and experienced engineer	Section 5.4

CoA no.	Condition requirement	Reference
	and/or building surveyor to assess damage that may have resulted from the vibration-generating works. The results of the post-construction surveys must be documented in a Post-Construction Condition Survey Report for each item surveyed. The Post-construction Condition Survey Reports must be provided to the owner of the structures/assets surveyed, and no later than four (4) months following the completion of construction activities that have the potential to impact on the structure / asset.	

2 Baseline Data

2.1 Noise and vibration sensitive receivers

The noise and vibration assessment in the EIS, Response to Submissions, Amendment Report, Amendment Report Submissions Report and the ARSR - Amendment (collectively Environmental Assessment Documentation) identified and considered potential construction noise and vibration impacts for each habitable dwelling or park along the Project alignment and within 1200 m either side of the new or existing road centre line.

Sensitive receivers potentially affected by site establishment activities and the operation of AF7 (Early Works) and AF18 (Early Works) comprise of three residential receivers located on the northern side of Elizabeth Drive and the eastern side of Wallgrove Road.

For AF7 (Early Works) the closest receiver is around 240 metres to the north of the facility boundary across Elizabeth Drive. For AF18 (Early Works) the closest receiver is around 48 metres directly north of the facility boundary with another receiver being located around 100 metres directly south of the facility boundary.

One State listed heritage item the Upper Canal System (Pheasants Nest Weir to Prospect Reservoir) is located to the immediate south east of AF7 (Early Works) and has the potential to be impacted by vibration.

2.2 Noise Catchment Areas

Noise catchment areas (NCAs) that reflect land uses and the nature and types of receivers within each NCA were established as part of the noise assessment. Each NCA was assigned the Ratings Background Level (RBL) noise levels from the noise logger most representative of the noise environment in that Noise Catchment Area (NCA). AF7 (Early Works) is located within NCA 05 and AF18 (Early Works) is located with NCA 04 both within the eastern extent of the Project within the Western Sydney Parklands. The land uses are primarily rural residential and recreational.

2.3 Existing noise environment (baseline data)

The ambient noise environment is dominated by a combination of road traffic noise in the vicinity of major roads and general environmental noise (such as wind and insects) in the more rural locations.

Unattended noise surveys in the Project area were conducted at 15 locations as part of the preparation of the Environmental Assessment Documentation, namely the EIS in 2017, and the Amendment Report in 2020. The measured noise levels were used to determine the existing noise environment and to set criteria to assess the potential impacts from the Project. The monitoring equipment was generally located at receivers which will have line-of-sight to the Project or to existing major roads.

It was noted within the EIS that measured existing noise levels are representative of receivers that would likely be most affected by construction and operation of the Project in each NCA. Where

NCAs were likely to have a similar noise environment and noise levels, representative noise monitoring was carried out in a similar location. The locations in which background noise monitoring surveys were carried out, are shown in the Environmental Assessment Documentation.

The RBL is used to determine the appropriate noise management level (NML). The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). A summary of the noise monitoring results and adopted RBLs is provided in Table 2-1.

Table 2-1: Ambient noise monitoring results (dBA)

ID	Background noise (RBL) – Periods based on extended construction hours[1]					Average noise level LA_{eq} (period) based on Road Noise Policy[2]	
	Morning shoulder	Day	Evening	Evening Shoulder	Night	Day 15 hour	Night 9 hour
L02	47	36	39	41	34	46	45
L03	60	54	48	56	37	66	63

Prior to the commencement of site establishment activities, Zinfra will carry out additional monitoring to confirm the validity of the background data. This will determine whether there have been changes to the existing background noise levels since the publication of the EIS, and therefore if new RBLs and NMLs need to be calculated for NCA 04 and NCA 05.

[1] RBL periods are based on extended construction hours: Morning shoulder is 6:00 am to 7:00 am Monday to Friday; Daytime is 7:00 am to 6:00 pm Monday to Saturday and 8:00 am to 6:00 pm Sunday and Public Holidays; Evening is 7:00 pm to 10:00 pm Monday to Friday and 6:00 pm to 10:00 pm Saturday, Sunday and Public Holidays; Evening shoulder is 6:00 pm to 7:00 pm Monday to Friday; Night-time is 10:00 pm to 6:00 am Monday to Friday, 10:00 pm to 7:00 am Saturday and 10:00 pm to 8:00 am Sunday and Public Holidays

[2] LA_{eq} periods are based on the Road Noise Policy: Daytime is 7:00 am to 10:00 pm; Night-time is 10:00 pm to 7:00 am.

Figure 2-1: Sensitive receivers located near AF7 Early Works

Figure 2-2: Sensitive receivers located near AF18 (Early Works)

3 Noise and vibration criteria

3.1 Construction noise criteria

The noise criteria adopted for site establishment and operational activities at AF7 (Early Works) for residential receivers within NCA 05 (measured at L02) is set out in Table 3-1.

The noise criteria adopted for site establishment and operational activities at AF18 (Early Works) for residential receivers NCA 04 (measured at L03) is set out in and Table 3-2.

Table 3-1: Construction NMLs and sleep disturbance screening criteria at residences within NCA05

NML ($L_{Aeq(15min)}$ (dBA))							Sleep disturbance screening criteria (RBL + 15 dB)
Standard construction (RBL + 10dB)	Approved extended hours (RBL + 10dB)	Out-of-hours (RBL + 5dB)					
Day[3]	Day Saturday 1pm-6pm[4])	Morning shoulder[5]	Day[6]	Evening[7]	Evening shoulder[8]	Night[9]	
46	41	41	41	41	41	39	49

[3] *Daytime period is the standard construction hours of 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm Saturday.*
[4] *Approved extended hours include Saturday from 1:00 pm to 6 pm*
[5] *Morning shoulder period is 6:00 am to 7:00 am Monday to Friday. Where the morning shoulder RBL is higher than the daytime RBL, the daytime RBL was adopted.*
[6] *Daytime OOH period is 7:00 am to 8:00 am Saturday and 1:00 pm to 6:00 pm Saturday, and 8:00 am to 6:00 pm Sunday and Public Holidays.*
[7] *Evening period is 7:00 pm to 10:00 pm Monday to Friday and 6:00 pm to 10:00 pm Saturday, Sunday and Public Holidays*
[8] *Evening shoulder period is 6:00 pm to 7:00 pm Monday to Friday. Where the evening shoulder RBL is higher than the evening RBL, the evening RBL was adopted.*
[9] *Night-time period is 10:00 pm to 6:00 am Monday to Friday, 10:00 pm to 7:00 am Saturday and 10:00 pm to 8:00 am Sunday and Public Holidays.*

Table 3-2: Construction NMLs and sleep disturbance screening criteria at residences within NCA04

NML ($L_{Aeq(15min)}$ (dBA))							Sleep disturbance screening criteria (RBL + 15 dB)
Standard construction (RBL + 10dB)	Approved extended hours (RBL + 10dB)	Out-of-hours (RBL + 5dB)					
Day	Day Saturday 1pm-6pm)	Morning shoulder	Day	Evening	Evening shoulder	Night	
64	59	59	59	53	53	42	52

3.2 Construction vibration criteria

3.2.1 Disturbance to building occupants

Maximum and preferred values for continuous and impulsive vibration for the Early Works are defined in Table 3-3.

Table 3-3: Continuous and impulsive vibration acceleration (m/s^2) 1-80 Hz

Location	Assessment period[1]	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Continuous vibration					
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Impulsive vibration					
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14

Intermittent vibration impact is assessed using vibration dose values (VDVs). The VDV method is more sensitive to peaks in the acceleration waveform and makes corrections to the criteria based on the exposure duration. The acceptable vibration dose values (VDV) for intermittent vibration for the Project are defined in Table 3-4.

Table 3-4: Acceptable vibration dose values (m/s$^{1.75}$) for intermittent vibration

Location	Daytime[1]		Night-time[1]	
	Preferred Values	Maximum Values	Preferred Values	Maximum Values
Residences	0.20	0.40	0.13	0.26

Notes: [1]Daytime is 7.00am to 10.00pm and night-time is 10.00pm to 7.00am

3.2.2 Structural damage

British Standard (BS) 7385 has been adopted as a guide to assess the likelihood of building damage from ground vibration. BS 7385 suggests levels at which 'cosmetic', 'minor' and 'major' categories of damage. Table 3-5 sets out the BS 7385 criteria for cosmetic, minor and major damage. Where heritage structures or buried pipework are impacted, German Standard DIN 4150 vibration criteria will be applied. The criteria applicable to heritage buildings is identified in Table 3-6. The criteria applicable to buried pipework is identified in Table 3-7.

Table 3-5: BS 7385 structural damage criteria

Group	Type of structure	Damage level	Peak component particle velocity[1] (mm/s)		
			4 – 15 Hz	15 – 40Hz	≥40Hz
1	Reinforced or framed structures Industrial and heavy commercial buildings	Cosmetic	50	50	50
		Minor[2]	100	100	100
		Major[2]	200	200	200
2	Un-reinforced or light framed structures Residential or light commercial type buildings	Cosmetic	15 - 20	20 - 50	50
		Minor[2]	30 - 40	40 - 100	100
		Major[2]	60 - 80	80 - 200	200

Notes: [1] Peak Component Particle Velocity is the maximum Peak particle velocity in any one direction (x, y, z) as measured by a tri-axial vibration transducer.

[2] Minor and major damage criteria established based on BS 7385 Part 2 (1993) Section 7.4.2

Table 3-6: DIN 4150-3 vibration guideline for heritage buildings

Type of structure	Guideline values for vibration velocity (mm/s)			
	Vibration at the foundation at a frequency of			Vibration at the horizontal plane of the highest floor at all frequencies
	1 - 10 Hz	10 - 50 Hz	50 - 100 Hz[1]	
Heritage buildings	3	3 - 8	8 - 10	8

Notes: [1]At frequencies above 100 Hz the values given in this column may be used as minimum values.

Table 3-7: DIN 4150 guideline values for short-term vibration on buried pipework

Pipe Material	Vibration velocity at pipe (mm/s)
Steel, wielded	100
Vitrified clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80
Masonry, plastics	50

3.2.3 Safe working distances

Where vibration intensive plant such as rock breakers and vibratory rollers are used, vibration must be managed to minimise disturbance to building occupants and to avoid damage to buildings and other structures.

Table 3-8 indicates the safe working distances recommended by the CNVG for typical items of vibration intensive plant that must be complied with unless otherwise approved by TfNSW.

Table 3-8: Safe working distances for vibration intensive plant (TfNSW, 2013)

Plant item	Rating / Description	Minimum working distance		
		Cosmetic damage (BS 7385) Light-framed structures	Cosmetic damage (DIN 4150) Heritage and other sensitive structures	Human response (EPA's Vibration guideline)
Vibratory Roller	< 50 kN (Typically 1-2 tonnes)	5 m	14 m	15 m to 20 m
	< 100 kN (Typically 2-4 tonnes)	6 m	16 m	20 m
	< 200 kN (Typically 4-6 tonnes)	12 m	33 m	40 m
	< 300 kN (Typically 7-13 tonnes)	15 m	41 m	100 m
	> 300 kN (Typically 13-18 tonnes)	20 m	54 m	100 m
	> 300 kN (> 18 tonnes)	25 m	68 m	100 m

Plant item	Rating / Description	Minimum working distance		
		Cosmetic damage (BS 7385) Light-framed structures	Cosmetic damage (DIN 4150) Heritage and other sensitive structures	Human response (EPA's Vibration guideline)
Small Hydraulic Hammer	(300 kg - 5 to 12t excavator)	2 m	5 m	7 m
Medium Hydraulic Hammer	(900 kg – 12 to 18t excavator)	7 m	19 m	23 m
Large Hydraulic Hammer	(1600 kg – 18 to 34t excavator)	22 m	60 m	73 m
Vibratory Pile Driver	Sheet piles	20 m	50 m	100 m
Pile Boring	≤ 800 mm	2 m (nominal)	40 m	4 m
Jackhammer	Hand held	1 m (nominal)	2 m	2 m

The safe working distances presented in Table 3-8 are indicative and will vary depending on the item of plant (particularly its power rating) and local geotechnical conditions. The cosmetic damage thresholds apply to typical buildings under typical geotechnical conditions and vibration monitoring is recommended at specific sites. Where structures are more sensitive such as heritage items, more stringent conditions may be applicable and will be considered individually by Zinfra.

In accordance with NSW CoA E40, a Noise and Vibration Impact Statement (NVIS) must be prepared for any work that may exceed noise management levels and/or vibration criteria for any work outside of the construction hours identified in NSW CoA E34, or where receivers are highly noise affected. No out of hours works are proposed for site establishment.

The nearest residential receiver is located 240m from the nearest point of AF7 (Early Works), greater than safe working distance for cosmetic damage and human response. Notwithstanding, the nearest residential receiver for AF18 (Early Works) is 48m, within safe working distances for cosmetic damage and human response for some vibration intensive plant. Furthermore, the Upper Canal System is located directly adjacent AF7 (Early Works) boundary to the south. Vibratory rollers no greater than four tonne have been nominated for use for site establishment activities. As a result, there will not be an exceedance in safe working distances within AF18 (Early Works). Rollers will not be used within the safe working distance for cosmetic damage for heritage structures along the AF7 (Early Works) southern boundary. The use of smaller and less vibratory intense equipment (such as plate compactors) has been selected to minimise potential indirect impacts to the Upper Canal System. An NVIS is therefore not required for the plant and equipment nominated. However, an NVIS will be developed should plant and equipment be required to be

used within nominated safe working distances (e.g. use of a 1-2 tonne vibratory roller within 14m of a heritage structure etc).

As required by NSW CoA E41, if the potential vibration criteria exceedance is to occur more than once or extend over a period of 24 hours, sensitive receivers will be provided with a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the sensitive receiver. In relation to human response, the safe working distances relate to continuous vibration. For most construction activities, vibration emissions are intermittent and higher vibration levels over shorter periods are acceptable. Additional assessment will be undertaken where the human response criteria are exceeded.

4 Monitoring Procedures

4.1 Noise monitoring

The overarching noise monitoring procedure to be adopted for the Project is provided in Table 4-1. Noise monitoring will be undertaken by Zinfra's Environmental Site Representative or delegate.

All noise monitoring will be undertaken in accordance with Australian Standard AS 2659.1 – 1998: "Guide to the use of sound measuring equipment – portable sound level meters", or any revisions of that standard which may be made by Standards Australia, and the compliance monitoring guidance provided in the "NSW Noise Policy for Industry" (EPA, 2017). Zinfra will undertake noise monitoring as directed by an authorised officer of the EPA.

Table 4-1: Noise monitoring procedure

Monitoring details	Frequency	Test procedure
Attended noise surveys will be carried out to verify noise environment RBL and NML	Prior to the commencement of construction	• Surveys to be carried out at the locations identified in the EIS that are within NCA 05 and NCA 04 (i.e. L02 and L03), at which baseline noise levels were measured to inform the EIS • Monitoring equipment to be located at receivers which will have line-of-sight to AF7 (Early Works) and AF18 (Early Works). • Noise monitoring equipment will continuously measure existing noise levels in 15-minute periods during the daytime, evening and night-time periods for the survey period. All equipment must carry current National Association of Testing Authorities (NATA) or manufacturer calibration certificates
Attended monitoring will be carried out at the commencement of site establishment activities	Within the first month during the day, evening and night period	The testing method includes: • Sound level meter configured for "Fast" time weighting and "A" frequency weighting • The test environment will be free from reflecting objects where possible. Where the noise monitoring is conducted within 3.5 metres of large walls or a building facade, then a reflection correction of up to -2.5 dBA will be applied to remove the effect of increased noise due to sound reflections from such structures • Tests will not be carried out during rain or when the wind speed at the test site exceeds 5 m/s • Conditions such as wind velocity, wind direction, temperature, relative humidity and cloud cover will be recorded. These may be obtained from the
Attended or unattended OOHW noise monitoring at sensitive receivers identified in Section 2 of this Monitoring Program	As required during OOHW	
Attended or unattended monitoring where a complaint is received and monitoring is considered an appropriate response to determine if noise levels exceed predicted 'worst	Related to noise complaint	

Monitoring details	Frequency	Test procedure
case' Construction noise levels		nearest Bureau of Meteorology monitoring station or on-site weather station/observations
Attended monitoring to confirm noise levels are no more than 5 dB(A) above RBL for OOHW period using the $L_{Aeq\ (15min)}$ descriptor for works undertaken in accordance with NSW CoA E38	During works undertaken in accordance with NSW CoA E38	• The monitoring period should be sufficient such that the measured noise levels are representative of the noise over a 15-minute period • At a minimum Leq, Lmax, L_{10} and L_{90} levels will be measured and reported • Noise monitoring will also be undertaken for non-sensitive receivers predicted to be impacted by moderate exceedances of the NML from work in standard hours. The observations of the person undertaking the measurements will be reported including audibility of construction noise (no more 15dB(A)), other noise in the environment and any discernible construction activities contributing to the noise at the receiver.
Spot checks of noise intensive plant where it is required to check the noise emission from the plant against manufacturer's specifications	When a noise intensive piece of equipment commences works on site	The test procedure for construction plant will be guided by the stationary test procedures according to Australian Standard AS 2012.1. • Sound level meter configured for "Fast" time weighting and "A" frequency weighting • The test environment will be free from reflecting objects • Tests will not be carried out during rain or when the wind speed at the test site exceeds 5 m/s
Where required for the purposes of refining site establishment methods or techniques to reduce noise levels	As required	

Where actual noise levels exceed the predicted worst case levels, the source of excessive noise generations will be identified, and any additional feasible and reasonable measures available will be implemented to either reduce noise emissions or reduce the impacts on receivers.

Details of site activity and equipment usage will be noted during noise monitoring.

4.1.1 Noise monitoring equipment

All monitoring will be undertaken by competent personnel, suitability trained and experienced in undertaking noise measurements. Noise monitoring equipment used will be at least Type 2 instruments and calibrated in accordance with manufacturer specifications or relevant Australian Standards. The calibration of the monitoring equipment will be checked in the field before the noise measurement period.

Acoustic instrumentation employed in the noise monitoring surveys will carry current manufacturer conformance certificates and comply with the guidelines identified in Section 1.6

4.2 Vibration monitoring

The overarching vibration monitoring procedure to be adopted for the Project is provided in Table 4-2. Vibration monitoring will be undertaken by the Zinfra Environmental Site Representative or delegate. Dilapidation surveys will be the responsibility of Zinfra.

All vibration monitoring will be undertaken in accordance with the technical guidance provided in the "Environmental Noise Management - Assessing Vibration: a technical guideline" (DEC, 2006). Vibration monitoring results may be assessed and reported against the acceptable values of human exposure to vibration set out in Tables 2.2 and Table 2.4 of the guideline.

Zinfra will undertake vibration monitoring as directed by an authorised officer of the EPA.

Zinfra will conduct vibration testing during vibration generating activities that have the potential to impact on the Upper Canal System to identify minimum working distances to prevent cosmetic damage as per NSW CoA E42. In addition, vibration monitoring must be undertaken for the duration of the Early Work at the Upper Canal in consultation with WaterNSW.

Table 4-2: Vibration monitoring procedure

Monitoring details	Frequency	Test procedure
Prior to the use of vibratory rollers within 20 m the Upper Canal System and Tunnel Shaft 3 (see Table 3-8 for minimum safe working distances)	As required	Attended vibration monitoring will be undertaken when checking the safe working distances from construction plant or in response to a complaint. The testing method includes: • Transducer to be affixed to ground or building in general accordance with AS 2775- 2004 • Monitoring to be conducted for at least three distances from the plant, including a representative distance for the nearest sensitive structures and/or receivers • The testing will be conducted at each location to obtain a suitable representation of the range of vibration levels that will occur from the tested plant • The plant will be tested in the settings in which it is expected to operate. For vibratory rollers this may include both “High” and “Low” settings • PPV with sufficient temporal resolution to determine vibration impacts and the dominant frequency of the vibration will be recorded for assessment against the structural and cosmetic damage criteria. In situations in which human comfort is also of concern then a metric which is appropriate for calculating vibration does values.
At the commencement of vibratory compaction work within 50 m of residential buildings	As required	
Where a complaint is received in relation to human exposure to vibration levels and monitoring is considered an appropriate response	As required	
Where a complaint is received in relation to suspected property damage due to vibration impacts and monitoring is considered an appropriate response	As required	
Where an activity may occur within safe working distances for cosmetic damage for no more than one day continuously	As required	

Monitoring details	Frequency	Test procedure
Where required for the purposes of refining site establishment methods to reduce vibration levels	As required	

Where an activity may occur within safe working distances for cosmetic damage for a period of more than one day continuously	As required	Continuous vibration monitoring will be undertaken in situations where there is a risk that vibration from a particular construction activity may exceed the cosmetic damage criteria at a sensitive structure including the Upper Canal System. This will be where activities may occur within the safe working distances for cosmetic damage identified in Section 3.2 of this MP.
		The testing method includes:
		• Transducer to be affixed to ground or building in general accordance with AS 2775- 2004
		• Vibration logger to continuously measure vibration levels while the relevant works are occurring within the safe working distance for cosmetic damage. Advice from a heritage specialist on methods and locations for installing equipment used for vibration at the Upper Canal System will be sought.
		• Measurement to be conducted as close as possible to the sensitive structure.
		• A warning system will be implemented with the monitoring system including one or both of the following:
		  ◦ Audible and/or visual warning alarm
		  ◦ SMS and/or email alerts to site personnel.
		• PPV with sufficient temporal resolution to determine vibration impacts and the dominant frequency of the vibration will be recorded for assessment against the structural and cosmetic damage criteria. In situations in which human comfort is also of concern then a metric which is appropriate for calculating vibration does values.

Monitoring details	Frequency	Test procedure
Dilapidation surveys of buildings and structures where construction works occurs within the safe working distance for cosmetic damage	Prior to that work being undertaken and post-Construction	At a minimum, dilapidation surveys and reports will comprise: • A visual inspection of the structure, including all internal and external walls, ground level floors and external pavements, all connections of other structures above ground level and their connection at ground level and any exposed foundations • Full written building Condition Survey Report outlining the condition of the internal and external components of each property • A series of photographs of each identified defect/crack • A sketched floor plan showing the exact location of each defect and measurements of crack width/defect size • Identification of any condition changes relative to Pre-construction and the likely cause of the change (Post-Construction only)

Where vibration is found to exceed safe levels, impacts will be reduced by changing work methods and / or equipment, or through the provision of building protection measures where possible. In the event that a complaint relating to property damage is received, an inspection of the property will be undertaken and an interim building condition survey prepared.
Attended vibration monitoring will be undertaken to determine site-specific minimum working distances for structural damage and human response. Site-specific minimum working distances will be determined whenever significant vibration generating plant will be working close to or within the recommended minimum working distances listed in

Table 3-8. Details of site activity and equipment usage will be noted during monitoring.

4.2.1 Vibration monitoring equipment

Zinfra and/or its appointed contractor will identify the vibration monitoring equipment to be used and a maintenance/calibration program to ensure equipment is implemented. Monitoring methods and instrumentation employed in the vibration monitoring surveys will comply with *AS2775.2004 Mechanical vibration and shock—Mechanical mounting of accelerometers* and *AS2670.1 Evaluation of human exposure to whole body vibration*.

Zinfra and/or its appointed contractor will seek advice from a heritage specialist on methods and locations for installing equipment used for vibration monitoring at the Upper Canal System and Tunnel Shaft 3 in accordance with NSW CoA E43.

5 Reporting

5.1 Monthly Environmental Report

Zinfra will prepare Monthly Environmental Reports for the duration of Early Works, for submission to the Transport for NSW Environment and Sustainability Manager (or delegate) for review. Information to be detailed in the reports includes:

- Results summary and analysis of the environmental monitoring
- Performance of this Monitoring Program
- Summary of complaints received that are related to noise and vibration.

Refer to Section 6.5 of the EWEMP for further detail on environmental reporting.

5.2 Noise and Vibration Construction Monitoring Report

In accordance with NSW CoA C18 Zinfra will prepare Noise and Vibration Monitoring Reports detailing the results of the monitoring undertaken in accordance with this Monitoring Program at six monthly intervals. Reports will be prepared within the first month of site establishment and every three months thereafter until site closure and rehabilitation is complete. Reports will include, but not be limited to, the following information:

- The date(s) and time at which the monitoring was undertaken
- The locations and description of monitoring undertaken
- The name of the person who undertook the monitoring
- Tabulations of monitoring data
- Compliance monitoring results with the criteria identified in Section 3 of this Monitoring Program
- Identification of exceedances of the nominated criteria and descriptions of the causes of these exceedances
- Details of any alteration to the Monitoring Program
- Summary of any complaints received regarding noise and vibration.

Monitoring records will be:

- Kept in a legible form, or in a form that can readily be reduced to a legible form
- Kept for at least four years after the monitoring or event to which they relate took place
- Produced in a legible form to any authorised officer of the DPE, DAWE or EPA upon request, within the timeframe nominated in the request.

Where the Noise and Vibration Monitoring Report details monitoring in relation to the Upper Canal System, a copy will be provided to WaterNSW in accordance with the *Guidelines for development adjacent to the Upper Canal and Warragamba Pipelines.*

Zinfra will maintain accurate records of all noise and vibration monitoring activities.

5.3 Reporting on exceedances

In the event that the criteria identified in Section 3 of this Monitoring Program are exceeded, the Zinfra will investigate and report the exceedance to the TfNSW Project Manager who will then report to the Environment and Sustainability Manager (or delegate) and the ER within seven days of identification of the exceedance. Details of exceedances will be provided in the Monthly Environmental Reports.

The investigation into the exceedance will determine if the exceedance is related to Project activities or noise from another source. If the exceedance is attributed to Project activities, the exceedance will be classified as a non-compliance, incident or reportable event as defined by the M12 Environment Incident Classification and Reporting Procedure, (Appendix A5 of the EWEMP).

It is noted that in accordance with the POEO Act, a pollution incident does not include an incident or set of circumstance involving only the emission of any noise. As a result, noise exceedances cannot be classified as a Material Harm incident and do not require incident notification and reporting outlined in NSW CoA A44 and A45.

5.4 Building Condition Survey Reports

Prior to commencement of any works, a suitably qualified person will undertake building and structure condition surveys of all buildings and structures identified as being located where construction works occur within the safe working distance for cosmetic damage, in accordance with NSW CoA E76. The results of the surveys will be documented in a Building Condition Survey Report for each building and structure surveyed. Copies of Building Condition Survey Reports will be provided to the landowners of the buildings and structures surveyed and, if agreed by the landowner, the relevant Council within three weeks of completing the surveys, and no later than one month prior to the commencement of works.

After the completion of the works, a suitably qualified person will undertake building and structure condition surveys of all buildings and structures surveyed under the requirements of NSW CoA E77. The results of the surveys will be documented in a Building Condition Survey Report for each building and structure surveyed. Copies of the Building Condition Survey Reports will be provided to the landowners of the buildings and structures surveyed and, if agreed by the landowner, the relevant Council within three weeks of completing the surveys, and no later than one month prior to the commencement of works.

5.5 Complaints management and reporting

Recording and reporting of complaints will be undertaken in accordance with the Complaints Management System for the Project (refer to Section 5.5.3 of the EWEMP).

6 Adaptive management

Should noise and vibration monitoring results directly attributable to site establishment activities exceed the criteria set out in Section 3 of this Monitoring Program, the following steps will be undertaken:

- Analysis of the results by the Zinfra Environmental Site Representative or delegate in more detail with a view of determining possible causes for the exceedance
- Site inspection by the Zinfra Environmental Site Representative or delegate
- Advising relevant personnel of the problem
- Identifying and agreeing on actions and/or additional mitigation measures to resolve or mitigate the exceedance
- Implementing actions to rectify or mitigate the exceedance, including stop work arrangements where necessary or if directed by the ER
- Identifying and implementing additional mitigation measures.

Where actual noise levels are found to exceed the predicted worst case levels, the source of excessive noise generations will be identified, and any additional feasible and reasonable measures available will be implemented to either reduce noise emissions or reduce the impacts on receivers.

Where vibration is found to exceed safe levels, impacts will be reduced by changing work methods and / or equipment, or through the provision of building protection measures where possible. In the event a complaint relating to property damage is received, an inspection of the property will be undertaken and an interim building condition survey prepared.

Mitigation measures and preventative / corrective actions will be developed in accordance with TfNSW specifications and the procedure for dealing with non-compliance with environmental management measures outlined in Appendix A8 of the EWEMP. Zinfra will be required to verify and document the effectiveness of any management measures or preventative / corrective actions implemented to avoid further exceedances.

The timing for any improvement will be agreed between the Zinfra Project Engineer/Superintendent and TfNSW Project Manager and Environment and Sustainability Manager (or delegate) based on the level of risk or reoccurrence of the exceedance (e.g. a significant risk will require immediate action).

Zinfra will communicate regularly with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and cumulative noise and vibration impacts are minimised.

Appendix D – Noise Screening Assessment

Activity	Description of Activity	Plant/ Equipment	L_{Aeq} SWL	L_{Aeq} at 7m	Assumptions for quantitative assessment			
					No. Units	Activity total L_{eq} SWL	Activity total L_{A1} SWL	
Mobilisation & Site Establishment	Installing construction boundary hoardings/ fences and traffic barriers	Truck (medium rigid)	103	78	4 per hour	**115**		**116**
		Road truck	108	83	4 per hour			
		Scissor Lift	98	73	1			
		Franna crane	98	73	1			
Utility, property, service adjustment	Adjustment of property boundaries (where required); relocation of services	Excavator (tracked) 35t	110	85	1	**116**		**116**
		Dump truck	110	85	4 per hour			
		Franna crane 20t	98	73	1			
		Pneumatic hammer	113	88	-			
		Concrete saw	118	93	1			
		Vacuum truck	109	84	-			
		Backhoe	111	86	-			
		Power generator	103	78	1			
Corridor Clearing	General land clearing, tree and stump removal, topsoil stripping, loading	Bulldozer D9	116	91	1	**121**		
		Excavator (tracked) 35t	110	85	1			
		Chainsaw 4-5hp	114	89	2		**Not recommended as OOHW**	
		Tub grinder/ mulcher 40-50hp	116	91	1			
		Dump truck	110	85	4 per hour			
	House/ building demolition	Excavator (tracked) 35t	110	85	1	**122**		
		As above + hydraulic hammer	122	97	1		**Not recommended as OOHW**	
		Front end loader 23t	112	87	1			
		Dump truck	108	83	4 per hour			
Rock crushing	Crushing and screening of building waste/ rock material for re-use on site	Rock crusher	118	93	1	**118**		
		Bulldozer D9	116	91	1		**Not recommended as OOHW**	
		Excavator (tracked) 35t	110	85	1			
		Dump truck	110	85	4 per hour			
Bulk earthworks	Formation of road alignment. Excavation of soil and rock, hammering/rock breaking, drilling, loading, haulage, compaction of fill areas, grading	Bulldozer D9	116	91	1	**123**		
		Scraper 651	110	85	1			
		Excavator (tracked) 35t	110	85	1			
		As above + hydraulic hammer	122	97	1			
		Grader	113	88	1		**Not recommended as OOHW**	
		Dump truck	110	85	8 per hour			
		Compactor	106	81	1			
		Roller (large pad foot)	109	84	-			
		Water cart	107	82	-			
Drainage infrastructure	Excavation of trenches and pits; Delivery and placement of precast pipes and pits; filling and compacting.	Backhoe	110	85	-	**115**		**116**
		Franna crane 20t	98	73	1			
		Excavator (tracked) 35t	110	85	1			
		Concrete truck	109	84	4 per hour			
		Truck compressor	75	50	1			
		Vibratory roller	109	84	1			
		Road truck	108	83	4 per hour			
Bridge works	Casting; concrete pours; Placement of pre-cast elements; Piling (mainly bored); and Demolition.	Franna crane 20t	98	73	1	**120**		**124**
		Piling rig - driven	116	91	-			
		Piling rig - bored	112	87	1			
		Power generator	100	75	1			
		Concrete pump	102	77	1		(Piling not recommended as OOHW)	
		Concrete truck	109	84	4 per hour			
		Compressor	109	84	1			
		Pneumatic hammer	115	90	-			
		Welding equipment	105	80	-			
Retaining walls/ noise walls	Construction of retaining walls & noise walls	Piling rig - bored	112	87	1	**119**		**130**
		Power generator	103	78	1			
		Mobile crane	113	88	1			
		Concrete vibrator	113	88	1		(Piling and air track drill not recommended as OOHW)	
		Concrete pump	109	84	1			
		Welding equipment	105	80				
		Excavator (tracked) 35t	112	87	1			
		Air track drill	124	99				
Paving/ asphalting (inc concrete sawing)	Delivery of raw materials.	Pavement laying machine	114	89	1	**118**		**130**
	Placement of surface material.	Dump truck	110	85	4 per hour			
	Saw cutting.	Asphalt truck & sprayer	103	78	1			
		Concrete truck	109	84	1			
		Smooth drum roller	107	82	1			
		Concrete saw	118	93	1			
Compounds	Deliveries.	Front end loader	91	66	1	**114**		**116**
	Plant and equipment.	Excavator (tracked) 35t	110	85	-			
	Maintenance.	Road truck	108	83	4 per hour			
	Office areas.	Compressor	109	84	1			
	Storage areas.	Welding equipment	105	80	1			
		Light vehicles	88	63	12 per hour			
		Power generator	103	78	1			
Road furniture installation	Signposting and line marking	Road truck	108	83	4 per hour	**110**		**116**
		Scissor lift	98	73	1			
		Franna crane 20t	98	73	1			
		Line marking truck	108	83	1			
Construction Compound Site Establishment		Chainsaw 4-5hp	114	89	2	**119**		
		Pneumatic hammer	113	88	-			
		Fixed crane	113	88	1			
		Front end loader	112	87	1			
		Excavator (tracked) 35t	110	85	-			
		Grader	113	88	1			
		Vibratory roller	109	84	-		**Not recommended as OOHW**	
		Concrete truck	109	84	4 per hour			
		Dump truck	110	85	4 per hour			
		Water cart	107	82	-			
		Concrete vibrator	113	88	1			
		Concrete pump	109	84	1			
		Power generator	103	78	1			
		Light vehicles (eg 4WD)	103	78				
Local Roads Works		Bulldozer D9	116	91	1	**120**		**128**
		Excavator (tracked) 35t	110	85	-			
		Chainsaw 4-5hp	114	89	2			
		Tub grinder/ mulcher 40-50hp	116	91	1			
		Front end loader	112	87	1			
		Scraper 651	110	85	1			
		Backhoe	111	86	-			
		Compactor	106	81	1			
		Dump truck	110	85	4 per hour			
		Road truck	108	83	4 per hour			
		Water cart	107	82	-			
Re-surfacing works	Milling the asphalt to expose the underlying concrete, then laying new asphalt	Daymakers	98	73	2	**118**		**123**
		Pavement profiler	117	92	1			
		Dump truck	110	85	4 per hour			
		Front end loader	112	87	1			
		Pavement laying machine	114	89				
		Asphalt truck & sprayer	106	81				
		Smooth drum roller	107	82				

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 AF7 Compound Site Establishment
Scenario name	Compund Site Establishment
Receiver address	240m North of AF7
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		54
	Evening		48
	Night		37
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		64
	Day (OOHW)		59
	Evening		53
	Night		42

Representative distance (m)	240

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Compound site establishment	119	Yes	0	240	56

Total SPL $L_{Aeq(15minute)}$ (dBA)	*56*

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	64	55	65	55	65	60	75	70
	Day (OOHW)	59	55	65	55	65	60	75	70
	OOHW Period 1	53		65	55	65	60	75	70
	OOHW Period 2	42		65	55			75	70
Level above background (dB(A))	Standard hours	2							
	Day (OOHW)	2							
	OOHW Period 1	8							
	OOHW Period 2	19							
Level above NML (dB(A))	Standard hours		1		1				
	Day (OOHW)		1		1				
	OOHW Period 1	3			1				
	OOHW Period 2	14			1				
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	V, N, R2, DR		-	N			-	-

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
9. Identify and implement standard mitigation measures where feasible and reasonble. Include any shileiding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 42 to 44).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 AF7 Site Compound Operation
Scenario name	Compound Operation
Receiver address	240m North of AF7
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		54
	Evening		48
	Night		37
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		64
	Day (OOHW)		59
	Evening		53
	Night		42

Representative distance (m)	240

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Compound operation	114	Yes	0	240	51

Total SPL $L_{Aeq(15minute)}$ (dBA)	***51***

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	64	55	65	55	65	60	75	70
	Day (OOHW)	59	55	65	55	65	60	75	70
	OOHW Period 1	53		65	55	65	60	75	70
	OOHW Period 2	42		65	55			75	70
Level above background (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1	2							
	OOHW Period 2	14							
Level above NML (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2	9							
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	V, N, R2, DR		-	-			-	-

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
9. Identify and implement standard mitigation measures where feasible and reasonble. Include any shileiding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 42 to 44).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 AF18 Compound Site Establishment
Scenario name	Compound Site Establishment
Receiver address	48m north of AF18
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		54
	Evening		48
	Night		37
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		64
	Day (OOHW)		59
	Evening		53
	Night		42

Representative distance (m)	48

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Compound site establishment	119	Yes	0	48	72

Total SPL $L_{Aeq(15minute)}$ (dBA)	*72*

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	64	55	65	55	65	60	75	70
	Day (OOHW)	59	55	65	55	65	60	75	70
	OOHW Period 1	53		65	55	65	60	75	70
	OOHW Period 2	42		65	55			75	70
Level above background (dB(A))	Standard hours	18							
	Day (OOHW)	18							
	OOHW Period 1	24							
	OOHW Period 2	35							
Level above NML (dB(A))	Standard hours	8	17	7	17	7	12		2
	Day (OOHW)	23	17	7	17	7	12		2
	OOHW Period 1	19		7	17	7	12		2
	OOHW Period 2	30		7	17				2
Additional mitigation measures	Standard Hours	-	N, V	-	N, V	-	N, V	-	-
	Day (OOHW)	N, R1, DR	V,N, R1, DR	N, R1, DR	V,N, R1, DR	N, R1, DR	N, R1, DR	-	-
	OOHW Period 1	V, N, R1, DR		N, R1, DR	V,N, R1, DR	N, R1, DR	N, R1, DR	-	-
	OOHW Period 2	AA, V, IB, N, PC, SN, R2, DR		V, N, R2, DR	V, IB, N, PC, SN, R2, DR			-	N

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
9. Identify and implement standard mitigation measures where feasible and reasonble. Include any shileiding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 42 to 44).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 AF18 Site Compound Operation
Scenario name	Compound Operation
Receiver address	48m north of AF18
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		54
	Evening		48
	Night		37
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		64
	Day (OOHW)		59
	Evening		53
	Night		42

Representative distance (m)	48

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Compound operation	114	Yes	0	48	67

Total SPL $L_{Aeq(15minute)}$ (dBA)	*67*

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	64	55	65	55	65	60	75	70
	Day (OOHW)	59	55	65	55	65	60	75	70
	OOHW Period 1	53		65	55	65	60	75	70
	OOHW Period 2	42		65	55			75	70
Level above background (dB(A))	Standard hours	13							
	Day (OOHW)	13							
	OOHW Period 1	19							
	OOHW Period 2	30							
Level above NML (dB(A))	Standard hours	3	12	2	12	2	7		
	Day (OOHW)	3	12	2	12	2	7		
	OOHW Period 1	14		2	12	2	7		
	OOHW Period 2	25		2	12				
Additional mitigation measures	Standard Hours	-	N, V	-	N, V	-	-	-	-
	Day (OOHW)	N, R1, DR	N, R1, DR	-	N, R1, DR	-	N, R1, DR	-	-
	OOHW Period 1	N, R1, DR		-	N, R1, DR	-	N, R1, DR	-	-
	OOHW Period 2	AA, V, IB, N, PC, SN, R2, DR		N	V, N, R2, DR			-	-

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
9. Identify and implement standard mitigation measures where feasible and reasonble. Include any shileiding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 42 to 44).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 Minor Ancillary Facilty A - Elizabeth Drive, Cecil Park
Scenario name	Site Establishment
Receiver address	72m West of Minor Ancillary Facility A
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		54
	Evening		48
	Night		37
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		64
	Day (OOHW)		59
	Evening		53
	Night		42

Representative distance (m)	72

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Site establishment	115	Yes	0	72	66

Total SPL $L_{Aeq(15minute)}$ (dBA)	***66***

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	64	55	65	55	65	60	75	70
	Day (OOHW)	59	55	65	55	65	60	75	70
	OOHW Period 1	53		65	55	65	60	75	70
	OOHW Period 2	42		65	55			75	70
Level above background (dB(A))	Standard hours	12							
	Day (OOHW)	12							
	OOHW Period 1	18							
	OOHW Period 2	29							
Level above NML (dB(A))	Standard hours	2	11	1	11	1	6		
	Day (OOHW)	7	11	1	11	1	6		
	OOHW Period 1	13		1	11	1	6		
	OOHW Period 2	24		1	11				
Additional mitigation measures	Standard Hours	-	N, V	-	N, V	-	-	-	-
	Day (OOHW)	N, R1, DR	N, R1, DR	-	N, R1, DR	-	N, R1, DR	-	-
	OOHW Period 1	N, R1, DR		-	N, R1, DR	-	N, R1, DR	-	-
	OOHW Period 2	V, IB, N, PC, SN, R2, DR		N	V, N, R2, DR			-	-

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
9. Identify and implement standard mitigation measures where feasible and reasonble. Include any shileiding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 42 to 44).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 Minor Ancillary Facilty B - Elizabeth Drive, Cecil Park
Scenario name	Site Establishment
Receiver address	282m West of Minor Ancillary Facility B
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		54
	Evening		48
	Night		37
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		64
	Day (OOHW)		59
	Evening		53
	Night		42

Representative distance (m)	282

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Site establishment	115	Yes	0	282	50

Total SPL $L_{Aeq(15minute)}$ (dBA)	*50*

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	64	55	65	55	65	60	75	70
	Day (OOHW)	59	55	65	55	65	60	75	70
	OOHW Period 1	53		65	55	65	60	75	70
	OOHW Period 2	42		65	55			75	70
Level above background (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1	2							
	OOHW Period 2	13							
Level above NML (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2	8							
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	V, N, R2, DR		-	-			-	-

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
9. Identify and implement standard mitigation measures where feasible and reasonble. Include any shileiding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 42 to 44).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	M12 Minor Ancillary Facilty C - Elizabeth Drive, Cecil Park
Scenario name	Site Establishment
Receiver address	283m South-east of Minor Ancillary Facility C
Select area ground type	Undeveloped green fields (rural areas with isolated dwellings)
Select type of background noise level input	User Input

Noise area category		Representative Noise Environment	User Input
RBL or L_{A90} Background level (dB(A))	Day		45
	Evening		44
	Night		40
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	Day		55
	Day (OOHW)		50
	Evening		49
	Night		45

Representative distance (m)	283

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?	Shielding correction (dB(A))	Distance used in calculation (m)	Contribution SPL (dB(A))
Site establishment	115	Yes	0	283	50

Total SPL $L_{Aeq(15minute)}$ (dBA)	***50***

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	55	55	65	55	65	60	75	70
	Day (OOHW)	50	55	65	55	65	60	75	70
	OOHW Period 1	49		65	55	65	60	75	70
	OOHW Period 2	45		65	55			75	70
Level above background (dB(A))	Standard hours	5							
	Day (OOHW)	5							
	OOHW Period 1	8							
	OOHW Period 2	10							
Level above NML (dB(A))	Standard hours								
	Day (OOHW)	0							
	OOHW Period 1	1							
	OOHW Period 2	5							
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	V, N, R2, DR		-	-			-	-

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Steps:

1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select type of background noise level input - Reprentative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Enter the representative distance in cell C24.
7. Select scenario from the drop-down list in cells A27.
   (a) is there line of sight to receiver? Select from drop down list in cells F27. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 36 to 41).
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   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

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Appendix B2

Early Works Flora and Fauna Management Sub-Plan

Early Works for M12 Motorway - Protection of High Pressure Gas Mains

May 2022

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Document control

File Name	M12PPW-ADAP-ALL-EN-PLN-000058_EWFFMP_Rev_G
Title	Early Works Environmental Management Plan - Zinfra Early Works for M12 Motorway Appendix B2: Early Works Flora and Fauna Management Sub-plan
Document Number (Teambinder)	M12PPW-ADAP-ALL-EN-PLN-000058

Approval and authorisation

Plan reviewed by:	Plan reviewed by:	Plan reviewed by:
Sheila Anderson	Thomas Tu	Kimberley Nguyen
TfNSW Senior Environment and Sustainability Manager	TfNSW Utilities Manager	Zinfra Project Manager
Date 02/06/2022	Date 02/06/2022	Date 03/06/2022
Signed Sheila Anderson	Signed	Signed

Revision history

Revision	Date	Description
A	30/04/2021	First draft for TfNSW review
B	13/05/2021	Update following TfNSW and Jemena review
C	11/08/2021	Update following TfNSW review
D	17/08/2021	Update following TfNSW review
E	3/11/2021	Update following TfNSW and ER review
F	11/05/2022	Update to increase AF18 footprint and minor administrative amendments
G	26/05/2022	Update to increase Early Works footprint

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Appendix G Clearing and Grubbing Plan [TBD by Zinfra]
Appendix H Reuse Strategy [TBD by Zinfra]

Glossary/ Abbreviations

Abbreviations	Expanded text
AR	Amendment Report
ARSR	Amendment Report Submissions Report
BAR	Biodiversity Assessment Report
BC Act	*Biodiversity Conservation Act 2016*
Best practice	A procedure or management measure that has been shown through experience, at the time of writing, to minimise environmental impact and that is established or proposed as a standard suitable for widespread adoption.
BOS	Biodiversity Offset Strategy
CEMP	Construction Environmental Management Plan
Construction	Includes all activities required to construct the CSSI as described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding Low Impact Work which is carried out to complete prior to the approval of the CEMP, works approved under a Site Establishment Management Plan, demolition of acquired residential houses, structures and sheds, and works specified in Appendix B and approved under an environmental management plan(s) in accordance with Condition A24.
CoA	Conditions of Approval
Commonwealth CoA	Federal Conditions of Approval under the EPBC Act
CSSI	Critical State Significant Infrastructure
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DEC	Former NSW Department of Environment and Conservation
DECC	Former NSW Department of Environment and Climate Change
DECCW	Former NSW Department of Environment, Climate Change and Water
DPI	Department of Primary Industries
DPE	NSW Department of Planning, Industry and Environment (former Department of Planning Industry and Environment)
Early Works	Works specified in Appendix B of the Infrastructure Approval which are required to be approved under an Early Works Environmental Management Plan required under Condition A24.
EEC	Endangered Ecological Community

Abbreviations	Expanded text
EHG	Environment and Heritage Group (a part of NSW DPE)
EIS	Environmental Impact Statement
EMS	Environmental Management Systems
Environmental Assessment Documentation	Collective reference to the M12 EIS, Submissions Report and Amendment Report and supplementary reports as detailed in NSW CoA A1
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
ER	Environmental Representative
EWEMP	Early Works Environmental Management Plan
EWFFMP	Early Works Flora and Fauna Management Plan
EWMS	Environmental Work Method Statements
Federal Approval	Approval (EPBC 2018/8286) for carrying out the M12 Project under Part 8 of the *Environmental Protection and Biodiversity Conservation Act 1999* subject to specific CoA as detailed in Annexure A of the approval.
FM Act	*Fisheries Management Act 1994*
HCP	Habitat Compensation Plan
Infrastructure Approval	Approval (SSI 9364) for carrying out of the M12 Project under Section 5.19 of the *Environmental Planning and Assessment Act 1979* subject to specific CoA as detailed in Schedule 2 of the approval.
KFH	Key Fish Habitat
KTP	Key Threatening Process
NPW Act	*National Parks and Wildlife Act 1974*
NSW CoA	NSW Conditions of Approval
OEH	NSW Office of Environment and Heritage, now Environment Energy and Science
PBFD	Psittacine beak and feather disease
PCT	Plant Community Type
Pesticide Act	*NSW Pesticides Act 1999*

Abbreviations	Expanded text
PMST	Protected Matters Search Tool
POEO Act	*NSW Protection of the Environment Operations Act 1997*
Primary CoA/REMM	CoA or REMM that is specific to the development of this Plan
REMM	Revised Environmental Management Measures
Roads and Maritime	NSW Roads and Maritime Services, now Transport for New South Wales
RTA	Roads & Traffic Authority. Former NSW Roads and Maritime Services. Now Transport for NSW
Secondary CoA/REMM	CoA or REMM that is related to, but not specific to, the development of this Plan
TEC	Threatened Ecological Communities
TfNSW	Transport for New South Wales
TSC Act	*NSW Threatened Species Conservation Act 1995*
WSIA	Western Sydney International Airport
WSP	Western Sydney Parklands

1 Introduction

1.1 Context

This Early Works Flora and Fauna Management Sub-Plan (EWFFMP or Plan) forms part of the Early Works Environmental Management Plan (EWEMP) for the M12 Motorway (the Project) protection and relocation of gas mains to be carried out by Zinfra.

Approval for the Project under the EP&A Act was granted by the Minister for Planning on 23 April 2021 (SSI 9364). Approval for the Project under the EPBC Act was granted by the Commonwealth Minister for the Environment on 3 June 2021 (EPBC 2018/8286). The Early Works must be carried out in accordance with the terms of the NSW and Federal Approvals. This EWFFMP has been prepared to address the requirements of the NSW Minister's Conditions of Approval (CoA), Commonwealth Conditions of Approval, the environmental management measures detailed in the M12 Motorway Environmental Impact Statement (EIS), Revised Environmental Management Measures (REMMs) detailed in the Amendment Report Submissions Report (ARSR), and all applicable legislation.

1.2 Background and project description

Transport for New South Wales (TfNSW) is planning to construct and operate the M12 Motorway (the Project) to provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network. The M12 Motorway will run between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham for about 16 kilometres and is expected to be opened to traffic prior to opening of the WSIA.

1.3 Scope of the Plan

This EWFFMP is related to the Early Works phase only (refer to Figure 1-1). This includes the protection of high pressure gas mains as described in the EWEMP and Appendix B of the Minister's Conditions of Approval. Construction activities, as defined by the Infrastructure Approval for the project are not within the scope of the EWEMP and Sub-plans (including this EWFFMP).

The document is to be used by all personnel involved with the protection of high pressure gas mains as described in the EWEMP, including Zinfra and the TfNSW appointed Early Works Vegetation Clearing Contractor.

Figure 1-1: Early Works for the Protection of high-pressure gas mains

Figure 1-1 Early works for the protection of high pressure gas mains

1.4 Environmental Management System overview

The Environmental Management System (EMS) for the Early Works is described in Section 3 of the EWEMP. Zinfra will implement an EMS that is consistent with the overarching EMS.

This EWFFMP forms part of the environmental management framework for Early Works of the Project, as described in Section 3.3 of the EWEMP.

Zinfra will be required to use either their own or TfNSW's existing detailed procedures and plans (or develop their own) to address specific requirements of the CoA and REMMs identified in this EWFFMP. The purpose of these flora and fauna environmental management documents associated with Early Works is outlined in Section 2.1 of this EWFFMP.

Management measures identified in this EWFFMP may also be incorporated into site or activity specific Environmental Work Method Statements (EWMS). EWMS incorporate appropriate mitigation measures and controls and identify key procedures to be used concurrently with the EWMS. A template EWMS is provided in Appendix A6 of the EWEMP. EWMS will be prepared for:

- Early Works activities that impact on or are carried out in proximity to:
  - Threatened ecological communities:
    - Moist Shale Woodland in the Sydney Basin Bioregion (critically endangered ecological community, BC Act and EPBC Act)
    - Cumberland Plain Woodland in the Sydney Basin Bioregion (critically endangered ecological community, BC Act and EPBC Act)
  - Identified areas of occupied and potential habitat for the Cumberland Plain Land Snail (endangered, BC Act), Southern Myotis (vulnerable, BC Act) and Grey Headed Flying Fox (vulnerable, BC Act and EPBC Act)
  - Waterways
- Clearing and grubbing.

EWMS will be prepared by Zinfra and the Early Works Vegetation Clearing Early Works Contractor (where required), and reviewed by the TfNSW Utilities Manager, TfNSW Senior Environmental Officer (or delegate) and the independent Environmental Representative (ER) prior to the commencement of the activities to which they apply. Early Works personnel undertaking a task governed by an EWMS will undertake the activity in accordance with the mitigation and management measures identified in the EWMS.

Used together, the EWEMP and Sub-plans, strategies, procedures and EWMS form management guides that clearly identify required environmental management actions that are to be implemented by Zinfra.

The review and document control processes for this EWFFMP are described in Section 7 of the EWEMP.

1.4.1 Preparation, endorsement and approval

This EWFFMP has been prepared to satisfy the NSW and Commonwealth CoA's in relation to flora and fauna management during Early Works of the Project.

This EWFFMP will be reviewed by the TfNSW Utilities Manager, Environment and Sustainability Manager (or delegate) and Zinfra Project Manager and endorsed by the ER prior to submission to the Secretary of DPE for approval. This EWFFMP will be submitted for the approval of the Secretary no later than one (1) month prior to commencement of Early Works of the Project in accordance with NSW CoA A25.

In accordance with NSW CoA A24, Early Works will not commence prior to approval of the EWEMP and Sub-plans by the Secretary.

1.4.2 Interactions with other management plans and documents

This Plan has the following interrelationships with other management plans and documents:

- Pre-clearing and post clearing surveys will be undertaken in accordance with Section 6.1
- Vegetation to be retained within construction worksites will be detailed on Sensitive Area Plans (SAP) as detailed in the EWEMP
- Any fauna and /or flora management required in the establishment of ancillary facilities detailed in the Site Establishment Management Plan(s) will be in accordance with this EWFFMP
- The EWEMP addresses the erosion and sedimentation impacts associated with vegetation clearing and also provides a framework for waste management
- The Zinfra Contractor's and the Early Works Vegetation Clearing Contractor's Work Health and Safety Management Plans will address the safety requirements associated with the use of herbicides and pesticides.
- Consultation between TfNSW, Zinfra, stakeholders, community and relevant agencies will be undertaken in accordance with the Overarching Communication Strategy (OCS) prepared by TfNSW to address the requirements of NSW CoA B1 and B2

A Project Biodiversity Offset Strategy has been developed and is being implemented by TfNSW in accordance with CoA E2-E7 and REMM B4 to compensate for the loss of threatened species and Endangered Ecological Communities (EEC), which will be removed as a result of Early Works and construction activities.

1.5 Consultation

1.5.1 Consultation during preparation

The NSW Environment, Energy and Science (EES) were consulted with during the development of this EWFFMP, in accordance with NSW CoA A24 (d).

In accordance with NSW CoA A5 (b), Table 1-1 provides a log of engagement or attempted engagement with EES.

Table 1-1: Log of engagement or attempted engagement with EES

Agency	Date	Person Contacted	Comment	Status
NSW Environment,	14 October 2021	EES Representative	TfNSW sent a copy of the EWFFMP to EES via email requesting comment.	Open

Agency	Date	Person Contacted	Comment	Status
Energy and Science	29 October 2021	TfNSW Representative	EES sent through comments on the EWFFMP to TfNSW via email	Open
	November 2021	EES Representative	TfNSW sent through response to issues raised by EES via email	Closed

In accordance with NSW CoA A5, the consolidated evidence of the consultation undertaken for the preparation of this plan is provided in Appendix A. Appendix A includes:

- Documentation of the engagement with the parties identified above that occurred prior to submitting the document to the Secretary for approval
- Documentation of the follow-up with the identified parties where engagement or feedback has not been provided to confirm that they have no feedback or have not attempted to engage or provide feedback after repeated requests
- An outline of the issues raised by the identified parties, a summary of how they have been addressed and a cross reference to the section or Sub-plan of the EWEMP where the issue has been addressed
- A description of the outstanding issues raised by the identified parties and the reasons why they have not been addressed.

1.5.2 Ongoing consultation during Early Works

Consultation between TfNSW, Zinfra, the Early Works Vegetation Clearing Contractor, stakeholders, the community and relevant agencies regarding the management of flora and fauna within the Early Works area will be undertaken during the Early Works as required. The process for the consultation is documented in the Overarching Communication Strategy (OCS). Consultation as detailed by the Infrastructure Approval is identified in Table 1-2.

Table 1-2: Consultation Requirements

Reference	Description	Consultee	Responsibility
NSW CoA E8	*Pimelea Spicata* Surveys in potential habitat for this species within the refined construction footprint to the north of Elizabeth Drive and west of the existing Wallgrove Road	EES and DAWE	Transport for NSW
NSW CoA E15 REMM B02	Potential reuse all removed native trees and vegetation Including hollows, tree trunks, mulch, bush rock, root balls, coarse woody debris, collected plant material seeds and/or propagated plants	Council, Western Sydney Parklands, Landcare groups and government agencies including NSW National Parks & Wildlife Service (Scheyville Office), Greater Sydney Local Land Services and DPI Fisheries.	Zinfra

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how impacts on flora and fauna will be minimised and managed during Early Works on the Project.

2.2 Objectives

The objective of the EWFFMP is to ensure that all avoidance, mitigation and management measures relevant to the protection of native flora and fauna including threatened species and EEC referred to in:

- The Environmental Assessment Documentation prepared for M12 Motorway
- NSW Conditions of Approval granted to the Project on 23 April 2021
- Commonwealth CoA to the Project on 3 June 2021
- Zinfra's *G-EN-PR-00053 Flora and Fauna Management Procedure*

2.3 Targets

The following targets have been established for the management of flora and fauna impacts during Early Works for the Project:

- Ensure full compliance with the relevant legislative requirements, CoA and REMMs
- Ensure controls and procedures are implemented to avoid, minimise or manage potential adverse impacts to flora and fauna within and adjacent to the Early Works footprint
- No increase in distribution of weeds currently existing within the Early Works footprint
- No new weeds introduced to the Early Works footprint
- No transfer of plant diseases or pathogens to or from the Early Works areas
- Effective rehabilitation / revegetation to ensure sites are stabilised prior to main construction works commencing
- All fauna species encountered are handled humanely in accordance with industry standards
- No pollution or siltation of aquatic ecosystems, wetlands, EEC or threatened species habitat
- Minimise barriers to fauna movement and fish passage.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this EWFFMP is included in Appendix A1 of the EWEMP. Legislation considered during the development of this Plan includes:

- *Environmental Planning and Assessment Act 1979*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *National Parks and Wildlife Act 1974*
- *Biodiversity Conservation Act 2016 (Under Part 7 (Clause 27) of the Threatened Species Conservation Act (TSC Act))*[1]
- *Biosecurity Act 2015*
- *Pesticides Act 1999*
- *Fisheries Management Act 1994*
- *Protection of the Environment Operations Act 1997.*

3.1.2 Additional approvals, licences, permits and requirements

Refer to Appendix A1 of the EWEMP. It is noted that the Environmental Protection Authority (EPA) has confirmed that an EPL is not required for the Early Works; evidence of consultation is provided in Appendix A7 of the EWEMP.

3.1.3 Guidelines and standards

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

- Biodiversity Guidelines: Protecting and Managing biodiversity on RTA projects (RTA, September 2011)
- NSW Biodiversity Offsets Policy for Major Projects (OEH, 2014b)
- Guide 4: Clearing Vegetation and Bush Rock of the Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects
- Department of Primary Industries 'Policy and Guidelines for Fish Habitat Conservation and Management (DPI 2013)
- Hygiene protocol for the control of disease in frogs (DECCW, 2008)
- Australian Standard AS 4373 Pruning of Amenity Trees
- Roads and Maritime Environmental Direction No.25 - Management of Tannins from Vegetation Mulch (Roads and Maritime, 2012)

[1] An application was granted on 5 April 2018 to save the Project under Part 7 (Clause 27) of the BC Act therefore, allowing it to be assessed under the TSC Act and in accordance with the NSW Biodiversity Offsets Policy for Major Projects (2014). This is underpinned by the *Framework for Biodiversity Assessment 2014* (FBA). Further detail can be found in Section 1.4 of the Biodiversity Assessment Report (BAR) for the Project.

- Wildlife Connectivity Guidelines for Road Projects (TfNSW, draft, November 2011)
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (NSW Department of Environment and Conservation, 2004)
- Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna - Amphibians (NSW Department of Environment and Climate Change (DECC), 2009)
- Framework for Biodiversity Assessment (OEH, 2014)
- Policy and Guidelines for Fish Habitat Conservation and Management (NSW Department of Primary Industries (DPI), 2013)
- Policy and Guidelines for Fish Friendly Waterway Crossings (DPI, 2004)
- NSW Guide to Surveying Threatened Plants (OEH, 2016)
- Noxious and Environmental Weed Control Handbook, 4th Edition, NSW Industry & Investment Management Guide
- Australian Standard 4970 – 2009 Protection of Trees
- Zinfra's *G-EN-PR-00053 Flora and Fauna Management Procedure.*

These guidelines are a key source of environmental protection management processes relevant to this EWFFMP. The specifications set out environmental protection requirements, including Hold Points that must be complied with by Zinfra and the Early Works Vegetation Clearing Contractor during Early Works. A Hold Point is a point beyond which a work process must not proceed without express written authorisation from TfNSW.

3.2 Ministers Conditions of Approval

The primary NSW CoA relevant to this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other project management documents. Where relevant, secondary conditions relevant to this Plan have been listed in Appendix B. It is noted that no Primary REMMs have been identified as requiring inclusion into this EWFFMP.

Table 3-1: Primary Conditions of Approval

CoA No.	Condition Requirements	Document Reference
A24	Before undertaking Early Works specified in Appendix B, the Proponent must prepare an Early Works Environmental Management Plan. The Plan must include:	EWEMP
	(d) a flora and fauna management sub-plan (prepared in consultation with the EES) which includes	Section 1.5.1 Appendix A
	(i) details of the measures to avoid and minimise disturbance to native vegetation, and other habitat of native flora and fauna species	Section 6
	(ii) details of the proposed management and mitigation measures for the affected species listed in Table 3	Section 6.1 Appendix C (Section 2.2.2)
	(iii) procedures for undertaking pre-clearing surveys for native fauna, including	Section 6.1
	surveys by a suitably qualified and experienced ecologist to determine the presence of native fauna in the area impacted by the Early Works,	Section 6.1
	and procedures and measures to manage their relocation, and	Section 6.6 Section 6.7
	(iv) unexpected finds protocol for flora and fauna;	Section 6.6 Appendix D

3.3 EPBC Conditions of Approval

The primary Commonwealth CoA relevant to this Plan are listed in Table 3-2 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other project management documents.

Table 3-2: Commonwealth CoA

CoA No.	Condition Requirements	Document Reference
1	The approval holder must not clear in the locations identified in condition E8 of the State Infrastructure approval, until it has completed the additional surveys and provided the results to the Department as required by condition E8 of the State Infrastructure approval.	Section 4.1.2
3	The approval holder must not clear protected matters outside the final construction footprint.	Section 5.2.1
4	To minimise the impacts of the action on protected matters the approval holder must not clear more than the following specified amounts, or another specified amount determined in consultation with the Department in accordance with condition E4 of the State Infrastructure approval within the final construction footprint:	Section 5.2.1
4(a)	42.89 hectares of known Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest threatened ecological community;	Section 5.2.1
4(b)	0.44 hectares of known Western Sydney Dry Rainforest and Moist Woodland on Shale threatened ecological community;	Section 5.2.1
4(c)	100 known *Pultenaea parviflora* individuals;	Section 5.2.1
4(d)	The number of *Pimelea spicata* individuals identified in the additional surveys required by condition E8 of the State Infrastructure approval;	Section 5.2.1
4(e)	62.71 hectares of known foraging habitat for Grey-headed Flying Fox (*Pteropus poliocephalus*);	Section 5.2.1
4(f)	80.21 hectares of known foraging habitat for Swift Parrot (*Lathamus discolor*).	Section 5.2.1

4 Existing Environment

The key reference documents are M12 Motorway Section 6.2 of the Submissions Report to the ARSR, Section 6.1 and Appendix A of the M12 Motorway Amendment Report (AR), Section 7.1, the ARSR - Amendment and Appendix E of the M12 Motorway EIS.

The Early Works boundary and relevant ecological data is shown on the SAP included in Appendix A4 of the EWEMP.

Key components of the EIS Biodiversity Assessment Report methodology included:

- Desktop review of:
  - NSW BioNet Species Sightings data collection, managed by the EES
  - Protected Matters Search Tool, managed by DAWE
  - BioNet Vegetation Classification data collection managed by EES
  - BioNet Threatened Species data collection, managed by EES
  - NSW WeedWise, managed by DPI
  - RIAR Spatial Data Portal
  - Other relevant environmental and strategic planning documents.
- Undertaking a likelihood of occurrence assessment involving determining the likelihood of a particular species occurring within the Project boundary. A likelihood ranking was assigned to species, including ‘recorded’, ‘high’, ‘moderate’, ‘low’ and ‘none’. The likelihood of occurrence assessment was used to guide and inform the field surveys carried out for the Project
- Field surveys to identify the biodiversity values within the study area in accordance with requirements of the Framework for Biodiversity Assessment, including:
  - Vegetation surveys over 13 days between May and November 2017, August and September 2018 and in February 2019
  - Targeted flora surveys over 16 days during October, November 2017 and August 2018
  - Terrestrial fauna habitat assessments at 43 sites across the study area
  - Targeted fauna surveys for species with a moderate to high likelihood of occurrence carried out over 34 days between May 2017 and October 2018
  - Aquatic habitat assessments carried out on 18 and 19 June 2018 and 11 March 2019 at 14 waterway locations across the study area
  - Three additional days of field survey between 16 January and 29 January 2020 for the amended construction footprint.
- Identification and assessment of likely impacts on biodiversity arising from the Project
- Mitigation measures for avoiding, managing or reducing impacts on biodiversity values during detailed design, construction and operation
- Identification of any residual impacts that cannot be avoided, minimised or mitigated which must be offset.

The following sections summarise existing flora and fauna within the Early Works footprint area including species, communities and habitats. The Early Works locations are shown in Figure 1-1 in Section 1.3 of this EWFFMP.

4.1 Environmental aspects

4.1.1 Threatened ecological communities

Six Threatened Ecological Communities (TECs) listed under the BC Act were identified in the Environmental Assessment Documentation. The Early Works footprint only contains one of the six TECs and is listed below:

- Cumberland Plain Woodland in the Sydney Basin Bioregion (critically endangered ecological community, BC Act and EPBC Act).

This TEC is located within the Early Works footprint. The area of impact for Early Works is detailed within Table 5-1.

One Commonwealth listed TEC has been identified within the Early Works footprint.

The location of the TEC's in relation to the Early Works are depicted in Figure 4-1 and in the SAPs included at Appendix A4 of the EWEMP.

4.1.2 Threatened or otherwise significant flora species

Two threatened flora species were identified in the Environmental Assessment Documentation in the M12 Project Corridor. As per the Infrastructure Approval NSW CoA A24 (d)(ii) and Table 3 (Table 4-1), threatened flora species management and mitigation measures are detailed in Section 6.10. These threatened flora species have not been identified within the Early Works footprint, as such no specific measures have been included within this EWFFMP.

The location of flora species in relation to the Early Works is shown in Figure 4-1.

Table 4-1: Table 3 extracted from Infrastructure Approval NSW CoA A24

Name	Loss of habitat or individuals
Dillwynia tenuifolia	244 individuals
Pultenaea parviflora Sydney Bush-pea	Up to 100 individuals

In accordance with NSW CoA E8 and Commonwealth CoA 1, additional surveys for the Spiked Rice-flower (*Pimelea Spicata*) were undertaken in potential habitat for this species construction footprint to the north of Elizabeth Drive and west of the existing Wallgrove Road. No plants of Spiked Rice-flower were recorded during these surveys.

Figure 4-1: Threatened ecological communities and threatened fauna habitat for within the Early Works footprint for the protection of high pressure gas mains

4.1.3 Fauna habitat

Vegetation communities within the study area were consolidated into four broader fauna habitat types based on general similarities in vegetation type, geology, landscape setting, habitat connectivity and fauna habitat values. Two habitat types are located within or adjacent to the Early Works footprint as described in Table 4-2.

All Woodland habitats across the Project study area are considered likely to provide foraging habitat for Grey-headed Flying-foxes listed as vulnerable under the EPBC Act and the BC Act.

One potential hollow-bearing tree has been identified south of Elizabeth Drive during site assessments undertaken by TfNSW. Further assessment of this potential hollow-bearing tree will be undertaken by the Early Works Ecologist (refer Section 7.1) during pre-clearing surveys.

Table 4-2: Fauna habitat types

Name	Habitat features
Woodland	Dense understorey grasses, coarse woody debris and leaf litter provide shelter habitat for small terrestrial amphibians and reptiles. Large living or dead hollow-bearing trees are relatively scarce. Canopy trees in woodland habitat provide blossom resources for common nectivorous birds, small gliders and flying-foxes.
Grassland	This habitat is comprised almost entirely of land cleared of native forest or woodland for grazing, cropping and more recently for residential and industrial development. Large, scattered paddock trees and stags occur within grassland habitat in some sections of the Early Works footprint, some supporting small, medium and large hollows. Hollows within the grasslands of the Early Works footprint are likely to provide roosting habitat for common, adaptable microbats and were observed to provide nesting habitat for bird species including Little Corella, Long-billed Corella, Eastern Rosella and Red-rumped Parrot. Native fauna most frequently recorded from grassland habitat during surveys were highly adaptable species typically associated with cleared landscapes.

4.1.4 Threatened fauna

Threatened fauna species identified during survey (confirmed) and those which have been previously recorded in the M12 amended Project study area are detailed in the Environmental Assessment Documentation. Two threatened fauna species were identified within the Early Works footprint and one threatened fauna species was assumed to be present in the study area (Table 4-3).

Table 4-3**:** Threatened fauna identified within the Early Works footprint and study area

Common name	Scientific name	EPBC Act	BC Act	Occurrence likelihood
Grey-headed Flying-fox	*Pteropus poliocephalus*	Vulnerable	Vulnerable	In footprint: Low – Breeding High – Foraging

Common name	Scientific name	EPBC Act	BC Act	Occurrence likelihood
Cumberland Plain Land Snail	*Meridolum corneovirens*	Not listed	Endangered	High – One individual recorded within the Early Works footprint during surveys
Southern Myotis	*Myotis marcopus*	Not Listed	Vulnerable	Assumed to be present in study area

The Southern Myotis were assumed to be present within the study area as 'possible' calls were recorded. The Southern Myotis is known to occasionally use tree hollows as roosting habitat. All hollow-bearing trees within 200 metres of riparian zones within the study area are considered potential 'breeding' habitat for the Southern Myotis. Therefore, as indicated in Figure 4-1, it is assumed that the presence of Southern Myotis adjacent to the Early Works footprint is likely; it is noted no hollow bearing trees are identified within the Early Works footprint with the exception of one potential tree that is to be reviewed during pre-clearing surveys.

As the Southern Myotis was identified within Table 3 of the Infrastructure Approval, specific proposed management and mitigation measures in accordance with NSW CoA A24(d)(ii) have been developed and detailed in Section 5.2.1 and 6.11 and Appendix C.

Both Cumberland Plain Land Snail and Grey-headed Flying-fox habitat will be impacted by the Early Works as identified in the SAPs. Grey-headed Flying-fox foraging habitat associated with Cumberland Plain Woodland, has been identified within the Early Works boundary during surveys undertaken for the Environmental Assessment. It is noted that no camps (roosting, breeding) were identified in the EIS study corridor.

However, at that time, the closest Grey-headed Flying-fox was in Wetherill Park, about 8 km away. This camp has since disbanded (recorded Aug 2020, as per DAWE National Flying-fox Monitoring Viewer, accessed 17 June https://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf),). The closest camps are now either in Clyde or Parramatta Park, more than 15 km from the M12 Motorway site. As such, the Grey-headed Flying Fox will only be using the site from dusk to dawn for foraging, so unlikely to be directly impacted by clearing during standard hours.

4.1.5 Aquatic habitat

Aquatic habitat values for each surface water feature within or adjacent to the Early Works footprint are shown in Table 4-4. The Unnamed tributary of Ropes Creek is around 24 metres from the Early Works boundary north of Wallgrove Road. It is identified as Key Fish Habitat (KFH) however, field assessment confirmed that the waterway is an ephemeral first order drainage line with no aquatic habitat. It was therefore determined that the Unnamed tributary of Ropes Creek is not a KFH or sensitive receiving environment. Therefore, no threatened fish species are anticipated to occur within the Early Works.

There is one minor unnamed drainage line around 29 metres southeast of the Early Works boundary. This drainage line is a first order stream which is not considered KFH and has minimal channel definition. However, this drainage line feeds into a SEPP Coastal Wetland (ID117). This site has been identified as a sensitive receiving environment due to its listing as a SEPP Coastal Wetland. This ephemeral drainage line receives minimal upstream catchment flows and therefore the potential impacts to surface water quality and hydrology within the Coastal Wetland during Early Works are unlikely.

Table 4-4: Aquatic habitat values for each surface water feature within and adjacent to the Early Works footprint

Surface water feature	Stream order	Waterway class (Fairfull and Witheridge)	Key fish habitat (DPI Fisheries)	Sensitive receiving environment
Unnamed tributary of Ropes Creek	1st	4 – unlikely fish habitat	Mapped as KFH– Does not meet key fish habitat definition	No
SEPP Coastal Wetland ID117		2 – moderate fish habitat	KFH (Class 2) - moderately sensitive key fish habitat. During wet periods it provides a variety of aquatic habitats	Yes

Figure 4-2: SEPP Coastal Wetland (ID 117)

4.1.6 Listed migratory species

The Protected Matters Search Tool (PMST) report identified 16 listed migratory species with the potential to occur within 10 kilometres of the M12 construction boundary. Preliminary desktop assessments identified eight of the 16 species to have a moderate likelihood of occurrence and eight to have a low likelihood of occurrence in the M12 amended Project study area. Subsequent habitat assessments and field surveys assessed that all 16 species have a low likelihood of occurrence in the M12 construction boundary.

4.2 Matters of National Environmental Significance

4.2.1 Threatened species and ecological communities

One TEC listed under the EPBC Act will be removed from the Early Works footprint, Cumberland Plain Woodland.

One EPBC listed fauna species, the Grey-headed Flying-fox (*Pteropus poliocephalus*), listed as Vulnerable, was recorded foraging within the vicinity of the Early Works.

The Early Works footprint does not contain any areas of important habitat for any of the listed migratory species.

4.2.2 Wetlands of international importance

There are no wetlands of international importance within 10 kilometres of the Early Works footprint.

4.2.3 World and natural heritage

There is one world heritage location, the Greater Blue Mountains Area located about 25 kilometres from the western most point of the Early Works footprint. It is highly unlikely that this area will be impacted by the Early Works.

4.2.4 National heritage

There is one national heritage locations, the Greater Blue Mountains Area, located about 25 kilometres from the western most point of the Early Works footprint. It is highly unlikely that this area will be impacted by the Early Works.

5 Environmental aspects and impacts

5.1 Early Works activities

Key aspects of Early Works that could result in impacts to terrestrial and aquatic flora and fauna include:

- Clearing of native vegetation (including habitat)
- Noise, vibration and light impacts
- General earthworks (i.e. excavation for gas protection work) near vegetation, resulting in disturbance of soils, consequential erosion and the mobilisation of sediment
- Establishment of ancillary facilities
- Vehicle movements
- Excavation works
- Use of chemicals / fuels (potential for spills).

5.2 Ecological impacts

Early Works of the Project may result in potential direct and indirect impacts to biodiversity, including:

- Loss of native vegetation, including TEC
- Loss of fauna habitat
- Direct and Indirect impacts to terrestrial and aquatic fauna, including threatened species
- Changes in water quality
- Direct injury and mortality of fauna (including vehicle strike)
- Edge effects on adjacent native vegetation and habitat
- Fragmentation of habitats and wildlife corridors
- Invasion and spread of weeds and pests
- Invasion and spread of pathogens and disease
- Noise, vibration, dust, light and contaminants
- Cumulative impacts in association with nearby projects.

The aim of the environmental management measures provided in Section 6 is to minimise the potential impacts on flora and fauna for Early Works.

5.2.1 Clearing of native vegetation

Clearing of native vegetation for Early Works will be in accordance with the impacts identified, assessed and approved in the Environmental Assessment Documentation.

Approximately 0.49 ha of native vegetation will require removal. It is noted that this number is based on areas mapped within the Environmental Assessment Documentation. However, as Early Works are to take place within an existing easement, vegetation is highly disturbed and it is likely

that the majority of clearing will consist of tree trimming. This trimming may require impact to the Cumberland Plain Woodland in the vicinity of the Early Works.

The potential area of loss of vegetation and habitat due to Early Works of the Project is summarised in Table 5-1.

Table 5-1: Indicative area of impact to native vegetation

Plant community type (PCT)	Status (BC Act) and corresponding TEC	Approximate area impacted by Early Works (ha) (including Ancillary Facilities)
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Critically endangered - Cumberland Plain Woodland in the Sydney Basin Bioregion	0.55

Removal of threatened flora

The *Pultenaea Parviflora* (Sydney Bush-pea) will not be directly impacted by the Early Works however, potential indirect impacts resulting from fragmentation may occur. In the event that additional individual plants of listed species or populations are discovered during Pre-works surveys or during Early Works, the Unexpected Threatened Species or EEC Finds Procedure will be followed (refer Appendix D) with exclusion zones set up around the unexpected finds in the first instance. The procedure includes provisions for implementing exclusion zones to ensure plants are protected during clearing activities and Early Works.

Removal of threatened fauna species habitat and habitat features

Clearing for Early Works will have indirect impacts on the Grey-headed Flying-fox and Cumberland Plain Land Snail due to removal of foraging and/or breeding habitat. No confirmed hollow bearing trees have been identified within the Early Works footprint. There is one potential hollow bearing tree that has been identified as such, this tree hollow will be checked during the pre-clearing survey for potential evidence of Southern Myotis habitat.

5.2.2 Impacts to aquatic biodiversity

Direct impacts to aquatic biodiversity are not expected as no works will be undertaken within waterways. Notwithstanding, the implementation of erosion and sediment control measures as detailed in Section 3.3.3 of the EWEMP.

5.2.3 Habitat fragmentation

Early Works associated with the Project have the potential to impact habitat corridors as follows:

- Reduce the area of vegetation comprising habitat corridors
- Reduce the width of habitat corridors
- Increase the width of existing gaps in habitat corridors
- Create new gaps in habitat corridors
- Introduce or move edge effects in corridors.

One regional corridor will be potentially impacted in the Early Works footprint. Woodland habitat along the east and west sides of the M7 motorway provides limited north-south habitat connectivity. This area includes threatened fauna recorded or assumed present within the footprint. These species are assumed to be a highly mobile flying species and therefore, the Early Works are

not anticipated to result in impacts on movement and/ or dispersal pathways for any threatened species or population.

5.2.4 Injury and mortality of fauna

The primary cause of fauna injury and mortality during the Early Works stage of the Project will be vegetation clearing prior to Early Works. Specific clearing measures for threatened fauna are provided in Appendix C.

5.2.5 Invasion of spread of weeds and pests

Large areas of the Early Works footprint have a high abundance of exotic species. Typically, weed invasion and spread is an indirect impact of projects that is often generated by clearing vegetation and movement of plant. Other Early Works activities, including earthworks and movement of soil associated with gas protection work can also result in the dispersal and introduction of weeds.

A total of 14 introduced vertebrate fauna species were recorded within the M12 amended Project study area during surveys. In addition to the 14 exotic fauna species, two additional native species recorded within the M12 Project Corridor, Noisy Miner (*Manorina melanocephala*) and Bell Miner (*Manorina melanophrys*), are also considered pest species.

Early Works activities (e.g. vegetation clearing, habitat removal, increased noise and human presence) have the potential to disperse pest species across the surrounding landscape and increase the ability of such species to utilise habitats during construction and operation phases due to vegetation clearing, habitat removal, increased noise and human presence. While the pest species listed above are likely to capitalise on the disturbance associated with Early Works and development activities, the Project is unlikely to significantly increase the overall impact of pest species within the Early Works footprint.

The aggressive exclusion of birds from potential woodland and forest habitat by over-abundant Noisy Miners was listed as a Key Threatening Process (KTP) under the EPBC Act. As Project activities will increase fragmentation in the Early Works footprint, it is possible that the Project will increase the abundance of Noisy Miner in the Early Works footprint and exacerbate this KTP.

Within the Early Works footprint, there is also evidence of Bell Miner Associated Dieback (BMAD). This is caused by an overabundance of psyllids (sap-sucking insects that create a sugary excretion known as a lerp) in conjunction with Bell Miners (who feed on both the psyllids and lerp). As the Project will result in further vegetation clearing and localised fragmentation, it could increase the prevalence and severity of BMAD in the locality.

5.2.6 Invasion and spread of pathogens and disease

Early Works has the potential to increase the spread of pathogens that threaten native biodiversity values. Pathogens specific to the project include:

- Soil-borne pathogen *Phytophthora cinnamomi* (Phytophthora)
- *Austropuccinia psidii* which causes the disease Myrtle rust
- *Batrachochytrium dendrobatidis* (Chytrid fungus)
- Psittacine beak and feather disease (PBFD).

All four of these pathogens are listed as KTPs under the BC Act. Early Works may increase the risk of dispersal of Phytophthora and Myrtle rust, from soil disturbance and plant movement during Early Works. Chytrid fungus causes the infectious disease Chytridiomycosis (amphibian chytrid

fungus disease) which affects amphibians. No threatened amphibian species are considered likely to occur within the Early Works footprint, and chytrid fungus is therefore considered unlikely to have a significant impact within the Early Works footprint.

PBFD can have a significant impact on threatened parrot species with small populations, however, larger populations of parrot species can sustain losses and develop immunity to the disease. As there are no threatened parrot species likely to occur within the Early Works footprint, PBFD is unlikely to have a major impact within the Early Works footprint.

Environmental controls will be implemented in consultation with the Early Works Ecologist to prevent the spread or introduction of pathogens to the Early Works area in accordance with the Weed and Pathogen Plan (Appendix E).

5.2.7 Water pollution

There is potential for sedimentation and spills to affect water quality in the waterways during Early Works which could also affect native fish and frogs, including downstream of the Early Works footprint.

Water pollution may also result from hydrocarbon leaks or spills from vehicles or equipment used during work adjacent to waterways.

5.2.8 Noise, vibration, dust, light and contaminants

Impacts from noise and vibration are likely to be localised to the Early Works footprint, existing roads and new roads. Construction noise is likely to create short term impacts on fauna, however remaining vegetation will provide refuges for fauna to retreat to, and impacts will be reduced after the Early Works. These impacts are not considered to have a significant, long-term impact on fauna, including threatened fauna.

During night-time works there will be an increase in artificial lighting within the Early Works footprint and surrounds. As such, the Early Works may potentially affect nocturnal fauna by interrupting their life cycle or impacting on species that can be more vulnerable to predation (e.g. some small mammals).

Dust emitted during earthworks, vegetation clearing and due to vehicle movements may deposit on plant foliage, however the impact of dust pollution is likely to be localised, intermittent, and temporary in nature.

Adverse impacts to flora and fauna due to accidental release of contaminants to the environment may occur.

5.2.9 Bushfire

Bushfire is an established natural hazard within this landscape and can occur in south-western Sydney frequently during the summer months. Prolonged dry conditions, hot temperatures, and low humidity during spring, summer and early autumn are experienced regularly at the Early Works site. Along with wind, these climate features contribute significantly to the behaviour of a fire.

A bushfire hazard exists where there is fuel in the form of vegetation, including grass, scrub, bushes and trees. Early Work activities have the potential to generate bushfire risk as a result of activities likely to generate sparks occurring on site or from spontaneous combustion of stockpiles if they are piled too deeply. Activities identified as likely to generate sparks include:

- Smoking

- Plant Maintenance
- Driving on site
- Hot works.

6 Environmental mitigation and management measures

6.1 Pre-clearing process

Pre-clearing processes will be carried out in accordance with Guide 1 of the *Biodiversity Guidelines* (RTA, 2011).

A Vegetation Clearing Procedure (Appendix C) has been for the Early Works in accordance with the requirements of Guide 1 the *Biodiversity Guidelines* (RTA, 2011). The purpose of the Procedure is to:

- Outline environmental control measures to minimise clearing of vegetation
- Identify management measures to minimise impacts on biodiversity and the surrounding environment
- Provide a framework for the management of vegetation to be retained or removed
- Outline steps for the minimisation of loss of habitat and harm to associated fauna.

The Procedure will include, but not be limited to:

- Flora and fauna management strategies for pre-clearing, clearing and post-clearing activities including environmental control measures
- Pre-clearing survey form
- Delineation methods for clearing
- Measures to minimise clearing of native vegetation
- Measure to protect vegetation and habitat during clearing activities
- Retained timber, bush rock and root ball management procedure, including a process for consulting with community groups, Council and relevant government agencies to determine if retained timber and root balls could be used for environmental rehabilitation projects before pursuing other disposal options
- Specific procedures to protect threatened flora and fauna species and populations (where required), including:
  - Southern Myotis
  - Grey-headed Flying-fox
  - Cumberland Plain Land Snail.
- Specific reporting requirements associated with additional survey work and control of clearing activities
- Outline steps to inspect the site for potential fauna habitat features including vegetation, leaf litter, and existing culverts; including the requirement to prepare a Relocation Plan should threatened fauna be identified.

A work-specific Clearing and Grubbing Plan will be prepared which must include, but not be limited to, the following information:

- Methods used to identify and mark areas of weeds to be removed and methods for their removal

- Procedure for the disposal of weeds and exotics
- Procedure for protecting threatened flora species and trees marked for preservation
- Methods used for identifying, marking and removing or pruning unsound trees likely to fall upon the roadway or onto private property
- Procedure for identifying and removing trees, stumps and logs above the specified size and within the hazard line.

Furthermore, a site specific Clearing and Grubbing EWMS will be prepared within the Clearing and Grubbing Plan, as required.

The pre-clearing process will include a pre-clearing survey which will identify the quantity, quality and size of the tree hollows to be removed and the hollow-dependent fauna species inhabiting the area. The survey will identify habitat trees to be felled in a staged approach.

An inventory of hollow bearing trees will be developed as part of the pre-clearing surveys to inform the Habitat Compensation Plan (HCP) (HCP required during construction under REMM B02). The inventory will include details of the location of each hollow bearing tree and their characteristics such as species, height and diameter at breast height (DBH), number of hollows on the tree, their position and size.

Fauna identified using hollows during surveys will further inform the HCP.

6.1.1 Pre-work surveys

The Early Works Ecologist is to document the results of pre-clearing surveys; this data is to be provided to Zinfra and TfNSW for the update of SAPs and in the consideration of updating offset obligations where required.

6.1.2 Post-Clearing Report

At the completion of clearing, the Early Works Ecologist will complete post-clearing surveys and prepare a Post-Clearing Report to be provided to both TfNSW and Zinfra. The report will confirm the final area cleared, the number and identity of all vegetation removed, and specifically, the post-clearance abundance and density count of hollow-bearing trees. The Post-Clearing Report will also identify if any fauna, nests or other fauna habitats were impacted by clearing works and provide fauna capture and relocation data. Further details regarding responsibilities, timing and other requirements for preparation of Post-Clearing Reports is provided in Section 7.1 and Appendix C of this EWFFMP.

Zinfra and the Early Works Vegetation Clearing Contractor's Vegetation Clearing Procedures will be reviewed by TfNSW for consistency with the requirements of this EWFFMP and the CoA.

6.2 Exclusion zones

Zinfra and the Early Works Vegetation Clearing Contractor will install exclusion zones and fencing or other means to demarcate vegetation to be retained. Exclusion zones will be set up at the limit of clearing in accordance with *Biodiversity Guidelines* (RTA, 2011) (Guide 2: Exclusion zones). Exclusion zones will be mapped out by a qualified surveyor in accordance with the Flagging Protocol in Section 2.2.6 of the Vegetation Clearing Procedure (Appendix C).

Zinfra and the Early Works Vegetation Clearing Contractor will install environmental protection area signage on exclusion zone fencing at regular intervals agreed to by the TfNSW Environment and Sustainability Manager (or delegate). The fencing will only be removed following agreement by

the TfNSW Environment and Sustainability Manager (or delegate). The exclusion zones will also be clearly illustrated on Sensitive Area Plans.

Connectivity measures will be implemented in accordance with *Wildlife Connectivity Guidelines for Road Projects* (TfNSW, under preparation). Fencing will be located to reduce roadkill of fauna species and funnel animals to creek crossings where safe passage will be available.

6.3 Coarse woody debris and snags

Woody debris and snags (branches, trunks and whole trees that fall into rivers and streams) provide important habitat for aquatic and terrestrial flora and fauna. Early Works activities are not expected to be undertaken within waterways, however, should this be required, a Snag Management Plan will be developed prior to works within a watercourse. The Snag Management Plan will be developed in accordance with the *Policy and guidelines for fish habitat conservation and management* (DPE, 2013) and REMM B12. Course, woody, debris will be retained where felled for Early Works for reuse purposes as described in Table 6-1 and as per the Early Works Vegetation Clearing Contractor's Reuse Strategy (Section 306.10).

Table 6-1: Classification of woody debris and proposed uses

Woody debris size	Usage
Logs > 500 mm diameter	Use within re-snagging of creeks
Logs 250-500 mm diameter Logs up to 2000 mm length[2] (preferred for habitat enhancement)	Priority to use as habitat for Cumberland Plain Land snail
Logs 100-250 mm diameter	Habitat improvement/replacement, erosion and sediment control, fauna furniture for culverts
Debris <100 mm diameter	Mulched/chipped and re-used on site for revegetation or erosion and sediment control

6.4 Aquatic and riparian habitat

Although Early Works are not expected to be undertaken within waterways, if required, Zinfra will manage aquatic and riparian habitat in accordance with Guide 10 of the *Biodiversity Guidelines* (RTA, 2011) and Section 3.3.2 of the *Policy and Guidelines for Fish Habitat Conservation and Management Update* (DPI, 2013) including:

- Consideration of timing of clearing to avoid flooding risks
- Retaining of tree roots or staged removal on the bank of a waterway in order to maintain bank stability

[2] It should be noted that logs greater than 2000 mm in length are preferred for habitat enhancement based on the logistical and financial benefits of moving and installing shorter logs. However, logs greater than 2000 mm may still be used where appropriate, especially where felled trees can be reused on the same site.

- Existing trees, grasses and other ground cover will be retained within 15 m of rivers, creeks and watercourses and in all drainage lines until immediately before work commences in the area
- Developing a process for de-watering farm dams and the relocation of aquatic fauna
- Avoidance of activities in aquatic habitats and riparian zones as much as practicable
- Establishment of exclusion zones for vehicles, plant and equipment, and provision of exclusion fencing around sensitive areas
- Keeping vehicles and machinery away from the banks of a waterway where possible
- Preventing refuelling of vehicles and plant, and chemical storage and decanting within 50 m of aquatic habitats
- Temporary application of mulch will be managed to avoid the potential for material and tannin run-off into waterways, including limiting the application of mulch near waterways where practicable
- Removal of all temporary works, flow diversion barriers and sediment control barriers within aquatic habitats as soon as practicable and in a manner that does not promote future channel erosion.

Furthermore, impacts to KFH as defined in Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013 update) must be minimised; residual impacts will be offset at a ratio of 2:1 habitat offset requirement and in consultation with DPI Fisheries. Refer to the Fauna Handling and Rescue Procedure in Appendix F for dewatering procedure and aquatic fauna relocation. The dewatering procedure will also include measures to prevent potential release and potential disposal of exotic aquatic fauna/ flora and pathogens during dewatering into waterbodies. No works will be undertaken in KFH until payment of habitat offset requirements have been made to the DPI Fish Conservation Trust Fund. TfNSW will be responsible for the payment of habitat offset requirements.

6.5 Weed and pathogen control

Weed and pathogen management and control practices will be implemented throughout Early Works to minimise the risk of spread into and out of the Early Works areas.

Zinfra and the Early Works Vegetation Clearing Contractor will prepare a work-specific Weed and Pathogen Management Plan prior to commencement of Early Works in accordance with the requirements of Guides 6 and 7 of the *Biodiversity Guidelines* (RTA, 2011), and the Weed and Pathogen Management Plan provided in Appendix E of this EWFFMP. The purpose of the Plan is to:

- Identify the pathogens and key weed species and their distribution across the Early Work sites
- Prevent the introduction and spread of weeds and pathogens during the work
- Establish an inspection and reporting framework for weeds and pathogens
- Set out performance criteria for the management of weeds and pathogens for the Project.

The Plan will include, but not be limited to:

- Identification and mapping of weeds and pathogens at each site
- Site assessment process

- Measures to prevent the introduction and spreading of weeds and pathogens caused by the Project using a precautionary approach
- Hygiene protocols including vehicle and footwear wash down facilities and requirements for all vehicles and footwear to be washed down before entering or of exiting the site
- Weed and pathogen control methods
- Disposal methods
- Arrangements for monitoring.

Weed and Pathogen Management Plans will be reviewed by TfNSW for consistency with the requirements of this EWFFMP, the CoA and the REMMS.

6.6 Unexpected threatened species finds

Zinfra and the Early Works Vegetation Clearing Contractor will implement the Unexpected Threatened Species or EEC Finds Procedures in accordance with Guide 1 of the *Biodiversity Guidelines* (RTA, 2011), relevant Zinfra specifications, and the Procedure provided in Appendix D of this EWFFMP. The purpose of the Procedure is to outline the process to follow in the event of an unexpected species or EEC find during Early Works. The Procedure will include, but not be limited to:

- Stop work arrangements in the immediate area of the threatened species
- A notification and communication protocol
- The consultation process with appropriate specialists to assess the significance of the find and develop management options
- Notification process for TfNSW and the ER
- Notification process for EES, DPI, Department of Planning, Industry and Environment (DPE) and Department of Agriculture, Water and Environment (DAWE) as appropriate
- A procedure to obtain approvals, licences or permits prior to recommencement of works
- Requirement for impact assessment and calculation of additional off-sets will be calculated to account for the impact.

6.7 Fauna rescue and release procedure

Handling of fauna during the Early Works may be required if fauna is encountered during Early Works and is required to be relocated or transported to a vet or wildlife carer in the case of injury. Should threatened fauna be required to be relocated, a fauna Relocation Plan will also be prepared.

Zinfra and the Early Works Vegetation Clearing Contractor will prepare a work-specific Fauna Handling and Rescue Procedure prior to commencement of Early Works in accordance with the requirements of Guide 9 the *Biodiversity Guidelines* (RTA, 2011) and the Fauna Handling and Rescue Procedure provided in Appendix F of this EWFFMP. The purpose of the Procedure is to detail the actions to be implemented in the event that fauna (including injured, shocked, dependent juvenile or other) is discovered that requires handling during Early Works for the Project.

The Procedure will include, but not be limited to:

- Steps to be followed when rescue or relocation of fauna is required

- A process to ensure that, if native fauna is captured during vegetation clearing or other activities, it is released into a suitable nearby habitat that has been identified as such by an ecologist
- Fauna rescue and release management measures for aquatic fauna and fish
- A procedure for handling of fauna by a licensed fauna handler such as a fauna spotter/catcher, fauna ecologist or wildlife carer with specific animal handling experience
- The responsibilities of the Early Works Ecologist
- A process to keep records of fauna captured and relocated
- A process to report any injury or death of threatened species.

Zinfra's Fauna Handling and Rescue Procedures will be reviewed by TfNSW for consistency with the requirements of this EWFFMP, the CoA and the REMMS.

6.8 Vegetation rehabilitation

Revegetation will not be required for the Early Works. Vegetation rehabilitation is to take place progressively during construction of the Project. Due to the short duration of Early Works and subsequent construction activities being undertaken in the area, temporary stabilisation will be the preferred course of action until construction works have been completed. Permanent landscaping will then be undertaken.

If required, revegetation will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 3: Re-establishment of native vegetation) will be implemented for post-Early Works. Where practicable, local provenance native species from the relevant native vegetation community (or communities) that occur, or once occurred in these locations will be used.

6.9 Biodiversity offsets

Biodiversity offsets are proposed as required by CoA E3-E7, and REMM B4. These are documented separately in the Biodiversity Offset Strategy prepared for the M12 Project and will be secured by TfNSW.

6.10 Reuse Strategy

A Reuse Strategy (Appendix H) will be prepared outlining:

- The identification (in consultation with TfNSW) of where it is practicable to reuse native trees and vegetation on-site and off-site from the Early Works including hollows, tree trunks, root balls, bush rock, and mulch. This will be informed by the tree survey already undertaken by TfNSW.
- An expression of interest process with Western Sydney Parklands Trust, Local Councils, Landcare groups and relevant Government agencies (including but not limited to NSW National Parks & Wildlife Service (Scheyville Office), Greater Sydney Local Land Services and DPI Fisheries) for the supply of hollows, tree trunks, root balls, mulch, bush rock, collected plant material, seeds and/or propagated plants prior to clearing commencement if it is determined not possible for the Early Works to reuse all the material. This process will build on consultation already undertaken by TfNSW with these stakeholders.

6.11 Management Measures

Management actions prescribed by this EWFFMP aim to avoid and minimise impacts on biodiversity and are summarised in Table 6-2.

Table 6-2: Flora and fauna management and mitigation measures

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
Prior to Early Works actions						
FF1	A Clearing and Grubbing Plan will be prepared that meets the requirements of TfNSW publication "Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects". A site-specific Clearing and Grubbing EWMS within the Clearing and Grubbing Plan will be prepared if required.	Hold Point Release	Prior to clearing	Early Works Vegetation Clearing Contractor	Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects	Appendix G
FF2	Prior to commencing clearing and tree removal, a site inspection between TfNSW, and Zinfra will be undertaken to determine and agree the extent of the clearing. Clearing and tree removal will only be undertaken to the minimum extent necessary. Where there is uncertainty regarding the level of impacts to trees from early works, advice will be sought from a suitably qualified arborist. No clearing outside this area will be undertaken without approval from the Principal. Trees to be retained, and trees to be removed will be clearly marked.	Hold Point Release	Prior to clearing	Zinfra Early Works Vegetation Clearing Contractor	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF3	Clearing for trenching will be no greater than the extent required for the trench and working area and extend no greater than 10m beyond the edge of the trench provided.	Hold Point Release	Prior to clearing	Zinfra Early Works Vegetation Clearing Contractor	Best Practice	N/A
FF4	Clearing will be planned and undertaken in accordance with *Guide 4: Clearing Vegetation and Bush Rock of the Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects.*	Clearing and Grubbing Plan	Prior to clearing	Early Works Vegetation Clearing Contractor	Guide 4: Clearing Vegetation and Bush Rock of the Biodiversity Guidelines: Protecting and managing biodiversity on RMS projects	Appendix G
FF5	Pre-clearing surveys to be undertaken by a qualified and experienced ecologist prior removal of any vegetation, or the demolition of structures identified as potential roosting sites for microbats in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process).	Hold Point Release	Prior to clearing	Early Works Ecologist	NSW CoA A24(d)(iii) REMM B05	N/A
FF6	**Cumberland Plain Land Snail** Cumberland Plain Land Snail procedure to be followed in all vegetated areas to be disturbed that are identified as known or potential habitat for	Ecologist Report	Prior to Early Works	Early Works Ecologist	REMM B05	Appendix C

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
	Cumberland Plain Land Snail. Pre-clearance surveys and subsequent translocation to be carried out immediately before clearing works by a qualified ecologist in in accordance with the procedure.					
FF6.1	**Southern Myotis** Southern myotis procedure to be followed prior to clearing of habitat tree. Anabat surveys to be undertaken to determine presence of southern myotis. Should they be present, tree removal will be undertaken at night once bats have left the roost. No clearing of habitat during winter torpor and breeding in October to January. See Appendix C for full methodology.	Ecologist report	Prior to Southern Myotis Habitat tree removal	Early Works Ecologist	A24(d)(ii)	Appendix C
FF6.2	**Grey-headed Flying Fox** If nightworks in foraging habitat is to be undertaken, supervision by an ecologist is required as per standard clearing procedure.	Ecologist report	During night works in Grey-headed Flying-fox foraging habitat	Early Works Ecologist	NSW CoA A24(d)(ii)	Appendix C
FF7	An inventory of hollow bearing trees will be developed as part of the pre-clearing surveys to inform the Habitat Compensation Plan (HCP) (HCP required during construction only).	Ecologist report	Prior to Early Works	Early Works Ecologist	REMM B02	N/A
FF8	The relocation of fauna and associated management/offset measures, must be undertaken under the guidance of a suitably qualified and experienced ecologist in accordance with an approved Relocation Plan.	Ecologist report	During Pre-Clearing Surveys and/or Early Works	Early Works Ecologist	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF9	Prior to the commencement of vegetation clearing, a Reuse Strategy will be prepared detailing practicable options to reuse native trees and vegetation that are to be removed. If it is not possible to reuse all removed native trees and vegetation Including hollows, tree trunks, mulch, bush rock, root balls, coarse woody debris, collected plant material seeds and/or propagated plants, the Early Works Vegetation Clearing Contractor will consult with Council, Western Sydney Parklands, Landcare groups and government agencies to determine whether this material could be used by others in habitat enhancement, beneficial re-use and rehabilitation work before pursuing other disposal options. Burning of timber is not permitted. Where offsite reuse is proposed, an Ecologist is to examine the material prior to clearing, as per the EPA Mulch Order 2016. This would be subject to Section 143 Notice and Biosecurity Assessment, EPA Mulch Order 2016 or any other suitable document to support the Section 143 Notice.	Consultation records Assessment report Section 143 Notice	Prior to Early Works	Early Works Vegetation Clearing Contractor	NSW CoA E8 NSW CoA E15	Appendix H
FF10	A report will be developed which: (a) includes a statement from a suitably qualified Ecologist that identifies the species and location of any weeds growing anywhere in the road reserve over the length to be cleared and grubbed (b) includes a map showing vegetation boundaries, clearing boundaries, retained vegetation and exclusions/no go zones, identifies all locations of	Ecologist report	Prior to Early Works	Early Works Ecologist/ Arborist	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
	threatened flora species and trees which have been marked or otherwise identified for preservation; and (c) lists any trees identified by a suitably qualified arborist outside the limits of clearing which are unsound and likely to fall upon the roadway or onto private property (d) incorporates the management measures identified within the Ecologist pre-clearing survey					
FF11	Pruning to be undertaken in accordance with AS 4373-2007 Pruning of amenity trees in a controlled and sensitive manner that causes minimal impact on surrounding vegetation.	Ecologist report	Prior to Early Works	Arborist	REMM LVIA15	Appendix G
FF12	Areas of weed infestation identified in the ecologist report must be marked in the Clearing and Grubbing Plan.	Ecologist report, Clearing and Grubbing Plan	Prior to Early Works	Early Works Ecologist	Best Practice	Appendix G
FF13	Before commencing clearing and grubbing all soil erosion and sedimentation controls must be installed.	Erosion and Sediment Control Plan	Prior to Early Works	Zinfra	Best Practice	N/A
FF14	Sensitive aerial vegetation maps will be updated based on clearance surveys and previous survey work.	Pre-clearing survey/ Updated SAP	Prior to Early Works	Zinfra /TfNSW	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
Exclusion Zones						
FF15	Exclusion zones will be set up at the limit of clearing in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones) and Flagging Protocol in Section 2.2.6 of the Vegetation Clearing Procedure (Appendix B). The clearing of native vegetation will be minimised with the objective of reducing impacts to TEC and threatened species habitat.	Site inspection	Prior to clearing	Zinfra Early Works Vegetation Clearing Contractor	NSW CoA E2 REMM B24	Appendix B
FF16	Prior to clearing, the limits of clearing will be mapped out by a qualified surveyor and identified by clearly visible markers placed at 25 m intervals on each side of the work. Clearing limits will be flagged at least seven working days prior to the proposed commencement of clearing.	Site inspection	Prior to clearing	Site surveyor	REMM B24	N/A
FF17	Environmental protection area signage to be placed on exclusion zone fencing at regular intervals	Site inspection	Prior to clearing	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
FF18	Clearing limits to be identified on SAPs	Sensitive area plans	Prior to clearing	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF19	Clearing to be undertaken in accordance with the Vegetation Clearing Procedure (Appendix C)	Ecologist report	During Early Works	Early Works Vegetation Clearing Contractor	REMM B01	Appendix C
FF20	Existing trees, grasses and other ground cover must be retained within 15 m of rivers, creeks and watercourses and in all drainage lines until immediately before Early Works commences in the area. An access track may be constructed across these areas on an alignment that will minimise erosion in accordance with Managing Urban Stormwater: Soils and Construction (the Blue Book) (Landcom, 2004). Notwithstanding the retention of the ground cover, soil erosion and sedimentation controls for the area must be installed. All trees in these areas must be felled manually, leaving grasses and small understorey species wherever possible.	Ecologist report	Prior to and During Early Works	Early Works Vegetation Clearing Contractor Zinfra	REMM B10	N/A
FF21	Removal of riparian vegetation at creek crossings will be minimised and vegetation connectivity across the riparian zone will be maintained where possible. Existing trees, grasses and other ground cover must be retained within 15 m of rivers, creeks and watercourses and in all drainage lines until immediately before Early Works commences in the area.	Site inspection	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	REMM B10	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF22	Vegetation and habitat removal will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 4: Clearing of vegetation and removal of bushrock).	Ecologist report	During Early Works	Early Works Vegetation Clearing Contractor	REMM B07	Appendix G
FF23	All activities will be planned and carried out within the Early Works boundary to ensure that there is no damage to any vegetation outside the specified clearing limits.	Site inspection report	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	Appendix C
FF24	Damage or destruction of threatened flora species and trees which have been identified for preservation will be minimised by: 1. Protecting trees in accordance with AS4970-2009 including installing fencing clear of the canopy line for the duration of works. The radius of the protection zone must be determined by multiplying the diameter of the tree at breast height (1.4m) by 12. The minimum radius must be 2m and the maximum 15m 2. Ensuring no materials are stockpiled and no vehicles are parked under the canopy 3. Avoiding excavation or the placing of fill near any tree without advice from an ecologist 4. Routing haul roads and access tracks clear of the canopy.	Site inspection report	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	AS4970-2009	Appendix C

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF25	Damage of any kind, including damage to fencing or trees or other vegetation outside the limits of clearing, which occurs during clearing operations, must be rectified.	Site inspection report	During Early Works	Zinfra	Best Practice	N/A
FF26	Holes left following the removal of trees and stumps must: • be backfilled promptly with sound material to prevent the infiltration and ponding of water • backfilling material will be compacted to at least the relative compaction of material existing in the adjacent ground • the final 50 mm of backfilling will be topsoil and the area must be vegetated within seven (7) days of removal of stump	Site Diary	During Early Works	Zinfra	Best Practice	N/A
FF27	Tree removal will be minimised by clearing only in the area required for Early Works activities	Site diary	During Early Works	Early Works Vegetation Clearing Contractor	Best Practice	Appendix C
Fauna Management						
FF28	Fauna will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 9: Fauna handling) and the Fauna Handling and Rescue Procedure (Appendix F).	Ecologist report	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	REMM B25	Appendix F

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF29	Fencing will be located to reduce roadkill of fauna species and funnel animals to creek crossings where safe passage will be available.	As built drawings	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	REMM B23	N/A
FF30	Report any injury or death of threatened species to the Principal	Monthly Report Incident Report	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
Weeds and Pathogens						
FF31	Weed species will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 6: Weed management) and the Weed and Pathogen Management Plan (Appendix E).	Ecologist report	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	REMM B26	Appendix E
FF32	All staff must be made aware of the Priority Weeds present on-site and requirements	Site induction	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
FF33	Weeds must be removed and disposed of in accordance with the requirements of the local Council.	EWEMP	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Local Environment Plans	N/A
FF34	Pathogens will be managed in accordance with Biodiversity Guidelines: Protecting and managing	Ecologist Report	During Early Works	Early Works Vegetation Clearing Contractor	REMM B27	Appendix E

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
	biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones).			Zinfra		
FF35	Works will be carried out such that no noxious weeds are imported to the site or around the site including the washing of wheels of all plant prior to transportation to site.	Site inspection and daily diary	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
FF36	Weeds and topsoil will be treated and disposed of in accordance with their category under the Biosecurity Act	Waste classification	During Ealy Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
Lighting						
FF37	Where works are undertaken at night, utilise direction lighting and direct lighting away from vegetated areas where practicable.	Site inspection	During Early Works	Zinfra	REMM B28	N/A
Aquatic Habitat						
FF38	If works are to be undertaken within a waterway, a Snag Management Plan must be developed prior to commencement of works	Ecologist report	During Early Works	Zinfra	REMM B2 and B12	N/A
FF39	Large woody debris will be retained for creek crossing works where practicable.	Ecologist report	During Early Works	Early Works Vegetation Clearing Contractor	REMM B16	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF40	Retain stumps in riparian zones and aquatic habitats, where practicable, to reduce the potential for bank erosion.	Ecologist report	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best management practice	N/A
FF41	No works will be undertaken in KFH until payment of habitat offset requirements have been made to the DPI Fish Conservation Trust Fund. Impacts to KFH as defined in Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013 update) must be minimised. Residual impacts to KFH must be offset at a ratio of 2:1 habitat offset requirement in accordance with the Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013 update) and in consultation with DPI Fisheries. TfNSW will be responsible for securing offsets.	Consultation records and site inspections	Prior to commencement of works in KFH	Zinfra TfNSW	NSW CoA E11 NSW CoA E12	N/A
FF42	Refuelling of plant and equipment, chemical storage and decanting will be undertaken at least 50 m away from aquatic habitats unless otherwise approved by the Principal.	Site inspection records	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
Pesticides Use						
FF43	Only pesticides listed in the Transport for NSW Approved Pesticides List (TfNSW, 2021) will be used (https://roads-waterways.transport.nsw.gov.au/about/environment/e	Records sheet	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
	nvironmental-compliance/weed-management-pesticide-use.html). Use of pesticides will be in accordance with the *Pesticides Act 1999* (NSW), other relevant legislation, label directions and any relevant industry codes of practice. Herbicides and pesticides will be currently registered for their intended use by the Australian Pesticides and Veterinary Medicines Authority (APVMA).					
FF44	A Records Sheet must be completed within 24 hours of applying a pesticide; a copy must be submitted to the Principal. A Records Sheet is not required when all of the following are satisfied: (a) The pesticide is, or is part of a product that is widely available to the general public at retail outlets. (b) The pesticide is only applied by hand or by using hand-held equipment. (c) If applied outdoors on any single occasion, in quantities of no more than 5 litres/5 kilograms of concentrated product or 20 litres/20 kilograms of the ready-to-use product; or if applied indoors, in quantities of no more than 1 litre/1 kilogram of concentrated product or 5 litres/5 kilograms of the ready-to-use product.	Records sheet	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF45	All personnel managing and using pesticides must receive appropriate training and hold appropriate licence prior to commencing work. Only pesticides registered for use near water may be used near water.	Records sheet	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
FF46	Public notification of pesticide use must be in accordance with best practice. Implement the following measures whenever pesticides are to be used adjacent to, or across the road from, a "sensitive place". • Use of mechanical means of pest control (such as mowing or slashing) where feasible; or • Use of hand-held application of pesticides where mechanical means of pest control are not feasible.	Records sheet	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
FF47	Avoid applying pesticide: (i) on hot days when plants are stressed; (ii) after the seed has set; (iii) within 24 hours of rain or when rain is imminent; (iv) when winds will cause drift of pesticides into non-target areas.	Records sheet	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A
FF48	Monitor the effectiveness of weed treatments and reapply if previous treatment not fully effective	Records Sheet	During Early Works	Early Works Vegetation Clearing Contractor Zinfra	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
Stockpile management						
FF49	A stockpile management procedure to be developed and included in the ESCP (refer to EWEMP Section 3.5).	ESCP	Prior to Early Works	Zinfra	Best Practice	N/A
FF50	Stockpiles to be established and managed in accordance with the stockpile management procedure, to be informed by the *RMS Stockpile Site Management Guideline* (2011)	Site inspection report	During Early Works	Zinfra	*RMS Stockpile Site Management Guideline* (2011)	N/A
FF51	Locate stockpiles outside of the tree protection zone of trees or native vegetation identified for retention. Delineate the tree protection zone in accordance with AS 4970 – Protection of Trees on Development Sites.	Site inspection report	During Early Works	Zinfra	AS 4970 – Protection of Trees on Development Sites	N/A
FF52	Locate stockpiles at least 5 m from likely areas of concentrated water flows and at least 10 m from waterways that are classified as Class 1 and Class 2 from the DPI Fisheries guideline "Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings".	Site inspection report	During Early Works	Zinfra	DPI Fisheries guideline: Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings	N/A
FF53	Keep topsoil that is not contaminated by weeds in stockpiles for later spreading on fill batters and other areas. Other material may also be stockpiled but kept separated from the topsoil stockpiles.	Site inspection report	During Early Works	Zinfra	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF54	Stockpiles are to be seeded with a sterile cover crop to encourage vegetation cover and minimise potential for weed growth. Seeding must be carried out progressively within seven days of completion of each 500 m^2 of exposed batter face.	Site inspection report	During Early Works	Zinfra	NSW Blue Book	N/A
FF55	Set up the stockpiles in a manner that minimises any damage to natural vegetation and trees such that the stockpiled material is accessible for carting away at any time.	Site inspection report	During Early Works	Zinfra	Best Practice	N/A
FF56	Following completion of the Works, carry out restoration of the stockpile areas	Site inspection report	Post Early Works	Zinfra	NSW Blue Book	N/A
FF57	Where the native vegetation is insufficient to provide the quantities of mulch needed during landscape planting, native trees removed during clearing and grubbing must be mulched and stockpiled with the exception of logs and rootballs. Under no circumstances must the extent of clearing and grubbing be extended or weeds or exotic species used to make up any shortfall of mulch. Where possible, woody debris (defined as consisting of trees and wood, whether living or dead, but at least 100mm in diameter) will be retained to be distributed in suitable nearby vegetation to enhance habitat.	Site inspection report	During Early Works	Zinfra	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF58	Stockpiles must be monitored and turned over as required to avoid spontaneous combustion.	Site inspection report	During Early Works	Zinfra	Best Practice	N/A
FF59	The temporary stockpiling and/or application of mulch during Early Works will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application and/or stockpiling of mulch near waterways where practicable. This will be detailed in the Erosion and Sediment Control Plan.	Erosion and Sediment Control Plan	During Early Works	Zinfra	REMM B18	N/A
FF60	Do not stockpile weed infested or contaminated topsoil adjacent to areas of native vegetation. Weed infested topsoil must be disposed off site	Site inspection report	During Early Works	Zinfra	Best Practice	N/A
Bushfire						
FF61	Zinfra will prepare pre-planned fire response actions plans. The action plans will be issued as part of the site induction for all site personnel.	Fire response actions plans	During Early Works	Zinfra	Best Practice	N/A
FF62	No smoking (including e-cigarettes) will be allowed on site except at designated areas. Dedicated butt disposals will be located in all designated smoking areas.	Induction and Toolbox talks	During Early Works	Zinfra	Best Practice	N/A
FF63	All works involving a fire source will have a hot works permit in place with specific controls to prevent fire risk.	Safe Work Method Statement	During Early Works	Zinfra	Best Practice	N/A

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF64	Zinfra will not undertake cutting, welding or grinding on total fire ban days, unless the works takes place in an area at least 50 metres away from an ignition source and appropriate fire controls are in place.	Safe Work Method Statement	During Early Works	Zinfra	Best Practice	N/A
FF65	Vehicles will not be driven or idled in areas of long grass on fire ban days or after prolonged periods of dry weather.	Induction and Toolbox Talks	During Early Works	Zinfra	Best Practice	N/A
FF66	All entry points into the site are to be kept shut to prevent unauthorised vehicle access and torching.	Induction and Toolbox Talks	During Early Works	Zinfra	Best Practice	N/A
FF67	A supply of water will be available at all times for firefighting purposes and supply point will be communicated with local firefighting authorities.	Safe Work Method Statement	During Early Works	Zinfra	Best Practice	N/A
FF66	Fire extinguishers will be available on all plant and equipment.	Safe Work Method Statement	During Early Works	Zinfra	Best Practice	N/A
Rehabilitation						
FF67	Revegetation will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 3: Re-establishment of native vegetation) for the purposes of site stabilisation after Early Works and prior to the commencement of Construction.	Site inspection report	During Early Works	Zinfra	REMM B08	Section 6.8

ID	Measure/Requirement	Evidence	When to Implement	Responsibility for Implementation	Reference or source	Additional Information
FF68	Habitat will be replaced or re-instated in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes).	Site inspection report	During Early Works	Zinfra	REMM B02 and B09	Section 6.8

7 Compliance management

7.1 Roles and responsibilities

The Early Works organisational structure and overall roles and environmental responsibilities are outlined in Section 5.1 of the EWEMP. Specific responsibilities for the implementation of flora and fauna management are detailed in Section 6 of this EWFFMP.

TfNSW will engage a suitably qualified and experienced Early Works Ecologist to provide advice throughout Early Works and to supervise and lead the implementation of processes and management measures for ecologically sensitive activities. These activities will include, but not be limited to, pre-clearing processes, weed and pathogen management, fauna relocation and handling, and work in riparian zones, as outlined in Section 6. The Early Works Ecologist will demonstrate that they hold appropriate qualifications and all licenses relevant to the work being undertaken, in addition to specific experience in working in environmentally sensitive areas of a similar nature to the Early Works.

7.2 Training

All site personnel (including sub-contractors) will undergo site induction training relating to flora and fauna management issues prior to Early Works commencing. The induction training will address elements related to flora and fauna management, including:

- Existence and requirements of this EWFFMP and all plans and procedures prepared under the EWFFMP
- Relevant legislation and regulations
- Incident response, management and reporting
- Environmentally sensitive locations and exclusion zones
- Specific species likely to be affected by the works and how these species can be recognised
- Mulch stockpile location and management measures
- Site flagging protocol
- Fauna rescue requirements
- Boundaries for vegetation clearing
- Fauna and fauna habitat management
- Weed control measures
- General flora and fauna management measures
- Specific responsibilities for the protection of flora and fauna
- All requirements of Appendices contained within this EWFFMP.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in flora and fauna management or those undertaking an activity with a high risk of environmental impact. Site personnel will undergo refresher training at not less than six monthly intervals.

The ER will review and endorse the induction training program prior to the commencement of Early Works and monitor implementation.

Daily pre-start meetings conducted by the Zinfra's Foreman/ Site Supervisor and/or the Early Works Vegetation Clearing Contractor will inform the site workforce of any environmental issues relevant to flora and fauna that could potentially be impacted by, or impact on, the day's activities.

Further details regarding staff induction and training are provided in Section 5.3 of the EWEMP.

7.3 Hold Points

Table 7-1: Flora and Fauna Hold Points

Hold Point ID	Description	Document Reference
HP1	Following approval of amendments to the EWEMP and At least 10 working days prior to the proposed commencement of the stage of Work Under the Contract nominated in the submission by you, submit the approved EWEMP and associated Plans & Sub-Plans and/or EWMS, as well as the CEMS documents.	Section 6.10
HP2	At least 20 working days prior to the proposed commencement of each applicable work activity submit the EWMS documents addressing the issues listed in Section 3.2.2 of the EWEMP for the nominated work activity.	Table 6-2
HP3	Ten days prior to clearing, a Clearing and Grubbing Plan and report on the presence of weeds and unsound trees with written notice that limits of clearing and areas of weed infestation identified in the ecologist report are marked, must be submitted to TfNSW.	Table 6-1 Appendix G
HP4	Relocation of any threatened fauna species in accordance with an approved Relocation Plan and any associated permits/approvals should these be identified in pre-clearing surveys	Table 6-1 Section 6.1

7.4 Monitoring and inspections

Inspections of sensitive areas and activities with the potential to impact flora and fauna will occur for the duration of the Early Works.

Requirements and responsibilities in relation to monitoring and inspections are documented in Section 6 of the EWEMP.

7.5 Auditing

Audits will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 7.4 of the EWEMP.

7.6 Reporting and identified records

Reporting requirements and responsibilities are documented in Section 7.6.2 of the EWEMP.

Specific reporting requirements associated with additional survey work and control of clearing activities are outlined in Table 7-2.

Table 7-2: Reporting requirements relevant to flora and fauna management

Report	Frequency	Responsibility
Report on the presence of weeds and unsound trees together with written notice that limits of clearing and areas of weed infestation identified in the Ecologist report have been marked	At least seven working days prior to commencement of clearing	Early Works Ecologist
Pre-clearing Survey Report Survey methodology, targeted species, habitat trees to be removed, fauna rescue events and relocations	Prior to undertaking clearing	Early Works Ecologist
Post Clearing Report Summary of the results of surveys, vegetation cleared, fauna rescues, fauna injury and mortality during clearing activities Summary of areas of vegetation cleared and areas approved for clearing for the Early Works to be included in Monthly Reports	Weekly, and a final report within 21 days from the completion of substantial clearing Monthly	Early Works Ecologist

Zinfra and the Early Works Vegetation Clearing Contractor will be required to maintain accurate records substantiating all activities associated with Early Works or relevant to the conditions of approval, including measures taken to implement this EWFFMP. Records will be made available to the DPE and DAWE, within the timeframe nominated in the request.

In addition, key identified records relevant to this EWFFMP are identified in Table 7-3.

Table 7-3: Identified Records

Description	Document Reference
Early Works Environmental Management Plan (EWEMP), Plans & Sub-Plans, procedures and EWMS	This EWFFMP
Report any injury or death of threatened species to the Principal	Section 5.2.4
A Pesticides Records Sheet must be submitted to TfNSW within 24 hours of applying a pesticide	Section 5.2.6
A report must be submitted to TfNSW on the presence of weeds and unsound trees.	Section 5.2.5

Description	Document Reference
A Clearing and Grubbing Plan must be submitted with EWEMP.	Appendix G

8 Review and improvement

8.1 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
- Zinfra and the Early Works Vegetation Clearing Contractor will be responsible for ensuring Early Works environmental risks are identified and included in the risk register and appropriate mitigation measures implemented throughout the work for the Early Works as part of the continuous improvement process. The process for ongoing risk identification and management during Early Works is outlined in Section 7 of the EWEMP.

8.2 Update and amendment

Any revisions to the EWFFMP will be in accordance with the process outlined in Section 1.10 of the EWEMP.

A copy of the updated plan and changes will be distributed to DPE, DAWE and relevant stakeholders in accordance with the approved document control procedure – refer to Section 7.6.2 of the EWEMP.

Appendix A – Consultation correspondence

Appendix A

Consultation Correspondence

M12 Motorway Early Works: Protection of High Pressure Gas Mains – Early Works Flora and Fauna Management Sub-plan

May 2022

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1 Introduction

As detailed in Section 1.5 of the EWFFMP, in accordance with NSW CoA A24(d), consultation has been undertaken with NSW Environment, Energy and Science (EES) during the preparation of the EWFFMP.

A log of the dates of engagement or attempted engagement with EES has been included in Section 1.5.1 of the EWFFMP in accordance with NSW CoA A5(b). Section 2 details the evidence of engagement with each party and responses.

2 Consultation documentation

This section provides consultation documentation undertaken during the consultation period with parties including:

- Engagement with EES that occurred prior to the submission of the FFMP for approval by the Planning Secretary as required by NSW CoA A5(a)
- A copy of the responses provided during consultation with the required parties
- A summary of the issues raised during consultation and how they have been addressed as required by NSW CoA A5(d). A description of the outstanding issues raised during consultation and why they have not been addressed has also been included where required as per NSW CoA A5(e).

2.1 Evidence of correspondence

Evidence of correspondence between EES and TfNSW is provided below.

From: Shaun Hunt [mailto:shaun.hunt@environment.nsw.gov.au]
Sent: Friday, 29 October 2021 3:03 PM
To: Suzette Graham <Suzette.GRAHAM@transport.nsw.gov.au>
Subject: EES Response: M12 Motorway (Early Works - Gas Protection) Flora and Fauna Management Plan - For Review

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Suzette,

Please see attached comments from EES in relation to the Early Works – Gas Protection Flora and Fauna Management Plan.

If you have any questions please don't hesitate to get in touch

Have a great weekend.

Kind Regards
Shaun Hunt
Senior Conservation Plannning Officer

Biodiversity and Conservation | Department of Planning, Industry and Environment
T 02 8275 1617 | E shaun.hunt@environment.nsw.gov.au
Level 6, 12 Darcy St, 4 Parramatta Square, Parramatta NSW 2150 | Locked Bag 5022
www.dpie.nsw.gov.au

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Our Vision: Together, we create thriving environments, communities and economies.

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

From: Suzette Graham via InEight Document <system@teambinder.com>
Sent: Thursday, 14 October 2021 1:50 PM
To: Shaun Hunt <shaun.hunt@environment.nsw.gov.au>
Subject: HPE CM: M12 Motorway (Early Works - Gas Protection) Flora and Fauna Management Plan - For Review

Document Transmittal

Transmittal No: M12PPW-TFNSW-TX-000485

Date: 14 October 2021 01:50 PM

Reason for Issue:

Subject: M12 Motorway (Early Works - Gas Protection) Flora and Fauna Management Plan - For Review

Contract No: M12PPW - M12 - Project Wide

Message:

Hi Shaun,

As discussed, please find attached the Flora and Fauna Management Plan for the M12 gas protection works.
If you could please provide comments by 28/10/2021 that would be great.

Thanks,

Kind regards,

Suzette Graham
Environment and Sustainability Manager

Sydney Infrastructure Development | Safety, Environment and Regulation

M 0476 828 524 E suzette.graham@transport.nsw.gov.au
Transport for NSW
27 Argyle Street, Parramatta NSW 2150

I work flexibly. Unless it suits you, I don't expect you to read or respond to my emails outside of your normal work hours.

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Transmitted to:

Company	Name
NSW Office of Environment & Heritage	Shaun Hunt

Environment Energy and Science Group	Group mailbox

Transmitted cc:

Company	Name
Transport for NSW	Suzette Graham
Transport for NSW	Foster Walker

Click here to download all Transmittal files.

Click on Document Nos to download them individually.

Item	Document No	Rev	Sts	Title	Contract No	Design Package No
1	M12PPW-TFNSW-ALL-EN-PLN-000020	D.01	S2	M12 Motorway Early Works Gas Protection FFMP Rev D - For Consultation	M12PPW	

Transmitted by: Suzette Graham, Transport for NSW

TeamBinder Transmittal Reference: {06994AA4-6484-4FF7-A164-44B0E1EE8C03}

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2.2 EES Response

EES' response to the EWFFMP is provided below.

Planning, Industry & Environment

Our ref: DOC21/915998

Suzette Graham
Environment and Sustainability Manager
Sydney Infrastructure Development
Transport for NSW
27 Argyle Street
Parramatta NSW 2150

Subject: M12 Motorway - Early Works - Gas Protection Flora and Fauna Management Plan

Thank you for your email received 14 October 2021 requesting comment from Environment Energy and Science (EES) on the M12 Motorway - Early Works Gas Protection Flora and Fauna Management Plan prepared in accordance with Conditions of Approval for the M12 Motorway (SSI 9364).

EES has reviewed the plan and provides comments at Attachment A.

Should you have any queries regarding this matter, please contact Shaun Hunt, Senior Conservation Planning Officer via shaun.hunt@environment.nsw.gov.au or 02 8275 1617.

Yours sincerely

S. Harrison

27/09/21

Susan Harrison

Senior Team Leader Planning
Greater Sydney Branch
Biodiversity and Conservation

4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150 | Locked Bag 5022, Parramatta NSW 2124 | dpie.nsw.gov.au |

Attachment A – EES comments on Early Works Flora Fauna Management Plan - Protection of High Pressure Gas Mains

Section of Plan	EES Comment
Section 5.2.5	The last sentence in this section states *'However, impacts are likely to be insignificant when compared to the broad-scale clearing that has occurred in the past as a result of agriculture and urban development.'* This comparison does not provide any guidance on mitigation or avoidance of impacts and serves no purpose in this plan.
Table 6-1 Management Measure FF2	This measure should include an additional sentence stating clearing and tree removal will only be undertaken to the minimum extent necessary. Where there is uncertainty regarding the level of impacts to trees from early works, advice should be sought from the project arborist.
Table 6-1 Management Measure FF11	Include additional requirements that tree pruning is to be undertaken in a controlled and sensitive manner that causes minimal impact on surrounding vegetation.
Table 6-1 Management Measure FF24	Australian Standard 4970:2009 Protection of Trees on Development Sites stipulates a maximum Tree Protection Zone of 15m, not 12m.
Appendix E Section 4.1	This section notes that '*Testing from a National Association of Testing Authorities (NATA) approved laboratory may be required to confirm the presence of pathogens in the soil and/or water.*' It should be further noted that works will not proceed until the results of any such tests are confirmed and suitable prevention and control measures have been implemented if necessary.
Appendix F, G and H	EES notes these documents were not included in the draft document.

End of Submission

4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150 | Locked Bag 5022,Parramatta NSW 2124 | dpie.nsw.gov.au | 2

2.3 How issues have been addressed

Issues raised by EES and how they have been addressed by TfNSW is outlined below in Table 2-1.

Table 2-1: Response to issues raised

Section of plan	EES comment	TfNSW Response	Section amended
Section 5.2.5	The last sentence in this section states . '*However, impacts are likely to be insignificant when compared to the broad-scale clearing that has occurred in the past as a result of agriculture and urban development.'* This comparison does not provide any guidance on mitigation or avoidance of impacts and serves no real purpose in this plan.	Section 5 of the EWFFMP identifies the impacts of the Early Works. This assessment is consistent with what has been included with the Environmental Assessment Documentation and was included to maintain consistency. Nonetheless, the sentence has been removed.	Section 5.2.5
Table 6-2 (FF2)	This measure should include an additional sentence stating clearing and tree removal will only be undertaken to the minimum extent necessary. Where there is uncertainty regarding the level of impacts to trees from early works, advice should be sought from the project arborist.	Management measure FF2 has been updated to state: "*Prior to commencing clearing and tree removal, a site inspection between TfNSW, and Zinfra will be undertaken to determine and agree the extent of the clearing. Clearing and tree removal will only be undertaken to the minimum extent necessary. Where there is uncertainty regarding the level of impacts to trees from early works, advice will be sought from a suitably qualified arborist.* *No clearing outside this area will be undertaken without approval from the Principal. Trees to be retained, and trees to be removed will be clearly marked*."	Table 6-2 (FF2)
Table 6-2 (FF11)	Include additional requirements that tree pruning is to be undertaken in a controlled and sensitive manner that causes minimal impact on surrounding vegetation.	Management measure FF11 has been updated to state: *"Pruning to be undertaken in accordance with AS 4373-2007 Pruning of amenity trees in a controlled and sensitive manner that causes minimal impact on surrounding vegetation."*	Table 6-2 (FF11)
Table 6-2 (FF24)	Australian Standard 4970:2009 Protection of Trees on Development Sites stipulates a maximum Tree Protection Zone of 15m, not 12m.	Management measure FF24 has been updated to be consistent with Australian Standard 4970:2009 and now includes a maximum Tree Protection Zone of 15m.	Table 6-2 (FF24)

Section of plan	EES comment	TfNSW Response	Section amended
Appendix E (Section 4.1)	This section notes that '*Testing from a National Association of Testing Authorities (NATA) approved laboratory may be required to confirm the presence of pathogens in the soil and/or water*.' It should be further noted that works will not proceed until the results of any such tests are confirmed and suitable prevention and control measures have been implemented if necessary.	Text within Appendix E has been updated to read as follows: *"Testing from a National Association of Testing Authorities (NATA) approved laboratory may be required to confirm the presence of pathogens in the soil and/or water as determined by the Early Works Ecologist during Pre-clearing surveys. in the areas where such testing is required, clearing activities will not proceed until the results of any such tests are confirmed and suitable prevention and control measures have been implemented if necessary."*	Appendix E (Section 4.1)
Appendix F, G, H	EES notes these documents were not included in the draft document.	Appendix F, G and H include the Fauna Handling and Rescue Procedure, the Clearing and Grubbing Plan and the Reuse Strategy. These plans are not required to receive the Planning Secretary's approval for the EWFFMP therefore they have yet to be prepared. These plans will be prepared by Zinfra and/or the Early Works Vegetation Clearing Contractor prior to work commencing on site.	N/A

2.4 Consultation Dated 24 May 2022

From:	Shaun Hunt
To:	Foster Walker
Subject:	FW: HPE CM: RE: M12 Motorway Project (Early Works - Jemena Gas Protection): Amendment to Flora and Fauna Management Plan
Date:	Thursday, 2 June 2022 9:27:19 AM
Attachments:	image001.png image002.png image003.png image004.png image005.png image006.png image007.png

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Hi Foster, Apologies please see below.

From: Shaun Hunt
Sent: Wednesday, 1 June 2022 4:13 PM
To: Foster Walker <m12.teambinder@transport.nsw.gov.au>
Cc: Thomas Tu <thomas.tu@transport.nsw.gov.au>
Subject: HPE CM: RE: M12 Motorway Project (Early Works - Jemena Gas Protection): Amendment to Flora and Fauna Management Plan

Hi Foster,

Thanks for your email below.

I have reviewed the amendment to the proposed early works construction footprint. As EHG have already provided comment on the Early Works FFMP and the proposed amendment of the construction footprint will not impact on that previous advice, there is no need to refer the amended plan for our review.

Happy to discuss further if required.

Kind Regards,

Shaun Hunt
Senior Conservation Planning Officer
Biodiversity & Conservation
Environment and Heritage Group
Department of Planning and Environment

T (02) 8275 1617 E shaun.hunt@environment.nsw.gov.au

environment.nsw.gov.au

Locked Bag 5022
Parramatta NSW 2150

I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

Please consider the environment before printing this email.

From: Foster Walker via InEight Document <system@teambinder.com>
Sent: Tuesday, 24 May 2022 12:31 PM
To: Shaun Hunt <shaun.hunt@environment.nsw.gov.au>
Cc: OEH ROG Greater Sydney Region Planning Unit Mailbox <rog.gsrplanning@environment.nsw.gov.au>; Thomas Tu <thomas.tu@transport.nsw.gov.au>
Subject: M12 Motorway Project (Early Works - Jemena Gas Protection): Amendment to Flora and Fauna Management Plan
Importance: High

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General Correspondence

Reference No.:	**M12PPW-TFNSW-OEH-CORR-000007**
Contract No:	M12PPW - M12 - Project Wide

Date:	24 May 2022, 12:31
To:	Shaun Hunt, NSW Office of Environment & Heritage
Cc:	Group mailbox, Environment Energy and Science Group Ibrahim El-Jamal, Transport for NSW Thomas Tu, Transport for NSW
From:	Foster Walker, Transport for NSW
Subject:	**M12 Motorway Project (Early Works - Jemena Gas Protection): Amendment to Flora and Fauna Management Plan**

Hi Shaun,

As previously discussed, Zinfra our Contractor who is undertaking the Jemena Gas protection works as Early Works under the planning approval on the M12 Motorway Project. Zinfra has identified that they need additional area to undertake the works. Therefore approx. 600m2 of additional Cumberland Plain Woodland in the Sydney Basin Bioregion needs to be trimmed/ removed. I note that the vegetation is located within the approved construction boundary, which has been assessed to be removed.

I have attached two figures, a mark-up illustrating the proposed change and the second figure is the amended one to be inserted into the Flora and Fauna Management Plan.

I note as per the M12 Infrastructure Approval, Condition A124 (d) requires a Flora and Fauna Management Plan for early works to be prepared in consultation with EHG, therefore DPE have requested that EHG is consulted when the M12 Motorway Project propose to amend the Flora and Fauna Management Plan to clear additional vegetation for the Early Works.

Can you please advise (via email is fine) if you wish to review the amended Flora and Fauna Management Plan or not, noting that the vegetation is to be removed within the approved construction boundary.

Regards

Foster

Discipline: Environmental

Location: Elizabeth Drive

Attachments: 20220524_M12 Early Works - Amendment to Footprint for Zinfra Works.docx, G30058484_EWFFMP_005_WesternSydneyParklandsConst_A4L_v12.pdf

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Attachments:

Click here to download files (Total 3 MB)

20220524_M12 Early Works - Amendment to Footprint for Zinfra Works.docx (1016 KB)
G30058484_EWFFMP_005_WesternSydneyParklandsConst_A4L_v12.pdf (2 MB)

TeamBinder mail reference: {79744B83-8228-47AC-8B63-FF21AF36428D}

Appendix B – Secondary CoAs, and REMMS

Secondary NSW CoAs Relevant to Early Works

CoA No.	Condition Requirements	Document Reference
E2	The clearing of native vegetation must be minimised with the objective of reducing impacts to threatened ecological communities and threatened species habitat.	Section 6
E8	The Proponent must undertake additional surveys of *Pimelea spicata* (Spiked Rice-flower) in potential habitat for this species within the refined construction footprint to the north of Elizabeth Drive and west of the existing Wallgrove Road as identified in Figure 6-5 of the M12 Motorway Amendment Report – Submissions Report (December, 2020). The surveys must be undertaken during optimal conditions as defined by the NSW Bionet Threatened Biodiversity Profile Data Collection (DPE) or as agreed by the Planning Secretary. The surveys must be undertaken in consultation with EES and DAWE and the results of the surveys provided to the Planning Secretary, EES and DAWE for information within one (1) month of completion of the surveys.	Section 4.1.2
E9	If *Pimelea spicata* is recorded in the surveys carried out under Condition E8, any impacts to the species must be offset in accordance with the options available under Condition E3 and in consultation with EES. The Proponent must provide details of the required biodiversity credits to the Planning Secretary, EES and DAWE for information prior to works that impact the threatened species.	Section 4.1.2
E11	The Proponent must minimise impacts to Key Fish Habitat (KFH) as defined in Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013 update). Residual impacts to KFH must be offset at a ratio of 2:1 habitat offset requirement in accordance with the Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013 update) and in consultation with DPI Fisheries.	Section 6.4
E12	Payment of the habitat offset requirement must be made to the DPI Fish Conservation Trust Fund prior to the commencement of Work that impacts KFH in Badgerys Creek, Cosgroves Creek, Kemps Creek and South Creek.	Section 6.4
E15	Prior to vegetation clearing, the Proponent must identify where it is practicable for the CSSI to reuse native trees and vegetation that are to be removed. If it is not possible for the CSSI to reuse all removed native trees and vegetation, the Proponent must consult with the relevant council(s), Western Sydney Parklands Trust and Landcare groups and relevant government agencies to determine if:	Section 6.10 Appendix H

CoA No.	Condition Requirements	Document Reference
	(a) hollows, tree trunks, mulch, bush rock and root balls salvaged from native vegetation impacted by the CSSI; and	Table 6-2
	(b) collected plant material, seeds and/or propagated plants from native vegetation impacted by the CSSI,	
	could be used by others in habitat enhancement, beneficial re-use and rehabilitation work, before pursuing other disposal options.	

Secondary REMMs relevant to Early Works

ID	Measure/requirement	Timing	Reference
B01	A CFFMP will be prepared. The measures in the CFFMP will include: • A site specific induction • Identification of clearing limits and exclusion fencing • Pre-clearance surveys • Vegetation clearing procedures • An unexpected finds procedure • Procedures for weed management and monitoring • A process for de-watering farm dams and the relocation of aquatic fauna Provision of supplementary fauna habitat (eg nest boxes).	Prior to Early Works	This Plan where relevant for Early Works activities.
B02	A Habitat Compensation Plan (HCP) will be prepared and implemented as part of the CFFMP for the project. The HCP will target those species that will be impacted by the loss of hollows. Measures will include: nest boxes, reuse of salvaged hollows and/or new technologies eg chainsaw hollows), as well as replacement of woody debris and bushrock with consideration to Guide 5 and Guide 8 of Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011).	Prior to Early Works	Section 6.1
B05	Pre-clearing surveys will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process). The following species identified on or near the study area will require particular attention:	Prior to Early Works	Section 6.1 Table 6-2
	• Cumberland Plain Land Snail Pre-clearance surveys will be carried out immediately before clearing works by a qualified ecologist in all vegetated areas to be disturbed that were identified as known or potential habitat for Cumberland Plain Land Snail (see Figure 6-6). As identified in the CFFMP, all individual Cumberland Plain Land Snails found during pre-clearance surveys will be translocated to adjacent areas of suitable habitat.		Section 6.1 Table 6-2

ID	Measure/requirement	Timing	Reference
B06	An unexpected threatened species finds procedure will be developed as part of the EWFFMP and based on Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 1: Pre-clearing process).	During Early Works	Appendix D
	The procedure will include requirements for workers to be made aware of the potential flora and fauna species that may be encountered during construction (including training staff on species identification) and outline the process for the identification and management of unexpected flora and fauna.		Appendix D
	In the event that any threatened species are identified during construction, the following steps would be carried out: 1. Stop work immediately in the location of the unexpected find to avoid any potential impacts. 2. Notify the Senior Environment Officer. 3. Senior Environment Officer will arrange for an ecologist to conduct an assessment of significance of the likely impact, develop management options, and notify DPE, EESG, and DAWE as appropriate. 4. If a significant impact is unlikely to occur, re-start work and maintain regular site inspections. 5. If a significant impact is likely to occur: a. Consult with DPE, EES and DAWE as appropriate. b. Obtain approvals, licenses or permits as required. c. Re-begin work once advice is sought and necessary approvals, licenses and permits are obtained. 6. Include species in subsequent inductions, toolbox talks and update the EWEMP.		Appendix D
B07	Vegetation and habitat removal will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 4: Clearing of vegetation and removal of bushrock).	During Early Works	Section 6.1 Appendix G
B08	Revegetation will be carried out in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 3: Re-establishment of native vegetation) and the Landscape Plan prepared for the project.	During Early Works	Section 6.7

ID	Measure/requirement	Timing	Reference
B09	Habitat will be replaced or re-instated in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes).	During Early Works	Section 6.3
B16	Large woody debris will be retained for creek crossing works where practicable. Any large woody debris placed in the realigned waterways will be relocated in consultation with an ecologist.	During Early Works	Section 6.3 Table 6-1
B18	The temporary application of mulch during construction will be managed to avoid the potential for material and tannin run-off into waterways. This will include limiting the application of mulch near waterways where practicable. The application of mulch for permanent landscaping must be designed and planned to avoid material and tannin runoff.	During Early Works	Section 6.4 Table 6-2
B19	Emergency response protocols and procedures will be included in the Project CEMP and implemented in the event of a contaminant spill or leak.	During Early Works	EWEMP
B20	Spill kits will be located to allow for timely response to uncontained spills. Site inductions will include a briefing on the use of spill kits.	During Early Works	EWEMP
B24	Exclusion zones will be set up at the limit of clearing in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones). Exclusion zones will be set up to protect potential indirect impacts to threatened flora in accordance with the areas identified in the EIS and this amendment report (including Figure 1-2 of Appendix A of the amendment report).	During Early Works	Section 6.2 Table 6-2

ID	Measure/requirement	Timing	Reference
B25	Fauna will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 9: Fauna handling).	During Early Works	Section 6.6 Section 6.1 Table 6-2 Table 7-3 Appendix D
B26	Weed species will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 6: Weed management).	During Early Works	Section 6.5 Appendix E
B27	Pathogens will be managed in accordance with Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA, 2011) (Guide 2: Exclusion zones).	During Early Works	Section 6.5 Appendix E
LVIA03	Existing vegetation within the construction footprint will be retained and protected where possible. This includes densely vegetated areas such as remnant riparian forests and Cumberland Woodlands in Western Sydney Parkland.	Detailed design and during Early Works	Section 6.1 Section 6.2 Section 6.7 Table 6-2
LVIA15	A tree management strategy will be prepared for the project, outlining:	Detailed design and prior to Early Works	Section 6.1 Section 6.2
	• Measures to minimise tree removal to retain and protect as many trees within the construction footprint as reasonable and feasible		Section 6.1 Section 6.2

ID	Measure/requirement	Timing	Reference
	• Measures to avoid damage to trees that are to be retained within the construction footprint to ensure the maintenance of health and stability of the trees in accordance with AS4970-2009 Protection of trees on development sites		Section 6.2
	• Requirements for the pruning of trees to be carried out by a suitably qualified person in accordance with AS 4373-2007 Pruning of amenity trees.		Table 6-2
GG03	Vegetation removal will be minimised where practicable.	Detailed design and Early Works	Section 6.1

Appendix C - Procedure for Vegetation Clearing

Appendix C

Early Works Flora and Fauna Management Sub-plan

Vegetation Clearing Procedure

Early Works for M12 Motorway – Protection of High Pressure Gas Mains

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Plan reviewed by:	Plan reviewed by:	Plan reviewed by
Sheila Anderson	Thomas Tu	Kimberley Nguyen
TfNSW Senior Environment and Sustainability Manager	TfNSW Utilities Manager	Zinfra Project Manager
Date 02/06/2022	Date 02/06/2022	Date 03/06/2022
Signed Sheila Anderson	Signed	Signed

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Revision	Date	Description
A	30/04/2021	First Draft for TfNSW Review
B	13/05/2021	Second Draft for TfNSW and Jemena Review
C	13/08/2021	Third draft for TfNSW review
D	17/09/2021	Fourth draft for TfNSW review
E	03/11/2021	Fifth Draft for TfNSW Review
F	11/05/2022	Update to increase AF18 footprint and minor administrative amendments
G	26/05/2022	Update to increase Early Works footprint

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Glossary/ Abbreviations

Abbreviations	Expanded text
AR	Amendment Report
ARSR	Amendment Report Submissions Report
BC Act	*Biodiversity Conservation Act 2016*
CEEC	Critically Endangered Ecological Community
CoA	Conditions of Approval
DAWE	Commonwealth Department of Agriculture, Water and Environment
DBH	Diameter at Breast Height
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
EHG	NSW Environment and Heritage Group(a part of DPIE)
EIS	Environmental Impact Statement
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
EWFFMP	Early Works Flora and Fauna Management Plan
EWEMP	Early Works Environmental Management Plan
EWMS	Environmental Work Method Statements
Project, the	M12 Motorway Project
PCT	Plant Community Type
RTA	Former Roads & Traffic Authority
RtS	Response to Submission
TfNSW	Transport for New South Wales
Tree	Long-lived woody perennial plant with one or relatively few main stems, with a trunk size of 300 mm or more at 1.5 metres from ground AND/OR a height of 3 metres or more
WIRES	NSW Wildlife Information Rescue and Education Service

1 Introduction

1.1 Purpose

Clearing associated with Early Works of the M12 Motorway Project (the Project) will result in the loss of vegetation and fauna habitat, with impacts on native flora and fauna, including threatened species and Endangered Ecological Communities (EEC). This Vegetation Clearing Procedure has been prepared in accordance with *Guide 1: Pre-clearing process, Guide 2: Exclusion zones* and *Guide 4: Clearing of vegetation and removal of bushrock*, *Biodiversity Guidelines* (RTA, 2011) and Transport for NSW (TfNSW) specifications.

The purpose of this Procedure is to outline environmental control measures to minimise clearing of vegetation associated with the Early Works and impacts on biodiversity and the surrounding environment. It provides a framework for the management of vegetation to be retained or removed and the minimisation of loss of habitat and harm to associated fauna.

1.2 Induction/training

All site personnel (including sub-contractors) will be inducted on the potential threatened species and EEC and sensitive environmental areas occurring within the Early Works, and this Procedure. Training will include inductions, toolbox talks, pre-starts and targeted training as required.

All site personnel working in the Early Works area will be informed of exclusion zones as illustrated on the Sensitive Area Plans and where they are located.

1.3 Scope

This Procedure details control measures to minimise impacts of vegetation clearing to be implemented throughout the Early Works.

1.4 Roles and Responsibilities

The following specialised roles are required for Early Works clearing activities:

- A suitably qualified and experienced Early Work Ecologist will undertake pre-clearing surveys, including targeted surveys for the Cumberland Land Snail, Grey-headed Flying-fox and Southern Myotis.
- A qualified arborist will undertake an assessment of existing trees within the road reserve that are to be retained and identify techniques to maximise tree health and longevity. Any pruning will be carried out by an arborist using only the appropriate tools.
- An experienced, licenced wildlife carer or fauna handler will supervise vegetation clearing and capture and relocate fauna.

1.5 Consultation

Development of the EWFFMP includes consultation with NSW Environment, Energy and Science (EES) Group.

1.6 Review

This Procedure will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of this EWFFMP.

2 Vegetation Clearing Procedure

2.1 Clearing and Grubbing Plan and EWMS

A Clearing and Grubbing Plan with an EWMS included will be prepared. This will report on the presence of weeds and unsound trees, together with written notice that limits of clearing and areas of weed infestation identified in the Early Works Ecologist's report have been marked, at least 15 working days prior to starting any clearing. The Clearing and Grubbing Plan and EWMS will include, but not be limited to, the following information written in accordance with the EWFFMP and this procedure:

- Methods used to identify and mark areas of weeds to be removed and for their removal
- Procedure for the disposal of weeds and exotics
- Procedure for protecting threatened flora species and trees marked for preservation
- Methods used for identifying, marking and removing or pruning unsound trees likely to fall upon the roadway or onto private property
- Procedure for identifying and removing trees (including potential habitat, hollow-bearing trees), stumps and logs above the specified size and within the hazard line
- Management measures to be implemented to identify and protect clearing limits, habitat features and exclusion areas
- Detailed Sensitive Area Plans.

2.2 Pre-clearing

2.2.1 Pre-clearing process

The pre-clearing process provides a final check for any threatened flora or fauna species that may have moved into the area since previous surveys were undertaken. A suitably qualified and experienced Early Works Ecologist will undertake the pre-clearing survey to identify and mark any habitat features within the area to be cleared and to advise on the presence of any fauna. The pre-clearing process will include the following activities:

- Identify and locate habitat features on site
- Identify exclusion zones, install fencing/flagging/signage
- Install erosion and sedimentation controls
- Identify threatened fauna that have the potential to be disturbed, injured or killed during clearing activities (e.g. nesting birds) which would then require development of a Relocation Plan
- Survey for the presence of threatened flora and fauna species identified as being confirmed or likely to occur in the Early Works area

- Identify the number and species of trees, beyond those identified in the TfNSW tree survey, outside of EECs where a tree is defined as "*long-lived woody perennial plant with one or relatively few main stems, with a trunk size of 300 mm or more at 1.5 metres from ground AND/OR a height of 3 metres or more"*
- Identify the number and species of trees within EECs outside of those identified in the TfNSW tree survey
- Record the details for all hollow-bearing trees, trees containing threatened fauna and threatened flora
- Mark habitats to be protected during clearing
- Identify suitable habitat areas for fauna relocation
- 24 hours prior to clearing, licensed wildlife carers and/or ecologists should capture and/or remove fauna that have the potential to be disturbed as a result of clearing activities and relocate to the pre-determined location (as above).

Note: tree survey information obtained by TfNSW will be provided to Zinfra and the Early Works Vegetation Clearing Contractor to help facilitate their pre-clearing surveys.

2.2.2 Targeted pre-clearing survey – Southern Myotis

Targeted pre-clearing surveys will be carried out, where required, for the Southern Myotis in the potential habitat tree, by the Early Works Ecologist as per Figure 2-1.

Figure 2-1: Southern Myotis Clearing Procedure

2.2.3 Targeted pre-clearing survey – Cumberland Plain Land Snail

In areas identified as potential Cumberland Plain Land Snail (CPLS) habitat (CPLS lives under leaf and bark litter, leaves and logs, or shelters in loose soil around grass clumps. It has been found under rubbish), (detailed in Figure 4-1 and 4-2 of the EWFFMP), the following procedure will be followed:

1. Within 7 days of clearing, identify the closest safe receiving habitat where snails can be safely transferred to (preferably within 100 metres of habitat to be cleared)
2. Search the habitat to be cleared by hand, to minimise chance of damaging snail shells. Collect all live snails. Photograph and record the location found, and translocated to, for all potential CPLS (if in doubt, assume it is a CPLS but take photos of ventral and dorsal surfaces and get expert verification (for example Michael Shea from the Australian Museum). Garden Snails (*Helix aspersa*) and other *Meridolum* species can be confused with CPLS
3. Dampen receiving habitat and translocate some soil from the habitat to be cleared (to ensure that the fungus that CPLS feeds on is available within the receiving habitat)
4. Search the habitat at night for signs of active snails, as CPLS is generally active at night
5. Just prior to clearing, scrape habitat away down to at least 10cm since CPLS can burrow down into the soil, especially during dry periods. Translocate any remaining live snails.

2.2.4 Targeted pre-clearing survey – Grey-headed Flying-fox

If nightworks in foraging habitat is required, supervision by the Early Works Ecologist, as per standard clearing procedures is considered adequate to address any potential risks to foraging flying foxes.

2.2.5 Exclusion zones

Exclusion zones as informed by pre-clearing surveys will be established to prevent damage to native vegetation and fauna habitats and prevent the distribution of pests, weeds and disease in accordance with the following:

- Identify exclusion zones on a suitable plan to be displayed in prominent places in the Early Works area. Include in the plan aerial photographs, clear labelling of what is being excluded and access points
- Mark out exclusion zones on site with temporary markings such as pegs or paint and where possible use a qualified surveyor
- Erect signs to inform personnel of the purpose of exclusion zone fencing
- Ensure all exclusion zones are regularly inspected and repairs to fencing are made where required
- Maintain exclusion fencing until the risk to disturbance within the excluded zone has been eliminated through other means
- Update Sensitive Area Maps to ensure exclusion zones are clearly detailed
- Undertake removal of fencing in consultation with the Early Works Ecologist.

2.2.6 Flagging protocol

Site delineation, including environmentally sensitive area protection, habitat tree identification and clearing limits, must be consistent with the TfNSW Flagging Protocol. Clearing boundary survey pegs must be numbered as outlined in the Flagging Protocol. Refer to Table 2-1 and Figure 2-2.

Clearing limits will be flagged at least seven working days prior to the proposed commencement of clearing. Clearing limits will be identified using signage and highly visible continuous barrier or tape such as bunting, nightline or other similarly robust and durable material. Sensitive areas, Aboriginal heritage areas and non-Aboriginal heritage areas will be identified. No vegetation clearing within the excluded areas will occur.

Table 2-1: Flagging type

Flagging Type	Description
	Red Flagging – Early Works Boundary
	Orange Flagging – Clearing Limits/Exclusion Fencing. No clearing outside this flagging at any time during the Early Works
	<u>HABITAT TREE</u> Red and White Tape around habitat tree. Spray circle and write “H” (in white) on habitat tree
	Yellow and Black Tape – 10m exclusion zone from underground services. Trees to only be stump cut within this area
	To be allocated by Zinfra and/or the Early Works Vegetation Clearing Contractor
	Orange Parrawebbing with “NO ENTRY – ENVIRONMENTAL PROTECTION AREA” sign – (heritage, threatened flora/fauna). Absolutely no entry without written permit from Senior Environmental Officer

Figure 2-2: Pegging arrangement

2.3 Clearing Process

The area to be cleared will be confirmed following a site inspection with the TfNSW Environment and Sustainability Manager (or delegate). Clearing within identified environmentally sensitive areas will not be undertaken without the approval of the TfNSW Project Manager and Environment and Sustainability Manager (or delegate). Clearing of riparian vegetation or EECs will be in accordance with the areas assessed in the Environmental Assessment Documentation and Infrastructure Approval.

Exclusion zone fencing will be installed to delineate the areas to be cleared.

Clearing will be undertaken in accordance with the following methods:

- Carefully clear vegetation so as not to mix topsoil with debris and to avoid impacts to surrounding native vegetation
- Separate woody vegetation into millable timber, secondary re-use or exotic vegetation
- Temporary stockpiles of vegetation and timber will be less than 2 metres in height, and mulched as soon as practical and managed in accordance with the Management of Tannins from Vegetation Mulch Procedure (refer to the EWEMP)
- Non-woody vegetation should be incorporated into the stripping of topsoil to retain any organic materials and nutrients
- Topsoil is not to be mixed with subsoil and will be stockpiled separately for re-use
- Topsoil stockpiles are not to be compacted, as this can damage the soil structure
- Topsoil stockpiles are to be managed in accordance with the EWEMP and EWFFMP
- The staged habitat removal process is to be used when identified habitat is to be removed, with a licensed wildlife carer or ecologist on site
- Undertake bush rock removal in a way that minimises damage to the bush rock, avoids excessive soil disturbance and avoids climatic seasons when species are utilising this resource
- Pruning will be supervised by a Level 3 qualified arborist.

2.3.1 Staged habitat removal

The staged habitat removal process will be used when identified habitat (e.g. hollow-bearing trees, habitat trees or bushrock) is to be removed.

Staged habitat removal is conducted in at least two stages. Non-habitat trees and surrounding understorey vegetation will be felled or cleared first in order to give any fauna an opportunity to relocate. Habitat trees will be felled or cleared under the supervision of the Early Works Ecologist after a minimum of 24 hours after clearing of non-habitat vegetation.

The following actions will be undertaken for stage habitat removal:

- Removal works will be timed to minimise impacts on fauna (e.g. avoid known breeding/nesting seasons)
- Contact vets and wildlife carers prior to commencing works to ensure willingness to assist if required
- The Early Works Ecologist and/or a licensed wildlife carer will be present on-site during habitat removal
- Habitat trees will be felled using the "slow drop" technique and relocated for re-use, where possible
- Accurate records will be maintained.

2.4 Controls for protection of fauna

A qualified fauna handler, wildlife carer or ecologist will be present during clearing and will direct clearing in a manner that encourages and allows fauna to safely flee the clearing area. Where animals are unable to flee as a result of injury or otherwise, they will be captured and placed in adjacent areas of equivalent habitat.

In the event that fauna handling is required, the Fauna Handling and Rescue Procedure will be implemented. A Relocation Plan will also be prepared and approved by TfNSW. Section 2.3.1 details the two staged clearing process for identified habitat trees.

If fauna is encountered during clearing activities, a stop work procedure will be implemented in accordance with the Unexpected Threatened Species or EEC Finds Procedure.

The following steps will be taken:

- Cease work in the vicinity of the fauna and immediately notify the Zinfra Environmental Site Representative (or delegate)
- Allow the animal to relocate by itself, however if it is injured (or suspected to be injured), contact a licenced fauna handler or rescuer (e.g. WIRES) or the Early Works Ecologist
- Injured fauna will be transferred to a local vet for treatment
- Non-injured fauna will be relocated to appropriate pre-determined nearby habitat.

2.5 Controls for protection of vegetation

2.5.1 General controls

Zinfra and the Early Works Vegetation Clearing Contractor will implement protective measures during clearing to avoid damaging or destroying vegetation and habitat which have been marked or otherwise identified for preservation. Measures will include:

- Installation of suitable fencing to prevent plant and equipment entering the exclusion zones
- Avoid stockpiling of materials and vehicle parking under the tree canopy
- Avoid excavation or the placing of fill near any tree without advice from an arborist
- Haul roads and access tracks will be located away from the tree canopy
- Trees will be marked for directional felling to avoid damage to environmentally protected areas
- Existing trees, grasses and other ground cover within 15 metres of watercourses and in all drainage lines will be retained until immediately before works commence in the area
- Access tracks will be constructed and aligned to minimise erosion as per the Blue Book (Landcom, 2004)
- Plant and equipment will be selected to minimise tracking and disturbance of existing ground.

2.5.2 Threatened flora

Early Works will not result in impacts to threatened plant species. Should any threatened species be identified during pre-clearing surveys, the Unexpected Finds Procedure will be implemented and include the establishment of Exclusion Zones will be established around any additional plants identified during the pre-clearing surveys.

2.5.3 Root ball management

During vegetation clearing, timber and root balls will be retained where practicable for reuse in habitat enhancement and rehabilitation work. The retained timber and root balls may be used on or offsite.

Prior to the commencement of vegetation clearing, practicable options to reuse native trees and vegetation that are to be removed will be identified in accordance with the Reuse Strategy detailed in Section 6.10 and Appendix H of the EWFFMP. In accordance with NSW CoA E15, if it is not possible to reuse all removed native trees and vegetation, will consult with Council, Western Sydney Parklands, Landcare groups and government agencies to determine whether hollows, tree trunks, mulch, bush rock, root balls, collected plant material seeds and/or propagated plants could be used by others in habitat enhancement, beneficial re-use and rehabilitation work before pursuing other disposal options

2.6 Post-clearing

The post-clearing process includes:

- Completion of a post-clearance checklist

- Stabilisation of disturbed areas with revegetation or other material to be carried out where earthworks are not planned to commence within four weeks of clearing, to prevent erosion
- Any damage to vegetation to be retained will be immediately reported to the Environmental Site Representative (or delegate) and Transport for NSW Environment and Sustainability Manager(or delegate) and rectified with the advice of an ecologist or arborist

Where holes remaining after tree removal are located in areas where pedestrian or foot traffic is likely to occur, the holes will be backfilled and vegetated. Backfill material will prevent the infiltration and ponding of water and be compacted to at least the relative compaction of adjacent ground.

3 Reporting

3.1 Pre-clearing Survey Report

The Early Works Ecologist will prepare a Pre-Clearing Survey Report after undertaking the pre-clearing survey for review by the TfNSW Environment and Sustainability Manager (or delegate). The Pre-clearing Survey Report will be provided to Zinfra for information. The report will include:

- Description of the pre-clearing survey methodology
- Identification of target species including, as a minimum, the Cumberland Plain Land Snail, Southern Myotis and Grey-headed Flying-fox
- Identification of number and species of trees to be removed
- Identification of exclusion zones
- Identification of habitat trees to be removed within areas to be cleared
- Identification of active nests present.

3.2 Post-clearing Report

The Early Works Ecologist will prepare Post-Clearing Reports containing a summary of the results of post-clearing surveys, and any fauna rescues, injuries or mortalities during clearing activities. The Post-Clearing Reports will be reviewed by the TfNSW Environment and Sustainability Manager (or delegate). The reports will be provided to Zinfra, the Early Works Vegetation Clearing Contractor and TfNSW progressively (weekly) and a final report within 21 days from the completion of substantial clearing. The reports will include:

- Name and qualifications of the Ecologist or wildlife carer present during clearing
- Assessment of the habitat and handling of fauna
- Information on clearing operations, dates, procedures, areas
- Areas of Plant Community Type (PCTs), EECs, Critically Endangered Ecological Communities (CEECs) and all other vegetation removed and areas approved for removal in the EIS and Amendment Report
- Number and species of trees and other vegetation removed
- Number and size of hollows contained in trees removed
- Live fauna sightings, captures, any releases or injured/shocked wildlife
- Any damage to trees to be retained, nests or other fauna habitat features
- Injury or mortality of fauna
- Photographs of rescued fauna
- Records of all fauna rescue events, including locations to where fauna has been relocated.

Details of the vegetation cleared against the areas assessed and approved in the Environmental Assessment Documentation will be provided to TfNSW.

Appendix D – Unexpected Threatened Species and Endangered Ecological Communities (EECs) finds Procedure

Appendix D

Early Works Flora and Fauna Management Sub-plan

Unexpected Threatened Species and Endangered Ecological Communities (EECs) Finds Procedure

Early Works for M12 Motorway – Protection of High Pressure Gas Mains

May 2022

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Plan reviewed by:	Plan reviewed by:	Plan reviewed by:
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Date 02/06/2022	Date 02/06/2022	Date 02/06/2022
Signed Sheila Anderson	Signed	Signed

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Glossary/ Abbreviations

Abbreviations	Expanded text
CoA	Conditions of Approval
DAWE	Commonwealth Department of Agriculture, Water and Environment
DPI Fisheries	NSW Department of Primary Industries - Fisheries
DPE	NSW Department of Planning and Environment (former NSW Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
EHG	NSW Environment and Heritage Group(a part of DPE)
EIS	Environmental Impact Statement
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ER	Environmental Representative
ESM	Environment and Sustainability Manager
EWEMP	Early Works Environmental Management Plan
EWFFMP	Early Works Flora and Fauna Management Plan
RTA	Former Roads & Traffic Authority, now Transport for New South Wales
Project, the	M12 Motorway Project
TfNSW	Transport for New South Wales

1 Introduction

1.1 Purpose

This Unexpected Threatened Species and Endangered Ecological Community (EEC) Finds Procedure details the actions to be taken when a threatened flora or fauna species or EEC is unexpectedly encountered during Early Works of the M12 Motorway Project (the Project). This Procedure has been developed in accordance with *Guide 1: Pre-clearing process, Biodiversity Guidelines* (RTA, 2011).

1.2 Scope

This Procedure is applicable to all activities conducted by site personnel that have the potential to come into contact with threatened flora and fauna species and EECs during Early Works of the Project.

Where threatened fauna is unexpectedly encountered, the Fauna Handling and Rescue Procedure (Appendix F) will be followed.

1.3 Induction / training

All site personnel (including sub-contractors) will be inducted on the potential threatened species and EECs occurring, or likely to occur, within the Early Works area and the requirements of this Procedure. Training will include inductions, toolbox talks, pre-starts and targeted training as required. Zinfra will include photos and descriptions of threatened species and EECs occurring or likely to occur within the Early Works area in the Procedure and communicate the information to all site personnel.

1.4 Roles and responsibilities

The Environmental Site Representative (or delegate) will be notified in the event of an unexpected species or EEC find on site during Early Works of the Project. The Environmental Site Representative (or delegate) is the key contact point for the Transport for NSW (TfNSW) Environment and Sustainability Manager (or delegate) in regard to this Procedure. An Ecologist will be engaged by Zinfra if required for the implementation of this Procedure.

The TfNSW Environment and Sustainability Manager (or delegate) will act as the liaison between Zinfra, the Early Works Vegetation Clearing Contractor and relevant government agencies in the event that a significant impact to a threatened species or EEC is likely to occur.

All site personnel are responsible for reporting any unexpected species or EEC finds for the duration of the Early Works.

1.5 Review

This Procedure will be updated by the Zinfra Quality Site Supervisor in consultation with the Project Ecologist and reviewed by the TfNSW Environment and Sustainability Manager (or delegate) prior to commencement of Early Works of the Project.

This Procedure will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of the Early Works Flora and Fauna Management Sub-plan (EWFFMP).

2 Threatened species and EECs likely to occur in the Early Works area

The threatened flora and fauna species and EECs which may be impacted by the Early Works are identified in Section 4 of the overarching EWFFMP. In the event that these species or EECs (or other threatened species or EECs) not considered in Environmental Assessment Documentation or Section 4 of the EWFFMP, be encountered on site, works must stop and this Procedure must be implemented. The specific flora and fauna species identified in Section 4 of the EWFFMP are shown in Table 2-1.

Table 2-1 Potential threatened species

Species	Photo
Cumberland Plain Land Snail	
Southern Myotis	
Grey-headed Flying-fox	

Species	Photo
Dillwynia tenuifolia	
Pultenaea parviflora	
Marsdenia viridiflora subsp. Viridiflora	
Pimelea spicata	

3 Procedure

3.1 Overview

An overview of the steps to be followed in the event that a threatened flora or fauna species or EEC is unexpectedly discovered on site is outlined in Figure 3-1, with further detail provided below.

3.2 Detailed procedure

Step 1	**Threatened flora or fauna species or EEC unexpectedly encountered during Early Works activities** If a new threatened flora or fauna species or EEC is unexpectedly encountered: **<u>Cease work</u> in the vicinity of the unexpected find.** Immediately notify the Environmental Site Representative (or delegate) and the TfNSW Environment and Sustainability Manager (ESM) (or delegate) and the ER. The Contractor Environmental Site Representative (or delegate) will notify and engage an ecologist and notify NSW Department of Planning, Industry and Environment (DPE), Commonwealth Department of Agriculture, Water and Environment (DAWE), NSW Environment, Energy and Science (EES) and NSW Department of Primary Industries (DPI) Fisheries, if required.
Step 2.	**Assessment of impact** The Environmental Site Representative (or delegate) and ecologist will conduct an assessment of the likely impact to the threatened species or EEC, calculate if additional off-sets are needed, and develop management measures, as required. The Environmental Site Representative (or delegate) will notify the TfNSW ESM (or delegate) and the ER, EES, DPI Fisheries and DPE, as appropriate, of the outcome of the assessment, including any management measures to be implemented. If the ecologist's assessment determines that exceedances of the vegetation clearing limits and offset requirements in the CoA is likely to occur, the TfNSW ESM (or delegate) will notify EES, DPI, DPE and DAWE as appropriate. Management measures will be developed in consultation with the appropriate authorities who will also confirm any necessary approvals, licences or permits required. If practical, Zinfra may reduce vegetation clearing in another area to compensate. DAWE will be notified and consulted if the threatened species or EEC encountered is listed under the *Commonwealth Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act).
Step 3	**Approvals** Any approvals, licences or permits required will be obtained by the TfNSW Environment and Sustainability Manager (or delegate) in consultation with the Zinfra Environmental Site Representative (or delegate) and the Environment Representative (ER).
Step 4.	**Recommencement of works** Where impact is likely to occur, work will not recommence prior to confirmation by the TfNSW Environment and Sustainability Manager (or delegate) in consultation with the ER, that appropriate advice has been received, relevant approvals, licences and permits have been obtained, and the approved management measures have been implemented. Regular inspections by the Environmental Site Representative (or delegate), in consultation with the ecologist, if appropriate, will be conducted to ensure that management measures have been effectively implemented.

Step 5.	**Review and update of environmental management documentation** The Zinfra Environmental Site Representative (or delegate) will include the threatened species or EEC in subsequent inductions and toolbox talks and will update the listed species or EECs in this Procedure, if required. The Transport for NSW Environment and Sustainability Manager (or delegate) will update the Biodiversity Offset Strategy to account for any impacts to threatened flora and/or fauna, where required.

4 Records

Zinfra, the Early Works Vegetation Clearing Contractor TfNSW and the Project Ecologist will maintain accurate records of all unexpected threatened species or EEC finds for the duration of the Early Works.

Appendix E –Weed and Pathogen Management Procedure

Appendix E

Early Works Flora and Fauna Management Sub-plan

Weed and Pathogen Plan

Early Works for M12 Motorway – Protection of High Pressure Gas Mains

May 2022

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Document control

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Approval and authorisation

Plan reviewed by:	Plan reviewed by:	Plan reviewed by:
Sheila Anderson	Thomas Tu	Kimberley Nguyen
TfNSW Senior Environment and Sustainability Manager	TfNSW Utilities Manager	Zinfra Project Manager
Date 02/06/2022	Date 02/06/2022	Date 03/06/2022
Signed Sheila Anderson	Signed	Signed

Revision history

Revision	Date	Description
A	30/04/2021	First Draft for TfNSW Review
B	13/05/2021	Second Draft for TfNSW Review
C	13/08/2021	Third Draft of TfNSW Review
D	17/09/2021	Fourth Draft for TfNSW Review
E	03/11/2021	Fifth Draft for TfNSW Review
F	11/05/2022	Update to increase AF18 footprint and minor administrative amendments
G	26/05/2022	Update to increase Early Works footprint

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Glossary/ Abbreviations

Abbreviations	Expanded text
BC Act	*Biosecurity Act 2015*
DAWE	Commonwealth Department of Agriculture, Water and Environment
DPI Fisheries	NSW Department of Primary Industries - Fisheries
DPE	NSW Department of Planning and Environment (former Department of Planning Industry and Environment
EEC	Endangered Ecological Community
EHG	NSW Environment and HeritageGroup (a part of DPE)
ER	Environmental Representative
LGA	Local Government Area
NATA	National Association of Testing Authorities
PBFD	Psittacine beak and feather disease
Pesticide Act	*Pesticides Act 1999*
Project, the	M12 Motorway Project
RTA	Former Roads & Traffic Authority, now Transport for New South Wales
TfNSW	Transport for New South Wales

1 Introduction

1.1 Purpose

Early Works has the potential to cause the spread or importation of weeds and pathogens. Activities including vegetation clearing, soil disturbance, erosion and sediment control, vehicle movements, inadequate rehabilitation/ revegetation of disturbed areas and inappropriate topsoil management have been identified as potential risks in weed and pathogen management.

This Weed and Pathogen Management Plan has been prepared to identify the presence and management of pathogens and key weed species and their distribution across the Early Works area, and to outline the processes required to control and prevent the spread of weeds and pathogens. It has been prepared in consultation with a qualified Ecologist and in accordance with the *Biosecurity Act 2015*, *Guide 6: Weed management* and *Guide 7: Pathogen management, Biodiversity Guidelines* (RTA, 2011) and the *Greater Sydney Regional Strategic Weed Management Plan 2017 - 2022*. The overviews from Guide 6 and Guide 7 of the *Biodiversity Guidelines* are attached to this template Weed and Pathogen Management Plan. Priority weeds and other weeds of regional concern are also attached to this Plan.

The purpose of this Plan is to:

- Identify the pathogens and key weed species and their distribution across the Early Works sites
- Prevent the introduction and spread of weeds and pathogens throughout Early Works
- Establish an inspection and reporting framework for weeds and pathogens
- Set out performance criteria for the management of weeds and pathogens for the Project.

1.2 Scope

This Plan details control measures to be implemented throughout the Early Works. This Plan focuses on weed control prior to vegetation clearance, weed management during clearing, and progressive weed control throughout Early Works.

1.3 Induction / training

All site personnel (including sub-contractors) will be inducted in this Plan and the existence of priority and other weeds in the Early Works area. Training will also include requirements to inspect machinery and clean footwear to prevent the spread of weeds, and measures to identify and prevent the introduction or spread of *Phytophthora cinnamomi* (Root Rot).

Training will include inductions, toolbox talks, pre-starts and targeted training as required.

1.4 Roles and responsibilities

The Environmental Site Representative (or delegate) is responsible for ensuring the effective implementation of this Plan and training of site personnel in the requirements of this Plan.

The Early Works Ecologist will advise on appropriate weed removal and control techniques for each weed species and for pathogens.

All persons entering the Early Works sites are responsible for preventing the spread of weeds and pathogens within the Early Works area and offsite.

1.5 Review

This Plan will be updated by Zinfra and the Early Works Vegetation Clearing Contractor and reviewed by the Transport for NSW (TfNSW) Environment and Sustainability Manager (or delegate) prior to commencement of Early Works of the Project.

This Plan will be updated throughout Early Works to include any new weed or pathogen findings and subsequent management measures required. This Plan will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of the Early Works Flora and Fauna Management Sub-plan (EWFFMP) and Section 7 of the Early Works Environmental Management Plan (EWEMP).

2 Weeds and pathogens in the Early Works area

2.1 Weeds

The *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022* identifies priority weeds and other regional weeds of concert for the Greater Sydney Region, including the Liverpool, Fairfield and Penrith Local Government Areas (LGAs). The WeedWise website and associated app (https://weeds.dpi.nsw.gov.au/) also provides details on weed identification, control options and biosecurity duty. This website and app will be utilised during Early Works to inform identification and management options.

2.1.1 Priority weeds in the Greater Sydney Region

State level determined priority weeds and regionally determined priority weeds, as identified in the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022*, are provided in Attachments 1.1 and 1.2 respectively. Management requirements for weeds, whether that be specific regulatory measures (state level priorities) or outcomes to demonstrate compliance with the General Biosecurity Duty (regional priority weeds), are also detailed in Attachment 1 of the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022*.

The outcomes applied to a particular weed depend on factors such as the biology and ecology of the weed, the land use(s) in which it occurs, the distribution in the region and size of the infestation, potential pathways for infestation and others. These factors were taken into account in determining the suite of outcomes to demonstrate compliance with the General Biosecurity Duty and strategic responses. These obligations apply to all private and public landholders in the region.

2.1.2 Other regional weeds of concern list

Attachment 2 of the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022* outlines other priority weeds identified by the Greater Sydney Regional Weed Committee in consultation with the community. These are species for which a consistent and/or collaborative approach to management will provide the best outcome across the region. Weeds identified within Attachment 2 of the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022* are also subject to the General Biosecurity Duty and may be a focus for local management plans and coordinated campaigns by the community and other stakeholder groups in the region.

2.1.3 Weed identification and mapping

Detailed weed identification and mapping of Early Works sites and adjacent areas will be undertaken by the Early Works Ecologist during pre-clearing surveys, and/or personnel trained in weed management prior to the commencement of Early Works.

Zinfra and/or Zinfra's appointed sub-contractor will update this Weed and Pathogen Management Plan with a detailed list of all weed species identified during the pre-clearing. Zinfra will include details of the weed species including photographs, detailed descriptions and known locations. The detail to be provided will also include the weed status in accordance with Attachments 1 and 2 of the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022*.

This information will be disseminated to site personnel during training and induction.

2.2 Pathogens

Pathogens that have been identified to potentially occur in the Project area include:

- Soil-borne pathogen *Phytophthora cinnamomi* (Phytophthora)
- *Austropuccinia psidii* which causes the disease Myrtle rust
- *Batrochytridium dendrobatidis* (Chytrid (Frog) fungus)
- Psittacine beak and feather disease (PBFD).

The Early Works Vegetation Clearing Contractor will prepare identification and/or fact sheets on each pathogen identified as having the potential to occur within the Early Works area or with the potential to be introduced to the area.

3 Weed management procedure

3.1 Approach to weed management

In NSW all plants are regulated with a general biosecurity duty under the *Biosecurity Act 2015* to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

Figure 3-1, from the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022*, illustrates the invasion process for weeds from arrival to widespread establishment and shows that the effort and resources required to control a weed rise with time and area occupied. Managing weeds earlier rather than later is more effective. The asset protection phase shown in Figure 3-1 illustrates the shift in the focus from controlling a weed species to limiting the impact it may have on important assets.

Source: Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022

Figure 3-1: Weed invasion curve

Further detail of the management categories identified in Figure 3-1 is provided in Table 1.

Table 1: Regional weed management categories

Category	Objective	Weed Characteristics
Prevention	To prevent the weed species arriving and establishing in the region.	These species are not known to be present in the region. They have a high to very high weed risk (highly invasive and high threat) and have a high likelihood of arriving in the region due to potential distribution and/ or an existing high-risk pathway.
Eradication	To permanently remove the species and its propagules from the region OR to destroy infestations to reduce the extent of the weed in the region with the aim of local eradication.	These species are present in the region to a limited extent only and the risk of re-invasion is either minimal or can be easily managed. They have a high to very high weed risk and high feasibility of coordinated control.
Containment	To prevent the ongoing spread of the species in all or part of the region.	These species have a limited distribution in the region. Regional containment strategies aim to prevent spread of the weed from an invaded part of the region (core infestation), and/or exclude the weed from an uninvaded part of the region (exclusion zone).
Asset Protection	To prevent the spread of weeds to key sites/ assets of high economic, environmental and social value, or to reduce their impact on these sites if spread has already occurred.	These weed species are widespread and unlikely to be eradicated or contained within the wider regional context. Effort is focussed on reducing weed threats to protect priority high value assets.

3.2 Site weed assessment

Zinfra's Environmental Site Representative (or delegate), Zinfra's appointed sub-contractor, the Early Works Vegetation Clearing Contractor and the Early Works Ecologist will undertake an inspection of the site to assess the area for weeds. Weed assessments will occur:

- As part of the pre-clearing survey
- Prior to drainage works
- During regular site inspections
- When a potential weed infestation has been identified.

The weed assessment will involve the following activities:

- Identify and describe or map weed infested areas
- Include photographic guide to identifying common weed species within the Early Works area
- Identify surrounding land uses and sensitive environmental areas
- Determine weed management priorities and objectives in accordance with Attachments 1 and 2 of the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022*.

3.3 Establish weed control measures

3.3.1 Prevention of weed spread / importation

Environmental controls will be implemented by Zinfra's appointed sub-contractor and the Early Works Vegetation Clearing Contractor in consultation with the Early Works Ecologist to prevent the spread or introduction of weeds within the Early Works footprint. Controls will include:

- Map and mark areas that are infested with weeds as an exclusion zone with fencing and signage to limit access by personnel and vehicles
- Install wheel wash and rumble grids
- Provide boot wash down facilities
- Program works from least to most weed infested areas, where possible.

3.3.2 Determine weed control / removal methods

Weed control methods include mechanical, physical and chemical techniques. The suitability of control techniques will vary depending on the target weed species and the desired outcomes. The Early Works Ecologist will advise on the most appropriate weed treatment methodology and timing.

3.3.3 Implement weed control / removal methods

Weed control methods will be implemented under guidance from the Early Works Ecologist. Methods will include:

- Use of mechanical weed control methods such as slashing or mowing
- Controlled use of herbicides to avoid the development of herbicide resistance
- Mowing/slashing of areas infested with weeds before they seed to reduce the propagation of new plants
- Separate weeds from native vegetation where native vegetation is to be used for mulch
- Topsoil recovered from areas of low weed infestation will be stockpiled separately
- Remove weeds immediately onto suitable trucks and dispose of without stockpiling
- Following weed removal, any exposed areas will be stabilised and/or rehabilitated to reduce erosion and minimise the potential for further weed invasion.

3.3.4 Pesticide use

Only pesticides listed in the Transport for NSW Approved Pesticides List (TfNSW, 2021) will be used. The use of pesticides must be in accordance with the NSW *Pesticides Act 1999*, other relevant legislation, label directions, any relevant industry codes of practice.

The Zinfra Site Supervisor and Early Works Vegetation Clearing Contractor will ensure that a Pesticide Application Record is completed and public notifications made in accordance with relevant legislation, where pesticides are to be used in areas that could be accessed by members of the public. The Zinfra Environmental Site Representatives (or delegate) and/or the Early Works Vegetation Clearing Contractor will complete a Pesticides Application Record Sheet (Appendix A) within 24 hours of applying the pesticide and submit a copy to the Transport for NSW Environment and Sustainability Manager (or delegate).

The Records Sheet does not need to be completed if all of the following are satisfied:

- The pesticide is, or is part of a product that is widely available to the general public at retail outlets
- The pesticide is only applied by hand or by using hand-held equipment
- If applied outdoors on any single occasion, in quantities of no more than 5 L/5 kg of concentrated product or 20 L/20 kg of the ready-to-use product or, if applied indoors, in quantities of no more than 1 L/1 kg of concentrated product or 5 L/5 kg of the ready-to-use product.

Public notification of pesticide use will be in accordance with Table 2 whenever pesticides are used adjacent to, or across the road from a public place or private property. Appropriate environmental management measures will be implemented where pesticides are proposed during Early Works to avoid or minimise impacts on adjoining properties.

Table 2: Public notification requirements

Public places where pesticides will be applied	Minimum Notification Methods
• Urban and rural roadsides, including: ◦ Median strips ◦ Road shoulders ◦ Kerb and guttering ◦ Roundabouts ◦ Traffic islands ◦ Roadside cycleways/footpaths ◦ Traffic management devices ◦ Stockpile sites • Freeways and controlled access roads	• **Signs on vehicle** concurrent with spraying activity. • **Internet-based notification** required as per Annexure G36/H2 below**.**
• Road construction sites	• **Signs on vehicle** concurrent with spraying activity.
• Roadside rest areas, including facilities such as: ◦ Picnic/BBQ areas ◦ Toilets ◦ Playgrounds • Vacant lands owned by TfNSW, including pesticide applications around built property (excluding lands that are leased for private occupation and without public access). • Administration sites, including regional and district offices.	• **Signs on vehicle** concurrent with spraying activity. • **Portable signs** will be erected at locations where most likely to be seen immediately prior to use and remain until operation is completed, unless label requires a longer period. Reasonable efforts must be made to replace signs removed or vandalised.

Any spraying of priority weeds must avoid damage to adjacent native vegetation and to prevent overspray entering waterways or adjoining properties. Only pesticides registered for use near water may be used near any waterways.

The following measures will be implemented whenever pesticides are to be used adjacent to, or across the road from, a “sensitive place”:

- Use of mechanical means of pest control (such as mowing or slashing) where feasible and this will not result in spread of weed propagules or
- Use of hand-held application of pesticides where mechanical means of pest control are not feasible.

Pesticide application will be appropriately scheduled. Pesticides will not be applied:

- On hot days when plants are stressed
- After seed has set
- Within 24 hours of rain or when rain is imminent
- When winds will cause drift of pesticides into non-target areas.

All personnel managing and using pesticides must receive appropriate training and hold an appropriate licence prior to commencing work.

3.3.5 Ongoing management of weeds

Measures for the ongoing management of weeds will be implemented, including the following:

- Minimise soil disturbance within weed infested areas
- Ensure topsoil imported onto site is free of weed propagules
- Regularly inspect and clean machinery, vehicles and footwear using installed facilities
- Wash down the wheels of all construction plant before transportation to the site
- Keep records of all screening checks and subsequent actions taken
- Securely cover loads of weed-contaminated material during transportation
- Avoid use of weeds as mulch
- Avoid re-use vegetation or topsoil containing weed material on site unless appropriately treated
- Monitor disturbed and rehabilitated sites for presence of weeds.

3.4 Weed disposal

Weeds and topsoil potentially containing weed propagules disturbed by Early Works activities will be removed and disposed of at a suitable landfill location in accordance with the requirements of the relevant local Council and *Biosecurity Act 2015*. Exotic plant species will be removed, bagged and disposed offsite to a licensed landfill facility.

4 Pathogen management procedure

4.1 Site pathogen assessment

A detailed site assessment for potential risk of pathogens in the Early Works area will be undertaken by the Early Works Ecologist during pre-clearing surveys. The site assessment will identify and describe or map potential pathogen-containing vegetation areas. Zinfra's appointed sub-contractor and the Early Works Vegetation Clearing Contractor will refer to DPI guidelines for the most up-to-date hygiene protocols for each pathogen and for the most recent locations of contamination.

Testing from a National Association of Testing Authorities (NATA) approved laboratory may be required to confirm the presence of pathogens in the soil and/or water as determined by the Early Works Ecologist during Pre-clearing surveys. In the areas where such testing is required, clearing activities will not proceed until the results of any such tests are confirmed and suitable prevention and control measures have been implemented if necessary.

4.2 Establish pathogen control measures

4.2.1 Prevention of introduction or spread of pathogens

Pathogens can be spread on footwear, vehicles and machinery, particularly during wet weather or in wet conditions. Controlling the introduction and spread of pathogens that have the potential to harm the environment in the Early Works area is a high priority. Environmental controls will be implemented by Zinfra's appointed sub-contractor and the Vegetation Clearing Early Works Contractor in consultation with the Early Works Ecologist to prevent the spread or introduction of pathogens to the Early Works area. Controls will include:

- Map and mark areas that are infested with pathogens as an exclusion zone with fencing and signage to limit access by personnel and vehicles
- Install wheel wash and rumble grids
- Provide boot wash down facilities
- Program works from uninfected areas to infected areas, where possible.

4.2.2 Determine pathogen prevention / control methods

Management measures for pathogens can include planning or awareness measures, exclusion measures and containment measures. The suitability of control techniques will vary depending on the pathogen and will be determined on advice from the Early Works Ecologist and best practice guidelines. Best practice protocols include:

- Minimise work during excessively wet or muddy conditions
- Provide parking and turn-around points on hard, well-drained surfaces
- Restrict vehicles to designated tracks, trails and parking areas
- Restrict personnel to designated tracks and trails

- Personnel working in an infected site should shower and launder clothes before moving to another vegetated site
- Use disinfectant or gloves when handling frogs and only handle frogs when necessary
- Wash hands thoroughly with disinfectant after handling frogs from one waterbody
- Ensure frogs or tadpoles/spawn are not moved between catchments
- Disinfect any handling equipment and boots when moving between waterbodies
- Ensure vehicles and footwear are free of soil before entering or exiting the site (i.e. directed to wash down area before entering or exiting the site)
- Use a certified supply of plants and soil that is disease-free
- Hygiene protocols, such as use of disposable suits, will be used where site personnel are required to work in areas identified as containing pathogens that are located in the vicinity of threatened flora or fauna or Endangered Ecological Communities (EECs)
- Removed infected vegetation will be securely wrapped in bags prior to disposal.

4.3 Material disposal

Disposal of infected material will vary depending on the pathogen in the affected material.

Where materials are known or suspected to be affected by *Phytophthora*, the material will be retained within the contaminated area. Stockpiles of mulch, topsoil and fill material will be separated to avoid potential contamination and spread.

Plant material infected with Myrtle Rust will be buried on site if possible and will not be disposed of at another vegetated site. Buried material sites will be recorded on maps to prevent re-exposure. Where material is unable to be buried, advice will be sought by Zinfra's appointed sub-contractor and/or the Early Works Clearing Environmental Contractor from NSW Environment, Energy and Science (EES).

To avoid cross contamination of frogs with *Chytrid*, the contractors will avoid, where possible, transferring water between two or more separate waterbodies.

5 Inspection, monitoring and reporting

Monitoring of weed and/or pathogen infestations will occur as part of the routine weekly environmental inspections to determine the effectiveness of management controls. The presence of any weeds and/or pathogens and the necessary management actions will be noted on the Environmental Inspection Checklist.

Also, Zinfra's appointed sub-contractor and the Early Works Vegetation Clearing Contractor will prepare a weed and pathogen monitoring program that includes:

- Inspection of the general condition of the Early Works area including identification of additional weeds and pathogens or reduction in the occurrence of weeds and pathogens
- Measures to assess the effectiveness of weed and pathogen treatments
- Modifications to weed and pathogen treatments
- Schedule to re-apply treatments if previous treatments are not fully effective
- Measures to improve the quality of habitat in retained vegetation
- Site visits, mapping and fixed point photographs of the Early Works area and adjoining impacted areas.

Dedicated inspections will be carried out on a monthly basis for a period of six months (or as necessary responding to seasonal and climatic conditions), then at least every three months for the remainder of the Early Works. The Early Works Ecologist will undertake all monitoring and inspections. Zinfra's Environmental Site Representative (or delegate) will report the results of each monitoring inspection against the weed and pathogen management objectives to the TfNSW Project Manager and the TfNSW Environment and Sustainability Manager (or delegate).

Zinfra's appointed sub-contractor and the Early Works Vegetation Clearing Contractor will prepare and implement an action plan to manage any ongoing weed and pathogen problems.

Appendix A Sample Pesticides Application Records Sheet

Information to be Recorded	Brief Description	Enter Data Here
Date and time	Start Date and Time: Finish Date and Time:	
Who applied the pesticide	Full operator name: Operator contact address: Operator contact phone:	
Who owns/occupies the land	Full owner/occupier's name: Owner/occupier's contact address: Owner/occupier's contact phone:	
Boundaries of treated area and order of treatment	List treated areas and order of treatment, preferably with reference to a map: List order of treatment:	
Problem treated	Identify the pest or problem treated (e.g. controlling of spot weed infestation):	
Product used	Record either the full name, or a product code if a list of full product names of pesticides you use is kept at the front of your logbook:	
Equipment used	Describe the equipment used (e.g. boom-spray, hand-held backpack sprayer etc):	
Quantity applied and dilution	Total amount of pesticide product mix used: Write down whether the mix was concentrated product or a diluted mixture (note down rate of dilution):	
Area covered by application	Area of application (in square metres or hectares):	
Wind speed and direction	Estimate of wind speed and direction (only if the pesticide is applied through the air): Write down any changes in weather during application:	
Other weather details	Record any weather details such as temperature, humidity and/or rainfall where the pesticide product label requires you to assess these:	

Attachment 1 Biodiversity Guide 6 Overview

Guide 6: Weed management

Background

A 'weed' is a plant growing in a terrestrial or aquatic area where it is not wanted. This can include seeds, flower heads or woody material. A plant that is considered a weed may not always be classed as a weed by everyone in all regions. Weeds are plants that may threaten agricultural productivity, have detrimental effects on the natural environment or impact on human health. Weeds may be native or introduced plant species.

The construction of road projects and maintenance works has the potential to introduce and promote the spread of weed species. The *Noxious Weeds Act 1993* (NSW) has provisions for the control of certain weeds and the RTA is required to control noxious weeds under this Act.

There are currently six Key Threatening Processes listed under the *NSW Threatened Species Conservation Act 1995* (NSW) (TSC Act) that relate to the invasion and establishment of weeds:

- Invasion and establishment of exotic vines and scramblers.
- Invasion and establishment of Scotch Broom (*Cytisus scoparius*).
- Invasion of native plant communities by Bitou Bush & Boneseed.
- Invasion of native plant communities by exotic perennial grasses.
- Invasion of native plant communities by African Olive (*Olea europaea L. subsp. cuspidata*).
- Invasion, establishment and spread of Lantana (*Lantana camara*).

Weeds are often classed into broad groups depending on their characteristics and impacts. The main groups of weeds are provided in Table 6.1.

TABLE 6.1: CLASSIFICATION OF WEEDS IN NSW.

Classification	Description
Weeds of National Significance (WONS)	Listed under the National Weeds Strategy (see www.weeds.gov.au/weeds/lists/wons.html).
National Environmental Alert List Weeds	Identified under the National Weeds Strategy (see www.weeds.gov.au/weeds/lists/alert.html).
Noxious	Require control under the *Noxious Weeds Act 1993* (NSW). Noxious weed declarations, their control class and control requirements are different for each Local Government Area (see www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/noxweed).
Environmental	Represent a threat to the conservation values of natural ecosystems.
Agricultural	Represent a threat to agricultural production.

Objective

The objective of this guide is to prevent or minimise the spread of noxious and environmental weed species on all RTA project sites and during maintenance works.

Application of this guide

This guide is applicable where RTA activities disturb vegetation, soil or aquatic environments.

This guide outlines weed management requirements for environmental and noxious weeds during construction but also provides best practice methods for weed management during maintenance works.

Specialist input requirements

Use an ecologist or person trained in weed management and identification to conduct the site weed assessment before works begin and assist in developing the weed management plan.

Management requirements

General requirements for weed management for projects and maintenance works

The project manager and/or environment manager should ensure the following best practice methods for weed management are undertaken:

- Mow/slash areas infested with weeds before they seed. This may reduce the propagation of new plants.
- Program works from least to most weed infested areas.
- Clean machinery, vehicles and footwear before moving to a new location.
- Securely cover loads of weed-contaminated material to prevent weed plant material falling or blowing off vehicles.
- Dispose of weed-contaminated soil at an appropriate waste management facility.
- Remove weeds immediately onto suitable trucks and dispose of without stockpiling.
- Separate weeds from native vegetation where native vegetation is to be used for mulch. Dispose of weeds to an appropriate waste management facility. Do not use weeds for mulch.
- Send samples of topsoil being imported onto site to a **National Association of Testing Authorities (NATA)** approved soil laboratory to ensure it contains no weed seeds or propagules (vegetative parts of plants such as buds or offshoots that can grow into new individuals)(see *Guide 3: Re-establishment of native vegetation*).

FIGURE 6.1: The weed Singapore Daisy (*Sphagneticola trilobata*) on the Pacific Highway – Banora Point Upgrade project. Once confined to Queensland, this weed has spread down the NSW coast and invaded rainforest edges and disturbed areas such as roadsides of the Northern Region (Photo: Tammie Tribe).

Site weed assessment

The project manager and/or environment manager should engage an **ecologist or person trained in weed identification and management** to undertake a site weed assessment including:

1. Identifying and describing or mapping weed infested areas within the site and adjacent areas. A weed assessment may have been done as part of the environmental assessment. Other useful resources for the identification of weeds can be found in the *Supporting Documents* section of this guide. Weed identification and description/mapping will provide an understanding of the scale of weed occurrences and any associated management issues.
2. Identifying and recommendations for managing any Weeds of National Significance (WONS), National Environmental Alert Weeds and/or noxious weeds located within the site or adjacent areas in consultation with the **weeds officer** at the relevant local council. Many of these weeds have legislative control requirements and most have separate weed management guides (see www.weeds.gov.au/publications/guidelines/index.html).
3. Identifying surrounding land uses and consultation with surrounding landholders where required.

Weed management plan

The project manager and/or environment manager should ensure a weed management plan is developed for the site with consideration of the resources available to implement the plan. The *Introductory Weed Management Manual* (Natural Heritage Trust 2004) provides guidance for developing weed management plans.

The requirements of the weed management plan would be incorporated into relevant plans for the project (eg landscape management plan, Construction Environmental Management Plan (CEMP) or work method statements).

The detail of the weed management plan would vary for each site but should include:

- Type and source of the weed/s.
- Weed management priorities and objectives.
- Sensitive environmental areas within or adjacent to the site.
- Location of weed infested areas.
- Mechanical weed control methods such as slashing or mowing, as well as a range of herbicides to avoid the development of herbicide resistance.
- Measures to prevent the spread of weeds.
- A monitoring program to measure the success of weed management.
- Communication strategies to improve contractor awareness of weeds and weed management.

Weed control methods

Weed control methods include mechanical, physical and chemical techniques. The *Introductory Weed Management Manual* (Module 2) (Natural Heritage Trust 2004) and *Noxious and Environmental Weed Control Handbook* (DPI 2007) provide examples of weed control methods.

In order to effectively control weeds it is important to have an understanding of the types of weeds present and their growth cycles and flowering times. Reference should be made to the Department of Primary Industries (DPI) Calender of Growth Cycle and Control Times for different regions across NSW (see www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/publications/management/calendar).

Herbicide use

The use of herbicides is controlled in NSW by the *Pesticides Act 1999*. The project manager and/or environment manager should ensure that pesticides (including herbicides) are only be applied by **personnel trained and competent in chemical use**.

The application of herbicide should ensure the safety of users and other people, and minimise risks to the broader environment. The National Heritage Trust (2004) *Introductory Weed Management Manual* and the 'Pesticides and Chemicals' section of the Office of Environment and Heritage (OEH) website (www.environment.nsw.gov.au/pesticides/index.htm) provides further information on using herbicides appropriately.

CropLife Australia (the main industry body for Australian plant science) has grouped herbicides according to the way they work on plants ('mode of action') and the potential for resistance to them. Each herbicide has a mode of action letter printed on the product label and herbicides with similar modes of action are put into the same group. CropLife Australia regularly revises the modes of action and resistance management strategies. These are available at www.croplifeaustralia.org.au

The RTA has obligations to notify the community of proposed pesticide use (including herbicides) in accordance with the NSW Pesticides Regulation 2009 (see the *RTA's Pesticide Use Notification Plan*).

The following should be considered when using herbicides:

- **The type and dose of herbicide** – choose the right herbicide for the weed species. Refer to manufacturer's label for target weeds, application rates and 'mode of action' groups.
- **Application method** – consider the type of weed to be treated, label instructions, resources available and weed management objectives.
- **Risks** – consider associated risks with each type of application method (eg spray drift), surrounding land uses (eg schools), suitable Personal Protective Equipment (PPE), weather and proximity to areas of environmental sensitivity.
- **Timing** – some control methods may not be effective at certain times of the year and weeds should be targeted when their growth cycle stage provides the best opportunity for control.
- **Herbicide resistance** – at sites where the same herbicide (eg glyphosate) has been sprayed on weeds repeatedly, the weeds may develop resistance to that particular chemical. These weeds may no longer be controlled by that herbicide. Some examples of glyphosate resistant weeds include Annual Rye Grass (*Lolium rigidum*) and Feathertop Rhodes Grass (*Chloris virgata*). Further information on the management of glyphosate resistant weeds is available at www.glyphosateresistance.org.au

Exclusion zones

Areas that are infested with weeds should be identified, mapped and marked as an exclusion zone with fencing and signage to limit access by personnel and vehicles (see *Guide 2: Exclusion zones*). This will minimise the spread of weeds. Maps of infested areas should be provided to contractors and highlighted during inductions.

Topsoil management

Topsoil management needs to be planned so as to minimise the spread of weeds originating from the topsoil, while making best use of the native seed bank. Topsoil recovered from areas of low weed infestation can be re-used onsite with treatment but should be stockpiled separately. Soil disturbance within weed infested areas should be minimised. Refer to RTA's Stockpile Site Management Guideline, the Blue Book, *RTA Environmental Protection (Management System) QA Specification G36* and *RTA Vegetation QA Specification R178* for further guidance on stockpile management.

Integrated weed management

Weed management is most effective through an integrated approach that utilises a variety of control techniques (eg mechanical and chemical). The suitability of certain control techniques for a site will vary depending upon the target weed species and the desired outcomes for the site. An integrated and strategic approach may sometimes require cooperation with adjacent landholders in order to provide adequate long-term control.

Weed disposal

All weed plant material and topsoil containing weed plant material should be disposed of to an appropriate waste management facility. Contact the local council for a list of disposal facilities within the local area. Topsoil from areas of high weed infestation may be disposed of on site by burial. The depth of burial will depend on the weed species and conditions at the site. Specific information on the disposal of weeds according to species can be found on the DPI website (www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds).

Control of aquatic weeds

Aquatic weeds may need to be controlled when they interfere with the use of a particular aquatic environment or when there is a statutory obligation.

The best option for controlling aquatic weeds in a body of water is through integrated management which combines a number of techniques such as physical removal, chemical control, biological control or booms and barriers.

For more information on aquatic weed control techniques, refer to *NSW DPI Primefact 30: Aquatic weed management in waterways and dams*.

FIGURE 6.2: Salvinia (*Salvinia molesta*) treatment within Pola Creek on the Kempsey Bypass Project. Salvinia weevils were also introduced to the waterway to manage Salvinia (Photo: Sarah Wain).

FIGURE 6.3: Paterson's Curse (*Echium plantagineum*) in the road reserve along Hume Highway, South Western region (Photo: Leigh Trevitt).

Supporting documents

1. Environmental assessment and associated supporting documents (eg ecological report, conditions of approval).
2. Environmental management plans and associated sub-plans and procedures for the works
3. Ainsworth, N and Bowcher, A (2005) *Guidelines for Herbicide Use near Water*, Cooperative Research Centres (CRC) for Australian Weed Management, South Australia.
4. Department of Primary Industries (DPI) Calender of Growth Cycle and Control Times for different regions across NSW (www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/publications/management/calendar).
5. Department of Primary Industries (DPI) Weeds Training Program (www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/training#clm).
6. Department of Primary Industries (DPI) Weeds website (www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds).
7. Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) Weed Identification Tool (www.weeds.gov.au/cgi-bin/weedidtool.pl).
8. Ensbey, R (2009, accessed 7 April 2011) *Noxious and Environmental Weed Control Handbook: A guide to weed control in non-crop, aquatic and bushland situations*, 4th ed, Industry and Investment NSW, Orange, NSW (www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/publications/noxious-enviro-weed-control).
9. Gorham, P (2008, accessed 7 April 2011) *Primefact 30: Aquatic weed management in waterways and dams*, Industry and Investment NSW (www.dpi.nsw.gov.au/primefacts).
10. Natural Heritage Trust (2004, accessed 7 April 2011) *Introductory Weed Management Manual*, Natural Heritage Trust (with the CRC for Australian Weed Management and the Commonwealth Department of Environment and Heritage), ACT (www.weedscrc.org.au/documents/manual.pdf).
11. Office of Environment and Heritage (updated 14 April 2011) 'Pesticides and Chemicals' NSW Government Office of Environment and Heritage (www.environment.nsw.gov.au/pesticides/index.htm).
12. RTA (2007) Pesticide Use Notification Plan (www.rta.nsw.gov.au/environment/biodiversity/pesticideplan.html).
13. *RTA Environmental Protection (Management Plan) QA Specification G35* (Accessed via the RTA intranet TechInfo page, Techdocs).
14. *RTA Environmental Protection (Management System) QA Specification G36* (Accessed via the RTA intranet TechInfo page, Techdocs).
15. *RTA Vegetation QA Specification R178* (Accessed via the RTA intranet TechInfo page, Techdocs).

Attachment 2 Biodiversity Guide 7 Overview

Guide 7: Pathogen management

Background

Pathogens are agents that cause disease in flora and fauna and are usually living microorganisms such as a bacterium, virus, or fungus. Some pathogens are restricted to certain areas, and others are widespread across Australia. The severity of infection can also differ between areas.

Pathogens can be spread on footwear, vehicles and machinery, particularly during wet weather or in wet conditions. Strict precautions are necessary to prevent the spread of some pathogens. Some pathogens cannot be eradicated from infected sites so controlling their introduction and spread is a high priority.

Several pathogens in NSW have the potential to impact on the environment and biodiversity. These may be introduced and spread during the construction of road projects and roadside maintenance works. They include:

- Phytophthora (*Phytophthora cinnamomi*).
- Chytrid fungus (*Batrachochytrium dendrobatidis*).
- Myrtle rust (*Uredo rangelli*).
- Fusarium wilt/Panama disease (*Fusarium oxysporum*).

Phytophthora is a soil-borne fungus that causes tree death (dieback) where infestation occurs. Phytophthora attacks the roots of a wide range of native plant species causing them to rot. 'Dieback caused by Phytophthora' is listed as a Key Threatening Process under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cwlth)(EPBC Act) and the *Threatened Species Conservation Act 1995* (NSW)(TSC Act). Spores can be dispersed over relatively large distances by surface and sub-surface water flows. Infected soil/root material may be dispersed by vehicles (eg earth moving equipment) animals and bushwalkers.

FIGURE 7.1: Dieback in Grass-tree (*Xanthorrhoea australis*) (Photo: K McDougall, OEH).

Chytridiomycosis (Chytrid) is an infectious disease that affects amphibians worldwide. The disease is caused by the fungus *Batrachochytrium dendrobatidis*. In Australia, chytrid has impacted on native frog species, causing the extinction of one species of frog and suspected to have caused the extinction of three others. 'Infection of frogs by amphibian chytrid fungus causing the disease chytridiomycosis' is listed as a Key Threatening Process under the EPBC and TSC Acts. Chytrid is a water-borne fungus that may be spread as a result of handling frogs or through cross contamination of water bodies.

FIGURE 7.2: A Great Barred Frog (*Mixophyes fasciolatus*) displaying symptoms of chytrid such as lethargy, emaciation, half closed eyes and accumulation of sloughed skin over the body (Photo: Lee Berger, CSIRO).

FIGURE 7.3: A Common Green Tree Frog (*Litoria caerula*) with chytrid symptoms, including redness on the underside of the body and legs (Photo: K Gillet, OEH).

Myrtle rust is a plant disease caused by the introduced fungus *Uredo rangelli*. It was first detected on the Central Coast (NSW) in April 2010 and has since spread along the east coast from Wollongong to Tweed Heads. Myrtle rust attacks the young leaves, shoot tips and stems of Myrtaceous plants (eg Bottle Brush, Tea Tree, Lilly Pilly and Turpentine) eventually killing the plant. Myrtle rust is an air-borne fungus that may be spread by moving infected plant material, contaminated clothing (especially hats), equipment and vehicles.

The 'Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae' is listed as a *Key Threatening Process under the TSC Act*. Myrtle rust is included in this Key Threatening Process.

FIGURE 7.4: Leaves infected with Myrtle rust (Photos: courtesy of Department of Primary Industries).

Fusarium wilt (or Panama disease) is an introduced plant disease caused by the fungus *Fusarium oxysporum*. It is widespread in banana plantations in the Northern Rivers region of NSW, but is also known from a few plantations in Coffs Harbour and Woolgoolga. Fusarium wilt is spread when spores are moved in soil by water, workers, vehicles, animals or movement of infected plant material. Plants affected by Fusarium wilt show unusual patterns of frond (leaves) death and will eventually die. There is no cure or control mechanism but it can be kept out of a plantation through best practice hygiene protocols.

FIGURE 7.5: Banana plantations near Coffs Harbour showing yellow leaves, a symptom of Panama Disease (Photos: Josie Stokes).

Objective

The objective of this guide is to provide guidance for preventing the introduction and/or spread of disease causing agents such as bacteria and fungi.

Application of this guide

This guide is applicable wherever pathogens are known or suspected to occur on or adjacent to RTA projects and during maintenance works.

Specialist input requirements

Testing from a **National Association of Testing Authorities (NATA) approved laboratory** may be required to confirm the presence of pathogens in the soil and/or water.

Advice from **Department of Primary Industries (DPI)** or the **Office of Environment and Heritage (OEH)** regarding the most practical hygiene management measures may be required if pathogens are present.

Management requirements

The project manager and/or environment manager should consider the potential for pathogens to occur on site or in the area at an early stage (eg in the environmental assessment). This includes considering the potential risk for the project to contribute to the spread of pathogens. Pathogen management is ongoing throughout the period in which works are being carried out.

Industry response to pathogens and quarantine areas is dynamic. The project manager and/or environment manager should check the DPI website (www.industry.nsw.gov.au) for the most up-to-date hygiene protocols for each pathogen and for the most recent locations of contamination. Table 7.1 provides best practice hygiene protocols to help prevent the introduction or spread of pathogens.

The project manager and/or environment manager should ensure the risk of spreading pathogens and the mitigation measures required on site are regularly communicated to staff and contractors eg during inductions and toolbox talks.

TABLE 7.1: BEST PRACTICE HYGIENE PROTOCOLS TO PREVENT THE INTRODUCTION OR SPREAD OF PATHOGENS ON RTA PROJECT SITES AND DURING MAINTENANCE WORKS.

Best Practice Hygiene Protocols	Phytophthora (*Phytophthora cinnamomi*)	Chytrid (*Batrachochytrium dendrobatidis*)
Test for presence if determined in REF or environmental assessment	• Soil test by a **NATA approved laboratory.**	• Water test by a **NATA approved laboratory**.
Work programs	• Minimise work during excessively wet or muddy conditions. • Programming of works should always move from uninfected areas to infected areas.	• Minimise work during excessively wet or muddy conditions. • Programming of works should always move from uninfected areas to infected areas.
Restrict access	• Set up exclusion zones with fencing and signage to restrict access into contaminated areas.	• Set up exclusion zones with fencing and signage to restrict access into contaminated areas.
Inductions	• All personnel (including visitors) to be inducted on Phytophthora management measures for the site.	• All personnel (including visitors) to be inducted on chytrid management measures for the site.
Vehicles and machinery	• Provide vehicle wash down facility. • Restrict vehicles to designated tracks, trails and parking areas. • Provide parking and turn-around points on hard, well-drained surfaces.	• Provide vehicle wash down facility. • Restrict vehicles to designated tracks, trails and parking areas. • Provide parking and turn-around points on hard, well-drained surfaces.
Personnel and equipment	• Provide boot wash down facility. • Restrict personnel to designated tracks and trails.	• Provide boot wash down facility. • Disinfect with cleaning products containing benzalkonium chloride or 70 per cent methylated spirits in 30 per cent water. • Disinfect hands or change gloves between the handling of individual frogs and between each site. • Only handle frogs when necessary. Use the 'one bag-one frog' approach.
New material	• Use a certified supply of plants and soil that is disease-free.	• n/a
Disposing of material	• Retain all potentially affected materials within the contaminated area. • Ensure stockpiles of mulch, topsoil and fill material are separated to avoid potential contamination and spread.	• To avoid cross contamination, generally avoid transferring water between two or more separate waterbodies.
Further information	• National best practice guidelines for management of Phytophthora for biodiversity conservation in Australia (O'Gara et al. 2005).	• Hygiene protocol for the control of disease in frogs, Information Circular Number 6 (Wellington and Haering 2008).

Best Practice Hygiene Protocols	Fusarium wilt (eg Panama disease)	Myrtle rust (*Uredo rangelli*)
Test for presence if determined in REF or environmental assessment	• Contact **DPI** before carrying out the works in former banana sites to see if and where Fusarium wilt is present.	• Before carrying out works in bushland, consult: (a) The DPI Myrtle Rust Management Zone map (www.dpi.nsw.gov.au/biosecurity/plant/myrtle-rust/zones) to determine reporting required and whether you are working in a high risk area, and (b) Local offices of **OEH/NPWS** for additional rust records and risk assessments. • Photograph potentially infected plants and send to: biosecurity@industry.nsw.gov.au for confirmation.
Work programs	• No earth work should occur during heavy rainfall or after extended rainfall. • Programming of works should always move from uninfected areas to infected areas.	• Programming of works should always move from uninfected areas to infected areas.
Restrict access	• Set up exclusion zones with fencing and signage to restrict access into contaminated areas.	• Set up exclusion zones with fencing and signage to restrict access into contaminated areas.
Inductions	• All personnel (including visitors) to be inducted on Fusarium wilt management measures for the site.	• All personnel (including visitors) to be inducted on Myrtle rust management measures for the site.
Vehicles and machinery	• Provide vehicle wash down facility. • All vehicles to be washed with Truckwash® and then disinfected with Castrol Farmcleanse® (or equivalent). • For medium-long term projects, install a concrete wash down bay which will capture the water in a trench or bunded area. Water used for wash downs must not be used for dust control.	• Provide vehicle wash down facility. • All vehicles and machinery to be washed with Truckwash® (or equivalent). • Restrict vehicles to designated tracks, trails and parking areas. • For medium-long term projects, install a concrete wash down bay which will capture the water in a trench or bunded area. Water used for wash downs must not be used for dust control.
Personnel and equipment	• Provide boot wash down facility. • Remove mud/dirt from footwear and equipment and disinfect with Castrol Farmcleanse® (or equivalent).	• Personnel working in an infected site should shower and launder clothes (especially hats) before moving to another bushland site. • Provide boot wash down facility. • Footwear and equipment to be cleaned of soil/mud then sprayed with 70 per cent methylated spirits in 30 per cent water.
New material	• Ensure that new soil being brought onto the site is disease-free.	• Use a certified supply of plants and soil that is disease-free (the Australian Nursery Industry *Myrtle Rust Management Plan* (McDonald 2011) provides best practice Myrtle rust management that is to be expected from suppliers).
Disposing of material	• Run-off water must not be used for dust control or irrigation and it is not to be released. • Topsoil from potentially infected plantations must only be stockpiled and used within contaminated areas of the plantation.	• Plant material should be buried on site if possible. • Do not dispose of waste at another bushland site. • Buried material sites must be mapped to prevent re-exposure, especially if located near utility easements. • If material cannot be buried advice should be sought from **DPI.**
Further information	• Fusarium wilt management procedures should be included in the Construction Environmental Management Plan (CEMP) or associated plans.	• DPI handout prepared for Myrtle rust response 2010–11: *Preventing spread of Myrtle Rust in bushland*. Information on managing Myrtle rust can be obtained from: www.dpi.nsw.gov.au/biosecurity/plant/myrtle-rust • The OEH Interim management plan for Myrtle rust in bushland (2011).

Examples of pathogen management on RTA projects

The following photos provide best practice examples of hygiene protocols applied to RTA projects across NSW. This includes handheld boot and vehicle wash down, truck wash down bays, secure disposal of cleared vegetation and disposable suits for personnel on high risk sites.

FIGURE 7.6: Vehicle wash down to prevent the spread of pathogens at Bulahdelah, Hunter Region (Photo: Angie Radford).

FIGURE 7.7: Wheel wash bay used at Tempe Reserve during construction of the Airport Link, Sydney Region. Most trucks drove through the wheel wash, but some vehicles needed to be scrubbed to ensure materials were not transported from site. The water depth was approximately 400mm, with a cattle grate underwater for solids to settle under (Photo: Leigh Trevitt).

FIGURE 7.8: Wheel wash bay used at Sassafras during upgrades on Main Road 92 (Nowra to Nerriga) Southern Region. Vehicles drive onto the grid and are washed down. Water is contained under the grid (Photo: Julian Watson).

FIGURE 7.9: Boot wash down to prevent the spread of the Pathogen chytrid on shoes on the Sapphire to Woolgoolga project, Northern Region (Photo: Josie Stokes).

FIGURE 7.10: Pythopthora management measures on the Main Road 92 near Nowra, Southern Region (Photo: Scott Fayers).

FIGURE 7.11: Removed vegetation was securely wrapped in black plastic bags before disposal to prevent the spread of the pathogen Myrtle rust on the M2 Upgrade, Sydney region (Photo: Nicholas Francesconi).

FIGURE 7.12: Disposable suits were worn on the M2 Upgrade Sydney Region when contractors were working in a positively identified Myrtle rust site adjacent to a critically endangered ecological community of Blue Gum High Forest. This level of hygiene is recommended when working in Myrtle rust sites that are adjacent to highly sensitive ecological areas (eg endangered populations and endangered ecological communities) (Photo: Donald Cheong).

Supporting documents

1. Environmental assessment and associated supporting documents (eg ecological report, conditions of approval).
2. Environmental management plans and associated sub-plans and procedures for the works.
3. Department of Environment and Climate Change (April 2008), Statement of Intent 1. Infection of native plants by *Phytophthora cinnamomi*, New South Wales Department of Environment and Climate Change, Sydney.
4. Gollnow, B, Carnegie, A, Horwood, M and Driessen, S (2010, accessed 7 April 2011) PrimeFacts 1017 (2nd Edition) Myrtle Rust – *Uredo rangelli*, Industry and Investment NSW (www.dpi.nsw.gov.au/primefacts).
5. Industry and Investment NSW (November 2010, accessed 7 April 2011) *Preventing spread of Myrtle Rust in bushland: Handout prepared for Myrtle Rust response 2010–11*, Industry and Investment NSW, Gosford (www.dpi.nsw.gov.au/primefacts).
6. McDonald, J (2011) *Australian Nursery Industry Myrtle Rust* (*Uredo rangelli*) Management Plan, Nursery and Garden Industry Australia, Sydney (www.ngia.com.au).
7. Newley, P (August 2010, accessed 7 April 2011) PrimeFacts 1029 Panama Disease in Bananas, Industry and Investment NSW (www.dpi.nsw.gov.au/primefacts).
8. O'Gara, E, Howard, K, Wilson, B and Hardy, J (2005) *Management of Phytophthora cinnamomi for Biodiversity Conservation in Australia: Part 2 National Best Practice Guidelines,* A report funded by the Commonwealth Government Department of the Environment and Heritage by the Centre for Phytophthora Science and Management, Murdoch University, Western Australia.
9. Suddaby, T and Liew, E (2008) Best Practice *Management Guidelines for Phytophthora cinnamomi within the Sydney Metropolitan Catchment Management Authority Area,* Royal Botanic Gardens Trust, Sydney.
10. Threat Abatement Plans or Strategies and Priority Actions as issued and updated from time to time by
11. Threat Abatement Plans or Strategies and Priority Actions as issued and updated from time to time by OEH online (www.environment.nsw.gov.au).
12. Wellington, R and Haering, R (2008) *Hygiene Protocol for the control of disease in frogs: Threatened Species Management Information Circular No. 6,* Department of Environment and Climate Change, Sydney South.

Attachment 3 Priority weeds

A1.1 State level determined priority weeds

State Priority Weed Objective – PREVENTION: *The following weeds are currently not found in the state, pose significant biosecurity risk and prevention of the biosecurity risk is a reasonably practical objective.*	
Species	**Biosecurity Act requirements & Strategic Response in the region**
All species of vascular plant (Tracheophyta)	**Mandatory Measure (Division 8, Clause 34)** *Duty to notify on importation of plants into the State:* (1) A person must not import a species of vascular plant (Tracheophyta) into the State if the species is not currently present in the State unless the person has, at least 20 working days before the plant is imported into the State, notified the species of plant and its proposed location within the State. (2) The notification is to be given to the Secretary and is to be given in accordance with Part 6. (3) A species of plant is taken not to be present in the State if the National Herbarium of New South Wales does not show it as being present in the State. Note. See http://plantnet.rbgsyd.nsw.gov.au/. **Regional Strategic Response:** Manage in accordance with the New Weed Incursion Plan.
Gamba grass - *Andropogon gayanus*	**Prohibited Matter (Part 4, Biosecurity Act, 2015):** A person who deals with any biosecurity matter that is Prohibited Matter throughout the State is guilty of an offence. **Regional Strategic Response:** Manage in accordance with the New Weed Incursion Plan.
Pond apple - *Annona glabra*	
Bridal veil creeper - *Asparagus declinatus*	
Kochia - *Bassia scoparia (*excluding subsp. *trichophylla)*	
Spotted knapweed - *Centaurea stoebe* subsp.*australis*	
Black knapweed - *Centaurea x moncktonii*	
Siam weed - *Chromolaena odorata*	
Koster's curse - *Clidemia hirta*	
Rubber vine - *Cryptostegia grandiflora*	
Anchored water hyacinth - *Eichhornia azurea*	
Hawkweed - *Hieracium* spp (all species)	
Hydrocotyl/Water pennywort - *Hydrocotyle ranunculoides*	
Lagarosiphon - *Lagarosiphon major*	
Frogbit / Spongeplant - *Limnobium* spp. (all species)	
Yellow burrhead - *Limnocharis flava*	
Miconia - *Miconia* spp. (all species)	
Mikania vine - *Mikania micrantha*	

State Priority Weed Objective – PREVENTION: *The following weeds are currently not found in the state, pose significant biosecurity risk and prevention of the biosecurity risk is a reasonably practical objective.*	
Species	***Biosecurity Act 2015* requirements & Strategic Response in the region**
Mimosa - *Mimosa pigra*	***Prohibited Matter (Part 4, Biosecurity Act, 2015):*** A person who deals with any biosecurity matter that is Prohibited Matter throughout the State is guilty of an offence. **Regional Strategic Response:** Manage in accordance with New Weed Incursion Plan.
Eurasian water milfoil - *Myriophyllum spicatum*	
Mexican feather grass - *Nassella tenuissima* (syn. *Stipa tenuissima*)	
Broomrape - *Orobanche* spp. (all species except the native *O. cernua* var. *australiana* and *O. minor*)	
Water soldier - *Stratiotes aloides*	
Witchweed - *Striga* spp. (except the native *S. parviflora*)	
Water caltrop - *Trapa* spp. (all species)	
Karoo acacia - *Vachellia karroo* (syn. *Acacia karroo*)	
Prickly acacia - *Vachellia nilotica* (syn. *Acacia nilotica*)	
Parthenium Weed - *Parthenium hysterophorus*	***Prohibited Matter (Part 4, Biosecurity Act, 2015):*** A person who deals with any biosecurity matter that is Prohibited Matter throughout the State is guilty of an offence. ***Mandatory Measure (Division 8, Clause 35, Biosecurity Regulation, 2017) - Parthenium weed carriers – machinery and equipment*** (1) This clause applies to the following equipment: (a) grain harvesters (including the comb or front), (b) comb trailers (including the comb or front), (c) bins used for holding grain during harvest operations (d) augers or similar equipment used for moving grain (e) vehicles used for transporting grain harvesters (f) vehicles used as support vehicles with grain harvesters and that have been driven in paddocks during harvest operations, and (g) mineral exploration drilling rigs and vehicles used for transporting those rigs. (2) A person must not import into the State from Queensland any equipment to which this clause applies **Regional Strategic Response:** Manage in accordance with the New Weed Incursion Plan.

State Priority Weed Objective – ERADICATION: *The following weeds are present in limited distribution and abundance in some parts of the state. Elimination of the biosecurity risk posed by these weeds is a reasonably practical objective.*	
Species	***Biosecurity Act 2015* requirements & Strategic Response in the region**
Boneseed -*Chrysanthemoides monilifera subspecies monilifera*	***Biosecurity (Boneseed) Control Order 2017*** **6. Control measures for owners and occupiers of land** Pursuant to section 62(1)(b) of the Act, an owner or occupier of land in the Boneseed Control Zone on which there is Boneseed must: (a) notify the local control authority for the area if the Boneseed is part of a new infestation on the land: i) as soon as practicable after becoming aware of the new infestation; ii) verbally or in writing; iii) giving the following: (1) the person's full name and contact number; (2) the location of the Boneseed, including the property identification code for the land (if this is known); and (3) any other information reasonably requested by the local control authority; and (b) immediately destroy all Boneseed on the land; (c) ensure that subsequent generations of Boneseed are destroyed; and (d) the land is kept free of Boneseed. (e) The owner or occupier does not need to comply with (a) above if they know that notification of the infestation on the land has already been given to the local control authority for the area. **7. Control measures for persons dealing with carriers** Pursuant to section 62(1)(b) of the Act, a person who deals with a carrier of Boneseed in the Boneseed Control Zone, in circumstances where the person knows or ought reasonably to know of the presence of Boneseed on the land or in or on the carrier, must: (a) ensure that Boneseed (including any seed and propagules) is not moved from the land; and (b) immediately notify the local control authority for the area: i) as soon as practicable after becoming aware of the presence of Boneseed; ii) verbally or in writing; iii) giving the following: (1) the person's full name and contact number; (2) the location of the Boneseed, including the property identification code for the land (if this is known); and iv) any other information reasonably requested by the local control authority. (c) The person who deals with a carrier of Boneseed does not need to comply with (b) above if they know that notification of the infestation on the land has already been given to the local control authority for the area. ***Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017)***: A person must not move, import into the State or sell. **Regional Strategic Response:** • manage in accordance with New Weed Incursion Plan • detailed surveillance and mapping to locate infestations • high level analysis of pathways to identify potential introduction areas and prevention options • implement quarantine and/or hygiene protocols, and • monitor progress towards eradication

State Priority Weed Objective – ERADICATION: *The following weeds are present in limited distribution and abundance in some parts of the state. Elimination of the biosecurity risk posed by these weeds is a reasonably practical objective.*	
Species	***Biosecurity Act 2015* requirements & Strategic Response in the region**
Chinese violet - Asystasia gangetica	***Biosecurity (Chinese violet) Control Order 2019*** **6. Control measures for owners and occupiers of land** Pursuant to section 62(1)(b) of the Act, an owner or occupier of land in the Chinese violet Control Zone on which there is Chinese violet must: (a) notify the local control authority for the area if the Chinese violet is part of a new infestation on the land: i) as soon as practicable after becoming aware of the new infestation; ii) verbally or in writing; iii) giving the following: (1) the person's full name and contact number; (2) the location of the Chinese violet, including the property identification code for the land (if this is known); and (3) any other information reasonably requested by the local control authority; and (b) immediately destroy all Chinese violet on the land; (c) ensure that subsequent generations of Chinese violet are destroyed; and (d) the land is kept free of Chinese violet. (e) The owner or occupier does not need to comply with (a) above if they know that notification of the infestation on the land has already been given to the local control authority for the area. **7. Control measures for persons dealing with carriers** Pursuant to section 62(1)(b) of the Act, a person who deals with a carrier of Chinese violet in the Chinese violet Control Zone, in circumstances where the person knows or ought reasonably to know of the presence of Chinese violet on the land or in or on the carrier, must: (a) ensure that Chinese violet (including any seed and propagules) or matter suspected to be or contain Chinese Violet (including any suspected seeds and propagules) is not moved from the land; and (b) immediately notify the local control authority for the area: i) as soon as practicable after becoming aware of the presence of Chinese violet; ii) verbally or in writing; iii) giving the following: (1) the person's full name and contact number; (2) the location of the Chinese violet, including the property identification code for the land (if this is known); and iv) any other information reasonably requested by the local control authority. (c) The person who deals with a carrier of Chinese violet does not need to comply with (b) above if they know that notification of the infestation on the land has already been given to the local control authority for the area. **Regional Strategic Response:** • manage in accordance with New Weed Incursion Plan

State Priority Weed Objective – ERADICATION: *The following weeds are present in limited distribution and abundance in some parts of the state. Elimination of the biosecurity risk posed by these weeds is a reasonably practical objective.*	
Species	***Biosecurity Act 2015* requirements & Strategic Response in the region**
Parkinsonia - *Parkinsonia aculeata*	***Biosecurity (Parkinsonia) Control Order 2017*** **6. Control measures for owners and occupiers of land** Pursuant to section 62(1)(b) of the Act, an owner or occupier of land in the Parkinsonia Control Zone on which there is Parkinsonia must: (a) notify the local control authority for the area if the Parkinsonia is part of a new infestation of Parkinsonia on the land: i) as soon as practicable after becoming aware of the new infestation; ii) verbally or in writing; iii) giving the following: (1) the person's full name and contact number; (2) the location of the Parkinsonia, including the property identification code for the land (if this is known); and (3) any other information reasonably requested by the local control authority; and (b) immediately destroy all Parkinsonia on the land; and (c) ensure that subsequent generations of Parkinsonia are destroyed; and (d) the land is kept free of Parkinsonia. (e) The owner or occupier does not need to comply with (a) above if they know that notification of the infestation on the land has already been given to the local control authority for the area. **7. Control measures for persons dealing with carriers** Pursuant to section 62(1)(b) of the Act, a person who deals with a carrier of Parkinsonia in the Parkinsonia Control Zone, in circumstances where the person knows or ought reasonably to know of the presence of Parkinsonia on the land or in or on the carrier, must: (a) ensure that Parkinsonia (including any seed and propagules) is not moved from the land; and (b) immediately notify the local control authority: i) as soon as practicable after becoming aware of the presence of Parkinsonia; ii) verbally or in writing; iii) giving the following: (1) the person's full name and contact number; (2) the location of the Parkinsonia, including the property identification code for the land (if this is known); and iv) any other information reasonably requested by the local control authority. (c) The person who deals with a carrier of Parkinsonia does not need to comply with (b) above if they know that notification of the infestation on the land has already been given to the local control authority for the area. ***Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017):*** A person must not move, import into the State or sell. **Regional Strategic Response:** Manage in accordance with the New Weed Incursion Plan.

State Priority Weed Objective – ERADICATION: *The following weeds are present in limited distribution and abundance in some parts of the state. Elimination of the biosecurity risk posed by these weeds is a reasonably practical objective.*	
Species	***Biosecurity Act 2015* requirements & Strategic Response in the region**
Tropical soda apple - *Solanum viarum*	***Biosecurity (Tropical Soda Apple) Control Order 2017*** **6. Control measures for owners and occupiers of land** Pursuant to section 62(1)(b) of the Act, an owner or occupier of land in the Tropical Soda Apple Control Zone on which there is Tropical Soda Apple must: (a) notify the local control authority for the area if the Tropical Soda Apple is part of a new infestation of Tropical Soda Apple on the land: i) as soon as practicable after becoming aware of the new infestation; ii) verbally or in writing; iii) giving the following: (1) the person's full name and contact number; (2) the location of the Tropical Soda Apple, including the property identification code for the land (if this is known); and (3) any other information reasonably requested by the local control authority; and (b) destroy all Tropical Soda Apple on the land, including fruit; and (c) ensure that subsequent generations of Tropical Soda Apple are destroyed; and (d) that the land is kept free of Tropical Soda Apple. (e) The owner or occupier does not need to comply with (a) above if they know that notification of the infestation on the land has already been given to the local control authority for the area. **7. Control measures for persons dealing with carriers** Pursuant to section 62(1)(b) of the Act, a person who deals with a carrier of Tropical Soda Apple in the Tropical Soda Apple Control Zone, in circumstances where the person knows or ought reasonably to know of the presence of Tropical Soda Apple on the land or in or on the carrier, must: (a) ensure that Tropical Soda Apple (including any seed and propagules) is not moved from the land; and (b) immediately notify the local control authority for the area: i) as soon as practicable after becoming aware of the presence of Tropical Soda Apple; ii) verbally or in writing; iii) giving the following: (1) the person's full name and contact number; (2) the location of the Tropical Soda Apple, including the property identification code for the land (if this is known); and iv) any other information reasonably requested by the local control authority. (c) The person who deals with a carrier of Tropical Soda Apple does not need to comply with (b) above if they know that notification of the infestation on the land has already been given to the local control authority for the area. **Regional Strategic Response:** Manage in accordance with the New Weed Incursion Plan

State Priority Weed Objective – CONTAINMENT: *These weeds are widely distributed in some parts of the state. While broad scale elimination is not practicable, minimisation of the biosecurity risk posed these weeds is reasonably practicable.*	
Land area where requirements apply	***Biosecurity Act 2015* requirements & Strategic Response in the region**
Alligator Weed - *Alternanthera philoxeroides*	
A biosecurity zone, to be known as the alligator weed biosecurity zone, is established for all land within the State except land in the following regions: (a) Greater Sydney, (b) Hunter (but only in respect of land in the local government area of City of Lake Macquarie, City of Maitland, City of Newcastle or Port Stephens).	***Biosecurity Regulation 2017 - Part 5, Division 2 (Biosecurity Zone)*** An owner or occupier of land in the alligator weed biosecurity zone on which there is the weed *Alternanthera philoxeroides* (Alligator weed) must: (a) if the weed is part of a new infestation of the weed on the land, notify the local control authority for the land as soon as practicable in accordance with Part 6, and (b) eradicate the weed or, if that is not practicable, destroy as much of the weed as is practicable and suppress the spread of any remaining weed. ***Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017):*** A person must not move, import into the State or sell. **Regional Strategic Response:** Refer Appendix 1.2 Containment.
Bitou Bush - *Chrysanthemoides monilifera* subsp. *rotundata*	
A biosecurity zone, to be known as the bitou bush biosecurity zone, is established for all land within the State except land within 10 kilometres of the mean high water mark of the Pacific Ocean between Cape Byron in the north and Point Perpendicular in the South.	***Biosecurity Regulation 2017 - Part 5, Division 3 (Biosecurity Zone)*** An owner or occupier of land in the bitou bush biosecurity zone on which there is the weed *Chrysanthemoides monilifera* subsp. *rotundata* (Bitou bush) must: (a) if the weed is part of a new infestation of the weed on the land, notify the local control authority for the land as soon as practicable in accordance with Part 6, and (b) eradicate the weed or, if that is not practicable, destroy as much of the weed as is practicable and suppress the spread of any remaining weed. ***Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017):*** A person must not move, import into the State or sell. **Regional Strategic Response:** Manage in accordance with NSW Threat Abatement Plan and Saving Our Species.

State Priority Weed Objective – CONTAINMENT: *These weeds are widely distributed in some parts of the state. While broad scale elimination is not practicable, minimisation of the biosecurity risk posed these weeds is reasonably practicable.*	
Land area where requirements apply	***Biosecurity Act 2015* requirements & Strategic Response in the region**
Water Hyacinth *Eichhornia crassipes*	
A biosecurity zone, to be known as the water hyacinth biosecurity zone, is established for all land within the State except land in the following regions: (a) Greater Sydney or North Coast, (b) North West (but only land in that region that is in the local government area of Moree Plains), (c) Hunter (but only land in that region that is in the local government area of City of Cessnock, City of Lake Macquarie, Mid-Coast, City of Maitland, City of Newcastle or Port Stephens), (d) South East (but only land in that region that is in the local government area of Eurobodalla, Kiama, City of Shellharbour, City of Shoalhaven or City of Wollongong).	***Biosecurity Regulation 2017 - Part 5, Division 4 (Biosecurity Zone)*** An owner or occupier of land in the water hyacinth biosecurity zone on which there is the weed *Eichhornia crassipes* (Water hyacinth) must: (a) if the weed is part of a new infestation of the weed on the land, notify the local control authority for the land as soon as practicable in accordance with Part 6, and (b) eradicate the weed, or if that is not practicable, destroy as much of the weed as is practicable and suppress the spread of any remaining weed. ***Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017):*** A person must not move, import into the State or sell. **Regional Strategic Response:** See Appendix 1.2 Containment.

State Priority Weed Objective – ASSET PROTECTION (Whole of State): *These weeds are widely distributed in some areas of the State. As Weeds of National Significance, their spread must be minimised to protect priority assets.*	
Species	***Biosecurity Act 2015* requirements & Strategic Response in the region**
Madeira vine - *Anredera cordifolia*	***Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017):*** A person must not import into the State or sell. **Regional Strategic Response:** Identify priority assets for targeted management. # Refer Appendix 1.2 Prevention. † Refer Appendix 1.2 Eradication. †† Refer Appendix 1.2 Containment. ‡ Refer Appendix 1.2 Asset Protection.
Asparagus weeds - *Asparagus aethiopicus, †A. africanus, A. asparagoides* including the Western Cape form*, *A. plumosus,* and *A. scandens*	
‡Cabomba - *Cabomba caroliniana*	
‡Scotch/English broom - *Cytisus scoparius* subsp. *scoparius*	
‡Cat's Claw Creeper - *Dolichandra unguis-cati*	
Cape/Montpellier broom - *Genista monspessulana*	
Flax-leaf broom - *Genista linifolia*	
#Hymenachne - *Hymenachne amplexicaulis*	
Bellyache bush - *Jatropha gossypiifolia*	
Lantana - *Lantana camara*	
African boxthorn - *Lycium ferocissimum*	
Chilean needle grass - *Nassella neesiana*	
††Serrated tussock - *Nassella trichotoma*	
Opuntia- *Opuntia* spp., *Cylindropuntia* spp., *Austrocylindropuntia* spp. (Excludes *O. ficus- indica*)	
Mesquite - *Prosopis* spp.	
Blackberry - *Rubus fruticosus agg. (Blackberry except the varietals Chester Thornless, Dirksen Thornless, Loch Ness, Silvan, Black Satin, Murrindindi, Smooth Stem, Thornfree and Chehalem)*	
Sagittaria - *Sagittaria platyphylla*	
†Willows - *Salix* spp.(excludes *S.babylonica*, *S.X calodendron* & *S. x reichardtiji*)	
††Salvinia - *Salvinia molesta*	
Fireweed - *Senecio madagascariensis*	
Silver-leaf nightshade - *Solanum elaeagnifolium*	
Athel pine - *Tamarix aphylla*	
††Gorse - *Ulex europaeus*	

A1.2 Regional priority weeds

Regional Priority Weed Objective – PREVENTION: *The following weeds are currently not found in the Greater Sydney region, pose significant biosecurity risk and prevention of the biosecurity risk posed by these weeds is a reasonably practical objective.*	
Coral creeper - *Barleria repens*	
East Indian hygrophila - *Hygrophila polysperma*	
Giant devil's fig - *Solanum chrysotrichum*	
Giant rats tail grass - *Sporobolus pyramidalis*	
Hymenachne - *Hymenachne amplexicaulis*	
Nodding thistle - *Carduus nutans*	
Spanish broom - *Spartium junceum*	
Water lettuce - *Pistia stratiotes*	
Water star grass - *Heteranthera zosterifolia*	
White blackberry / Mysore raspberry - *Rubus niveus*	
Outcomes to demonstrate compliance with the GBD	**Strategic response in the region**
• The plant is eradicated from the land and the land is kept free of the plant. • Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. • Local Control Authority is notified if the plant is found on the land	• Implement quarantine and/or hygiene protocols • Undertake high risk sites & pathways analysis to identify potential introduction areas and preventative options • Have a collaborative rapid response protocol in place ***Supporting documents:*** New Weed Incursion Plan (includes rapid response protocol) Look, Learn, Act Community awareness program

Regional Priority Weed Objective – ERADICATION: *The following weeds are present in limited distribution and abundance. Elimination of the biosecurity risk posed by these weeds is a reasonably practical objective.*	
Outcomes to demonstrate compliance with the GBD	**Strategic response in the region**
Black willow - *Salix nigra*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation, 2017):*** A person must not move, import into the State or sell.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations.
Chinese knotweed - *Persicaria chinensis*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations.
Climbing asparagus - *Asparagus africanus*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation, 2017):*** A person must not move, import into the State or sell.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations.
Glory lily – *Gloriosa superba*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations.
Grey sallow – *Salix cinerea*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation, 2017):*** A person must not move, import into the State or sell.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations.

Regional Priority Weed Objective – ERADICATION: *The following weeds are present in limited distribution and abundance. Elimination of the biosecurity risk posed by these weeds is a reasonably practical objective.*	
Outcomes to demonstrate compliance with the GBD	**Strategic response in the region**
Groundsel bush - Baccharis halimifolia	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene controls
Hygrophila - *Hygrophila costata*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations.
Kei apple - *Dovyalis caffra*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations.
Kidney leaf mud plantain - *Heteranthera reniformis*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene protocols.
Kudzu - *Pueraria lobata*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene protocols.
Leaf cactus - *Pereskia aculeata*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene protocols.

Regional Priority Weed Objective – ERADICATION: *The following weeds are present in limited distribution and abundance. Elimination of the biosecurity risk posed by these weeds is a reasonably practical objective.*	
Outcomes to demonstrate compliance with the GBD	**Strategic response in the region**
Ming fern - *Asparagus macowanii var. zuluensis*	
• The plant is eradicated from the land and the land is kept free of the plant. • Land managers mitigate the risk of the plant being introduced to their land. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Detailed surveillance and mapping to locate all infestations. • High level pathways analysis to identify potential introduction areas and preventative options. • Implement quarantine and/or hygiene protocols. • Monitor progress towards eradication.
Mysore thorn - *Caesalpinia decapetala*	
• The plant is eradicated from the land and the land is kept free of the plant. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene protocols.
Sicilian sea lavender - *Limonium hyblaeum*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene protocols.
Sicklethorn - *Asparagus falcatus*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene protocols.
Skunk vine - *Paederia foetida*	
• The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene protocols.

Regional Priority Weeds objective – CONTAINMENT: *These weeds are widely distributed in the region. While broad scale elimination is not practicable, minimisation of the biosecurity risk posed by these weeds is reasonably practicable.*		
Land area where requirements apply	**Outcomes to demonstrate compliance with the GBD**	**Strategic response in the region**
African olive - *Olea europaea* subsp. *cuspidata*		
An ***exclusion zone*** is established for all lands in the Blue Mountains local government area and lands to the west of the Nepean River in the Penrith local government area. The remainder of the region is classified as the ***core infestation area***.	**Whole region:** • The plant or parts of the plant are not traded, carried, grown or released into the environment. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers prevent spread from their land where feasible. • Land managers reduce the impact on priority assets.	**Whole region:** • Implement quarantine and/or hygiene protocols. • Surveillance and mapping to locate all infested properties and maintain currency of exclusion zone and objectives. • Monitor change in current distribution to ensure containment of spread. **Within Exclusion zone:** • Destruction of all infestations, aiming at local eradication where feasible **Within Core infestation:** • Identify priority assets for targeted management.
Alligator weed - *Alternanthera philoxeroides*		
An ***exclusion zone*** is established for all lands in the Blue Mountains local government areas. The remainder of the region is classified as the ***core infestation area.***	**Whole region:** • Land managers prevent spread from their land where feasible. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers mitigate the risk of the plant being introduced to their land. • Land managers reduce the impact on priority assets. ***The following legislative requirement also applies:*** **Mandatory Measure (Division 8, Clause 33):** A person must not move, import into the State or sell. Note a Biosecurity Zone applies to this species under Part 5 of Division 2 of the *Biosecurity Regulation 2017*. However this does not apply to the Greater Sydney region.	**Blue Mountains LGA:** • Destruction of all infestations, where feasible. • Implement quarantine and/or hygiene protocols. **Remainder of region:** • Implement quarantine and/or hygiene protocols. • Manage in accordance with the Priorities for the control of Alligator Weed in the Sydney Region.

Regional Priority Weeds objective – CONTAINMENT:		
Land area where requirements apply	**Outcomes to demonstrate compliance with the GBD**	**Strategic response in the region**
Asparagus fern - Asparagus virgatus		
An ***exclusion zone*** is established for the whole of the region except Central Coast local government area. Central Coast local government area is classified as the ***core infestation area.***	**Whole region:** • Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. • Local Control Authority is notified if the plant is found on the land. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers prevent spread from their land where feasible. • Land managers reduce the impact on priority assets.	• Destruction of all infestations where feasible. • Monitor change in current distribution to ensure containment of spread.
Gorse - *Ulex - europaeus*		
An ***exclusion zone*** is established for the Blue Mountains local government area. The remainder of the region is classified as the ***core infestation area***.	**Whole region:** • Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers prevent spread from their land where feasible. ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause33, Biosecurity Regulation, 2017):*** A person must not move, import into the State or sell.	• Destruction of all infestations, aiming at local eradication where feasible. • Detailed surveillance and mapping to locate all infestations. • Implement quarantine and/or hygiene protocols. • Monitor progress towards eradication.

Regional Priority Weeds objective – CONTAINMENT:		
Land area where requirements apply	**Outcomes to demonstrate compliance with the GBD**	**Strategic response in the region**
Holly-leaved senecio - *Senecio glastifolius*		
An ***exclusion zone*** is established for the whole of the region except the Royal National Park. The Royal National Park is classified as the ***core infestation area***.	**Whole region:** • Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. • Local Control Authority is notified if the plant is found on the land. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers prevent spread from their land where feasible. • Land managers reduce the impact on priority assets.	• The plant should be fully and continuously suppressed and destroyed • Monitor change in current distribution to ensure containment of spread.
Horsetails - *Equisetum* spp.		
An ***exclusion zone*** is established for whole of region except Northern Beaches local government area. The Northern Beaches local government area is classified as the ***core infestation area.***	**Whole region:** • Land managers mitigate the risk of the plant being introduced to their land. • Local Control Authority is notified if the plant is found on the land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers prevent spread from their land where feasible.	• Destruction of all infestations, where feasible. • Monitor change in current distribution to ensure containment of spread.

Regional Priority Weeds objective – CONTAINMENT:		
Land area where requirements apply	**Outcomes to demonstrate compliance with the GBD**	**Strategic response in the region**
Salvinia - *Salvinia molesta*		
An ***exclusion zone*** is established for the whole of the region except the Georges and Hawkesbury-Nepean Rivers and their tributaries. The Georges and Hawkesbury-Nepean Rivers and tributaries are classified as the ***core infestation area***.	**Whole region:** • Land managers mitigate the risk of the plant being introduced to their land. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. **Within Core infestation:** • Land managers prevent spread from their land where feasible. ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation, 2017):*** A person must not move, import into the State or sell.	• The plant should be fully and continuously suppressed and destroyed • Monitor change in current distribution to ensure containment of spread.
Sea spurge - *Euphorbia paralias*		
An ***exclusion zone*** is established for whole of region except Sutherland local government area. Sutherland local government areas is classified as the ***core infestation area.***	**Whole region:** • Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. **Within Core infestation:** • Land managers prevent spread from their land where feasible.	• Destruction of all infestations, where feasible. • Detailed surveillance and mapping to locate all infestations. • High level pathways analysis to identify potential introduction areas and preventative options. • Implement quarantine and/or hygiene protocols. • Monitor progress towards eradication.

Regional Priority Weeds objective – CONTAINMENT:		
Land area where requirements apply	**Outcomes to demonstrate compliance with the GBD**	**Strategic response in the region**
Senegal tea - *Gymnocoronis spilanthoides*		
An ***exclusion zone*** is established for the whole of the region except Central Coast LGA, Royal National Park and the Hawkesbury-Nepean River and its tributaries. Central Coast LGA, Royal National Park and the Hawkesbury-Nepean River and its tributaries are classified as the ***core infestation area***.	**Whole region:** • Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. • Local Control Authority is notified if the plant is found on the land. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers prevent spread from their land where feasible.	• The plant should be fully and continuously suppressed and destroyed • Monitor change in current distribution to ensure containment of spread.
Serrated tussock - *Nassella trichotoma*		
An ***exclusion zone*** is established for all lands in the region, excluding areas comprising Wollondilly and Camden local government areas, which will be known as the ***core infestation area***.	**Whole region:** • Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. • Local Control Authority is notified if the plant is found on the land. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers prevent spread from their land where feasible. ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation, 2017):*** A person must not move, import into the State or sell.	• Monitor change in current distribution to ensure containment of spread. • Promote best practice principles to landholders, including a range of control techniques for integrated weed management; maintaining competitive vegetation/crops/ pastures, hygiene and property management plans. **Within Exclusion zone:** • The plant should be fully and continuously supressed and destroyed.

Regional Priority Weed Objective – CONTAINMENT:		
Land area where requirements apply	**Outcomes to demonstrate compliance with the GBD**	**Strategic response in the region**
Tiger pear - Opuntia aurantiaca		
An exclusion zone is established for the whole of the region except Blacktown and Wollondilly local government areas. Blacktown and Wollondilly local government areas are classified as the core infestation area.	**Whole region:** • Land managers prevent spread from their land where feasible. • Local Control Authority is notified if the plant is found on the land. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. **Within Core infestation:** • Land managers mitigate the risk of the plant being introduced to their land • Land managers reduce the impact on priority assets. ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33):*** A person must not move, import into the State or sell.	• Destruction of all infestations, where feasible. • Monitor change in current distribution to ensure containment of spread.
Water poppy - *Hydrocleys nymphoides*		
An ***exclusion zone*** is established for all lands (and waters) in the region, excluding areas comprising the Hacking River Catchment, which will be known as the ***core infestation area***.	**Whole region:** • The plant or parts of the plant are not traded, carried, grown or released into the environment. **Within Exclusion zone:** • The plant is eradicated from the land and the land is kept free of the plant. • Local Control Authority is notified if the plant is found on the land. **Within Core infestation:** • Land managers mitigate the risk of the plant being introduced to their land. • Land managers prevent spread from their land where feasible.	• Monitor change in current distribution to ensure containment of spread. • Promote best practice principles to landholders, including a range of control techniques for integrated weed management; maintaining competitive vegetation/crops/ pastures, hygiene and property management plans. **Within Exclusion zone:** • The plant should be fully and continuously supressed and destroyed.

Regional Priority Weed Objective – ASSET PROTECTION:	
Outcomes to demonstrate compliance with the GBD	**Strategic response in the region**
Cat's claw creeper - *Dolichandra unguis-cati*	
• Land managers prevent spread from their land where feasible. • Land managers mitigate the risk of the plant being introduced to their land. • Land managers reduce the impact on priority assets. • The plant or parts of the plant are not traded, carried, grown or released into the environment. ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33):*** A person must not move, import into the State or sell.	• The plant should be fully and continuously suppressed and destroyed • Identify priority assets for targeted management • Promote best practice principles to landholders, including a range of control techniques for integrated weed management; maintaining competitive vegetation/crops/pastures, hygiene and property management plans.
Cabomba - *Cabomba caroliniana*	
• Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment. ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33):*** A person must not move, import into the State or sell.	• The plant should be fully and continuously suppressed and destroyed • Implement quarantine and/or hygiene protocols.
Giant reed – *Arundo donax*	
• Land managers mitigate the risk of the plant being introduced to their land. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• The plant should be fully and continuously suppressed and destroyed • Implement quarantine and/or hygiene protocols.
Green cestrum - *Cestrum parqui*	
• Land managers mitigate the risk of the plant being introduced to land used for grazing of livestock. • Land managers prevent spread from their land where feasible. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• The plant should be fully and continuously suppressed and destroyed on grazing land • Implement quarantine and/or hygiene protocols.
Ludwigia - *Ludwigia peruviana*	
• Land managers mitigate the risk of the plant being introduced to their land. • Land managers prevent spread from their land where feasible. • Land managers reduce the impact on priority assets. • The plant or parts of the plant are not traded, carried, grown or released into the environment. • Local Control Authority is notified if the plant is found on the land.	• The plant should be fully and continuously suppressed and destroyed. • Identify priority assets for targeted management.

Regional Priority Weed Objective – ASSET PROTECTION:	
Outcomes to demonstrate compliance with the GBD	**Strategic response in the region**
Pampas grass - *Cortaderia species*	
• Land managers mitigate the risk of the plant being introduced to their land. • Land managers prevent spread from their land where feasible. • Land managers reduce the impact on priority assets. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• The plant should be fully and continuously suppressed and destroyed. • Identify priority assets for targeted management
Scotch/English Broom - *Cytisus scoparius*	
• Land managers mitigate the risk of the plant being introduced to their land. • Land managers reduce the impact on priority assets. ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33):*** A person must not move, import into the State or sell.	• The plant should be managed in accordance with a regional best practice guide identifying assets to be protected, including the Greater Blue Mountains World Heritage Area and Sydney water supply catchment lands.
Singapore daisy - *Sphagneticola trilobata*	
• Land managers mitigate the risk of the plant being introduced to their land. • Land managers reduce the impact on priority assets. • The plant or parts of the plant are not traded, carried, grown or released into the environment.	• Manage in accordance with New Weed Incursion Plan • Implement quarantine and/or hygiene protocols. • Identify priority assets • Promote best practice principles to landholders, including a range of control techniques for integrated weed management; maintaining competitive vegetation/crops/pastures, hygiene and property management plans.
Water hyacinth - *Eichhornia crassipes*	
• Land managers prevent spread from their land where feasible. • The plant or parts of the plant are not traded, carried, grown or released into the environment. ***The following legislative requirement also applies: Mandatory Measure (Division 8, Clause 33):*** A person must not move, import into the State or sell. Note a Biosecurity Zone applies to this species under Part 5 of Division 2 of the *Biosecurity Regulation 2017*. However this does not apply to the Greater Sydney region.	• Develop and implement Community Campaign • Promote best practice principles to landholders, including a range of control techniques for integrated weed management; maintaining competitive vegetation/crops/pastures, hygiene and property management plans.

Attachment 4 Other weeds of regional concern

Appendix 2: Other weeds of regional concern

The following table recognises that whether a plant is a weed depends on the location, and that some plants grown as crops may function as weeds in other land uses. For example, kikuyu is a valuable pasture grass in grazing paddocks but is an invasive weed in the natural environment ie. bushland and National parks. Agapanthus are very popular garden plants, often used as border plants or to hold low banks. However, agapanthus are also known to invade roadsides, bushland and waterways.

Weeds listed in Appendix 2 include species known to occur in the Greater Sydney region as well as species not currently known to occur but at risk of moving into the region in the future. They have been identified as a potential risk in some (not all) situations. Many of the species pose potential risks to biodiversity (i.e. the environment), for example if they were to spread to or be found in a National Park. Some of the species pose potential risks to agriculture and some of the weeds pose potential risks to human health. In most situations this is when ingested but can also include risks associated with asthma and other allergic reactions.

This plan recognises that many weeds are already so well established that they can only be managed and will never be eradicated from the region. The species included in Appendix 2 may warrant resources for control or management programs, or occur in neighbouring regions and are a priority to keep out of the region. Inclusion on the list may assist Local Control Authorities and/or land managers prioritise action in certain circumstances where it can be demonstrated the weed poses a threat to the environment, agriculture and/or the community/ human health.

The *Biosecurity Act 2015* provides powers to Local Control Authorities to take action in relation to these weeds in particular circumstances, for example where a weed threatens a high value asset and prevention, elimination or reduction of the risk is feasible and reasonable.

Common name	Scientific name	Asset/value at risk
Aaron's Beard, Rose-of-Sharon	*Hypericum calycinum*	Environment
African lovegrass	*Eragrostis curvula*	Environment
African marigold	*Cineraria lyratiformis*	Environment
Agapanthus	*Agapanthus praecox subsp. orientalis*	Environment
American Cotton Palm, Cotton Palm, California fan palm.	*Washingtonia filifera*	Environment
Apple of Sodom	*Solanum linnaeanum*	Environment, Agriculture, Community amenity
Arrowhead	*Sagittaria calycina* var. *calycina*	Environment, Agriculture, Community amenity
Arum lily	*Zantedeschia aethiopica*	Human health, Environment
Awabuki sweet viburnum	*Viburnum odoratissimum* var *awabuki*	Environment
Balloon vine	*Cardiospermum grandiflorum*	Environment
Banana passionfruit	*Passiflora tarminiana*	Environment
Beach daisy	*Arctotheca populifolia*	Environment, Community amenity

Common name	Scientific name	Asset/value at risk
Berberis, Barberry	*Berberis aristata, B. darwini* and *B. thunbergii*	Environment
Billardieria, Bluebell creeper	*Billardiera heterophylla*	Environment
Black cherry, Wild black cherry	*Prunus serotina*	Environment
Black locust	*Robinia pseudoacacia*	Environment, Human health
Blue heliotrope	*Heliotropium amplexicaule*	Agriculture
Blue hound's tongue	*Cynoglossum creticum*	Agriculture
Blue morning glory	*Ipomoea indica*	Environment, Human health
Blue stars	*Aristea ecklonii*	Environment
Bokhara	*Melilotus albus*	Environment
Box elder	*Acer negundo*	Environment
Brazilian button flower	*Centratherum punctatum*	Environment
Brazilian cherry	*Eugenia uniflora*	Environment
Broad leaf pepper	*Schinus terebinthifolius*	Environment
Buckthorn	*Rhamnus alaternus*	Environment
Buffel grass	*Cenchrus ciliaris*	Environment
Burr ragweed	*Ambrosia confertiflora*	Agriculture, human health
Bushman's Poison, Hottentot's-poison, Poison arrow plant, Wintersweet	*Acokanthera oblongifolia*	Agriculture
Camphor laurel	*Cinnamomum camphora*	Environment, Agriculture, Human health
Cane needle grass	*Nassella hyalina*	Agriculture
Cape honeysuckle	*Tecoma capensis*	Environment
Cape ivy	*Delairea odorata*	Environment
Cape tulip	*Moraea flaccida*	Environment, Agriculture
Cassia, Senna	*Senna pendula*	Environment
Cherry guava	*Psidium cattleyanum*	Environment, Agriculture
Chinese celtis/ Chinese hackberry	*Celtis sinensis*	Environment, Agriculture
Chinese elm	*Ulmus parvifolia*	Environment
Chinese tallow	*Triadica sebifera*	Environment
Climbing nightshade, Brazillian nightshade	*Solanum seaforthianum*	Environment, Human health
Coastal morning glory	*Ipomoea cairica*	Environment
Cockspur coral tree	*Erthrina crista-galli*	Environment
Cocos palm	*Syagrus romanzoffiana*	Environment
Coffee bush, Leucaena	*Leucaena leucocephala*	Environment, Community amenity
Common morning glory	*Ipomoea purpurea*	Environment, Agriculture
Coolatai grass	*Hyparrhenia hirta*	Environment, Agriculture
Coral Berry	*Ardisia crenata*	Environment
Coral tree, Common coral tree	*Erythrina* x *sykesii*	Environment
Corky passionflower	*Passiflora suberosa*	Environment
Cotoneaster	*Cotoneaster* spp	Environment

Common name	Scientific name	Asset/value at risk
Creeping lantana, trailing lantana	*Lantana montevidensis*	Environment, Agriculture
Crofton weed	*Ageratina adenophora*	Environment, Agriculture
Cumbungi	*Typha latifolia*	Environment
Day-lily, Kwanso	*Hemerocallis fulva*	Environment
Dense waterweed, Leafy elodea, Egeria, Anacharis, Brazilian elodea	*Egeria densa*	Environment, Community amenity
Dipogon, Dolichos pea,	*Dipogon lignosus*	Environment
Dutchmans pipe	*Aristolochia elegans*	Environment
Espartillo, Broad-kernel espartillo	*Amelichloa caudata* (syn. *Achnatherum caudatum*)	Environment, Agriculture
Espartillo – narrow kernel	*Amelichloa brachychaeta*	Environment, Agriculture
European olive	*Olea europaea subsp. europaea*	Environment
Firethorn	*Pyracantha* spp.	Environment
Fishbone fern	*Nephrolepis cordifolia*	Environment
Formosa lily, Taiwan lily	*Lilium formosanum*	Environment
Fountain grass	*Pennisetum setaceum*	Environment
Foxglove tree, Empress tree	*Paulownia tomentosa*	Environment
Galenia	*Galenia pubescens*	Environment, Agriculture
Giant Parramatta grass (GPG)	*Sporobolus fertilis*	Environment, Agriculture
Ginger lily	*Hedychium gardnerianum*	Environment
Golden rain tree	*Koelreuteria elegans*	Environment
Golden wreath wattle	*Acacia saligna*	Environment
Harrisia cactus	*Harrisia* spp.	Environment
Himalayan honeysuckle	*Leycesteria formosa*	Environment
Holly, English holly	*Ilex aquifolium*	Environment
Honey locust	*Gleditsia triacanthos*	Environment, Agriculture
Indian hawthorn	*Rhaphiolepis indica*	Environment
Japanese climbing Fern	*Lygodium japonicum*	Environment
Japanese hawthorn, Yeddo hawthorn	*Rhaphiolepis umbellata*	Environment
Japanese honeysuckle	*Lonicera japonica*	Environment
Keriberry	*Rubus rugosus*	Environment
Kikuyu	*Pennisetum clandestinum*	Environment
Long leaf water primrose	*Ludwigia longifolia*	Environment, Agriculture, Community amenity
Lote tree, Nettle tree,Mmediterranean hackberry	*Celtis australis*	Environment
Mahonia, Chinese Holly	*Berberis lomariifolia*	Environment
Mexican water lily, Yellow water lily	*Nymphaea mexicana*	Environment
Mimosa bush, Briar bush, Yellow mimosa	*Vachellia farnesiana*	Environment, Agriculture
Mirror bush, Mirror plant	*Coprosma repens*	Environment

Common name	Scientific name	Asset/value at risk
Mistflower	*Ageratina riparia*	Environment, Agriculture
Monkey's comb	*Pithecoctenium crucigerum*	Environment
Montbretia	*Crocosmia x crocosmiiflora*	Environment
Mossman river grass	*Cenchrus echinatus*	Environment
Moth vine, Moth plant	*Araujia sericifera*	Environment
Mother of millions	*Bryophyllum* spp.	Environment, Agriculture, Human health
New Zealand flax	*Phormium tenax*	Environment
Ochna	*Ochna serrulata*	Environment
Onion Grass	*Romulea rosea*	Environment, Agriculture
Orange jessamine, Murraya	*Murraya paniculata*	Environment
Osage orange	*Maclura pomifera*	Environment
Ox-eye daisy	*Leucanthemum vulgare*	Environment
Pampas lily of the valley	*Salpichroa origanifolia*	Environment
Paper mulberry	*Broussonetia papyrifera*	Environment
Paterson's curse	*Echium plantagineum*	Environment, Agriculture, Human health
Patula pine, Mexican weeping pine	*Pinus patula*	Environment
Pellitory, Asthma weed	*Parietaria judaica*	Environment, Human health
Periwinkle, Blue periwinkle	*Vinca major*	Environment
Phoenix palm, Canary Island date palm	*Phoenix canariensis*	Environment
Pink trumpet vine	*Podranea ricasoliana*	Environment
Privet spp.	*Ligustrum sinense, Ligustrum lucidum, Ligustrum vulgare*	Environment, Human health
Radiata pine, Pine wildings	*Pinus radiata*	Environment
Rattleseed pod, Rattlepod	*Crotalaria lunata*	Environment
Red ludwigia	*Ludwigia repens*	Environment, Agriculture, Community amenity
Reed canary grass	*Phalaris arundinacea*	Environment
Reed sweet grass	*Glyceria maxima*	Environment
Rhizomatous bamboo, Black bamboo	*Phyllostachys nigra*	Environment
Rhizomatous bamboo, Fishpole bamboo, Yellow bamboo	*Phyllostachys aurea*	Environment
Rhodes grass	Chloris gayana	Environment
Rhus tree	*Toxicodendron succedaneum*	Human health
Rush	*Juncus articulatus*	Environment
Rush	*Juncus effusus*	Environment
Scotch, Illyrian thistles	*Onopordum acanthium, O. Illyricum* and *O. acaulon*	Agriculture
Sedge, Cyperus	*Cyperus teneristolon*	Environment, Agriculture
Spanish heath	*Erica lusitanica*	Environment
Spiderwort, Moss inch plant	*Tradescantia cerinthoides*	Environment

Common name	Scientific name	Asset/value at risk
Spiny burrgrass - longispinus	*Cenchrus longispinus*	Environment, Agriculture, Human health
Spiny rush, Spike rush, Sharp rush	*Juncus acutus*	Environment
St John's wort	*Hypericum perforatum*	Environment, Agriculture
Sweet briar	*Rosa rubiginosa*	Agriculture
Sweet vernal-grass	*Anthoxanthum odoratum*	Environment, Agriculture
Tall wheat grass	*Thinopyrum ponticum*	Environment
Tangier Pea	*Lathyrus tingitanus*	Environment
Telegraph Weed	*Heterotheca grandiflora*	Environment
Trad	*Tradescantia fluminensis*	Environment
Tree of heaven	*Ailanthus altissima*	Environment, Human health
Turkey rhubarb	*Acetosa sagittata*	Environment
Tussock paspalum, Blue grass	*Paspalum quadrifarium*	Environment
Tutsan	*Hypericum androsaemum*	Environment
Umbrella tree	*Schefflera actinophylla*	Environment
Viper's bugloss	*Echium vulgare*	Agriculture
Watsonia	*Watsonia meriana*	Environment
Whisky grass	*Andropogon virginicus*	Environment
White jasmine, Chinese jasmine	Jasminum polyanthum	Environment
Wild poinsettia	*Euphorbia cyathophora*	Environment
Wild tobacco bush	*Solanum mauritianum*	Environment, Agriculture
Yellow bells, Golden bells	*Tecoma stans*	Environment, Agriculture
Yorkshire fog	*Holcus lanatus*	Environment

Appendix F – Fauna Handling and Rescue Procedure [TBD by the Zinfra]

Appendix G – Clearing and Grubbing Plan [TBD by Zinfra]

Appendix H – Reuse Strategy [TBD by Zinfra]

Guidance Text

Reuse Strategy including:

- Consideration of the re-use of hollows, tree trunks, root balls, bush rock, mulch on and off Site; and
- An expression of interest process with Western Sydney Parklands Trust, Local Councils, Landcare groups and relevant Government agencies for the supply of hollows, tree trunks, root balls, mulch, bush rock, prior to clearing commencement;
- Process to ensure all requirements of Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (NSW Roads and Traffic Authority, 2011) are met.