Construction Environmental Management Plan

Westlink Stage 1

290-308 Aldington Road, 59-62 Abbotts Road & 63 Abbotts Road, Kemps Creek

SSD-9138102

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AUTHOR(S) DETAILS

Author Details	Qualifications and Experience
Mathew Williams	BEnvSc Over 20 years experience in planning, auditing, compliance and construction environmental management.
Zainab Ahmed	BIR MEnvSc 2 years of experience in environmental research, planning and assessment.
Neda Yousefi	BA MAE PhD (EnvSc) 5 years environmental research and assessment.

APPROVER DETAILS

Approver Details	Qualifications and Experience
Rob Salisbury	BSc DipEnvStud MSc Over 30 years of environmental management experience in the transport, industrial, water, energy, communications and other sectors.

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Glossary

ACHMP	Aboriginal Cultural Heritage Management Plan
CAQMP	Construction Air Quality Management Plan
CEMP	Construction Environmental Management Plan
CNVMP	Construction Noise and Vibration Management Plan
CTMP	Construction Traffic Management Plan
CUFP	Contamination Unexpected Finds Protocol
CoC	Condition(s) of Consent
CPESC	Certified Professional in Erosion and Sediment Control
CSCS	Community and Stakeholder Communications Strategy
DCP	Development Control Plan
DDS	Dam Decommissioning Strategy
DPE	Department of Planning and Environment (formerly DPIE)
EIS	Environmental Impact Statement
Environmental Incident	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.
ER	Environmental Representative
Material Harm	Harm that involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or 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).
MRP	Mamre Road Precinct
Non-compliance	An occurrence, set of circumstances, or development that is a breach of the SSD 9138102 Development Consent.
ROL	Road Occupancy Licence
SSD	State significant development
TGS	Traffic guidance scheme
The Project	Stage 1 of the Westlink industrial estate (formerly known as the Kemps Creek Logistics Park)
WAD	Works Authorisation Deed
WMP	Wildlife Management Plan

1 INTRODUCTION

1.1 Background

This Construction Environmental Management Plan (CEMP) has been prepared by Aspect Environmental Pty Ltd (Aspect), on behalf of ESR Australia Pty Ltd (ESR), for the purposes of Stage 1 of an industrial estate known as Westlink (formerly known as the Kemps Creek Logistics Park) (the Project).

This CEMP has been prepared with reference to:

- State Significant Development (SSD) 9138102 Development Consent and the included conditions of consent (CoC) dated 21 April 2023
- Amendment Report (Ethos Urban, 15 September 2022)
- Environmental Impact Statement (Ethos Urban, 17 June 2021)
- SSD 9138102 Planning Secretary's Environmental Assessment Requirements which were issued in December 2020.

The CEMP defines the environmental management framework for earthworks and construction of the Project.

1.2 Project Description

The Project comprises the first stage of an industrial estate located at 290-308 Aldington Road, Kemps Creek (Lot 13 DP 253503), 59-62 Abbotts Road (Lot 12 DP 253503), and 63 Abbotts Road, Kemps Creek (Lot 11 DP 253503) within Penrith City Local Government Area. The Project site is approximately 319,800m^2 in area and is irregular in shape. The location of the Project site is indicated by the red outline on Figure 1-1.

The SSD 9138102 Development Consent also includes Lots 3 and 4 DP 250002 in the development site. These lots are located immediately south of Lot 11 DP 253503 and works (e.g. batter slopes) may be required within them to allow earthworks to be safely undertaken within Lot 11.

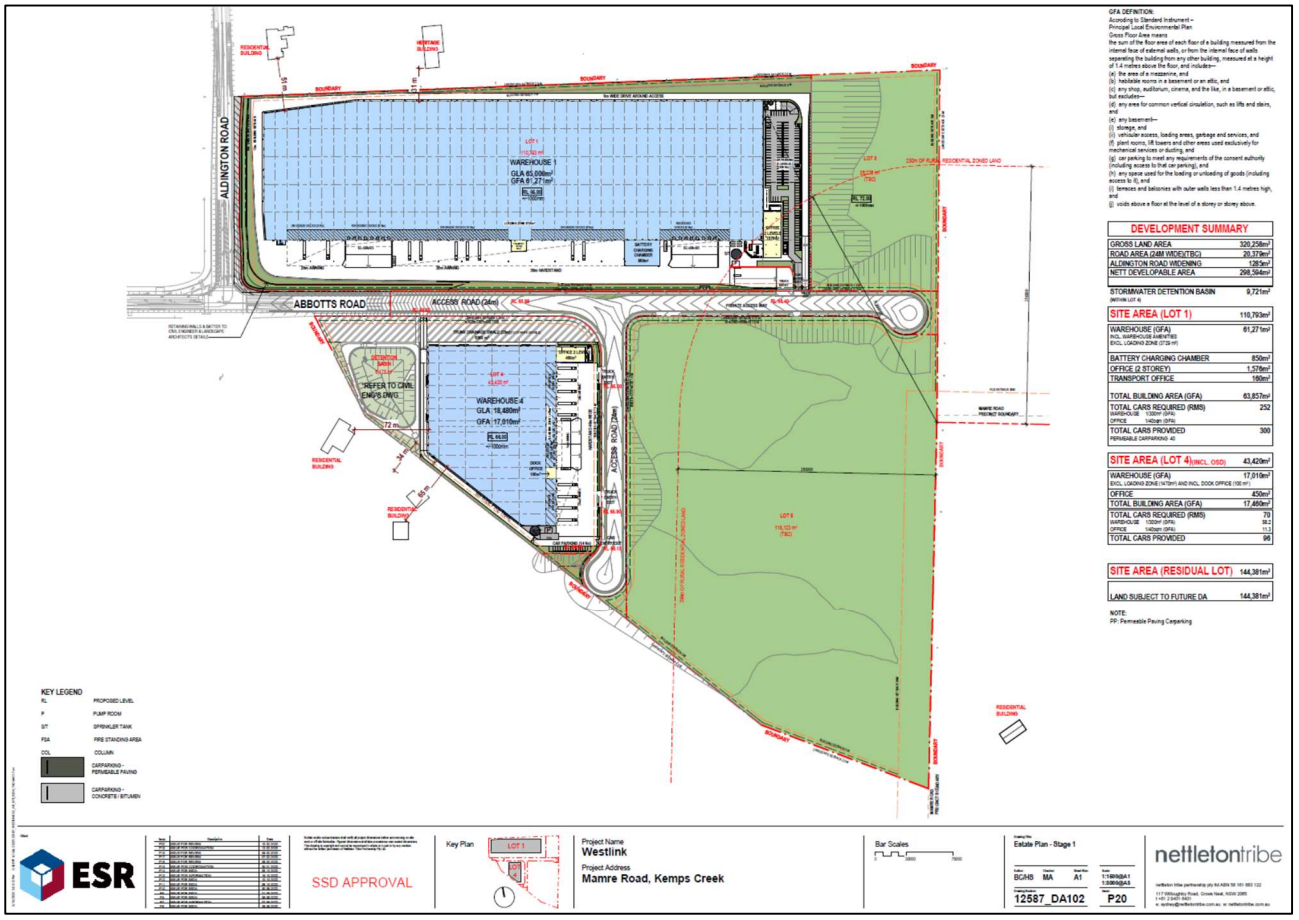
The site currently comprises undulated rural land, with foundations of residential dwellings, farm sheds, and miscellaneous agricultural greenhouses and structures. It is best described as being rural-residential in nature, with significant areas of land currently remaining unused.

As per the SSD 9138102 Development Consent the Project includes bulk earthworks (clearing, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction), subdivision, construction, fit out and operation of two warehouse buildings and ancillary office space with a total gross floor area of 81,317m^2, landscaping, construction of estate roads and external road upgrades, site servicing and stormwater infrastructure.

The site layout for Stage 1 is shown in Figure 1-2.

Figure 1-1: Site context (EIS, Ethos Urban, June 2021)

Figure 1-2: Stage 1 site layout (SSD 9138102 Development Consent, 21 April 2023)



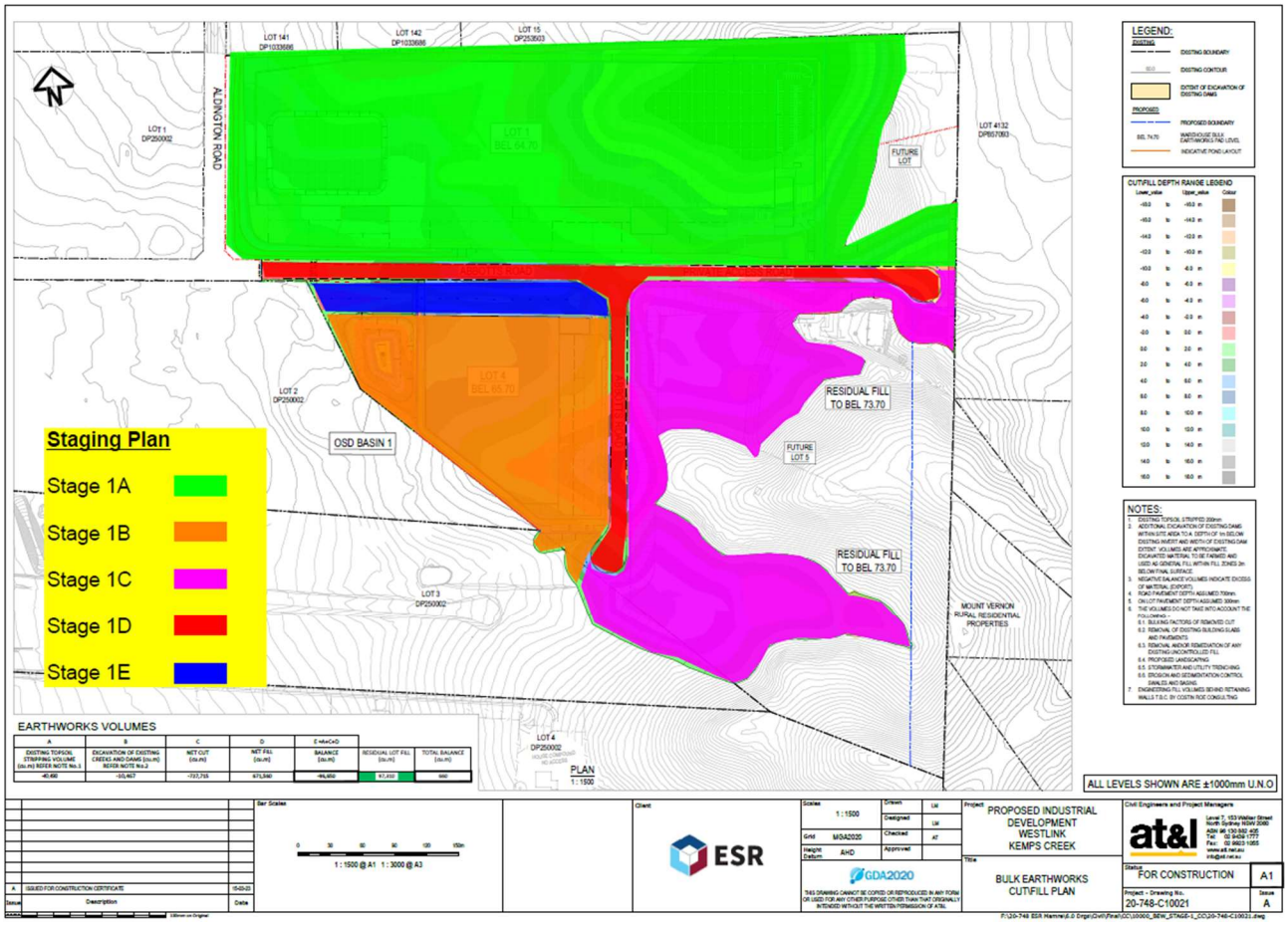
1.2.1 Construction Staging

The Project will be delivered by ESR's contractors in several sub-stages as outlined in Table 1-1 and shown on Figure 1-3 (for the Stage 1 civil works). The forecast dates for and durations of the stages shown in the table are approximate and are subject to construction planning. Note that construction phases overlap.

Table 1-1: Project sub-stages

Project Phase	Proposed Construction Activities	Forecast Commencement	Forecast Duration	Forecast Completion
Stage 0	Pre-commencement works	May 2023	8 weeks	July 2023
Stage 1	**Civil Works**			
Stage 1A	Pad 1 earthworks and retaining walls	June 2023	12 weeks	August 2023
Stage 1B	Pad 2 earthworks and retaining walls	August 2023	12 weeks	October 2023
Stage 1C	Remaining earthworks and retaining walls	October 2023	12 weeks	December 2023
Stage 1D	Internal roads and services	October 2023	20 weeks	February 2024
Stage 1E	Trunk drainage	October 2023	20 weeks	February 2024
Stage 2	**Warehouse 1 Construction**	**August 2023**	**52 weeks**	**August 2024**
Stage 3	**Warehouse 3 Construction**	**December 2023**	**52 weeks**	**December 2024**

Figure 1-3: Stage 1 Civil Works staging (at&l, 15 March 2023)



This CEMP and the Sub-Plans cover Stages 0 and 1 of the Project, being delivered for ESR by JK Williams. Future Stages 2 and 3 of the Project comprise the construction of Warehouses 1 and 3 will be covered by an updated CEMP or another CEMP.

1.2.2 Construction Hours

Earthwork and construction hours will be in accordance with CoC B47 which are reproduced in Table 1-2.

Table 1-2: Construction hours of work

Activity	Day	Time
Earthworks and construction	Monday to Friday	7 am to 6 pm
	Saturday	8 am to 1 pm

Under CoC B48, works outside of hours identified in condition CoC B47 may be undertaken in the following circumstances:

a) Works that are inaudible at nearest sensitive receivers
b) Works agreed to in writing by the Planning Secretary
c) For the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons
d) Where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.

The construction hours will be provided to all personnel and contractors as part of the site induction.

For works to be undertaken out-of-hours, refer to the Construction Noise and Vibration Management Plan (CNVMP) attached as Appendix D for specific noise and vibration-related requirements.

1.2.3 Key Personnel Contact Details

The emergency contact details (24 hours 7 days a week) for key project personnel are included in Table 1-3.The personnel are from ESR, the contractor appointed by ESR to deliver Stage 1 of the Project, JK Williams, or the Environmental Representative (ER) engaged by ESR to meet the requirements of CoC A35.

Table 1-3: Emergency 24-hour Project contact details

Role	Name	Contact Details
ESR Representative	Jacob Dickson	Mobile Email
Project Manager	Slavce Kirovski	Mobile Email –
Environmental Manager	Jessica Gough	Mobile Email –
Communications and Community Liaison Representative	Slavce Kirovski	Mobile Email –
Environmental Representative (ER)	Carl Vincent	Mobile Email –

Role	Name	Contact Details
Alternate ER	Richard Petersen	Mobile Email –
Certified Professional in Erosion and Sediment Control (CPESC)	Peter Monsted	Mobile Email –

1.3 CEMP Purpose, Context and Objectives

1.3.1 CEMP Context

This CEMP has been prepared to address the specific requirements of SSD 9138102 Development Consent for Stages 0 and 1 the Project. As required by CoC C3 and other CoC, the following Sub-Plans have been prepared to support this CEMP:

- Appendix A Construction Traffic Management Plan (CTMP)
- Appendix B Erosion and Sediment Control Plan
- Appendix C Dam Decommissioning Strategy (DDS)
- Appendix D Construction Noise and Vibration Management Plan (CNVMP)
- Appendix E Contamination Unexpected Finds Protocol (CUFP)
- Appendix F Construction Air Quality Management Plan (CAQMP)
- Appendix G Site Induction Training Material
- Appendix H Wildlife Management Plan (WMP)
- Appendix I Community and Stakeholder Communications Strategy (CSCS)
- Appendix J Contingency Plan
- Appendix K Aboriginal Cultural Heritage Management Plan (ACHMP)
- Appendix M Daily Site Inspection Checklist

In accordance with CoC A35, this CEMP and relevant Sub-Plans must be reviewed by the ER to ensure they are consistent with requirements in or under the Development Consent and if so, make a written statement to that effect. Relevant CEMP and Sub-Plans will then be submitted for the approval of the Planning Secretary in accordance with CoC C2.

Construction will not commence until the CEMP and relevant Sub-Plans are approved by the Planning Secretary.

Construction will be undertaken in accordance with the most recent, approved version of this CEMP and Sub-Plans.

1.3.2 CEMP Scope

The CEMP has been prepared to satisfy CoC C1 through C4 of the SSD 9138102 Development Consent. These specific requirements, together with where these requirements have been addressed in the CEMP are listed in Table 1-4.

Table 1-4: Relevant CoCs and where the CEMP addresses them

SSD 9138102 Development Consent CoC	CEMP Section
Management Plan Requirements	
C1. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	Section 3.3
(a) detailed baseline data	Sub-Plans

SSD 9138102 Development Consent CoC	CEMP Section
(b) details of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 3.3
(ii) any relevant limits or performance measures and criteria; and	Section 4.2 and Sub-Plans
(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Table 1-5 and Sub-Plans
(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 4.2 and Sub-Plans
(d) a program to monitor and report on the: (i) impacts and environmental performance of the development; and (ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Section 5 and Sub-Plans
(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impact reduce to levels below relevant impact assessment criteria as quickly as possible	Section 5.4 and Appendix J
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 4 and Sub-Plans
(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	Section 5.5 Section 5.6
(ii) complaint;	Section 2.2 and Appendix I
(iii) failure to comply with statutory requirements; and	Section 5.5
(h) a protocol for periodic review of the plan.	Section 5.8
Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for management plans	Noted
Construction Environmental Management Plan	
C2. The Applicant must prepare a Construction Environmental Management Plan (CEMP) in accordance with the requirements of condition C1 and to the satisfaction of the Planning Secretary.	CEMP
C3. As part of the CEMP required under condition C2 of this consent, the Applicant must include the following:	Noted
(a) Construction Traffic Management Plan (see condition B1)	Appendix A
(b) Erosion and Sediment Control Plan (see condition B21)	Appendix B
(c) Dam Decommissioning Strategy (see condition B36);	Appendix C
(d) Construction Noise and Vibration Management Plan (see condition B50)	Appendix D
(e) Unexpected Finds Protocol (see condition B70)	Appendix E
(f) Construction Air Quality Management Plan (see condition B76)	Appendix F
(g) Site induction training material (See condition B81)	Appendix G
(h) Wildlife Management Plan (see condition B87)	Appendix H
(i) Community Consultation and Complaints Handling	Appendix I

SSD 9138102 Development Consent CoC	CEMP Section
C4. The Applicant must:	
a) not commence construction of the development until the CEMP is approved by the Planning Secretary; and	This CEMP and Sub-Plans will be referred to the Secretary for approval.
b) carry out the construction of the development in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time.	Noted

1.3.3 CEMP Objectives

The objectives of this CEMP are to:

- Identify the roles and responsibilities of key personnel
- Clearly and concisely document the commitments made in the Environmental Impact Statement (EIS, Ethos Urban, June 2021), Submissions and Amendment Report (Ethos Urban, April 2022) and Amendment Report (Ethos Urban, September 2022), including relevant management plans, that are required to be implemented during construction
- Provide guidelines for undertaking the construction works in compliance with the CoC and other applicable regulatory requirements
- Demonstrate to the Department of Planning and Environment (DPE) how ESR proposes to meet its regulatory obligations including those outlined in the CoC
- Outline the controls to be implemented by the contractor to meet those obligations
- Prescribe project-specific performance standards and mitigation measures that aim to protect human and ecological values and manage the potential impacts of the works on the environment
- Detail environmental management practices for the management, implementation and monitoring of the Project.

All ESR personnel, contractors and visitors are required to comply with the requirements of this CEMP at all times.

1.4 Environmental Performance Indicators

Environmental performance indicators and targets have been established as a means of assessing environmental performance during construction. The objectives and targets in Table 1-5 have been developed with consideration of the key issues identified through the environmental assessment and risk assessment process.

Table 1-5: Environmental performance indicators

Measurements/Performance Indicator	Targets/Criteria	Measurement Tools/ Performance Measure
General		
Comply with all relevant environmental standards, legislation and approvals during the life of the Project	No written warnings or infringement notices	Daily Site Inspection Checklist Daily logbook ER monitoring, inspections and audits CPESC supervision and audits
Harm to people, the environment and property	No environmental incidents	Incident register/reports

Measurements/Performance Indicator	Targets/Criteria	Measurement Tools/ Performance Measure
Air Quality		
Comply with relevant legislation, CoC, requirements and guidelines	No written warnings or infringement notices EPA air quality criteria	Dust deposition monitoring Daily Site Inspection Checklist Daily logbook
Minimise impacts from dust emissions during construction for sensitive receivers	No visible dust emissions leaving the site No complaints relating to air quality	Contact Register
Waste		
Waste production and resource recovery	In accordance with targets within Penrith City Council's Waste Hierarchy	Waste reporting
Managing contaminated and hazardous waste	Remove all contaminated or hazardous materials from site to an appropriate licenced facility	Qualified and certified contractors
Noise and Vibration		
Impact from noise and vibration during demolition and construction for sensitive receivers	No complaints relating to noise and vibration	Noise and vibration monitoring Contact Register
Construction noise limits	To be in accordance with EPA's interim Construction Noise Guideline (DECC, 2009)	Noise monitoring Contact Register
Soil and Water		
Adverse water quality and sedimentation impact during construction	Minimum impact on waterbodies surrounding the project	Best management practices CPESC supervision, certification and monthly audits
Sediment tracking on public roads	Any sediment tracking on public roads to be actioned immediately with sweeper cart	Daily Site Inspection Checklist Daily logbook
Traffic		
Managing construction vehicles in efficient and safe manner	No accidents	Incident reports
Car parking and traffic disturbances on surrounding road network and public road network users	No complaints relating to car parking and traffic	Contact Register Traffic numbers / movements tracking Monthly reports to ER
Heritage		
Impact on Aboriginal Heritage	Limit impacts to the scope permitted by the planning approval for the Project	Results from implementation of Heritage Unexpected Finds Procedure

Measurements/Performance Indicator	Targets/Criteria	Measurement Tools/ Performance Measure
Wildlife		
Minimise impacts to biodiversity during construction	No impacts to biodiversity	Daily Site Inspection Checklist Six-monthly monitoring by suitably qualified ecologist
Minimise impacts of wildlife to Western Sydney Airport operations	Minimal occurrence of common strike species at the site	Daily Site Inspection Checklist Six-monthly monitoring by suitably qualified ecologist

2 COMMUNITY AND STAKEHOLDER ENGAGEMENT

As required by SSD-9138102 Development Consent, consultation with stakeholders was required during the development of several of the Sub-Plans. The result of this consultation is documented in each Sub-Plan, where relevant.

Consultation with stakeholders during the preparation of this CEMP was not required under CoCs C1 and C2.

2.1 Community Communication during Construction

A Community and Stakeholder Communications Strategy (Ethos Urban, May 2023 – Appendix I) has been prepared by ESR for the Project. This strategy outlines measures to enable effective communication with the community throughout the construction works, including:

- Regular community notifications
- Community updates when there are changes to construction works to those previously communicated
- Interactions between workers and the community
- Stakeholder and community feedback protocol
- Issues management and dispute resolution
- Contact register and enquiries management
- Complaints management.

A range of communications channels will be used to communicate with the community including:

- Stakeholder (including the Mamre Road Precinct (MRP) Working Group) and resident meetings and briefings via video conference or in person
- The Project website – au.esr.com/available-space/westlink/
- The Project hotline – 1800 270 980
- The Project email – aus_development@au.esr.com
- Letterbox notifications
- Door knocking
- Media announcements
- Contact register.

ESR will participate in the existing MRP Working Group, with other relevant development consent holders in the MRP. Participation will commence within three months of the commencement of construction and will be ongoing until all components of the Project are constructed and operational. The purpose of the MRP Working Group is to consult and coordinate construction works within the MRP to assist with managing and mitigating potential cumulative environmental impacts.

The MRP Working Group currently includes the developers of the following industrial estates that have received development consent:

- 200 Aldington Road Industrial Estate (SSD 10479)
- Aspect Industrial Estate (SSD 10448).

The implementation of the strategy will assist the Project team to deliver the Project with minimal disruption to the community.

2.2 Complaints Management

Community complaints will be managed under the stakeholder and community feedback protocol (Section 5.8 of Appendix I).

The ongoing and consistent management of project related feedback throughout the delivery of the Project, is crucial to ensuring appropriate mitigation strategies are developed in response to issues identified and experienced. As such, the Project team will document all stakeholder and community related feedback received directly, in a professional and timely manner.

Feedback is defined as any communication received from a stakeholder or community member which expresses support and/or dissatisfaction with any aspect of the Project and its delivery. As such, the proposed contact response timings for general enquiries are as follows:

- Same day acknowledgement of all stakeholder and community contact
- Development of proposed response and issue within 48 hours by the Project team. This timeframe can be extended where complex information is required, provided an acknowledgment of the enquiry is sent, outlining the need to gather more information before a response can be sent
- A 72-hour response target for complex enquiries (e.g. requires further consultation and planning with Project team, request for meeting)
- All details will be captured and logged in the Contact Register, and all responses will be shared with the Project team.

In accordance with CoC A36, the Contact Register will be made available to the ER on a daily basis. The ER will assist DPE in the resolution of community complaints, as may be requested by the Planning Secretary.

Adherence to these response protocols fulfil requirement specified in CoC B50(f), related to the CNVMP which requires a complaints management system to be implemented for the duration of the development.

3 ENVIRONMENTAL MANAGEMENT FRAMEWORK

3.1 Project Organisational Structure

ESR is the developer of the Project and has overall responsibility for compliance with the SSD 9138102 Development Consent. ESR have engaged JK Williams as the Principal Contractor for the construction of Stage 1 of the Project.

All personnel including consultants, contractors, sub-contractors and all other personnel associated with undertaking construction works on the Project, ultimately report to JK Williams.

JK Williams is responsible for monitoring the environmental performance of the Project and monitoring compliance with the CoC, this CEMP and Sub-Plans as they relate to the construction of Stage 1 of the Project.

3.2 Roles and Responsibilities

All Project personnel are responsible for the implementation of this CEMP and have the responsibility to stop works if there is the potential for a safety or environmental incident to occur.

Roles, and responsibilities for environmental management of the Project are outlined in Table 3-1.

Table 3-1: Project roles and responsibilities

Role	Responsibility
ESR Representative	Environmental reporting responsibility associated with the Project.
	Overall responsibility for environmental management and compliance with the SSD 9138102 Development Consent and relevant legislation.
	Liaise with ESR management to keep them informed of the Project's environmental performance and progress.
	Record, notify, investigate and respond to any environmental incidents and, where necessary, guide the development and implementation of corrective actions.
	Consult and engage with any contractors or interfacing contractors regarding the environmental management of the Project.
	Provide adequate environmental inductions/training to ESR employees and contractors regarding their requirements under this CEMP.
	Provide ER with all documentation requested in order for the ER to perform their functions specified below, including any assessment carried out by ESR of whether proposed work is consistent with the SSD 9138102 Development Consent (which must be provided to the ER before the commencement of the subject work).
Project Manager	Oversee the implementation and maintenance of the CEMP and Sub-Plans.
	Check that any licence, permit and/or approval required for the Project has been obtained in the required timeframe.
	Implement the Contamination Unexpected Finds Protocol in the event of contamination being encountered onsite during construction. Submit the disposal location and results of testing to the Planning Secretary, prior to its removal.
	Monitor and report on overall environmental management performance.

Role	Responsibility
	Review and acknowledge periodic environmental inspection reports.
	Initiate project meetings as required or directed, in which environmental items are discussed as appropriate.
	Identify and allocate Project resources to implement the requirements of the CEMP and Sub-Plans.
	Confirm relevant environmental expectations expressed by the client and/or regulatory authorities to the Project team.
Environmental Manager	Provide advice where required in relation to environmental issues associated with the Project.
	Inform all personnel including sub-contractors of the requirement to conform with the CEMP and Sub-Plans.
	Confirm that all necessary environmental controls are implemented and maintained for the duration of the Project.
	Complete daily site inspections to monitor and verify mitigation measures are implemented and effective.
	Assist with the implementation of the Contamination Unexpected Finds Protocol in the event of contamination being encountered onsite during construction.
	Monitor weather conditions to prepare the Project for high winds or other extreme weather events.
	Provide regular environmental inspection and progress reports to the Project Manager.
	Monitor environmental compliance with the CEMP.
	Facilitate the environmental induction and training (toolbox talks) of employees and subcontractors (as required).
	Complete and maintain all necessary environmental documentation for the contract (as required).
	Conduct environmental incident investigations and implement corrective action responses in consultation with the Project Manager.
Communications and Community Liaison Representative	Lead and manage the community involvement activities, including liaison with property owners and key stakeholders.
	Be the primary Project contact for the public, handling enquiries and complaints and managing interface issues.
	Maintain the Contact Register and make available the Contact Register to the ER on a daily basis.
	Be available for contact by local residents and the community at all reasonable times to answer any questions.
	Liaise with property owners to co-ordinate access and to deal with specific property related issues arising from the upgrade works.
	Lead the delivery of communication and community engagement strategies and plans.
	Facilitate meetings and forums and arrange interviews to address concerns raised by the community.
	Provide advice and participate with the project teams to improve and enhance the delivery of communication services to the community.
	Build and maintain collaborative and consultative working relationships with internal and external stakeholders.

Role	Responsibility
	Be available for contact by local residents, key stakeholders and community representatives to answer queries and provide more information or feedback.
Environmental Representative (ER)	Be a suitably qualified and experienced person who was not involved in the preparation of the EIS, Response to Submissions, Amendment Report and any additional information for the development and is independent from the design and construction personnel for the development.
	Receive and respond to communication from the Planning Secretary in relation to the environmental performance of the development.
	Consider and inform the Planning Secretary on matters specified in the terms of the SSD 9138102 Development Consent.
	Consider and recommend to the ESR any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community.
	Review the CEMP required in Condition C2 and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under the SSD 9138102 Development Consent and if so: • 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 • 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/DPE for information or are not required to be submitted to the Planning Secretary/DPE).
	Regularly monitor the implementation of the CEMP to be carried out in accordance with the document and the terms of the SSD 9138102 Development Consent.
	As may be requested by the Planning Secretary, help plan, attend, or undertake audits of the development commissioned by DPE including scoping audits, programming audits, briefings, and site visits.
	As may be requested by the Planning Secretary, assist DPE in the resolution of community complaints.
	Provide advice to the Applicant on the management and coordination of construction works on the site with adjoining sites in the MRP in relation to construction traffic management, earthworks and sediment control and noise.
	Attend the MRP Working Group (CoC A38) in a consultative role in relation to the environmental performance of the Project.
	Prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an Environmental Representative Quarterly Report providing the information set out in the Environmental Representative Protocol under the heading 'Environmental Representative Quarterly Reports'. The Environmental Representative Quarterly Report must be submitted within seven calendar days following the end of each quarter for the duration of the ER's engagement for the development, or as otherwise agreed with the Planning Secretary.
	Implement and comply with the requirements of this CEMP.
CPESC	Prepare detailed erosion and sediment control plans.
	Supervise and certify delivery and operation of all construction phase erosion and sediment controls.
	Conduct monthly audits of all construction phase erosion and sediment controls.

Role	Responsibility
MRP Working Group	Comprise at least one representative of ESR, the ER and relevant development consent holders in the MRP.
	Meet periodically throughout the year to discuss, formulate and implement measures or strategies to improve monitoring and coordination of the approved industrial developments in the MRP.
	Inform Council, TfNSW, Sydney Water and the Planning Secretary regularly of the outcomes of these meetings and actions to be undertaken by the working group.
	Review the performance of approved industrial developments in the MRP and identify trends in the data with respect to cumulative construction traffic, erosion and sediment control, noise, stormwater management and waterway health objectives under the MRP Development Control Plan (DCP).
	Review community concerns or complaints with respect to environmental management.
	Identify interim traffic safety measures to manage construction traffic and how these measures will be coordinated, communicated, funded and monitored in the MRP.
	Provide the Planning Secretary with an update and strategies, if a review under subclauses (d) and (e) identify that additional measures and processes are required to be implemented by the working group.
	Three months prior to completion of construction of all components of the development the Applicant is eligible to exit the working group. The Applicant must: (a) consult with the Planning Secretary (b) provide confirmation that all components of the development are operational (c) advise on the date of the proposed exit.
All personnel	Report all environmental incidents, hazards, non-compliances and near misses to their supervisor or the Project Manager immediately.
	Attend all required environmental awareness, induction and training sessions.
	Stop work or otherwise mitigate the effects of an activity that is causing significant, uncontrolled or unexpected environmental harm.
	A daily pre-start inspection of plant and equipment will be undertaken by plant and equipment operators and any leaks or excessive emissions reported to the Environmental Manager.

3.3 Legal and Compliance Requirements

3.3.1 SSD 9138102 Development Consent

The Project will be constructed in accordance with SSD 9138102 Development Consent and in accordance with the documents referenced under CoC A2:

(a) The CoCs

(b) Written directions from the Planning Secretary

(c) The EIS (Ethos Urban, June 2021), the Submissions and Amendment Report (April 2022) and Amendment Report (Ethos Urban, September 2022)

(d) The development layout plans and drawings attached to the Development Consent as Appendix 1

(e) The management and mitigation measures attached to the Development Consent as Appendix 5.

Appendix L lists the CoCs related to the construction of the Project and identified where is this CEMP and Sub-Plans each COC is addressed.

Under CoC A4, if there is any inconsistency, ambiguity or conflict between the plans and documentation referred to in CoC A2(c)or A2(e), the most recent document will prevail to the extent of the inconsistency. However, the conditions of SSD 9138102 Development Consent prevail to the extent of any inconsistency, ambiguity or conflict. ESR will notify the ER and DPE if any inconsistencies are identified.

CoC A1 states:

> *In addition to meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.*

This CEMP and its Sub-Plans describe the environmental mitigation measures that will be implemented on the Project during construction to prevent and minimise environmental impacts.

CoC A23 requires that all ESR employees, contractors (and their subcontractors) be made aware of and are instructed to comply with the CoC relevant to activities carried out for the Project. ESR will undertake consistency assessments to determine whether planned design changes and construction methodologies would be consistent with the requirements of the SSD 9138102 Development Consent. To meet the requirements of CoC A36(b) ESR will provide any consistency assessments undertaken to the ER prior to any relevant work being commenced.

3.3.2 Regulatory Framework

The regulatory framework for the Project is outlined in Table 3-2, which identifies relevant legislative instruments, including legislative and voluntary obligations, permits and licences, and their key objectives and relevance to the Project.

Table 3-2: Legislative and related instruments relevant to the Project

Legislation	Key Project Requirements	Activity/Aspect
Environment Planning and Assessment Act 1979	Established a system of environmental planning and assessment of proposed developments in NSW. The Project must comply with the SSD 9138102 Development Consent.	All
Environment Protection and Biodiversity Conservation Act 1999	Requirements in relation to protection and management of nationally and internationally important flora, fauna, ecological communities, and heritage places.	Threatened species and ecological environments
Biodiversity Conservation Act 2016	Comply with conservation requirements for any identified threatened species.	Threatened species and ecological environments

Legislation	Key Project Requirements	Activity/Aspect
Protection of the Environment Operations Act 1997	The handling, storage and disposal of all waste streams on site is to be implemented in accordance with the POEO Act. Aims to aid the protection, restoration and enhancement of the quality of the NSW environment, including emissions to air. Identifies activities for which an Environment Protection Licence is required.	Construction waste management Discharges or emissions to air, land and water
Protection of the Environment Operations (Noise Control) Regulation 2017	Comply with the requirements of the POEO (Noise Control) Regulation to mitigate the impacts of noise and vibration on sensitive receivers and the environment.	Management and mitigation of noise and vibration produced during construction works
Protection of the Environment Operations (Clean Air) Regulation 2021	Identifies criteria for air quality objectives and emissions.	Management of any dust and air pollution emissions produced by works to promote air quality
Protection of the Environment Operations (Waste) Regulation 2014	Handling, storage, transport and disposal of all waste streams to be undertaken with consideration for the requirements within the POEO (Waste) Regulation. Aims to protect human health and the environment. Identifies the thresholds for Environment Protection Licences.	Management of construction waste Discharge or emissions to air, land, water in accordance with thresholds set by the regulation
Waste Avoidance and Resource Recovery Act 2001	Aims to promote waste avoidance and resource recovery by: • Encouraging efficient use of resources • Encouraging the avoidance of waste and the reuse and recycling of waste • Ensuring industry and the community share responsibility in reducing/dealing with waste • Efficiently funding waste/resource management planning, programs and service delivery.	Management of construction waste
Contaminated Land Management Act 1997	Remediation requirements for management of contaminated lands.	May be applicable in the event of any unexpected find of contaminants/ contamination
State Environmental Planning Policy (Resilience and Hazards) 2021	Remediation of contamination lands and consent requirements.	May be applicable in the event of any unexpected find of contaminants/ contamination
Heritage Act 1977 *National Parks and Wildlife Act 1974*	Protection and recording of Indigenous and non-Indigenous heritage values, relics, artefacts, places and other finds/remains.	Earthmoving /excavation works – identifying unexpected finds
Managing Urban Stormwater: Soils and Construction – Volume 1 (the "Blue Book") (Landcom, March 2004)	Soil and erosion controls for managing surface water flows onsite and reducing potential for erosion and sedimentation leaving site.	Management surface water flows onsite

Legislation	Key Project Requirements	Activity/Aspect
Technical guidance for achieving Wianamatta-South Creek stormwater management targets (DPE, September 2022)	In accordance with Water Sensitive Urban Design principles set out in the Technical Guidance.	Specific direction on what modelling to undertake, assumptions to make and which data to use to demonstrate that the stormwater management targets are being achieved
Mamre Road Stormwater Scheme Plan (Sydney Water, December 2022)	Performance of stormwater management system in accordance with Integrated Water Cycle Management Controls.	Water cycle management. Irrigated street trees
Stormwater Scheme Infrastructure Design Guideline (Sydney Water, December 2022)	Irrigated street tress.	Design of irrigated street trees

Where updated or revised versions of guidelines, protocols, standards or policies, or a replacement of them are available, the most recent versions should be applicable to this CEMP.

3.3.3 Other Licences, Permits, Approvals and Consents

The additional licences, permits, approvals and consent requirements for the Project is outlined in Table 3-3. A current list of licences, permits, approvals and consents, and their status, including any new additions as the Project progresses, will be included in monthly reports.

Table 3-3: Other licences, permits and approval requirements relevant to the Project

Requirement	Responsible	Timing	CoC
All relevant approvals from utility service providers.	JK Williams	Before the construction of any utility works associated with the development	A30
A Compliance Certificate for water and sewerage infrastructure servicing at the site will be obtained.	JK Williams	Before the commencement of operation of the development	A31
Evidence, satisfactory to the Certifier, that arrangements have been made for: (a) the installation of fibre-ready facilities to all individual lots and/or premises in the development to enable fibre to be readily connected to any premises that is being or may be constructed on those lots; and (b) the provision of fixed-line telecommunications infrastructure in the fibre-ready facilities to all individual lots and/or premises in the development demonstrated through an agreement with a carrier.	JK Williams	Before the issuing of a Subdivision Works or Construction Certificate for any stage of the development	A32
Evidence from the carrier in writing that the fibre-ready facilities are fit-for-purpose.	JK Williams	Before the issuing of the Occupation Certificate for the development	A33

Requirement	Responsible	Timing	CoC
Works Authorisation Deed (WAD) with TfNSW for intersection works.	ESR	Prior to the commencement of construction works for the Mamre Road/Abbotts Road intersection works and signalised intersections on Abbots Road and Aldington Road*	B5
The proposed Traffic Control Signal/s at the intersection of Mamre Road/Abbotts Road and, Aldington Road/Abbotts Road must be designed to meet TfNSW requirements.	ESR	Prior to the commencement of construction of signalised intersection road works	B6
The Applicant must prepare and submit detailed design plans and hydraulic calculations of any changes to the stormwater drainage system to TfNSW for approval.	ESR	Prior to commencement of any works on the Mamre Road/Abbotts Road intersection works and signalised intersections on Aldington Road*	B7
Road Occupancy Licence (ROL) must be obtained from TfNSW Transport Management Centre for any works that may impact on traffic flows on Mamre Road during construction activities.	ESR	Prior to works that may impact on traffic flows on Mamre Road during construction*	B10
Detailed design plans showing the provision of passively irrigated street trees within the relevant stage of works must be submitted to the satisfaction of the relevant road authority	Nettletontribe	Prior to the commencement of any stage of road construction	B13

* Note that works on the Mamre Road/Abbotts Road intersection are not included in Stage 1 and are not covered by this CEMP.

3.4 Training and Awareness

All personnel including sub-contractors are required to attend a compulsory site induction that includes an environmental component, prior to commencement of works onsite.

The environmental induction will include, but not be limited to, an overview of:

- Relevant details of the CEMP including purpose and objectives
- Key environmental issues
- Traffic management and Drivers' Code of Conduct (also provided to all contractors and suppliers at the time of contract/order to provide to their drivers prior to visiting the site)
- Project specific environmental management requirements and responsibilities as specified in CEMP, ACHMP and other Sub-Plans
- Incident response and reporting requirements.

All Project personnel will be suitably qualified, but individual team members may benefit from specific environmental training (e.g. erosion and sediment control and environmental auditor training) to help them better manage the environmental impacts of the Project.

Short-term visitors to the Project site will be required to undertake a visitor's induction and be accompanied by inducted personnel.

A record of all inductions will be maintained onsite.

Toolbox talks will also be used to review management procedures and identify/discuss daily site conditions and raise environmental awareness. Site inductions and toolbox talks will highlight specific environmental requirements and activities being undertaken at the worksite each day.

A record of issues covered in daily toolbox meetings will be maintained onsite.

The CEMP will be explained to all contractors and a controlled copy will be maintained onsite during construction works.

CoC C3(g) requires the CEMP to include site induction training material required under CoC B81. This material is related to Aboriginal cultural heritage and outlines the obligations of workers under the *National Parks and Wildlife Act 1979* and the SSD 9138102 Development Consent. This material is included in Appendix G.

4 IMPLEMENTATION

4.1 Aspects and Impacts

Project environmental aspects, impacts and opportunities have been identified and assessed in accordance with the risk assessment as presented in the EIS (Ethos Urban, June 2021) and Amendment Report (Ethos Urban, September 2022). The key environmental aspects and impacts for the Project during construction are listed in Table 4-1.

Table 4-1: Key environmental aspects and impacts during construction

Aspect	Potential Environmental Impact	Significance of Impact*	Manageability of Impact	Residual Impact
Noise and vibration	Increase in noise and vibration levels during construction	Moderate	Standard	Low/Medium
Traffic and parking	Increase in construction traffic on local roads	Moderate	Standard	Low/Medium
Air and water quality	Potential for reduced air and water quality during construction	Moderate	Standard	Low/Medium
Sediment, erosion and dust	Dust produced from construction Erosion produced from construction	Minor	Elementary	Low/Medium
Heritage	Potential physical and visual impacts on heritage items Potential impacts to archaeology and artefacts	Moderate	Standard	Low/Medium
Ecology	Impact on flora and fauna during construction and operation Tree removal and construction impacts on tree health	Moderate	Elementary	Medium

* Significance of impact was provided in the EIS (Ethos Urban, June 2012).

4.2 Environmental Mitigation Measures

Environmental mitigation measures to be implemented during construction of Stage 1 of the Project to enable compliance with the SSD 9138102 Development Consent (including Appendix 5), performance measures and criteria are documented in Table 4-2 and the aspect-specific CEMP Sub-Plans. The identified mitigation measures are consistent with those identified in the EIS (Ethos Urban, June 2021) and Amendment Report (Ethos Urban, September 2022) and reflect current accepted industry guidelines and practice.

Table 4-2: Key environmental mitigation measures

Mitigation Measure	Responsibility
Construction Hours	
Carry out construction activities and delivery of materials within approved construction hours.	Project Manager
Construction Impacts	
Maintain and implement CEMP on site.	Project Manager

Mitigation Measure	Responsibility
All vehicles, plant and equipment used on site will be maintained and in a proper and efficient condition and will be operated in a proper and efficient manner.	Project Manager
Erosion and Sediment Control	
See Appendix B Erosion and Sediment Control Plan	See plan
Noise and Vibration	
See Appendix D Construction Noise and Vibration Management Plan and Appendix I Community and Stakeholder Communications Strategy	See plan and strategy
Biodiversity	
See Appendix H Wildlife Management Plan	See plan
Site Contamination	
See Remediation Action Plan (Alliance Geotechnics, February 2022)	See plan
Air Quality	
See Appendix F Construction Air Quality Management Plan	See plan
Waste Management	
See Section 4.3	See Table 4-3

4.3 Waste Management Mitigation Measures

4.3.1 Waste Regulatory Framework

In addition to the waste management legislation listed in Table 3-2, and guidelines for management of waste for this Project include:

- EPA (December 2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21
- EPA (November 2014) Waste Classification Guidelines Part 1: Classifying waste
- EPA (June 2020) Construction and demolition waste – A management toolkit
- EPA Resource Recovery Orders and Resource Recovery Exemptions under the *Protection of the Environment Operations (Waste) Regulation 2014*
- Penrith City Council (September 2017) Waste Strategy 2017-2026
- Penrith DCP 2014
- Mamre Road Precinct DCP 2021.

CoCs B70, B91 to B95 address waste management for the Project (see Appendix L).

4.3.2 Waste Streams and Classifications

The demolition and construction of the Project will generate the following core waste streams:

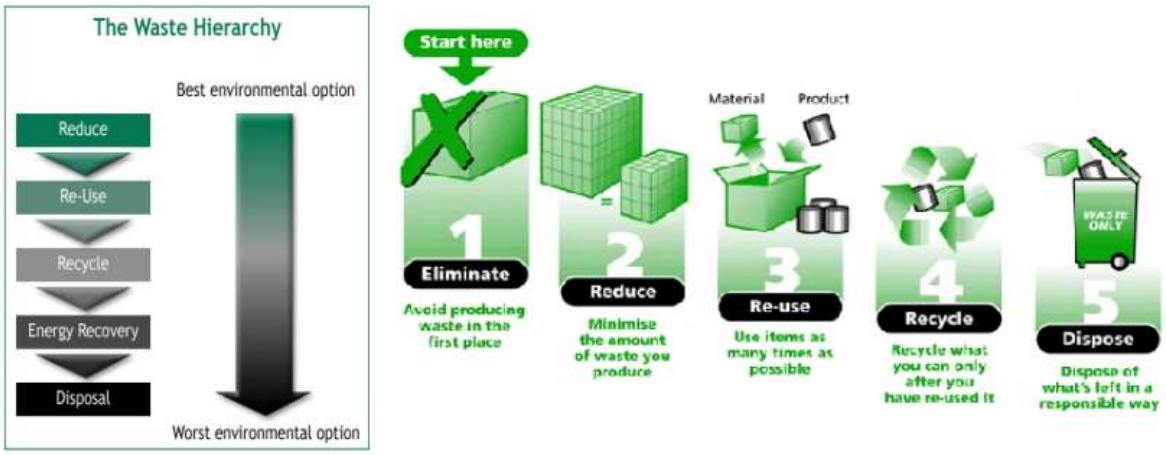
- Site clearance waste
- General construction waste
- Construction plant maintenance waste
- Packaging waste
- Work compound waste from onsite employees.

The NSW EPA website provides further information on managing demolition and construction waste and classifying waste types.

4.3.3 Waste Management Hierarchy

The waste related mitigation measures have been prepared in accordance with Penrith City Council's Waste Hierarchy, which addresses the objectives of the *Waste Avoidance and Resource Recovery Act 2001* (Figure 4-1).

Figure 4-1: Waste management hierarchy (Penrith City Council DCP, 2014)



4.3.4 Waste Management Measures

Waste avoidance measures, which eliminate or reduce waste generation, and waste reuse, recycling and disposal measures to be employed on site are provided in Table 4-3.

Table 4-3: Waste avoidance, reuse, recycling and disposal measures

Mitigation Measure	Responsibility
Waste avoidance	
Develop a purchasing policy based on the approximate volumes of materials to be used so that the correct quantities are purchased.	Project Manager
Arrange for delivery of materials on an 'as needed' basis to avoid material degradation through weathering and moisture damage.	Project Manager
Communicate strategies to handle and store waste to minimise environmental, health and amenity impacts.	Project Manager
Select materials with a low environmental impact over the lifecycle of the building.	All personnel
Choose timber from certified plantations and avoid unsustainable timber imports in western red cedar, oregon, meranti, luan or merbau.	Project Manager
Use leased equipment rather than purchase and disposal.	Project Manager
Minimise site disturbance and unnecessary excavation.	Project Manager
Group wet areas together to minimise the amount of pipe work required.	Project Manager
Design the Project to require standard material sizes or make arrangements with manufacturing groups for the supply of non-standard material sizes.	Project Manager
Design works for de-construction.	Project Manager
Request cardboard or metal drums rather than plastics.	Project Manager
Return packaging to suppliers where practicable to reduce waste further along the supply chain.	Project Manager

Mitigation Measure	Responsibility
Purchase in bulk.	Project Manager
Request metal straps rather than shrink wrap.	Project Manager
Waste reuse, recycling and disposal	
Assess and classify all liquid and non-liquid wastes to be taken off site in accordance with the latest version of EPA's Waste Classification Guidelines Part 1: Classifying Waste (EPA, 2014) and dispose of all wastes to a waste management facility or premises lawfully permitted to accept the waste.	Project Manager
Manage construction on the site to include minimising waste generation, requiring the appropriate storage and timely collection of waste materials, and maximising reuse or recycling of materials.	Project Manager
Consider the potential of any new materials to be reused and recycled at the end of the Project's life.	Project Manager
Store wastes onsite appropriately to mitigate cross-contamination and allow the highest possible reuse value.	Project Manager
Recycle and reuse waste offsite, where this is not possible onsite.	Project Manager
Strip topsoil from areas designated for excavation and store it onsite for reuse.	Project Manager
Recycle or dispose solid waste, timber, brick, concrete, asphalt and rock, where such waste cannot be reused onsite, to an appropriately licensed landfill.	Project Manager
Identify opportunities for the use of prefabricated components and recycled materials.	Project Manager
Reuse excavation material onsite where possible.	Project Manager
Reuse formwork where appropriate.	Project Manager
Retain roofing material cut-offs for reuse or recycling.	Project Manager
Retain used crates for storage purposes unless damaged.	Project Manager
Recycle cardboard, glass and metal wastes.	Project Manager
Sell or reuse all disassembled materials, where possible.	Project Manager
Deliver batteries and florescent lights to drop offsite recycling facility.	Environmental Manager
Return excess materials and packaging to the supplier or manufacturer.	Project Manager
Deliver items to an appropriately licensed landfill as a last resort and only dispose wastes that cannot be cost effectively reused or recycled.	Project Manager
Dispose all garbage via a council approved system.	Project Manager
Dispose all asbestos and/or hazardous wastes in accordance with SafeWork NSW and NSW EPA requirements.	Project Manager
As required by the Contamination Unexpected Finds Protocol, any material identified as contaminated must be disposed of in accordance with the POEO Act and its associated regulations. Details of the final disposal location and the results of any associated testing must be submitted to the Planning Secretary prior to removal of the contaminated material from the site.	Project Manager

As outlined in the Penrith City Council Development Control Plan (2014), waste materials produced from demolition and construction activities are to be separated at the source and stored separately onsite. Waste separation, storage and servicing measures to be implemented onsite are provided in Table 4-4.

Table 4-4: Waste storage and servicing measures

Mitigation Measure	Responsibility
Waste separation	
The following waste materials are to be segregated, sorted and stored onsite in separate skip bins or appropriately managed stockpiles prior to offsite disposal: • Bricks, concrete and scrap metal • Metal and steel, in a condition suitable for recycling at metal recycling facilities • Timber • Glass • Hardstand rubble • Uncontaminated excavation spoil, if present • Contaminated excavation spoil, if present • Hazardous waste, if present • Paper and cardboard • General co-mingled recycling waste • Non-recyclable general waste.	Project Manager
If there is insufficient space onsite for full segregation of waste types, the Project Manager is to consult with the waste and recycling collection contractor to confirm which waste types may be co-mingled prior to removal from the site.	Project Manager
Waste storage areas	
Waste must be secured and maintained within designated waste storage areas at all times and must not leave the site onto neighbouring public or private properties.	Project Manager
Waste storage areas will allow enough space for servicing requirements.	Project Manager
Mark waste storage areas and bins clearly with the standard NSW EPA signage (Figure 4-2).	Environmental Manager
Delineate dedicated stockpile areas on the site, with regular transfers to dedicated skip bins for sorting, where space is restricted.	Project Manager
Allow unimpeded access to waste storage areas by site personnel and waste disposal contractors.	Project Manager
Consider environmental factors which could potentially cause an impact to the waste storage, such as slope, drainage and the location of watercourses and native vegetation, when locating waste storage areas.	Project Manager
Employ adequate environmental management controls to prevent offsite migration of waste materials and contamination from the waste.	Environmental Manager
Consider visual amenity, safety, accessibility and convenience when locating waste storage areas.	Project Manager
Mitigate hazards to human health or the environment.	Project Manager
Place all waste in skips or bins for disposal or recycling adequately so that the waste does not fall, blow, wash or otherwise escape from the site.	All personnel
Keep the waste containers and storage areas clean and in a good state of repair.	Project Manager
Waste servicing	
Arrange for suitable waste collection contractors to remove construction waste from site.	Project Manager

Mitigation Measure	Responsibility
Visually assess waste bins to verify they are not filled beyond recommended filling levels.	Environmental Manager
Verify that all bins and loads of waste materials leaving site are covered.	Environmental Manager
Maintain waste disposal documentation detailing, at a minimum • Descriptions and estimated amounts of all waste materials removed from site • Details of the waste and recycling collection contractors and facilities receiving the waste and recyclables • Records of waste and recycling collection vehicle movements (e.g. date and time of loads removed, licence plate of collection vehicles, tip dockets from receiving facility) • Waste classification documentation for materials disposed to offsite recycling or landfill facilities.	Environmental Manager
Maintain waste disposal records and provide to regulatory authorities such as Council, SafeWork NSW or NSW EPA upon request.	Project Manager
Allow waste to only be removed during approved hours.	Project Manager
Dispose of all building waste generated onsite to an approved site lawfully able to accept them.	Project Manager
Contaminated or hazardous waste	
A qualified and certified contractor is to remove all contaminated or hazardous materials (e.g. asbestos) and dispose of all contaminated or hazardous waste to an appropriately licensed facility.	Project Manager
All asbestos and other hazardous waste to be handled according to appropriate legislation and regulation including the *Work Health and Safety Regulation 2011*.	Project Manager
Hazardous waste management at the site may require a licence from the EPA and approval from Council. If hazardous waste is identified for removal, Council and NSW EPA are to be consulted prior to undertaking any hazardous waste removal.	Project Manager

Figure 4-2: NSW EPA waste management signage

5 MONITORING AND REVIEW

5.1 Environmental Inspections

The Project Manager or Environmental Manager will complete daily environmental inspections of the Project. The purpose of these inspections is to:

- Verify compliance with CoC
- Review the performance and effectiveness of environmental controls
- Identify any non-conformances or potential non-conformances against the mitigation measures and other requirements of this CEMP and the Sub-Plans
- Document observations and track performance.

These inspections will be undertaken in the morning and afternoon and will be documented in the Daily Site Inspection Checklist included in Appendix M.

Any corrective actions identified will be documented and their implementation will be recorded onsite to verify that they have been being actioned and closed out.

A daily pre-start inspection of plant and equipment will be undertaken by plant and equipment operators and any leaks or excessive emissions reported to the Environmental Manager.

The ER will regularly monitor the implementation of the CEMP and Sub-Plans to determine whether the Project is being carried out in accordance with this CEMP and the SSD 9138102 Development Consent.

The CPESC will supervise the delivery and operation of all construction phase erosion and sediment controls on the site and will also conduct monthly audits in accordance with CoC B23.

5.2 Environmental Monitoring

Environmental monitoring will be undertaken to assist in the management of the following:

- Construction of the Project in accordance with environmental approvals
- Compliance with all relevant legislative requirements
- The minimisation of potential environmental incidents
- Effectiveness of environmental controls
- Implementation of this CEMP and the Sub-Plans.

Monitoring requirements are included in the relevant Sub-Plans. Where relevant, the Sub-Plan will provide detail on the following:

- Responsibility for monitoring
- Relevant standards applicable to the monitoring
- Monitoring technique and location
- Frequency of monitoring
- Data management, review and distribution.

Environmental monitoring requirements are summarised in Table 5-1.

Table 5-1: Summary of environmental monitoring

Aspect	Monitoring	Frequency/ Timing	Responsible	Reference
General	Monitor the implementation of the CEMP to ensure implementation is being carried out in accordance with the document and the CoC	Ongoing	ER	CoC A35(f)
Traffic safety measures	Identify interim traffic safety measures to manage construction traffic and how these measures will be coordinated, communicated, funded and monitored	Ongoing	MRP Working Group	A38(f)
Traffic	Onsite traffic management effectiveness Traffic numbers/movements tracking	Ongoing Monthly reports to ER	Project Manager	CTMP
Air quality	Effectiveness of mitigation measures	Daily	Environmental Manager	CAQMP
Air quality	Dust generation	Daily	Environmental Manager	CAQMP
Air Quality	Dust Deposition Report	Monthly report to ER	Project Manager	CAQMP
Air quality	Weather condition	Daily	Environmental Manager	CAQMP
Noise and vibration	Noise monitoring equipment	Weekly for long-term noise monitoring	Environmental Manager	CNVMP
Noise and vibration	Short term (attended)	As required- following complaint or request by project	Environmental Manager	CNVMP
Noise and vibration	Vibration monitoring to: • confirm acceptability of construction techniques, or • confirm compliance with limits for structural or cosmetic damage of buildings	As required	Environmental Manager	CNVMP
Noise and vibration	Assess compliance with vibration limits for human exposure to vibration	As required	Environmental Manager	CNVMP
Waste	Waste generated and disposal methods	Ongoing	Environmental Manager	Section 4.2
Waste	Past waste disposal receipts	Ongoing	Environmental Manager	Section 4.2
Waste	Waste volumes recycled, reused or contractor removed in accordance with Penrith DCP	Ongoing	Environmental Manager	Section 4.2
Waste	Information to track waste avoidance, reuse and recycling performance and to help in waste estimations for future waste management plans	Ongoing	Environmental Manager	Section 4.2

Aspect	Monitoring	Frequency/ Timing	Responsible	Reference
Dam water	Assess dam water quality	Prior to dam dewatering	Environmental Manager under supervision of a suitably qualified specialist	DDS
Ecological clearance of dam	Presence or likely presence of aquatic species of flora and fauna in dam	Prior to dam dewatering	Suitably qualified ecologist	DDS
Dam water	Water quality to check whether it meets the Australian and New Zealand Guidelines for Fresh Water Quality 95% species protection	Prior to discharged offsite or to an onsite sediment basin, when there is excess dam water	Environmental Manager	DDS
Dam sediment	Assess sediments excavated from the dams against relevant guideline criteria	During dam removal	Environmental Manager	DDS
Wildlife	Monitoring of diurnal bird species, including common strike species	Six-monthly, once Western Sydney Airport is operational	Environmental Manager Suitably qualified ecologist	WMP
Wildlife	Monitoring of nocturnal megabat species	Annually, during summer, once landscaping street trees are provided	Environmental Manager Suitably qualified ecologist	WMP
Wildlife	Monitoring of vegetation.	Six-monthly	Environmental Manager Suitably qualified ecologist	WMP
Wildlife	Monitoring of diurnal bird species, including common strike species	Six-monthly, after a rainfall event, once infrastructure is constructed	Environmental Manager Suitably qualified ecologist	WMP
Wildlife	Monitoring of diurnal bird species, including common strike species	Six-monthly, once café is constructed	Environmental Manager Suitably qualified ecologist	WMP

ESR will provide the ER with all performance reporting documentation in order for the ER to perform their functions in accordance with SSD 9138102 Development Consent, including monthly reporting and quarterly reporting to the DPE.

5.3 Environmental Auditing

ESR will undertake an internal Health, Safety, Security and Environment audit of the Project annually. Audits will involve a review of all environmental documents, records and reports to verify compliance with the CEMP to satisfy CoC C16. In addition, the ER may at

any time request documents and evidence confirming implementation of the CEMP and Sub-Plans.

Key environmental and procedural aspects to be covered by the audit may include:

- Environmental mitigation measures detailed in the CEMP Sub-Plans
- Adherence to reporting procedures
- Complaint and incident management
- Legislative requirements.

Environmental and construction records include:

- Contact Register
- Incident, non-conformance and corrective action reporting
- Communications with stakeholders
- Records of environmental monitoring
- Monthly waste management reporting
- CEMP audit documentation.

Records of auditing and reporting will be maintained to demonstrate compliance.

As per CoC A3., the Planning Secretary may make written directions to the Applicant in relation to an audit being undertaken and approved by the DPE.

A Plant Noise Audit will be undertaken by the contractor, to measure noise emission levels of all critical items of mobile plant and equipment for compliance with noise limits appropriate to those items prior to the equipment going into regular service.

Six-monthly audits will be conducted to check the implementation of waste management measures. Where audits show that recycling is not carried out effectively, the Project will carry out additional staff training, signage re-examination and reviews of the waste management measures.

The CPESC will conduct monthly audits of the delivery and operation of all construction phase erosion and sediment controls on the site in accordance with CoC B23.

5.4 Contingency Management Plan

If inspections, monitoring and/or auditing indicate that the mitigation measures listed in the Sub-Plans are not effective in managing environmental impacts, the actions outlined in the Contingency Plan (Appendix J) will be implemented.

The Contingency Plan (required by CoC C1(e)) will manage any unpredicted impacts and their consequences. The implementation of this plan will allow the Project team to reduce ongoing impacts to levels below relevant impact assessment criteria as quickly as possible.

5.5 Non-compliance and Actions

A non-compliance is defined in SSD 9138102 Development Consent as an:

> *occurrence, set of circumstances or development that is in breach of this consent.*

Potential non-compliances with the CoC, this CEMP and Sub-Plans can be identified by anyone and are to be reported to the Project Manager as a potential non-compliance. The Project Manager must report non-compliances and potential non-compliances to ESR immediately.

Non-compliances will be investigated to determine the root cause and any corrective and/or preventative actions arising from the investigation. This will be reported to the Project Manager in a Non-Compliance Report and any corrective and/or preventative actions will be recorded.

In accordance with CoC C11, the Planning Secretary must be notified via the major Projects website within seven days after ESR becomes aware of any non-compliance. As per CoC C12, the notification must identify the development and the application number for it, set out the CoC that the development is non-compliant with, the way in which it does not comply, the reasons for the non-compliance (if known), and what actions have been, or will be, undertaken to address the non-compliance.

Note that under CoC C13, a non-compliance which has been notified as an environmental incident (see Section 5.6.1)does not need to also be notified as a non-compliance.

5.6 Environmental Incident and Emergency Response

5.6.1 Environmental Incidents

An environmental incident is defined in SSD 9138102 Development Consent as 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 as:

> *harm that:*
>
> *a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or*
> *b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).*

Environmental incidents can be identified by anyone and are to be reported to the Project Manager immediately. The Project Manager must report environmental incidents to ESR immediately.

Under CoC C10, ESR must notify the Planning Secretary in writing via the Major Projects website immediately after ESR becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 6 of the SSD 9138102 Development Consent.

Where a pollution incident causes or threatens material harm to the environment or human health, the following authorities must also be notified immediately under the POEO Act:

- EPA
- Penrith City Council
- The Ministry of Health (via Public Health Units)
- SafeWork NSW (formerly WorkCover)
- Fire and Rescue NSW.

Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, ESR 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 within Appendix 6 of the SSD 9138102 Development Consent, and such further reports as may be requested.

5.6.2 Environmental Emergencies

An environmental emergency is any event that causes or has the potential to cause material harm to the environment.

ESR have nominated an emergency contact and an alternate contact that are available 24-hours a day, seven days a week. JK Williams will implement an Emergency Response Plan for the Project as required. Under this plan the Site Emergency Contact will have the authority to stop and direct works on site in the event of an emergency.

For reference, emergency contact details are included in Table 5-2.

Table 5-2: Emergency contact details

Contact	Phone Number/Email	Address
Ambulance	000	N/A
Fire Brigade	000	N/A
Police	000	N/A
NSW EPA Pollution Hotline	131 555	N/A
DPE	1300 305 695	N/A
NSW Department of Health	(02) 9391 9000	N/A
SafeWork NSW	13 10 50	N/A
Penrith City Council	(02) 4732 7777	601 High St, Penrith NSW 2750
ESR Representative Jacob Dickson	Mobile Email	N/A
Project Manager Slavce Kirovski	Mobile Email	N/A
Environmental Manager Jessica Gough	Mobile Email	N/A
ER Carl Vincent	Mobile Email	N/A
Alternative ER Richard Petersen	Mobile Email	N/A
CPESC Peter Monsted	Mobile Email	N/A

5.7 Environmental Reporting

The reporting of environmental performance during construction will be undertaken as required by the SSD 9138102 Development Consent. Environmental reporting requirements for the Project as documented in the CEMP and Sub-plans are summarised in Table 5-3.

Table 5-3: Summary of environmental reporting

Report	Timing/Frequency	Responsibility	Reference
Dilapidation Report	Before the commencement of construction	Project Manager	CoC A13(b)
ER Quarterly Report	Quarterly to DPE	ER	CoC A35(k)
ER Monthly Report	Monthly	ER	CoC A36
CPESC Monthly Audit Reports	Monthly	CPESC	CoC B23
Design Noise Verification Report	Within three months of the commencement of earthworks	Environmental Manager	CoC B54
Preconstruction Dilapidation Reports for adjoining properties	Prior to the commencement of earthworks, if offer accepted by property owners	Project Manager	CoC B64
Remediation Validation Report	Within one month of completion of remediation works	Environmental Manager	CoC B68
Environmental Review Report	Annually	Environmental Manager	CoC C1(d)
Incident Report	Within 30 days of the date on which the incident occurred	Project Manager	CoC C10
Non-Compliance Report	As required, following identification of a non-compliance	Project Manager	CoC C12
Compliance Report	Within six months after the commencement of construction of the development, and in the same month each subsequent year	Project Manager	CoC C14
Environmental inspection and progress reports	Ongoing to the Project Manager	Environmental Manager	Section 3.2
Traffic numbers/movements tracking and reports	Monthly to ER	Project Manager	CTMP
Dust Monitoring Report	Monthly to ER	Project Manager	CAQMP
Report on excessive dust being generated at source and dust leaving the site	When occurs, based on daily visual inspection	Environmental Manager	CAQMP
Monthly Project Report (including overall environmental performance of the Project)	Monthly to ESR	Project Manager	Section 3.2
Pre-start checks on plant and equipment and reports to Environmental Manager	Daily	Plant and Equipment Operators	Section 5.1 CAQMP
Internal Health, Safety, Security and Environment Audit Report	Annually	ESR Representative	Section 5.3

It should be noted that several of these reports are required by the CoC to be prepared by individuals with certain qualifications or accreditations, as follows:

- The CPESC Report must be prepared by a CPESC.
- The ER monthly and quarterly reports must be prepared by a suitably qualified and experienced person who was not involved in the preparation of the EIS, RTS, ADR, and any additional information for the development and is independent from the design and construction personnel for the development.
- The stormwater management system design must be prepared and certified by a suitably qualified chartered professional engineer with experience in modelling and in consultation with Environment & Heritage Group, Sydney Water and Council.
- The Design Noise Verification Report must be prepared by a suitably qualified, experienced and independent acoustics consultant.
- The Remediation Validation Report must be prepared by consultant certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management scheme.

As noted in Table 5-3, the Environmental Manager is responsible for the preparation of these reports, however if not suitably qualified, the reports will be prepared by suitably qualified consultants contracted to JK Williams that meet the CoC requirements.

Under CoC A36, ESR will provide the ER with the Contact Register (on a daily basis) and a copy of any consistency assessment for proposed works (before the commencement of the subject work).

The Compliance Reports (required by CoC C14) will review the environmental performance of the Project. The Compliance Reports will be prepared in accordance with the Compliance Reporting Post Approval Requirements (DPE, 2020) and must also:

- Identify any trends in the monitoring data
- Identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies
- Describe what measures will be implemented over the next year to improve the environmental performance of the development.

Under CoC C15, each Compliance Report will be made publicly available by ESR no later than 60 days after submission to the Planning Secretary. ESR will notify the Planning Secretary in writing seven days prior to public availability.

5.8 CEMP Review and Revision Program

To meet the requirements of CoC C1(d) and (f) for this CEMP and the Sub-Plans, JK WIlliams will implement a review program to:

- Monitor and report on the:
  - Impacts and environmental performance of the Project
  - Effectiveness of the management measures included in the CEMP and Sub-Plans
- Investigate and implement ways to improve the environmental performance of the Project over time.

This review will consider the broader management context of the CEMP and Sub-Plans including:

- Complaints received
- Issues raised by stakeholders
- Non-compliances identified and reported
- Incidents and the Project team response
- Project team structure and resourcing
- Recommendations of environmental inspections, audits and previous review (after the initial review).

This review will be undertaken by the Environmental Manager, in consultation with the Project Manager and ESR Representative, on an annual basis commencing one year after the commencement of construction. An Environmental Review Report recommending measures to improve the environmental performance of the Project will be produced by the review.

CoC C8 also states that all strategies, plans and programs required under the SSD 9138102 Development Consent will be reviewed and the Planning Secretary notified of the review within three months of:

- The submission of a Compliance Report under CoC C14
- The submission of an incident report under CoC C10
- The approval of any modification of the conditions of the SSD 9138102 Development Consent
- The issue of a direction of the Planning Secretary under CoC A2(b) which requires a review.

As per CoC C9, where documents are revised under the above reviews, the revised documents will be sent to the Planning Secretary for approval within six weeks of the review (or as agreed by the Planning Secretary).

All employees and contractors will be informed of any revisions to the CEMP during toolbox talks.

REFERENCES

Alliance Geotechnics (February 2022) Remediation Action Plan – Proposed Residential Subdivision, 290-308 Aldington Road and 59-63 Abbotts Road Kemps Creek NSW

Artefact (April 2023) Aboriginal Cultural Heritage Management Plan.

Ason Group (April 2023) Construction Traffic Management Plan.

Aspect Environmental (April 2023) Construction Air Quality Management Plan.

Aspect Environmental (April 2023) Contamination Unexpected Finds Protocol.

AT&L (2021) Civil Infrastructure Report.

DPE (May 2020) Compliance Reporting Post Approval Requirements.

DPE (September 2022) Technical guidance for achieving Wianamatta-South Creek stormwater management targets.

EPA (November 2014) Waste Classification Guidelines Part 1: Classifying waste.

EPA (December 2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

EPA (June 2020) Construction and demolition waste – A management toolkit

Ethos Urban (June 2021) Environmental Impact Statement – 290-308 Aldington Road, 59-62 Abbotts Road & 63 Abbotts Road, Kemps Creek – Westlink Industrial Estate.

Ethos Urban (April 2022) Submissions and Amendment Report – 290-308 Aldington Road, 59-62 Abbotts Road and 63 Abbotts Road, Kemps Creek – Westlink Industrial Estate.

Ethos Urban (September 2022) SSD-9138102: Westlink Stage 1 – Amendment Report – 290-308 Aldington Road, 59-62 Abbotts Road & 63 Abbotts Road, Kemps Creek – ESR Australia.

Ethos Urban (April 2023) Community and Stakeholder Communications Strategy.

Landcom (March 2004) Managing Urban Stormwater: Soils and Construction – Volume 1 (the “Blue Book”).

Penrith City Council (September 2017) Waste Strategy 2017-2026.

Renzo Tonin and Associates (April 2023) Construction Noise and Vibration Management Plan.

SLR Consulting (2021) Sustainability Management Sub-Plan.

SSD 9138102 Development Consent, dated 21 April 2023.

SSD 9138102 Planning Secretary’s Environmental Assessment Requirements dated December 2020.

Sydney Water (December 2022) Mamre Road Stormwater Scheme Plan.

Sydney Water (December 2022) Stormwater Scheme Infrastructure Design Guideline.

Appendix A Construction Traffic Management Plan

Construction Traffic Management Plan

ESR Westlink Stage 1

59-63 Abbotts Road & 290-308 Aldington Road, Kemps Creek
29/06/2023
P1323r07

info@asongroup.com.au
+61 2 9083 6601
Suite 17.02, Level 17,
1 Castlereagh Street,
Sydney, NSW 2000

Document Control

Project No	1323
Project	ESR Kemps Creek Logistics Park, Abbotts Road, Kemps Creek
Client	ESR Developments (Australia) Pty Ltd
File Reference	1323r07v05 Early Works CTMP_Westlink, Stage 1

Revision History

Revision No.	Date	Details	Author	Reviewed by	Approved by
-	16/12/2022	Draft	M. Abdullah	R. Butler-Madden	J. Laidler
01	2/02/2023	Issue I	M. Abdullah	R. Butler-Madden	J. Laidler
02	2/05/2023	Issue II	M. Abdullah	R. Butler-Madden	J. Laidler
03	22/05/2023	Issue III	M. Abdullah	R. Butler-Madden	J. Laidler
04	20/06/2023	Issue IV	M. Abdullah	R. Butler-Madden	R. Butler-Madden
04	20/06/2023	Issue IV	R. Butler-Madden		R. Butler-Madden

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APPENDICES

Glossary

Acronym	Description
AV	Articulated Vehicle (as defined by AS2890.2:2018)
CCLR	Communications and Community Liaison Representative
CEMP	Construction Environmental Management Plan
Council	Penrith City Council
CTMP	Construction Traffic Management Plan
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
MRPWG	Mamre Road Precinct Working Group
RAV	TfNSW Restricted Access Vehicles
ROP	Road Occupancy Permit
SSD	State Significant Development
TCAW	Transport for NSW Traffic Control at Work Sites Technical Manual
TfNSW	Transport for New South Wales
TGS	Traffic Guidance Scheme
TTM	Temporary Traffic Management
veh/hr	Vehicle movements per hour (1 vehicle in & out = 2 movements)
VMS	Variable Message Sign
VOC	Verification of Competency
VRU	Vulnerable Road Users
WHS	Work, Health and Safety

1 Introduction

1.1 Overview

Ason Group has been engaged by ESR Developments (Australia) Pty Ltd (ESR) to prepare a Construction Traffic Management Plan (CTMP) in regard to the future construction of industrial development known as the Westlink Industrial Estate, at Abbotts Road, Kemps Creek (the Site).

This CTMP details the proposed construction management strategies which would provide for the safe and efficient completion of the proposed works while minimising construction traffic impacts on the surrounding road network and public road network users.

1.2 Project Representatives & Stakeholders

This report has been prepared by a consultant who holds a SafeWork NSW Work Health & Safety Traffic (WHS) Control Work card, accredited for the 'Prepare a Work Zone Traffic Management Plan. Details of the accredited consultant is provided below:

- James Laidler Ticket No. TCT0031686

This Construction Traffic Management Plan (CTMP) has been prepared to meet the requirements outlined in Appendix A and Appendix E, Section E.2 of the Transport for NSW Traffic Control at Work Sites Technical Manual (Issue No. 6.1, Feb 2022) (TCAW).

Through the preparation of this CTMP, the project representatives and stakeholders consulted in the development of the traffic management strategy are listed below:

TABLE 1: PROJECT REPRESENTATIVES AND STAKEHOLDERS

Name	Organisation	Role
Jacob Dickson	ESR	Project Manager
James Laidler	Ason Group	Senior Traffic Engineer

1.3 Project Details

1.3.1 Project Description

The Site comprises the first stage of an industrial estate located at 290-308 Aldington Road, Kemps Creek (Lot 13 DP 253503), 59-62 Abbotts Road (Lot 12 DP 253503), and 63 Abbotts Road, Kemps Creek (Lot 11 DP 253503) within Penrith City Local Government Area. The Site is approximately 319,800m^2 in area and is irregular in shape.

The SSD-9138102 Development Consent also includes Lots 3 and 4 DP 250002 in the development site. These lots are located immediately south of Lot 11 DP 253503 and works (e.g., batter slopes) may be required within them to allow earthworks to be safely undertaken within Lot 11.

The Site currently comprises undulated rural land, with foundations of residential dwellings, farm sheds, and miscellaneous agricultural greenhouses and structures. It is best described as being rural-residential in nature, with significant areas of land currently remaining unused.

As per the SSD-9138102 Development Consent the project includes bulk earthworks (clearing, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction), subdivision, construction, fit out and operation of two warehouse buildings and ancillary office space with a total gross floor area of 81,317m^2, landscaping, construction of estate roads and external road upgrades, site servicing and stormwater infrastructure.

Figure 1: Site Overview

1.3.2 Site Location

The Site is positioned approximately 4 km north-west of the future Western Sydney International (Nancy-Bird Walton) Airport (WSA), 13 km south-east of the Penrith CBD and 40 km west of the Sydney CBD. The Site has direct frontage to Aldington Road and Abbotts Road. The location of the Site is presented below.

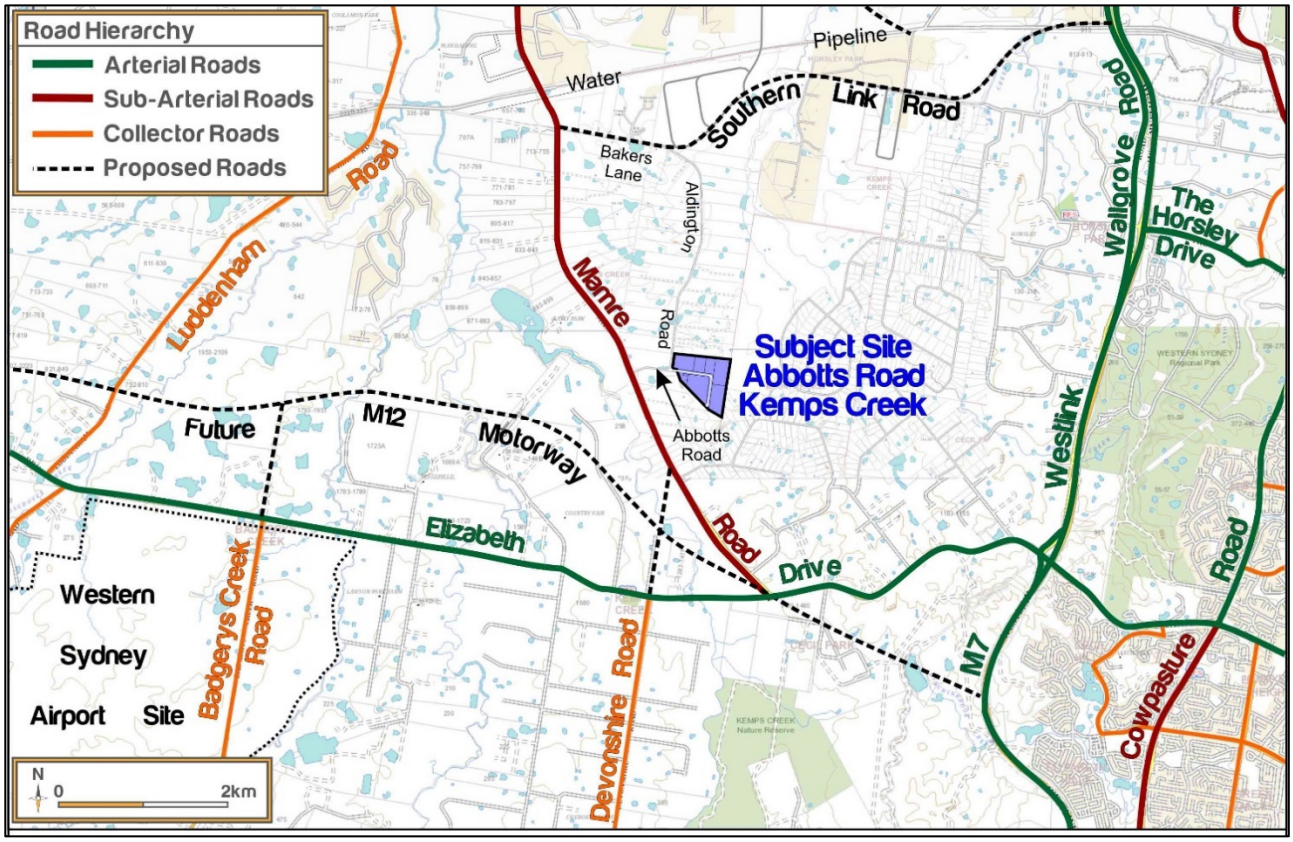


Figure 2: Site Location

1.3.3 Proposed Construction Activity / Works

The proposed construction activities are expected to begin around Q2 of this year. The Project will be delivered by JK Williams in several stages as outlined in **Table 2** and shown on **Figure 3** (for the Stage 1 civil works). The construction will generally be completed over a duration of 10 months, subject to authority approvals and inclement weather delays. Construction shall not commence until the CTMP required by Condition B1 is approved.

TABLE 2: STAGING AND DURATION OF WORKS		
Stage	**Timing**	**Proposed Construction Activities**
0	8 weeks (May 2023 – July 2023)	Pre-commencement works
1A	12 weeks (June 2023 – August 2023)	Pad 1 earthworks and retaining walls
1B	12 weeks (August 2023 – October 2023)	Pad 2 earthworks and retaining walls
1C	12 weeks (October 2023 – December 2023	Remaining earthworks and retaining walls
1D	20 weeks (October 2023 – February 2024	Internal roads and services
1E	20 weeks (October 2023 – February 2024	Trunk drainage

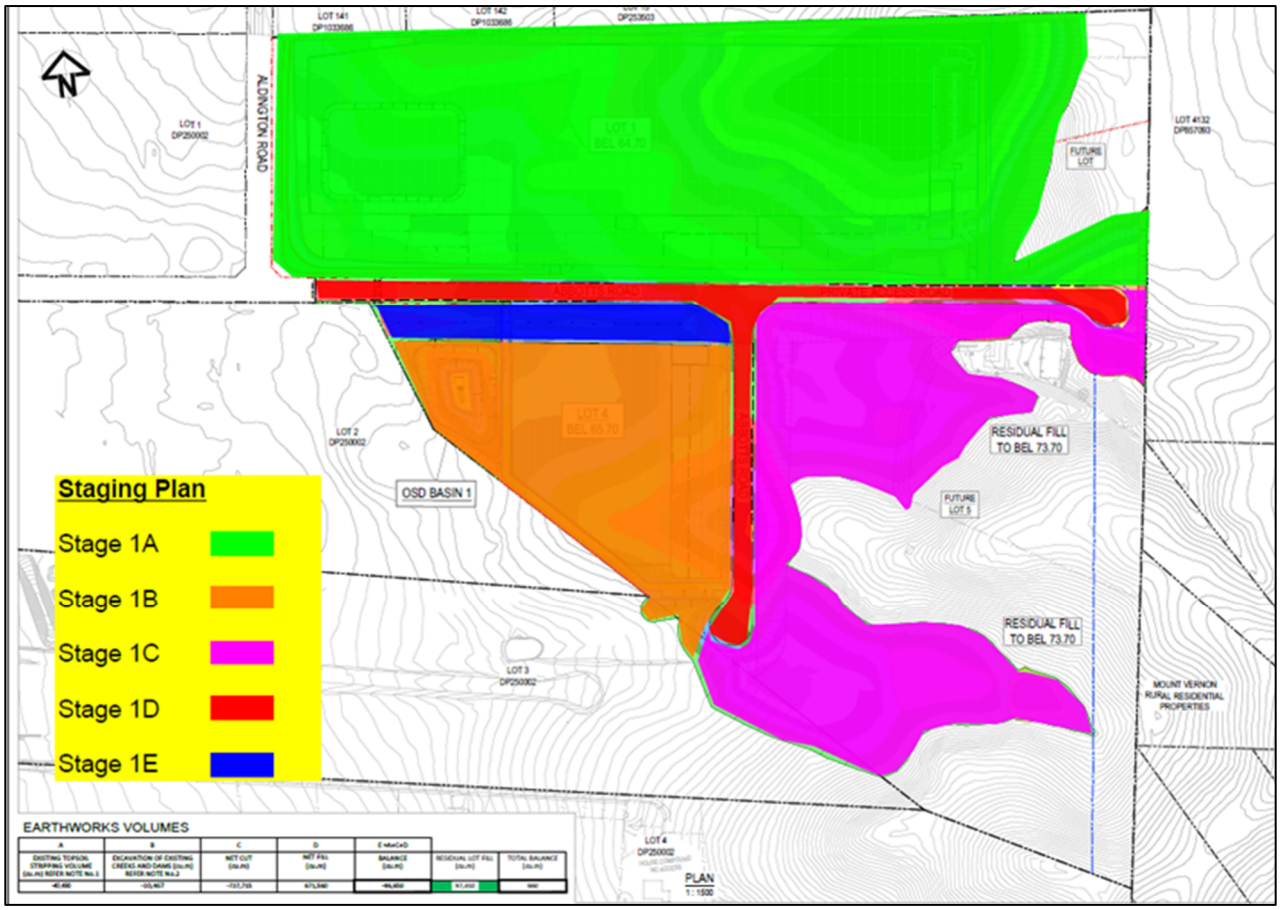


Figure 3: Stage 1 Civil Works Staging

Source: (AT&L, 15 March 2023)

1.4 Authority Requirements

Conditions of Consent for the Project have now been provided the Department of Planning and Environment (DPE) in relation to SSD-9138102. The Conditions relevant to this CTMP (Condition B1, B2, B47, B48, C1, C10, and C11) are reproduced in **Table 3**, with the CTMP response to each also provided.

Legislative and other requirements applicable to all aspects of the project are included in the Construction Environmental Management Plan.

TABLE 3: SSD-9138102 REQUIREMENTS

Condition No.	Requirement	Response
B1	Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan for the development to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by condition C2 and must:	-
(a)	be prepared by a suitably qualified and experienced person(s);	Consultants from Ason Group are suitably qualified Traffic Engineers, with relevant "Prepare a Work Zone Traffic Management Plan" accreditation. Refer to **Section 1.2** for relevant qualifications.
(b)	be prepared in consultation with Council and TfNSW;	Consultation has been undertaken with both Penrith Council and TfNSW, with comments raised from either agency. Evidence of consultation has been provided within **Appendix E**.
(c)	detail the measures that are to be implemented to ensure road safety and network efficiency during construction works to: (i) ensure access to the site and road safety and network efficiency is maintained, (ii) manage cumulative construction traffic from other concurrent construction works within the Mamre Road Precinct, and (iii) address necessary interim traffic safety controls and management measures, including consideration of any traffic control measures required to manage traffic entering Mamre Road in the period before Mamre Road/Abbotts Road intersection construction is complete;	i. Section 3 details the traffic management measures which will ensure site and road safety and network efficiency is maintained. ii. At the time of writing, there are only 2 construction projects underway in Mamre Road: The Yards and Aspect Industrial Estate. Therefore, the cumulative impacts of the Site commencing construction would be minimal as set out below. A cumulative traffic impact assessment was undertaken during assessment of the SSD and included consideration to the all the development sites along Abbotts Road and Aldington Road, that could be subject to construction activities at the same time. The cumulative traffic impact assessment concluded traffic could be managed with appropriate mitigation measures. Once additional development sites, outside of the cumulative traffic impact assessment begin construction along Abbotts Road and Aldington Road, the cumulative impacts would need to be

		reviewed and considered in more detail. To manage this, ESR are working with other landowners to deliver the road upgrades. Therefore, construction can be coordinated as it progresses as required by Condition A37. Condition A37 requires a working group to be established in the Precinct to ensure landowners coordinate construction activities and identified mitigation measures as required. ESR are active participants in this PWG and are currently coordinating with the other landowners in this regard. Nevertheless, it is noted that the development at 200 Aldington Road recently received a development consent. The cumulative construction activities have been considered further in Section 3.3. In addition, the Place of Worship at 230-242 Aldington Road commenced construction in August 2021 and works still ongoing. The impact of the Place of Worship's construction traffic volumes has already been captured in the assessment of the existing intersection performance (Section 3.3), which has been found to operate at Level of Service B. iii. Noting that the Mamre Road / Abbotts Road is already subject to peak hour left-out only restrictions, no further management is required at this stage. This restriction was implemented to assist in managing construction traffic from the Oakdale West Estate which was prohibited from using Bakers Lane during the peak hours. The connection to the Oakdale West site to Bakers Lane / Aldington Road has now been removed and construction volumes for Oakdale West are no longer present on the network. Given that the works covered by this CTMP relate to just the early works / bulk earthworks, the identified traffic volumes for this stage require no further mitigation measures. A speed restriction recommended- by the preliminary CTMP in the SSDA identified reduction of vehicle movements as a potential mitigation measure. This mitigation measure was assumed to be adopted in the period where upgrade works are being undertaken to the Mamre Road / Abbotts Road intersection concurrently with cumulative construction activities on each site would be at their peak (which

		is construction of buildings). No works are to be undertaken to the intersection at this point of time and majority of early works traffic is contained on site. Given these conditions, no speed restriction is required at this time. However, this mitigation measure will be reassessed and revisited through the update of the CTMP associated with the build and the CTMP to be prepared for the road works. This will be further monitored by the PWG which may identify further mitigation measures for the CTMP. If this is identified, the PWG will advise the DPE of the update and identify actions to adopt the mitigation measure.
(d)	detail heavy vehicle routes, access and parking arrangements;	The Site access arrangements – relevant to each stage – are outlined in subsequent sections of this report (Refer **Section 2.4**).
(e)	include a Driver Code of Conduct to: (i) minimise the impacts of earthworks and construction on the local and regional road network; (ii) `minimise conflicts with other road users; (iii) minimise road traffic noise; and (iv) ensure truck drivers use specified routes, including entering and exiting Mamre Road via Abbotts Road and not Bakers Lane;	A driver Code of Conduct is a requirement of and included within this CTMP. The Drivers Code of Conduct (included in **Appendix** A) addresses ways to minimise the impacts on the road network, with other road users, ensure truck routes are utilised and to manage pedestrian movements. Construction vehicles will not utilise Bakers Lane for access.
(f)	include a program to monitor the effectiveness of these measures; and	The Contractor shall include a program to monitor the effectiveness of the measures. Deliveries will be tracked against approved volumes and will keep a vehicle log – including rego & time of entry – for the purpose of assessing the effectiveness of these monitoring programs. These programs will be completed in accordance with **Section 4.1** and **Table 14**.
(g)	if necessary, detail procedures for notifying residents and the community (including local schools), of any potential disruptions to routes	The Contractor will notify the community liaison representative when traffic conditions are expected to exceed parameters with within Condition Green of **Table 16.** Measures that may be included within the strategy have been identified within **Section 4.1** and **Section 4.4**. Meetings are to be undertaken on a regular basis to keep key stakeholders informed of any upcoming events.
B2	The Applicant must:	-
(a)	not commence construction until the Construction Traffic Management Plan required by condition B1 is approved by the Planning Secretary; and	Noted and reiterated in **Section 1.3.3**

(b)	implement the most recent version of the Construction Traffic Management Plan approved by the Planning Secretary for the duration of construction.	Refer **Section 4.1** of this Plan which outlines requirement for this Plan to be updated regularly.
B47	The Applicant must comply with the hours detailed in Table 2, unless otherwise agreed in writing by the Planning Secretary. Earthworks and construction: Monday – Friday 7 am to 6 pm; Saturday 8 am to 1 pm Operation: Monday – Sunday 24 hours	Refer to **section 2.3**
B48	Works outside of the hours identified in condition B47 may be undertaken in the following circumstances: (a) works that are inaudible at the nearest sensitive receivers; (b) works agreed to in writing by the Planning Secretary; (c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or (d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.	Refer to **section 2.3**
C1	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include: (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	A contingency plan has been provided in **section 4.3** of this report.
C10	The Planning Secretary must be notified in writing via the Major Projects website immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 6.	All environmental incidents will be reported immediately to DPE in writing via the Major Projects website after ESR becomes aware of the incident. Refer to **section 4.2.1**
C11	The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Applicant becomes aware of any non-compliance.	The Principal Contractor will notify ESR's Project Manager immediately, who is then required to notify DPE in writing (via the Planning Portal) within 7 days in the event of a notifiable non-compliance incident arising. Refer to **section 4.2.1**

1.5 Site Related Data

1.5.1 Road Details

The key roads surrounding the Site are as identified within **Figure 2** and summarised in **Table 4**.

TABLE 4: LOCAL ROAD NETWORK

Road Name	Section	Speed Limit	Parking	Traffic Volumes and Peak Times	Urban / Rural
Mamre Road	Great Western Highway and M4 & Elizabeth Dr	80 km/hr	No	AM Peak: 1,595[1] veh/hr PM Peak: 1,702[1] veh/hr	Urban
Aldington Road	Abbotts Rd & Bakers Ln	60 km/hr	No	-	Urban
Abbotts Road	Mamre Rd & Aldington Rd	60 km/hr	No	AM Peak: 46[1] veh/hr PM Peak: 54[1] veh/hr	Urban
Elizabeth Drive	M7 & The Northern Rd, Hume Highway & Mamre Rd	80 km/hr	No	2021 ADT: 26,516[2] veh/day	Urban
Bakers Lane	Mamre Rd & Aldington Rd	60 km/hr (40 km/hr during school peaks)	No	-	Urban
Erskine Park Road	Mamre Rd & M4	70 km/hr	No	-	Urban

Notes: 1) According to Ason Group surveys conducted in 2022
2) Transport for NSW Traffic Volume Viewer

1.5.2 Crash History

A review of TfNSW crash database has been undertaken to establish the crash history in the vicinity of the Site; the crash history for the 5-year period 2018 to 2022 (inclusive) is outlined below in **Table 5**. Of those crashes, the ones that occurred near the Site can be seen below.

TABLE 5: CRASH HISTORY

Year	Location	RUM Code	Injury/Death
2018	Mamre Road, West of Site	20 – Head On	nil

Source: TfNSW Crash Statistics Website

These crash statistics show that no fatalities occurred on Mamre Road over 2018 and 2022. Furthermore, it suggests that there are no inherent safety issues within this Section of Mamre Road, Abbotts Road, or Aldington Road, near the Site.

1.5.3 Vulnerable Road Users

Vulnerable road users (VRU) are road users not in a car, bus or truck. In the event of a crash, VRUs have little to no protection from crash forces, therefore, need to be addressed within this CTMP. Provides context to VRUs surrounding the Site.

TABLE 6: PUBLIC AND ACTIVE TRANSPORT

Road Name	Pedestrian	Cycling	Public Transport
Mamre Road	No	Yes Within shoulder	None close to Site
Aldington Road	No	No	No
Abbotts Road	No	No	No
Elizabeth Drive	No	Yes Within shoulder	Yes Bus Stops
Bakers Lane	No	Yes Within shoulder	No
Erskine Park Road	Yes Footpath Width = 2.6 m	Yes Bike trail	Yes Bus Stops

1.6 Stakeholder Engagement

1.6.1 Stakeholder Engagement Plan

ESR has consulted with required stakeholders regarding construction schedules and trucks routes and will raise any further conflicts with stakeholders at the earliest time. The Mamre Road Precinct Working Group (MRPWG) is a dedicated forum to consult with key stakeholders, and provides a platform to discuss programmes, impacts and any outcomes from previous engagements.

Consultation has been conducted with TfNSW and Penrith City Council in April 2023 regarding the CTMP, during which both TfNSW and Penrith City Council indicated no obligation to the plan. Proof of the consultation has been provided within **Appendix E**. Any further stakeholder engagement shall adhere to the actions and procedures outlined below and in **Section 1.6.2**.

TABLE 7: STAKEHOLDER CONSULTATION ACTIONS

Stakeholder	Action
TfNSW	ESR to submit CTMP to stakeholder.(Done) ESR to liaise with stakeholder to address comments and re-submit final CTMP. (Done)
Penrith City Council	ESR to submit CTMP to stakeholder (Done) ESR to liaise with stakeholder to address comments and re-submit final CTMP.
Transport Management Centre (TMC)	Tied to consultation with TfNSW. Any consultation will be undertaken in tandem with TfNSW.

1.6.2 Stakeholder Notification

In the event that any disruptions (unexpected or in advance) to roadways / footpath occur as a result of construction works, the procedure outlined below is to be followed:

- If any future disruptions to roadways / footpaths are required, Council / TfNSW is to be notified first and depending on the extent of the disruption the contractor is to notify affected property occupiers using letter drops and Variable Message Sign (VMS).
- If any unforeseen disruptions to roadways / footpaths occur, Council / TfNSW is to be notified first and depending on the extent of the disruption the contractor is to notify affected property occupiers via traffic controllers and VMS.
- In the event that heavy vehicle damage to Council / TfNSW assets / infrastructure, contractors will notify Penrith Council's Traffic & Transport team and / or Assets Branch.

2 Proposed Works and Staging

2.1 Overview of Works

The details of the Bulk Earthworks and Retaining Walls are shown in **Table 8**. It is estimated that the total duration of the works will be approximately 11 months from the commencement date.

TABLE 8: BULK EARTHWORKS & RETAINING WALLS (STAGES 0 - 1C)

Criteria	Response
Description of Key Activities	Pre-Commencement works, Bulk Earthworks, and Retaining Walls (11 months)
Max. Vehicle Size	20.0m Articulated Vehicles (AV's)
Vehicle Movement Frequency	Approximately 209 light vehicle movements / day + Approximately 32 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via the existing driveway on Abbotts Road
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	N
Contractor Parking	Y – All parking internal
Pedestrian Control	Fencing to the perimeter of the Site with 1.8 m manproof on property boundary
Public Transport Services Affected	N
Road Occupancy Requirements (If yes, provide further details)	N
Lane or Footpath Closures (If yes, provide further details)	N
Traffic Guidance Scheme	Refer below.

Furthermore, **Table 9** shows the details of the civil and site road works. These works are estimated to take approximately 5 months from the commencement date.

TABLE 9: CIVIL WORKS STAGE (STAGES 1D – 1E)

Criteria	Response
Description of Key Activities	Civil and Site Road Works (5 months)
Max. Vehicle Size	20.0m Articulated Vehicles (AV's)
Vehicle Movement Frequency	Approximately 78 light vehicle movements / day + Approximately 168 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via the existing driveway on Abbotts Road
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	N
Contractor Parking	Y – All parking internal
Pedestrian Control	Fencing to the perimeter of the Site with 1.8 m manproof on property boundary
Public Transport Services Affected	N
Road Occupancy Requirements **(If yes, provide further details)**	Y The section of Abbotts Road, along the Site frontage, will be closed during upgrade works.
Lane or Footpath Closures **(If yes, provide further details)**	N
Traffic Guidance Scheme	Refer below.

2.2 Additional External Road Works

In addition to the construction work mentioned above, the Land Owners Group East (LOG-E), represented by ESR, Fife Kemps Creek and Frasers Property Australia, are proposing upgrades to the Aldington Road and Abbotts Road corridor as well as the Mamre Road / Abbotts Road intersection.

These works are being undertaken separately to this CTMP but will be coordinated with construction activities as part of the MRPWG.

2.3 Construction Hours

Earthwork and construction hours will be in accordance with CoC B47 which are reproduced in **Table 10**.

TABLE 10: HOURS OF WORK

Activity	Day	Time
Construction works	Monday – Friday Saturday	7 am to 6 pm 8 am to 1 pm

No work Sundays or Public Holidays.

It is anticipated that construction works will not be conducted outside of the hours outlined above. Should out of work hours be required, ESR will lodge an application for an Out of Work Hours Permit with DPE to seek approval for these works. The type of works that might be undertaken outside the recommended standard hours are:

- The delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads,
- Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm,
- Maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours (community agreement with the affected receivers should be obtained),
- Public infrastructure works that shorten the length of the project and are supported by the affected community (community agreement with the affected receivers should be obtained),
- Works where a proponent demonstrates and justifies a need to operate outside the recommended standard hours.

Condition B48 of the Conditions of Consent outline that Works outside of the hours identified in condition B47 may be undertaken in the following circumstances:

- Works that are inaudible at the nearest sensitive receivers;
- Works agreed to in writing by the Planning Secretary;
- For the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or
- Where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.

2.4 Truck Routes and Heavy Vehicle Deliveries

It is expected that all heavy vehicles (including deliveries vehicles carrying large construction equipment and machinery) will access the Site via the approved TfNSW Restricted Access Vehicles (RAV) Map for 26 m B-double Access. The access routes are shown in **Figure 4**.

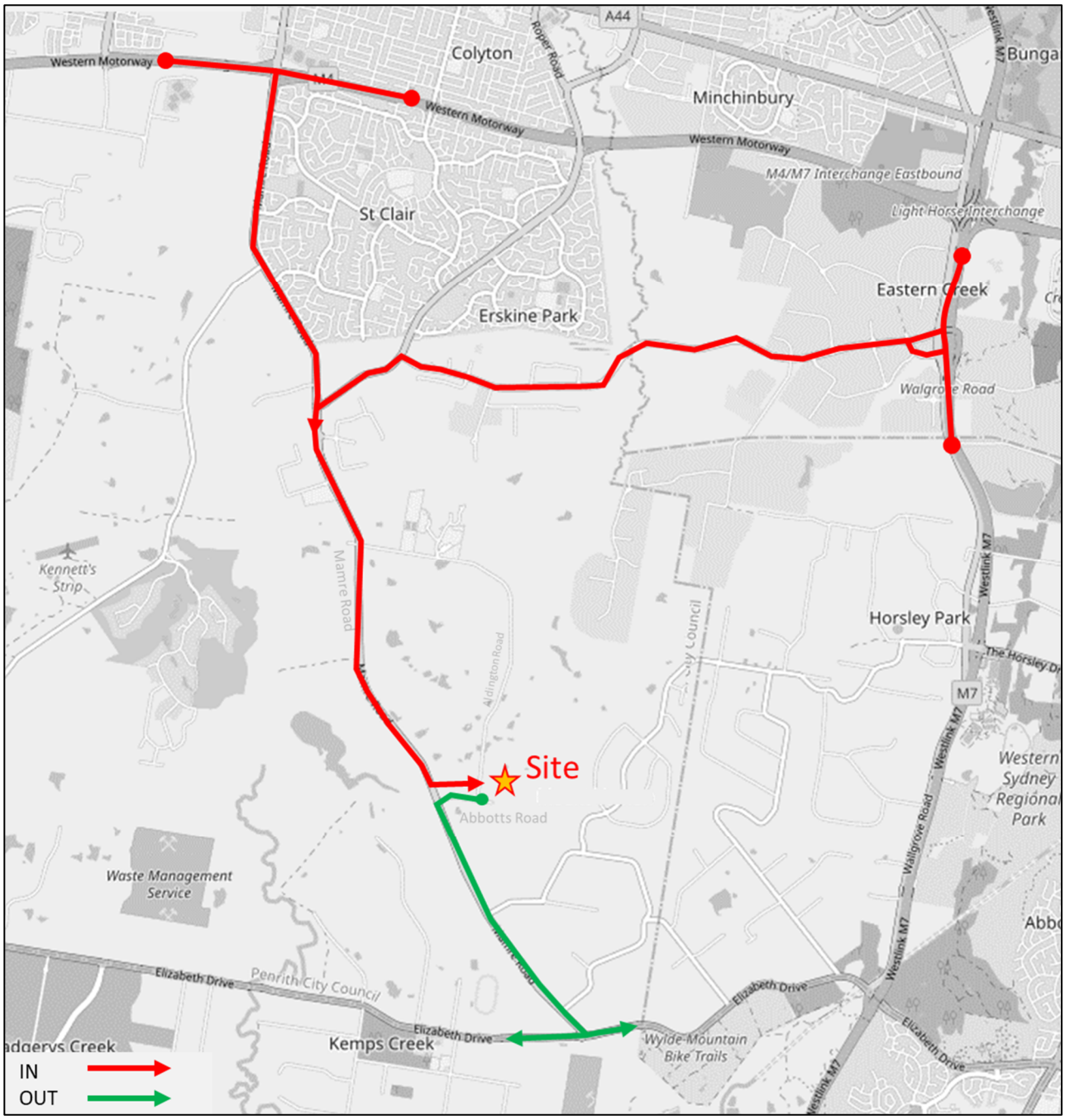


Figure 4: Construction Vehicle Route Map

As discussed, all construction vehicles will enter and exit the Site via Abbotts Road. It is anticipated that all heavy vehicles will access Site via the following routes:

- Arrival Trips:
  - Route 1: From M4 Western Motorway, southbound along Mamre Road and left into Abbotts Road.
  - Route 2: From Westlink M7, westbound on Old Wallgrove Road, Lenore Drive and Erskine Park Road, then south along Mamre Road and left into Abbotts Road.
- Departure Trips:
  - Route 1: From the Site, onto Abbotts Road then south on Mamre Road to Elizabeth Drive and left to the M7 Motorway and sub-regional routes to the east.

– Route 2: From the Site, onto Abbotts Road then south on Mamre Road to Elizabeth Drive and right to Badgerys Creek and The Northern Road to the west.

A copy of the approved routes will be distributed by the Contractor to all drivers before their arrival to Site. No trucks are to be queued on local roads. Mobile phones, two-way radios or application-based solutions should be used to coordinate truck arrivals.

As can be shown in **Figure 5**, the RAV Map illustrates that vehicles up to and including B-doubles are capable of traveling to and from the Site within approved routes.

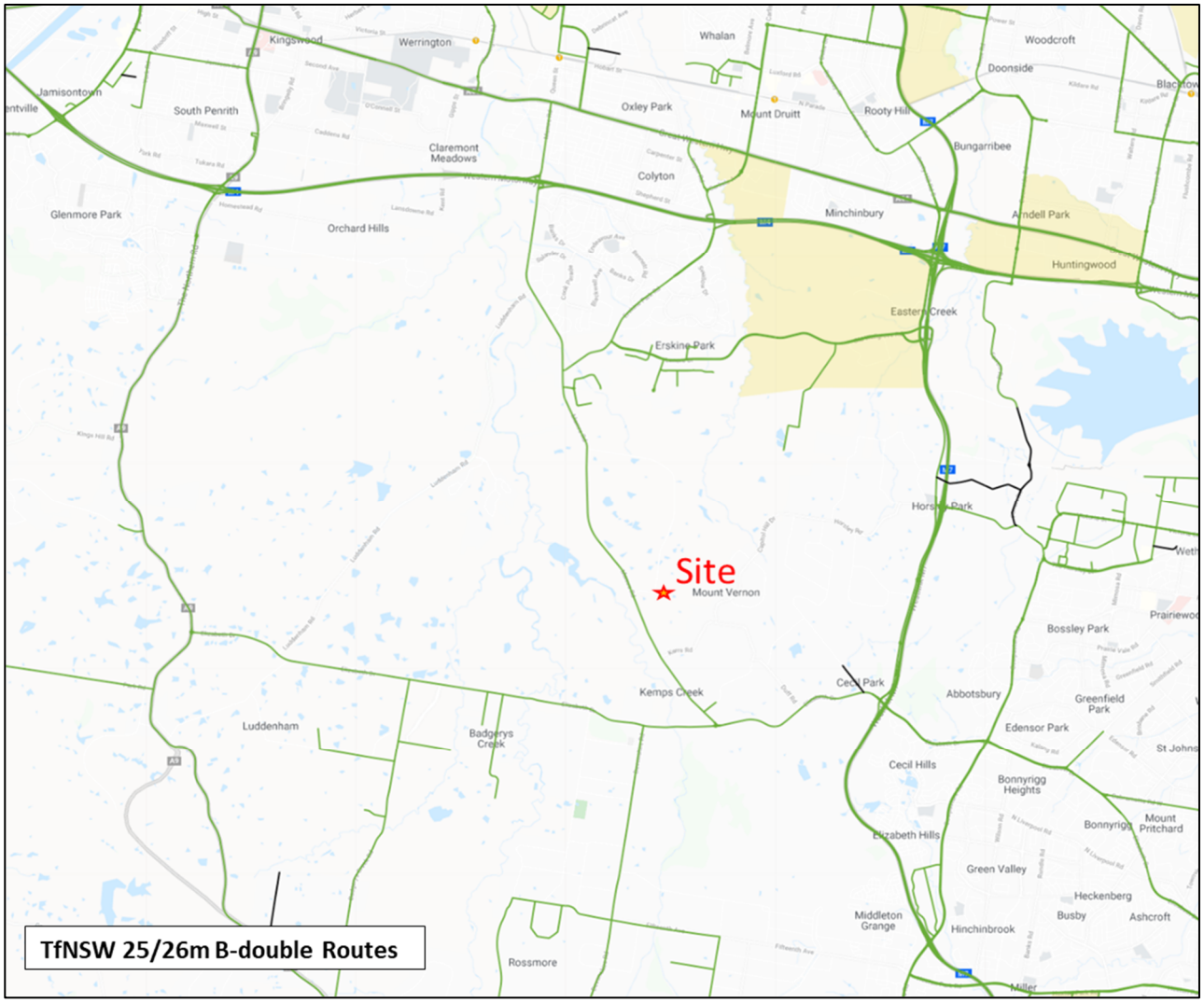


Figure 5: Restricted Access Map

To deliver heavy construction equipment on site, ESR and its contractor must follow the "Multi-State Class 1 Load Carrying Vehicle Dimension Exemption Notice 2023 (No.1)" and "Oversize and/or Overmass (OSOM) Mass and Dimension Exemption Permit". The process of how these permits are applied is outlined below. Each process has its set of mitigation measures which are required to be followed during the delivery of equipment to the site. This includes but not limited to following discrete, permitted routes to get to site, no convoys, limitation on the number of deliveries to site per day, approved travel times to minimise disruption with peak hours. ESR and its contractors will abide by these requirements to ensure minimal disruption occurs to the network.

The majority of deliveries of oversized plant and equipment will be undertaken via the "Multi-State Class 1 Load Carrying Vehicle Dimension Exemption Notice 2023 (No.1)" issued by the National Heavy Vehicle Regulator. This exemption outlines specific requirements for oversized vehicle movements on public roadways, including permissible travel times vehicle dimensions, pilot and escort vehicles, and permissible vehicle routes. It is anticipated that 10 of these deliveries will initially be required commencing in the bulk earthworks and retaining wall stage of the development. These deliveries will be staggered as required by the permit (no convoys) to minimise disturbance to the local road users, and the enable safe management of the deliveries to the site. The delivery vehicles will be accepted to site via the gate person who will assist in opening and closing the site enabling a smooth and safe transition from the public road to the site.

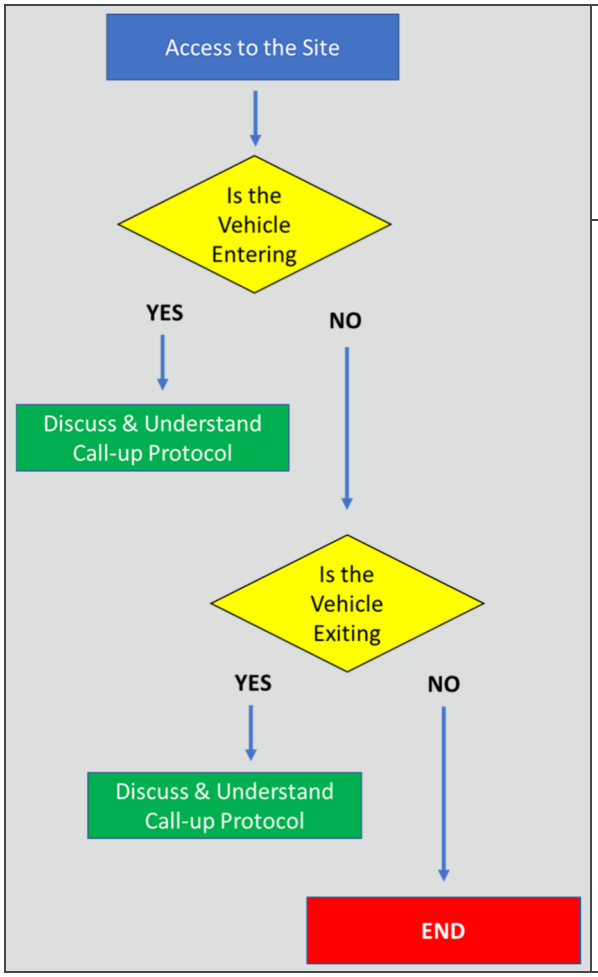
Where deliveries are required that exceed the vehicle dimensions specified in the abovementioned exemption, a specific permit will be applied for through the National Heavy Vehicle Regulator "Oversize and/or Overmass (OSOM) Mass or Dimension Exemption Permit". These permits approve oversize or overmass vehicles to travel on approved roadways under strict conditions outlined in the permit. These conditions include notifying specific authorities, escort vehicles, reporting damage to roadways, gaining approval from third parties where applicable (NSW Police, utility owners), restrictions on numbers of deliveries per day (3), approved travel route and approved travel times. It is anticipated that 8 of these deliveries will be required commencing in the bulk earthworks and retaining wall stage of the development. These deliveries will be staggered as required by the permit (no convoys) to minimise disturbance to the local road users, and the enable safe management of the deliveries to the site. The delivery vehicles will be accepted to site via the gate person who will assist in opening and closing the site enabling a smooth and safe transition from the public road to the site.

2.5 Temporary Traffic Management Method

Traffic management shall be undertaken in accordance with the methodology outlined within the TGS, **Table 11** and attached within **Appendix C.** All road users are expected to be directed around the worksite in order to physically separate the road user from any hazards within the worksite.

TABLE 11: ACCESS PROTOCOLS & METHODOLGY

Procedure	Responsibility	Notes
	Site Manager / Foreman / Traffic Controller	**ENTRY PROTOCOL:** Via UHF radio, channel agreed at pre-start 1. Vehicle to advise gate controller when 200m from gate via UHF — vehicle to ensure flashing lights are on 2. Vehicle advises of metres from gate in 50m lots (i.e., 1 50 m from gate 100m from gate). 3. Gate Controller advises safe to enter, vehicle enters site and decelerates behind barriers 4. If not safe to enter, vehicle is to continue driving and not stop / queue on the public roadway

		5. Vehicle uses road network to return and make another attempt at entering site
	Site Manager / Foreman / Traffic Controller	**EXIT PROTOCOL:** Via UHF radio, channel agreed at pre-start 1. Vehicle driver to radio Gate Controller to ensure exit is possible – vehicle to ensure flashing lights are on 2. If no issues driver to accelerate to exit gate and merge with traffic. 3. If driver cannot exit, Gate Controller to order vehicle to hold until gate is clear. **Gate Controller is not to stop traffic on the public road network**

2.6 Risk Assessment

A risk assessment is aimed to identify the hazards and risks associated with the works. The purpose of this risk assessment is to determine the controls required for the protection of the road workers and road users. A risk assessment has been completed and is attached in **Appendix B.**

2.7 Site Contact

The key contacts for the Site during Construction have been outlined below.

TABLE 12: CONSTRUCTION CONTACT LIST

Role	Name	Company	Contact
Project Manager	Slavce Kirovski	JKW	
Environmental Manager	Jessica Gough	JKW	
Communications and Community Liaison Representative	Slavce Kirovski	JKW	
ESR Representative	Jacob Dickson	ESR	
Environmental Representative	Carl Vincent	ErSed	
Environmental Representative	Richard Peterson	Trigalana Environment	

The list of key contacts shall be provided within the site induction to all staff and contractors, as well as be posted on the site shed. Consideration should also be given to presenting this list of contacts within the project's website[1].

2.8 Site Access

All access to the Site by construction personnel will be to/from Abbotts Road via the existing access driveway.

The largest vehicle that will access the Site during construction would be a Truck & Dog Vehicle, which the temporary access driveway will be designed to accommodate. Further, construction management protocols will require that any vehicle entering the Site access road will have right of way in order to ensure that there is no queuing on Abbotts Road.

Access to emergency vehicles shall be maintained at all times. An emergency vehicle parking space will be maintained at all times and left vacant unless occupied by an emergency vehicle.

This Site access is illustrated in **Figure 6**.

[1] https://au.esr.com/available-space/westlink/

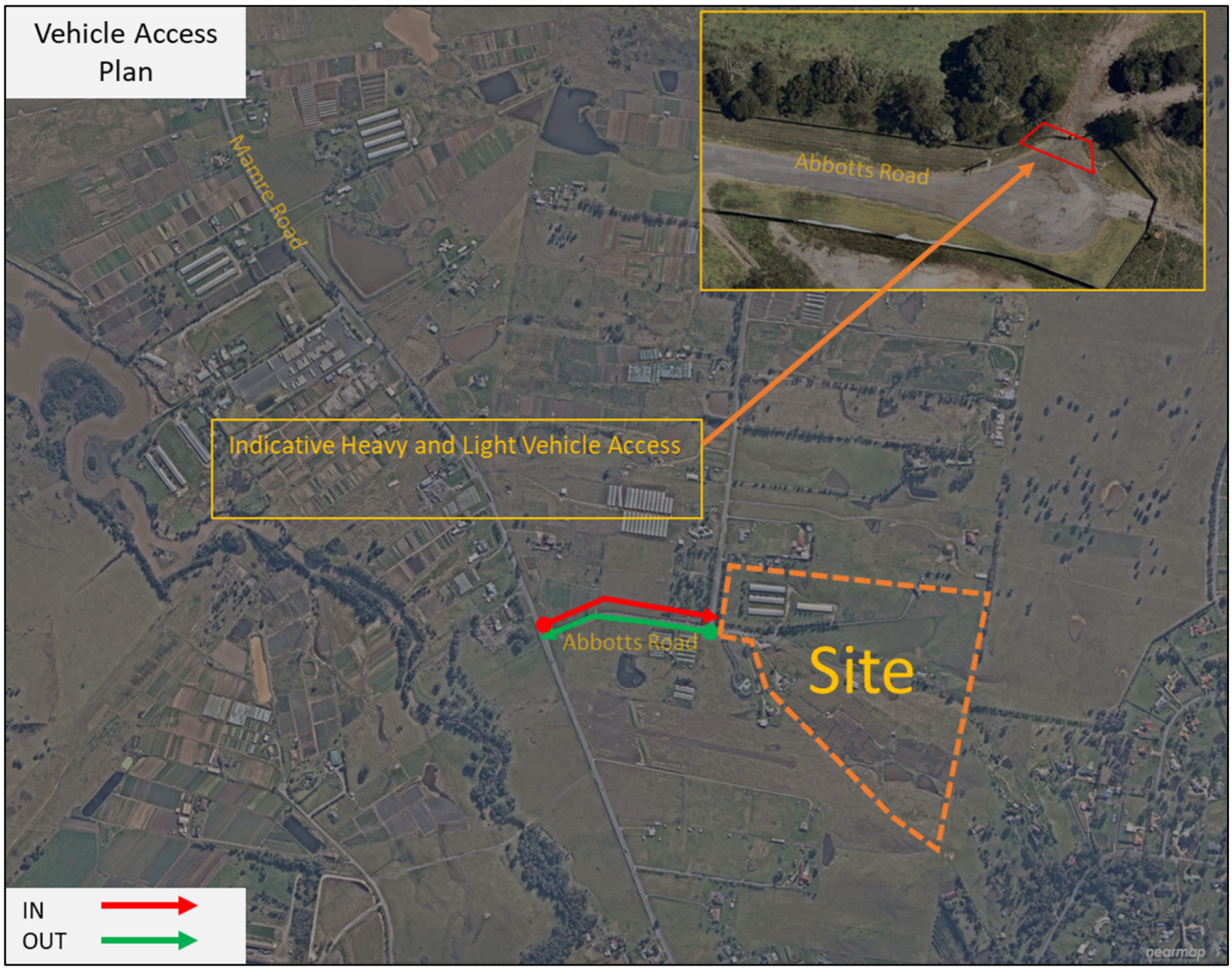


Figure 6: Site Access

2.9 Works Zone

A Work Zone is not required during the bulk earthwork stage; all construction vehicles will be able to park/stop within the Site.

A Road Occupancy Permit (ROP) from Penrith City Council will be required during the works undertaken on Abbots Road. It is the responsibility of the contactor to obtain the ROP.

3 Traffic Management

3.1 Operational Traffic Volumes

The traffic report (Ason Group Ref: 1323r06) supporting the development, outlined the following relevant figures with regard to future operational traffic volumes associated with the Site:

- AM Peak (7:00-8:00): 188 movements per hour (movements, in & out combined)
- PM Peak (4:00-5:00): 196 movements per hour (movements, in & out combined)
- Daily: 1,886 movements per day (movements, in & out combined)

For the purpose of this report, 1 truck is equal to 1 inbound movement plus 1 outbound movement which equals to a total of 2 movements.

3.2 Construction Vehicle Traffic Generation

The anticipated vehicle movements generated by the construction of the Site have been estimated having consideration of the likely requirements for construction staff, plant, equipment, and haulage. The anticipated construction schedule has been provided by the contractor, with the estimated traffic volumes as follows:

- 287 Light Vehicle Movements per day
  (up to 25 movements in the AM and 6 movements in PM Peak Periods)
- 200 Heavy Vehicle Movements per day
  (up to 16 movements in the AM Peak Periods and 12 movement in the PM peak)

Therefore, the expected maximum daily construction vehicles generated is up to 487 movements per day, with a maximum of 41 movements in either road network peak period.

As per Table 2, this CTMP does not cover any built-from construction. Construction of the approved warehouses will be subject to separate, future CTMPs. The cumulative traffic volumes are to be updated as each new stage of construction commences.

3.3 Cumulative Construction Traffic Impacts

At the time of writing, the only project which has received a development consent which could commence construction in a similar timeframe to the Project is the Fife Kemps Creek site at 200 Aldington Road (SSD-10479).

The peak cumulative construction traffic flows of the Project, alongside the Site are provided below.

TABLE 13: CUMULATIVE TRAFFIC FORECAST (MOVEMENTS)

Site Timeframe	Period	FKC 200 Aldington (SSD-10479)	ESR – Westlink (SSD-9138102)	Total
Month 0 - 9 Jun 2023 - May 2024	AM	20	15	35
	PM	20	10	30
	Daily	136	241	377
Month 10 - 11 June - July 2024	AM	34	41	75
	PM	34	18	52
	Daily	**236**	**487**	**723**
Month 12 - 16 August – Nov 2024	AM	14	26	40
	PM	14	8	22
	Daily	100	246	346

As shown, the peak cumulative traffic is anticipated to be during the secondary phases of construction, 9 months after works have commenced. It is noted that the current Mamre Road / Abbotts Road intersection operates with a Level of Service B (assessed at the time of application of the SSD). This reflects an intersection with "good performance" and spare capacity. This is consistent with the on-site observations, with left-turn movement into Abbotts Road being able to occur freely and the right-turn movement being subject to a low demand.

Of note is that construction traffic would be restricted to left-in/left-out movements only (as per Figure 4). This equates to an additional 37 movements into Abbots Road (or 1 movement every 1-2 minutes) and 38 movements out. This level of additional traffic would not have a material impact on the operation of this intersection.

3.4 Minimising Traffic Impacts on Surrounding Network

The impacts of construction traffic and the mitigating measures to be implemented are outlined below.

- **Construction Traffic in Mamre Road and Abbotts Road**: Construction traffic will use the existing access on Abbotts Road to access the work area for the works, connecting to the wider network via Mamre Road. To ensure the impacts to motorists within the area are kept to a minimum, construction traffic will be contained with the prescribed volumes.
- **Management of deliveries**: The Contractor will manage deliveries to ensure that construction vehicles, particularly heavy vehicles, will not exceed approved limits.

- **Safety During Construction**: Safety to motorists and pedestrians throughout the area will be maintained during construction through the preparation and execution of TGS's. A range of TGS's are to be implemented by the contractor CTMPs, for each access throughout construction, to identify all reasonably foreseeable hazards, assess the hazards, and manage the hazards as best possible by either eliminating or minimising the risks. TGS's shall be monitored and updated accordingly throughout the project.
- **Reporting**: Reporting and monitoring of movements during peak periods are to be undertaken to ensure that drivers are adhering to restricted times, and to ensure that the approved traffic generation, and subsequent impacts on the road network, are in line with those approved.

3.5 Vehicle Management

In accordance with TfNSW requirements and the Conditions of Consent, all drivers are to be familiar with the Driver Code of Conduct before attending the Site. A copy of the Code is included in **Appendix A.**

All vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the Site. Public roads used by construction vehicles are to be kept clean at all times. All vehicles enter and exit the Site in a forward direction.

All subcontractors must be inducted by the lead contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The lead contractors will monitor the roads leading to and from the Site and take all necessary steps to rectify any road deposits caused by Site vehicles.

Vehicle movements to, from and within the Site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads, access points and internal parking areas will not be obstructed by any materials, unapproved vehicles, refuse skips or the like, under any circumstances. At no time shall heavy vehicles and bins associated with the development park on local roads or footpaths in the vicinity of the Site.

All vehicles are wholly contained on site before being required to stop. At no stage shall queuing occur on the public road network. A schedule for deliveries of goods and materials will be established prior to that day, with Traffic Controllers to maintain radio contact with construction vehicles at all times. The anticipated deliveries will be made known to site personnel at daily prestart meetings.

3.6 Contractor & Heavy Vehicle Parking

Contractors will likely drive since there is no easily accessible public transport in close proximity to the Site. Onsite parking will be available. Suitable pedestrian connectivity shall be maintained between the work areas and this contractor parking at all times.

A dedicated area for the parking of contractor and heavy vehicles shall be developed and updated / relocated as the project progresses. The number of parking spaces provided within the Site throughout the construction will change as construction progresses, which will likely increase as construction progresses.

During each iteration of car parking location, there shall be enough parking to accommodate the expected maximum for that particular stage (with the overall maximum being 148 light vehicles and 100 heavy vehicles).

It is expected that the location of dedicated light and heavy vehicle parking areas shall change as the construction of the internal road network progresses, therefore the location of parking spaces shall be outlined within the Driver Code of Conduct and outlined within the regular toolbox meetings. Parking will be regularly monitored to ensure that no queuing onto roadway.

3.7 Pedestrian and Cyclist Management

Abbotts Road does not have any footpaths, bicycle paths or shared paths fronting the Site.

However, in the unlikely event that there are pedestrians or cyclists needing to cross an access driveway they will be halted by an accredited Traffic Controller while construction vehicles are entering or exiting the

Site. Once the construction vehicles are clear, the Traffic Controller can allow pedestrians/cyclists to continue along their journey.

3.8 Fencing Requirements

Fencing requirements will consist of fencing to the perimeter of the Site with a 1.8 m man-proof fence on the property boundary. During temporary and signal intersection works, concrete jersey kerbs along the Site frontage will be constructed.

The fencing is to ensure unauthorised persons are kept out of the Site.

3.9 Traffic Control

As noted about in Section 3, there shall be additional works pertaining to the Site to be undertaken at the same time as the works outlined within Section 2.1.

A site-specific TGS is provided in **Appendix C** for the Site access following the completion of the temporary access.

It should be noted that an accredited Traffic Controller shall be on-site to supervise construction vehicles passing general traffic.

3.10 Authorised Traffic Controller

There is a requirement for authorised traffic controllers to be present throughout the bulk earthworks, and construction stages of the project. The responsibilities include:

- Implementation of the TGS.
- Pedestrian and cyclist management, to ensure that adverse conflicts between vehicle movements and pedestrians do not occur.
- Supervision of all vehicle movements across pedestrian footpaths at all times, and
- Supervision of all loading and unloading of construction materials during the deliveries in the construction phase of the project.

Refer to **Appendix C** for the TGS for details of the proposed work zone, location of traffic controllers and associated traffic management measures.

3.11 Driver Awareness & Code of Conduct

All drivers shall be made aware and adhere to the Driver Code of Conduct, outlined in **Appendix A.**

3.12 Worker Induction

All workers and subcontractors engaged on-site would be required to complete a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, work, health and safety (WHS), driver protocols and emergency procedures.

Any workers required to undertake works or traffic control within the public domain must be suitably trained and covered by adequate and appropriate insurances.

4 Monitoring and Review

4.1 Monitoring Program

This CTMP shall be subject to a monthly review and will be updated accordingly. Regular reviews will be undertaken by the on-site coordinator during implementation and execution of this CTMP. Monitoring of this CTMP shall also be picked up in the Environmental checklists, with any incidents being reported within the weekly site meeting. The monitoring shall be undertaken in accordance with Condition B1(f)

All and any reviews undertaken should be documented, however key considerations regarding the review of the CTMP shall be:

- To ensure the implementation of the CTMP and TGS's are consistent with the intent of this report, and that the most recent version of the CTMP and TGS (as approved by the Planning Secretary) is being implemented.
- Tracking deliveries against the volumes outlined within report. Deliveries will be tracked against approved volumes and will keep a vehicle log - including Rego & time of entry - for the purpose of assessing the effectiveness of these monitoring programs.

  It is expected the contractor will undertake a truck and car count/review with ESR to ensure volumes are within Condition Green of **Table 16,** and will be undertaken once a month. In addition, the Contractor is required to retain a log of all vehicles accessing the Site on a daily basis.

  This information is to be given to the Environmental Representative once the monthly reviews have been conducted.
- To identify any shortfalls and develop an updated action plan to address issues that may arise during construction (Parking and access issues)
- To ensure TGS's are updated (if necessary) by "Prepare a Work Zone Traffic Management Plan" card holders to ensure they remain consistent with the set-up on-site.
- Regular checks to ensure all loads are entering and leaving site covered as outlined within this CTMP.

As such the table below provides triggers to monitor and review this CTMP.

TABLE 14: MONITORING & REVIEWS OF CTMP

Type of Review	Frequency	Considerations
Scheduled	The scheduled CTMP review must be undertaken monthly or as per Condition C8 / as specified otherwise	The scheduled CTMP review must consider the following: • CTMP and TGS are approved; • Identify required variations to the TGS, and ensure that they are updated, recorded, and approved; • Review any departures or variations of the CTMP and/or TGS to ensure they have been documented and approved; • Speed control effectiveness; and • Construction vehicle entry/egress suitability, with no queuing on the public road network at any time. • Construction vehicle daily / peak hour movements are compliant with approved volumes, with monthly reviews of the contractor's daily logbook of vehicles required. • Periodic checks to ensure that heavy vehicles are using the correct access route

		• Periodic checks of noise generating items to ensure they are less than the prescribed 45 dBA.
Change Generated Review	The change generated review must be undertaken when implementing new traffic stages, switches, or other construction-based activities.	The change generated CTMP review must consider the following: • The work site is operating safely; • Delineation is effective with appropriate signage installed for changed conditions; • Safe passage is provided for all road users; • Road Safety Audits are arranged or confirmed as required • Accountability for approval and inspection is well understood and documented
Non-Compliance, Post Incident or Near Miss Review	The Non-Compliance, post-incident or near miss review must be undertaken following an incident or near miss.	Any non-compliance must be reported to immediately to the supervisor. A non-compliance is anything other than 'Condition Green' as outlined within Table 16. All workplace incidents must be reported immediately to the supervisor, who is to determine responsibility for investigating the incident. The incident and investigation must also be recorded in the incident reporting system of Transport The post incident or near miss CTMP review must consider: • Causal factors; • Contributory factors or changes required; and • Identified changes to TGS are completed, approved, recorded, and communicated. For any incidents or near miss (where required) a safety alert must also be prepared and distributed by the Transport project manager to share learnings with other work sites.

This monitoring process is expected to form part of the monitoring plan required to be included as part of the overarching CEMP of which this CTMP forms a part. The roadway (including footpath) must be kept in a serviceable condition for the duration of construction. At the direction of Council, undertake remedial treatments such as patching at no cost to Council.

4.2 Work Site Inspections, Recording and Reporting

Recording and reporting of the monitoring programs shall be done in accordance with Section E.3, E.4 and E.5 of the TCAWs Manual. As such, the structure, schedule, and frequency of these activities have been considered and identified.

To inspect, review and audit the temporary traffic management (TTM) arrangements implemented on site, the following actions are to be undertaken by suitably qualified personnel in accordance with TCAWS 6.1 requirement during all phases of construction, being:

TABLE 15: EXAMPLE REVIEW OF ACTIVITIES

Activity			Frequency or Details
Shift Inspections	☐ Yes	☐ No	
Regular Inspections	☐ Yes	☐ No	
TMP Review	☐ Yes	☐ No	
Road Safety Audit	☐ Yes	☐ No	
Other	☐ Yes	☐ No	
Comments			

Given that the length of construction and that no regular works have been proposed outside of the site, monthly TTM inspections is considered to be sufficient.

4.2.1 Incident Management

For the purposes of this CTMP, an 'incident' is 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. Furthermore, a 'non-compliance' is an occurrence, set of circumstances or development that is a breach of the consent.

All incidents related to traffic, including those of the Principal Contractor, subcontractors, and/or visitors that occur during construction works will be managed in conjunction with the requirements outlined in ESR's Incident and Non-compliance Response and Handling Procedure.

ESR will be responsible for ensuring that systems and processes satisfy the requirements of the CEMP and relevant sub-plans, including the incident management components. The Contractor will be responsible for providing all necessary documentation with regards to the incident investigation and close-out actions where required. The timing of the provision of this documentation is to align with ESR requirements.

ESR's Project Manager must be notified immediately of any environmental incident or near miss related to traffic. Such incidents may include, but not limited to:

- Vehicle crash or injury resulting from construction traffic related to the project.
- Failure to correctly implement required traffic controls for planned activities.
- Queuing onto Abbotts Road, in breach of the requirements set out under this CTMP.
- Spill of any dangerous goods or hazardous substance to ground or water.
- Substantiated complaints received from members of the community or regulatory authorities relating to traffic management.
- Land-based off-site sediment loss to the environment, including sediment tracking onto the roadway.

ESR's Project Principal will be responsible for all notifiable environmental incidents in line with the regulatory notification requirements as per Table 3-1 of CEMP.

All environmental incidents will be reported immediately to DPE in writing via the Major Projects website after ESR becomes aware of the incident, as per Condition C10 of the conditions. Any notification to DPE must identify the development, including the application number, and set out the location and nature of the incident.

In the event of a notifiable non-compliance incident arising, the Principal Contractor will notify ESR's Project Manager immediately, who is then required to notify DPE in writing (via the Planning Portal) within 7 days, as per Condition C11 of the conditions. Any notification to DPE must

- identify the development, including the application number,
- set out the condition of approval that the development is non-compliant with,
- the way in which it does not comply,
- the reasons for the non- compliance (if known) and
- what actions have been taken, or will be taken, to address the non- compliance.

4.3 Contingency Plan

A contingency plan shall be established by the Contractor and is to be included in the overarching CEMP, in accordance with Condition C1(e). Notwithstanding, **Table 16** outlines an indicative plan to be undertaken by the builder in the event that the monitoring program identifies the management plan is not effective in managing the construction impacts.

TABLE 16: CONTINGENCY PLAN

Risk		Condition Green	Condition Amber	Condition Red
Construction Movements	Trigger	Both peak hour and daily Construction traffic volumes are in accordance with volume and time constraints as outlined within Section 2.3 and Section 3.1 being: 287 Light Vehicle Movements per day (up to 25 movements in the AM and 6 movements in PM Peak Periods); and 200 Heavy Vehicle Movements per day (up to 16 movements in the AM Peak Periods and 12 movements in the PM peak).	Construction traffic volumes exceeds programmed Peak volumes but is within the daily volumes (287 Light Vehicle Movements per day and 200 Heavy Vehicle Movements per day).	Construction traffic volumes exceeds programmed volumes and time constraints, (287 Light Vehicle Movements per day (up to 25 movements in the AM and 6 movements in PM Peak Periods); and 200 Heavy Vehicle Movements per day (up to 16 movements in the AM Peak Periods and 12 movements in the PM peak)).
	Response	No response required	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: • Review CTMP and update where necessary • Provide additional training.	As with Condition Amber, plus; • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report or non-compliance report to government agencies. • Determine cause of exceedance and

				amend delivery schedules to ensure no further non-compliances.
Queuing	Trigger	No queuing identified	Queuing identified within site, but not on to public road	Queuing identified on the public road.
	Response	No response required Continue monitoring program	Review the delivery schedule prepared by the builder. If drivers are not following the correct schedule, then they should be provided with additional training and an extra copy of the Driver Code of Conduct	As with Condition Amber, plus • Review and investigate construction activities. • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report nor non-compliance report to government agencies. • Temporary halting of activities and resuming when conditions have improved. • Stop all transportation into and out of the Site. • Review CTMP and update where necessary, provide additional training.
Noise	Trigger	Noise levels do not exceed imposed noise constraints, as outlined within the Noise Assessment Report (<45dBA), nor has there been a traffic noise related complaint	Noise levels in minor excess (<10dBA) of imposed noise constraints, or receipt of a single noise complaint	Noise levels greatly in excess (>10dBA) of imposed noise constraints or consistent noise complaints.
	Response	No response required	Undertake all feasible and reasonable mitigation and management measures to minimise noise impacts.	As with Condition Amber If noise levels cannot be kept below applicable limits, then a different construction method or equipment must be utilised.
Traffic Guidance Scheme	Trigger	No observable issues (TGS implements according to plan)	Minor inconsistencies with TGS to onsite operations (such as covered signs,	Near miss or incident occurring regardless of / as a result of the TGS being implemented

			missing signs, fallen cones, etc.)	
	Response	No response required	Traffic Controller to amend TGS on site and to keep a log of all changes	Stop work until an investigation has been undertake into the incident. There are to be changes made to the TGS to ensure that the safety of all workers, students and civilians are catered for.
Dust	Trigger	No observable dust	Minor quantities of dust in the air and tracking on to the road	Large quantities of dust in the air and tracking on to the road
	Response	No response required	Review and investigate construction activities and respective control measures, where appropriate. Implement additional remedial measures, such as: • Deployment of additional water sprays • Relocation or modification of dust-generating sources • Check condition of vibrating grids to ensure they are functioning correctly. • Temporary halting of activities and resuming when conditions have improved	As with Condition Amber. • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. • Implement relevant responses and undertake immediate review to avoid such occurrence in future.

4.4 Communications Strategy

A communications strategy shall be established by the Contractor and is included in the overarching CEMP (refer to the community consultation strategy prepared separately).

A Communications and Community Liaison Representative (CCLR) shall be elected and shall be responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an environmental complaint.

All employees who are made aware of a complaint, either verbal or written, are to immediately notify the Contractor's Project Manager, who will then contact the CCLR. Upon becoming aware of a complaint, the protocol outlined below will be followed.

TABLE 17: RESPONSE STRATERGY

Ref	Protocol	Action
1	Record and acknowledge	Any employee who takes receipt of a complaint, either verbal or written, are to immediately notify the Contractor's Project Manager who will then contact the Communications and Community Liaison Representative. The Contractor's Project Manager will be available 24 hours a day, seven days a week and have the authority to stop or direct works. In the normal course of events, the first contact for complaints will usually be made in person or by telephone. The complainant's name, address, and contact details, along with the nature of the complaint, will be requested. If the complainant refuses to supply the requested information, a note will be made on the form and complainant advised of this.
2	Assess and prioritise	The CCLR will prioritise all complaints by severity for the risk to health and safety and will attempt to provide an immediate response via phone or email.
3	Investigate	An on-site investigation will be initiated in an attempt to confirm details relevant to the complaint and the cause of the problem. Any monitoring information and/or records at and around the time of the complaint will be reviewed for any abnormality or incident that may have resulted in the complaint.
4	Action or rectify	Once the cause of the complaint has been established, every possible effort will be made to undertake appropriate action to rectify the cause of the complaint and mitigate any further impact. The CCLR will assess whether the complaint is founded or unfounded and delegate the remediation of the issue to the Contractor's Project Manager for action, as required.
5	Respond to Complainant	The CCLR will oversee the rectification of the issue and respond to the complainant once the issue has been resolved. The complainant will be provided with a follow up verbal response on what action is proposed within two hours during night-time works (between the hours of 6:00 pm and 10:00 pm) and 24 hours at other times. Where a complaint cannot be resolved by the initial or follow-up verbal response, a written response will be provided to the complainant within ten days.
6	Record	It is imperative that an assessment of the situation is carried out and documented to minimise the potential for similar complaints in the future. On this basis, every complaint received is to be recorded in the Community Correspondence Register. A copy of the completed form will be maintained for at least five years
7	Preventative Action	Once the complaint has been suitably handled, appropriate measures will be identified and implemented to negate the possibility of re-occurrence. The Community Correspondence Register is not finalised until the preventative actions are completed and recorded on the form.

In addition to the above, the CCLR is to notify the community liaison representative when traffic is expected to exceed the parameters set within "Condition Green" of **Table 16**. Notwithstanding, **Table 18** outlines an indicative communication strategy to ensure that adequate communication with key stakeholders have been met.

TABLE 18: COMMUNICATIONS STRATERGY

Risk	Impact	Comms Channel
Wider Traffic Disruption	Wider community and stakeholders informed through local and wider advertising and notification	Stakeholder Meetings Stakeholder email blast
Construction related traffic	Ensure construction crews use traffic routes identified in the Traffic Management Plan, and Ensure residents in area are notified in advance to any traffic changes that may affect them	

Furthermore, ongoing communication will be undertaken so that all stakeholders are kept up to date of works and potential impacts.

Appendix A. Driver Code of Conduct

Drivers Code of Conduct

Safe Driving Policy for the ESR Westlink, Abbotts Road.

Objectives of the Drivers Code of conduct

- To minimise the impact of earthworks and construction on the local and regional road network;
- Minimise conflict with other road users;
- Minimise road traffic noise; and
- Ensure truck drivers use specified routes.

Code of Conduct

The code of conduct requires that while driving any vehicle for work-related purposes. Drivers are to be issues with a copy of the Drivers Code of Conduct, and must comply with all of the following:

- Demonstrate safe driving and road safety activities.
- Abide by traffic, road, and environmental legislations.
- Follow site signage and instructions.
- Drivers must only enter and exit the Site via the approved entry and exit points and travel routes.

The below activities in any vehicles will be considered as a breach of conduct and will result in removal from site:

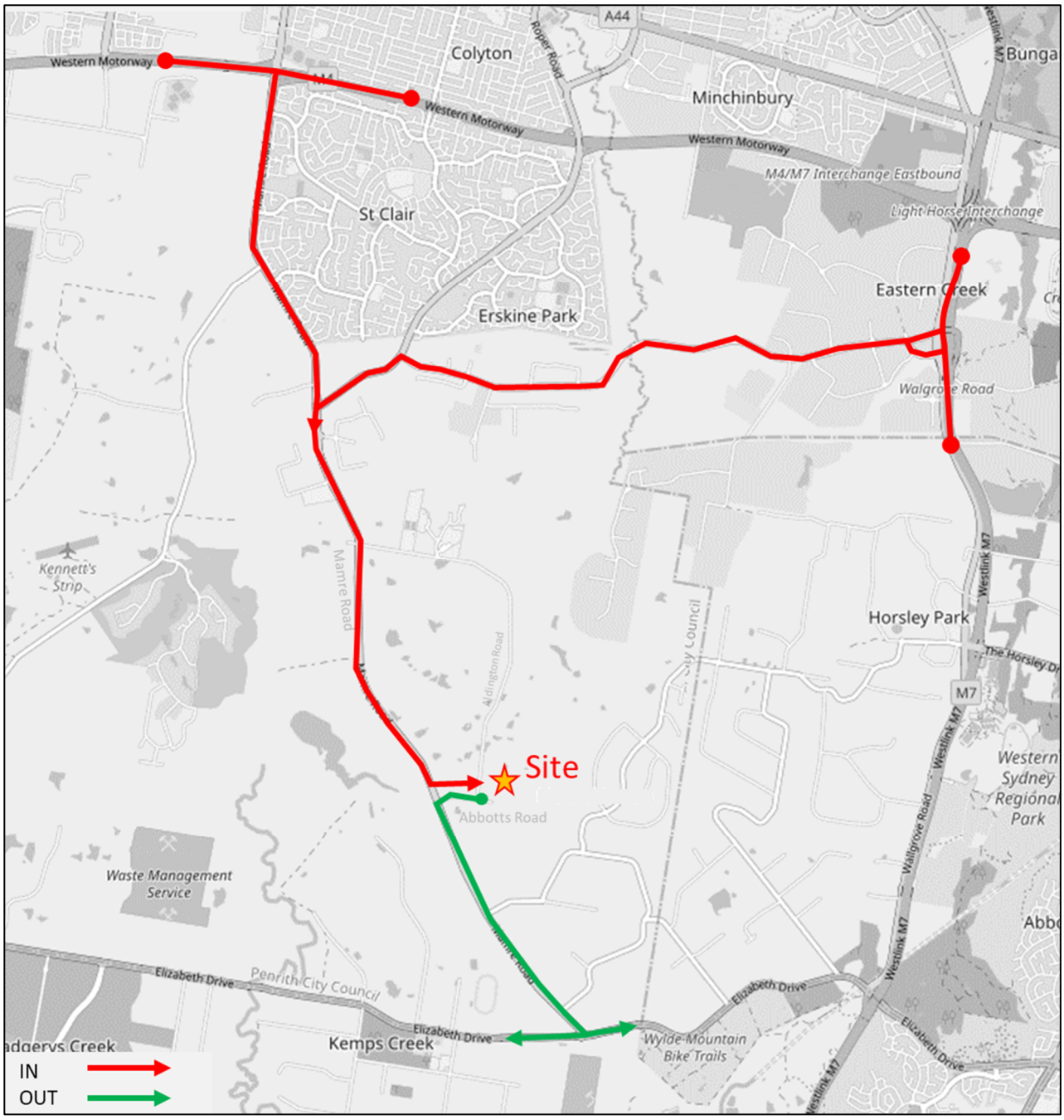
- Reckless or dangerous driving causing injury or death.
- Driving whilst disqualified or not correctly licensed.
- Drinking or being under the influence of drugs while driving
- Failing to stop after an incident.
- Loss of demerit points leading to suspension of licence.
- Any actions that warrant the suspension of a licence
- Exceeding the speed limit in place on any permanent or temporary roads

Driver Responsibilities

All Drivers on site must:

- Be responsible and accountable for their actions when operating a company vehicle or driving for the purposes of work.
- Display the highest level of professional conduct when driving a vehicle at all times.

- Ensure they have a current driver licence for the class of vehicle they are driving, and this licence is to be carried at all times.
- Immediately notify their supervisor or manager if their drivers' licence has been suspended, cancelled, or has had limitations applied.
- Comply with all traffic and road legislation when driving.
- Assess hazards while driving.
- Undertake daily pre-start checks of oil, tyre pressures, radiator, and battery levels of company vehicles they regularly used.
- Drive within the legal speed limits, including driving to the conditions.
- Not drive outside of the approved heavy vehicle routes. All drivers must obey weight, length and height restrictions imposed by the National Vehicle Regulator, and other Government agencies. Heavy Vehicles shall adhere to the selected routes.
- Be cognisant of the noise and emissions requirements imposed within the EIS, and in a broader sense, the NSW/ Australian Road Rules. Works must be constructed with the aim of achieving the construction noise management levels detailed in the Interim Construction Noise Guideline.
- Do not queue on public roads unless a prior approval has been sought.
- Be aware that at no time may a tracked plant be permitted or required on a paved road.
- Never drive under the influence of alcohol or drugs, including prescription and over the counter medication if they cause drowsiness – to do so will merit disciplinary measures.
- All drivers to report to their supervisor if they have been prescribed medication prior to the start of work.
- Wear a safety seat belt at all times when in the vehicle.
- Avoid distraction when driving – the driver will adjust car stereos/mirrors etc. before setting off or pull over safely to do so.
- Report ALL near-misses, crashes, and scrapes to their manager,
- Report infringements to a manager at the earliest opportunity.
- Report vehicle defects to a manager prior to the next use of the vehicle.
- Follow speed limits as imposed within the estate.
- Keep loads covered at all times.
- Park in dedicated light vehicle or heavy vehicle parking spaces.
- Follow the approved site access/egress routes only.
  - Arrival Trips:
    - Route 1: From M4 Western Motorway, southbound along Mamre Road and left into Abbotts Road.
    - Route 2: From Westlink M7, westbound on Old Wallgrove Road, Lenore Drive and Erskine Park Road, then south along Mamre Road and left into Abbotts Road.
  - Departure Trips:
    - Route 1: From the Site, onto Abbotts Road then south on Mamre Road to Elizabeth Drive and left to the M7 Motorway and sub-regional routes to the east.
    - Route 2: From the Site, onto Abbotts Road then south on Mamre Road to Elizabeth Drive and right to Badgerys Creek and The Northern Road to the west.



The Site Team Responsibilities

The Contractor is responsible to take all steps necessary to ensure company vehicles are as safe as possible and will not require staff to drive under conditions that are unsafe.

This will be achieved by undertaking the following:

- Ensuring all vehicles are well maintained and that the equipment enhances driver, operator, and passenger safety by way of:
  - Pre-commencement checks for all new plant arriving on-site and prior to undertaking any work.
  - Daily prestart inspections for all plant, vehicles, and equipment currently on-site.

  - All construction plant must be fitted with a flashing light, fire extinguisher and reverse alarms (or squawkers).
  - Ensure all operators onsite have a current verification of competency (VOC) for their current driver's licence of the appropriate class.
  - Ensure maintenance requirements are met and recorded.
- Identify driver training needs and arranging appropriate training or re-training. This may include providing the below:
  - Operator VOC assessment as part of all inductions.
  - Regular Toolbox discussions on safety features, managing fatigue, approved heavy routes, driver responsibility and drink-driving.
- Encouraging Safe Driving behaviour by:
  - Ensuring the subcontractor is informed if their staff become unlicensed.
  - Not covering or reimbursing staff speeding or other infringement notices
  - Ensuring Legal use of mobile phones in vehicles while driving only and that illegal use is not undertaken.
- Encouraging better fuel efficiency by:
  - Use of other transport modes or remote conferencing, whenever practical.
  - Providing training on, and circulating information about, travel planning and efficient driving habits.

Crash or incident Procedure

- Stop your vehicle as close to it as possible to the scene, making sure you are not hindering traffic. Ensure your own safety first, then help any injured people and seek assistance immediately if required.
- Ensure the following information is noted:
  - Details of the other vehicles and registration numbers
  - Names and addresses of the other vehicle drivers.
  - Names and addresses of witnesses.
  - Insurers details
- Give the following information to the involved parties:
  - Name, address, and company details
- If the damaged vehicle is not occupied, provide a note with your contact details for the owner to contact the company.
- Ensure that the police are contacted should the following circumstances occur:
  - If there is a disagreement over the cause of the crash.
  - If there are injuries.
  - If you damage property other than your own.
- As soon as reasonably practical, report all details gathered to your manager.

Environmental Procedures

A range of measures shall be implemented to ensure the following;

- No dirt or debris from the construction vehicles is tracked on to the public road network.
- Reduce the impacts to sensitive receivers, including, where practicable, starting noisy equipment away from sensitive receivers and implementing respite periods.
- Watering of dusty activities will be undertaken, or activities temporarily halted and then resumed once weather conditions have improved.
- Containment measures for spillages will be provided at appropriate locations and in close proximity to staff car park areas, dangerous goods stores areas and main Project work areas.
- All vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria, and
- Keep an accurate record which includes the range of measures undertaken to reduce environmental impacts.

Appendix B. Risk Assessment

59-63 Abbotts Road & 290-308 Aldington Road, Kemps Creek

Risk Assessment and Communication Tool

Project Number	P1323
Project Name	Early Construction Works for ESR Westlink Stage 1
Site Location	59-63 Abbotts Road & 290-308 Aldington Road, Kemps Creek
Date of Assessment	4 April 2023
Revision	Draft

Name	Company	Title
J. Laidler	Ason Group	Senior Traffic Engineer
M. Abdullah	Ason Group	Traffic Engineer
Jacob Dickson	ESR	Project Manger

Document Control			
Date Issued	Revision	Issued By	Checked By
4/04/2023	Draft	M. Abdullah	J. Laidler

Risk Matrix		**Consequence**				
		Minor	Major	Severe	Critical	Catastrophic
		A	B	C	D	E
Very Unlikely	1	Low	Low	Medium	Medium	Medium
Unlikely	2	Low	Low	Medium	Medium	High
Possible	3	Low	Medium	High	High	High
Likely	4	Medium	Medium	High	High	Extreme
Almost Certain	5	Medium	High	High	Extreme	Extreme

Description	
A - Minor	Could result in injury or illness not resulting in a lost work day or minimal environmental damage not required to be notified under jurisdiction requirements.
B - Major	Could result in injury or illness resulting in one or more lost work day(s) or environmental damage can be mitigated and is not required to be notified under jurisdiction
C - Severe	requirements where restoration activities can be accomplished.
D - Critical	Could result in permanent partial disability, injuries or illness that may result in
E - Catastrophic	hospitalisation of persons or environmental damage can be mitigated and is required to be notified under jurisdiction requirements.

Likelihood Descriptor	Design Likelihood
1 - Very unlikely	Industry experience suggests design failure is very unlikely. It can be assumed failure
2 - Unlikely	Industry experience suggests design failure is unlikely to occur in the life of design.
3 - Possible	Industry experience suggests design failure is possible some time during the life of the
4 - Likely	Industry experience suggests design failure is likely to occur during the life of the product.
5 - Almost certain	Industry experience suggests design failure is almost certain to occur during the life of the

Risk Assessment and Communication Tool

Example

ID. Ref	Risk and/ or Hazard	Risk Description	Location	Existing Control	Initial Risk Rating			Design Response to risk and /or hazard	Status of Risk	Assignment of risk or hazard	Residual risk rating		
					C	L	RR				C	L	RR
1	Unauthorized Access to the Site	Site prevents unauthorised access	Entire Site	Nil	C	3	High	Boundary fence will be provided as part of the main works. The design provides a defined separation between public areas and work area. Admin area is located in front of the site to minimise unauthorised visitor access	Design Solution	Main Contractor	B	2	Low
2	Interaction between pedestrians and vehicles	Vehicles and pedestrians to be separates as best possible	Entire Site & Access Roads	Nil	D	3	High	separate pedestrians from vehicles in construction sites, use barrier fencing, signage and markings, traffic control measures, and temporary walkways. Ensure that the site is well-lit, especially when	Design Solution	Main Contractor	B	2	Low

								it get dark, and train workers on safety around construction equipment and vehicles to promote awareness of potential hazards.					
3	Potential vehicle conflict points	Vehicles can crash with each other while manoeuvring through the site	Entire Site & Access Roads	Nil	B	3	Medium	Use one-way manoeuvring around a site to limit interaction between vehicles to designated access points. Maintain Low speeds throughout the site to ensure safety for drivers.	Design Solution	Main Contractor	B	1	Low
4	Fatigue	Injury caused by fatigue	Entire Site	Nil	C	3	High	Toolbox meetings and regular breaks (in line with WHS practices) to minimise fatigue	Design Solution	Main Contractor	B	1	Low
5	Fall risks	Injury due to falls (in general)	Entire Site	Nil	E	3	High	Proper safety equipment, training, and site maintenance should be implemented to ensure a safe work environment.	Design Solution	Main Contractor	C	2	Medium

6	Misdirected access in to neighbouring site	Vehicle in unsafe locations	Entire Site	Nil	C	3	High	Ensuring appropriate directional signage has been provided to ensure vehicles do not access the wrong construction site, which could create potential safety breaches and hazards for all partied. Additionally, communicating with the neighbouring site can help to identify any potential issues related to access or safety, and facilitate the sharing of best practices and resources. This can promote a culture of collaboration and cooperation between neighbouring sites, and ultimately help to improve overall safety and	Design Solution	Main Contractor	B	2	Low

								efficiency in the area.					
7	Conflicting Traffic Management	Coordinating Traffic Controllers could create misleading and wrong advice	Entire Site	Nil	C	3	High	Regular toolbox meetings, safety briefings, liaison with traffic management teams, and updated signage plans can minimize construction site hazards by adopting a comprehensive approach to traffic management.	Design Solution	Main Contractor	C	2	Medium

Appendix C. Traffic Guidance Scheme

TGS GENERAL NOTES

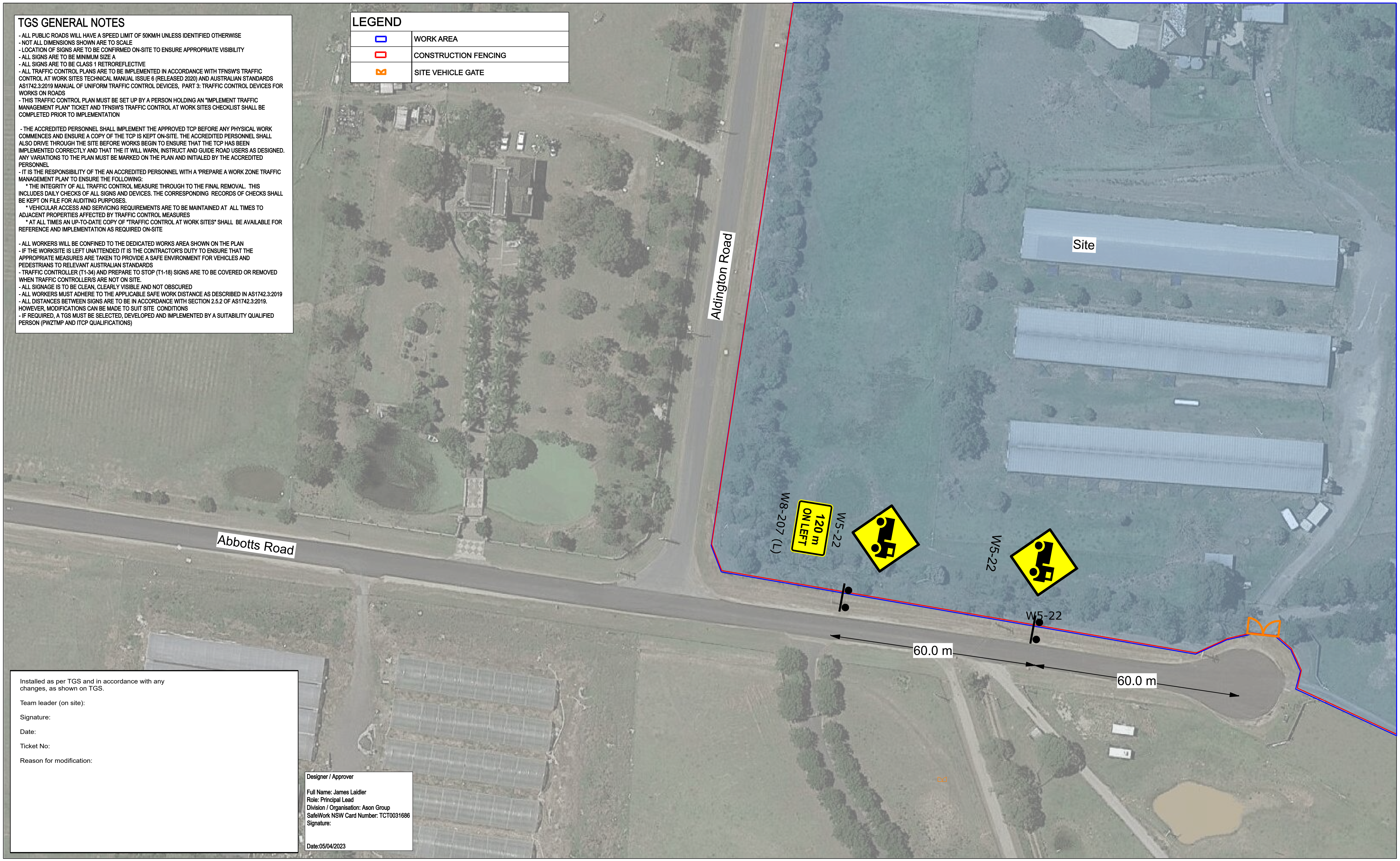
- ALL PUBLIC ROADS WILL HAVE A SPEED LIMIT OF 50KM/H UNLESS IDENTIFIED OTHERWISE
- NOT ALL DIMENSIONS SHOWN ARE TO SCALE
- LOCATION OF SIGNS ARE TO BE CONFIRMED ON-SITE TO ENSURE APPROPRIATE VISIBILITY
- ALL SIGNS ARE TO BE MINIMUM SIZE A
- ALL SIGNS ARE TO BE CLASS 1 RETROREFLECTIVE
- ALL TRAFFIC CONTROL PLANS ARE TO BE IMPLEMENTED IN ACCORDANCE WITH TFNSW'S TRAFFIC CONTROL AT WORK SITES TECHNICAL MANUAL ISSUE 6 (RELEASED 2020) AND AUSTRALIAN STANDARDS AS1742.3:2019 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 3: TRAFFIC CONTROL DEVICES FOR WORKS ON ROADS
- THIS TRAFFIC CONTROL PLAN MUST BE SET UP BY A PERSON HOLDING AN "IMPLEMENT TRAFFIC MANAGEMENT PLAN" TICKET AND TFNSW'S TRAFFIC CONTROL AT WORK SITES CHECKLIST SHALL BE COMPLETED PRIOR TO IMPLEMENTATION

- THE ACCREDITED PERSONNEL SHALL IMPLEMENT THE APPROVED TCP BEFORE ANY PHYSICAL WORK COMMENCES AND ENSURE A COPY OF THE TCP IS KEPT ON-SITE. THE ACCREDITED PERSONNEL SHALL ALSO DRIVE THROUGH THE SITE BEFORE WORKS BEGIN TO ENSURE THAT THE TCP HAS BEEN IMPLEMENTED CORRECTLY AND THAT THE IT WILL WARN, INSTRUCT AND GUIDE ROAD USERS AS DESIGNED. ANY VARIATIONS TO THE PLAN MUST BE MARKED ON THE PLAN AND INITIALED BY THE ACCREDITED PERSONNEL
- IT IS THE RESPONSIBILITY OF THE AN ACCREDITED PERSONNEL WITH A 'PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN' TO ENSURE THE FOLLOWING:
  * THE INTEGRITY OF ALL TRAFFIC CONTROL MEASURE THROUGH TO THE FINAL REMOVAL. THIS INCLUDES DAILY CHECKS OF ALL SIGNS AND DEVICES. THE CORRESPONDING RECORDS OF CHECKS SHALL BE KEPT ON FILE FOR AUDITING PURPOSES.
  * VEHICULAR ACCESS AND SERVICING REQUIREMENTS ARE TO BE MAINTAINED AT ALL TIMES TO ADJACENT PROPERTIES AFFECTED BY TRAFFIC CONTROL MEASURES
  * AT ALL TIMES AN UP-TO-DATE COPY OF "TRAFFIC CONTROL AT WORK SITES" SHALL BE AVAILABLE FOR REFERENCE AND IMPLEMENTATION AS REQUIRED ON-SITE

- ALL WORKERS WILL BE CONFINED TO THE DEDICATED WORKS AREA SHOWN ON THE PLAN
- IF THE WORKSITE IS LEFT UNATTENDED IT IS THE CONTRACTOR'S DUTY TO ENSURE THAT THE APPROPRIATE MEASURES ARE TAKEN TO PROVIDE A SAFE ENVIRONMENT FOR VEHICLES AND PEDESTRIANS TO RELEVANT AUSTRALIAN STANDARDS
- TRAFFIC CONTROLLER (T1-34) AND PREPARE TO STOP (T1-18) SIGNS ARE TO BE COVERED OR REMOVED WHEN TRAFFIC CONTROLLER/S ARE NOT ON SITE.
- ALL SIGNAGE IS TO BE CLEAN, CLEARLY VISIBLE AND NOT OBSCURED
- ALL WORKERS MUST ADHERE TO THE APPLICABLE SAFE WORK DISTANCE AS DESCRIBED IN AS1742.3:2019
- ALL DISTANCES BETWEEN SIGNS ARE TO BE IN ACCORDANCE WITH SECTION 2.5.2 OF AS1742.3:2019. HOWEVER, MODIFICATIONS CAN BE MADE TO SUIT SITE CONDITIONS
- IF REQUIRED, A TGS MUST BE SELECTED, DEVELOPED AND IMPLEMENTED BY A SUITABILITY QUALIFIED PERSON (PWZTMP AND ITCP QUALIFICATIONS)

LEGEND

(blue outline)	WORK AREA
(red outline)	CONSTRUCTION FENCING
(orange symbol)	SITE VEHICLE GATE



Installed as per TGS and in accordance with any changes, as shown on TGS.

Team leader (on site):

Signature:

Date:

Ticket No:

Reason for modification:

Designer / Approver

Full Name: James Laidler
Role: Principal Lead
Division / Organisation: Ason Group
SafeWork NSW Card Number: TCT0031686
Signature:

Date:05/04/2023

AMENDMENTS

REV	DATE	DESCRIPTION	DRW	CHK	APP
XX	XX.XX.XX	XX	XX	XX	XX

GENERAL NOTES

DESIGNED	James Laidler
PAPER SIZE	A3
CHECKED BY	James Laidler
DATE	03.05.2023
APPROVED BY	James Laidler
SCALE	1:1000

CLIENT

ESR

PROJECT

P1323

59-63 Abbotts Rd & 290-308 Aldington Rd, Kemps Creek

DOCUMENT INFORMATION

Traffic Guidance Scheme

Site Access TGS

DRAWING STATUS	FILE NAME	SHEET
For Construction	AG1323-v05-02	AG01

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

PLOT DATE: 11/01/2021 8:58:38 AM | CAD REFERENCE: C:\Users\James Laidler\Downloads\AG TGS Template WIP (2).dwg | James Laidler |

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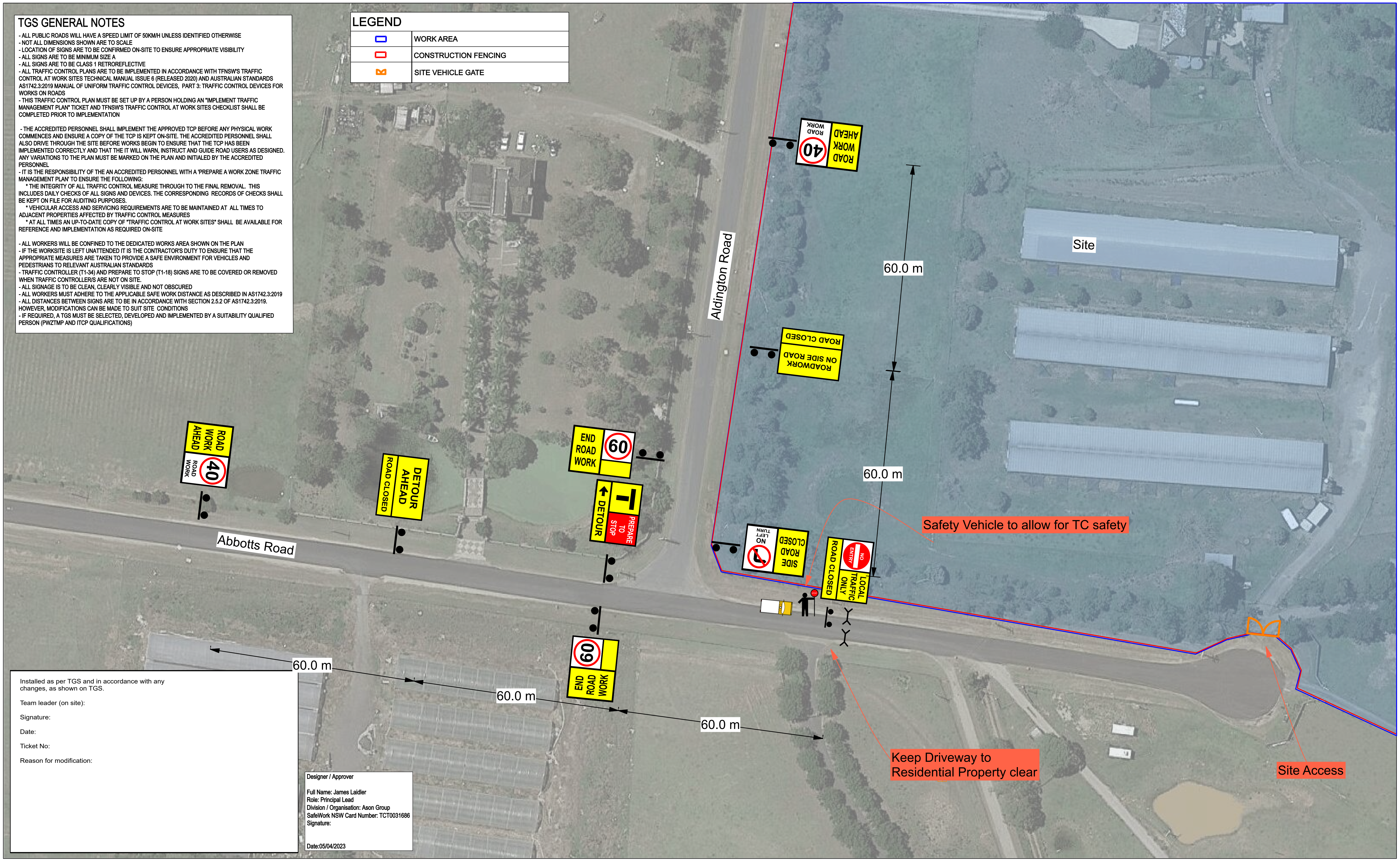
LEGEND

	WORK AREA
	CONSTRUCTION FENCING
	SITE VEHICLE GATE



Installed as per TGS and in accordance with any changes, as shown on TGS.

Team leader (on site):

Signature:

Date:

Ticket No:

Reason for modification:

Designer / Approver

Full Name: James Laidler
Role: Principal Lead
Division / Organisation: Ason Group
SafeWork NSW Card Number: TCT0031686
Signature:

Date:05/04/2023

AMENDMENTS

REV	DATE	DESCRIPTION	DRW	CHK	APP
XX	XX.XX.XX	XX	XX	XX	XX

GENERAL NOTES

DESIGNED: James Laidler	PAPER SIZE: A3
CHECKED BY: James Laidler	DATE: 03.05.2023
APPROVED BY: James Laidler	SCALE: 1:1000

CLIENT
ESR

PROJECT
P1323

59-63 Abbotts Rd & 290-308 Aldington Rd, Kemps Creek

DOCUMENT INFORMATION
Traffic Guidance Scheme

Road Closure

DRAWING STATUS: For Construction

FILE NAME: AG1323-v05-02

SHEET: AG01

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

PLOT DATE: 11/01/2021 8:58:38 AM | CAD REFERENCE: C:\Users\James Laidler\Downloads\AG TGS Template WIP (2).dwg | James Laidler |

Appendix D. Verification Checklist

TGS verification checklist

TGS Verification must be undertaken after selecting or designing a TGS as a confirmation of appropriateness prior to approval for use. A PWZTMP or TGS qualified person must undertake this verification.

Completed by:				
Name:	James Laidler	**Signature:**		
Qualification	Senior Traffic Engineer PWZTMP #0052158569			
TGS details:				
TMP Reference:	P1323r07v01 Early work CTMP ESR Stage 1	**TGS Reference:**		
Date:	4/04/2023	**Review type**	☐ Site Inspection	☑ Desktop Review
Sources used for desktop review	Near Map, Dated 03/02/2023.			
Site details				
Street name:	Abbotts Road and Aldington Road	**Confirmed posted speed limits:**	60km/h	
Street name:		**Confirmed posted speed limits:**		
Street name:		**Confirmed posted speed limits:**		
List unique site-specific Hazards / Risks identified on site. **E.g., utilities, infrastructure, vegetation, schools,**				
n/a				

TGS details					
Have the below been addressed on the TGS for this location?					
Traffic volumes	☑ Yes	☐ No	☐ N/A	**Details**	Traffic volumes have been assessed for Abbotts Road, Aldington Road, and the Site.
Predicted queue length	☑ Yes	☐ No	☐ N/A	**Details**	As Abbotts Road is a cul-de-sac with a low traffic movement, there is sufficient distance available to manage any potential internal queuing without disrupting traffic flow on the main road - Mamre Road
Shoulder widths	☐ Yes	☐ No	☑ N/A	**Details**	Abbotts Road and Aldington Road have no road shoulder
Sight distances	☑ Yes	☐ No	☐ N/A	**Details**	Straight road with no obstructions and good sight distance
Existing infrastructure	☑ Yes	☐ No	☐ N/A	**Details**	No trees, poles, or other infrastructure
Transport services	☑ Yes	☐ No	☐ N/A	**Details**	There is no bus stop directly fronting the Site and will not be affected by the construction works.
Pedestrian generators	☑ Yes	☐ No	☐ N/A	**Details**	Pedestrians are given right of way as far as possible.
Appropriate site access	☑ Yes	☐ No	☐ N/A	**Details**	Appropriate site access for largest vehicle
Appropriate escape route for traffic controllers	☑ Yes	☐ No	☐ N/A	**Details**	Traffic controllers will be positioned away from the road and have a 6m-wide verge area adjacent to Abbotts Road as an escape route in case of an incident, ensuring their safety. Furthermore, a service vehicle will be placed next to the traffic controller to maximise safety.

Appendix E. Evidence of Consultation

Jacob Dickson

From: Nav Prasad >
Sent: Monday, 24 April 2023 3:05 PM
To: Jacob Dickson
Cc: Grace Macdonald; Daniel Galea; Pahee Rathan; David Rohloff
Subject: RE: SSD-9138102 Construction Traffic Management Plan Consultation

Hi Jacob,

TfNSW has reviewed the submitted CTMP and notes that CTMP fulfills the TFNSW requirements provided in the SEARS and the draft conditions for the CTMP (Condition B1).

In this regard TfNSW raises no objections to the submitted CTMP.

Regards

Nav Prasad
Development Assessment Officer
Planning and Programs
Greater Sydney
Transport for NSW

M

Please not that I am contracted to TfNSW in a part time capacity and generally available Mondays, Tuesdays and Wednesdays only.

Transport for NSW

I recognise and acknowledge that modern New South Wales is an overlay on Aboriginal land and that many of the transport routes of today follow songlines Aboriginal people have followed for tens of thousands of years. I pay my respects to the Aboriginal people of NSW and Elders past and present.

Please consider the environment before printing this email.

From: Laura Van putten
Sent: Wednesday, 12 April 2023 11:25 AM
To: Jacob Dickso >; Development Sydney
Cc: Grace Macdonald ; Daniel Galea ; James Douglas ; Pahee Rathan
Subject: RE: SSD-9138102 Construction Traffic Management Plan Consultation

Hi Jacob

I am currently on secondment elsewhere and James is on leave, however I will pass on your request to be registered and attended to.

Hi Land Use Team - Please register the attached email - SYD20/01025 and refer to Pahee FA, thanks.

Kind Regards,

Laura van Putten
Network Development Officer
Network Solutions, Central River City
Greater Sydney
Transport for NSW

M **E**

transport.nsw.gov.au

I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

Please consider the environment before printing this email.

From: Jacob Dickson
Sent: Wednesday, 12 April 2023 11:11 AM
To: James Douglas ; Laura Van putten >
Cc: Grace Macdonald <>; Daniel Galea <>
Subject: SSD-9138102 Construction Traffic Management Plan Consultation

Hi Laura and James,

ESR are seeking some direction regarding Westlink Industrial Estate – Stage 1 (SSD-9138102) post approval consultation of our Construction Traffic Management Plan.
With reference to ESR's development conditions of consent (attached) I have included an extract of the relevant conditions below. We are seeking to consult with TfNSW as required under CoC B1(b) as highlighted below.

Condition of Consent Reference	Detail
B1	B1. Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan for the development to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by condition C2 and must: (a) be prepared by a suitably qualified and experienced person(s); (b) **be prepared in consultation with Council and TfNSW;** (c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction works to: (i) ensure access to the site and road safety and network efficiency is maintained, (ii) manage cumulative construction traffic from other concurrent construction works within the Mamre Road Precinct, and (iii) address necessary interim traffic safety controls and management measures, including consideration of any traffic control measures required to manage traffic entering Mamre Road in the period before Mamre Road/Abbotts Road intersection construction is complete; (d) detail heavy vehicle routes, access and parking arrangements; (e) include a Driver Code of Conduct to: (i) minimise the impacts of earthworks and construction on the local and regional road network; (ii) minimise conflicts with other road users; (iii) minimise road traffic noise; and (iv) ensure truck drivers use specified routes, including entering and exiting Mamre Road via Abbotts Road and not Bakers Lane; (f) include a program to monitor the effectiveness of these measures; and (g) if necessary, detail procedures for notifying residents and the community (including local schools), of any potential disruptions to routes.
B2	B2. The Applicant must: (a) not commence construction until the Construction Traffic Management Plan required by condition B1 is approved by the Planning Secretary; and (b) implement the most recent version of the Construction Traffic Management Plan approved by the Planning Secretary for the duration of construction.

Item No.	Condition	Consent Timing	ESR target finalisation / issue to Planning Secretary for approval
1	Condition B1	Prior to the commencement of construction of the Stage 1 Development	Friday 28th April 2023

I have attached ESR's draft CTMP for your team's review. If you consider appropriate, we would be happy to have a meeting between TfNSW / ESR to step through the documents in order to expedite a resolution.

Regards,

Jacob Dickson | Project Manager - Infrastructure

ESR

ESR Australia | Level 24, 88 Phillip St, Sydney 2000 | au.esr.com

M **D** **E**

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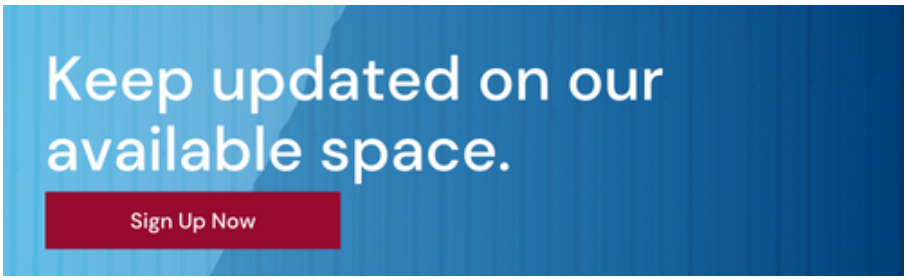

OFFICIAL

OFFICIAL

Jacob Dickson

From: Hamish Dodson < >
Sent: Tuesday, 20 June 2023 9:55 AM
To: Jacob Dickson; Gavin Cherry
Cc: Kathryn Saunders; Grace Macdonald
Subject: RE: Penrith Council Response to Draft Condition Enquiry : SSD-9138102 Construction Traffic Management Plan Consultation

[EXTERNAL EMAIL**]**

Hi Jacob

Please accept my apologies for not getting back to you sooner.

I acknowledge the submission of the dilapidation reports to Council and find the supplied documents acceptable.

There are no further comments from Councils Asset Management Department in relation to the CTMP submission for this development.

Regards

Hamish Dodson
Infrastructure Officer
Asset Management

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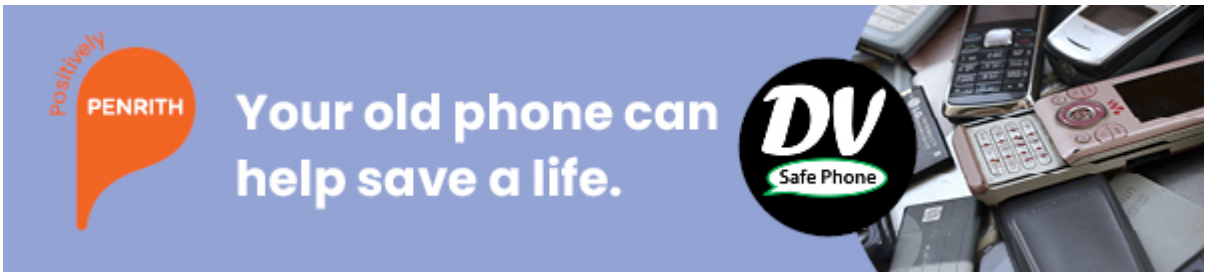

From: Jacob Dickson < >
Sent: Tuesday, June 20, 2023 9:05 AM
To: Gavin Cherry < >; Hamish Dodson
Cc: Kathryn Saunders ; Grace Macdonald
Subject: RE: Penrith Council Response to Draft Condition Enquiry : SSD-9138102 Construction Traffic Management Plan Consultation

EXTERNAL EMAIL: This email was received from outside the organisation. Use caution when clicking any links or opening attachments.

Hi Gavin,

To close out our requirements on the CTMP, we require confirmation from Council that you have no additional comments apart from the comment provided on the dilapidation inspections. Are you able to provide an email stating that following closure of the dilapidation comment, that you have no additional comments outside of this?

I have been trying to get in contact with Hamish also to close this out the dilapidation report comment it would be greatly appreciated.

Regards

Jacob Dickson | Project Manager - Infrastructure

ESR

ESR Australia | Level 24, 88 Phillip St, Sydney 2000 | au.esr.com

M

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From: Gavin Cherry
Sent: Monday, June 19, 2023 8:28 AM
To: Jacob Dickson >; Hamish Dodson
Cc: Kathryn Saunders
Subject: RE: Penrith Council Response to Draft Condition Enquiry : SSD-9138102 Construction Traffic Management Plan Consultation

[EXTERNAL EMAIL**]**

Hi Jacob
Please engage direct with Hamish on this aspect as Council's Assets Department will need to verify that they are comfortable with what has been provided.

Hi Hamish
Can you please respond to Jacob and confirm that the received dilapidation report is acceptable to your team.

regards

Gavin Cherry
Development Assessment Coordinator
Development Services

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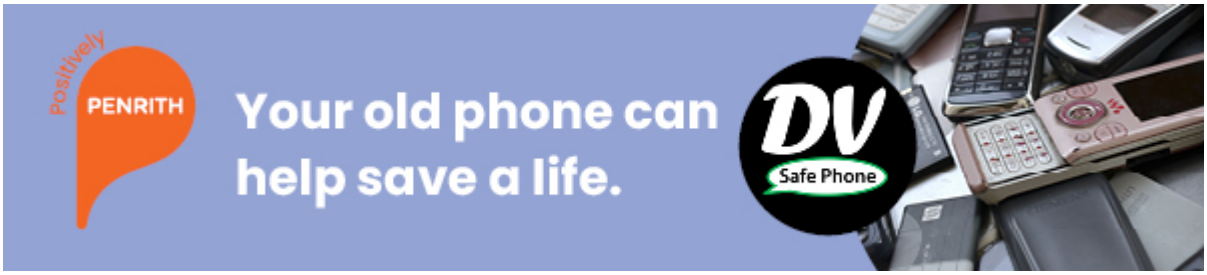

From: Jacob Dickson
Sent: Friday, June 16, 2023 5:19 PM
To: Gavin Cherry >; Hamish Dodson
Cc: Kathryn Saunders <>
Subject: RE: Penrith Council Response to Draft Condition Enquiry : SSD-9138102 Construction Traffic Management Plan Consultation

Hi Gavin,

We have been asked by DPIE to provide closure of your below comment.

We provided the dilapidation report as per the email trail below. Can you please confirm you have no further comments on the plan.

Regards

Jacob Dickson | Project Manager - Infrastructure

ESR

ESR Australia | Level 24, 88 Phillip St, Sydney 2000 | au.esr.com

M

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From: Jacob Dickson
Sent: Wednesday, April 26, 2023 9:00 AM
To: Gavin Cherry
Cc: Kathryn Saunders
Subject: RE: Penrith Council Response to Draft Condition Enquiry : SSD-9138102 Construction Traffic Management Plan Consultation

Hi Gavin/Hamish,

We have completed a dilapidation report of the external road reserve. I've included it in the attached link.
https://www.dropbox.com/sh/v7684jdf068rdpa/AAD6Au_hoX11sjTRNjLZy

With receipt of the dilapidation inspection, can you confirm closure of your comment and advise if you have any further comments relating to the CTMP.

Regards

Jacob Dickson | Project Manager - Infrastructure

ESR

ESR Australia | Level 24, 88 Phillip St, Sydney 2000 | au.esr.com

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From: Gavin Cherry
Sent: Friday, April 14, 2023 11:12 AM
To: Jacob Dickson
Cc: Kathryn Saunders
Subject: Penrith Council Response to Draft Condition Enquiry : SSD-9138102 Construction Traffic Management Plan Consultation

[EXTERNAL EMAIL**]**

Morning Jacob,

Council's Assets Department has reviewed the draft CTMP and requested amended to capture the inclusion of a dilapidation report of Council's roads which are intended to be used for access to and from the development. This dilapidation report with photographic images of existing infrastructure should be provided direct to Council's Asset Management Department prior to access/haulage to the site commencing.

For engagement on this aspect, please contact Hamish Dodson directly on (email:

I also note that the SSD is yet to be determined and as such, Council would require evidence of the issued Notice of Determination, with finalised condition wording to verify if the condition as prescribed has been met. At this stage it is assumed that the condition is only draft and may be subject to change.

regards

Gavin Cherry
Development Assessment Coordinator
Development Services

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www.penrithcity.nsw.gov.au

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From: Jacob Dickson
Sent: Wednesday, April 12, 2023 11:20 AM
To: Gavin Cherry _____ Natasha Williams ; Michael Alderton _____>; Penrith City Council - RECORDS
Cc: Grace Macdonald _____>; Daniel Galea _____
Subject: SSD-9138102 Construction Traffic Management Plan Consultation

Hi Gavin / Natasha / Michael,

ESR are seeking some direction regarding Westlink Industrial Estate – Stage 1 (SSD-9138102) post approval consultation of our Construction Traffic Management Plan.
With reference to ESR's development approval (attached) I have included an extract of the relevant conditions below. We are seeking to consult with Penrith City Council as required under CoC B1(b) as highlighted below.

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Item No.	Condition	Consent Timing	ESR target finalisation / issue to Planning Secretary for approval

1	Condition B1	Prior to the commencement of construction of the Stage 1 Development	Friday 28th April 2023

I have attached ESR's draft CTMP for your team's review. If you consider appropriate, we would be happy to have a meeting between Council / ESR to walk through the documents in order to expedite a resolution.

Regards,

Jacob Dickson | Project Manager - Infrastructure

ESR

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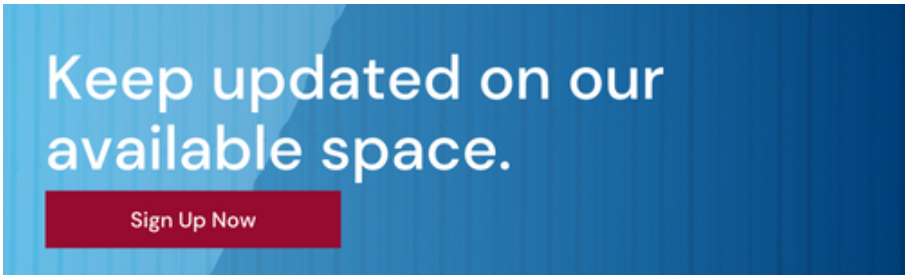


Appendix B Erosion and Sediment Control Plan

~~25 May~~19 June 2023

Attention: Jacob Dickson
Project Manager
ESR

CPESC review of the Westlink Industrial Development Erosion and Sediment Control Plans

1.0 Introduction

ESR are developing the Westlink Industrial Development at Kemps Creek. The development is a State Significant Development (SSD) and subject to conditions of approval under Department of Planning and Environment (DPE) Approval SSD-913102.

In accordance with the SSD Approval, ESR must prepare Detailed Erosion and Sediment Control Plans (ESCP) and drawings prior to the commencement of earthworks for the development. The ESCP must be prepared by a Chartered Professional Erosion and Sediment Control (CPESC) specialist. ESR engaged Peter Monsted from Leneco (CPESC Number 9758, refer to **Attachment A**) to assist with the development of the ESCPs.

The role of the CPESC has been to:

- Meet with ESR and their earthworks contractors to understand the proposed stating of the earthwork
- Calculate the required sediment basins sizes for key stages of the development
- Develop site specific specification for the design of the basins
- Undertake design review of the ESCP prepared by AT&L.

AT&L are the lead civil designers for the SSD and have prepared the ESCP in accordance with the recommendations of the CPESC.

This letter has been prepared by Peter Monsted to document the review of the AT&L Erosion and Sediment Control Package – Stage 1 (Rev B, dated 25/05/2023) and certify that the plans have incorporated the recommendations of the CPESC.

2.0 Environmental Requirements

This review has been prepared with reference to the Project's ~~draft~~ Conditions of Approval B2~~1~~0 (refer to **Table 1**).

Table 1 – Condition B20 Compliance

B20	Requirement	How addressed
B2~~1~~0	Prior to the commencement of earthworks for the development, the Applicant must design and detail the erosion and sediment control measures for the site to ensure the construction phase IWCM controls in the MRP DCP are achieved. Detailed Erosion and Sediment Control Plans (ESCP) and drawings must:	
(a)	be prepared by a Chartered Professional Erosion and Sediment Control (CPESC) specialist;	The ESCPs have been prepared within input from Peter Monsted (CPESC Number 9758)
(b)	be prepared in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1: Blue Book	The general principals of the Blue Book have been incorporated into the plan.

	(Landcom, 2004) and with the WSUD design principles set out in the Technical Guidance for achieving Wianamatta South Creek Stormwater Management Targets (Technical Guidance) (NSW Government, 2022);	Basins have been sized for active treatment of 80% of average annual runoff in accordance with Table 2 of the Wianamatta South Creek Stormwater Management Targets
(c)	include: (i) each major phase of construction work including catchment plans and calculations and sizing for all major drainage and sediment controls for each phase;	The ESCP has been prepared initially for 4 stages. Refer to Section 4 of this memo.
	(ii) the type of sediment basin, details of all functional components and calculations demonstrating compliance with the DCP;	The basin design spreadsheet and all relevant values used in the sizing are provided in **Attachment B**.
(d)	demonstrate the construction approach and timing to ensure the construction phase stormwater quality targets can be met; and	The approach to staging has been outlined in Section 4 of this letter
(e)	detail measures to manage external catchment flows and dispersive soils;	Clean water channels have been identified on the site perimeter to divert clean water around the development site. Dispersive soils will be managed with Type A Basins designed for treatment of 80% of average annual runoff.
(f)	detail measures to protect passively irrigated street trees during construction works, if these are installed before construction is completed;	Passively irrigated street trees will not be installed under the stages of which these ERSED plans relate, and as such have not been considered.
(gf)	be included in the CEMP required by Condition C2.	The ESCP will be included in the CEMP required by Condition C2

3.0 Design criteria

Condition B20(b) requires the ESCP to be prepared with reference to the water sensitive urban design (WSUD) design principles set out in the Technical Guidance for achieving Wianamatta South Creek Stormwater Management Targets (Technical Guidance) (NSW Government, 2022).

Under Table 2 of the Technical Guidance, all exposed areas greater than 2,500 m^2 are to be provided with sediment controls that are designed, implemented and maintained to a standard that would achieve treatment of at least 80% of the average annual runoff volume of the contributing catchment (i.e. 80% hydrological effectiveness) to 50 mg/L TSS or less, and pH in the range (6.5–8.5). No release of coarse sediment is permitted for any construction or building site.

To achieve this design criteria, Type A basins have been sized and designed with reference to the 2018 revision of Appendix B – Sediment Basin Design and Operation (IECA 2018) to the

Best Practice Erosion and Sediment Control Document (EICA 2008, referred to as the White Book).

4.0 Construction Staging

ESR have proposed a staged approach to the development of the SSD:

- Stage 1 – Remediation Works
- Stage 2 – Establishment of the compound and sediment basin on Lot 4
- Stage 3 – Lot 1 Bulk Earthworks utilising the sediment basin on Lot 4
- Stage 4 – Addition of Bulk Earthworks in the residual lots (4 and 5) by providing two additional sediment basins on Lot 1
    - Stage 4.1 – Development of Sediment Basin 2 (Lot 1 west)
    - Stage 4.2 – Development of Sediment Basin 3 (Lot 1 east).

These stages are illustrated in drawings 20-748-C10131 to 20-748-C10135 in the Stage 1 Erosion and Sediment Control Package.

3.0 Basin Sizing

The design factors for the Revised Universal Soil Loss Equation (RUSLE) and the basin sizing using the Qld_ESC_Design_Spreadsheet_V5.2 developed by **Strategic Environmental & Engineering Consulting (SEEC)** have been provided in **Attachment B**.

Additional design specification drawn from IECA 2018 and provided to AT&L are also provided in **Attachment B**.

4.0 Certification

I, Peter Monsted, have reviewed the AT&L Erosion and Sediment Control Package – Stage 1 (Rev B, dated 25/05/2023) and certify that the plans have incorporated the recommendations of the I have provided with regard to Type A sediment basins sizing and specifications and reflect the staging and other recommendations provided throughout the design review process.

Your Sincerely

Peter Monsted,
Director, CESCP #9758

Leneco Pty Ltd
Ph.
E.

Attachment A – Peter Monsted CPESC certification

EnviroCert International, Inc.
3054 Fite Circle, Suite 108, Sacramento, CA 95827
(279) 888-6911 | www.envirocert.org

Peter Monsted

CPESC

Certified Professional in Erosion and Sediment Control

9758	6/9/2023
CERTIFICATION NO.	EXPIRES

Attachment B – RUSLE soil loss factors, basins sizing calculations and design specification for the Westlink Industrial Estate

Strategic Environmental & Engineering Consulting

Spreadsheet Verion	5.2
Date	12/11/2018

This spreadsheet has been developed as a tool for sizing sediment basins using the current IECA Appendix B.
IECA (2018). Appendix B Sediment Basin Design and Operation.
International Erosion Control Association Australasian Chapter, Picton, NSW
https://www.austieca.com.au/publications/appendix-b-sediment-basin-design-and-operation

Although all care has been taken to ensure the method and formulas are consistent with IECA (2018) Appendix B, SEEC does not take any responsibility for any errors in this spreadsheet, use of incorrect input data, or works that have been designed using this spreadsheet.

Basin layouts and actual dimensions must be determined by the user based on individual site constraints.

Future updates of this spreadsheet are expected to be provided on our website.
www.seec.com.au

1. Erosion Hazard and Sediment Basins

Site Name: West Kemps Creek Industrial Development [Stage 3 and 4, Type A Basins]

Site Location: 290-308 Aldington Road and 59-63 Abbotts Road, Kemps Creek

Precinct/Stage: Stage I - Development of Lot 1

Other Details: Review prepared by Peter Monsted (CPESC 9758)

Site area	Sub-catchment or Name of Structure						Notes
	Stage 3	Stage 4.0	Stage 4.1	Stage 4.2	Stage 4.3		
Total catchment area (ha)	15.45	21.74	4.7	5.83	9.81		
Disturbed catchment area (ha)	15.45	21.74	4.7	5.83	9.81		
Soil analysis (enter sediment type if known, or laboratory particle size data)							
Sediment Type (C, F or D) if known:	D	D	D	D	D	D	If known. Type D is worst-case.
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							Pg 3.15 (IECA, 2008)
Soil Texture Group	D	D	D	D	D	D	Automatic calculation from above
Rainfall data							
Rainfall R-factor (if known)	2210	2210	2210	2210	2210	2210	Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	10	10	10	10	10	10	
RUSLE Factors							
Rainfall erosivity (*R*-factor)	2210	2210	2210	2210	2210	2210	Auto-filled from above
Soil erodibility (*K*-factor)	0.038	0.038	0.05	0.05	0.05	0.05	RUSLE LS factor calculated for a high rill/interrill ratio. See Appendix E of IECA (2008)
Slope length (m)	80	80	80	80	80	80	
Slope gradient (%)	5	5	5	5	5	5	
Length/gradient (*LS*-factor)	1.19	1.19	1.19	1.19	1.19	1.19	
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	
Calculations Erosion Hazard							
Soil loss (t/ha/yr)	130	130	171	171	171	171	
Soil Loss Class	1	1	2	2	2	2	Pg 3.4 (IECA, 2008)
Soil loss (m^3/ha/yr)	100	100	131	131	131	131	Conversion to cubic metres - assumes 1.3 t/m3
Is a Basin Required?	Yes	Yes	Yes	Yes	Yes	No	Refer to Table B1 Pg B.6 (IECA, 2018)
Sediment Basin Type							
Soil/Catchment Details							
Duration of soil disturbance	> 12 months	> 12 months	> 12 months	> 12 months	> 12 months	> 12 months	<70% effective ground cover (C ≥ 0.05)
Is the soil coarse?	No	No	No	No	No	No	< 33% finer than 0.02mm & ≤ 10% dispersive
Are WQOs likely to be met by Type C basin?	No	No	No	No	No	No	Particle settlement testing is recommended
Is automated dosing reasonable or practicable?	Yes	Yes	Yes	Yes	Yes	Yes	Does physical layout allow forebay inflow?
Required Basin Type	A	A	A	A	A	N/A	Refer to Table B2 Pg B.7 (IECA, 2018)

Version 5.2

Notes:

Stage 4.0 has been provided only to demonstrate the basin sizing requirement for the entire Stage 1 Development if only 1 basin was used., however is not proposed for development .

Stage 4.3 has been provided for a development footprint of Lot 4 and 5 only to demonstrate that the Type A basin provided for Stage 3.0 will exceed the size requirement once Stage 4.1 and 4.2 are developed.

2. Sediment Basin Type A

	Sub-catchment or Name of Structure						Notes
Basin Name	Stage 3	Stage 4.0	Stage 4.1	Stage 4.2	Stage 4.3		Must be same as site area on Worksheet 1
Type of soil disturbance	Short-term	Short-term	Short-term	Short-term	Short-term		Short-term e.g. civil, urban dev, long-term e.g. landfills, quarries
Design event (Yr ARI)	1	1	1	1	1		Auto-filled based on selections - Table B7, pg B.17 (IECA, 2018)
Rainfall intensity 24 hr event (mm/hr)	3.2	3.2	3.2	3.2	3.2		From BOM. 1yr, 24 hr for short term; 5yr, 24hr for long term
Catchment area (ha)	15.45	21.74	4.7	5.83	9.81		Total catchment area - auto-filled from Worksheet 1
Suggested decant rate - Q_A (L/s/ha)	9	9	9	9	9		From IECA (2018) Table B5, page B.16
Initial equation coefficient - K	16.2	16.2	16.2	16.2	16.2		From IECA (2018) Table B8, page B.17
Depth of settling zone - Ds (m)	1.5	1.5	1.5	1.5	1.5		Depth measured from spillway crest - min = 0.6m, max = 2m
Jar test settlement rate after 15 mins (mm)	150	150	150	150	150		See Table B9, pg B.18. Do jar test as per Pg B.83 (IECA, 2018)
Sediment settlement coeff. - Ks (s/m)	8000	8000	8000	8000	8000		Refer Table B14, page B.24 (IECA, 2018)
Optimum flow Q_A (L/s/ha)	10	10	10	10	10		Likely optimum low-flow decant rate Q_A - Eqn B1 (IECA, 2018)
Adopted decant rate Q_A (L/s/ha)	9	9	9	9	9		Adopted Q_A be within Table B5 limits even if optimum is greater
Number of decant arms	31	44	10	12	20		Assumes 2m wide arms @ 2.25L/s/m
Settling Zone Dimensions							
Minimum settling volume - Vs (m^3)	2031	2858	618	766	1290		Equation B6 (IECA, 2018)
Minimum surface area - As (m^2)	1112	1565	338	420	706		Equation B10 (IECA, 2018)
Critical design parameter	Volume	Volume	Volume	Volume	Volume		Basin sizes based on critical parameter
Actual volume (m^3)	2031	2858	618	766	1290		Based on critical parameter and adopted Ds
Actual area (m^2)	1354	1905	412	511	860		Based on critical parameter and adopted Ds
Length to width ratio X : 1	3	3	3	3	3		3:1 recommended
Batter slope (1 in X)	2	2	2	2	2		Table B4 (IECA). Max 1V:2H. If accessible by publlic < 1V:5H.
Approx top width at spillway level (m)	23.3	27.2	13.8	15.1	19.0		Approx only. Confirm with earthworks design software
Approx top length at spillway level (m)	69.8	81.7	41.3	45.3	56.9		Approx. only - confirm with earthworks design software
Scour check Full - supernatant velocity (m/s)	0.010	0.012	0.005	0.006	0.008		Velocity must be less than 0.015m/s; if required, adjust Q_A
Retained Water Zone Dimensions - Free Water Zone (FW)							
Depth free water zone - D_{FW} (m)	0.2	0.2	0.2	0.2	0.2		Min free water zone: 0.2m or 10% of Vs (Table B6, pg B.16)
Batter slope (1 in X)	2	2	2	2	2		Table B4 (IECA). Max 1V:2H. If accessible by publlic < 1V:5H.
Approx. FW volume (m^3)	213.90	313.40	51.34	67.54	126.77		Min. 10% of settling volume (Vs)
Scour check Empty - supernatant velocity (m/s)	0.001	0.001	0.003	0.003	0.002		Velocity < 0.015m/s; Assumes a 2m arm at 2.25l/s/m
Retained Water Zone Dimensions - Sediment Storage Zone (SS)							
Soil loss (t/ha/yr)	129.6	129.6	170.5	170.5	170.5		Calculated and autofilled from Worksheet 1
Sediment density (t / m^3)	1.3	1.3	1.3	1.3	1.3		Generally saturated sediment has a density of 1.3 t / m3
Soil loss (m^3/ha/yr)	99.7	99.7	131.2	131.2	131.2		Based on sediment density above
Put an X here to use 30% of water zone	x	x	x	x	x		Fill in one or the other - either an X or nominate the number of
Storage (soil) zone design (months)	2	2	2	2	2		months. Refer to Page B.40 (IECA, 2018)
Required basin storage (soil) volume (m^3)	609.0	857.0	185.0	230.0	387.0		Refer to Page B.40 (IECA, 2018)
Min. depth sediment storage zone- D_{SS} (m)	1.5	1.5	1.5	1.5	1.5		Min. depth sediment store zone - 0.2m or 30% of Vs - Table B6
Batter slope (1 in X)	2	2	2	2	2		Table B4 (IECA). Max 1V:2H. If accessible by publlic < 1V:5H.
Approx. SS volume (m^3)	1212.2	1877.84	187.00	281.34	646.67		Min. 30% of settling volume (Vs)
Sediment Storage Zone volume check	OK	OK	OK	OK	OK		Check that design complies with Table B6 (IECA, 2018)
Summary of Type A Basin Dimensions							
Basin Name	Stage 3	Stage 4.0	Stage 4.1	Stage 4.2	Stage 4.3		
Settling volume - Vs (m^3)	2031.0	2857.9	617.8	766.4	1289.6		Equation B7 (IECA, 2018)
Settling zone surface area - As (m^2)	1354.0	1905.3	411.9	510.9	859.7		Equation B11 (IECA, 2018)
Min. volume sediment storage zone - V_{SS} (m^3)	1212.23	1877.84	187.00	281.34	646.67		30% of V_{SS} or x months storage. Refer to page B.36 (IECA, 2018)
Total basin volume to spillway level (m^3)	**3457.15**	**5049.12**	**856.19**	**1115.28**	**2063.04**		

Version 5.2

Notes:

Stage 4.0 has been provided only to demonstrate the basin sizing requirement for the entire Stage 1 Development if only 1 basin was used., however is not proposed for development .

Stage 4.3 has been provided for a development footprint of Lot 4 and 5 only to demonstrate that the Type A basin provided for Stage 3.0 will exceed the size requirement once Stage 4.1 and 4.2 are developed.

Soil Loss Characteristics

Constraint / characteristic	Value / Rating	Source
Disturbed Catchment Area	See stages	AT&L measurement (20-748_ESR KEMPS CREEK_SSDA-BASIN SIZING_STAGE 1)
Rainfall erosivity (**R-factor**)	2210	$R = 164.74(1.1177)^{S}$ S0.6444
		Where S = 2-year, 6-hour storm
IFD: 2-year, 6-hour storm (s)	10	http://www.bom.gov.au/cgi-bin/hydro/has/CDIRSWebBasic
		Location Badgerys Creek BoM Station
Rainfall zone	1	Blue Book Figure 4.9 [p4-16]
Runoff coefficient (Cv)	0.64	Blue Book Table F2 [pF4]
Rainfall coefficient (C10)	0.86	Blue Book Table F3
85th %ile, 5-day rainfall event	35	Blue Book Table 6.3 [6-24] Location Penrith
Soil erodibility (**K-factor**)	0.038	Blue Book Appendix C, Table 19 [pc-104] Based on Luddenham (lu) Landscape Group
Soil erodibility (**K-factor**)	0.05	Alternate factor to represent imported material
Soil texture group	Type D	Maximum values of Luddenham (lu) Landscape Group
Soil Hydrologic Group	Type C	Luddenham (lu) Landscape Group
Slope Gradient	5%	Based on 4.4% for east west gradient of natural ground.
Slope length	80	Slope length between terraces
LS-factor	1.19	Blue Book Table A1 [pA-9]
Erosion Control Practice Factor (**P-factor**)	**1.3**	Blue Book Table A2 [pA-11]
Cover Factor (**C-factor**)	**1**	Default factor for construction site for areas with not stabilisation
Calculated Soil Loss (t/ha/yr)	See staged calcualtion sheet	Blue Book Appendix A [pA-1]
Soil Loss Class (m3//ha/yr)	See staged calcualtion sheet	RUSLE Equation
Soil Loss Class	1	Blue Book Table 4.2 [p4-13]
Erosion hazard	Very low	Blue Book Table 4.2 [p4-13]

Rainfall Erosivity factor (R-factor)

Monthly % and annual rainfall erosivity (R – factor) values													
	Jan	Feb	Mar	Apr	Mar	Jun	July	Aug	Sep	Oct	Nov	Dec	Year
Mean rainfall (mm)	78	112	112	48	39	57	34	37	36	59	69	55	717
%	11%	16%	16%	7%	5%	8%	5%	5%	5%	8%	10%	8%	100
R - Value	241	344	347	148	119	174	105	113	110	182	213	168	2210

1 Determined locality coordinates from SIX Maps
https://maps.six.nsw.gov.au/

Latitude -33.857364
Longitude 150.797268

2 2-year ARI, 6-hour storm event
http://www.bom.gov.au/cgi-bin/hydro/has/CDIRSWebBasic

10

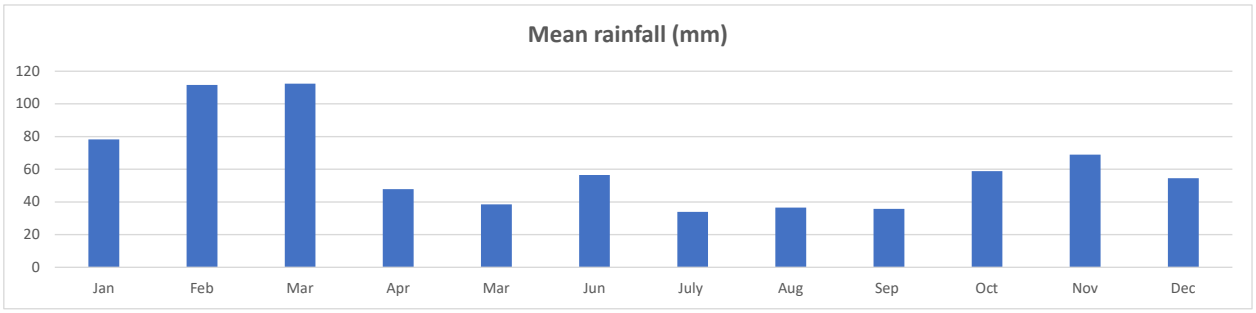
3 Calcualte R-factor

autocalcualte 2210

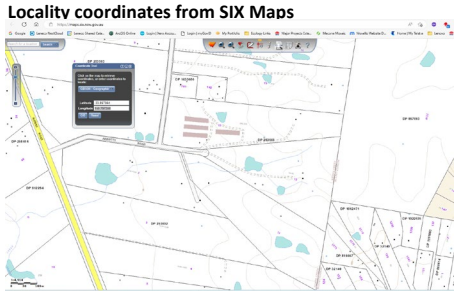
4 Mean Rainfall
http://www.bom.gov.au/nsw/observations/map.shtml

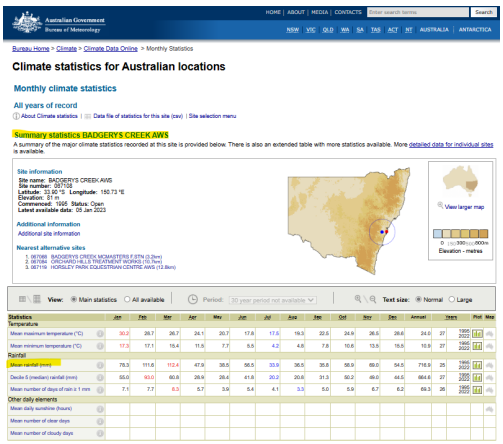
Weather Station ID 67108
Name BADGERYS CREEK AWS

Latest Weather Observations for Badgerys C
Climate statistics for Australian locations (b

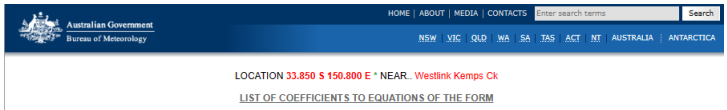


Locality coordinates from SIX Maps





2yr, 6hr ARI - Rainfall Intensity Frequency Duration Data



LOCATION 33.850 S 150.800 E * NEAR.. Westlink Kemps Ck

LIST OF COEFFICIENTS TO EQUATIONS OF THE FORM

$$ln(I) = A + B\,x\,(ln(T)) + C\,x\,(ln(T))^2 + D\,x\,(ln(T))^3 + E\,x\,(ln(T))^4 + F\,x\,(ln(T))^5 + G\,x\,(ln(T))^6$$

T = TIME IN HOURS AND I = INTENSITY IN MILLIMETRES PER HOUR

RETURN PERIOD	A	B	C	D	E	F	G
1	3.158773	-0.58931E+0	-0.31470E-1	0.86637E-2	0.18133E-3	-0.36772E-3	0.15821E-4
2	3.410940	-0.58942E+0	-0.31366E-1	0.84364E-2	0.27224E-3	-0.32428E-3	0.71588E-5
5	3.661308	-0.58964E+0	-0.31646E-1	0.76692E-2	0.59054E-3	-0.19809E-3	-0.20816E-4
10	3.782286	-0.58959E+0	-0.32377E-1	0.70300E-2	0.89622E-3	-0.10033E-3	-0.45670E-4
20	3.922462	-0.58965E+0	-0.32398E-1	0.67854E-2	0.99377E-3	-0.62495E-4	-0.52892E-4
50	4.080445	-0.58947E+0	-0.32612E-1	0.63368E-2	0.11768E-2	0.44963E-5	-0.68175E-4
100	4.185829	-0.58934E+0	-0.32845E-1	0.58773E-2	0.13312E-2	0.73806E-4	-0.83423E-4

RAINFALL INTENSITY IN mm/h FOR VARIOUS DURATIONS AND RETURN PERIODS

RETURN PERIOD (YEARS)

DURATION	1	2	5	10	20	50	100
5 mins	76.8	99.0	128.	144.	166.	195.	217.
6 mins	71.8	92.6	120.	135.	156.	183.	204.
10 mins	58.7	75.7	97.6	110.	127.	149.	166.
20 mins	42.8	55.2	70.9	80.1	92.2	108.	120.
30 mins	34.8	44.8	57.5	64.9	74.7	87.5	97.2
1 hour	23.5	30.3	38.9	43.9	50.5	59.2	65.7
2 hours	15.5	19.9	25.5	28.8	33.1	38.8	43.1
3 hours	12.0	15.4	19.8	22.3	25.7	30.1	33.4
6 hours	7.75	10.0	12.8	14.4	16.6	19.4	21.6
12 hours	5.00	6.45	8.31	9.38	10.8	12.7	14.1
24 hours	3.20	4.14	5.41	6.17	7.14	8.43	9.43
48 hours	1.98	2.59	3.45	3.99	4.66	5.56	6.27
72 hours	1.45	1.91	2.58	2.99	3.52	4.23	4.78

tc = 5min

(Raw data: 30.41, 6.45, 1.91, 59.07, 12.60, 4.22 skew= 0.010)
HYDROMETEOROLOGICAL ADVISORY SERVICE
(C) AUSTRALIAN GOVERNMENT, BUREAU OF METEOROLOGY
* ENSURE THE COORDINATES ARE THOSE REQUIRED SINCE DATA IS BASED ON THESE AND NOT LOCATION NAME.

Rainfall Erosivity factor (R-factor) cont.

Background

R - Rainfall Erosivity factor is measure of the ability of rainfall to cause erosion

- R is a product of two components: total energy (E) and maximum 30-minute intensity for each storm (I30). So, the total of EI for a year is equal to the R
- Correlation between the R-factor and the 2-year ARI, 6-hour storm event.

R factor can be read from the **Isoerodent maps** in Appendix B
Or

$R = 164.74(1.1177)^{S} S^{0.6444}$ . . . . . Equation (2)

where S is the **2-year ARI, 6-hour ARI** rainfall event (mm)

2-year ARI, 6-hour storm event
Data is available here: http://www.bom.gov.au/cgi-bin/hydro/has/CDIRSWebBasic

New data is also available here but does not correspond to the **2-year ARI, 6-hour**
http://www.bom.gov.au/water/designRainfalls/revised-ifd/?multipoint

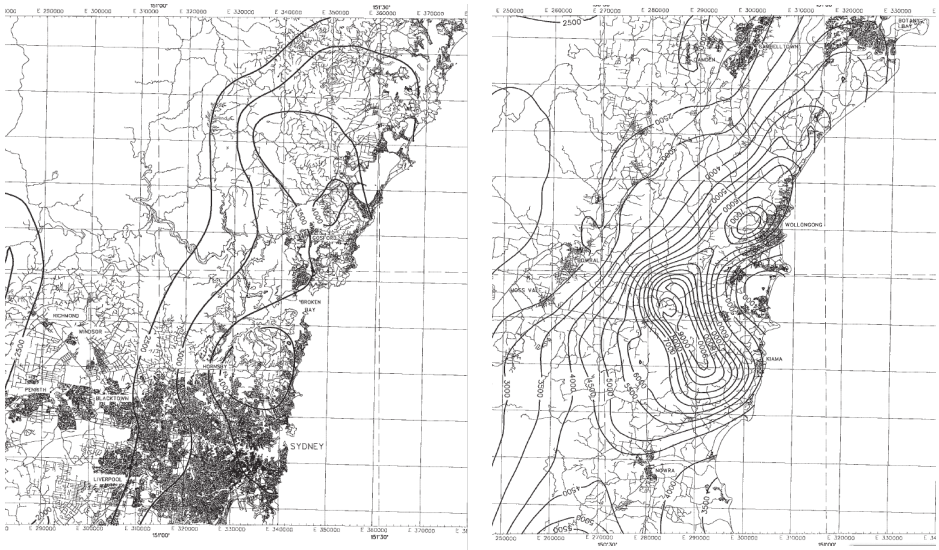


Table 6.2 Percentage of average annual EI that normally occurs in the first and second half of each month for each Rainfall Zone (figure 4.9) (Rosewell and Turner, 1992)

Zone	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
1	6	6	7	8	8	8	6	5	5	4	3	2	2	2	2	2	2	2	2	3	3	4	4	4
2	10	9	9	8	7	5	2	2	1	1	2	1	1	1	1	1	3	3	3	4	5	6	7	8
3	6	8	9	9	10	7	7	4	2	2	2	2	2	1	0	1	2	2	2	3	3	4	6	6
4	6	6	8	8	8	5	5	3	3	2	2	2	2	3	3	2	2	3	3	3	5	5	5	6
5	2	3	7	13	13	10	11	6	3	2	3	2	2	2	1	1	1	3	3	3	3	2	2	2
6	11	10	10	9	6	5	2	2	2	1	1	1	1	1	1	1	2	2	4	3	5	5	8	7
7	9	9	7	8	4	5	3	3	2	3	2	1	2	1	2	2	2	3	4	4	4	6	7	7
8	7	8	7	8	5	6	4	3	2	2	2	1	2	1	2	2	2	2	4	4	6	6	7	7
9	8	9	8	7	6	5	3	3	2	2	1	2	1	1	1	2	3	3	5	5	5	6	6	6
10	7	6	9	7	7	6	4	4	3	2	1	1	2	1	1	2	2	3	4	5	6	6	5	6
11	10	11	11	9	10	5	3	1	1	1	1	1	1	1	2	2	1	2	2	5	6	6	6	6
12	10	9	8	7	5	4	4	2	2	1	1	2	1	1	1	2	3	4	3	4	4	6	7	9

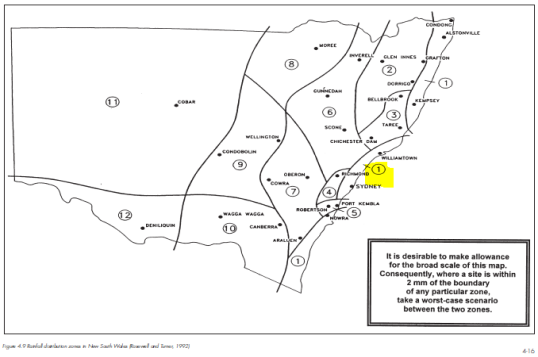


Figure 4.9 Rainfall distribution zones in New South Wales (Rosewell and Turner, 1992)

Design Rainfall depth (mm)

Table 6.3a **[p144]** has the 75th, 80th, 85th, 90th and 95th-percentile 2 and 5-day rainfall depths for 59 sites in New South Wales

Table 6.3a 75th, 80th, 85th, 90th and 95th-percentile 2 and 5-day rainfall depths for 59 sites in New South Wales

Location	2-day rainfall depths (mm)					5-day rainfall depths (mm)				
	75th %ile	80th %ile	85th %ile	90th %ile	95th %ile	75th %ile	80th %ile	85th %ile	90th %ile	95th %ile
North Coast										
Coffs Harbour	18.3	23.6	31.8	44.4	70.8	33.6	42.7	55.8	74.9	117.6
Dorrigo	22.1	27.9	36.4	49.0	77.0	40.3	49.3	63.7	84.8	132.0
Grafton	14.0	17.8	22.9	31.2	48.9	23.3	29.0	37.2	50.1	75.4
Lismore	16.3	20.6	26.4	36.3	57.0	28.6	35.3	45.2	60.2	95.3
Port Macquarie	18.0	22.9	29.8	41.4	65.3	32.0	40.1	51.8	70.0	106.2
Taree	15.0	19.0	24.9	35.5	56.4	25.0	31.7	41.2	55.9	90.6
Tweed Heads	23.4	29.5	37.6	50.8	78.7	39.6	48.5	62.5	82.5	126.8
Central Coast/Hunter										
Cessnock	13.4	16.5	21.1	28.5	45.0	20.3	24.4	31.0	42.8	63.0
Gosford (Narara)	16.7	21.3	28.4	39.8	63.0	27.9	35.0	45.8	62.2	99.3
Nelson Bay	17.5	22.3	28.9	39.4	58.9	30.4	38.1	48.3	63.5	91.5
Newcastle	13.7	17.6	23.0	31.8	48.1	24.4	30.5	38.9	51.8	76.7
Scone	12.4	15.3	19.3	25.0	37.8	19.0	22.6	27.7	35.9	51.3
Wyong	16.8	20.8	26.9	37.2	58.8	26.8	33.8	43.2	58.7	90.1
Sydney/Blue Mountains										
Bankstown	11.4	14.5	19.6	27.0	42.0	19.4	24.4	31.5	42.6	66.6
Blacktown	12.0	15.0	20.3	28.0	43.6	19.0	24.6	32.2	43.2	70.8
Camden	13.6	16.8	21.6	29.2	44.8	20.2	25.1	32.0	43.4	66.3
Campbelltown	12.2	15.2	19.0	26.9	42.1	19.3	23.9	30.6	43.2	63.3
Hornsby	15.7	20.6	27.4	38.1	61.0	25.9	32.8	43.3	60.0	92.5
Katoomba	16.5	20.6	26.7	37.6	60.2	28.0	35.2	45.4	63.0	99.6
Lithgow	11.4	14.0	18.3	24.2	35.3	19.5	23.6	29.4	37.8	56.4
Liverpool	12.2	15.5	20.0	28.4	43.2	19.2	24.4	32.2	43.8	70.2
Mona Vale	19.0	23.6	29.2	38.7	62.0	29.0	35.2	44.0	61.2	92.0
Mosman	15.2	19.3	25.4	35.8	57.7	26.2	32.9	43.2	59.6	91.5
Parramatta North	11.7	15.2	20.6	28.2	45.5	20.3	25.8	33.1	45.8	74.1
Penrith	14.0	18.2	23.6	31.5	49.5	21.8	27.4	35.0	47.6	74.6
Richmond	10.2	13.5	18.0	24.9	39.2	17.5	22.4	29.5	39.7	61.4
Ryde	14.7	18.3	24.9	34.3	53.5	23.4	29.5	38.8	53.6	80.5
Springwood	15.5	20.1	25.9	35.0	55.6	25.2	31.4	40.4	55.0	84.1
Sutherland	15.0	18.8	24.9	34.8	55.0	23.4	29.7	38.9	54.6	85.1
Sydney 12.7		16.6	22.4	31.6	52.1	23.3	29.7	38.8	55.2	84.3
Wallacia	14.0	17.8	23.0	31.4	48.8	22.1	27.6	36.6	48.8	76.2
Wilberforce	11.4	14.9	19.8	27.7	46.4	19.8	24.6	33.2	46.7	69.4
Illawarra/South Coast										
Albion Park	16.5	21.1	27.9	39.1	67.4	25.2	31.8	41.9	59.8	101.2
Batemans Bay	13.7	17.8	24.1	34.2	54.9	22.1	28.0	37.4	52.4	84.4
Bega	12.6	16.1	21.3	30.5	51.1	19.5	24.6	32.5	46.2	77.2
Cooma	7.6	9.8	13.0	17.8	27.2	12.5	15.8	20.0	25.8	39.1
Helensburgh	23.1	28.7	38.1	53.0	81.3	35.6	45.0	57.4	78.2	124.6
Kiama	14.7	19.1	24.9	35.5	57.2	25.5	32.2	42.1	58.3	90.7
Kangaroo Valley	16.8	21.4	29.2	41.7	70.6	26.8	34.2	45.7	67.0	115.6
Mittagong	14.7	18.3	23.4	31.8	49.1	22.9	28.0	36.2	49.0	75.2
Robertson	15.8	20.3	27.9	38.2	67.3	28.4	36.0	46.1	67.3	113.0
Wollongong	13.8	18.0	24.8	36.6	61.3	25.4	33.0	43.5	60.8	95.6
Northern Tablelands and Northwestern Slopes										
Armidale	12.4	15.2	19.3	25.0	35.3	19.8	24.1	29.2	37.4	52.9
Gunnedah	14.2	17.3	21.3	27.7	39.2	20.0	24.1	30.2	38.4	53.0
Tamworth	15.2	18.3	22.2	27.7	39.6	21.6	25.2	30.8	39.2	54.2
Tenterfield	18.8	22.3	26.7	33.8	46.0	26.7	31.4	38.1	47.4	63.3
Central Tablelands and Central Western Slopes										
Bathurst	10.7	13.2	16.5	21.4	30.4	16.8	20.6	24.9	31.4	43.7
Cowra	12.0	14.7	18.0	22.9	32.8	18.1	21.6	26.1	32.5	44.9
Dubbo	12.7	16.0	20.2	26.1	36.0	18.8	22.8	28.4	35.6	50.7
Southern Tablelands and Southwestern Slopes										
Albury	11.8	14.4	17.4	22.4	31.6	20.0	23.7	28.4	35.2	45.2
Goulburn	7.8	10.0	13.2	18.0	27.4	14.2	17.8	22.2	28.6	40.8
Jindabyne	11.9	14.2	17.3	22.6	33.4	17.3	20.6	24.9	32.0	46.8
Queanbeyan	12.7	15.2	18.8	24.2	34.3	18.0	21.3	25.8	33.0	45.1
Wagga	9.2	11.4	14.4	19.3	27.6	15.6	18.8	23.4	29.4	40.2
Northwestern, Southwestern and Far Western Plains										
Bourke	11.7	14.6	18.3	24.8	35.6	15.3	19.0	23.9	30.9	44.5
Broken Hill	7.1	9.1	12.0	16.8	25.9	9.7	12.2	16.2	21.6	33.0
Griffith	9.5	11.7	14.0	18.5	26.2	13.8	16.4	20.6	25.4	34.6
Moree	12.6	15.8	19.3	25.1	36.8	18.0	21.9	26.8	36.3	51.4
Nyngan	12.2	15.2	19.1	25.6	37.3	16.5	20.4	25.8	33.8	47.8

Soil Erosivity factor (K-factor)

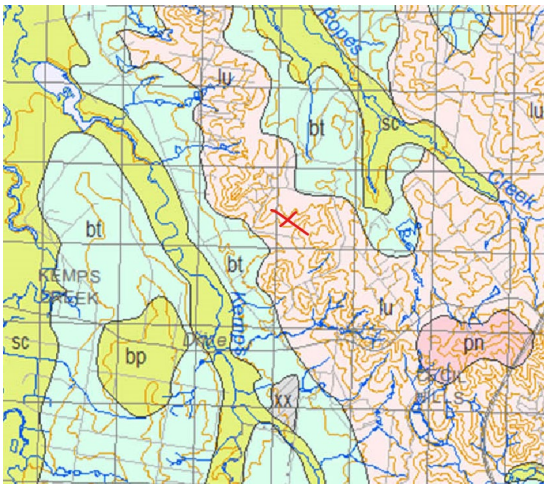


Table 19 Penrith Soil Landscapes

Soil landscape	Common constraints	Slope range	Soil hydrologic group	Acid sulfate risk	USCS class	K- factor	Sediment type	Sediment basin wall construction (earth)
					SC CL	0.042 0.024	*Type D* *Type F*	B A
Luddenham (lu)	moderately expansive, low wet strength, localised impermeable and highly plastic subsoils	5–20	Group C		CL CL CL	0.038 na na	*Type D* *Type F* *Type D*	B A A
Picton (pn)	high mass movement hazard; low permeability; low fertility; localised high expansion	>20	Group C		CL CL	na 0.034	*Type D* *Type D*	D B
Richmond (ri)	high soil erosion hazard (particularly at terrace edges) and localised flooding hazards; localised salinity	0–1	Group C		CL	0.059	*Type F*	A
South Creek (sc)	high flooding hazard; localised permanently high watertables; low fertility; localised salinity	0–5	Group C/D		CL	0.05	*Type F*	A
Upper Castlereagh (up)	very high soil erosion hazard; dispersible, impermeable soil layers	0–5	Group C/D		SC CL	na 0.032	*Type D* *Type F*	D D
Volcanic (vo)	moderately expansive soils with low wet strength, high soil erosion and mass movement hazards on steep slopes	5–60	Group C/D		CL	0.029	*Type F*	B
Warragamba (wb)	very high mass movement and soil erosion hazards; steep slopes, highly permeable soils with low fertility	>35	Group C		SM SC	0.036 0.032	*Type C* *Type D*	J B
Woodlands (wl)	soils with low fertility and low water holding capacity	0–10	Group B/D		CL CL	0.029 na	*Type F* *Type F*	C B

Table C19. Penrith Soil Landscapes (continued)

Erosion Hazard

The maximum calculated soil loss for the site is 174 t/ha/yr based on the catchment for SB1250 with LS-factor 1.19

Table 4.2 The Soil Loss Classes (adapted from Morse and Rosewell, 1996)

Soil Loss Class	Calculated soil loss (tonnes/ha/yr)	Erosion hazard
1	0 to 150	very low
2	151 to 225	low
3	226 to 350	low-moderate
4	351 to 500	moderate
5	501 to 750	high
6	751 to 1,500	very high
7	>1,500	extremely high

Cv
Soil hydrological group D
Design rainfall event (85th percentile)

F.3 Volumetric Runoff Coefficient

Table F2 shows the recommended values for estimating runoff coefficients (Cv) for volumetric data in disturbed catchments and is used in the sizing of sediment basins on Type D and Type F soils. Generally, these structures are designed to contain all the runoff expected from a nominated rainfall depth or storm event.

Table F2. Runoff coefficients (Cv) for volumetric data in disturbed catchments (adapted from USDA, 1996)

Soil Hydrologic Group	Design Rainfall depth (mm)							Runoff potential
	<21	21-25	26-30	31-40	41-50	51-60	61-80	
A	0.01	0.05	0.08	0.15	0.22	0.28	0.37	very low
B	0.10	0.19	0.25	0.34	0.42	0.48	0.57	low to moderate
C	0.25	0.35	0.42	0.51	0.58	0.63	0.70	moderate to high
D	0.39	0.50	0.56	0.64	0.69	0.74	0.79	high

Little data exists in Australia in relation to volumetric runoff coefficients on disturbed lands. So, Table F2 has been determined using the United States Department of Agriculture's Curve Number Method (USDA, 1996).

Where the Soil Hydrologic Group is not known and/or cannot be found out without an additional soil survey (but see Appendix C), adopting a default volumetric runoff coefficient of 0.5 is reasonable. However, higher values should be considered for high-density development or other sites that can be subject to very high levels of surface sealing (e.g. wheel compaction). Alternatively, lower values can be adopted where a significant proportion of the site is to remain undisturbed (i.e. vegetated), if that value is properly justified. However, the correct Soil Hydrologic Group should be determined on all sites where design is to greater than the standard 85th percentile, x-day rainfall depth and/or where the receiving waters are deemed to be highly or extremely sensitive.

C10 - refer Table F3

Table F3 Runoff coefficients (C10) for peak flow data in disturbed catchments

Soil Hydrologic Group	Rainfall intensity (mm) in the design storm						Runoff potential
	<21	21-40	41-60	61-80	81-100	>100	
A	0.20	0.37	0.55	0.64	0.68	0.75	very low
B	0.46	0.58	0.70	0.75	0.78	0.82	low to moderate
C	0.69	0.76	0.83	0.85	0.86	0.88	moderate to high
D	0.80	0.86	0.89	0.90	0.90	0.90	high

LS Calculations

Not used

Receiving basin	CH	Existing RL	Desing RL	CH	Existing RL	Desing RL	Distance	RL △	Slope	Comment
							0	0	#DIV/0!	Based on existing RL
							0	0	#DIV/0!	Based on existing RL
							0	0	#DIV/0!	Based on existing RL
							0	0	#DIV/0!	Based on existing RL
							0	0	#DIV/0!	Based on existing RL
							0	0	#DIV/0!	Based on existing RL

Table A1 LS-factors on construction sites using the RUSLE

Slope ratio	Slope gradient (%)	Slope length (m)														
		5	10	20	30	40	50	60	70	80	90	100	150	200	250	300
100:1	1	0.09	0.11	0.13	0.15	0.16	0.17	0.18	0.19	0.19	0.20	0.20	0.23	0.24	0.26	0.27
50:1	2	0.14	0.18	0.24	0.28	0.31	0.34	0.36	0.39	0.41	0.43	0.44	0.52	0.58	0.64	0.69
33.3:1	3	0.17	0.24	0.34	0.41	0.47	0.52	0.57	0.61	0.65	0.69	0.72	0.87	1.00	1.11	1.22
25:1	4	0.21	0.30	0.44	0.54	0.63	0.71	0.78	0.85	0.91	0.97	1.03	1.26	1.47	1.65	1.82
20:1	5	0.24	0.36	0.54	0.68	0.80	0.91	1.01	1.10	1.19	1.27	1.35	1.70	2.00	2.28	2.53
16.6:1	6	0.28	0.42	0.64	0.81	0.97	1.11	1.24	1.36	1.47	1.58	1.68	2.14	2.54	2.91	3.25
12.5:1	8	0.34	0.53	0.83	1.08	1.31	1.51	1.70	1.88	2.05	2.21	2.37	3.07	3.70	4.28	4.82
10:1	10	0.42	0.68	1.09	1.44	1.75	2.04	2.31	2.56	2.81	3.04	3.27	4.06	4.94	5.75	6.52
8.3:1	12	0.52	0.85	1.39	1.85	2.27	2.66	3.02	3.37	3.70	4.02	4.33	5.77	7.07	8.28	9.42
7.1:1	14	0.62	1.02	1.69	2.26	2.79	3.28	3.74	4.18	4.61	5.02	5.42	7.27	8.95	10.52	12.01
6.3:1	16	0.71	1.19	1.98	2.67	3.31	3.90	4.46	5.00	5.52	6.02	6.51	8.78	10.86	12.81	14.65
5.5:1	18	0.80	1.35	2.27	3.07	3.82	4.51	5.17	5.81	6.42	7.02	7.59	10.30	12.78		
5:1	20	0.89	1.50	2.55	3.47	4.32	5.12	5.88	6.61	7.32	8.01	8.68	11.92	14.84		
4:1	25	1.09	1.88	3.23	4.43	5.54	6.59	7.60	8.57	9.51	10.43	11.32				
3.3:1	30	1.28	2.23	3.86	5.32	6.69	7.99	9.23	10.43	11.60	12.74	13.85				
2.5:1	40	1.61	2.83	4.98	6.92	8.74	10.48	12.15	13.77							
2:1	50	1.88	3.33	5.89	8.22	10.42	12.52	14.55								

P-factor

Table A2 P-factors for construction sites (Goldman et al., 1986)

Surface condition	P-factor
Compacted and smooth	1.3
Track-walked along the contour[6]	1.2
Track-walked up and down the slope[7]	0.9
Punched straw[8]	0.9
Loose to 0.3 metres depth	0.8

Existing sub catchments

Source: Westlink Industrial Estate, Kemps Creek Stage 1 Civil Infrastructure and Water Management Strategy, ESR Development (Australia) Pty Ltd (AT&L, December 2022)

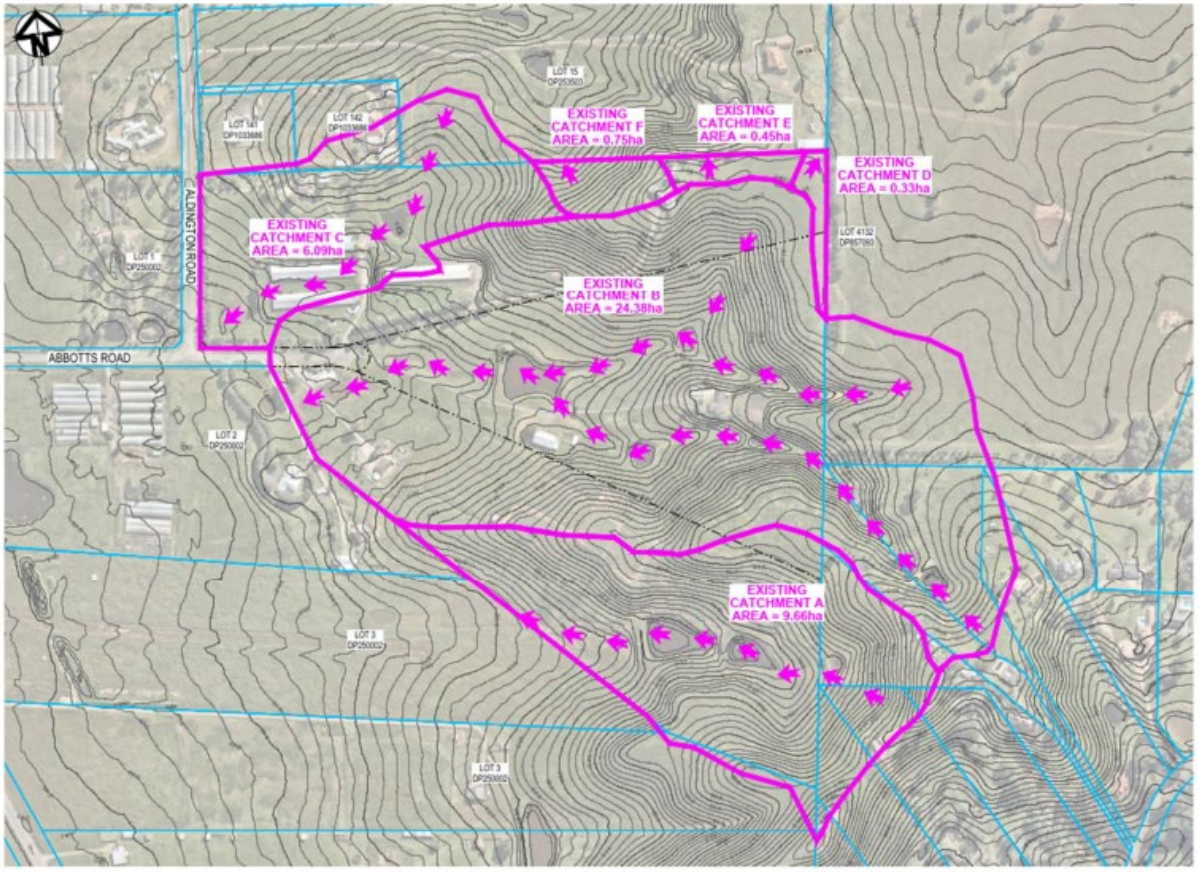


Figure 2: Catchment extents under existing conditions

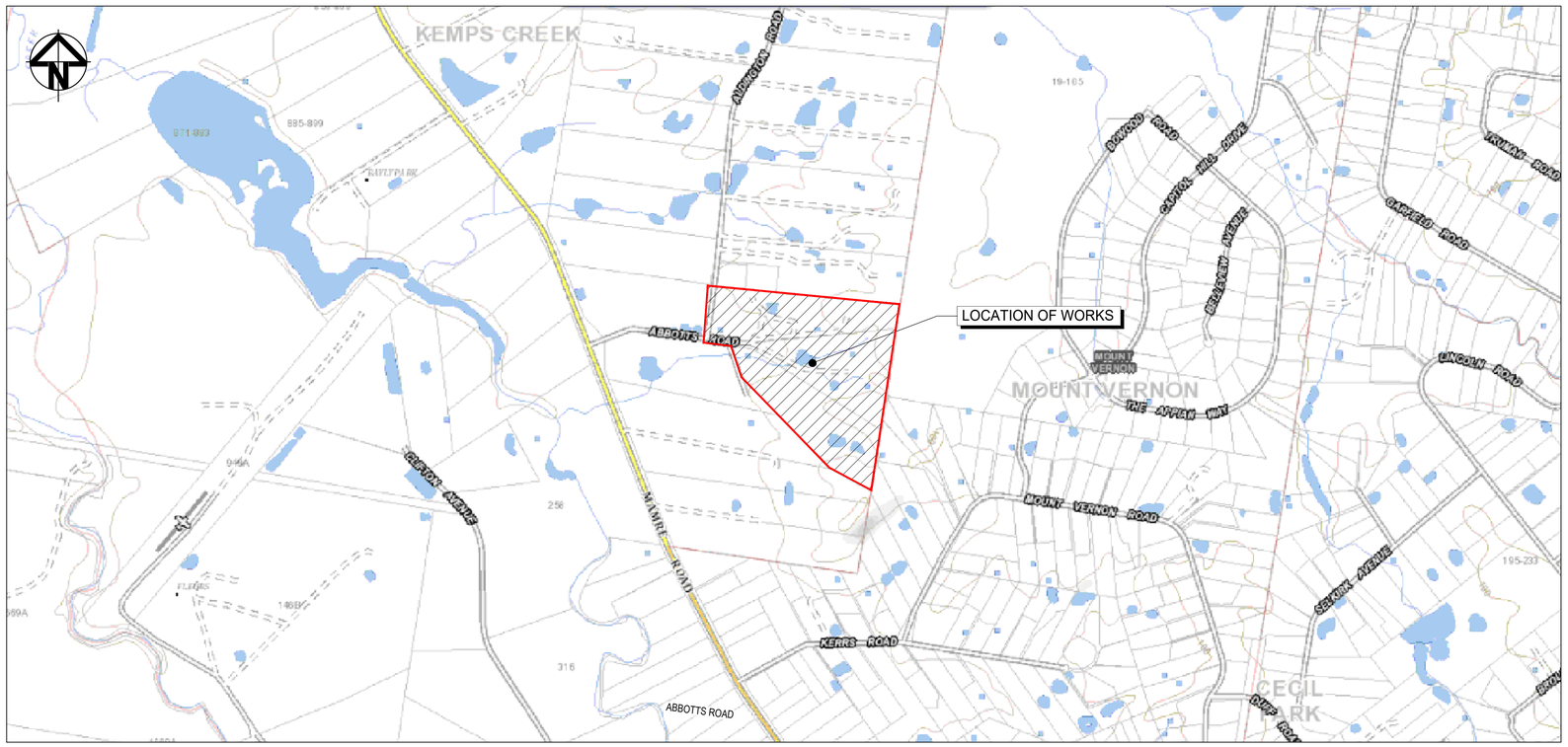
WESTLINK

KEMPS CREEK

EROSION & SEDIMENTATION PACKAGE - STAGE 1

SUBDIVISION WORKS CERTIFICATE

RTS-SSD-9138102



LOCALITY PLAN
NTS

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client

ESR

Scales N.T.S.

Drawn	LM
Designed	LM
Checked	AT
Approved	

Grid MGA2020

Height Datum AHD

GDA2020

Project
PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title
COVER SHEET

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status
FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.
20-748-C10100

Issue
B

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10100.dwg

DRAWING LIST

DRAWING No.	DRAWING TITLE
20-748-C10100	COVER SHEET
20-748-C10101	DRAWING LIST
20-748-C10102	GENERAL NOTES SHEET 1
20-748-C10103	GENERAL NOTES SHEET 2
20-748-C10104	GENERAL NOTES SHEET 3
20-748-C10105	GENERAL NOTES SHEET 4
20-748-C10106	GENERAL NOTES SHEET 5
20-748-C10107	GENERAL NOTES SHEET 6
20-748-C10108	GENERAL NOTES SHEET 7
20-748-C10109	GENERAL NOTES SHEET 8
20-748-C10110	EROSION & SEDIMENT CONTROL GENERAL ARRANGEMENT
20-748-C10111	EROSION AND SEDIMENT CONTROL PLAN SHEET 1
20-748-C10112	EROSION AND SEDIMENT CONTROL PLAN SHEET 2
20-748-C10113	EROSION AND SEDIMENT CONTROL PLAN SHEET 3
20-748-C10114	EROSION AND SEDIMENT CONTROL PLAN SHEET 4
20-748-C10115	EROSION AND SEDIMENT CONTROL PLAN SHEET 5
20-748-C10116	EROSION AND SEDIMENT CONTROL PLAN SHEET 6
20-748-C10117	EROSION AND SEDIMENT TYPE A BASIN DETAIL PLAN
20-748-C10118	EROSION AND SEDIMENT TYPE A BASIN DETAILS AND SECTIONS
20-748-C10120	EROSION AND SEDIMENT CONTROL DETAILS SHEET 1
20-748-C10121	EROSION AND SEDIMENT CONTROL DETAILS SHEET 2
20-748-C10122	EROSION AND SEDIMENT CONTROL DETAILS SHEET 3
20-748-C10123	EROSION AND SEDIMENT CONTROL DETAILS SHEET 4
20-748-C10124	EROSION AND SEDIMENT CONTROL DETAILS SHEET 5
20-748-C10131	EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 1 - PRIOR TO REMEDIATION & TREE CLEARING
20-748-C10132	EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 2 - ESTABLISHMENT OF COMPOUND AND SEDIMENT BASIN
20-748-C10133	EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 3 EARTHWORKS
20-748-C10134	EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 4.1 EARTHWORKS
20-748-C10135	EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 4.2 EARTHWORKS

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

Client

ESR

Scales N.T.S.

Grid MGA2020

Height Datum AHD

Drawn LM

Designed LM

Checked AT

Approved

GDA2020

Project
PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title
DRAWING LIST

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status
FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.
20-748-C10101

Issue
B

100mm on Original

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10101.dwg

SITEWORKS NOTES

1. ORIGIN OF LEVELS:- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO AT & L.
3. ALL EARTHWORKS TO BE UNDERTAKEN IN ACCORDANCE WITH DOUGLAS PARTNERS "MINIMUM GEOTECHNICAL SPECIFICATIONS AND REQUIREMENTS" REPORT, PROJECT 92352.02, 20th JUNE 2022.
4. MAKE SMOOTH CONNECTION WITH EXISTING WORKS.
5. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
6. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
7. PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
8. ASPHALTIC CONCRETE SHALL CONFORM TO R.M.S SPECIFICATION R116.
9. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S FORM 3051 (UNBOUND), R.M.S FORM 3052 (BOUND) COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m OF BASECOURSE MATERIAL PLACED.
10. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S FORM 3051, 3051.1 AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 OF SUB-BASE COURSE MATERIAL PLACED.
11. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S FORM 3051 AND 3051.1 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF AT & L AND PENRITH CITY COUNCIL.
12. SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THE CONTRACTOR IS TO SEEK ACCEPTANCE OF THE PRODUCT FROM AT&L AND PENRITH CITY COUNCIL. THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED.
13. WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.
14. ALL WORKS CARRIED OUT ADJACENT TO AND WITHIN TRANSGRID'S EASEMENT TO COMPLY WITH TRANSGRID'S GUIDELINES AND REQUIREMENTS.
15. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH PENRITH CITY COUNCIL'S ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY LANDPARTNERS, BEING REGISTERED SURVEYORS. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. AT & L DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.

SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT AT & L.

THE FOLLOWING NOTES HAVE BEEN TAKEN DIRECTLY FROM THE ORIGINAL SURVEY DOCUMENTS.

NOTES
1. THE BOUNDARIES HAVE APP0ROXIMATELY BEEN SURVEYED IN ACCORDANCE WITH CLAUSE 9 OF THE SURVEYING & SPATIAL INFORMATION REGULATION 2017
2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY NSW LAND REGISTRY SERVICES AND ARE SUBJECT TO FINAL SURVEY
3. ORIGIN OF COORDINATES HAS BEEN DERIVED USING GPS (GNSS) SURVEY FROM SSM33562
4. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM PM178274 USING GPS (GNSS) SURVEY METHODS.
5. CONTOUR INTERVAL 0.5 m
6. CONTOURS ARE INDICATIVE ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
7. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. SERVICES HAVE BEEN PLOTTED FROM RELEVANT AUTHORITIES INFORMATION AND HAVE NOT BEEN SURVEYED. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
8. 8/.4/7 DENOTES TREE SPREAD OF 8m, TRUNK DIAMETER OF 0.4m & APPROX HEIGHT OF 7m
9. SHOWS APPROXIMATE POSITION OF ROAD LINEMARKING AND IS INDICATIVE ONLY
10. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH

EXISTING UNDERGROUND SERVICES

1. THE LOCATIONS OF UNDERGROUND SERVICES SHOWN IN THIS SET OF DRAWINGS HAVE BEEN PLOTTED FROM SURVEY INFORMATION AND SERVICE AUTHORITY INFORMATION. THE SERVICE INFORMATION HAS BEEN PREPARED ONLY TO SHOW THE APPROXIMATE POSITIONS OF ANY KNOWN SERVICES AND MAY NOT BE AS CONSTRUCTED OR ACCURATE.
2. AT & L CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY INDICATES THE PRESENCE OR ABSENCE OF SERVICES OR THEIR LOCATION AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.
3. CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY.
4. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS.
5. CONTRACTORS ARE TO UNDERTAKE A SERVICES SEARCH, PRIOR TO COMMENCEMENT OF WORKS ON SITE. SEARCH RESULTS ARE TO BE KEPT ON SITE AT ALL TIMES.
6. PRIOR TO COMMENCEMENT OF WORKS, THE CONTRACTOR IS TO CONFIRM THE ALIGNMENT AND LEVELS OF ALL EXISTING SERVICES AT ALL LOCATIONS WHERE THE PROPOSED SERVICES ARE TO CROSS, CONNECT TO, OR ARE LOCATED IN CLOSE PROXIMITY TO THE EXISTING SERVICES.

DECOMMISSIONING / DEMOLITION

1. DEMOLITION OF EXISTING DWELLING TO BE CONDUCTED IN ACCORDANCE WITH THE PROVISIONS OF AS2601-2001 - DEMOLITION OF STRUCTURES BY CONTRACTORS EXPERIENCED IN THIS CLASS OF WORK AND HOLDING REQUIRED CURRENT PERMITS AND LICENSES AS REQUIRED.
2. EXISTING INTERNALS FENCING, CATTLE YARDS, UTILITIES AND OTHER REDUNDANT STRUCTURES TO BE DEMOLISHED AND REMOVED TO AN APPROVED WASTE MANAGEMENT FACILITY.
3. DAM DECOMMISSIONING TO BE COMPLETED AS PER THE DAM DECOMMISSIONING PROCEDURE AS CONTAINED WITHIN THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP).
4. ALL EXISTING SERVICES (INCLUDING SEPTIC TANKS) SHALL BE REMOVED FROM SITE.
5. ALL UNDERGROUND CABLES AND PIPES SHALL BE GRUBBED OUT AND CAPPED AT THE BOUNDARY OF THE SITE.
6. ALL OVERHEAD SERVICES SHALL BE REMOVED FROM WITHIN THE SITE BOUNDARY AND MADE SAFE AT THE TERMINATION LOCATION. ANY POLES SHALL BE REMOVED FROM THE SITE.
7. ALL EXISTING SERVICES TO BE CONSIDERED AS LIVE UNTIL THE CONTRACTOR HAS TESTED AND CONFIRMED TO THE SUPERINTENDENT THAT THE SERVICES ARE DEAD / REDUNDANT.

DEWATERING

1. IF REQUIRED ANY DEWATERING WORKS TO BE AS PER THE DEWATERING PROCEDURE AS CONTAINED WITHIN THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP).

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

1. THE SITE SUPERINTENDENT/ENGINEER WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED.
2. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
   a. LOCAL AUTHORITY REQUIREMENT
   b. EPA REQUIREMENTS
   c. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.
6. THE CONTRACTOR SHALL PREPARE ADDITIONAL EROSION AND SEDIMENT CONTROL PLANS THROUGHOUT THE WORKS THAT DOCUMENT THE REQUIRED CONTROLS TO MATCH THE STAGE AND PROGRESSION OF WORKS. IN THIS REGARD, THE EROSION AND SEDIMENT CONTROL PLANS INCLUDED WITHIN THIS DRAWING SET ARE GENERALLY THOSE CONTROLS TO BE IMPLEMENTED AT THE COMPLETION OF ALL WORKS.
7. SITE PERSONNEL RESPONSIBLE FOR IMPLEMENTING EROSION AND SEDIMENT CONTROLS ARE TO BE APPROPRIATELY TRAINED IN IMPLEMENTATION AND MAINTENANCE OF CONTROL MEASURES

LAND DISTURBANCE

8. THE CONTRACTOR SHALL PREPARE ADDITIONAL EROSION AND SEDIMENT CONTROL PLANS THROUGHOUT THE WORKS THAT DOCUMENT THE REQUIRED CONTROLS TO MATCH THE STAGE AND PROGRESSION OF WORKS. IN THIS REGARD, THE EROSION AND SEDIMENT CONTROL PLANS INCLUDED WITHIN THIS DRAWING SET ARE GENERALLY THOSE CONTROLS TO BE IMPLEMENTED AT THE COMPLETION OF ALL WORKS.
9. SITE PERSONNEL RESPONSIBLE FOR IMPLEMENTING EROSION AND SEDIMENT CONTROLS ARE TO BE APPROPRIATELY TRAINED IN IMPLEMENTATION AND MAINTENANCE OF CONTROL MEASURES
10. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
    (A) INSTALL A WIND FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
    (B) INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
    (C) CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
    (D) INSTALL SEDIMENT BASIN AS SHOWN ON PLAN
    (E) INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
    (F) UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

11. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
12. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.
13. WITHIN 5 DAYS OF THE CONCLUSION OF A RAINFALL EVENT, SEDIMENT BASINS MUST BE TREATED AND APPROVED CAPACITY RESTORED FOR THE ONGOING MANAGEMENT OF THE SITE SEDIMENT YIELD. IT IS NOTED THAT SOME BASINS MAY BE OVERSIZED TO RETAIN SITE WATER FOR CONSTRUCTION PURPOSES.
14. SITE WATER DISCHARGED FROM THE PROJECT WILL BE COMPLIANT WITH EPA CRITERIA AND WILL BE UNDERTAKEN AT APPROVED LOCATIONS BY APPROPRIATELY TRAINED SITE PERSONNEL. WATER DISCHARGE IS TO BE UNDERTAKEN AT NON-EROSIVE VELOCITIES WITH ADEQUATE DIFFUSERS, LEVEL SPREADERS, ETC. AND WILL ENSURE LOCALISED FLOODING DOES NOT OCCUR.
15. BASIN SPILLWAY MATERIAL WILL BE CLASSIFIED AS SUITABLE TO ACHIEVE DESIRED COMPACTION FOR STRUCTURE STABILITY.
16. NO VISIBLE OIL AND GREASE SHALL BE PRESENT IN ANY WATER TO BE DISCHARGED OFFSITE.
17. IF REQUIRED, THE CONTRACTOR SHALL ADD FLUCCULANT (E.G. GYPSUM) TO DROP SEDIMENT OUT OF SOLUTION TO MEET EPA REQUIREMENTS FOR TURBIDITY. THE PH OF ANY WATER TO BE DISCHARGED OFFSITE SHALL MEET EPA REQUIREMENTS.
18. BASIN INLET AND SPILLWAY CONSTRUCTION WILL INCLUDE SUITABLE SLOPE STABILISATION REQUIREMENTS AS REQUIRED TO ACHIEVE STABILITY FROM DISCHARGE AND OVERTOPPING WATER E.G. ROCK SCOUR AND GEOFABRIC. THE CONTRACTOR SHALL CONFIRM THE SPECIFIC SLOP STABILITY CONTROLS.
19. WHERE MATERIAL OR FABRIC IS USED, THE MATERIAL WILL BE OVERLAPPED BY A MINIMUM 300MM AND ANCHORED IN TO PREVENT SLIPPAGE AND UNDERCUTTING ON THE SLOPE.
20. WHERE ROCK MATERIAL IS USED, ROCK WILL BE A MINIMUM 150MM IN DIAMETER AND CONSTRUCTED TO PROVIDE ENERGY DISSIPATION FOR OVERTOPPING WATER.
21. THE FINISHED SPILLWAY WILL BE FREE OF DEPRESSIONS, POCKETS OF SMALL ROCK AND WILL BE SMOOTH AND UNIFORM SURFACE TO ENSURE EVEN FLOW OF OVERTOPPING WATER.COMPLETED EARTHWORKS PADS, WHICH ARE TO REMAIN UNDISTURBED FOR AN EXTENDED PERIOD OF TIME, SHALL BE SUITABILITY STABILISED (E.G. CHEMICAL BINDERS OR HYDROMULCHING) TO PREVENT DUST GENERATION AND SEDIMENT RUNOFF.

SEDIMENT CONTROL

9. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
10. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
11. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
12. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
13. INSPECTIONS OF EROSION AND SEDIMENT CONTROLS WILL OCCUR (AND BE DOCUMENTED) ON A REGULAR BASIS. THIS WILL INCLUDE IMMEDIATELY FOLLOWING RAINFALL EVENTS >10MM, WITH ANY NECESSARY REPAIRS IMPLEMENTED AS SOON AS POSSIBLE.
14. RELEVANT CHECKLISTS AND RECORDS TO BE MAINTAINED NOTING DETAILS SUCH AS RAINFALL RECEIVED, REPAIRS TO CONTROLS AND AMOUNTS OF SEDIMENTS CLEANED FROM CONTROLS.
15. ALL SITE PERSONNEL TO REPORT ANY SPILL, LEAKS, OR OTHER FAILURE TO RELEVANT RESPONSE STAFF AS SOON AS POSSIBLE.
16. EROSION AND SEDIMENT CONTROLS ARE TO BE MAINTAINED UNTIL THE PROJECT CATCHMENTS AREA IS STABILISED TO ACHIEVE SOIL SURFACE PROTECTION FACTORS AS PER THE 'BLUEBOOK'. AN INSPECTION BY THE PROJECT SOIL CONSERVATIONIST WILL BE UNDERTAKEN TO VERIFY THE STABILISATION OF THE PROJECT CATCHMENT AREA PRIOR TO REMOVAL OF CONTROLS.

OTHER MATTERS

17. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
18. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
    (A) PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
    (B) ENSURING THAT NOTHING IS NAILED TO THEM
    (C) PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
    (I) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
    (II) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
    (III) CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

FINISHED SURFACE LEVELS

1. ALL FINISHED SURFACE LEVELS ARE ±1000mm U.N.O.

CONSTRUCTION TOLERANCES

BULK EARTHWORKS

EARTHWORKS	-50mm / +0mm	OF FINISHED SURFACE LEVEL (AFTER COMPACTION AND TRIMMING)

TOLERANCE FOR EMBANKMENT BATTERS

LOCATION	TOLERANCE (mm)	
	SLOPE 1H:1V OR FLATTER	SLOPE STEEPER THAN 1H:1V
AT LEVEL OF TOP OF FORMATION/ UNDERSIDE OF PAVEMENT	+0/-150	+0/-150
BETWEEN TOP OF FORMATION AND 1m BELOW TOP OF FORMATION	+150/-150	+150/-150
BEYOND 1m BELOW TOP OF FORMATION	+300/-300	+300/-300

REFER TO TfNSW R44 SPECIFICATION

EMBANKMENT CONSTRUCTION SEQUENCE

1. STRIP VEGETATION AND TOPSOIL FROM EMBANKMENT AREA AND STOCKPILE TOPSOIL FOR LATER USE. CUT BACK AREA TO FIRM GROUND.
2. CONSTRUCT EMBANKMENT IN PRESENCE OF QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER IF NOT ROCK.
3. IN THE CASE WHERE THE EMBANKMENT AREAS SHOW ANY FAILURE, THE CONTRACTOR IS TO ENGAGE A QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER TO DETERMINE THE CAUSE AND METHOD OF RECTIFICATION
4. COMPACT CLAY STABILISED WITH GYPSUM (3% BY DRY MASS, MINIMUM) AS APPROVED BY A QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER INTO THE CUT-OFF TRENCH OF LAYERS NOT EXCEEDING 150mm LOOSE THICKNESS TO A DRY DENSITY EQUIVALENT TO 98% OF THAT DETERMINED BY STANDARD COMPACTION (AS 1289.5.1.1) AND AT A MOISTURE CONTENT OF -2% TO +2% OF OPTIMUM MOISTURE CONTENT.
5. GYPSUM STABILISED NATURAL SOILS EXPOSED IN EMBANKMENT AREA WITH MINIMUM 3% GYPSUM BY DRY MASS AND COMPACT AS FOR #4. ALL TO THE APPROVAL OF A QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER.
6. CONSTRUCT BODY OF EMBANKMENT WITH CLAYEY MATERIAL WON FROM SITE. COMPACT THE CLAYEY MATERIAL APPROVED BY A QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER IN LAYERS NOT EXCEEDING 150mm THICKNESS TO A DRY DENSITY EQUIVALENT TO 98% OF THAT DETERMINED BY STANDARD COMPACTION (AS 1289.5.1.1) AND AT A MOISTURE CONTENT OF -2% TO +2% OF OPTIMUM MOISTURE CONTENT. MOST IMPORTANTLY, IF SHRINKAGE CRACKS OCCUR, AS DIRECTED BY A QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER.
7. OVERFILL THE EMBANKMENT AND TRIM OFF, SO THAT THE ENTIRE BODY OF THE EMBANKMENT IS COMPACTED.
8. TRIM THE EMBANKMENTS BATTERS TO THE OVERFILLED MATERIAL, STABILISE THE UPSTREAM CLAY BATTERS WITH WELL MIXED GYPSUM (3% BY DRY MASS, MINIMUM) AND COMPACT TO MIN. 98% STD -2% TO +2% OMC.
9. PLACE ROCK RIP-RAP AS SHOWN.
10. RECOVER TOPSOIL FROM STOCKPILE AND SPREAD OVER EMBANKMENT AND CUT BATTERS (A THIN COVER OF TOPSOIL ONLY HAS BEEN NOMINATED). ONLY LIGHTLY TRACK-ROLL THE TOPSOIL AND THEN LANDSCAPE IN ACCORDANCE WITH THE LANDSCAPE AREA DRAWINGS.
11. WATER AND FERTILISE LANDSCAPE AS REQUIRED BY CLIMACTIC CONDITIONS TO ENSURE THE LANDSCAPE IS SUCCESSFUL.
12. AT THE COMPLETION OF WORK WRITTEN CONFIRMATION AND CERTIFICATION IS TO BE PROVIDED FROM A QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER THAT THE EMBANKMENTS HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THESE DRAWINGS.

DIAL 1100 BEFORE YOU DIG

CONTRACTOR SHALL CALL;
DIAL BEFORE YOU DIG 1100
PRIOR TO COMMENCEMENT OF WORK TO OBTAIN ALL CURRENT SERVICE AUTHORITY PLANS

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

100mm on Original

Client: ESR

Scales: N.T.S.
Grid: MGA2020
Height Datum: AHD

Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: GENERAL NOTES SHEET 1

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10102

Issue: B

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10102.dwg

GENERAL REQUIREMENTS

EROSION AND SEDIMENT CONTROL DESIGN

THE DETAILS SHOWN WITHIN THIS PLAN ARE OVER-ARCHING EROSION AND SEDIMENT CONTROL REQUIREMENTS ONLY FOR THE INITIAL STAGE OF THE BULK EARTHWORKS. AS THE WORKS PROGRESS AND SITE CONDITIONS CHANGE, THIS PLAN IS TO BE UPDATED ACCORDINGLY. SITE SPECIFIC PROGRESSIVE EROSION AND SEDIMENT CONTROL PLANS (PESCPS) WILL ALSO BE REQUIRED TO DETAIL SPECIFIC WORKS. THIS ESCP HAS BEEN PREPARED TO ACCOMPANY THE PROJECT'S CEMP AND CSMP.

THIS EROSION AND SEDIMENT CONTROL PLAN (ESCP) HAS BEEN PREPARED BY A CPESC (AS CERTIFIED) IN ACCORDANCE WITH BLUE BOOK VOLUME 1(LANDCOM, 2004) AND TO MEET THE REQUIREMENTS OF THE CONSTRUCTION WSUD PRINCIPALS SET OUT IN THE DRAFT TECHNICAL GUIDANCE FOR ACHIEVING WIANAMATTA SOUTH CREEK STORMWATER MANAGEMENT TARGETS (NSW GOVERNMENT, 2022). IT DEMONSTRATES THE CONSTRUCTION APPROACH AND TIMING REQUIREMENTS FOR ACHIEVING THE CONSTRUCTION PHASE STORMWATER QUALITY TARGETS.

THIS ESCP COVERS TWO MAIN AREAS OF WORK; THE MAIN SITE AREA AND THE MAMRE ROAD INTERSECTION WORKS. THE EROSION AND SEDIMENT CONTROLS FOR THE MAIN SITE ARE SHOWN ON ESCP(3 AND THE EROSION AND SEDIMENT CONTROLS FOR THE MAMRE ROAD INTERSECTION ARE ON ESCPO4.

AN EROSION HAZARD ASSESSMENT HAS BEEN COMPLETED FOR THE PROPOSED WORKS AND THE PREDICTED SOIL LOSS HAS
BEEN DETERMINED IN ACCORDANCE WITH THE FOLLOWING:

A = R x K x LS x C x P
WHERE
A = ANNUAL SOIL LOSS DUE TO EROSION (T/HA/YR)
R = RAINFALL EROSIVITY FACTOR
K = SOIL ERODIBILITY FACTOR
LS = TOPOGRAPHIC FACTOR DERIVED FROM SLOPE LENGTH (SL) AND SLOPE GRADIENT (S)
C = COVER AND MANAGEMENT FACTOR
P = EROSION CONTROL PRACTICE FACTOR

THE FOLLOWING VALUES HAVE BEEN USED:
R : 2500 (SOURCED FROM APPENDIX B OF THE BLUE BOOK)
K : 0.0456 (BASED ON SOIL DATA FOR THE BLACKTOWN AND LUDDENHAM SOIL LANDSCAPES)
SL: UP TO 80M MAX.
S : MAIN SITE = 7% ; MAMRE RD INTERSECTION = 4% (AVERAGE MAX. VALUES)

LS :1.76.
C : 1.0 (CONSTRUCTION STAGE - I.E. NO SOIL SURFACE PROTECTION OR GROUND COVER APPLIED)
P : 1.3 (FOR GENERAL CONSTRUCTION AREAS)

BASED ON THE ABOVE DATA, THE POTENTIAL SOIL LOSS IS:
E 2611T/HA/YR FOR THE MAIN SITE WORKS; AND
E 135T/HA/YR FOR THE MAMRE ROAD INTERSECTION WORKS.

THE DISTURBED CATCHMENT AREAS ARE APPROXIMATELY:
E 5582 HA FOR THE MAIN SITE WORKS; AND
E 1HA FOR EACH STAGE OF THE MAMRE ROAD INTERSECTION WORKS.

UNDER BLUE BOOK STANDARDS, SEDIMENT BASINS ARE REQUIRED IF THE ESTIMATED SOIL LOSS IS » 200 T/YR FOR ANY CATCHMENT/STAGE. THE ESTIMATED TOTAL SOIL LOSS IS:

E 14,548 T/YR FOR THE MAIN SITE WORKS; AND

E 135 1/YR FOR EACH STAGE OF THE MAMRE ROAD INTERSECTION WORKS.

THEREFORE, A SEDIMENT BASIN/S IS REQUIRED FOR THE MAIN SITE WORKS BUT NOT FOR THE MAMRE ROAD INTERSECTION
WORKS.

THE NSW GOVERNMENT (2022) TECHNICAL GUIDELINE (AS NOTED ABOVE) REQUIRES 80% OF THE AVERAGE ANNUAL RUNOFF VOLUME ACHIEVES 50mg/L TOTAL SUSPENDED SOLIDS (TSS) OR LESS AND PH IN THE RANGE (6.5-8.5). THE STANDARD BLUE BOOK SEDIMENT BASIN DESIGN AND OTHER STANDARD EROSION AND SEDIMENT CONTROL MEASURES ARE ESTIMATED TO ACHIEVE APPROXIMATELY 60% HYDROLOGICAL EFFECTIVENESS. THEREFORE, IN ORDER TO ACHIEVE 80% HYDROLOGICAL EFFECTIVENESS, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES ABOVE THE STANDARD BLUE BOOK DESIGN HAVE BEEN RECOMMENDED WITHIN THIS PLAN - REFER TO THE FOLLOWING INSTRUCTIONS AND NOTES AND THE PLANS ON ESCP03&04. THESE ADDITIONAL MEASURES INCLUDE:

- SEDIMENT BASIN DESIGN TO THE 85TH PERCENTILE RAINFALL DEPTH RATHER THAN THE STANDARD 80TH PERCENTILE BLUE BOOK REQUIREMENT PROVIDING ADDITIONAL WATER STORAGE VOLUME;
- UTILISING EXISTING DAMS AND/OR FUTURE WATER RETENTION DEVICES WHERE PRACTICABLE TO PROVIDE ADDITIONAL WATER STORAGE VOLUME AND BREAK UP CATCHMENTS;
- ENHANCED EROSION CONTROLS (E.G. REDUCED SLOPE LENGTHS, INCREASED FOCUS ON TEMPORARY AND PROGRESSIVE STABILISATION, ADDITIONAL CHECK DAMS AND A FOCUS ON TEMPORARY DRAINAGE CONTROL);
- PASSIVE BROADCAST GYPSUM SPREADING OVER THE ENTIRE DISTURBED CATCHMENT PRIOR TO LARGER RAINFALL EVENTS BEYOND THE SEDIMENT BASIN DESIGN TO ASSIST WITH WATER TREATMENT AND TO MINIMISE SOIL LOSS;
- PRE-LOADING SEDIMENT BASIN, SEDIMENT TRAPS AND THEIR INLET DRAINAGE DEVICES WITH GYPSUM OR BIOPOLYMER SOCKS TO SPEED UP SETTLEMENT RATES; AND
- REGULAR (MONTHLY) INSPECTIONS BY A CPESC TO MONITOR THE SITE CONDITIONS AND WATER QUALITY AND PROVIDE ADVICE IF CHANGES TO THE EROSION AND SEDIMENT CONTROLS ARE NECESSARY.

IF ALL OF THE PROPOSED MEASURES WITHIN THIS PLAN ARE IMPLEMENTED SUCCESSFULLY, THE TARGET WATER QUALITY OUTCOMES CAN BE ACHIEVED FOR AT LEAST 80% OF THE AVERAGE ANNUAL RUNOFF AS REQUIRED BY THE NSW GOVERNMENT (2022) TECHNICAL GUIDELINE.

EROSION AND SEDIMENT CONTROL INSTRUCTIONS - STAGING

BEFORE COMMENCEMENT OF CLEARING, TOPSOIL STRIPPING AND EARTHWORKS FOR EACH AREA OF WORK, THE SITE IS TO BE SECURED AND THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES INSTALLED IN ORDER EXCEPT FOR ITEMS 13 TO 20 WHICH ARE TO BE UNDERTAKEN PROGRESSIVELY AS REQUIRED AS THE WORKS PROGRESS. STRIPPING AND EARTHWORKS NECESSARY TO INSTALL THE EROSION AND SEDIMENT CONTROLS ARE PERMITTED BUT MUST BE KEPT TO AN ABSOLUTE
MINIMUM:

1. SITE ACCESS AND DISTURBANCE MUST BE MINIMISED TO THE AREAS ESSENTIAL FOR THE CONSTRUCTION WORKS ONLY. BARRIER FENCING (OR ALTERNATIVE MEASURES) IS TO BE IN PLACE AROUND THE EDGE OF THE CONSTRUCTION BOUNDARY TO RESTRICT ACCESS AND IN ANY ADDITIONAL LOCATIONS AS REQUIRED TO MINIMISE UNNECESSARY DISTURBANCE.
2. ESTABLISH STABILISED SITE ENTRY/EXIT POINTS (STANDARD DRAWING SD 6-14) IN THE LOCATIONS SHOWN AND AT ALL EGRESS POINTS. ENSURE THAT ALL VEHICLES ENTERING AND LEAVING THE WORK AREA PASS OVER ONE OF THESE POINTS. A VEHICLE WHEEL WASH (WASH DOWN) FACILITY IS TO BE ESTABLISHED AT THE MAIN CONSTRUCTION EXIT AND ALL CONSTRUCTION VEHICLES MUST PASS THROUGH THIS POINT WHEN LEAVING THE SITE.
3. ESTABLISH A TEMPORARY SITE OFFICE, TOILET AND PARKING AREA AS NOMINATED BY THE SITE MANAGER.
4. INSTALL SEDIMENT FENCING IN THE LOCATIONS SHOWN AND FOLLOWING STANDARD DRAWING SD 6-8.
5. OFFSITE (CLEAN) WATER DIVERSIONS ARE TO BE CONSTRUCTED AND STABILISED - REFER TO ESCP03804, THE 'STABILISATION' NOTES AND TO TABLE 4 ON ESCPO5 FOR LOCATIONS AND SIZING. ONCE CLEAN WATER DIVERSION CONSTRUCTION IS COMPLETED CLEAN WATER DIVERSIONS ARE TO BE CONFIRMED AS STABLE BY A CPESC.
6. THE PERMANENT CHANNEL DIVERSION IS TO BE CONSTRUCTED AND STABILISED. A PROGRESSIVE AREA SPECIFIC PESCP IS TO BE PRODUCED FOR THIS WORK PRIOR TO STARTING CONSTRUCTION. ALSO REFER TO THE PLAN FOR ADDITIONAL DETAILS. ONCE PERMANENT CHANNEL DIVERSION CONSTRUCTION IS COMPLETED IT IS TO BE CONFIRMED AS STABLE BY A CPESC. REFER TO ESCP03&04 AND THE 'STABILISATION' NOTES FOR ADDITIONAL REQUIREMENTS.
7. THE SEDIMENT BASINS AND THEIR INLET AND OUTLET STRUCTURES ARE TO BE CONSTRUCTED AND STABILISED - REFER TO ESCPO3&04 FOR LOCATIONS AND BASIN SIZING DETAILS (ALSO REFER TO THE 'SEDIMENT BASIN' NOTES BELOW AND TO SD 6-4).
8. SEDIMENT TRAPS ARE TO BE INSTALLED - REFER TO ESCP03804 FOR LOCATIONS/DETAILS AND TO THE 'STABILISATION' NOTES (ALSO REFER SD UST-01).
9. ONSITE (DIRTY) WATER DIVERSIONS ARE TO BE CONSTRUCTED AND STABILISED - REFER TO ESCP03&04, THE 'STABILISATION' NOTES AND TO TABLE 4 ON ESCPO5 FOR LOCATIONS AND SIZING. ADDITIONAL DIRTY WATER DIVERSIONS MAY BE REQUIRED AS THE WORKS PROGRESS. THE LOCATIONS OF THESE ARE TO BE PROVIDED ON PROGRESSIVE ESCPS.
10. STOCKPILE AREAS ARE TO BE ESTABLISHED IN LOCATIONS AS SHOWN OR AS SPECIFIED BY THE SITE MANAGER AND IN ACCORDANCE WITH THE ' SOIL STRIPPING AND STOCKPILING' NOTES BELOW.
11. THE EXISTING DAMS ARE TO BE DEWATERED IN ACCORDANCE WITH THE PROJECT APPROVED DEWATERING PROCEDURE AND IN ACCORDANCE WITH THE 'DIRTY WATER TREATMENT AND DISCHARGE REQUIREMENTS' NOTES AND OTHER RECOMMENDATIONS ON THIS PLAN. NOTE THAT IN SOME INSTANCES (WHERE DIVERSION DRAINS OR SEDIMENT BASINS ARE LOCATED IN THE POSITION OF EXISTING DAMS, DEWATERING OF THE DAMS WILL NEED TO OCCUR PRIOR TO THE CONSTRUCTION OF THESE DEVICES - REFER TO ESCP03&04 FOR DETAILS.
12. ONCE ALL OF THE ABOVE MEASURES ARE COMPLETE AND STABLE, CONSTRUCTION WORKS CAN COMMENCE IN ACCORDANCE WITH THE ENGINEERING PLANS.

THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE UNDERTAKEN AS REQUIRED DURING ALL STAGES OF THE WORKS:

13. TOPSOIL STRIPPING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
14. SLOPE LENGTHS ACROSS DISTURBED LANDS ARE TO BE MAINTAINED AT MAXIMUM 40M INTERVALS DURING ALL RAINFALL EVENTS. TO ACHIEVE THIS, DIVERSION BUNDS/DRAINS, LOW FLOW EARTH BANKS (STANDARD DRAWING SD 5-5) OR SANDBAGS/EQUIVALENT SHOULD BE INSTALLED PRIOR TO FORECAST RAINFALL AND SITE CLOSURE OF MORE THAN 2 DAYS. (NOTE THAT 40M INTERVALS ARE LESS THAN THE DESIGN SLOPE LENGTH OF 80M TO PROVIDE ENHANCED EROSION CONTROL AND ASSIST WITH REDUCING SEDIMENT MOVEMENT - ALSO REFER TO THE 'RAINFALL PREPARATION PROCEDURE' NOTES).
15. BROADCAST GYPSUM SPREADING IS TO BE UNDERTAKEN ACROSS ALL EXPOSED SOILS PRIOR TO FORECAST RAINFALL ABOVE THE 85TH PERCENTILE DESIGN RAINFALL EVENT AND SITE CLOSURE OF MORE THAN 2 DAYS IN ACCORDANCE WITH THE 'RAINFALL PREPARATION PROCEDURE'.
16. SEDIMENT BASIN AND SEDIMENT TRAP INLET POINTS WILL BE PRE-LOADED WITH GYPSUM (OR EQUIVALENT) PRIOR TO FORECAST RAINFALL ABOVE THE 85TH PERCENTILE DESIGN RAINFALL EVENT AND SITE CLOSURE OF MORE THAN 2 DAYS IN ACCORDANCE WITH THE 'RAINFALL PREPARATION PROCEDURE'.

(CONTINUED)

17. MAJOR DIRTY WATER DIVERSION DRAINS WILL HAVE GYPSUM, BIOPOLYMER GEL SOCKS (OR EQUIVALENT) PLACED WITHIN THEM AT 80M INTERVALS. THESE DEVICES WILL BE MAINTAINED OR REPLACED AS REQUIRED TO ENSURE THEY ARE IN PLACE PRIOR TO FORECAST RAINFALL ABOVE THE 85TH PERCENTILE DESIGN RAINFALL EVENT AND SITE CLOSURE OF MORE THAN 2 DAYS IN ACCORDANCE WITH THE 'RAINFALL PREPARATION PROCEDURE'.
18. DUST SUPPRESSION TO BE CARRIED OUT WHEN REQUIRED (REFER TO THE 'DUST SUPPRESSION' NOTES).
19. TEMPORARY DIRTY WATER CONTROL STRUCTURES (E.G. BATTER CHUTES, CHECK DAMS AND WINDROWS) ARE TO BE IMPLEMENTED (REFER TO THE 'RAINFALL PREPARATION PROCEDURE' NOTES).
20. TEMPORARY STABILISATION IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE 'STABILISATION' NOTES AND THE 'RAINFALL PREPARATION PROCEDURE' AND THE INSTRUCTIONS ON THE PLAN/S.
21. TREATMENT OF DIRTY WATER IS TO BE CARRIED OUT AS NECESSARY IN ACCORDANCE WITH THE 'DIRTY WATER TREATMENT AND DISCHARGE REQUIREMENTS' NOTES.
22. MEASURES TO ASSIST WITH SALINITY MANAGEMENT ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE 'SALINITY CONSIDERATIONS' NOTES AND THE PROJECT'S SALINITY MANAGEMENT PLAN.
23. MONITORING, MAINTENANCE AND INSPECTIONS ARE TO BE CARRIED OUT REGULARLY AS REQUIRED, IN ACCORDANCE WITH THE 'SITE INSPECTION AND MONITORING' NOTES.
24. UNDERTAKE PROGRESSIVE STABILISATION OF LANDS AS FINAL EARTHWORKS ARE COMPLETE IN EACH AREA (RATHER THAN WAITING UNTIL THE COMPLETION OF WORKS). FINAL STABILISATION IS TO BE COMPLETED IN ACCORDANCE WITH THE 'STABILISATION' NOTES.

DESIGN ASSUMPTIONS

E THE IFD: 2YEAR, 6HOUR STORM INTENSITY = 9.13MM/HR (BOM).

E THE SITE IS LOCATED ON THE BLACKTOWN SOIL LANDSCAPE (ACROSS THE MAJORITY OF THE SITE), THE LUDDENHAM SOIL LANDSCAPE (A SMALL PORTION OF THE SITE AT THE HIGHEST TOP CREST) AND SOUTH CREEK SOIL LANDSCAPE (A VERY SMALL PORTION OF THE SITE AT THE LOWEST PART OF THE SITE WITHIN THE DRAINAGE AREAS THAT CROSS MAMRE ROAD).

E POTENTIAL LIMITATIONS TO THE SOILS/LANDSCAPES INCLUDE LOCALISED SEASONAL WATERLOGGING, LOCALISED WATER EROSION HAZARD, MODERATELY REACTIVE HIGHLY PLASTIC SUBSOILS, MODERATE SALINITY POTENTIAL, PATENTIALLY SODIC AND HIGHLY DISPERSIVE SUBSOILS, LOCALISED SURFACE MOVEMENT POTENTIAL, LOCALISED IMPERMEABLE AND LOCALISED HIGH WATER TABLES.

E THE K-FACTOR IS BASED ON THE WORST CASE VALUE FOR THE BLACKTOWN AND LUDDENHAM SOIL LANDSCAPES OF 0.38. THIS IS THEN INCREASED BY 20% TO ACCOUNT FOR POTENTIAL DISPERSIBLE SOILS. THIS GIVES AN K-FACTOR OF 0.0456.

E 5-DAY, 85TH %ILE RAINFALL DEPTH = 34MM - BASED ON AN AVERAGE OF THE RAINFALL DEPTHS FOR BLACKTOWN, LIVERPOOL, PENRITH AND WALLACIA PROVIDED WITHIN THE BLUE BOOK (KEMPS CREEK IS APPROXIMATELY IN THE MIDDLE OF THESE LOCATIONS).

E VOLUMETRIC RUNOFF COEFFICIENT (CV) = 0.64 (ASSUMING HYDROLOGIC GROUP D RUNOFF COEFFICIENT - LOW INFILTRATION, HIGH RUNOFF).

E RUNOFF COEFFICIENT (C10) = 0.9.

E GROUNDWATER IS NOT EXPECTED TO BE ENCOUNTERED IN THE EARTHWORKS ASSOCIATED WITH THE PROJECT AS NOTED WITHIN THE 'GROUNDWATER MANAGEMENT PLAN' (ARCADIS, 2020). REFER TO THIS 'GROUNDWATER MANAGEMENT PLAN' (ARCADIS, 2020) FOR ALL GROUNDWATER CONSIDERATIONS AND REQUIREMENTS.

SOIL STRIPPING AND STOCKPILING

IDEALLY, STRIP TOPSOIL WHEN IT IS MOIST, NOT TOO WET OR TOO DRY.

TAKE CARE WHEN STRIPPING TOPSOIL NOT TO STRIP SUBSOIL WITH THE TOPSOIL PROFILE. TOPSOIL AND SUBSEILS SHOULD BE MANAGED SEPARATELY.

WHEREVER POSSIBLE, STOCKPILES ARE TO BE ESTABLISHED AND MAINTAINED IN ACCORDANCE WITH STANDARD DRAWING SD 4-1 (LANDCOM, 2004).

AS MUCH AS IS FEASIBLE, MULCHED VEGETATION, TOPSOIL AND SUBSOIL (IF APPLICABLE) ARE TO BE STOCKPILED SEPARATELY.

SEDIMENT FENCING IS TO BE INSTALLED AROUND THE LOWER EDGE OF STOCKPILES AS PER STANDARD DRAWING SD 4-1, UNLESS THE STOCKPILE IS IMMEDIATELY ADJACENT TO A SUITABLE ALTERNATIVE CONTROL SUCH AS A SEDIMENT BASIN, A DIVERSION DRAIN/BUND IS TO BE INSTALLED ON THE HIGH SIDE OF STOCKPILES IF RUN-ON FROM UPSLOPE LANDS COULD IMPACT ON THE STOCKPILE.

STACKPILES ARE NOT TO BE POSITIONED WITHIN 5M OF POSSIBLE CONCENTRATED WATER FLOW (INCLUDES ROAD GUTTERS AND TABLE DRAINS).

STOCKPILES ARE TO BE SITED AT LEAST 50M FROM ANY WATERCOURSE, NATURAL DRAINAGE LINE OR CREEK AND AT LEAST 2M FROM ANY TREES TO BE RETAINED.

STOCKPILES WILL NOT BE LACATED ON FLOOD PRONE LANDS BELOW THE 2YEAR FLOOD LEVEL.

STOCKPILES WILL BE POSITIONED WITHIN THE APPROVED PROJECT CONSTRUCTION BOUNDARY AND AWAY FROM PROTECTED AREAS (E.G. NATIVE VEGETATION).

INACTIVE STOCKPILE FACES ARE TO BE PROVIDED WITH AT LEAST 60% COVER (I.E. RUSLE C-FACTOR OF 0.1) WITHIN 10 DAYS OF FORMATION. STABILISATION OF STOCKPILES CAN BE ACHIEVED BY SEEDING AND SPRAYING WITH A SOIL STABILISER (E.G. VITAL P47), COVERING WITH GEOTEXTILE OR MATTING OR EQUIVALENT (NOTE SEEDING IS NOT REQUIRED FOR STOCKPILES IF THEY WILL BE IN PLACE FOR LESS THAN 3 MONTHS OR IF THEY HAVE AN EXISTING SEEDBANK), STOCKPILES OF TOPSOIL OR MULCH SHOULD BE CONSTRUCTED TO NO MORE THAN 2 METERS IN HEIGHT WHEREVER POSSIBLE (NOTE THIS ANLY APPLIES TO TOPSOIL AND MULCH).

STOCKPILES SHOULD BE FORMED TO BE NO STEEPER THAN 2:1 (H:V) WHEREVER POSSIBLE.

DUST SUPPRESSION

DUST SUPPRESSION IS TO BE BE CARRIED OUT WHENEVER NECESSARY TO MINIMISE SEDIMENT BECOMING AIR BORNE DUE TO WIND EROSION.

AN APPROPRIATE WATER SOURCE FOR DUST SUPPRESSION AND/OR DUST SUPPRESSANT MANAGEMENT SYSTEM MUST BE IDENTIFIED PRIOR TO STARTING CONSTRUCTION WORKS.

ENSURE DUST SUPPRESSION IS CARRIED OUT IN A MANNER TO AVEID WATER RUNOFF, EROSION OR PONDING ON SURFACES (I.E. APPLY IN A GENTLE MANNER AT APPROPRIATE RATES AND MONITOR REGULARLY).

TEMPORARY STABILISERS (E.G. VITAL BON-MATT P47), GEOTEXTILE, JUTE MATTING OR EQUIVALENT CAN BE USED IN NON-TRAFFICKED AREAS TO ASSIST WITH DUST CONTROL.

GENERAL REQUIREMENTS

STABILISATION

- UNDERTAKE PROGRESSIVE STABILISATION OF DISTURBED GROUND SURFACES AS THEY ARE COMPLETED RATHER THAN AT THE END OF THE WORKS PROGRAM (REFER TO TABLES 1AND 2).
- FINAL STABILISATION IS TO ACHIEVE THE C-FACTORS (GROUND COVER) DETAILED IN TABLES 1AND 2.
- FINAL REHABILITATION IS TO BE IN ACCORDANCE WITH THE LANDSCAPING/REHABILITATION PLANS.
- AREAS TO BE REVEGETATED ARE TO BE TOPSOILED FIRST. TOPSOIL IS TO BE SPREAD EVENLY TO AT LEAST 75MM. REFER TO STANDARD DRAWING (SD 4-2) FOR INSTRUCTIONS REGARDING TOPSOIL REPLACEMENT.
- TOPSOIL IS TO BE TESTED PRIOR TO REVEGETATION TO CONFIRM TREATMENT (AMELIORATION/FERTILIZATION)
- REQUIREMENTS INCLUDING TESTING FOR DISPERSION, PH, TRACE NUTRIENTS, EC AND CEC.
- APPROPRIATE SEEDBED PREPARATION SHOULD BE CARRIED OUT WHEN REVEGETATING LANDS (SEE STANDARD DRAWING (SD 7-1).
- AS MUCH AS POSSIBLE, AVOID HANDLING TOPSOILS WHEN THEY ARE TOO WET OR TOO DRY. THIS HELPS PRESERVE SOIL STRUCTURE.
- AVOID BLENDING FRESH MULCH WITH TOPSOIL, AS THIS LEADS TO DE-NITRIFICATION.
- TO HELP PRESERVE SOIL STRUCTURE, AVOID EXCESSIVE COMPACTION OF TOPSOILS.
- GYPSUM SHOULD BE APPLIED TO SUBSOILS (AS CLAY BREAKER) AT AROUND 0.5kg/m² FOR GENERAL SURFACES AND BATTERS. RATES TO BE CONFIRMED PRIOR TO REVEGETATION WITH SOIL TESTING.
- ALL FLOW AREA SUBSOILS (DRAINAGE LINES, WATERWAYS, DIVERSION DRAINS, CHANNELS, BASINS) SHOULD BE GYSPUM
- TREATED AT A RATE OF 1.5kg/m².
- TOPSOILS SHOULD BE AMELIORATED WITH LIME TO ADJUST PH IF FIELD TESTING SHOWS pH IS BELOW 6.
- TOPSOILS WOULD MOST LIKELY BENEFIT FROM AN APPLICATION OF NPK FERTILIZER PLUS TRACE ELEMENTS (S, CA AND
- MO). SOIL TESTING PRIOR TO RE-SPREADING CAN CONFIRM THE APPROPRIATE RATE.
- PERMANENT DRAINS ARE TO BE STABILISED IN ACCORDANCE WITH ENGINEERING DESIGN BUT MUST ACHIEVE THE C-FACTORS (GROUND COVER) DETAILED IN TABLE 1. SOIL TESTING OF SUBSOILS AND TOPSOILS IS TO BE UNDERTAKING TO POTENTIAL SOIL TREATMENT/STABILISATION REQUIREMENTS.
- TEMPORARY DIVERSION DRAINS/BUNDS ARE TO BE STABILISED TO ACHIEVE THE C-FACTORS AS DETAILED IN TABLES 1 AND 2, USING SEEDING + VITAL P47 + JUTE MESH/MATTING OR ALTERNATIVELY GEOTEXTILE FABRIC, ROCK OR TRM. SUBSOILS ARE TO BE TREATED FIRST BY LIGHTLY RIPPING GYPSUM INTO THE SURFACE AT A RATE OF APPROX. 1.5kg/m². REFER TO THE PLANS FOR SPECIFIC DETAILS. ALSO REFER TO STANDARD DRAWINGS (SD 5-6 AND SD 5-7).
- REFER TO THE 'SOIL STRIPPING AND STOCKPILING' NOTES FOR STABILISATION REQUIREMENTS ON STOCKPILES. ALSO REFER TO TABLES 1AND 2 AND STANDARD DRAWING (SD 4-1).
- SEDIMENT BASIN INLETS/OUTLETS ARE TO BE STABILISED IN ACCORDANCE WITH PERMANENT ENGINEERING DESIGN (WHERE APPLICABLE) OR WITH GEOTEXTILE UNDERLAY AND ROCK IN ACCORDANCE WITH RECOMMENDATIONS FOR "HIGH FLOW' AREAS ON TABLE 1 AND AS DETAILED ON THE PLAN.
- HIGHLY TRAFFICKED AREAS SUCH AS LAYDOWN/STORAGE AREAS, HAUL ROADS/ACCESS TRACKS AND SITE COMPOUNDS WILL BE FORMED IN ACCORDANCE WITH ENGINEERING SPECIFICATIONS AND STABILISED WHERE NECESSARY AND AS MUCH AS PRACTICABLE TO MINIMISE EROSION AND PROVIDE A TRAFFICABLE SURFACE. STABILISATION OF THESE AREAS WILL BE ACHIEVED WITH SUITABLE TRAFFICABLE MEASURES (E.G. WITH HEAVY BOUND DGB (CEMENT STABILISED), AGGREGATE, CRUSHED ROCK, ROAD BASE OR A HEAVY DUTY TRAFFICABLE SOIL STABILISER) AND RE-GRADING/RE-SURFACING AS NECESSARY.
- AS SURFACES ARE STABILISED (AT LEAST 90% OF ANY FINISHED AREA HAS AT LEAST 70% GROUND COVER) AND PERMANENT DRAINAGE MEASURES ARE INSTALLED, TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AND WATER MANAGEMENT STRUCTURES CAN BE REMOVED (E.G. DIVERSION DRAINS).
- TEMPORARY STABILISATION OF EXPOSED SURFACES ON HIGH RISK AREAS (I.E. STEEP SLOPES (>5%), BATTERS, SURFACES NOT DRAINING TO SEDIMENT
- SURFACES NOT DRAINING TO SEDIMENT BASINS AND WORKS (INNEAR WATERWAYS) WILL BE UNDERTAKEN PRIOR TO RAINFALL IN ACCORDANCE WITH THE 'RAINFALL PREPARATION PROCEDURE' NOTES AND THE INSTRUCTIONS ON THE PLAN.
- ALL EXPOSED LANDS WHERE WORKS ARE NOT ACTIVELY OCCURRING (FOR 20 DAYS OR MORE) ARE TO BE TEMPORARILY STABILISED WITH A TEMPORARY GROUND COVER (I.E. A SOIL BINDER (E.G. VITAL STONEWALL), MATTING, GEOFABRIC OR EQUIVALENT).
- WHEREVER POSSIBLE, RE-USE CLEARED/MULCHED VEGETATION FOR EITHER TEMPORARY OR PERMANENT STABILISATION OF DISTURBED AREAS.

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

100mm on Original

Client: ESR

Scales	N.T.S.
Grid	MGA2020
Height Datum	AHD
Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: GENERAL NOTES SHEET 2

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10103

Issue: B

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GENERAL REQUIREMENTS

SEDIMENT BASIN/S

SEDIMENT BASIN LOCATION/S AND SIZING ARE SHOWN ON THE PLAN.

WITHIN 5 CALENDAR DAYS OF THE CONCLUSION OF ANY RAINFALL CAUSING RUNOFF, THE SEDIMENT BASINS ARE TO BE EMPTY, READY FOR THE NEXT RAINFALL EVENT. THIS MIGHT INCLUDE TESTING WATER, TREATING (E.G. FLOCCULATING), DE-WATERING AND DE-SILTING BASINS. SEE THE 'DIRTY WATER AND DISCHARGE REQUIREMENTS' NOTES BELOW REGARDING DE-WATERING. IF RAINFALL (CAUSING RUNOFF) OCCURS AGAIN WITHIN 5 DAYS OF THE PREVIOUS RAIN EVENT, THE 5-DAY REQUIREMENT RE-SEFS.

DIRTY WATER ACCUMULATING IN SEDIMENT BASINS CAN BE USED ONSITE FOR DUST SUPPRESSION OR CONSTRUCTION PURPOSES. IF THIS OCCURS IT DOES NOT NEED TO BE TREATED FIRST. NOTE THAT THE 5-DAY MAINTENANCE REQUIREMENT FOR BASINS TO BE EMPTIED STILL APPLIES.

THE DESIGN RAINFALL EVENT FOR THE SEDIMENT BASINS IS 34MM (85TH %'ILE). IT IS ASSUMED THAT THE BASINS COULD OVERFLOW IN AN EVENT OF MORE THAN 34MM OVER ANY 5-DAY PERIOD.

THE SEDIMENT BASINS ARE TO INCLUDE OUTLETS (WEIR OVERFLOW/SPILLWAY) SIZED TO HAVE A CAPACITY TO PASS THE 100 YEAR PEAK FLOW. OUTLETS ARE TO BE ONTO STABLE LANDS OR INFO A STABLE WATERWAY.

WATER QUALITY MUST BE CHECKED PRIOR TO ANY CONTROLLED RELEASE FROM SEDIMENT BASINS. REFER TO THE 'DIRTY WATER AND DISCHARGE REQUIREMENTS' NOTES BELOW.

ADDITIONAL VOLUME CAN BE PROVIDED IN SEDIMENT BASINS FOR STORING WATER IF SO DESIRED (I.E. THEY CAN BE MADE BIGGER THAN IS REQUIRED BY THIS ESCP). MARKERS WILL NEED TO BE INSTALLED WITHIN BASINS TO INDICATE THE VARIOUS VOLUMES.

SEDIMENT BASIN FLOORS AND WALLS ARE TO BE WELL COMPACTED TO MINIMISE INFILTRATION TO ENGINEERING DETAIL.

SEDIMENT BASIN WALLS, INLETS AND SPILLWAY OUTLETS ARE TO BE GYPSUM TREATED AT A RATE OF 1.5kg/m? TO PROMOTE SEDIMENT SETTLING AND MINIMISE DISPERSION.

A MARKER PEG [OR SIMILAR] IS TO BE INCLUDED IN EVERY BASIN SHOWING THE LEVEL OF THE SEDIMENT STORAGE VOLUME,

SEDIMENT BASINS ARE TO BE DE-SILTED WHENEVER SEDIMENT ACCUMULATES TO MORE THAN 60% OF THE SEDIMENT STORAGE VOLUME. SEDIMENT REMOVED FROM THE BASIN CAN BE TAKEN TO A STOCKPILE AREA, BURIED ONSITE OR USED AS GENERAL FILL. ENSURE SEDIMENT REMOVED FROM BASINS IS NOT PLACED WHERE IT COULD WASH, BLOW OR FALL OFFSITE.

SEDIMENT BASINS ARE TO ACHIEVE AT LEAST 3:1 LENGTH:WIDTH FROM THEIR INLET(S) TO THEIR SPILLWAY. IF THIS IS NOT ACHIEVED THROUGH THE NATURAL SHAPE OF THE BASIN, A BAFFLE IS TO BE INCLUDED.

IF SO DESIRED, DIRTY WATER ACCUMULATING IN EXCAVATIONS/CUT SECTIONS CAN BE PUMPED OR CARTED TO A
SEDIMENT BASIN PROVIDING ADEQUATE CAPACITY IS AVAILABLE AND THE BASIN WON'T OVERFLOW AS A RESULT. NOTE
THAT THE 5-DAY MAINTENANCE REQUIREMENT FOR BASINS TO BE EMPTIED STILL APPLIES (SEE BELOW).

DRAIN/BUND STABILISATION AND LINING

SOIL PREPERATION PRIOR TO LINING DRAINS:

- GYPSUM SHALLOW/LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF 500g/m² (eg: RIP IN USING GRADER OR EXCAVATOR BUCKET TINES (TEETH).
- PLACE TOPSOIL OVER ENTIRE DRAIN SURFACE TO A MINIMUM DEPTH OF 75mm. (SOIL PREPARATION ALSO APPLIES TO TEMPORARY DRAINS IN PLACE FOR <6 MONTHS)

DRAIN LINING:

- SEEDING + VITAL P47 (OR VITAL STONEWALL) + JUTE MATTING:
- (VITAL P47/ STONEWALL TO BE APLLIED AT A MAXIMUM DILUTION OF 1:10 (VITAL:WATER)
- SEEDING TO BE A COMBINATION OF A COVER CROP (eg: RYE GRASS FOR WINTER MONTHS / JAPANESE MILLET FOR SUMMER MONTHS) AND A SUITABLE PERRENNIAL (LONG TERM) LOCAL NATIVE GRASS MIX.

WATERING:

- REGULAR WATERING REQUIRED WHERE RAINFALL IS INSUFFICIENT.
- ENSURE WATER IS APPLIED GENTLY (NOT WITH A PRESSURE SPRAY).
- ENSURE OVERWATERING DOES NOT OCCUR AND IS MINIMISED TO ONLY WHAT IS NECESSARY FOR PLANTS TO THRIVE.

LINING OF TEMPORARY DRAINS (IN PLACE FOR <6 MONTHS:

- LINE WITH GEOTEXTILE (BIDIM A24 MIN. EQUIVALENT).

GENERAL REQUIREMENTS

DIRTY WATER TREATMENT AND DISCHARGE REQUIREMENTS

THE DEVELOPMENT MUST COMPLY WITH SECTION 120 OF THE POEQ ACT WHICH PROHIBITS THE POLLUTION OF WATERS.
EXCEPT AS EXPRESSLY PROVIDED FOR IN AN EPL. THE FOLLOWING REQUIREMENTS ARE TO BE ADHERED TO TO ENSURE THIS:

WATER ACCUMULATING IN SEDIMENT BASINS, TRAPS, EXCAVATIONS OR IN ANY OTHER LOW POINTS ONSITE CAN EITHER BE:

- RE-USED FOR DUST SUPPRESSION OR CONSTRUCTION PURPOSES; OR
- TREATED (IF REQUIRED) AND TESTED IN SITY, THEN RELEASED OFF SITE ONCE IT MEETS THE REQUIRED
  WATER QUALITY DISCHARGE CRITERIA [SEE BELOW); OR
- PUMPED INTO A TANK, TRUCK OR OTHER HOLDING AREA FOR LATER TREATMENT; OR
- SPREAD OUT AND INFILTRATED ONTO WELL VEGETATED LANDS WITHIN THE SITE BOUNDARY AT LEAST 50m AWAY FROM ANY WATERWAY, SWALE OR DRAINAGE LINE. ENSURE WATER IS APPLIED SLOWLY AND IN A MANNER TO AVOID CONCENTRATED SURFACE RUNOFF AND/OR EROSION.
- ANY ACTIVE DISCHARGE OF WATER FROM THE PROJECT (I.E. WHERE WATER IS MOVED OFFSITE VIA DIRECT ACTION SUCH AS PUMPING RATHER THAN FLOWING OFF THE PROJECT AS A RESULT OF HEAVY RAINFALL) IS TO ACHIEVE:
- [I 50Mg/L OR LESS TSS {TOTAL SUSPENDED SEDIMENT}; AND
- PH 6.5 TO 8.5; AND
- <10MG/L OIL AND GREASE AND NO VISIBLE TRACE.
- ADEQUATE WATER QUALITY CAN BE ACHIEVED BY USING GYPSUM AT A RATE OF APPROXIMATELY 30 KG/100 M3 OF
  STORMWATER. ALTERNATIVE FLOCCULATING AGENTS CAN ONLY BE
  USED IF THEY DO NOT CAUSE ENVIRONMENTAL HARM
  WHEN DISCHARGED. REFER TO MANUFACTURERS GUIDELINES FOR
  DOSAGE DETAILS.
- SPREAD THE TREATMENT AGENT EVENLY OVER THE ENTIRE POND SURFACE FOR PROPER TREATMENT OF WATER.
- THESE DE-WATERING REQUIREMENTS APPLY TO DIRTY WATER ACCUMULATING IN ANY SORT OF EXCAVATION, SUMP, OR OTHER PONDED WATER BODY ON THE PROJECT.
- IF THE WATER IS GOING TO BE USED WITHIN THE CONSTRUCTION SITE FOR DUST-SUPPRESSION OR CONSTRUCTION
- PURPOSES AND WILL DRAIN BACK INTO THE SEDIMENT CAPTURE SYSTEM IT DOES NOT REQUIRE TREATMENT.
- DEWATERING OF THE EXISTING DAMS IS TO BE IN ACCORDANCE WITH THE PROJECT APPROVED DAM DECOMMISSIONING
  STRATEGY (20220310__DAM_ SILT_ STRATEGY_ AIEDIBLE BY MIRVAC] AND IN ACCORDANCE WITH THE ABOVE
  REQUIREMENTS AND OTHER RECOMMENDATIONS ON THIS PLAN.

RAINFALL PREPARATION PROCEDURE

- THE WEATHER FORECAST IS TO BE MONITORED REGULARLY {AT LEAST DAILY AND HOURLY WHEN RAINFALL IS IMMINENT}
  BY THE SITE ENVIRONMENTAL MANAGER {OR THEIR REPRESENTATIVE).
- PRIOR TO FORECAST RAINFALL {> 70% CHANCE OF 5MM OR MORE OVER 24 HOURS} AND SITE CLOSURE OF MORE THAN 2
  DAYS, THE FOLLOWING WILL OCCUR:
- THE SITE ENVIRONMENT MANAGER {OR THEIR REPRESENTATIVE} IS TO INSPECT THE CONDITION OF ALL
  EROSION AND SEDIMENT CONTROLS AND ACTION ANY URGENT REPAIR, MAINTENANCE OR IMPROVEMENT THEY ARE TO KEEP A RECORD ALL FINDINGS {INCLUDING DETAILS OF ACTIONS AND THEIR CLOSE
  OUTS).
- SLOPE BREAKS/CONTOUR BERMS WILL BE PUSHED UP OR CUT IN ACROSS LARGE, EXPOSED AREAS FO SLOW DOWN FLOWS AND MINIMISE EROSION. SLOPE LENGTHS ARE TO BE RESTRICTED TO 40M INTERVALS ACROSS ALL EXPOSED SURFACES PRIOR TO AND DURING RAINFALL. DIVERSION BUNDS/DRAINS, LOW FLOW EARTH
  BANKS (STANDARD DRAWING SD 5-5) OR SANDBAGS/EQUIVALENT SHOULD BE INSTALLED PRIOR TO RAINFALL
  EVENT TO ACHIEVE THIS WHERE REQUIRED. NOTE THAT SLOPE B BREAKS/CONTOUR BERMS ARE NOT REQUIRED
  TO BE IN PLACE DURING ACTIVE CONSTRUCTION WORKS WHEN RAINFALL IS NOT FORECAST/OCCURRING.
  LOCATIONS OF SLOPE BREAKS FOR THE INITIAL EARTHWORKS ARE SHOWN ON ESCP03&04, HOWEVER, AS
  WORKS PROGRESS LOCATIONS FOR SLOPES BREAKS WILL CHANGE AND THESE ARE TO BE UPDATED ON
  PROGRESSIVE ESCPS.
- TEMPORARY DIVERSIONS AROUND CULVERT WORKS ARE TO BE INSTALLED IN THE LOCATIONS SHOWN ON THE
  PLANS TO TAKE UPSLOPE CLEAN WATER FLOWS AROUND/THROUGH THE WORKS - REFER TO THE PLANS AND
  TO DETAIL 1 FOR SPECIFIC INSTRUCTIONS.
- ALL EXPOSED SURFACES OF HIGH RISK AREAS (I.E. STEEP SLOPES (5%), BATTERS, SURFACES NOT
  DRAINING TO SEDIMENT BASINS AND WORKS IN/NEAR WATERWAYS AND FLOW AREAS} WILL BE STABILISED
  WITH TEMPORARY GROUND COVERS LIE. VITAL P47/STONEWALL, GEOTEXTILE OR BLACK PLASTIC {SECURELY PINNEDOR EQUIVALENT).
- CHECK DAMS ARE TO BE PROVIDED WITHIN ALL DRAINAGE DEVICES INCLUDING ROADSIDE TABLE DRAINS AT 40m INTERVALS.
- PRIOR TO FORECAST HIGH RAINFALL {> 70% CHANCE OF 10mm OR MORE OVER 24 HOURS) AND SITE CLOSURE OF MORE
  THAN 2 DAYS, THE FOLLOWING WILL OCCUR IN ADDITION TO THE BELOW:
- WINDROWS/BUNDS ARE TO BE PROVIDED ALONG THE TOP EDGE OF FILL BATTERS TO PROTECT FILL BATTERS.
  LOCATIONS AND DETAILS ARE TO BE CONFIRMED ONSITE AS WORKS PROGRESS AND DOCUMENTED ON SITE
  SPECIFIC PROGRESSIVE ESCPS. THEY ARE NOT REQUIRED FOR INITIAL STRIPPING WORKS. THEY ARE TO BE FORMED AS COMPACTED EARTH BERMS (MIN. 600MM HIGH) ALONG THE
  TOP EDGE OF FILL PLATFORMS PRIOR TO RAINFALL AND SITE CLOSURE {2 DAYS). THEY ARE NOT REQUIRED DURING DRY WEATHER. ADDITIONAL WINDROWS AND GEOFABRIC LINED BATTER CHUTES AT REGULAR INTERVALS MAY NEED TO BE PROVIDED AS THE WORKS PROGRESS - LOCATIONS AND DETAILS ARE TO BE PROVIDED ON SITE SPECIFIC PROGRESSIVE ESCPS. REFER TO PHOTO 6 ON ESCP006 FOR A BATTER CHUTE EXAMPLE.
- PRIOR TO FORECAST RAINFALL {~70% CHANCE OF 34MM OR MORE OVER A 5 DAY PERIOD) AND SITE CLOSURE OF MORE
  THAN 2 DAYS, THE FOLLOWING WILL OCCUR IN ADDITION TO THE ABOVE:
- GYPSUM WILL BE SPREAD/DUSTED EVENLY OVER ALL EXPOSED SOIL SURFACES.
- SEDIMENT BASIN AND SEDIMENT TRAP INLET POINTS WILL BE PRELOADED WITH GYPSUM.
- MAJOR DIRTY WATER DIVERSION DRAINS WILL HAVE GYPSUM, BIOPOLYMER GEL SOCKS {OR EQUIVALENT} PLACED WITHIN THEM OR REPLENISHED AT 80M INTERVALS {IF NOT ALREADY IN PLACE}.

GENERAL REQUIREMENTS

SALINITY CONSIDERATIONS

TO MINIMISE THE RISK OF SALINITY OCCURRING DURING THE CONSTRUCTION PHASE OF WORKS THE FOLLOWING MEASURES ARE TO BE IMPLEMENTED:

- TOPSOIL IS TO BE TESTED PRIOR TO REVEGETATION TO CONFIRM TREATMENT REQUIREMENTS.
- ENSURE TOPSOIL IS SPREAD OVER AREAS TO BE REVEGETATED TO AT LEAST 75MM.
- WATERING OF NEWLY REVEGETATED AREAS IS FO BE MINIMISED FO ONLY WHAT IS NECESSARY FOR PLANTS TO THRIVE.
  AVOID OVER-WATERING WHICH COULD EXACERBATE CATCHMENT SALINITY.
- THE FLOOR AND WALLS OF EACH SEDIMENT BASIN IS TO BE WELL COMPACTED TO MINIMISE INFILTRATION.
- SWALE/DIVERSION DRAINS ARE TO BE GYPSUM-DUSTED AND LINED WITH MATTING AS NOTED TO PROMOTE FLOW AND
  REDUCE PONDING AND EROSION.
- AVOID PONDING WATER ACROSS THE SITE IN AREAS WHERE SHALE OR CLAY FILL MATERIALS HAVE BEEN PLACED.
- REHABILITATION AND REVEGETATION OF COMPLETED EARTHWORKS IS TO BE UNDERTAKEN PROGRESSIVELY AS EACH
  AREA IS FINISHED.

THE ABOVE LIST OUTLINES GENERAL STRATEGIES FOR MINIMISING THE POTENTIAL SALINITY RISK DURING CONSTRUCTION.
REFER TO THE PROJECT'S SALINITY MANAGEMENT PLAN {PSM3739-031L BY OTHER} FOR DETAILED RECOMMENDATIONS.

SITE INSPECTION, MONITORING AND MAINTENANCE

- REGULAR SITE INSPECTIONS ARE TO BE CONDUCTED BY THE SITE ENVIRONMENT MANAGER (OR THEIR REPRESENTATIVE):
- AT LEAST WEEKLY DURING NORMAL CONSTRUCTION HOURS; AND
- PRIOR TO FORECAST RAINFALL (SEE ABOVE); AND
- DAILY DURING RAIN EVENTS {IF SAFE TO DO SO); AND
- WITHIN 24 HOURS OF THE CESSATION OF A RAIN EVENT THAT CAUSES RUNOFF.
- MINIMUM MONTHLY AUDITS/SITE INSPECTIONS ARE ALSO TO BE CONDUCTED BY A CPESC TO ENSURE ALL OF THE
  REQUIRED OUTCOMES AND WATER QUALITY TARGETS ARE BEING MET AND WHERE NECESSARY PROVIDE ADVICE AND
  MODIFICATIONS TO THIS PLAN TO ENSURE ONGOING COMPLIANCE.
- RECORDS OF THE SITE INSPECTIONS/AUDITS ARE TO BE KEPT FOR THE DURATION OF CONSTRUCTION AND FOR A
  MINIMUM OF 12 MONTHS FOLLOWING THE COMPLETION OF CONSTRUCTION WORKS.
- PRIOR TO FORECAST RAINFALL OF 5MM OR MORE OVER 24 HOURS, THE SITE ENVIRONMENT MANAGER (OR THEIR REPRESENTATIVE IS TO INSPECT THE CONDITION OF ALL EROSION AND SEDIMENT CONTROLS AND ACTION ANY URGENT REPAIR, MAINTENANCE OR IMPROVEMENT WORKS. THEY ARE TO KEEP A RECORD ALL FINDINGS {INCLUDING DETAILS OF ACTIONS AND THEIR CLOSE OUTS).
- PRIOR TO SITE SHUTDOWN OF MORE THAN 2 DAYS, SLOPE BREAKS/CONTOUR BERMS WILL BE PUSHED UP OR CUT IN ACROSS LARGE, EXPOSED AREAS TO SLOW DOWN FLOWS AND MINIMISE EROSION. DIVERSION BUNDS/DRAINS, LOW FLOW
  EARTH BANKS {STANDARD DRAWING SD 5-5) OR SANDBAGS/EQUIVALENT SHOULD BE INSTALLED TO ACHIEVE THIS
  WHERE REQUIRED.
- ADDITIONAL EROSION AND SEDIMENT CONTROLS WILL BE INSTALLED AND EXISTING CONTROLS
  REPAIRED/UPGRADED/MAINTAINED AS NECESSARY TO ENSURE SATISFACTORY OUTCOMES IN KEEPING WITH THE
  PROJECT CONDITIONS AND BEST-PRACTICE BLUE BOOK GUIDELINES.
- SITE SPECIFIC PROGRESSIVE ESCPS WILL BE PREPARED AND/OR UPDATED AS REQUIRED.
- SEDIMENT OR ROCKS TRACKED FROM THE SITE WILL BE REMOVED FROM PUBLIC ROADS AS SOON AS POSSIBLE (E.G. WITH
  STREET SWEEPERS).
- AFTER RAINFALL, SEDIMENT ACCUMULATED IN TRAPPING DEVICES {E.G. BASIN, SEDIMENT FENCE) WILL BE REMOVED TO A
  SECURE LOCATION WHERE IT CAN'T WASH OR BLOW OFFSITE {PREFERABLY TO AN ACTIVE STOCKPILE).
- WEATHER CONDITIONS WILL BE MONITORED ONSITE AND DAILY RAINFALL WILL BE RECORDED. A RAINFALL GAUGE WILL BE INSTALLED AT THE SITE COMPOUND.
- SAFE STORAGE AREAS FOR WASTES, FUELS, EXCESS CONCRETE AND OTHER POTENTIAL CONTAMINANTS ARE TO BE DELINEATED BY THE SITE MANAGER.
- ADEQUATE SUPPLIES OF EROSION CONTROL MEASURES {E.G. GEOFABRIC ROLLS, JUTE MATTING, HYDRAULIC SOIL BINDERS} ARE TO BE MAINTAINED IN THE SITE COMPOUND FOR RAPID DEPLOYMENT AS REQUIRED.
- WATER TREATMENT CHEMICAL{S) AND EQUIPMENT ARE TO BE MAINTAINED ONSITE.

TABLE 1 - STABILISATION AND TREATMENT METHODS

DURING CONSTRUCTION - TEMPORARY STABILISATION
(DURING PERIODS OF INACTIVITY WHEN WORKS ARE ON HOLD)

LANDS	STABILISATION REQUIREMENT	TIMEFRAME	TREATMENT METHODS - PRODUCTS	REMARKS
HIGH RISK AREAS SOIL LOSS CLASS 6 OR ABOVE LANDS (WHERE APPLICABLE)	C-FACTOR = 0.1 (60% GRASS COVER OR EQUIVALENT GROUND COVER)	APPLIES PRIOR TO RAINFALL AND AFTER 10 WORKING DAYS OF INACTIVITY (EVEN THOUGH WORKS MIGHT CONTINUE LATER)	SOIL BINDER (ie: VITAL P47/STONEWALL OR EQUIVALENT)	-STABLISE ALL EXPOSED SOILS BY SPARYING SURFACES WITH VITAL P47/STORMWATER OR EQUIVALENT¹ -VITAL DILUTION RATE = 1 : 10 (VITAL MIXTURE. - RE-APPLY/MAINTAIN AS NECCESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
			GEOTEXTILE, JUTE MATTING, BLACK PLASTIC (SECURELY PINNED) OR EQUIVALENT¹	- COVER ALL EXPOSED SOILS. -RE-APPLY/MAINTAIN AS NECCESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
			GEOTEXTILE, JUTE MATTING, BLACK PLASTIC (SECURELY PINNED) OR EQUIVALENT¹	- COVER ALL EXPOSED SOILS. -RE-APPLY/MAINTAIN AS NECCESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
ALL LANDS (INCLUDING WATERWAYS AND STOCKPILES)	APPLIES AFTER 20 WORKING DAYS OF INACTIVITY (EVEN THOUGH WORKS MIGHT CONTINUE LATER)	APPLIES AFTER 20 WORKING DAYS OF INACTIVITY (EVEN THOUGH WORKS MIGHT CONTINUE LATER)	SOIL BINDER (ie VITAL P47/STONEWALL OR EQUIVALENT¹	-SPRAY ALL STOCKPILE SURFACES WITH VITALP47/STONEWALL OR EQUIVALENT¹ -VITAL DILUTION RATE = 1:10 (VITAL:WATER). -APPLICATION RATE = 1L/m² OF DILUTED VITAL MIXTURE
			GEOTEXTILE, JUTE MATTING, BLACK PLASTIC (SECURELY PINNED)	- COVER ALL EXPOSED SOILS. - E-APPLY / MAINTAIN AS NECCESSARY TO - ENSURE THE REQUIRED COVER IS PROVIDED.

Issue	Description	Date
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A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client: ESR

Scales: N.T.S.
Grid: MGA2020
Height Datum: AHD

Drawn: LM
Designed: LM
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GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: GENERAL NOTES SHEET 3

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10104

Issue: B

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TABLE 2 - STABILISATION REQUIREMENTS AND TREATMENT METHODS CONTINUED

POST CONSTRUCTION

LANDS	STABILISATION REQUIREMENT	TIMEFRAMES	TREATMENT METHODS PRODUCTS	REMARKS
WATERWAYS, DRAINAGE LINES AND CONCENTRATED FLOW AREAS	C-FACTOR = 0.05 (70% GRASS COVER OR EQUIVALENT GROUND COVER[1])	APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION AND BEFORE THEY ARE ALLOWED TO CARRY CONCENTRATED FLOWS.	REFER TO THE DRAIN SPECIFICATIONS DETAILED ON THE PLAN FOR SPECIFIC LINING/STABILISATION REQUIREMENTS. EXAMPLE TREATMENT METHODS ARE SHOWN BELOW.	
			TEMPORARY LINING - GEOTEXTILE (ie. BIDIM A24 OR EQUIVALENT[1])	- COMPLETE ANY SUBSOIL TREATMENT BEFORE LAYING THE MATTING. -INSTALL MATTING IN ACCORDANCE WITH SD 5-7 -RE-APPLY/MAINTAIN AS NECCESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
			JUTE MESH, SEEDING AND SOIL BINDER (ie VITAL P47/STONEWALL OR EQUIVALENT[1]) - LOW FLOWS	-COMPLETE SUBSOIL TREATMENT (E.G. GYPSUM LIGHTLY RIPPED INTO SURGRADE AT A RATE OF 15 TONNES/ha). TESTING TO CONFIRM TREATMENT RATES. - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75MM. - COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING ". - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQIVALENT[1]. - WATERWAYS AND (50% GRASS COVER OR " OF INACTIVITY LEVEN THOUGH MONTHS- - VITAL DILUTION RATE = 1:10 (VITAL:WATER). - APPLICATION RATE = 1L / 7m² OF DILUTED VITAL MIXTURE. - RE-APPLY / MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			JUTE MATTING (350gsm) AND SEEDING OR EQUIVALENT[1] - LOW TO MODERATE FLOWS	-COMPLETE SUBSOIL TREATMENT (E.G. GYPSUM LIGHTLY RIPPED INTO SURGRADE AT A RATE OF 15 TONNES/ha). TESTING TO CONFIRM TREATMENT RATES. - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75MM. - COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING ". - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQIVALENT[1]. - WATERWAYS AND (50% GRASS COVER OR " OF INACTIVITY LEVEN THOUGH MONTHS- - VITAL DILUTION RATE = 1:10 (VITAL:WATER). - APPLICATION RATE = 1L / 7m² OF DILUTED VITAL MIXTURE. - RE-APPLY / MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			- TURN REINFORCEMENT MATTING (TRM) (e.g TERRAMAT OR EQUIVALENT[1]) (TRN) -MODERATE FLOWS	-COMPLETE SUBSOIL TREATMENT (E.G. GYPSUM LIGHTLY RIPPED INTO SURGRADE AT A RATE OF 15 TONNES/ha). TESTING TO CONFIRM TREATMENT RATES. - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75MM. - COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING. - RE-APPLY / MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			ROCK LINING - HIGH FLOWS	-COMPLETE SUBSOIL TREATMENT (E.G. GYPSUM LIGHTLY RIPPED INTO SURGRADE AT A RATE OF 15 TONNES/ha). TESTING TO CONFIRM TREATMENT RATES. - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75MM. - COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING. - RE-APPLY / MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
STOCKPILES	C-FACTOR = 0.10 / 0.05 (60% GRASS COVER OR EQUIVALENT GROUND COVER[1])	APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION	SEEDING AND SOIL BINDER (ie VITAL P47/ STONEWALL OR EQUIVALENT[1])	- APPLY SEED TO ALL STOCKPILE SURFACES (NOTE: SEEDING MAY NOT BE REQUIRED IF EXISTING SEEDBED IS PRESENT). - SPRAY ALL STOCKPILE SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT[1]. - VITAL DILUTION RATE = 1L / m² OF DILUTED VITAL MIXTURE. - RE-APPLY/MAINTAIN AS NECCESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			GEOTEXTILE, JUTE MATTING, BLACK PLASTIC (SECURELY PINNED) OR EQUIVALENT[1]	- COVER ALL EXPOSED SOILS. - RE-APPLY / MAINTAIN AS NECCESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
GENERAL SURFACES	C-FACTOR = 0.10 / 0.05 (60% / 70% GRASS COVER OR EQUIVALENT GROUND COVER[1])	C-FACTOR = 0.1 APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION AND C-FACTOR= 0.05 APPLIES WITHIN A FURTHER 60 DAYS	TOPSOIL, SEEDING AND SOIL BINDER (i.e VITAL P47/STONEWALL OR EQUIVALENT[1])	-REFER TO SD 7-1 -COMPLETE SUBSOIL TREATMENT (i.e GYPSUM LIGHTLY RIPPED INTO SURGRADE AT A RATE OF 15 TONNES/ha). TESTING TO CONFIRM TREATMENT RATES. - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75MM. - APPLY ANY FERTILISERS REQUIRED. - APPLY SEED TO ALL SURFACES (Note: SEEDING MAY NOT BE REQUIRED IF EXISTING SEEDBED IS PRESENT. - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQIVALENT[1]. - VITAL DILUTION RATE = 1:10 (VITAL:WATER). - APPLICATION RATE = 1L / 7m² OF DILUTED VITAL MIXTURE. - RE-APPLY / MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			HYDROMLUCH OR EQUIVALENT[1]	-REFER TO SD 7-1 -COMPLETE SUBSOIL TREATMENT (i.e GYPSUM LIGHTLY RIPPED INTO SURGRADE AT A RATE OF 15 TONNES/ha). TESTING TO CONFIRM TREATMENT RATES. - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75MM. - APPLY ANY FERTILISERS REQUIRED. - APPLY SEED TO ALL SURFACES (Note: SEEDING MAY NOT BE REQUIRED IF EXISTING SEEDBED IS PRESENT. - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQIVALENT[1]. - VITAL DILUTION RATE = 1:10 (VITAL:WATER). - APPLICATION RATE = 1L / 7m² OF DILUTED VITAL MIXTURE. - RE-APPLY / MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.

TABLE 3 - LIMITATIONS TO ACCESS DURING CONSTRUCTION

LAND USE	LIMITATION	REMARKS
CONSTRUCTION AREAS	LIMITED TO 5 (PREFERABLE 2) METRES FROM THE EDGE OF ANY ESSENTIAL CONSTRUCTION ACTIVITY AS SHOWN ON THE ENGINEERING PLANS.	ALL SITE WORKERS SHOULD CLEARLY RECOGNISE THESE AREAS THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
ACCESS AREAS	LIMITED TO A MAXIMUM WIDTH OF METRES	THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON SITE. THEY CAN VARY IN POSITION SO AS TO BE BEST CONSERVE EXISTING VEGETATION AND PROTECT DOWNSTREAM AREAS WHILE BEING CONSIDERATE OF THE NEEDS OF EFFIICIENT WORKS ACTIVITIES. ALL SITE WORKERS WILL CLEARY RECOGNISE THESE BOUNDARIES.
ALL LANDS (INCLUDING WATERWAYS AND STOCKPILES)	APPLIES AFTER 20 WORKING DAYS OF INACTIVITY (EVEN THOUGH WORKS MIGHT CONTINUE LATER)	APPLIES AFTER 20 WORKING DAYS OF INACTIVITY (EVEN THOUGH WORKS MIGHT CONTINUE LATER)

TABLE 4 - DIVERSION DRAIN SIZING

DRAIN SIZING	REFER TO 'TYPICAL DETAIL' BELOW											
STRUCTURE NAME CHANNEL DETAILS	CD1	CD2	CD3	CD4	CD5	DD1	DD2	DD3	DD4	DD5	DD6	DD7
CHANNEL/ BUND DEPTH, D (m)	[1]	[2]	[2]	0.6	0.6	0.8	0.8	0.8	0.6	0.8	0.6	0.6
CHANNEL BASE WIDTH, B (m)	[1]	[2]	[2]	-	-	-	1.2	1	-	1.2	-	-
CHANNEL /BUND SIDE SLOPE (H:V)	[1]	[2]	[2]	2	2	2	2	2	2	2	2	2
CHANNEL TOP WIDTH, (m)	[1]	[2]	[2]	-	-	-	4.4	4.2	-	4.4	-	-
DRAIN SLOPE (%)	DRAIN SLOPES TO BE RELATIVE TO THE SITE TOPOGRAPHY. HOWEVER, THE ABSOLUTE MINIMUM DRAIN SLOPE TO BE 1%.											
IN LOCATIONS WHERE PERMANENT DRAINS ARE USED TO AS DIVERSION DRAINS FOR EROSION AND SEDIMENT CONTROL, CONSTRUCT DRAINS TO PERMANENT SIZING REQUIREMENTS.												

* - CONSTRUCTED AS BUND. TOP OF BUND TO BE MIN. 0.3m WIDE.
[1] TO PERMANENT DRAIN / CHANNEL SIZING SPECIFICATIONS.
[2] TO FUTURE ENGINEERING DETAIL.

Item	Unit	Lot 4 Basin	Lot 3, West	Lot 3, East
Design volume requirement	m^3	3030	856.2	1115
Design surface area requirement	m^2	1204	412	511
Length	m	140	45	55
Width	m	20	15	15
Surface area	m^2	2718	693	803
Length to width ratio	ratio	7:1	3:1	3:1
Depth	m	2	2	2
Basin wall batter slope	ratio	2:1	2:1	2:1
X-section area	m^2	32	22	22
Basin volume	m^3	4480	990	1210
Forebay (10% of volume)	m^3	*448*	*99*	*121*
Forebay length	m	20	10	10
Forebay width	m	20	15	15
Forebay depth	m	1.50	1.5	1.5
Forebay spillway basin slope	ratio	3:1	3:1	3:1
X-section area	m^2	26	18	18
Forebay volume	m^3	510	180	180
Spillway crest below basin wall	m	0.45	0.45	0.45
Spillway width	m	3	3	3
Spillway freeboard	m	0.3	0.3	0.3
Basin lining	ea	A29 bidim	A29 bidim	A29 bidim
Spillway lining	ea	rip rap	rip rap	rip rap
Outlet, concrete culvert	dia	>450	>450	>450

TYPE A BASIN SPECIFICATIONS

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client: ESR

Scales: N.T.S.
Drawn: LM
Designed: LM
Grid: MGA2020
Checked: AT
Height Datum: AHD
Approved:

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: GENERAL NOTES SHEET 4

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10105

Issue: B

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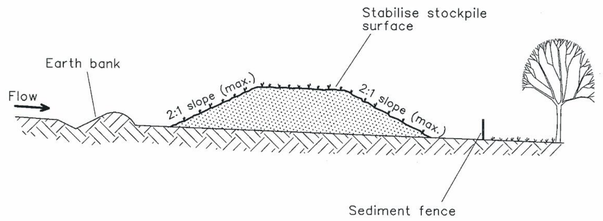
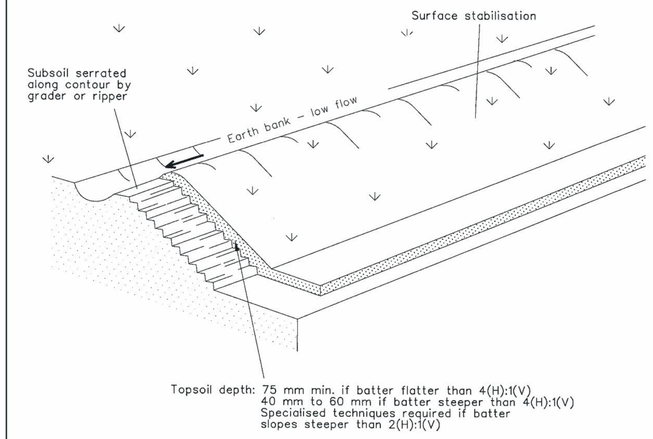


Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES **SD 4-1**

4-5

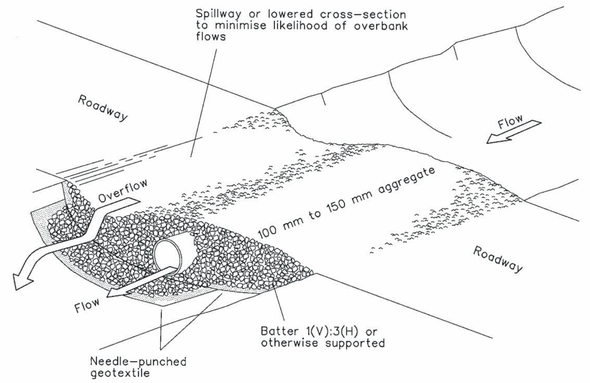


Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

REPLACING TOPSOIL **SD 4-2**

4-6



Construction Notes

1. Prohibit all traffic until the access way is constructed.
2. Strip any topsoil and place a needle-punched textile over the base of the crossing.
3. Place clean, rigid, non polluting aggregate or gravel in the 100 mm to 150 mm size class over the fabric to a minimum depth of 200 mm.
4. Provide a 3-metre wide carriageway with sufficient length of culvert pipe to allow less than a 3(H): 1 (V) slope on side batters.
5. Install a lower section to act as an emergency spillway in greater than design storm events.
6. Ensure that culvert outlets extend beyond the toe of fill embankments.

TEMPORARY WATERWAY CROSSING **SD 5-1**

5-14

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client: ESR

Scales: N.T.S.
Grid: MGA2020
Height Datum: AHD
GDA2020

Drawn: LM
Designed: LM
Checked: AT
Approved:

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: GENERAL NOTES SHEET 5

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
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A1

Project - Drawing No.: 20-748-C10106

Issue: B

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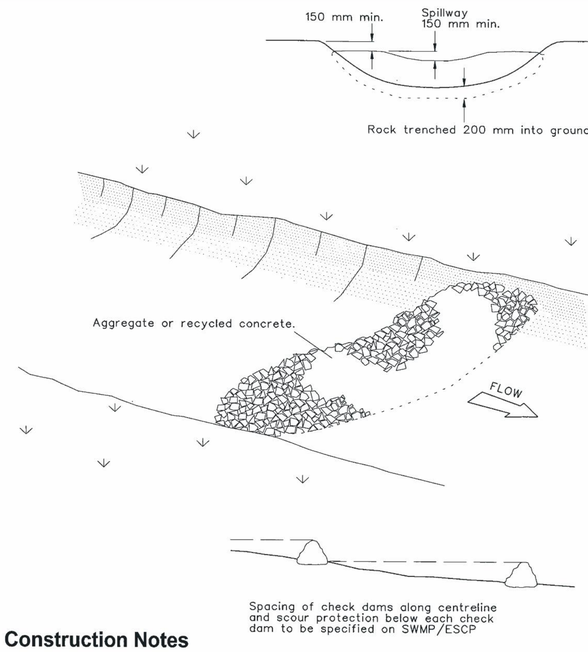
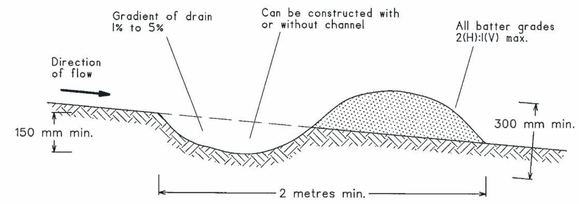


Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

ROCK CHECK DAM **SD 5-4**

5-22



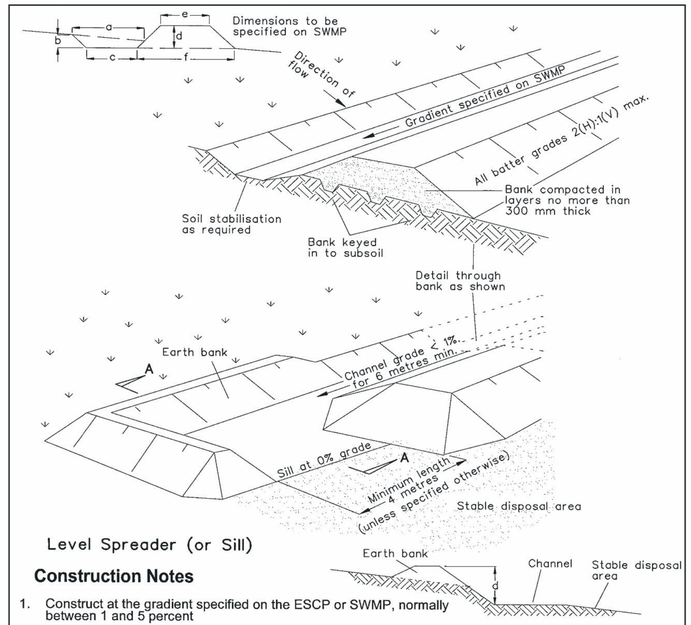
NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) **SD 5-5**

5-25



Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

EARTH BANK (HIGH FLOWS) **SD 5-6**

5-26

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client: ESR

Scales: N.T.S.
Grid: MGA2020
Height Datum: AHD

Drawn: LM
Designed: LM
Checked: AT
Approved:

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: GENERAL NOTES SHEET 6

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
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A1

Project - Drawing No.: 20-748-C10107

Issue: B

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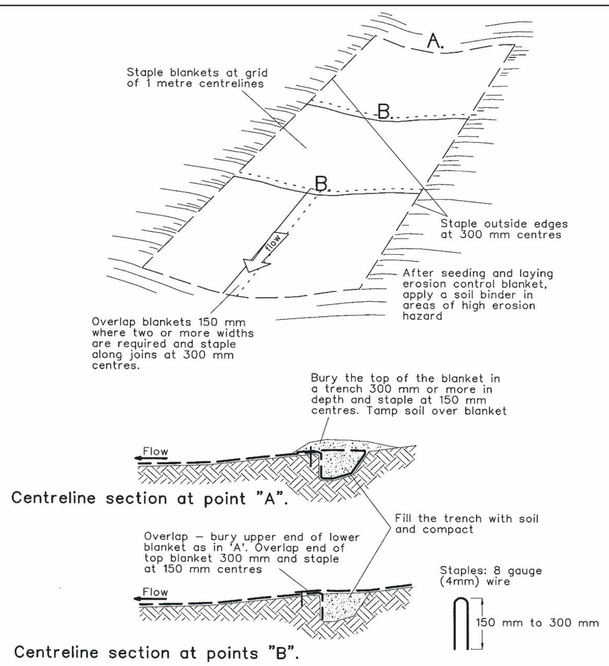
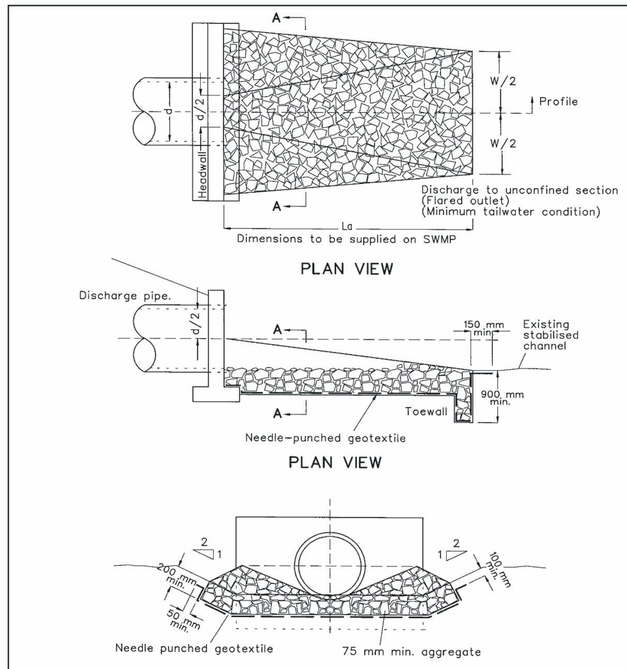


Construction Notes

1. Remove any rocks, clods, sticks or grass from the surface before laying matting
2. Ensure that topsoil is at least 75 mm deep.
3. Complete fertilising and seeding before laying the matting.
4. Ensure fabric will be continuously in contact with the soil by grading the surface carefully first.
5. Lay the fabric in "shingle-fashion", with the end of each upstream roll overlapping those downstream. Ensure each roll is anchored properly at its upslope end (Standard Drawing 5-7b).
6. Ensure that the full width of flow in the channel is covered by the matting up to the design storm event, usually in the 10-year ARI time of concentration storm event.
7. Divert water from the structure until vegetation is stabilised properly.

RECP : CONCENTRATED FLOW **SD 5-7**

5-28

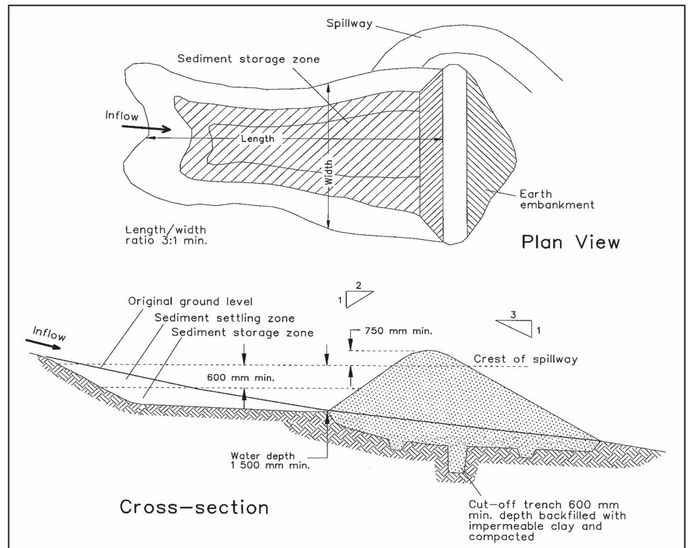


Construction Notes

1. Compact the subgrade fill to the density of the surrounding undisturbed material.
2. Prepare a smooth, even foundation for the structure that will ensure that the needle-punched geotextile does not sustain serious damage when covered with rock.
3. Should any minor damage to the geotextile occur, repair it before spreading any aggregate. For repairs, patch one piece of fabric over the damage, making sure that all joints and patches overlap more than 300 mm.
4. Lay rock following the drawing, according to Table 5.2 of Landcom (2004) and with a minimum diameter of 75 mm.
5. Ensure that any concrete or riprap used for the energy dissipater or the outlet protection conforms to the grading limits specified on the SWMP.

ENERGY DISSIPATER **SD 5-8**

5-34



Construction Notes

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Construct a cut-off trench 500 mm deep and 1,200 mm wide along the centreline of the embankment extending to a point on the gully wall level with the riser crest.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 per cent Standard Proctor Density.
4. Select fill following the SWMP that is free of roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond compacted fill to the existing substrate.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Construct the emergency spillway.
8. Rehabilitate the structure following the SWMP.

EARTH BASIN - WET **SD 6-4**
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

6-19

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client: ESR

Scales: N.T.S.
Grid: MGA2020
Height Datum: AHD
GDA2020

Drawn: LM
Designed: LM
Checked: AT
Approved:

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: GENERAL NOTES SHEET 7

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

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Issue: B

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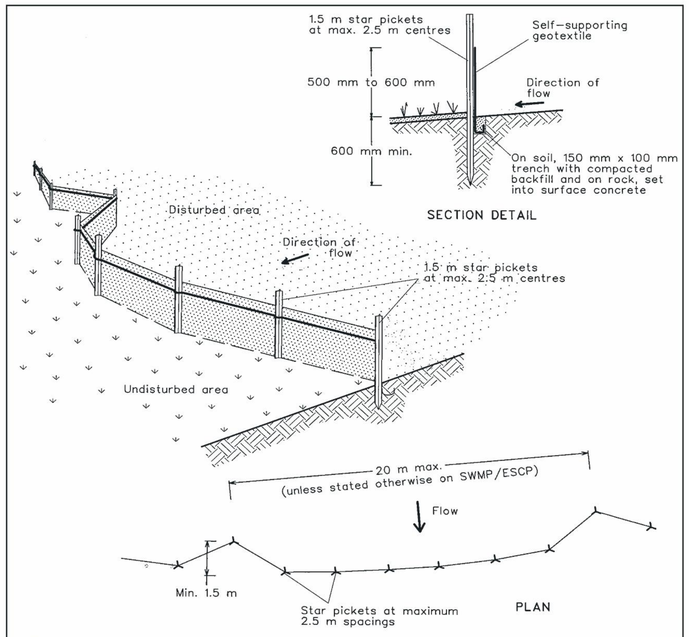
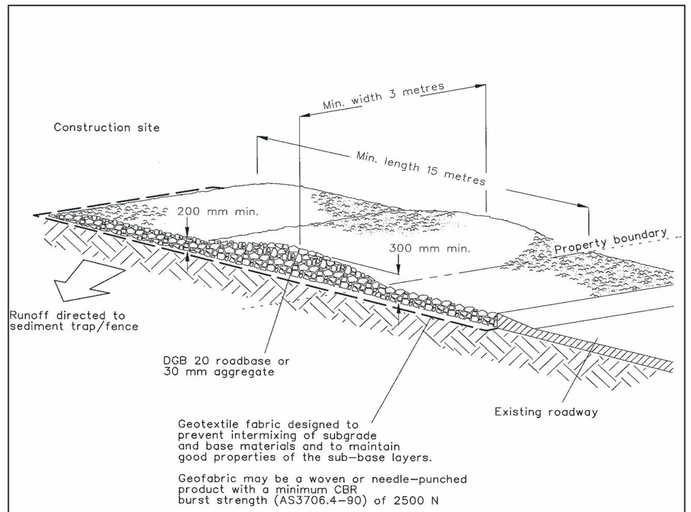


Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE **SD 6-8**

6-36

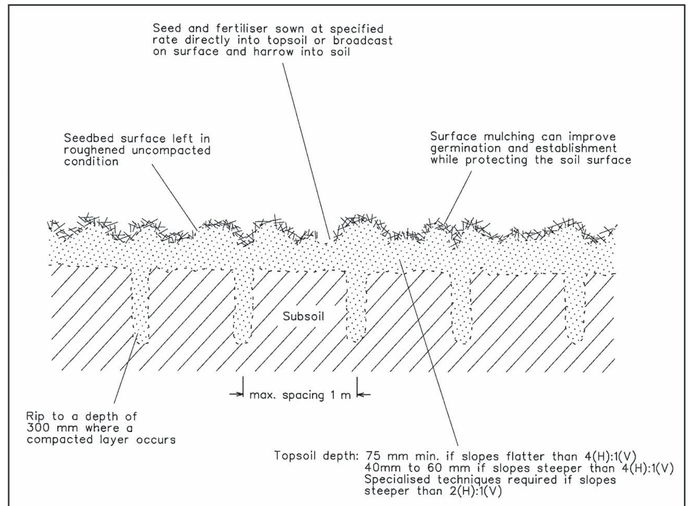


Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence

STABILISED SITE ACCESS **SD 6-14**

6-48



Construction Notes

1. Loosen compacted soil before sowing any seed. If necessary, rip the soil to a depth of 300 mm. Avoid rotary hoe cultivation.
2. Work the ground only as much as necessary to achieve the desired tilth and prepare a good seedbed.
3. Avoid cultivation in very wet or very dry conditions.
4. Cultivate on or close to the contour where possible, not up and down the slope.

SEEDBED PREPARATION **SD 7-1**

7-7

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

100mm on Original

Client: ESR

Scales: N.T.S.
Grid: MGA2020
Height Datum: AHD

Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: GENERAL NOTES SHEET 8

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

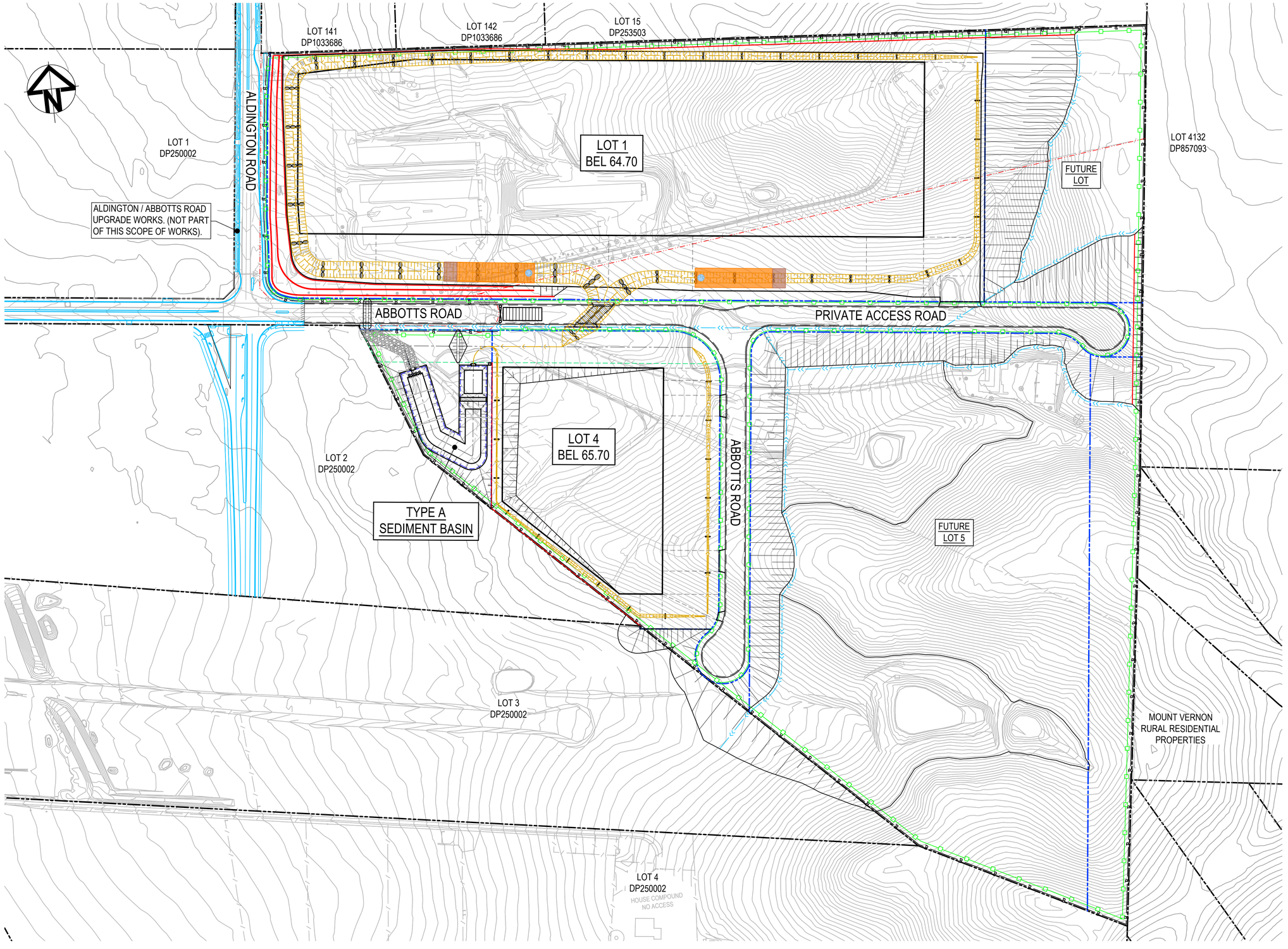
Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10109

Issue: B

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10109.dwg



LEGEND:

EXISTING
- EXISTING BOUNDARY
- 65.0 EXISTING CONTOUR

PROPOSED
- PROPOSED BOUNDARY
- PROPOSED RETAINING WALL. REFER TO COSTIN ROE RETAINING WALL DRAWINGS FOR DETAILED DESIGN.
- 70.00 PROPOSED MAJOR CONTOUR
- 70.20 PROPOSED MINOR CONTOUR
- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- CLEAN WATER DIVERSION SWALE
- B BARRIER FENCE
- STRAW BALE FILTER (SD 6-7)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- ROCK RIFFLE CHECK DAM (SD 5-4)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE
- PIPE CROSSING uPVC PIPE LAID AT MIN. 1% FALL

ALL LEVELS SHOWN ARE ±1000mm U.N.O

NOTE:
1. DETAILS FOR SCOUR PROTECTION TO BE DETERMINED BY CONTRACTORS CPESC, INCLUDING LENGTHS AND WIDTHS. IF THE CPESC CONFIRMS ROCK STABILISATION IS REQUIRED FOR THE INLETS/OUTLET, CPESC TO CONFIRM ROCK SIZING.
2. ALL SWALE PIPE CROSSINGS TO BE RATED FOR CONSTRUCTION TRAFFIC LOADINGS.
3. REFER TO BULK EARTHWORKS PACKAGE STAGE 1 DRAWINGS FOR ALL DRAINAGE SWALE LEVELS & PROFILES.

ALL LEVELS SHOWN ± 1000mm U.N.O

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

0 30 60 90 120 150m

1 : 1500 @ A1 1 : 3000 @ A3

Client: ESR

Scales: 1 : 1500
Grid: MGA2020
Height Datum: AHD

Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title: EROSION & SEDIMENT CONTROL GENERAL ARRANGEMENT

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

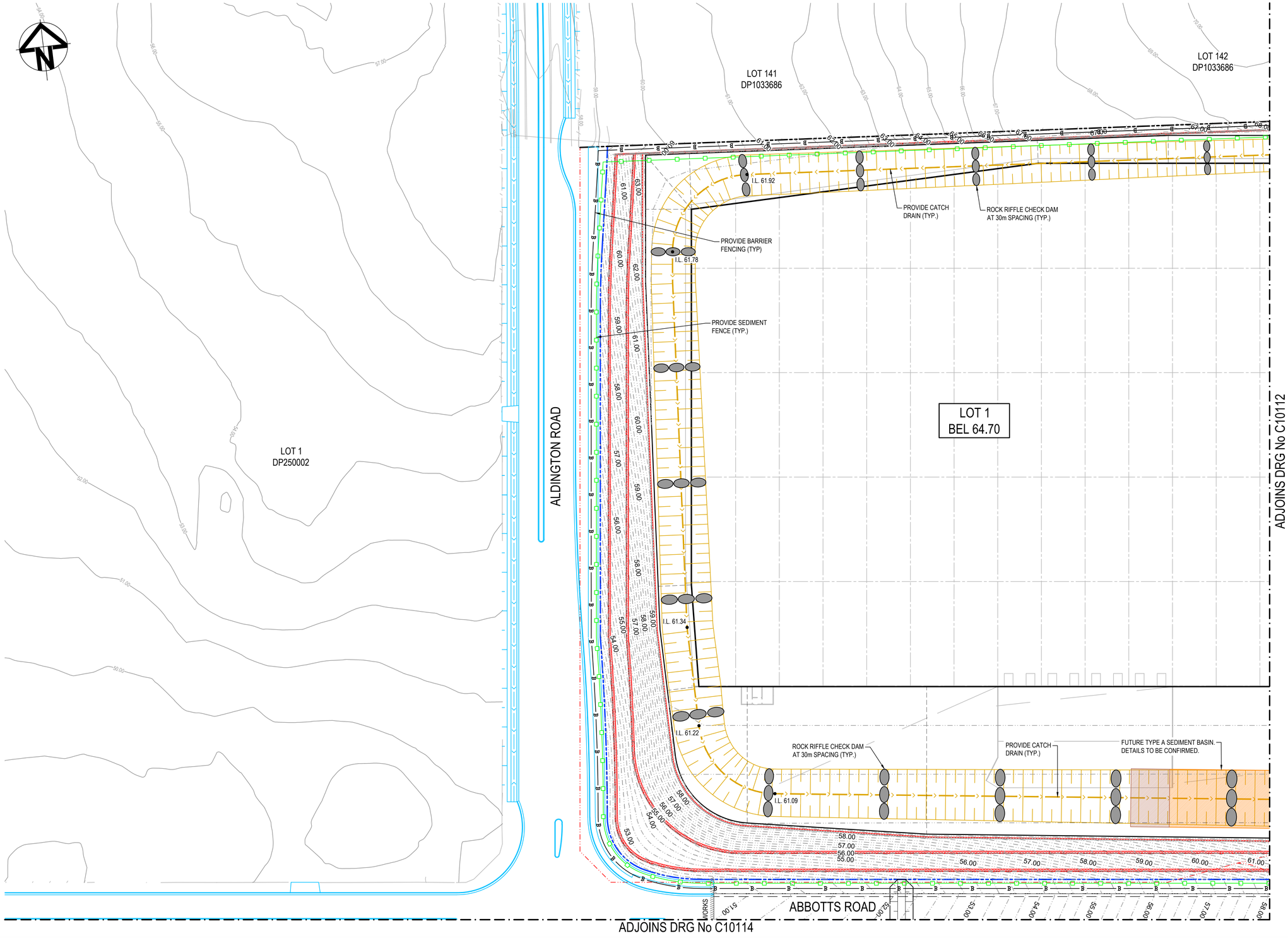
A1

Project - Drawing No.: 20-748-C10110

Issue: B

100mm on Original

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10110.dwg



LEGEND:

EXISTING

- EXISTING BOUNDARY
- 65.0 EXISTING CONTOUR

PROPOSED

- PROPOSED BOUNDARY
- PROPOSED RETAINING WALL. REFER TO COSTIN ROE RETAINING WALL DRAWINGS FOR DETAILED DESIGN.
- 70.00 PROPOSED MAJOR CONTOUR
- 70.20 PROPOSED MINOR CONTOUR
- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- CLEAN WATER DIVERSION SWALE
- B BARRIER FENCE
- STRAW BALE FILTER (SD 6-7)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- ROCK RIFFLE CHECK DAM (SD 5-4)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE
- PIPE CROSSING uPVC PIPE LAID AT MIN. 1% FALL

ALL LEVELS SHOWN ARE ±1000mm U.N.O

NOTE:

1. DETAILS FOR SCOUR PROTECTION TO BE DETERMINED BY CONTRACTORS CPESC, INCLUDING LENGTHS AND WIDTHS. IF THE CPESC CONFIRMS ROCK STABILISATION IS REQUIRED FOR THE INLETS/OUTLET, CPESC TO CONFIRM ROCK SIZING.
2. ALL SWALE PIPE CROSSINGS TO BE RATED FOR CONSTRUCTION TRAFFIC LOADINGS.
3. REFER TO BULK EARTHWORKS PACKAGE STAGE 1 DRAWINGS FOR ALL DRAINAGE SWALE LEVELS & PROFILES.

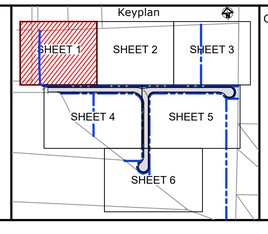
Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

0 10 20 30 40 50m

1 : 500 @ A1 1 : 1000 @ A3

Keyplan



Client: ESR

Scales	1 : 500
Grid	MGA2020
Height Datum	AHD
Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL PLAN SHEET 1

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

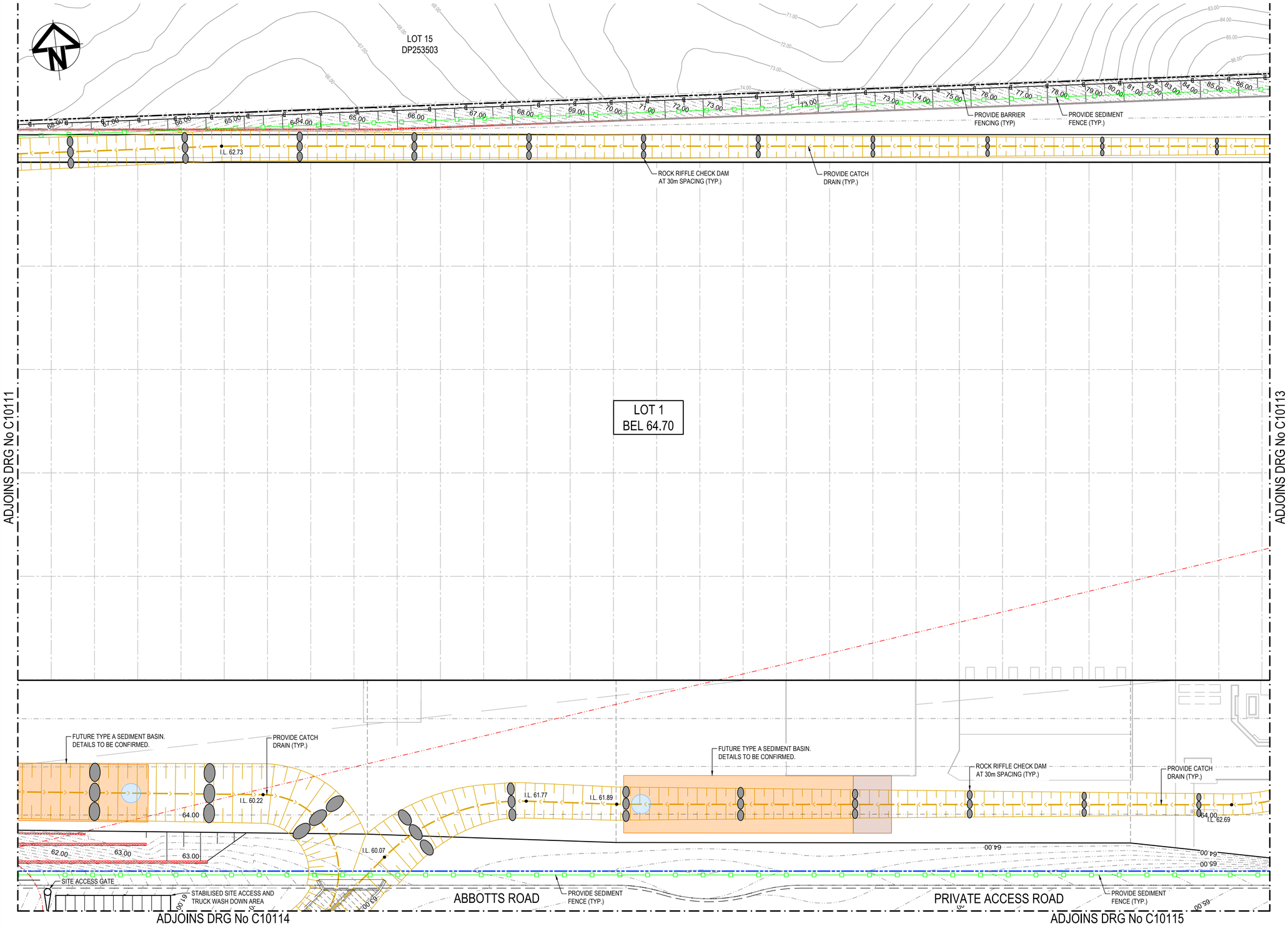
A1

Project - Drawing No.: 20-748-C10111

Issue: B

100mm on Original

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10111.dwg



LEGEND:

EXISTING

- EXISTING BOUNDARY
- 65.0 EXISTING CONTOUR

PROPOSED

- PROPOSED BOUNDARY
- PROPOSED RETAINING WALL. REFER TO COSTIN ROE RETAINING WALL DRAWINGS FOR DETAILED DESIGN.
- 70.00 PROPOSED MAJOR CONTOUR
- 70.20 PROPOSED MINOR CONTOUR
- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- CLEAN WATER DIVERSION SWALE
- B BARRIER FENCE
- STRAW BALE FILTER (SD 6-7)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- ROCK RIFFLE CHECK DAM (SD 5-4)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE
- PIPE CROSSING uPVC PIPE LAID AT MIN. 1% FALL

ALL LEVELS SHOWN ARE ±1000mm U.N.O

NOTE:

1. DETAILS FOR SCOUR PROTECTION TO BE DETERMINED BY CONTRACTORS CPESC, INCLUDING LENGTHS AND WIDTHS. IF THE CPESC CONFIRMS ROCK STABILISATION IS REQUIRED FOR THE INLETS/OUTLET, CPESC TO CONFIRM ROCK SIZING.
2. ALL SWALE PIPE CROSSINGS TO BE RATED FOR CONSTRUCTION TRAFFIC LOADINGS.
3. REFER TO BULK EARTHWORKS PACKAGE STAGE 1 DRAWINGS FOR ALL DRAINAGE SWALE LEVELS & PROFILES.

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

0 10 20 30 40 50m

1 : 500 @ A1 1 : 1000 @ A3

100mm on Original

Keyplan

SHEET 1 | SHEET 2 | SHEET 3 | SHEET 4 | SHEET 5 | SHEET 6

Client

ESR

Scales 1 : 500

Grid MGA2020

Height Datum AHD

Drawn LM

Designed LM

Checked AT

Approved

GDA2020

Project

PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title

EROSION AND SEDIMENT CONTROL PLAN
SHEET 2

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

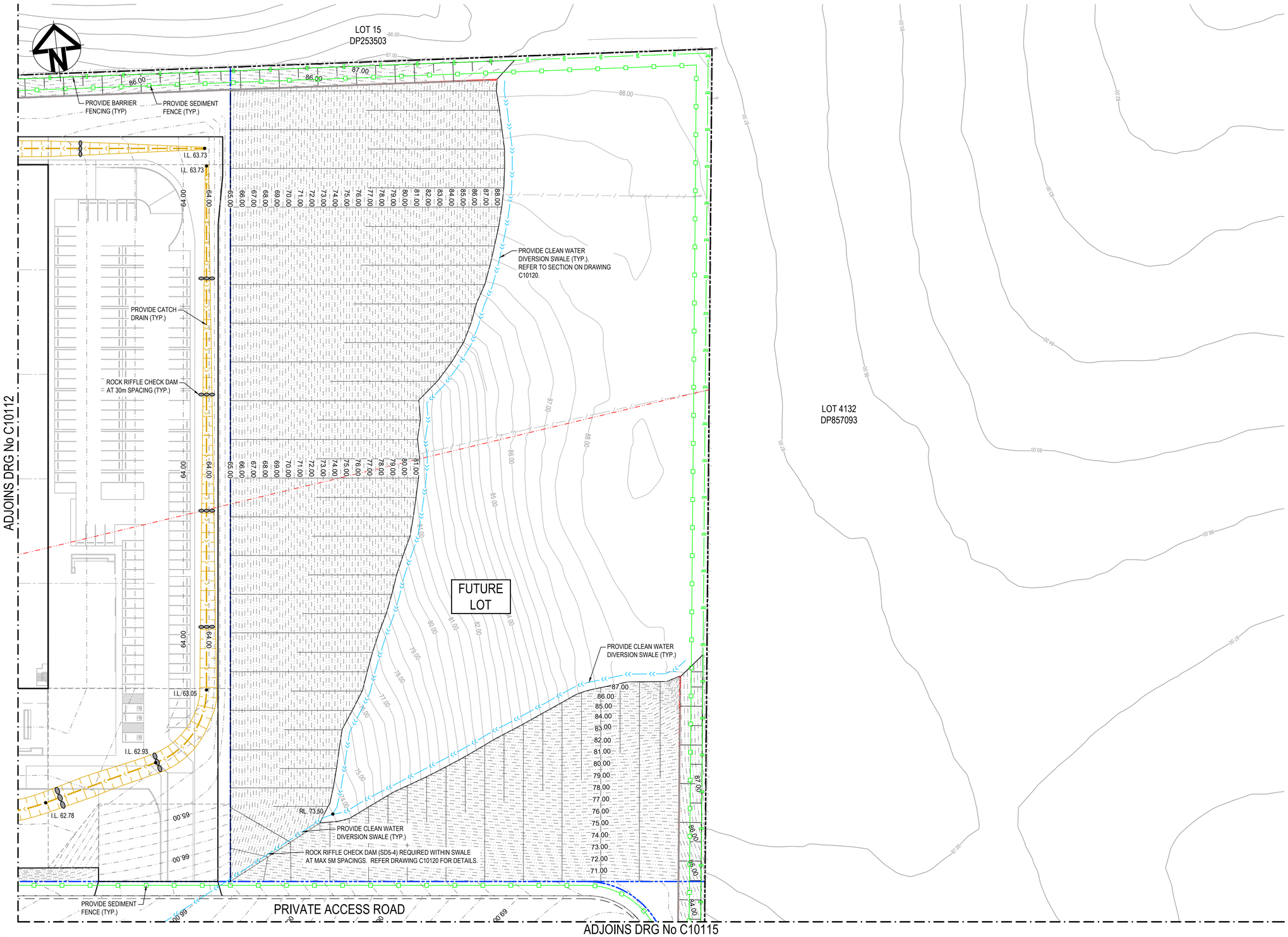
Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No. 20-748-C10112

Issue B

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10112.dwg



LEGEND:

EXISTING

- EXISTING BOUNDARY
- 65.0 EXISTING CONTOUR

PROPOSED

- PROPOSED BOUNDARY
- PROPOSED RETAINING WALL. REFER TO COSTIN ROE RETAINING WALL DRAWINGS FOR DETAILED DESIGN.
- 70.00 PROPOSED MAJOR CONTOUR
- 70.20 PROPOSED MINOR CONTOUR
- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- CLEAN WATER DIVERSION SWALE
- B BARRIER FENCE
- STRAW BALE FILTER (SD 6-7)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- ROCK RIFFLE CHECK DAM (SD 5-4)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE
- PIPE CROSSING uPVC PIPE LAID AT MIN. 1% FALL

ALL LEVELS SHOWN ARE ±1000mm U.N.O

NOTE:

1. DETAILS FOR SCOUR PROTECTION TO BE DETERMINED BY CONTRACTORS CPESC, INCLUDING LENGTHS AND WIDTHS. IF THE CPESC CONFIRMS ROCK STABILISATION IS REQUIRED FOR THE INLETS/OUTLET, CPESC TO CONFIRM ROCK SIZING.
2. ALL SWALE PIPE CROSSINGS TO BE RATED FOR CONSTRUCTION TRAFFIC LOADINGS.
3. REFER TO BULK EARTHWORKS PACKAGE STAGE 1 DRAWINGS FOR ALL DRAINAGE SWALE LEVELS & PROFILES.

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

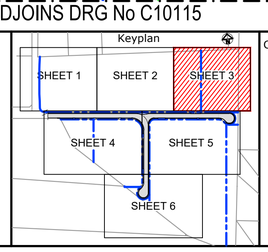
100mm on Original

Bar Scales

0 10 20 30 40 50m

1 : 500 @ A1 1 : 1000 @ A3

Keyplan



Client

ESR

Scales	1 : 500
Grid	MGA2020
Height Datum	AHD
Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project

PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title

EROSION AND SEDIMENT CONTROL PLAN
SHEET 3

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

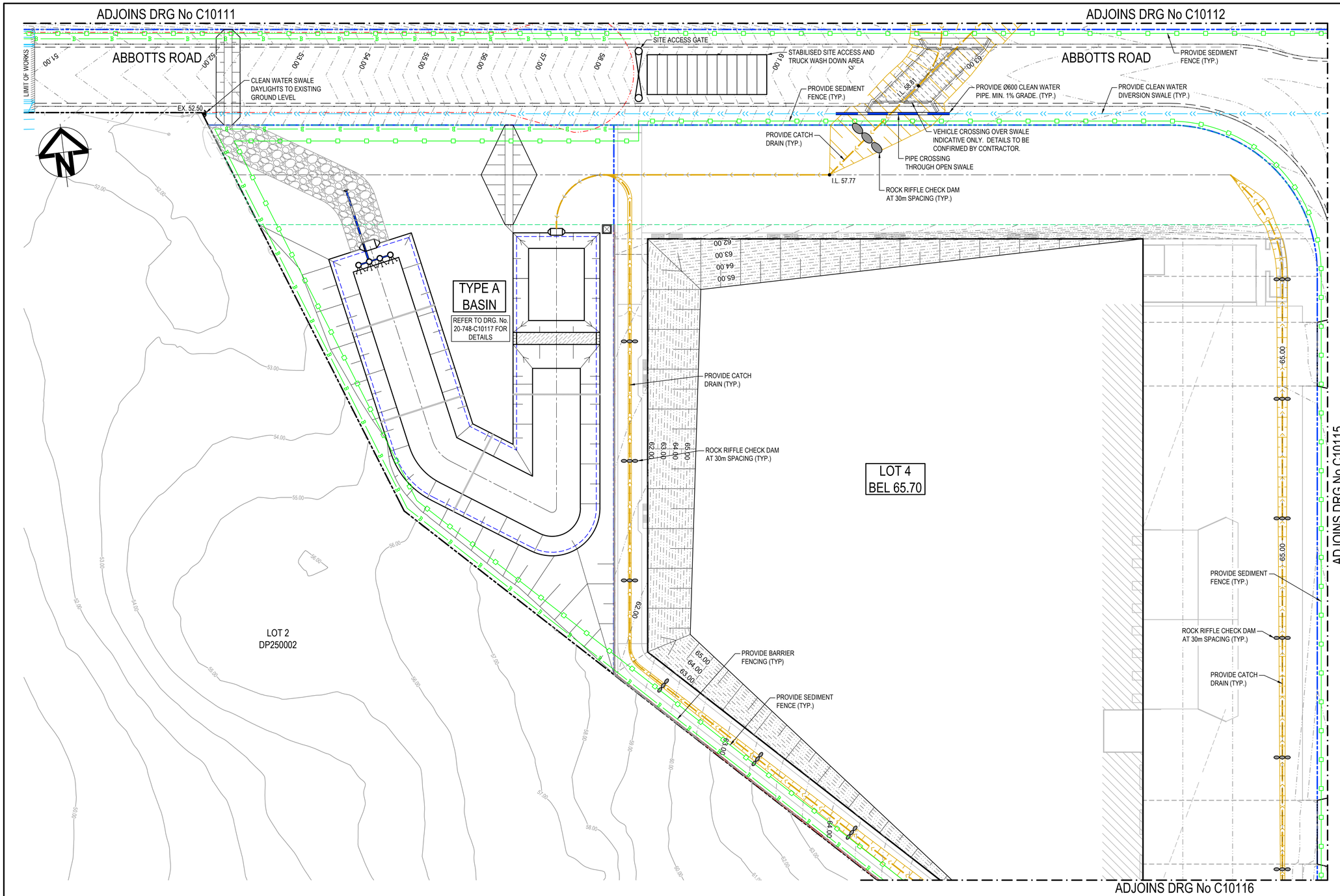
Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10113

Issue: B

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10113.dwg



LEGEND:

EXISTING
- EXISTING BOUNDARY
- 65.0 EXISTING CONTOUR

PROPOSED
- PROPOSED BOUNDARY
- PROPOSED RETAINING WALL. REFER TO COSTIN ROE RETAINING WALL DRAWINGS FOR DETAILED DESIGN.
- 70.00 PROPOSED MAJOR CONTOUR
- 70.20 PROPOSED MINOR CONTOUR
- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- CLEAN WATER DIVERSION SWALE
- B BARRIER FENCE
- STRAW BALE FILTER (SD 6-7)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- ROCK RIFFLE CHECK DAM (SD 5-4)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE
- PIPE CROSSING uPVC PIPE LAID AT MIN. 1% FALL

ALL LEVELS SHOWN ARE ±1000mm U.N.O

NOTE:
1. DETAILS FOR SCOUR PROTECTION TO BE DETERMINED BY CONTRACTORS CPESC, INCLUDING LENGTHS AND WIDTHS. IF THE CPESC CONFIRMS ROCK STABILISATION IS REQUIRED FOR THE INLETS/OUTLET, CPESC TO CONFIRM ROCK SIZING.
2. ALL SWALE PIPE CROSSINGS TO BE RATED FOR CONSTRUCTION TRAFFIC LOADINGS.
3. REFER TO BULK EARTHWORKS PACKAGE STAGE 1 DRAWINGS FOR ALL DRAINAGE SWALE LEVELS & PROFILES.

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

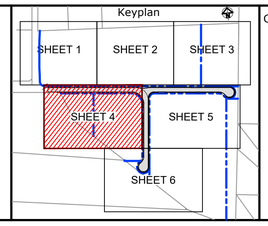
100mm on Original

Bar Scales

0 10 20 30 40 50m

1 : 500 @ A1 1 : 1000 @ A3

Keyplan



Client: ESR

Scales: 1 : 500

Drawn: LM
Designed: LM
Checked: AT
Approved:

Grid: MGA2020
Height Datum: AHD

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL PLAN SHEET 4

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10114

Issue: B

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10114.dwg

ADJOINS DRG No C10112

ADJOINS DRG No C10113

ADJOINS DRG No C10114

ADJOINS DRG No C10116

PRIVATE ACCESS ROAD

PRIVATE ACCESS ROAD

ABBOTTS ROAD

PROVIDE SEDIMENT FENCE (TYP.)

PROVIDE SEDIMENT FENCE (TYP.)

PROVIDE SEDIMENT FENCE (TYP.)

PROVIDE CLEAN WATER DIVERSION SWALE (TYP.)

PROVIDE SEDIMENT FENCE (TYP.)

ROCK RIFFLE CHECK DAM (SD5-4) REQUIRED WITHIN SWALE AT MAX 5M SPACINGS. REFER DRAWING C10120 FOR DETAILS.

RL. 73.70

PROVIDE CLEAN WATER DIVERSION SWALE (TYP.)

PROVIDE SEDIMENT FENCE (TYP.)

PROVIDE BARRIER FENCING (TYP)

PROVIDE SEDIMENT FENCE (TYP.)

PROVIDE CLEAN WATER DIVERSION SWALE (TYP.)

FUTURE LOT 5

FUTURE LOT 5

RL. 77.13

RL. 77.21

LEGEND:

EXISTING

- EXISTING BOUNDARY
- 65.0 EXISTING CONTOUR

PROPOSED

- PROPOSED BOUNDARY
- PROPOSED RETAINING WALL. REFER TO COSTIN ROE RETAINING WALL DRAWINGS FOR DETAILED DESIGN.
- 70.00 PROPOSED MAJOR CONTOUR
- 70.20 PROPOSED MINOR CONTOUR
- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- CLEAN WATER DIVERSION SWALE
- B BARRIER FENCE
- STRAW BALE FILTER (SD 6-7)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- ROCK RIFFLE CHECK DAM (SD 5-4)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE
- PIPE CROSSING uPVC PIPE LAID AT MIN. 1% FALL

ALL LEVELS SHOWN ARE ±1000mm U.N.O

NOTE:

1. DETAILS FOR SCOUR PROTECTION TO BE DETERMINED BY CONTRACTORS CPESC, INCLUDING LENGTHS AND WIDTHS. IF THE CPESC CONFIRMS ROCK STABILISATION IS REQUIRED FOR THE INLETS/OUTLET, CPESC TO CONFIRM ROCK SIZING.
2. ALL SWALE PIPE CROSSINGS TO BE RATED FOR CONSTRUCTION TRAFFIC LOADINGS.
3. REFER TO BULK EARTHWORKS PACKAGE STAGE 1 DRAWINGS FOR ALL DRAINAGE SWALE LEVELS & PROFILES.

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

0 10 20 30 40 50m

1 : 500 @ A1 1 : 1000 @ A3

Keyplan

SHEET 1 SHEET 2 SHEET 3 SHEET 4 SHEET 5 SHEET 6

Client

ESR

Scales 1 : 500

Drawn LM

Designed LM

Checked AT

Approved

Grid MGA2020

Height Datum AHD

GDA2020

Project

PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title

EROSION AND SEDIMENT CONTROL PLAN
SHEET 5

Civil Engineers and Project Managers

at&l

Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No. 20-748-C10115

Issue B

100mm on Original

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10115.dwg

ADJOINS DRG No C10114

ADJOINS DRG No C10115

LOT 4
BEL 65.70

LOT 2
DP250002

LOT 3
DP250002

FUTURE
LOT 5

FUTURE
LOT 6

ABBOTTS ROAD

PROVIDE CATCH DRAIN (TYP.)

PROVIDE SEDIMENT FENCE (TYP.)

PROVIDE BARRIER FENCING (TYP)

PROVIDE SEDIMENT FENCE (TYP.)

ROCK RIFFLE CHECK DAM AT 30m SPACING (TYP.)

PROVIDE SEDIMENT FENCE (TYP.)

PROVIDE CLEAN WATER DIVERSION SWALE (TYP.)

ROCK RIFFLE CHECK DAM (SD5-4) REQUIRED WITHIN SWALE AT MAX 5M SPACINGS. REFER DRAWING C10120 FOR DETAILS.

RL. 73.70

LEGEND:

EXISTING

- EXISTING BOUNDARY
- 65.0 EXISTING CONTOUR

PROPOSED

- PROPOSED BOUNDARY
- PROPOSED RETAINING WALL. REFER TO COSTIN ROE RETAINING WALL DRAWINGS FOR DETAILED DESIGN.
- 70.00 PROPOSED MAJOR CONTOUR
- 70.20 PROPOSED MINOR CONTOUR
- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- CLEAN WATER DIVERSION SWALE
- B BARRIER FENCE
- STRAW BALE FILTER (SD 6-7)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- ROCK RIFFLE CHECK DAM (SD 5-4)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE
- PIPE CROSSING uPVC PIPE LAID AT MIN. 1% FALL

ALL LEVELS SHOWN ARE ±1000mm U.N.O

NOTE:

1. DETAILS FOR SCOUR PROTECTION TO BE DETERMINED BY CONTRACTORS CPESC, INCLUDING LENGTHS AND WIDTHS. IF THE CPESC CONFIRMS ROCK STABILISATION IS REQUIRED FOR THE INLETS/OUTLET, CPESC TO CONFIRM ROCK SIZING.
2. ALL SWALE PIPE CROSSINGS TO BE RATED FOR CONSTRUCTION TRAFFIC LOADINGS.
3. REFER TO BULK EARTHWORKS PACKAGE STAGE 1 DRAWINGS FOR ALL DRAINAGE SWALE LEVELS & PROFILES.

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales

0 10 20 30 40 50m

1 : 500 @ A1 1 : 1000 @ A3

Keyplan

SHEET 1 SHEET 2 SHEET 3 SHEET 4 SHEET 5 SHEET 6

Client

ESR

Scales	1 : 500
Grid	MGA2020
Height Datum	AHD
Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project

PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title

EROSION AND SEDIMENT CONTROL PLAN
SHEET 6

Civil Engineers and Project Managers

at&l

Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10116

Issue: B

100mm on Original

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10116.dwg

LEGEND:

- EXISTING BOUNDARY
- PROPOSED BOUNDARY
- EXISTING BOUNDARY TO BE REMOVED
- PROPOSED EASEMENT
- PROPOSED RETAINING WALL
- PROPOSED MAJOR CONTOUR (48.00)
- PROPOSED MINOR CONTOUR (48.20)

ALL LEVELS SHOWN ARE ±1000mm U.N.O

TYPE A BASIN

FOREBAY VOLUME - REQUIRED = 510m³
FOREBAY VOLUME - ACTUAL = 542m³
FOREBAY SURFACE AREA = 482m²
DESIGN VOLUME - REQUIRED = 3,457m³
DESIGN VOLUME - ACTUAL = 3,913m³
DESIGN SURFACE AREA - REQUIRED = 1,354m²
DESIGN SURFACE AREA - ACTUAL = 2,527m²

RL 57.65
RL 54.78
BUND
RL 55.74
RL 55.40
4.5%
DOSING UNIT. DETAILED DESIGN TO BE CONFIRMED BY SPECIALIST.
1 C10118
21.80
RL 54.70
3.00
RL 55.00
14.00
FOREBAY RL 53.05
LEVEL SPREADER. REFER DRG. No. C10121 FIGURE 12 FOR DETAILS
RL 55.00
25.00
RL 55.00
RL 54.55
3.00
RL 52.55
4.90
12.00
4.90
1 3 MAX. BATTER
1 2 MAX. BATTER
250mm THICKNESS NOMINAL Ø200mm RIP-RAP SCOUR PROTECTION
3 C10118
I.L. 52.85
4500
1.80
RL 54.55
RL 55.00
4 x DECANT STRUCTURES DETAILED DESIGN TO BE CONFIRMED BY SPECIALIST. REFER DRG. No. C10122 FIGURE 19 FOR DETAILS
PERMEABLE BAFFLE (TYP.) SHOWN INDICATIVELY, ADD/REMOVE AS REQUIRED. REFER DRG. No. C10121 FIGURE 7 FOR DETAILS
3.00
RL 52.55
I.L. 53.05
2 C10118
EX. 52.50
SCOUR PROTECTION TO MATCH EXISTING LEVELS AT BOUNDARY
EX. 52.74
RL 55.00
4.90
12.00
4.90
1 4 MAX. BATTER
1 2 MAX. BATTER
1 4 MAX. BATTER
52.00
52.00
53.00
54.00
56.00

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

Bar Scales
0 5 10 15 20 25m
1 : 250 @ A1 1 : 500 @ A3

100mm on Original

Client: ESR

Scales	1 : 250
Grid	MGA2020
Height Datum	AHD
Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT TYPE A BASIN DETAIL PLAN

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
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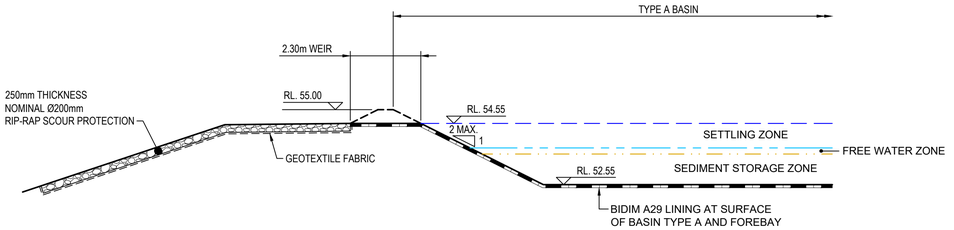
A1

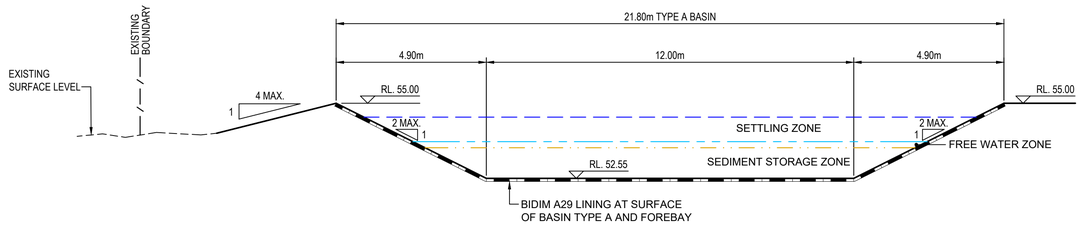
Project - Drawing No.: 20-748-C10117

Issue: B

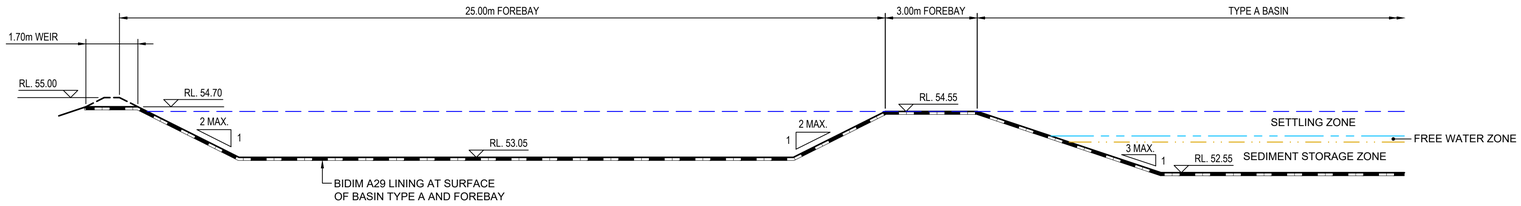
F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10117.dwg



SECTION 3
1 : 100
C10117



SECTION 2
1 : 100
C10117



SECTION 1
1 : 100
C10117

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

0 2 4 6 8 10m

1 : 100 @ A1 1 : 200 @ A3

Client

ESR

Scales	AS SHOWN	Drawn	LM
		Designed	LM
Grid	MGA2020	Checked	AT
Height Datum	AHD	Approved	

GDA2020

Project
PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title
EROSION AND SEDIMENT
TYPE A BASIN
DETAILS AND SECTIONS

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status
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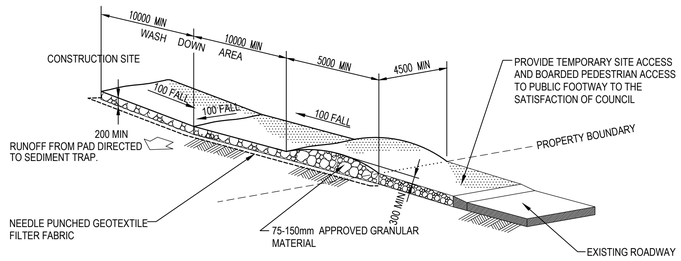
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.
20-748-C10118

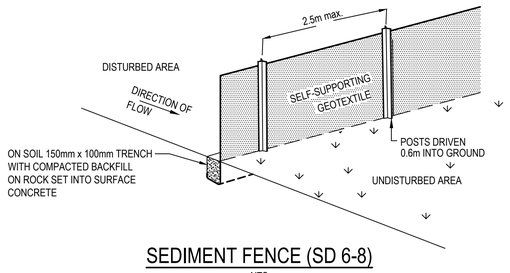
Issue
B

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10118.dwg



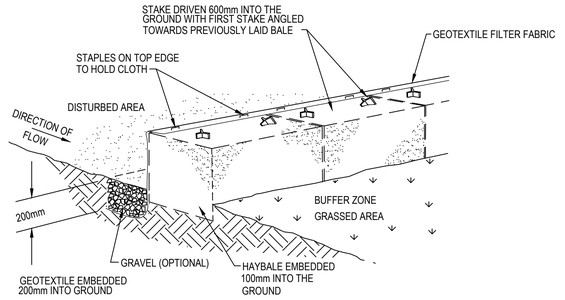
STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA

NTS



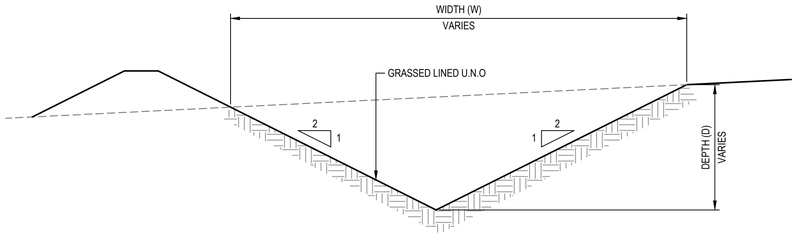
SEDIMENT FENCE (SD 6-8)

NTS



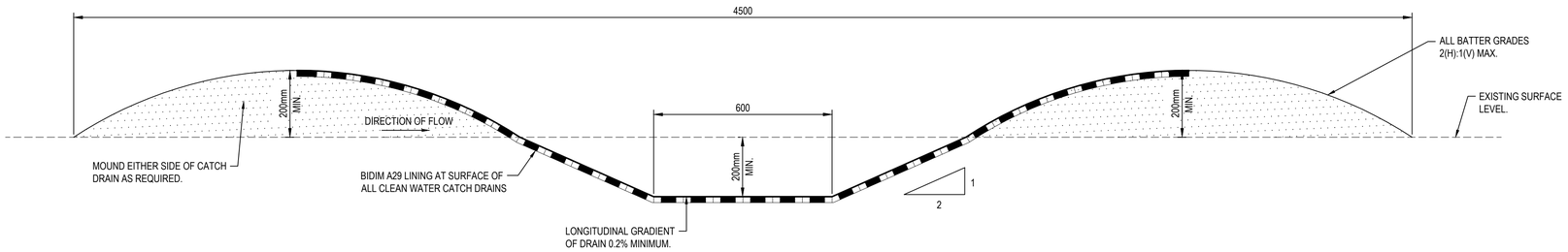
HAYBALE AND GEOTEXTILE SEDIMENT FILTER

NTS



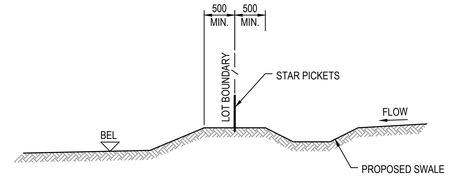
CATCH DRAIN (DIRTY WATER)

SCALE 1:10



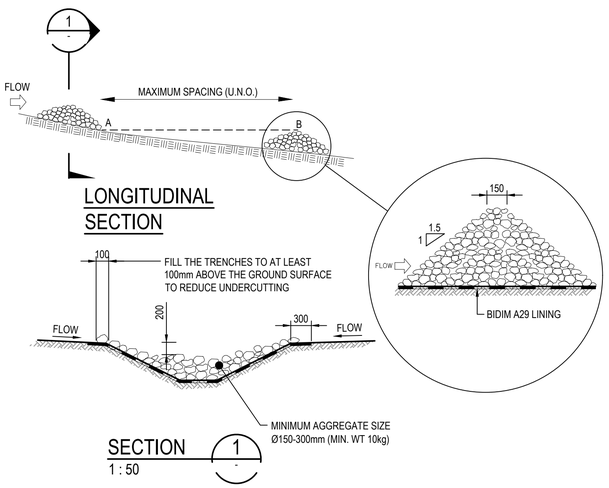
CATCH DRAIN DETAIL (CLEAN WATER)

SCALE 1:10



TYPICAL LOT BOUNDARY DETAIL

1 : 50



ROCK RIFFLE CHECK DAM (SD 5-4)

1 : 50

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

0 100 200 400 600 800 1000mm

1 : 10 @ A1 1 : 20 @ A3

0 1 2 3 4 5m

1 : 50 @ A1 1 : 100 @ A3

Client

ESR

Scales	AS SHOWN
Grid	MGA2020
Height Datum	AHD
Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project

PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title

EROSION AND SEDIMENT CONTROL DETAILS SHEET 1

Civil Engineers and Project Managers

at&l

Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10120

Issue: B

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INTERNAL BAFFLES - IN-LINE PERMEABLE

INTERNAL BAFFLES CAN ALSO BE USED TO ENSURE UNIFORM FLOW THROUGH A BASIN. THESE PERMEABLE INTERNAL BAFFLES CAN ASSIST PERFORMANCE OF ALL BASIN TYPES EVEN IN STANDARD BASIN SHAPES. THE USE OF PERMEABLE INTERNAL BAFFLES IS ESPECIALLY RECOMMENDED FOR TYPE A AND TYPE B BASINS AS THEY ASSIST IN LIMITING ANY SHORT CIRCUITING AND CAN ALSO ASSIST IN SETTLING OF FLOCS THROUGH AGAINST THE MESH.
PERMEABLE IN-LINE BAFFLES CAN TYPICALLY BE CONSTRUCTED USING A FIXED OR FLOATING SYSTEM. FIXED SYSTEMS WILL TYPICALLY INCORPORATE POSTS MOUNTED IN THE FLOOR AND WALL OF THE BASINS WITH A MESH ATTACHED TO THE POSTS. THE HEIGHT OF THE POSTS AND MESH SHOULD BE AT APPROXIMATELY THE SAME HEIGHT AS THE EMERGENCY SPILLWAY TO AVOID A CONCENTRATED FLOW ON THE UPPER LAYER OF THE WATER COLUMN ABOVE THE BAFFLE. AN ALTERNATIVE OPTION IS TO USE A BAFFLE INCORPORATING FLOATS TO KEEP THE MESH ON THE TOP OF THE WATER COLUMN AND WEIGHTING TO FIX THE BAFFLE TO THE FLOOR OF THE BASIN. THIS CAN BE GENERALLY BE ACHIEVED BY UTILISING PROPRIETARY SILT CURTAINS.

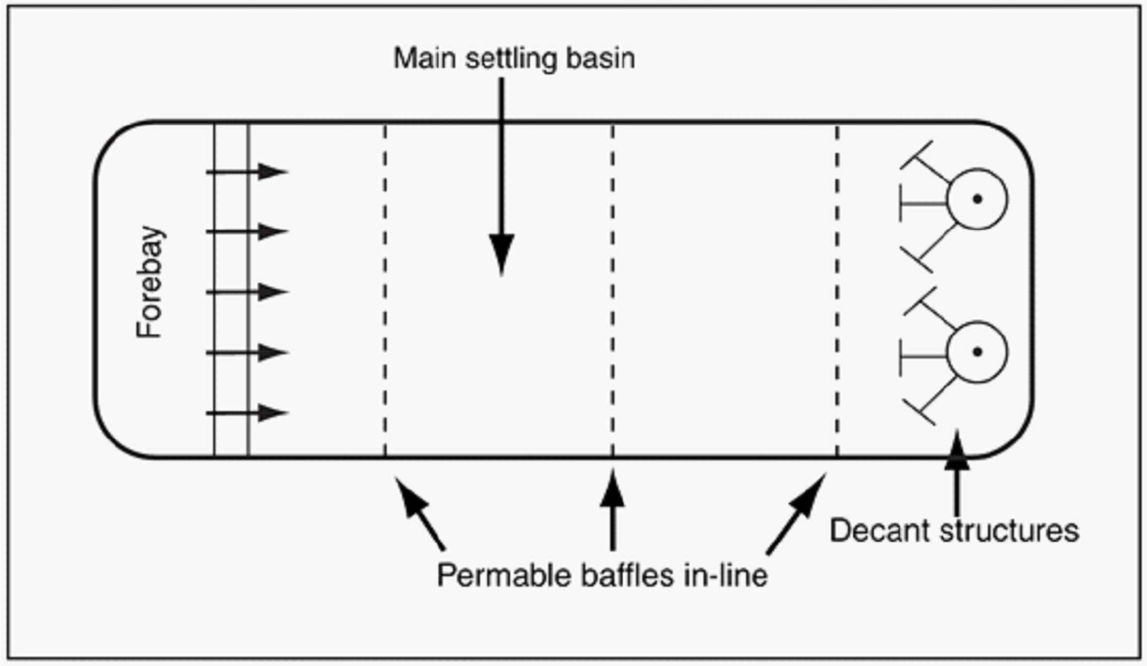

FIGURE 7 - TYPICAL ARRANGEMENT OF IN-LINE PERMEABLE BAFFLES

A CRITICAL COMPONENT OF IN-LINE PERMEABLE BAFFLES IS THE OPEN AREA OF THE PRODUCT. TOO TIGHT A WEAVE AND THE BAFFLES WILL ACTUALLY HINDER PERFORMANCE, WITH TOO OPEN A WEAVE PROVIDING LITTLE BENEFIT. A 75% WEAVE SHADE CLOTH OR EQUIVALENT OPEN AREA IS RECOMMENDED FOR IN-LINE PERMEABLE BAFFLES. NOTE THIS IS SIGNIFICANTLY MORE OPEN THAN TYPICAL SILT CURTAINS USED ON CONSTRUCTION SITES.

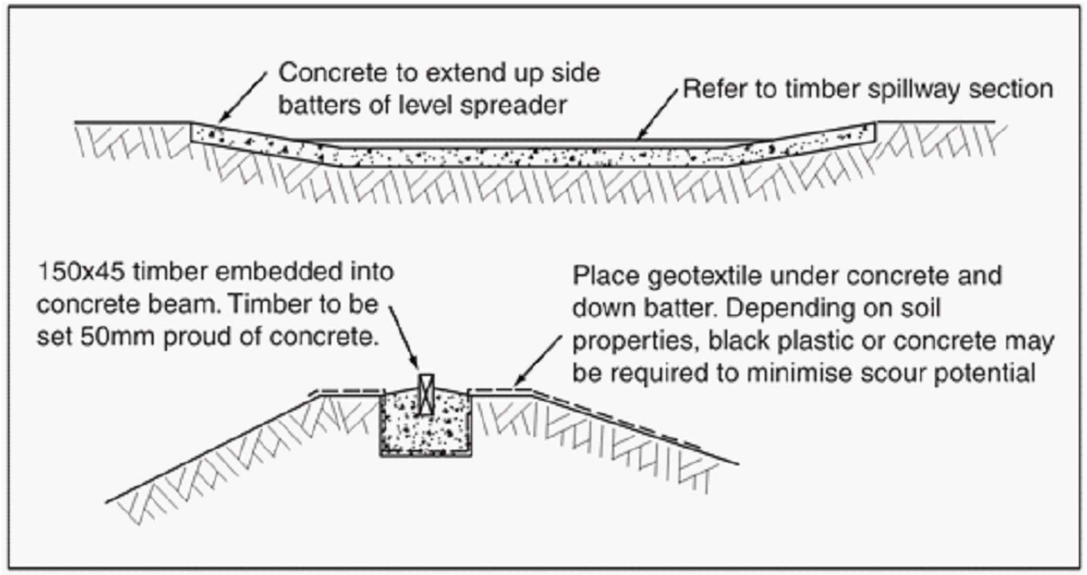

FIGURE 12 -TYPICAL DETAIL FOR A TYPE A AND B BASIN LEVEL SPREADER

IT IS CRITICAL THAT THE SPREADER IS LEVEL BECAUSE ANY MINOR INACCURACY IN CONSTRUCTION CAN DIRECT FLOW TO ONE SIDE OF THE MAIN BASIN CELL RESULTING IN SHORT-CIRCUITING AND A SIGNIFICANT REDUCTION THE PERFORMANCE OF THE BASIN. WHERE LONG SPREADERS ARE INSTALLED, THE USE OF A MULTIPLE V-NOTCH WEIR PLATE (FIGURE 13) IS RECOMMENDED TO OVERCOME DIFFICULTIES WITH ACHIEVING THE REQUIRED CONSTRUCTION TOLERANCES. A MULTIPLE V-NOTCH WEIR PLATE CAN BE FIXED TO A PIECE OF TIMBER EMBEDDED IN CONCRETE.

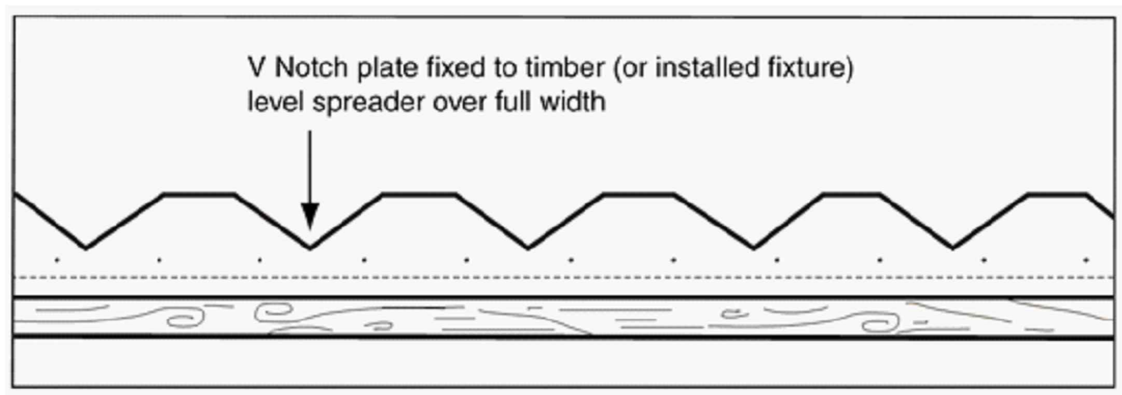

FIGURE 13 -TYPICAL DETAIL FOR MULTIPLE V-NOTCH WEIR PLATE

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	28-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client: ESR

Scales

Grid: MGA2020

Height Datum: AHD

Drawn	LM
Designed	LM
Checked	AT
Approved	

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL DETAILS SHEET 2

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
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A1

Project - Drawing No.: 20-748-C10121

Issue: B

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DESIGN THE PRIMARY OUTLET SYSTEM

HISTORICALLY, SEDIMENT BASINS WERE DESCRIBED AS EITHER 'DRY' OR 'WET' BASINS. THIS CLASSIFICATION SYSTEM CAN BE SEEN AS CONFUSING BECAUSE IT REFERS ONLY TO THE EXISTENCE OF AN AUTOMATIC DRAINING SYSTEM, AND NOT TO THE OPTION TO RETAIN WATER WITHIN THE BASIN AFTER STORMS SO THAT THE WATER CAN BE USED FOR ON-SITE PURPOSES. THE TRADITIONAL DEFINITION OF WET AND DRY BASINS IS PROVIDED BELOW.

- DRY BASINS ARE FREE DRAINING BASINS THAT FULLY DE-WATER THE SETTLING ZONE AFTER EACH STORM.THESE USUALLY INCLUDE TYPE A AND C BASINS.
- WET BASINS ARE NOT FREE DRAINING, BUT ARE DESIGNED TO RETAIN THE STORMWATER RUNOFF FOR EXTENDED PERIODS IN ORDER TO PROVIDE THE BASIN WITH SUFFICIENT TIME FOR THE GRAVITATIONAL SETTLEMENT OF FINE SEDIMENT PARTICLES. THESE BASINS CAN INCLUDE TYPE A, TYPE B, AND TYPE D BASINS. TYPE A BASINS ARE INCLUDED BECAUSE THE AUTOMATIC DECANT SYSTEM CAN BE SHUT DOWN IF THE BASIN'S DISCHARGE FAILS TO MEET THE PRE-DETERMINED WATER QUALITY OBJECTIVES.

TYPE A BASINS REQUIRE A FLOATING LOW-FLOW DECANT SYSTEM AS DESCRIBED BELOW.

TYPE B BASINS MAY NOT REQUIRE A FORMAL DECANT SYSTEM, OTHER THAN THAT REQUIRED TO DE-WATER THE BASIN PRIOR TO THE NEXT STORM, OR TO EXTRACT THE WATER FOR USAGE ON THE SITE.

TYPE C BASINS REQUIRE A FREE-DRAINING OUTLET SYSTEM IN THE FORM OF EITHER A RISER PIPE OUTLET, OR FLOATING DECANT SYSTEM. GABION WALL, *ROCK FILTER DAM*, AND *SEDIMENT WEIR* OUTLET SYSTEMS ARE **NOT** RECOMMENDED UNLESS A TYPE 2 SEDIMENT RETENTION SYSTEM HAS BEEN SPECIFIED.

TYPE D BASINS USUALLY REQUIRE A PUMPED DISCHARGE SYSTEM SIMILAR TO TYPE B BASINS. IF A PIPED OUTLET EXISTS, THEN A FLOW CONTROL VALVE MUST BE FITTED TO THE OUTLET PIPE TO CONTROL THE DISCHARGE.

FLOATING DECANT SYSTEM FOR TYPE A BASINS

FLOATING SIPHON OUTLET SYSTEMS ARE DESIGNED TO SELF-PRIME WHEN THE BASIN'S WATER EXCEEDS A PREDETERMINED ELEVATION. THESE SYSTEMS DECANT THE BASIN BY SIPHONING WATER FROM THE TOP OF THE POND, THUS ALWAYS EXTRACTING THE CLEANEST WATER. THIS ALSO EXTENDS THE SETTLEMENT PERIOD BY COMMENCING DECANT PROCEDURES ONLY WHEN THE POND LEVEL REACHES THE PREDETERMINED ELEVATION.

SELF-PRIMING SKIMMER PIPES ARE DIFFICULT TO DESIGN AND OPTIMISE. THE AUCKLAND-TYPE, FLOATING DECANT SYSTEMS IS DEPICTED IN FIGURE 19. THIS OUTLET SYSTEM ACHIEVE 4.5 L/S PER DECANT ARM. EACH DECANT ARM HAS SIX ROWS OF 10 MM DIAMETER HOLES DRILLED AT 60 MM SPACINGS (TOTALLING 200 HOLES) ALONG THE 2 M WIDTH OF THE DECANT ARM.

IF LARGER FLOW RATES ARE REQUIRED, MULTIPLE DECANTS STRUCTURES ARE TO BE INSTALLED. FLOW RATES CAN BE CONTROLLED THROUGH THE SIZING AND NUMBER OF HOLES IN THE DECANT, OR BY USING AN ORIFICE PLATE BASED ON APPROPRIATE HYDRAULIC CALCULATIONS.

FOR SMALL CATCHMENTS, A SINGLE DECANT MAY BE SUFFICIENT TO ACHIEVE THE REQUIRED OUTFLOW RATE. A SINGLE DECANT ARM CAN CONNECT DIRECTLY INTO A PIPE THROUGH THE SEDIMENT BASIN WALL NEGATING THE NEED FOR A MANHOLE. PROPRIETARY SKIMMING SYSTEMS ARE AVAILABLE AND CAN BE USED AS LONG AS THEY ADHERE TO THE DESIGN INTENT, AND WILL NOT DRAW UP FLOC PARTICLES DUE TO CONCENTRATED FLOW.

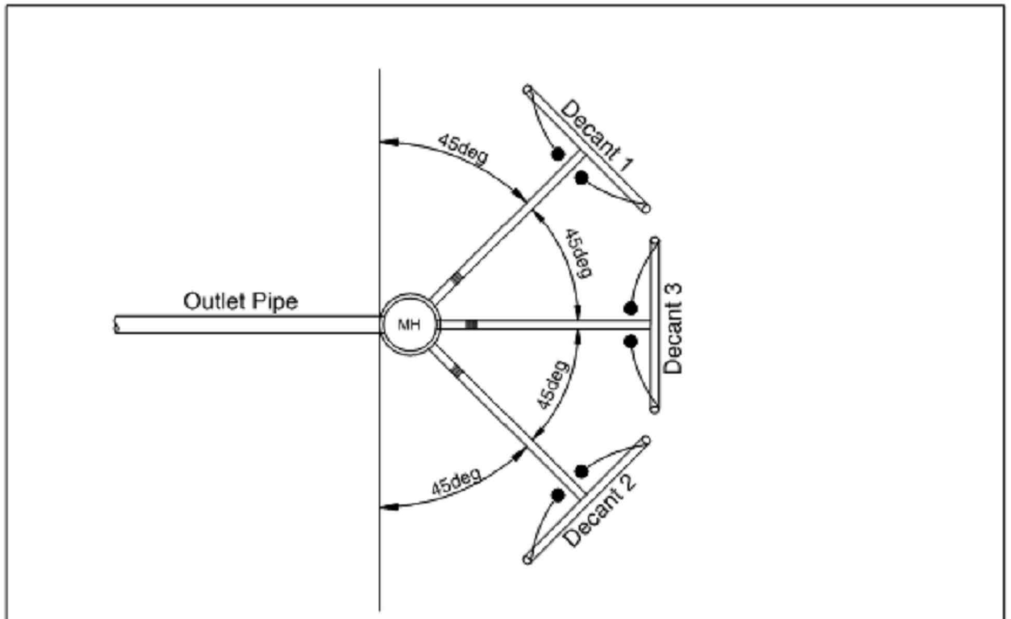

FIGURE 19 -AUCKLAND-TYPE FLOATING DECANT SYSTEM FOR TYPE A BASINS

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client: ESR

Scales | Drawn: LM | Designed: LM | Checked: AT | Approved:
Grid: MGA2020
Height Datum: AHD
GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL DETAILS
SHEET 3

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10122

Issue: B

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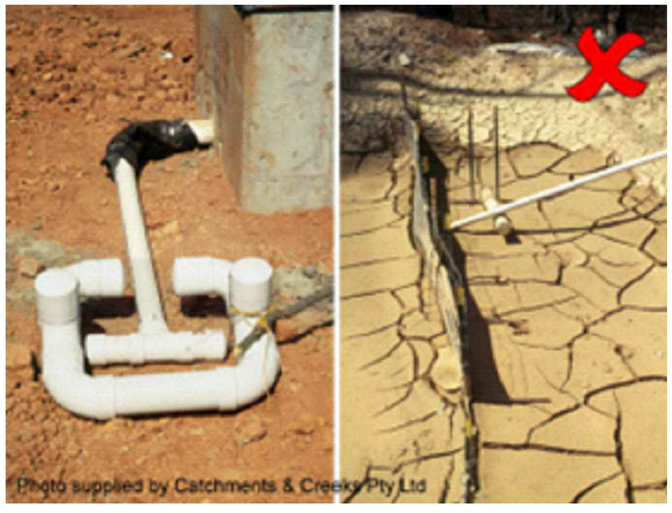
TYPE A DECANT AT LOW WATER LEVEL

FLOATING ARM DECANT SYSTEM

RISER PIPES UNDER CONSTRUCTION

RISER PIPE WITH AGGREGATE FILTER

SKIMMER OUTLET SYSTEM



SKIMMER PIPES MUST BE PROTECTED FROM SEDIMENT BUILD-UP

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client: ESR

Scales

Grid MGA2020

Height Datum AHD

GDA2020

Drawn	LM
Designed	LM
Checked	AT
Approved	

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL DETAILS SHEET 4

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No. 20-748-C10123

Issue B

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SAND FILTER OUTLET

SAND FILTER OUTLET

Issue	Description	Date
B	RE-ISSUED FOR APPROVAL	25-05-23
A	ISSUED FOR APPROVAL	08-05-23

100mm on Original

Bar Scales

Client

ESR

Scales

Grid MGA2020

Height Datum AHD

GDA2020

Drawn	LM
Designed	LM
Checked	AT
Approved	

Project

PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title

EROSION AND SEDIMENT CONTROL DETAILS
SHEET 5

Civil Engineers and Project Managers

at&l

Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status

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NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.

20-748-C10124

Issue

B

F:\20-748 ESR Mamre\6.0 Drgs\Civil\Final\CC\10100_SED_STAGE-1_CC\20-748-C10124.dwg

ALDINGTON ROAD

ABBOTTS ROAD

REMEDIATION AREA

UTILISE EXISTING DAM

UTILISE EXISTING ACCESS TRACK

EXISTING CLEAN WATER FLOW PATH

PROVIDE PIPE CROSSING UNDER CONSTRUCTION ENTRY/EXIT

UTILISE EXISTING DAM FOR EXISTING CLEAN WATER FLOW PATH STORAGE (FOR PUMPING OUT)

SEDIMENT FENCE

AEC09b

AEC14

DIVERSION DRAIN

HOUSE COMPOUND NO ACCESS

LEGEND:

- REMEDIATION AREA
- EXISTING DAM
- EXISTING TRACK
- CLEAN WATER DIVERSION DRAIN
- EXISTING CLEAN WATER FLOW PATH
- SEDIMENT FENCE
- CATTLE GRID
- SITE ACCESS GATE

SCOPE OF WORK

1. REMEDIATION TO BE CONDUCTED IN ACCORDANCE WITH :
   - 20-748-SKC186_SITE_REMEDIATION
   - ALLIANCE GEOTECHNICAL "REMEDIATION ACTION PLAN" DATED 2/5/2023 13546-ER-2-2_REV1
2. TREE CLEARING TO BE CONDUCTED IN ACCORDANCE WITH :
   - 20-748-SKC184_SITE_CLEARANCE
   - ECOLOGICAL AUSTRALIA "BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT" DATED 14 APRIL 2022
3. ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE ENDORSED CEMP AND ASSOCIATED SUB
4. ALL REMEDIATION AREAS TO BE LOCALLY DISTURBED, FOLLOWING COMPLETION OF THE WORKS THE DISTURBED AREAS ARE TO BE STABILISED AND A SUMP INSTALLED
5. TREE REMOVAL TO BE UNDERTAKEN TO GROUND LEVEL ONLY - NO GRUBBING OF STUMPS IS TO BE UNDERTAKEN AT THIS STAGE

Issue	Description	Date
C	RE-ISSUED FOR APPROVAL	25-05-23
B	ISSUED FOR APPROVAL	08-05-23
A	ISSUED FOR CONSTRUCTION CERTIFICATE	03-05-23

Bar Scales

0 30 60 90 120 150m

1 : 1500 @ A1 1 : 3000 @ A3

100mm on Original

Client: ESR

Scales: 1 : 1500

Grid: MGA2020

Height Datum: AHD

Drawn: QD

Designed: AT

Checked: AT

Approved:

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 1 - PRIOR TO REMEDIATION & TREE CLEARING

Civil Engineers and Project Managers

at&l

Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
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A1

Project - Drawing No.: 20-748-C10131

Issue: C

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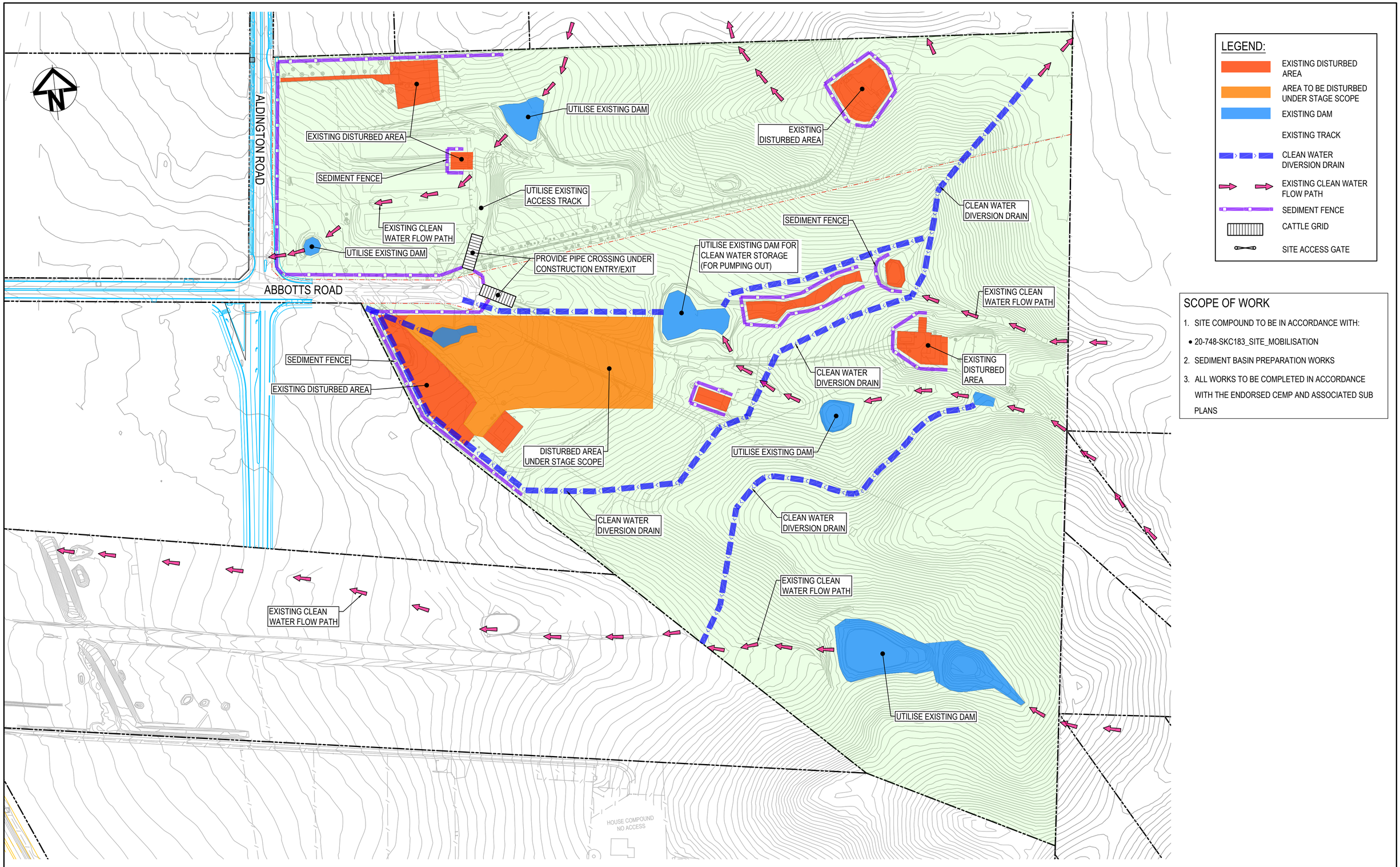

SCOPE OF WORK

1. SITE COMPOUND TO BE IN ACCORDANCE WITH:
   - 20-748-SKC183_SITE_MOBILISATION
2. SEDIMENT BASIN PREPARATION WORKS
3. ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE ENDORSED CEMP AND ASSOCIATED SUB PLANS

Issue	Description	Date
C	RE-ISSUED FOR APPROVAL	25-05-23
B	ISSUED FOR APPROVAL	08-05-23
A	ISSUED FOR CONSTRUCTION CERTIFICATE	03-05-23

Bar Scales

0 30 60 90 120 150m

1 : 1500 @ A1 1 : 3000 @ A3

100mm on Original

Client: ESR

Scales: 1 : 1500

Grid: MGA2020

Height Datum: AHD

GDA2020

Drawn	QD
Designed	AT
Checked	AT
Approved	

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 2 - ESTABLISHMENT OF COMPOUND AND SEDIMENT BASIN

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10132

Issue: C

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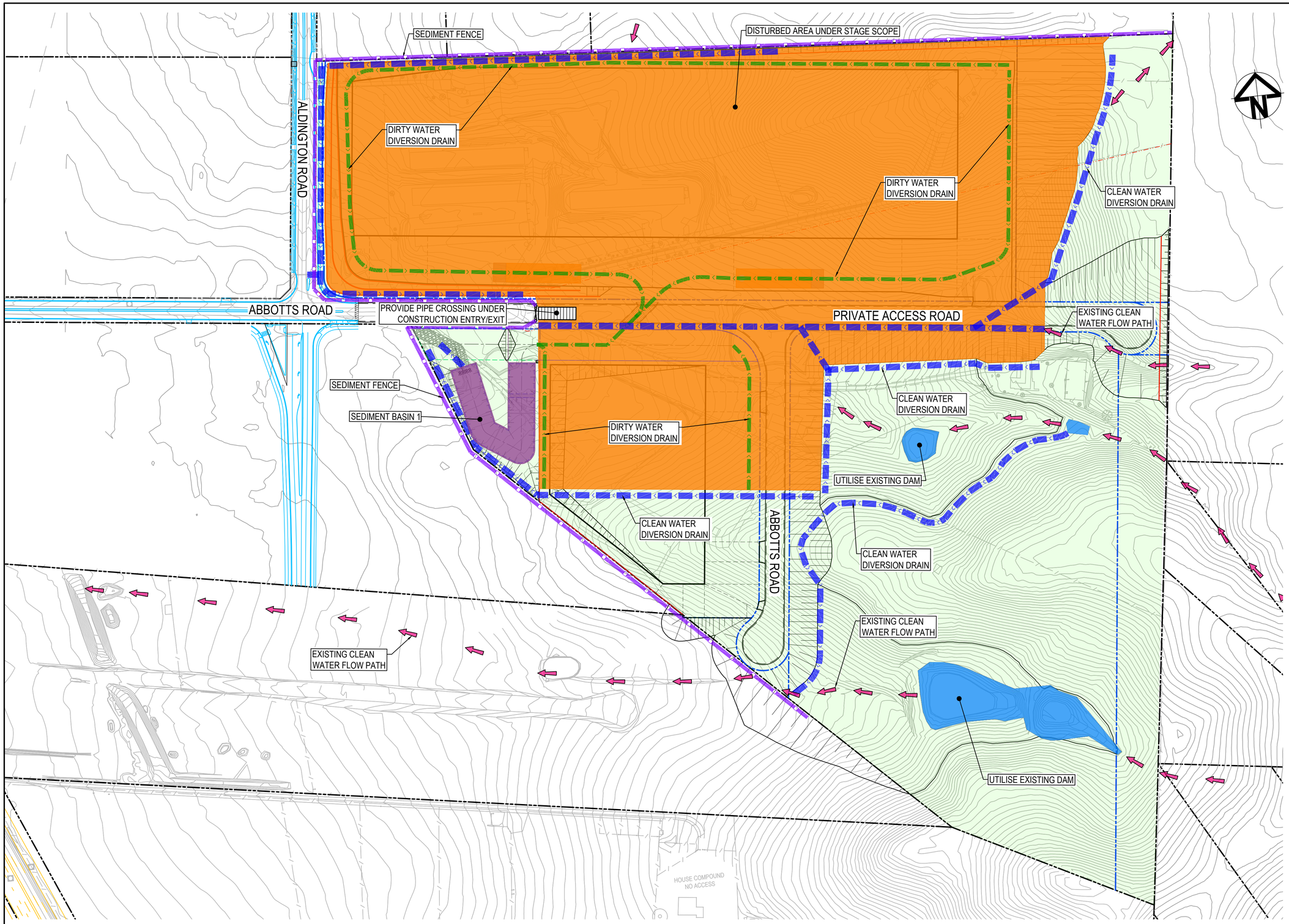

LEGEND:

- SEDIMENT BASINS
- AREA TO BE DISTURBED UNDER STAGE SCOPE
- EXISTING DAM
- EXISTING TRACK
- CLEAN WATER DIVERSION DRAIN
- EXISTING CLEAN WATER FLOW PATH
- DIRTY WATER DIVERSION DRAIN
- SEDIMENT FENCE
- CATTLE GRID
- SITE ACCESS GATE

SCOPE OF WORK & SEQUENCING

1. CONSTRUCTION OF SEDIMENT BASIN 1
2. CONSTRUCTION OF DIRTY WATER DIVERSION SWALE
3. REALIGNMENT OF CLEAN WATER DIVERSION
4. DAM DECOMISSIONING IN ACCORDANCE WITH THE DAM DECOMISSIONING MANAGEMENT PLAN
5. HOLD POINT - CPESC TO APPROVE THE INSTALLED ERSED CONTROLS
6. STRIP VEGETATION
7. BULK EARTHWORKS

ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE ENDORSED CEMP AND ASSOCIATED SUB PLANS

Issue	Description	Date
C	RE-ISSUED FOR APPROVAL	25-05-23
B	ISSUED FOR APPROVAL	08-05-23
A	ISSUED FOR CONSTRUCTION CERTIFICATE	03-05-23

Bar Scales

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1 : 1500 @ A1 1 : 3000 @ A3

100mm on Original

Client: ESR

Scales: 1 : 1500

Grid: MGA2020

Height Datum: AHD

Drawn: QD

Designed: AT

Checked: AT

Approved:

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 3 EARTHWORKS

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10133

Issue: C

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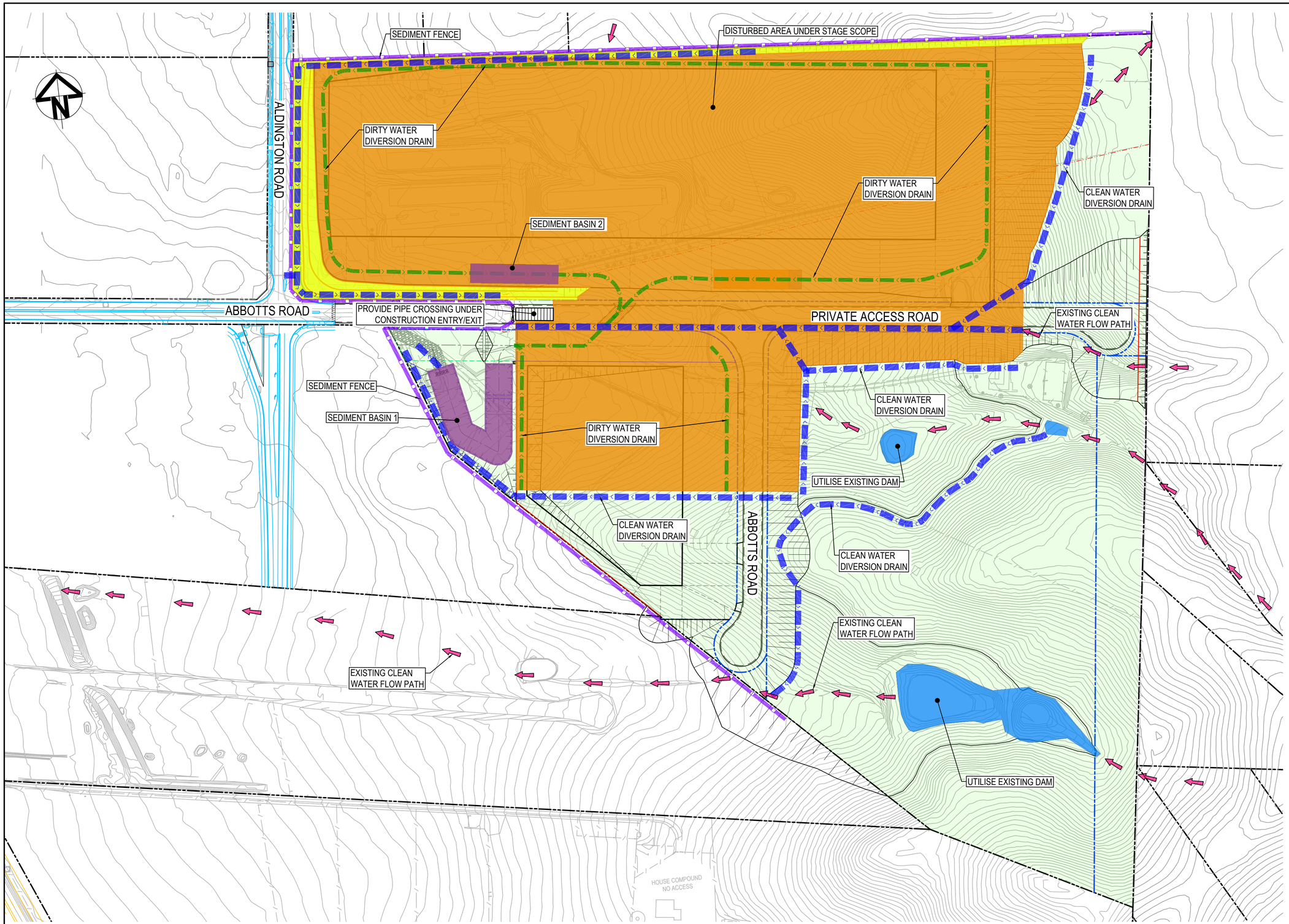

SCOPE OF WORK & SEQUENCING

1. CONSTRUCTION OF SEDIMENT BASIN 2
2. REALIGN DIRTY WATER DIVERSION SWALE
3. REALIGNMENT OF CLEAN WATER DIVERSION
4. STABILISE COMPLETED WORKS AREA IN LINE WITH BLUE BOOK
5. HOLD POINT - CPESC TO APPROVE THE INSTALLED ERSED CONTROLS

ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE ENDORSED CEMP AND ASSOCIATED SUB PLANS

Issue	Description	Date
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B	ISSUED FOR APPROVAL	08-05-23
A	ISSUED FOR CONSTRUCTION CERTIFICATE	03-05-23

100mm on Original

Bar Scales

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1 : 1500 @ A1 1 : 3000 @ A3

Client

ESR

Scales	1 : 1500
Grid	MGA2020
Height Datum	AHD
Drawn	QD
Designed	AT
Checked	AT
Approved	

GDA2020

Project

PROPOSED INDUSTRIAL DEVELOPMENT
WESTLINK
KEMPS CREEK

Title

EROSION AND SEDIMENT CONTROL STAGING PLAN
STAGE 4.1
EARTHWORKS

Civil Engineers and Project Managers

at&l

Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

A1

Project - Drawing No.: 20-748-C10134

Issue: C

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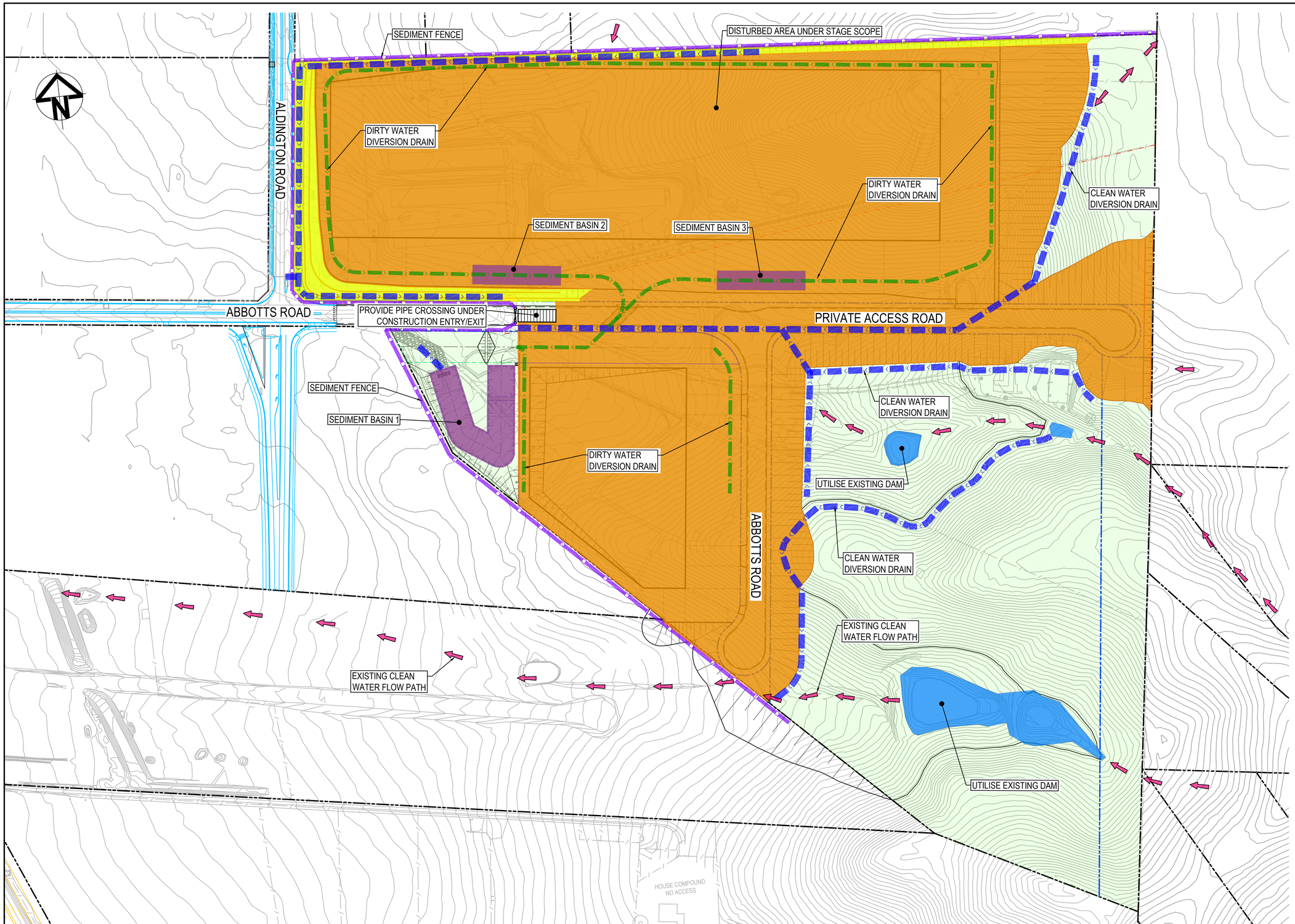

LEGEND:

- SEDIMENT BASINS
- AREA TO BE DISTURBED UNDER STAGE SCOPE
- STABILISED AREA (CLEAN RUNOFF)
- EXISTING DAM
- EXISTING TRACK
- CLEAN WATER DIVERSION DRAIN
- EXISTING CLEAN WATER FLOW PATH
- DIRTY WATER DIVERSION DRAIN
- SEDIMENT FENCE
- CATTLE GRID
- SITE ACCESS GATE

SCOPE OF WORK & SEQUENCING

1. CONSTRUCTION OF SEDIMENT BASIN 3
2. REALIGN DIRTY WATER DIVERSION SWALE
3. REALIGNMENT OF CLEAN WATER DIVERSION
4. STABILISE COMPLETED WORKS AREA IN LINE WITH BLUE BOOK
5. HOLD POINT - CPESC TO APPROVE THE INSTALLED ERSED CONTROLS

ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE ENDORSED CEMP AND ASSOCIATED SUB PLANS

Issue	Description	Date
A	ISSUED FOR APPROVAL	25-05-23

Bar Scales

0 30 60 90 120 150m

1 : 1500 @ A1 1 : 3000 @ A3

Client: ESR

Scales: 1 : 1500

Grid: MGA2020

Height Datum: AHD

Drawn: QD

Designed: AT

Checked: AT

Approved:

GDA2020

Project: PROPOSED INDUSTRIAL DEVELOPMENT WESTLINK KEMPS CREEK

Title: EROSION AND SEDIMENT CONTROL STAGING PLAN STAGE 4.2 EARTHWORKS

Civil Engineers and Project Managers
at&l
Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9923 1055
www.atl.net.au
info@atl.net.au

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

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Issue: A

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Appendix C Dam Decommissioning Strategy

Dam Decommissioning Strategy

Westlink Stage 1

290-308 Aldington Road, 59-62 Abbotts Road & 63 Abbotts Road, Kemps Creek

SSD-9138102

DOCUMENT TRACKING

Version No.	Document No.	Description	Prepared By	Approved By	Date
Rev 01	J1876230421.01	Draft issued to client for review	A. Wiltshire	R. Salisbury	21/04/2023
Rev 02	J1876230503.02	Updated to include approved CoC	N. Yousefi	R. Salisbury	03/05/2023
Rev 03	J1876230522.03	Updated to address ER comments	N. Yousefi	R. Salisbury	22/05/2023

AUTHOR(S) DETAILS

Author Details	Qualifications and Experience
Andrew Wiltshire	BSc DipSc (Env Mgt) 14 years of experience in environmental assessment and management across mining, construction and infrastructure sectors, including State significant development and Commonwealth approvals.
Neda Yousefi	BA MAE PhD (EnvSc) 5 years environmental research and assessment.

APPROVER DETAILS

Approver Details	Qualifications and Experience
Rob Salisbury	BSc DipEnvStud MSc Over 30 years of environmental management experience in the transport, industrial, water, energy, communications and other sectors.

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Glossary

CEMP	Construction Environmental Management Plan
CoC	Condition(s) of Consent
DDS	Dam Decommissioning Strategy
EIS	Environmental Impact Statement
ENM	Excavated natural material
NHMRC	National Health and Medical Research Council
NEPM	National Environmental Protection Measure
NSW EPA	NSW Environment Protection Agency
SSD	State significant development
The Project	Stage 1 of the Westlink industrial estate (formerly known as the Kemps Creek Logistics Park)
VENM	Virgin excavated natural material

1 INTRODUCTION

1.1 Background

This Dam Decommissioning Strategy (DDS) has been prepared by Aspect Environmental Pty Ltd on behalf of ESR Australia Pty Ltd (ESR), for the purposes of Stage 1 of an industrial estate known as Westlink (formerly known as the Kemps Creek Logistics Park) (the Project).

This DDS is a Sub-Plan of the Construction Environmental Management Plan (CEMP) and has been prepared with reference to:

- State significant development (SSD) 9138102 Development Consent and the included conditions of consent (CoC) dated 21 April 2023
- Amendment Report (Ethos Urban, 15 September 2022)
- Environmental Impact Statement (EIS, Ethos Urban, 17 June 2021)
- SSD 9138102 Planning Secretary's Environmental Assessment Requirements which were issued in December 2020.

The DDS guides the process for the decommissioning of the farm dams at the Project site, as part of the construction of the Project.

1.2 Project Description

The Project comprises the first stage of an industrial estate located at 290-308 Aldington Road, Kemps Creek (Lot 13 Deposited Plan (DP) 253503), 59-62 Abbotts Road (Lot 12 DP 253503), and 63 Abbotts Road, Kemps Creek (Lot 11 DP 253503) within Penrith City Local Government Area. The Project site is approximately 319,800m^2 in area and is irregular in shape. In June 2020, the site was rezoned IN1 – General Industrial under *the State Environmental Planning Policy (Western Sydney Employment Area) 2009*. The site is also located in the Mamre Road Precinct and is subject to controls outlined in the Mamre Road Precinct Development Control Plan 2021. The location of the Project site is indicated by the red outline on Figure 1-1.

The SSD 9138102 Development Consent also includes Lots 3 and 4 DP 250002 in the development site. These lots are located immediately south of Lot 11 DP 253503 and works (e.g. batter slopes) may be required within them to allow earthworks to be safely undertaken within Lot 11.

The site currently comprises undulated rural land, with foundations of residential dwellings, farm sheds, and miscellaneous agricultural greenhouses and structures. It is best described as being rural-residential in nature, with significant areas of land currently remaining unused.

As per the SSD 9138102 Development Consent, the Project includes bulk earthworks (clearing, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction), subdivision, construction, fit out and operation of two warehouse buildings and ancillary office space with a total gross floor area of 81,317m^2, landscaping, construction of estate roads and external road upgrades, site servicing and stormwater infrastructure.

The site layout for Stage 1 is shown in Figure 1-2.

Figure 1-1: Site context (EIS, Ethos Urban, June 2021)

Figure 1-2: Stage 1 site layout (SSD 9138102 Development Consent, 21 April 2023)

1.3 Dam Decommissioning Strategy Context and Purpose

This DDS has been prepared to address CoC B36 of SSD 9138102 Development Consent for the Project (provided in full below), and forms part of the CEMP required by CoC C2 in accordance with the condition.

In accordance with CoC A35, the DDS must be reviewed by the Project's Environmental Representative to ensure it is consistent with requirements in or under the consent and, if so, make a written statement to that effect. Relevant CEMP and Sub-Plans will then be submitted for the approval of the Secretary of Planning in accordance with CoC A2.

The purpose of this DDS is to set out the processes for implementation during the decommissioning of the onsite farm dams during the construction phase of the Project.

2 SITE DESCRIPTION

2.1 General

The Project site includes 290-308 Aldington Road, 59-62 Abbotts Road, and 63 Abbotts Road, Kemps Creek, and is located approximately 38km west of the Sydney central business district and approximately 5km north-east of the Western Sydney Airport, which is currently under construction. The site also includes two adjoining lots (1030-1048 and 1050-1064 Mamre Road), which form part of the stormwater management strategy, but will not be developed as part of Stage 1.

2.2 Topography

The site topography is hilly with high points and gullies at the east grading down towards flatter, lower-lying land to the west, with local relief between 50-80m and slopes from 5-20%.

2.3 Geology and Soils

The site is predominantly Luddenham soils and potentially Blacktown soils in the west and north-west portion of the site.

The Luddenham Soil Landscape is an erosional soil group characterised by undulating to rolling low hills on Wianamatta group shales and often associated with Minchinbury sandstone. It comprises three soil horizons that range from shallow dark podzolic soils to massive earthy clays on crests and moderately deep red podzolic soils on upper slopes. These soils are typically moderately reactive, with a high soil erosion hazard, and localised impermeable highly plastic subsoil.

The Blacktown Soil Landscape comprises up to four soil horizons that range from shallow red-brown hard-setting sandy clay soils on crests and upper slopes to deep brown to yellow sand and clay soils overlying grey plastic mottled clay on mid to lower slopes. These soils are typically low fertility, are moderately reactive and have a generally low wet bearing strength.

2.4 Hydrology and Hydrogeology

Water flows from east to west across the site via minor watercourses that discharge into neighbouring land to the west before flowing towards Kemps Creek, which flows north.

Based on distances to the nearest water course and site typography, groundwater flow is likely to be to the west.

The NSW Office of Water groundwater database indicates the are no registered groundwater features within 500m of the site.

3 LEGAL AND OTHER REQUIREMENTS

3.1 Regulatory Framework

Surface water and groundwater resources in NSW are managed by the NSW Department of Primary Industry and Environment (Water) under the *Water Act 1912* and *Water Management Act 2000*.

Water NSW is responsible for managing dam safety for all dams across NSW, including the decommissioning of farm dams.

3.2 Assessment Guidelines

The dam water quality will be screened against the following guidelines as part of the dewatering and decommissioning process:

- *Australian and New Zealand Guidelines for Fresh Water Quality* (ANZG, 2018) – 95% species protection guidelines
- *Guidelines for Managing Risks in Recreational Water* (NHMRC, 2008) – Primary contact recreation guidelines.

In addition, the following criteria are consistent with industry best practice and will be used immediately before and during dewatering to determine suitability for re-use or discharge:

- pH between 6.5 and 8.5
- Total suspended solids < 50 mg/L
- No visible oil and grease.

The dam sediment and embankment soil will be screened against the following National Environmental Protection Measure (NEPM) guidelines to determine the onsite reuse or offsite disposal process:

- *NEPM – Guideline on Investigation Levels for Soil and Groundwater* (2013) – Health investigation levels for soils contaminants for commercial/industrial sites (HIL-D)
- *NEPM – Guideline on Investigation Levels for Soil and Groundwater* (2013) – Health screening levels commercial/industrial sites (HSL-D).

3.3 Development Consent Conditions

The Project will be constructed in accordance with SSD 9138102 Development Consent and in accordance with the documents referenced under CoC A2 of that consent. CoC B36 states:

> *Prior to commencement of construction of the development, the Applicant must prepare a Dam Decommissioning Strategy to the satisfaction of the Planning Secretary. The Dam Decommissioning Strategy must form part of the CEMP required by condition C2. The Applicant must implement the most recent version of the Dam Decommissioning Strategy for the duration of construction.*

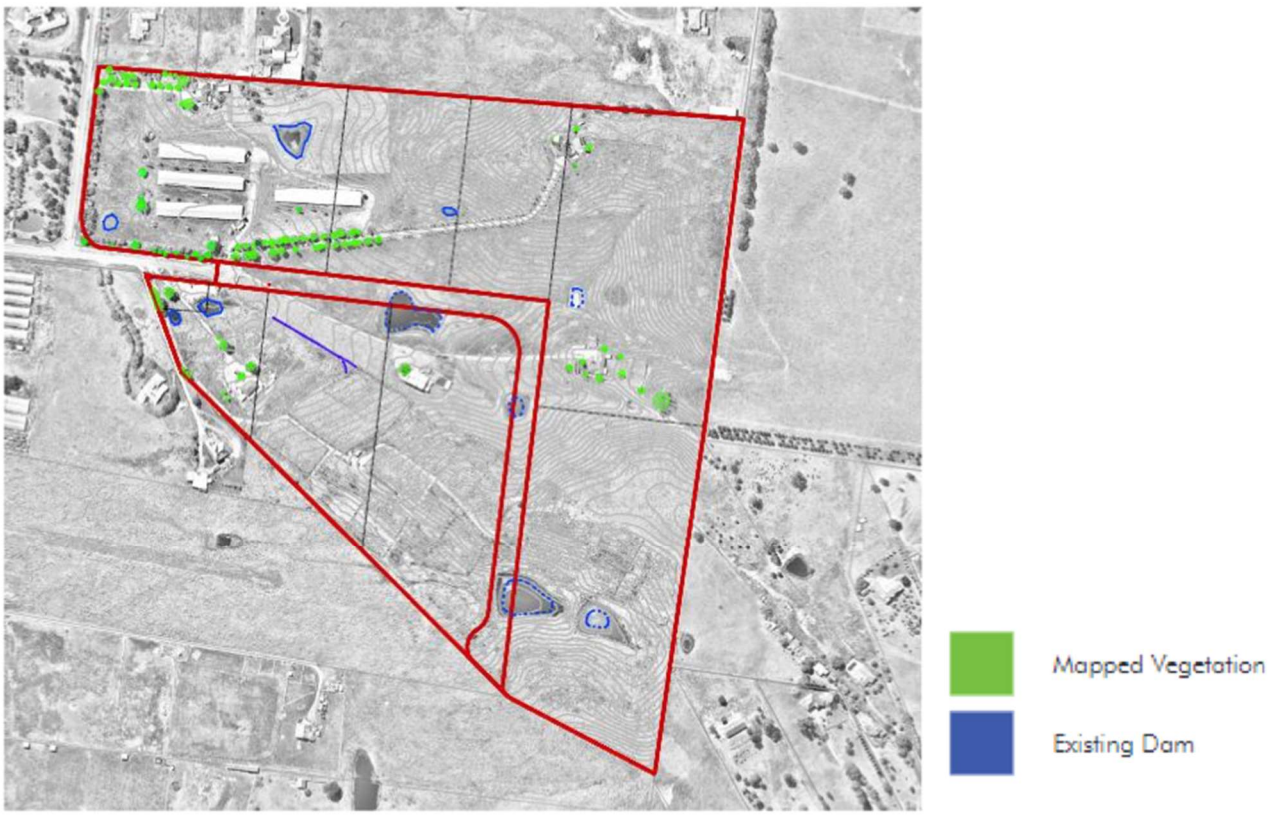
This DDS has been prepared to meet the requirements of the above condition.

4 DAM DECOMMISSIONING

4.1 Dams

The five major farm dams and the smaller farm dams on site are shown in Figure 4-1. The dams are located in a general north-west distribution across the site and are generally formed by the construction of earthen embankments. The dams are fed by rainfall run-off. The smaller farm dams identified in Figure 4 1 would be assessed on site and follow a similar procedure in Section 4.2, if necessary (i.e. they may already be dry).

Figure 4-1: Site dam locations (Nettleton Tribe, 2022)



4.2 Decommissioning Strategy

The decommissioning of the five major dams and smaller dams, if required, would be undertaken to align with the progression of earthworks on site. The timing of the earthworks and seasonal conditions will influence the water levels of the dams, and this would be taken into consideration when sequencing the decommissioning activities.

The recommended procedure for the decommissioning of the existing farm dams is summarised below. The dam decommissioning process would be undertaken under proper supervision to avoid unauthorised discharge of dam water off site. Supervision will include the implementation of a permit system whereby the Project Manager will approve dam dewatering and use or discharge of water, including the adequacy of downstream controls.

4.2.1 Dam Water Analysis

Management of the dam water will require an understanding of the water quality and approximate water volumes to assess reuse or disposal options. Onsite reuse is the preferred option and is discussed in Section 4.4.

4.2.1.1 Dam Water Quality

Water quality sampling of the dam water will be required prior to dewatering to determine if the water is suitable for onsite reuse. The water quality will be assessed against the relevant guidelines in Section 3.2 for the proposed use of the water as outlined in Section 4.2.3. The number of water quality samples for analysis is to be determined by a suitably qualified specialist and should be representative of the volume and size of the dam.

During the dewatering process, it is recommended that the pumped water is filtered through a gross pollutant trap (or similar), to remove solids and debris.

4.2.1.2 Dam Water Volume

An estimate of the volume of water in each dam is needed to quantify the volume of water that will require management across the site as part of the decommissioning process. The total volume of the site dam water will influence the reuse or disposal options. Where the total volume of dam water exceeds the reasonable reuse rate onsite, then alternate storage or disposal may be required.

The NSW Office of Water (2010) has provided a methodology of estimating dam capacity. The following formula will allow the capacity of each dam to be calculated:

$$Volume\ (m^3) = 0.4 \times surface\ area\ (m^2) \times maximum\ depth\ (m)$$

The maximum depth of a dam can be obtained by taking a measurement from the centre of the dam using a graduated staff or a weighted rope lowered from a kayak or canoe. In the case of larger dams, multiple measurements may be required to attain an accurate depth.

The surface area of the dam can be obtained using up-to date aerial photography and confirmed by site inspection.

4.2.2 Ecological Clearance

Prior to dam dewatering and removal of dam structures, a suitably qualified ecologist will inspect the dam to identify the presence or likely presence of aquatic species of flora and fauna.

The ecologist will determine whether the dam water is suitable for the proposed water reuse option and whether additional actions are required prior to or during the dam dewatering process (e.g. relocation of native aquatic species or destruction and disposal of weed or pest species).

4.2.3 Water Reuse Options

The reuse of dam water onsite is the preferred approach. The water reuse options are outlined in Table 4-1.

Table 4-1: Water reuse options

Reuse option	Description
Dust suppression	Water pumped from the dams can be used as dust suppression onsite during earthworks and construction. This can either be via a water cart or directly from the dam via a sprinkler system or similar.
Onsite irrigation	Water pumped from the dams can be used for irrigation purposes where construction sequencing permits.
Vehicle wheel wash	Water pumped from dams can be used to maintain a wheel wash facility or to spray down trucks as they leave the site to reduce the tracking of mud and dirt offsite.
Topping up neighbouring dams	Water pumped from the onsite dams can be pumped to dams on neighbouring properties, subject to the landowner's approval and the water quality meeting the *Australian and New Zealand Guidelines for Fresh Water Quality 95% species protection*.
Discharge to an onsite sediment basin	As a contingency, if there is excess dam water, water will be flocculated, and water quality would be monitored. If the water quality meets the *Australian and New Zealand Guidelines for Fresh Water Quality 95% species protection* the water can be discharged offsite or to an onsite sediment basin.

The multiple reuse options would be considered throughout the decommissioning process based on the progression of earthworks, seasonal conditions and site requirements.

4.2.4 Removal of Dam Structure(s)

After dewatering each dam, the dam void would be bunded to direct rainfall run-off away and into a drainage line directing surface water as part of the ERSED controls for the site. Bunding will be constructed in accordance with *Managing Urban Stormwater: Soils and Construction* (known as the 'Blue Book', Landcom 2004).

Following ecological clearance from a suitably qualified ecologist, the dam structure will be removed. Any soil and sediments would be sampled and analysed to guide disposal options, and assess if soils are suitable for on-site reuse. The preferred approach would be to use any embankment soils to partially infill the dam voids.

4.2.4.1 Dam Embankment Soils

It is likely that, where present, dam embankment soils would have been sourced locally (if not from the immediate vicinity), and therefore, would be compatible with the other soils onsite. Where suitable, embankment soils will be reused onsite to fill the dam voids following dewatering.

If the embankment soils fail to meet the relevant guideline criteria, they would be classified under the NSW EPA *Waste Classification Guidelines* (2014) to assess offsite disposal requirements.

4.2.4.2 Dam Sediments

It is anticipated that the sediments excavated from the dams would be saturated and the excess water would need to be removed. This will be done by spreading the saturated sediments out, either in the dam void or adjacent to the dam. Where

possible, the sediments will be located so that any runoff re-enters the excavated dam. This will reduce the potential for the spread of any contamination at the site.

Once dry, the sediment will be sampled against the relevant guidelines and if suitable, be blended with suitable embankment soils to be used as fill material.

If the sediments fail to meet the relevant guideline criteria, they would be classified under the NSW EPA *Waste Classification Guidelines* (2014) to assess offsite disposal requirements.

4.2.5 Dam Voids

The dam voids will be infilled following dewatering and the removal of any embankments and sediments in accordance with the options detailed in Table 4-2.

Table 4-2: Options for the infill of dam voids

Option	Description
Use of dam embankment soils and sediments	If the dam embankment soils and/or sediments meet the criteria for reuse onsite, they can be reused in the dam voids as fill material.
Other material generated by excavation works on site – Virgin Excavated Natural Material (VENM) and/or Excavated Natural Material (ENM)	If the dam embankment soils and/or sediments are unsuitable for reuse, or insufficient in volume, then other material generated by excavation works on site can be used to infill the voids.

The voids would be infilled and integrated into the earthworks specification for the entire site.

5 REFERENCES

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Ethos Urban (June 2021) Environmental Impact Statement – 290-308 Aldington Road, 59-62 Abbotts Road & 63 Abbotts Road, Kemps Creek – Westlink Industrial Estate

Ethos Urban (September 2022) SSD-9138102: Westlink Stage 1 – Amendment Report – 290-308 Aldington Road, 59-62 Abbotts Road & 63 Abbotts Road, Kemps Creek – ESR Australia

Landcom (2004) Managing Urban Stormwater: Soils and Construction (known as the 'Blue Book')

NEPM – Guideline on Investigation Levels for Soil and Groundwater (2013)

NHMRC (2008) Guidelines for Managing Risks in Recreational Water

NSW EPA (2014) Waste Classification Guidelines

NSW Office of Water (2010) Dams in NSW: What size are your existing dams?

Appendix D Construction Noise and Vibration Management Plan

RENZO TONIN & ASSOCIATES
inspired to achieve

Acoustics
Vibration
Structural Dynamics

PROPOSED WAREHOUSE DEVELOPMENT, ESR KEMPS CREEK LOGISTICS PARK

Construction Noise and Vibration Management Plan

22 May 2023

Aspect Environmental

TM755-01F02 ESR Kemps Creek CNVMP (r7).docx

35 1982-2017 ACOUSTIC ENGINEERING EXCELLENCE

Sydney Melbourne Brisbane Gold Coast Kuwait Singapore
Renzo Tonin & Associates ABN 29 117 462 861
Level 1/418A Elizabeth St SURRY HILLS NSW 2010 | PO Box 877 STRAWBERRY HILLS NSW 2012
P (02) 8218 0500 F (02) 8218 0501 sydney@renzotonin.com.au www.renzotonin.com.au

Document details

Detail	Reference
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Prepared for:	Aspect Environmental
Attention:	Rob Salisbury

Document control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Authorised
19.07.2022	Initial issue - draft	0	1	A. Leslie (MAAS) / R. Phillips (MAAS)	A. Leslie (MAAS)	T. Gowen (MAAS)
05.12.2022	Site amendment	2	3	D. Auld	A. Leslie (MAAS)	A. Leslie (MAAS)
04.04.2023	Update for draft consent conditions	4	5	R. Phillips (MAAS)	A. Leslie (MAAS)	A. Leslie (MAAS)
03.05.2023	Minor updates for approved consent conditions	-	6	A. Leslie (MAAS)	-	A. Leslie (MAAS)
22.05.2023	Minor updates for ER comments	-	7	A. Leslie (MAAS)	A. Leslie (MAAS)	T. Gowen (MAAS)

Contents

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1 Introduction

Renzo Tonin & Associates (RTA) has been engaged by Aspect Environmental (Aspect), on behalf of ESR Australia Pty Ltd (ESR), to prepare a construction noise and vibration management plan (CNVMP) for the proposed stage 1 of the industrial estate known as Westlink (formerly known as the Kemps Creek Logistics Park) (the Project). The Project site is located at the land identified at 290-308 Aldington Road, 59-62 Abbotts Road, and 63 Abbotts Road, Kemps Creek, as shown in Figure 1. The Project forms part of the State Significant Development (SSD) 9138102.

As part of the State Significant Development Application (SSDA) a noise and vibration assessment report (SSDA NVA) was prepared for the Project by RWDI (RWDI, report #2101343, dated 2/5/2021), which addressed construction noise and vibration.

The scope of this CNVMP is to describe how noise and vibration impacts during construction of the Project will be managed. This CNVMP will:

- Identify the site, proposed works and nearby noise sensitive development.
- Present information about ambient noise levels in the vicinity of the site.
- Identify relevant noise and vibration objectives with respect to demolition noise and vibration.
- Assess likely noise and vibration impacts from the works.
- Identify noise and vibration mitigation and management measures for the works to avoid or minimise noise and vibration impacts (including high noise generating works) and how these would be implemented where feasible and reasonable. This will include the items identified in the SSDA NVA.

The noise and vibration impacts from the demolition phase of the Project are addressed in this CNVMP in accordance with relevant NSW Environment Protection Authority (EPA) requirements and guidelines.

This CNVMP was prepared by suitably qualified and experienced acoustic consultants. The authors of this documents are acoustic engineers who are of Member grade of the Australian Acoustical Society (AAS) with suitable experience in construction noise and vibration in NSW or were instructed by an experienced acoustic engineer of Member grade. Additionally, all engineers involved in the preparation of this document are employed by Renzo Tonin & Associates, which is a member firm of the Association of Australasian Acoustic Consultants (AAAC).

1.1 Consent conditions

This CNVMP has been prepared with reference to the requirements of the SSD 9138102 Development Consent, and has been prepared to satisfy condition of consent (CoC) B50. This specific requirement, and the conditions of consent (CoC) relevant to this CNVMP are listed Table 1-1 below.

A cross reference is also included to indicate where the condition is addressed in this CNVMP or other project management documents.

Table 1-1: SSD 9138102 consent condition requirements (construction noise and vibration)

Requirement	Where addressed in this CNVMP
Mamre Road Precinct Working Group **A38.** Within three months of the commencement of construction of the development and until all components of the development are constructed and operational, the Applicant must establish and participate in a working group, or join and participate in an existing working group, with relevant consent holders in the MRP, to the satisfaction of the Planning Secretary. The purpose of the working group is to consult and coordinate construction works within the MRP to assist with managing and mitigating potential cumulative environmental impacts. The working group must: … (d) review the performance of approved industrial developments in the MRP and identify trends in the data with respect to cumulative construction traffic, erosion and sediment control, noise, stormwater management and waterway health objectives under the MRP DCP; (e) review community concerns or complaints with respect to environmental management;	Cumulative - Section 4.2.4 Complaints – Section 6.3
Hours of Work **B47.** The Applicant must comply with the hours detailed in Table 2, unless otherwise agreed in writing by the Planning Secretary ***Table 2*** *Hours of Work* **Activity** / **Day** / **Time** Earthworks and construction / Monday – Friday Saturday / 7 am to 6 pm 8 am to 1 pm Operation / Monday – Sunday / 24 hours	Section 3.1
B48. Works outside of the hours identified in condition B47 may be undertaken in the following circumstances: (a) works that are inaudible at the nearest sensitive receivers; (b) works agreed to in writing by the Planning Secretary; (c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or (d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.	Section 3.1.2
Construction Noise Limits **B49.** The development must be constructed to achieve the construction noise management levels detailed in the *Interim Construction Noise Guideline* (DECC, 2009) (as may be updated or replaced from time to time). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures in Appendix 5.	Section 3
Construction Noise and Vibration Management Plan **B50.** The Applicant must prepare a Construction Noise and Vibration Management Plan for the development to the satisfaction of the Planning Secretary. The Plan must form part of a CEMP in accordance with condition C2 and must:	This Plan
(a) be prepared by a suitably qualified and experienced noise expert(s)	Section 1
(b) be prepared in consultation with owners of adjoining residential properties (including those still occupied for residential use in the MRP), include evidence of this consultation and detail how the plan has responded to any issues raised during consultation;	Consultation – Section 6.3 and APPENDIX B
(c) describe procedures for achieving the noise management levels in EPA's *Interim Construction Noise Guideline* (DECC, 2009) (as may be updated or replaced from time to time);	Section 3

Requirement	Where addressed in this CNVMP
(d) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;	Section 5.1
(e) include strategies that have been developed with the community for managing high noise generating works; and	Section 6.3
(f) include a complaints management system that would be implemented for the duration of the development.	APPENDIX E
B51. The Applicant must:	
(a) not commence construction of any relevant stage until the CNMP required by condition B50 is approved by the Planning Secretary; and	-
(b) implement the most recent version of the Construction Noise and Vibration Management Plan approved by the Planning Secretary for the duration of earthworks and construction.	Section 7
Road Traffic Noise **B60.** Prior to the commencement of construction of the development, the Applicant must prepare a Driver Code of Conduct and induction training for the development to minimise road traffic noise. The Applicant must update the Driver Code of Conduct and induction training for construction and operation and must implement the Code of Conduct for the life of the development.	Section 5.1
Vibration Criteria **B61.** Vibration caused by construction at any residence or structure outside the site must be limited to:	
(a) for structural damage, the latest version of DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures (German Institute for Standardisation, 1999); and	Section 3.3
(b) for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: a technical guideline (DEC, 2006) (as may be updated or replaced from time to time).	Section 3.3
B62. Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition B61.	Section 5.2
B63. The limits in conditions B61 and B62 apply unless otherwise outlined in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by condition C2 of this consent.	Section 5.2
Dilapidation Reporting **B64.** Prior to commencement of earthworks, the Applicant must offer and prepare (if the offer is accepted) a preconstruction dilapidation report for adjoining properties that may be affected by proposed earthworks (including Lot 2 DP 250002, Lots 141 and 142 DP 1033686, Lot 15 DP 253503 and Lot 4132 DP 857093). The report must be submitted to the Planning Secretary and the relevant property owner(s) prior to construction works commencing on the site.	Section 5.2
B65. If requested by the property owner, the Applicant must repair, or pay the full costs associated with repairing, any damage to adjoining properties caused by carrying out the development in accordance with the preconstruction dilapidation reports required by Condition B64, unless otherwise agreed by the Planning Secretary.	Section 5.2
Management Plan Requirements **C1.** Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	-
(a) detailed baseline data;	Section 2.1

Requirement	Where addressed in this CNVMP
(b) details of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures and criteria; and (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Section 3
(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 5
(d) a program to monitor and report on the: (i) impacts and environmental performance of the development; and (ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Mitigation, management and monitoring: Section 5, 0 and APPENDIX D Compliance management and community consultation: Section 6
(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Noise: Section 5.1 Vibration: Section 5.2 Complaints: Section 6 Review and improvement: Section 7
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 7
(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); (ii) complaint; (iii) failure to comply with statutory requirements; and	Section 6
(h) a protocol for periodic review of the plan.	Section 7
Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans	-

1.2 Site description

The site is located at 290-308 Aldington Road, 59-62 Abbotts Road, and 63 Abbotts Road as shown in Figure 1,

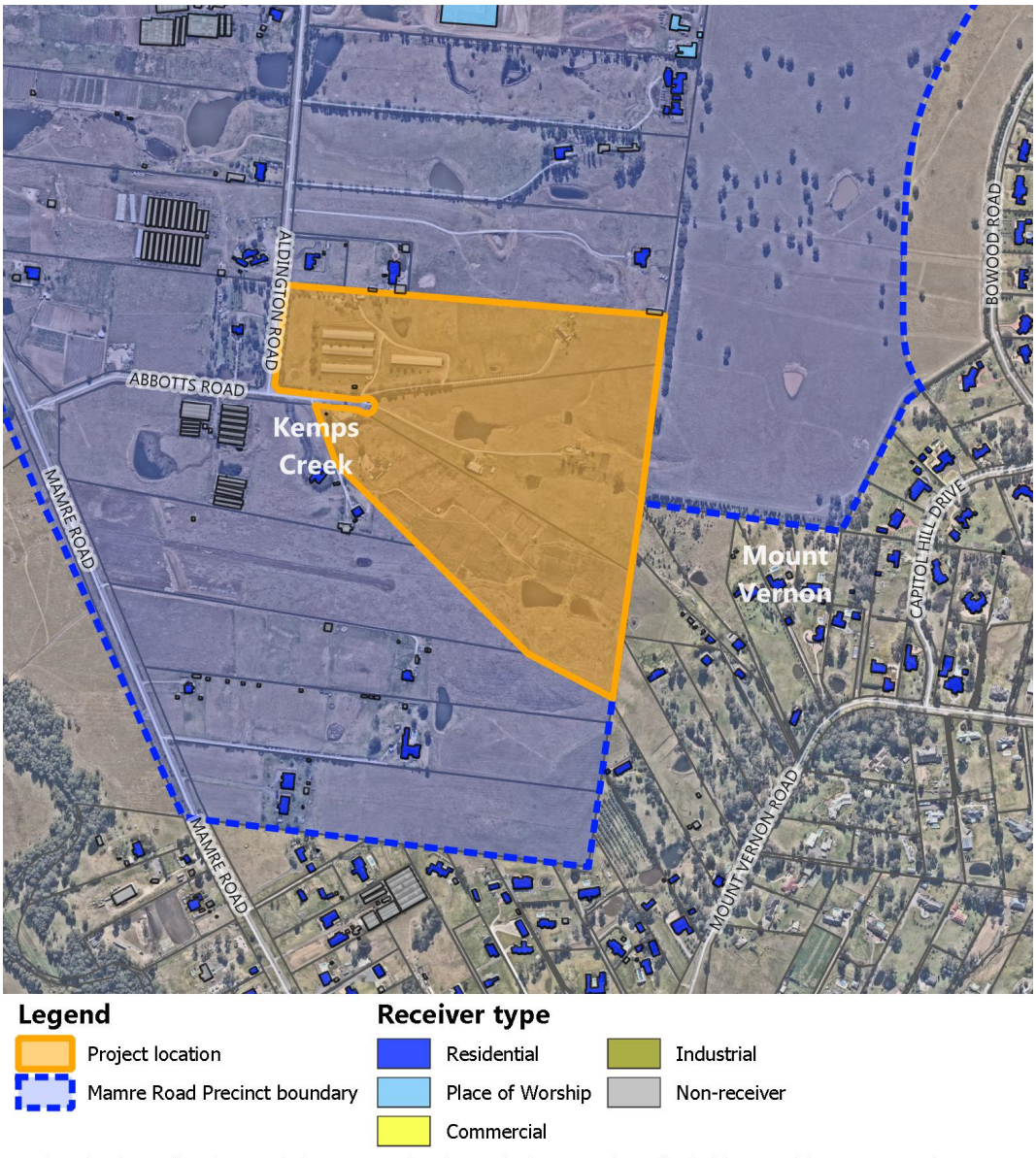
The surrounding land uses currently comprise a predominantly rural typology, with a variety of rural dwellings, rural land, farm dams and scattered vegetation. Beyond this, the Oakdale South industrial estate is located approximately 2.2km to the northeast of the site, and the established large lot residential housing community of Mount Vernon is located to the southeast.

The Project location is shown in Figure 1, and is located within the Penrith Local Government Area (LGA). The land is zoned IN1 General Industrial under the provisions of State Environmental Planning Policy (Western Sydney Employment Area) 2009 (SEPP WSEA).

The Project is located within the Mamre Road Precinct (MRP). The MRP is within the Western Sydney Employment Area and was rezoned in June 2020. The MRP provides about 850 hectares of industrial land (IN1 General Industrial). The rezoning of the precinct preserves around 95 hectares of land for environmental conservation and open space and protects a site for a potential Western Sydney freight intermodal terminal (IMT).

The development control plan (MRP DCP) was adopted on 19 November 2021 following a public exhibition.

Figure 1: Project location



Landuse classification based upon a desktop review only, subject to further review during detailed design and the construction phase.
Imagery source: Nearmap and Sixmaps (NSW Department Finance, Services and Innovation [14/07/2022])

1.3 Summary of construction works

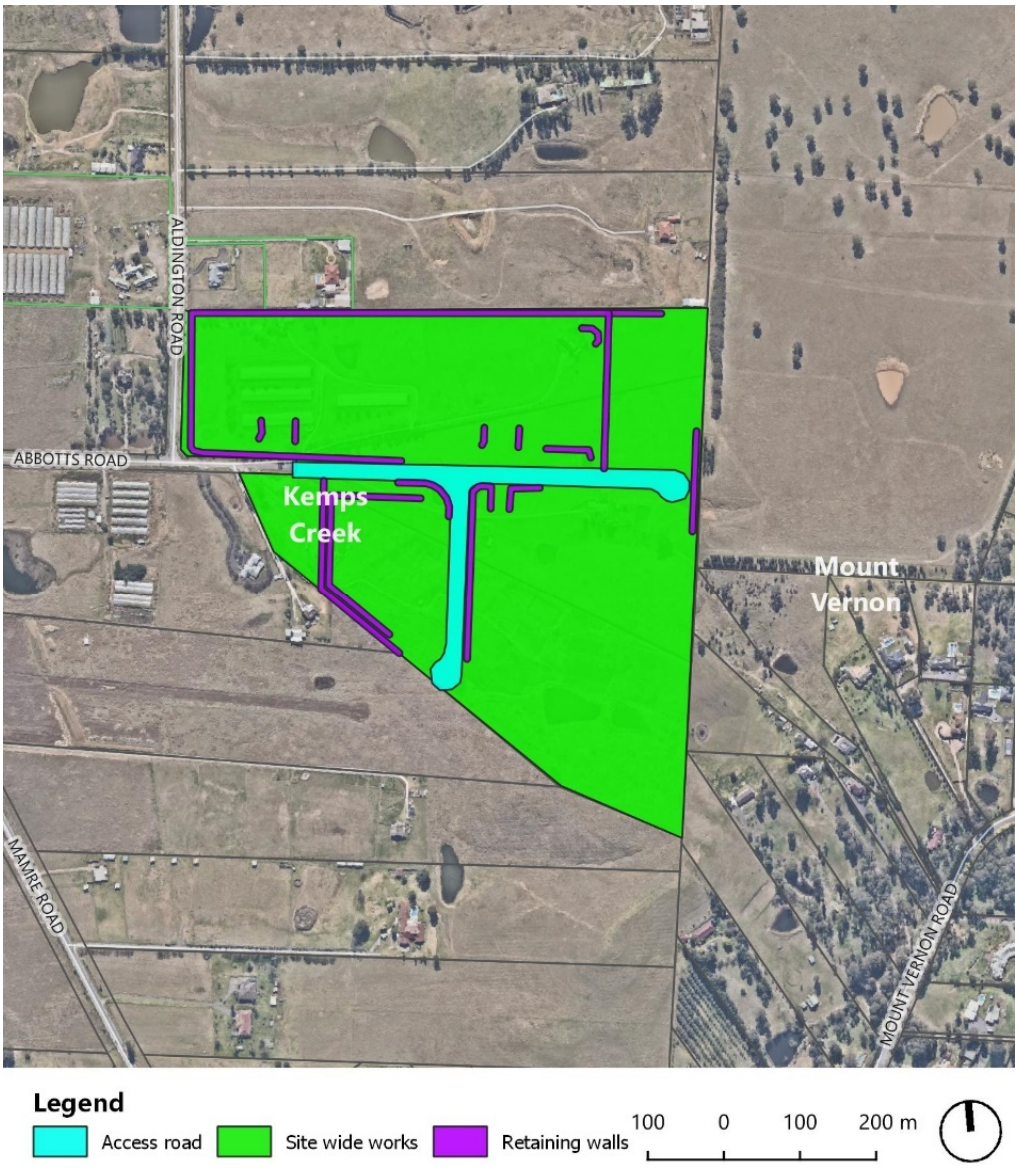
This CNVMP has been prepared to address the following aspects for the Project (the Proposed Works):

- Site preparation and mobilisation, demolition of existing structures and foundations
- Utilities relocations works, bulk earthworks, stormwater works – Across the entire Project site.
- Retaining wall construction works
- Internal access road roadworks – Main internal road (extension of Abbot Road all the way to the southern boundary of the site) plus Abbott Road works to the east of Aldington Road.

The following construction works that are likely to be required as part of the project are not included in the scope of this CNVMP.

- Construction of warehouses, cafés, landscaping, and associated works across the site.
- Other roadworks off-site including upgrades to Abbott and Mamre Roads intersections. These construction works are being undertaken with Penrith City Council in accordance with a separate approval.

Figure 2: Key construction areas



Construction activities associated with the Proposed Works will result in increased noise levels during construction. The works undertaken can consist of a mixture of both high and low noise activities. This assessment identifies potentially noisy activities, their impacts on surrounding receivers and outlines management strategies to control the impacts of noise and vibration during the construction stages of the project.

These stages will overlap, as the construction program is currently proposed to take place over approximately 10 months.

Table 1-2: Proposed construction works schedule and durations

Project phase	Construction stage	Estimated duration[1]
Stage 0	Site mobilisation / pre commencement works	2 months
	Demolition	2 months
Stage 1A/ Stage 1B/ Stage1C	Utility relocation	6 months
	Bulk earthworks (Stage 1 + Stage 2)	6 months
	Retaining walls (Stage 1 + Stage 2)	6 months
Stage 1D/ Stage 1E	Stormwater works	5 months
	Road pavement construction	5 months

Notes: 1. Some of these stages are likely to overlap

1.4 Construction traffic

The construction works will generate additional traffic movements in the form of:

- Light vehicle movements generated by construction personnel travelling to and from work
- Heavy vehicle movements generated by:
  - Trucks removing demolition and bulk earthworks material
  - Delivery vehicles bringing raw materials, plant, and equipment to the site.
  - However, the bulk of the excavated material is not proposed to be exported from the site, but will be internally redistributed. As such, over the bulk earthworks period approximately 23,500 m^3 is expected to require export. This will likely require up to 10 to 15 trucks per day.

The primary potential route to and from the Project for construction vehicles would be via Abbots Road and Mamre Road. with trucks accessing the Project site from the M4 Western Motorway either via the Erskine Park Road interchange from the northeast or the Mamre Road interchange in the north. Another potential route would be via Mamre Road and the Elizabeth Drive interchange with the M7 Motorway from the south. RMS currently identifies both routes as heavy vehicle routes. Construction of the Project would generate additional truck movements along these routes and would be managed in accordance with the Construction Traffic Management Plan required by Consent Condition D1. Given that these routes currently carry high volumes of heavy vehicles, construction of the development is likely to not have a significant impact on the performance of Mamre Road, Erskine Park Road, Elizabeth Road, the M4 Motorway or the M7 Motorway.

1.5 Acoustic terms & quality

This report is technical in nature and uses acoustic terminology throughout. A summary and explanation of the common acoustic terms that have been used in this report is presented in APPENDIX A.

The work documented in this report was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001.

2 Existing noise environment and noise and vibration sensitive receivers

Criteria for the assessment and management of construction noise are usually derived from the existing noise environment of an area, excluding noise from the subject development. As the noise environment of an area almost always varies over time, background and ambient noise levels need to be determined for the operational times of the proposed development. Background noise varies over the course of any 24-hour period, typically from a minimum at 3:00am in the morning to a maximum during morning and afternoon traffic peak hours. Therefore, the NSW Environment Protection Authority (EPA) *Noise Policy for Industry* (NPfI) (EPA 2017) requires that the level of background and ambient noise be assessed separately for the daytime, evening and night-time periods. As per Section 4.1.1 of the NSW *Interim Construction Noise Guideline* (DECC, 2009) (ICNG), the NPfI [which superseded the NSW *Industrial Noise Policy* (EPA, 2000)] details the procedure for determining the rating background noise level (RBL). Fact Sheet B of the NPfI outlines the methods for determining the background noise level of an area. The typical time periods in accordance with the NPfI are as follows:

- Day is defined as 7:00am to 6:00pm, Monday to Saturday and 8:00am to 6:00pm Sundays & Public Holidays.
- Evening is defined as 6:00pm to 10:00pm, Monday to Sunday & Public Holidays.
- Night is defined as 10:00pm to 7:00am, Monday to Saturday and 10:00pm to 8:00am Sundays & Public Holidays.

2.1 Environmental noise monitoring

Unattended and attended noise monitoring was conducted between Thursday 18 and Monday 30 November 2020 as part of the SSDA NVA to establish the existing noise environment at nearby residential receivers. The SSDA NVA also established noise catchment areas to group assessment receivers based on areas with similar acoustic characteristics for the purpose of determining noise management level at all nearby residential receivers. The measured background noise levels presented as in the SSD NVA are shown in Table 2-1 below.

Table 2-1: Measured rating background noise levels (RBL), dB(A)

Ref.	Location description	Rating background noise levels (RBL), $L_{A90,\ 15\ minute}$		
		Day[1]	Evening[2]	Night[3]
L01	Near to 30-38 Mount Vernon Rd, Mount Vernon, on the south-east boundary of the site.	35 (32)[4,5]	33	33 (38)[5,6]
L02	Near to 284 Aldington Rd, Kemps Creek, on the north-west boundary of the site.	35 (34)[4,5]	34	33

Notes:
1. Day: 7.00am to 6.00pm Monday to Saturday and 8.00am to 6.00pm Sundays & Public Holidays, Evening: 6.00pm to 10.00pm Monday to Sunday & Public Holidays, Night: 10:00pm to 7:00am, Monday to Saturday and 10:00pm to 8:00am Sundays & Public Holidays
2. Minimum assumed RBL of 35 dB(A) during the daytime period applied as per Table 2.1 of the NPfI.
3. Number in brackets represents the measured (actual)
4. Adjusted to be no greater than the Daytime or Evening noise levels as per NPfI methodology, as per SSD NVA Table 5-4.

2.2 Sensitive receivers

2.2.1 Nearby noise and vibration sensitive receivers

The Project site is located within the MRP. The land surrounding the Project area currently comprise a predominantly rural typology, with a variety of rural dwellings, rural land, farm dams and scattered vegetation. Subsequent to the approval of the MRP rezoning, large areas of this land have been purchased for industrial development, and construction has commenced on a number of approved developments.

Within the MRP, adjacent on the north, western and southern boundaries of the Project site are existing residential receivers [NCA4 and NCA5 (mislabelled in the SSD NVA)].

On the eastern boundary of the Project are residential receivers within the residential suburb of Mount Vernon. Sensitive receivers located in the vicinity of the development are located on the eastern boundary are located on Mt Vernon Road, Kerrs Road, Capitol Hill Drive and Bowood Road and make up NCA1, NCA2 and NCA3 respectively. The receivers are located at distances between 52 metres to 955 metres from the Project works areas.

On the western side of Mamre Road, outside of the MRP are residential receivers approximately 500 to 600 metres from the Project. These are in addition to those identified in the SSD NVA and are identified as NCA6.

For other non-residential receivers (OSR), a Hindu temple (BAPS Shri Swaminarayan Mandir) is currently under construction at 256 Aldington Rd, Kemps Creek, approximately 490m north of the site and may be operational during the construction period.

2.2.2 Noise catchment areas

As the existing acoustic environment varies at the nearby residential receivers, these residential receivers have been grouped into Noise Catchment Areas (NCAs) based upon areas with similar acoustic environments. This has been done to logically group the receivers to assist with the assessment and allocate the appropriate project noise trigger levels or management levels to each receiver.

The nearby sensitive receivers have also been separated into receivers located within the MRP (NCA4 and 5) and outside of the MRP (NCA1, 2, 3 and 6). Construction assessment should be based on the land use of the receiver at the time of construction. This may change over the construction period. Noting the current rate of change and development across the MRP, the noise sensitive receivers located within the MRP are only likely to be located there short-term and may only be occupied for a portion of the construction period.

The locations of these noise catchment area boundaries are also shown in Figure 3.

Given the large extent of the assessment area, a set of representative receiver locations have been selected and are presented in Table 2-2 below and a map of these locations presented in Figure 3.

Table 2-2: Construction noise assessment representative receivers

ID	NCA	Address	Receiver type	Approximate ground level distance to the Project, metres
R1	NCA5	284-288 Aldington Road, Kemps Creek	Residential	30
R2		282a Aldington Road, Kemps Creek	Residential	10
R3		272 Aldington Road, Kemps Creek	Residential	80
R4	NCA2	31-35 Bowood Road, Mount Vernon	Residential	640
R5	NCA1	243-247 Capitol Hill Drive, Mount Vernon	Residential	440
R6		52 Mount Vernon Road, Mount Vernon	Residential	180
R7		30-38 Mount Vernon Road, Mount Vernon	Residential	50
R8		20 Mount Vernon Road, Mount Vernon	Residential	110
R9	NCA3	44 Kerrs Road, Mount Vernon	Residential	350
R10		30 Kerrs Road, Mount Vernon	Residential	400
R11	NCA4	1066-1078 Mamre Road, Kemps Creek	Residential	240
R12		1050-1064 Mamre Road, Kemps Creek	Residential	170
R13		1016-1028 Mamre Road, Kemps Creek	Residential	20
R14		1016-1028 Mamre Road, Kemps Creek	Residential	20
R15	NCA6	1005-1023 Mamre Road, Kemps Creek	Residential	520
R16	NCA5	1 Abbotts Road, Kemps Creek	Residential	60
R17		269 Aldington Road, Kemps Creek	Residential	50
R18		253-267 Aldington Road, Kemps Creek	Residential	190
R19	OSR	230-242 Aldington Road, Kemps Creek	Place of worship *(under construction)*	490

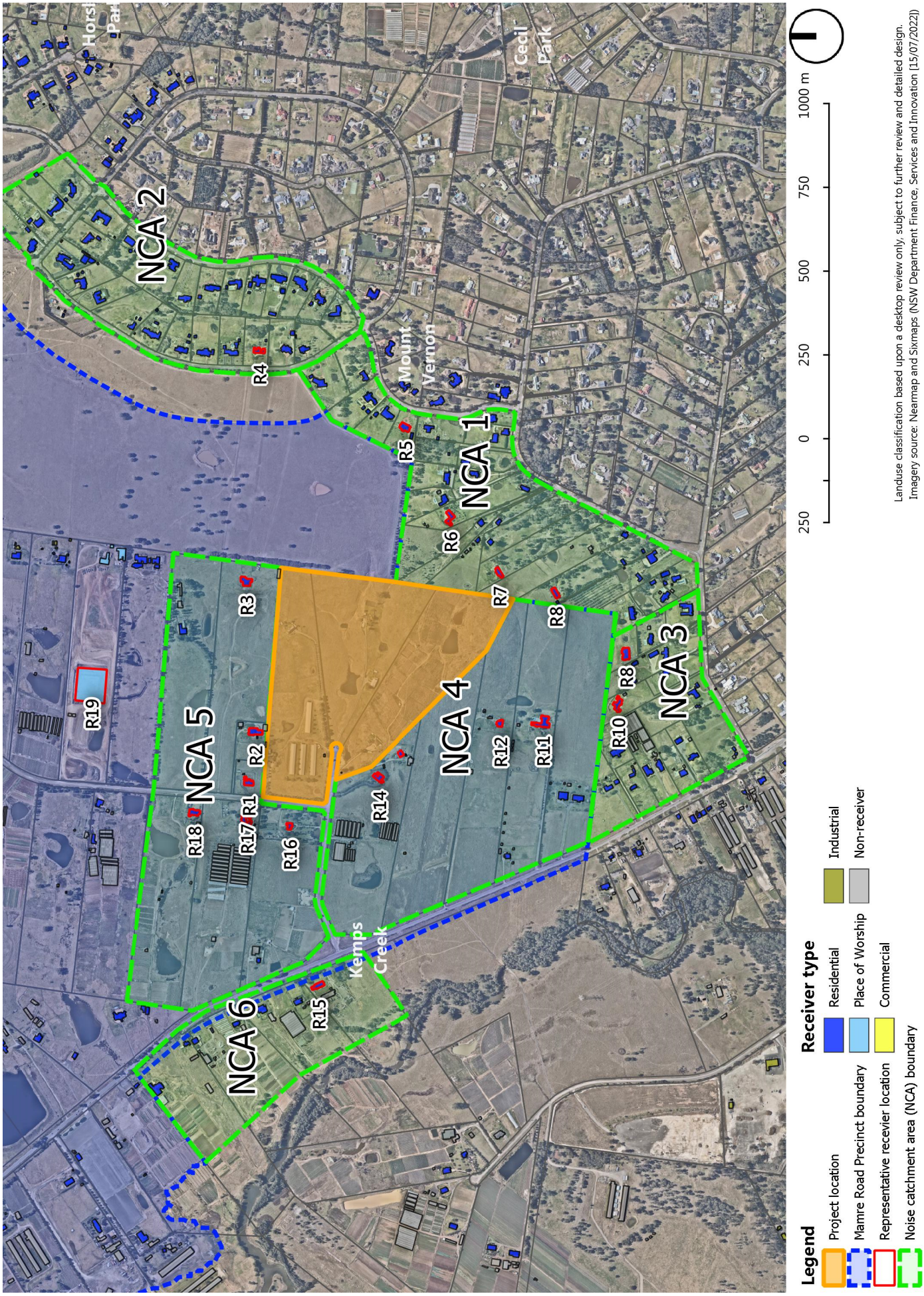


Figure 3: Site location, nearby construction noise sensitive receivers, land uses, noise monitoring locations and NCAs

3 Construction noise and vibration objectives

3.1 Construction hours

3.1.1 Standard construction hours

The ICNG establishes standard construction hours, which are:

- 7:00am to 6:00pm Monday to Friday
- 8:00am to 1:00pm on Saturday
- No work performed on Sunday and Public Holidays.

The construction works for the Project are proposed to take place during these hours. This is consistent with condition CoC B47.

3.1.2 Works outside standard construction hours

There are no OOH construction works (OOHW) currently proposed for the Project. During further construction planning, where OOHW are identified as being required (for emergency works, oversized equipment delivery, etc) these works would be subject to a separate approval process.

As per CoC B48, Construction works may be undertaken outside the recommended standard hours (OOH) in the following circumstances, which are to be confirmed following approval:

1. works that are inaudible at the nearest sensitive receivers
2. works agreed to in writing by the Planning Secretary
3. for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or
4. where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.

Where OOHW are proposed to take place, the proposed construction works may require an assessment of potential noise and/or vibration impacts, and the identification of feasible and reasonable mitigation and management measures that would be implemented as part of the construction works to manage potential noise and vibration impacts on nearby sensitive receivers.

For the purposes of Item 1, inaudibility is not meant to be a measurable criterion. Guidance for informing the risk of inaudibility could be set at a reference level of background level + 0 dB. This reference level would apply for both the average noise level (including considering the character of the noise) and instantaneous noise events. This approach is not for compliance purposes, but to inform a risk assessment regarding the likelihood that the works can be undertaken and be inaudible.

3.2 Noise management levels (NMLs)

3.2.1 NSW *Interim Construction Noise Guideline* (ICNG)

The NSW *Interim Construction Noise Guideline* (DECC, 2009) (ICNG) provides guidelines for assessing noise generated during the construction phase of developments.

The key components of the guideline that are incorporated into this assessment include:

- Identify and minimise noise from construction works
- Encourage construction during normal working hours only, unless approval is given for works that cannot be undertaken during these hours
- Use of 15 minute average ($L_{Aeq(15min)}$) as the descriptor for measuring and assessing construction noise.
- The establishing of "Noise Management Levels". These are noise levels which if exceeded, trigger the need to consider the application of feasible and reasonable noise mitigation. They are not intended to act as a prohibition on an activity if the trigger level is expected to be exceeded.
- As stated in the ICNG, a noise mitigation measure is feasible if it is capable of being put into practice and is practical to build given the project constraints.
- Selecting reasonable mitigation measures from those that are feasible involves making a judgement to determine whether the overall noise benefit outweighs the overall social, economic and environmental effects.

Table 3-1 reproduced from the ICNG, sets out the airborne noise management levels and how they are to be applied for residential receivers.

Table 3-1: Noise management levels at residential receivers

Time of day	Management level $L_{Aeq\ (15\ min)}$ *	How to apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.

Time of day	Management level $L_{Aeq\ (15\ min)}$ *	How to apply
No work on Sundays or public holidays	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. times identified by the community when they are less sensitive to noise (such as before/ after school for works near schools, or mid-morning or mid-afternoon for works near residences 2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	• A strong justification would typically be required for works outside the recommended standard hours. • The proponent should apply all feasible and reasonable work practices to meet the noise affected level. • Where all feasible and reasonable practices have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community. • For guidance on negotiating agreements see *ICNG* section 7.2.2.

* Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 metres above ground level. If the property boundary is more than 30 metres from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 metres of the residence. Noise levels may be higher at upper floors of the noise affected residence.

Table 3-2 sets out the ICNG noise management levels for other noise sensitive receiver locations.

Table 3-2: Noise management levels at other noise sensitive land uses

Land use	Time of day	Where objective applies	Management level $L_{Aeq\ (15\ min)}$
Classrooms at schools and other educational institutions	When in use	Indoor noise level Outdoor noise level[1]	45 dB(A) 55 dB(A)
Hospital wards and operating theatres	When in use	Indoor noise level Outdoor noise level[1]	45 dB(A) 55 dB(A)
Places of worship	When in use	Indoor noise level Outdoor noise level[1]	45 dB(A) 55 dB(A)
Active recreation areas	When in use	Outdoor noise level	65 dB(A)
Passive recreation areas	When in use	Outdoor noise level	60 dB(A)
Commercial premises	When in use	Outdoor noise level	70 dB(A)
Industrial premises	When in use	Outdoor noise level	75 dB(A)

Notes: 1. Outdoor noise level based on internal noise level in ICNG and assumes 10 dB loss through an open window
2. Noise management levels apply when receiver areas are in use only.

3.2.2 Summary of construction noise management levels

Table 3-3 presents the construction noise management levels established for the nearest noise sensitive residential receivers based upon the noise monitoring outlined in Section 2.1. The assessment locations and nearby sensitive receivers for the construction assessment are identified in Figure 3.

Table 3-3: Construction noise management levels

NCA / Rec. Id (see Section 2.2 for construction assessment receiver locations)	Location description	Noise management level $L_{Aeq(15min)}$[1] Monday to Fridays (7am to 6pm) Saturdays (8am to 1pm)
NCA1	Residence east and south east of the site	45
NCA2	Residence east and north east of the site	45
NCA3	Residence south of the site	45
NCA4	Residence south of the site with the MRP	45
NCA5	Residence west and north of the site with the MRP	45
NCA6	Residence to the west of MRP	45
R19	Places of worship	55[2,3]

Notes:
1. Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5m above ground level. If the property boundary is more than 30m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30m of the residence. Noise levels may be higher at upper floors of the noise affected residence.
2. Noise management levels apply when receiver areas are in use only.
3. External noise management level. A conversion from internal to external assumes 10 dB(A) loss from outside to inside through open window.

3.2.3 Construction-related road traffic noise

When trucks and other vehicles are operating within the boundary of a construction site, road vehicle noise contributions are included in the overall predicted $L_{Aeq(15minute)}$ construction site noise emissions. When construction-related traffic moves onto the public road network a different noise assessment methodology is appropriate, as vehicle movements would be regarded as 'additional road traffic' rather than as part of the construction site.

The community may associate heavy vehicle movements with the Project works, when vehicles are travelling on roads located immediately adjacent to construction sites. However, once the heavy vehicles move further from construction sites onto major collector or arterial roads, the noise may be perceived as being part of the general road traffic.

The ICNG refers to the NSW Road Noise Policy (RNP) for the assessment of noise from construction traffic on public roads. The RNP states that in assessing feasible and reasonable mitigation measures, an increase of up to 2 dB(A) represents a minor impact. As such, in line with the RNP, where increases are 2 dB or less than the corresponding 'without construction traffic' scenario, no further assessment is required.

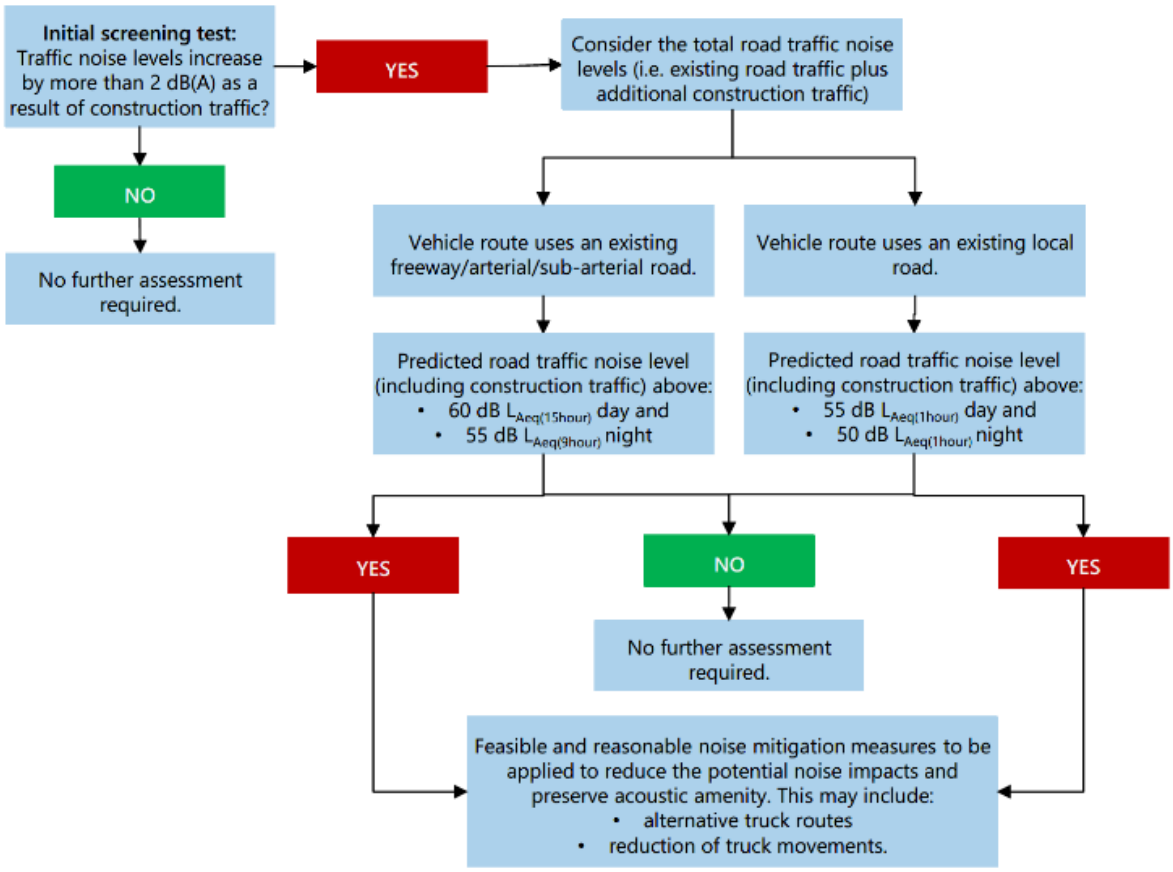
In considering feasible and reasonable mitigation measures where the relevant noise increase is greater than 2 dB, consideration should be given to the actual noise levels associated with construction traffic and whether these levels comply with the road traffic noise criteria in the RNP presented in Table 3-4.

Table 3-4: Construction-related road traffic noise assessment criteria

Road type	Day criteria (7:00am – 10:00pm)	Night criteria (10:00pm – 7:00am)
Freeway/ arterial/ sub-arterial roads	60 $L_{Aeq\ 15\ hour}$	55 $L_{Aeq\ 9\ hour}$
Local roads	55 $L_{Aeq\ 1\ hour}$	50 $L_{Aeq\ 1\ hour}$

The process that should be used to assess and manage potential noise impacts from construction traffic is presented in Figure 3-1.

Figure 3-1 – Construction traffic noise assessment process



3.3 Construction vibration objectives

Construction vibration is associated with three main types of impact:

- disturbance to building occupants
- potential damage to buildings, and
- potential damage to sensitive equipment in a building.

Generally, if disturbance to building occupants is controlled, there is limited potential for structural damage to buildings.

Vibration amplitude may be measured as displacement, velocity, or acceleration.

- Displacement (x) measurement is the distance or amplitude displaced from a resting position. The International System of Units (SI unit) for distance is the metre (m), although common industrial standards include mm.
- Velocity ($v=\Delta x/\Delta t$) is the rate of change of displacement with respect to change in time. The SI unit for velocity is metres per second (m/s), although common industrial standards include mm/s. The Peak Particle Velocity (PPV) is the greatest instantaneous particle velocity during a given time interval. If measurements are made in 3-axis (x, y, and z) then the resultant PPV is the vector sum (i.e. the square root of the summed squares of the maximum velocities) regardless of when in the time history those occur.
- Acceleration ($a=\Delta v/\Delta t$) is the rate of change of velocity with respect to change in time. The SI unit for acceleration is metres per second squared (m/s^2). Construction vibration goals are summarised below.

Construction vibration goals are summarised below.

3.3.1 Disturbance to buildings occupants

The acceptable vibration values to assess the potential for human annoyance from vibration are set out in the NSW '*Environmental Noise Management Assessing Vibration: A Technical Guideline*' (AVTG).

The guideline provides criteria which are based on the British Standard BS 6472-1992 '*Evaluation of human exposure to vibration in buildings (1-80Hz)*'. Sources of vibration are defined as either 'Continuous', 'Impulsive' or 'Intermittent'. Table 3-5 provides definitions and examples of each type of vibration.

Table 3-5: Types of Vibration

Type of Vibration	Definition	Examples
Continuous vibration	Continues uninterrupted for a defined period (usually throughout the day-time and/or night-time)	Machinery, steady road traffic, continuous construction activity (such as tunnel boring machinery).
Impulsive vibration	A rapid build-up to a peak followed by a damped decay that may or may not involve several cycles of vibration (depending on frequency and damping). It can also consist of a sudden application of several cycles at approximately the same amplitude, providing that the duration is short, typically less than 2 seconds	Infrequent: Activities that create up to 3 distinct vibration events in an assessment period, e.g. occasional dropping of heavy equipment, occasional loading and unloading.
Intermittent vibration	Can be defined as interrupted periods of continuous or repeated periods of impulsive vibration that varies significantly in magnitude	Trains, nearby intermittent construction activity, passing heavy vehicles, forging machines, impact pile driving, jack hammers. Where the number of vibration events in an assessment period is three or fewer, this would be assessed against impulsive vibration criteria.

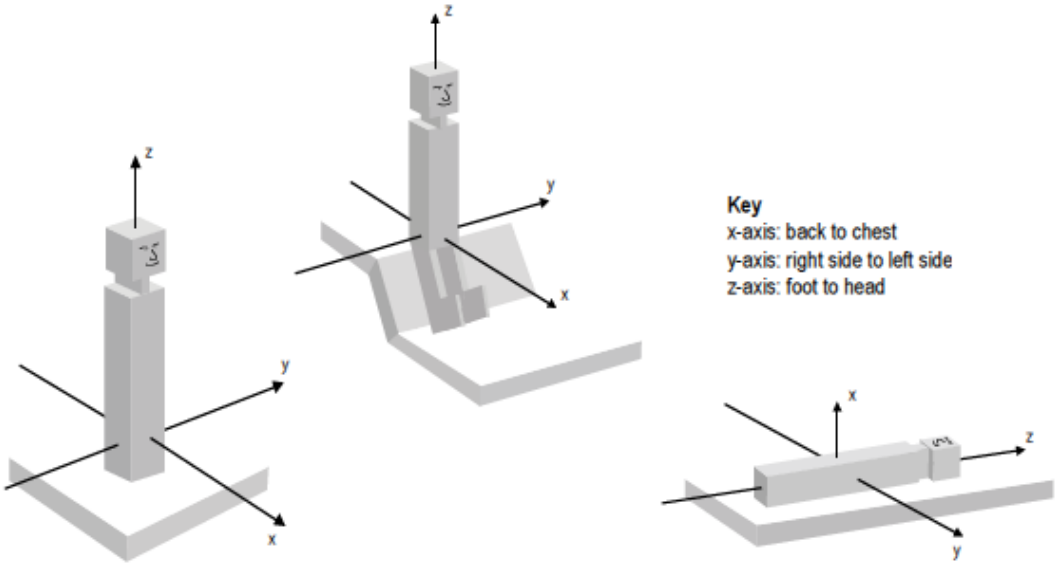
Source: Assessing Vibration; a technical guideline, Department of Environment & Climate Change, 2006

The vibration criteria are defined as a single weighted root mean square (rms) acceleration source level in each orthogonal axis. Section 2.3 of the guideline states:

'Evidence from research suggests that there are summation effects for vibrations at different frequencies. Therefore, for evaluation of vibration in relation to annoyance and comfort, overall weighted rms acceleration values of the vibration in each orthogonal axis are preferred (BS 6472).'

When applying the criteria, it is important to note that the three directional axes are referenced to the human body, i.e. x-axis (back to chest), y-axis (right side to left side) or z-axis (foot to head). Vibration may enter the body along different orthogonal axes and affect it in different ways. Therefore, application of the criteria requires consideration of the position of the people being assessed, as illustrated in Figure 2. For example, vibration measured in the horizontal plane is compared with x- and y-axis criteria if the concern is for people in an upright position, or with the y- and z- axis criteria if the concern is for people in the lateral position.

Figure 2: Orthogonal Axes for Human Exposure to Vibration



The preferred and maximum values for continuous and impulsive vibration are defined in Table 2.2 of the guideline and the locations applicable to receivers surrounding the site are reproduced in Table 3-6.

Table 3-6: Preferred and maximum levels for human comfort

Location	Assessment period[1]	Preferred values		Maximum values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Continuous vibration (weighted RMS acceleration, m/s^2, 1-80Hz)					
Critical areas[2]	Day- or night-time	0.005	0.0036	0.010	0.0072
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day- or night-time	0.020	0.014	0.040	0.028

Location	Assessment period[1]	Preferred values		Maximum values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Workshops	Day- or night-time	0.04	0.029	0.080	0.058
Impulsive vibration (weighted RMS acceleration, m/s^2, 1-80Hz)					
Critical areas[2]	Day- or night-time	0.005	0.0036	0.010	0.0072
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day- or night-time	0.64	0.46	1.28	0.92
Workshops	Day- or night-time	0.64	0.46	1.28	0.92

Notes:
1. Daytime is 7:00am to 10:00pm and night-time is 10:00pm to 7:00am
2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than the human comfort criteria specify above. Stipulation of such criteria is outside the scope of their policy and other guidance documents (e.g. relevant standards) should be referred to. Source: BS 6472-1992

To assess the potential for vibration impact on human comfort, an initial screening test will be done based on peak velocity units, as this metric is also used for the cosmetic damage vibration assessment. The screening test is based on the continuous vibration velocity (i.e. vibration that continues uninterrupted for a defined period). If the predicted vibration exceeds the initial screening test, the total estimated Vibration Dose Value (i.e. eVDV) will be determined based on the level and duration of the vibration event causing exceedance.

The initial screening test values and VDVs recommended in BS 6472-1992 for which various levels of adverse comment from occupants may be expected, are presented in Table 3-7. The 'Low probability of adverse comment eVDV' represent the preferred and maximum value presented in the AVTG.

Table 3-7: Vibration management levels for disturbance to building occupants

Place and Time	Initial screening test Velocity, PEAK, mm/s (>8Hz)	Low probability of adverse comment eVDV m/s$^{1.75}$	Adverse comment possible eVDV m/s$^{1.75}$	Adverse comment probable eVDV m/s$^{1.75}$
Critical areas (day or night)[1]	0.28	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8
Residential buildings 16 hr day[2]	0.56	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8 hr night[2]	0.40	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8
Offices, schools, educational institutions and places of worship (day or night)	1.10	0.4 to 0.8	0.8 to 1.6	1.6 to 2.4
Workshops (day or night)	2.20	0.8 to 1.6	1.6 to 3.2	3.2 to 6.4

1. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than the human comfort criteria specify above
2. Daytime is 7am to 10pm and night-time is 10pm to 7am

3.3.2 Building damage

Potential structural damage of buildings as a result of vibration is typically managed by ensuring vibration induced into the structure does not exceed certain limits and standards, such as British

Standard 7385 Part 2 and German Standard DIN4150-3. Currently there is no existing Australian Standard for assessment of structural building damage caused by vibration energy.

It is noted that vibration levels required to cause minor cosmetic damage are typically 10 times higher than levels that will cause disturbance to building occupants. Many building occupants assume that building damage is occurring when they feel vibration or observe rattling of loose objects, however the level of vibration at which people perceive vibration or at which loose objects may rattle is far lower than vibration levels that can cause damage to structures.

The cosmetic damage levels set by BS7385 are considered 'safe limits' up to which no damage due to vibration effects has been observed for certain particular building types. Table 3-8 sets out the recommended vibration limits from BS7385 for transient vibration to ensure minimal risk of cosmetic damage to residential, commercial and industrial buildings and is frequency dependent and specific to particular categories of structure, consistent with the SSD NVA.

Table 3-8: BS 7385 Transient vibration values for minimal risk of damage

Group	Type of building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and above
1	Reinforced or framed structures. Industrial and heavy commercial buildings.	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures. Residential or light commercial type buildings.	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

3.3.3 Vibration screening criteria

The limits presented in Table 3-8 above relate predominantly to transient vibration which does not give rise to resonant responses in structures, and to low-rise buildings. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, then the guide values in Table 3-8 may need to be reduced by up to 50 percent. This is especially applicable at the lower frequencies where lower guide values apply.

On this basis, consistent a conservative vibration screening criteria per receiver type is given below:

- Reinforced or framed structures (Line 1): 25.0 mm/s
- Unreinforced or light framed structures (Line 2): 7.5 mm/s

At locations where the predicted and/or measured vibration levels are greater than shown above (peak component particle velocity), a more detailed analysis of the building structure, vibration source, dominant frequencies and dynamic characteristics of the structure would be required to determine the applicable safe vibration level. The analysis would take into consideration the transient vibration guide values for minimal risk of cosmetic damage set out in Table 3-8.

3.3.4 Heritage items

The German Standard DIN 4150 provides a conservative criterion for vibration limits for different buildings and has been used to identify the vibration criteria for the Project where the British Standard does not apply. The German standard values for peak particle velocity (PPV) (mm/s) measured at the foundation of the building are summarised in Table 3-9.

Table 3-9: DIN 4150-3 guideline values for short-term vibration on structures

Group	Type of structure	Guideline values vibration velocity (mm/s)				
		Foundations, all directions at a frequency of:			Topmost floor, horizontal	Floor slabs, vertical
		1 to 10Hz	10 to 50Hz	50 to 100Hz	All frequencies	All frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 30	40 to 50	40	20
2	Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20
3	Structures that because of their particular sensitivity to vibration, cannot be classified into Group 1 or 2 and are of great intrinsic value e.g. heritage listed buildings	3	3 to 8	3 to 8	8	20

As noted in BS 7385, heritage buildings and structures should not be assumed to be more sensitive to vibration, unless structurally unsound. A conservative vibration damage screening level for heritage buildings/structures can be set to 3 mm/s (peak component particle velocity), the more stringent criterion in the German Standard DIN 4150. This screening level will allow potentially impacted heritage structures to be identified. If a heritage structure is predicted to be exposed to vibration levels above the conservative vibration screening level of 3mm/s, further investigation would be undertaken to determine whether the structure is structurally unsound.

Where a heritage building is deemed to be unsound and sensitive to vibration impacts, the more stringent DIN 4150 Group 3 guideline values can be applied. Otherwise, structural damage vibration limits based on BS 7385 (Section 3.3.2 and 3.3.3) can be applied.

3.3.5 Damage to vibration sensitive equipment

Some high technology manufacturing facilities, hospitals and laboratories utilise equipment that is highly sensitive and susceptible to vibration, for example scanning electron microscopes and micro-electronic manufacturing facilities. In addition, buildings housing sensitive computer or telecommunications equipment may require assessment against stricter criteria than those nominated for building damage.

There is no explicit guidance on acceptable vibration levels for such equipment, so recommended vibration levels should be obtained from instrument manufacturers. In the absence of equipment specific data provided by manufacturers, there are generic vibration criteria that can be used to assess

the impact of vibration generating activities on buildings housing vibration sensitive equipment. For example, the Vibration Criteria (VC) curves are often referred to as they are generic and apply to all tools/ equipment types within each category. The VC curves are defined over the frequency range 8 to 100 Hz.

Table 3-10 below summarises a range of suitable and conservatively stringent vibration limits that are applicable to buildings housing vibration sensitive equipment which may potentially be affected by construction vibration.

Table 3-10: Acceptable vibration limits for vibration measured on building structure housing sensitive equipment

Equipment Requirements	Vibration Limit[1] mm/s,		Description of Use[3]
	RMS[4]	Peak [5]	
Computer Areas[2]	0.7	1.0	Barely perceptible vibration. Adequate for computer equipment accommodation environments.
Medical[2, 3]	0.1	0.14	Vibration not perceptible. Suitable in most instances for microscopes to 100X and for other equipment of low sensitivity.
VC-A[3]	0.05	0.07	Vibration not perceptible. Adequate in most instances for optical microscopes to 400X, microbalances, optical balances, proximity and projection aligners, etc

Notes: 1. As measured in one-third octave bands of frequency over the frequency range 8 to 100 Hz. Vibration measured on the building structure near vibrating equipment or in areas containing sensitive equipment.

2. Based on AS 2834 Computer Accommodation

3. Gordon CG Generic Vibration Criteria for Vibration Sensitive Equipment

4. Root Mean Square value representing the average value of a signal

5. In the absence of Peak limits, RMS limits are converted to Peak by conservatively assuming the vibration signal is sinusoidal and random with a nominal crest factor of 1.414

3.3.6 Damage to buried services

Section 5.3 of DIN 4150-3:2016 also sets out guideline values for vibration velocity to be used when evaluating the effects of vibration on buried pipework. These values, which apply at the wall of the pipe, are reproduced and presented in Table 3-11 below.

Table 3-11: DIN 4150-3:2016 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on buried pipework

Line	Pipe Material	Guideline values for vibration velocity measured on the pipe, mm/s
1	Steel (including welded pipes)	100
2	Vitrified clay, concrete, reinforced concrete, prestressed concrete, metal (with or without flange)	80
3	Masonry, plastics	50

For long-term vibration the guideline levels presented in Table 3-11 should be halved.

Recommended vibration goals for electrical cables and telecommunication services such as fibre optic cables range from between 50 mm/s and 100 mm/s. It is noted however that although the cables may

sustain these vibration levels, the services they are connected to, such as transformers and switch blocks, may not. It is recommended that should such equipment be encountered during the construction process an individual vibration assessment should be carried out. This may include a specific vibration impact statement addressing impact on the utility and consultation with the utility provider to confirm specific vibration requirements.

4 Construction noise and vibration assessment

4.1 Construction noise and vibration activities and assumptions

4.1.1 Construction works and activities

The SSD NVA undertook an assessment of construction noise and vibration impacts. As part of design development the works and extent of the assessed activates has been updated, and as such, an assessment of the potential level of construction noise and vibration impact has been carried out to determine whether mitigation would be required, and to determine appropriate management controls. A summary of the indicative construction works schedule is provided in Section 1.3.

Specific construction equipment requirements are not confirmed at this Project stage. The type and number of plant and equipment associated with the proposed works was assumed based upon experience with similar noise assessments. Following further construction planning, prior to the commencement of a construction stage, the final construction details and methodology should be reviewed against the assumptions in this section to ensure that the mitigation and management measures that will be implemented remain consistent with these assumptions and are appropriate for the project. If there are substantially from the assumptions in this report, then the potential noise and vibration impacts are to be reviewed, and the mitigation and management measures that will be implemented updated so that impacts remain managed consistent with this CNVMP.

This CNVMP and the Construction Environmental Management Plan (CEMP) may also be updated from time to time, as detailed in Section 7, which may also require a review and update of the mitigation and management measures required to ensure the construction works are managed consistently with this CNVMP.

4.1.2 Construction noise sources

The schedule of items of plant and equipment likely to be used during the Proposed Works are presented in Table 4-1. The sound power levels for the majority of construction plant and equipment presented in the above table are based on maximum noise levels given in Table A1 of Australian Standard 2436 - 2010 '*Guide to Noise Control on Construction, Demolition and Maintenance Sites*', the ICNG, information from past projects and/or information held in the Renzo Tonin & Associates library files.

Table 4-1: Noise modelling assumptions for construction - activities and equipment

Scenario	Plant / Equipment	Operating weight kg	Sound Power Level (Lw re: 1pW), dB(A), L_{Aeq}
S1 Site mobilisation / pre commencement works	Semi-trailer truck		108
	Mobile crane		110
	Excavator with bucket	35 tonne	105
	Assumed combined activity noise level[1]		**113**

Scenario	Plant / Equipment	Operating weight kg	Sound Power Level (Lw re: 1pW), dB(A), L_{Aeq}
S2 Demolition (of the foundations of the previous structures)	Excavator with medium rockhammer (35t)	35 tonne	118
	Dump truck		108
	Truck & Dog		108
	Assumed combined activity noise level[1]		**121**
S3 Utility relocation	Excavator with medium rockhammer (35t)	35 tonne	118
	Tipper Truck		104
	Truck & Dog		108
	Semi-trailer truck		108
	Compactor (Roller)		107
	Plate compactor		108
	Assumed combined activity noise level[1]		**121**
S4 Bulk earthworks	Excavator with large rockhammer (50t)	50 tonne	121
	Bulldozer	D9	116
	Scraper		110
	Dump truck		108
	Compactor	35 tonne	108
	Grader		113
	Assumed combined activity noise level[1]		**124**
S5 Stormwater works	Excavator with bucket	35 tonne	105
	Dump truck		108
	Semi-trailer truck		108
	Franna crane	20 tonne	98
	Concrete Agitator		108
	Truck & Dog		108
	Tipper Truck		104
	Assumed combined activity noise level[1]		**113**
S6 Retaining walls	Excavator with bucket	35 tonne	105
	Dump truck		108
	Semi-trailer truck		108
	Franna crane	20 tonne	98
	Concrete Agitator		108
	Truck & Dog		108
	Tipper Truck		104
	Assumed combined activity noise level[1]		**113**
S7 Road pavement construction	Excavator with large rockhammer (50t)	50 tonne	121
	Grader		113
	Compactor (Roller)		107
	Concrete Agitator		108
	Truck & Dog		108

Scenario	Plant / Equipment	Operating weight kg	Sound Power Level (Lw re: 1pW), dB(A), L_{Aeq}
	Tipper Truck		104
	Asphalt truck & sprayer		103
	Assumed combined activity noise level[1]		**124**

Notes 1. Based upon the 3 (noisiest) plant operating concurrently

4.2 Construction airborne noise assessment

Construction noise levels were predicted by modelling the noise sources, receiver locations, and operating activities across the Proposed Works, as shown in Figure 2, based on the information presented in Section 4.1.1.

4.2.1 Noise prediction methodology

A noise model was developed for the Project using the CadnaA computer modelling program and noise levels were predicted using the noise propagation algorithm ISO 9613-2 (1996), which incorporates moderately adverse meteorological conditions, implemented in accordance with ISO/TR 17534-3 (2015).

The noise prediction model considers:

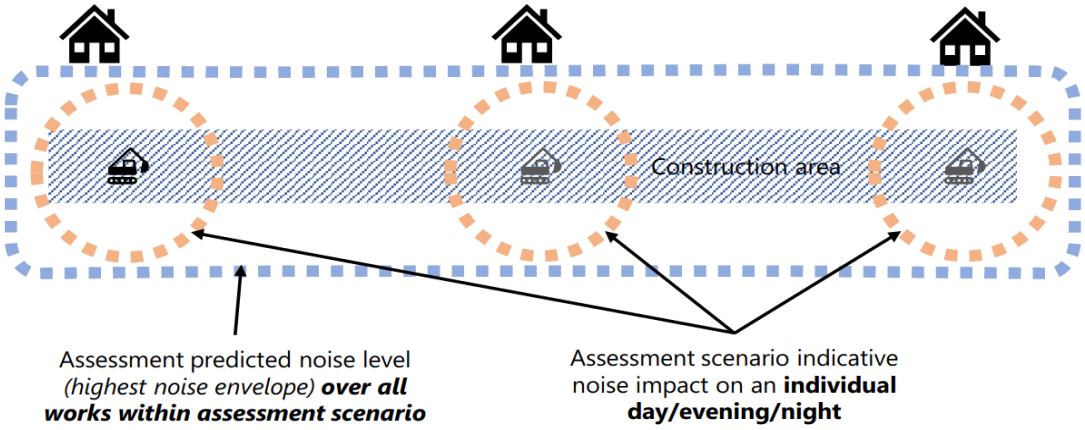
- Location of noise sources and sensitive receiver building locations
- Height of sources and receivers referenced to digital ground contours for the site and surrounding area
- Sound Power Levels (Lw) of plant and equipment likely to be used during the various construction activities
- Noise-sensitive buildings in the project have been assessed separately
- Separation distances between sources and receivers
- Acoustic shielding, potential reflections and attenuation from intervening structures, barriers and topography (natural and purpose built)
- Ground absorption between the source and receiver.

The predicted levels are conservative and represent the equipment/plant operating simultaneously in any 15 minute period. Where plant items are not operating simultaneously, or for reduced times in a 15 minute period, noise impacts could be lower than predicted.

A 5 dB(A) penalty in accordance with the ICNG has been factored into the noise modelling levels where applicable to allow for particularly annoying activities, such as rock hammering, saw cutting and jack hammering.

For the prediction noise levels in Section 4.2.2 that are the upper end of the range, these noise levels assume that the assessed activities could occur at the closest point to each receiver. While in practice, high noise generating construction works would occur at different locations throughout the work area, resulting in differing noise levels at each receiver. This means that predicted noise levels are only likely to occur when works are at the closest point to each receiver. The noise impacts may be lower than predicted as the construction activities move around or progress around the construction site, as shown by the lower end of the range in Section 4.2.2. This concept is demonstrated in Figure 3 and should be considered when reviewing the predicted noise levels in this assessment.

Figure 3: Predicted level are based works at the closest point of the entire works area, which differs from individual day/evening/night periods



4.2.2 Predicted construction noise levels

Noise levels at any receiver location resulting from construction works would depend on the location of the receiver with respect to the area of construction, shielding from intervening topography and structures, and the type and duration of construction being undertaken. Furthermore, noise levels at receivers would vary significantly over the total construction program due to the transient nature and large range of plant and equipment that could be used.

Noise emissions were determined by modelling the noise sources, receiver locations, and operating activities, based on the information presented in Section 4.1.1.

Table 4-2 presents noise levels likely to be experienced at the nearby affected receivers based on the construction activities and plant and equipment associated with the proposed site. The noise level range presented represents the plant item operating at a location furthest from the receiver and a location closest to the receiver. Noise levels were calculated taking into consideration attenuation due to distance between the construction works and the receiver locations and any intervening structures. The worst affected receivers are typically the receivers with direct line-of-sight to the construction work area. Receivers located without direct line-of-sight to the construction area would typically be exposed to construction noise levels 5 to 10 dB(A) lower than the levels predicted for the worst affected receivers.

Table 4-2: Predicted $L_{Aeq(15min)}$ noise levels for construction plant and activities, dB(A)

Receiver ID	R01	R02	R03	R04	R05	R06	R07	R08	R09	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19
NCA	NCA5	NCA5	NCA5	NCA2	NCA1	NCA1	NCA1	NCA1	NCA3	NCA3	NCA4	NCA4	NCA4	NCA4	NCA6	NCA5	NCA5	NCA5	-
Receiver type[1]	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	Place of worship
Noise management level	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55
S1 - Site mobilisation																			
Semi-trailer truck	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Mobile crane	37 - 75	38 - 77	30 - 44	< 30	25 - 34	32 - 41	32 - 47	22 - 31	20 - 30	26 - 37	30 - 45	36 - 52	41 - 72	42 - 74	33 - 43	37 - 64	36 - 65	31 - 48	25 - 40
Excavator with bucket	29 - 66	30 - 68	21 - 36	< 22	< 26	24 - 33	24 - 38	< 23	< 22	< 29	22 - 37	28 - 44	33 - 64	34 - 66	24 - 35	29 - 56	28 - 57	23 - 40	< 32
Up to 3 (noisiest) plant operating concurrently	39 - 77	40 - 79	32 - 47	< 33	27 - 37	35 - 44	34 - 49	24 - 33	23 - 32	28 - 39	33 - 48	38 - 55	44 - 75	45 - 76	35 - 46	40 - 67	39 - 67	33 - 51	27 - 43
S2 - Demolition (of the foundations of the previous structures)																			
Excavator with medium rockhammer (35t)	46 - 56	49 - 58	45 - 53	38 - 42	42 - 49	45 - 57	47 - 51	35 - 39	31 - 34	36 - 42	42 - 50	47 - 53	50 - 73	49 - 71	42 - 48	49 - 58	45 - 53	44 - 48	36 - 45
Dump truck	34 - 44	37 - 46	33 - 41	26 - 30	30 - 37	34 - 45	35 - 39	23 - 27	< 22	24 - 30	30 - 38	35 - 41	38 - 61	37 - 59	30 - 36	37 - 46	33 - 41	32 - 36	24 - 33
Truck & Dog	34 - 44	37 - 46	33 - 41	26 - 30	30 - 37	34 - 45	35 - 39	23 - 27	< 22	24 - 30	30 - 38	35 - 41	38 - 61	37 - 59	30 - 36	37 - 46	33 - 41	32 - 36	24 - 33
Up to 3 (noisiest) plant operating concurrently	47 - 56	49 - 59	46 - 53	39 - 42	43 - 49	46 - 58	47 - 51	36 - 40	32 - 34	37 - 43	43 - 50	48 - 53	50 - 74	50 - 71	42 - 48	49 - 58	46 - 53	44 - 48	36 - 45
S3 - Utility relocation																			
Excavator with medium rockhammer (35t)	47 - 84	48 - 86	39 - 54	27 - 40	35 - 44	42 - 51	42 - 56	32 - 41	30 - 40	36 - 47	40 - 55	46 - 62	51 - 82	52 - 84	42 - 53	47 - 74	46 - 75	41 - 58	35 - 50
Tipper Truck	31 - 69	32 - 71	24 - 38	< 24	< 28	26 - 35	26 - 41	< 25	< 24	< 31	24 - 39	30 - 46	35 - 66	36 - 68	27 - 37	31 - 58	30 - 59	25 - 42	< 34
Truck & Dog	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Semi-trailer truck	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Compactor (Roller)	34 - 72	35 - 74	27 - 41	< 27	22 - 31	29 - 38	29 - 44	< 28	< 27	23 - 34	27 - 42	33 - 49	38 - 69	39 - 71	30 - 40	34 - 61	33 - 62	28 - 45	22 - 37
Plate compactor	32 - 69	33 - 71	24 - 39	< 25	< 29	27 - 36	27 - 41	< 26	< 25	21 - 32	25 - 40	31 - 47	36 - 67	37 - 69	27 - 38	32 - 59	31 - 60	26 - 43	< 35
Up to 3 (noisiest) plant operating concurrently	47 - 85	48 - 87	40 - 55	27 - 41	35 - 45	43 - 52	42 - 57	32 - 41	31 - 40	36 - 47	41 - 56	46 - 63	52 - 83	53 - 84	43 - 54	48 - 75	47 - 75	41 - 59	35 - 51
S4 - Bulk earthworks																			
Excavator with large rockhammer (50t)	50 - 87	51 - 89	42 - 57	30 - 43	38 - 47	45 - 54	45 - 59	35 - 44	33 - 43	39 - 50	43 - 58	49 - 65	54 - 85	55 - 87	45 - 56	50 - 77	49 - 78	44 - 61	38 - 53
Bulldozer	41 - 79	42 - 81	34 - 48	21 - 35	29 - 39	36 - 46	36 - 51	26 - 35	25 - 34	30 - 41	35 - 50	40 - 56	46 - 76	46 - 78	37 - 48	41 - 69	40 - 69	35 - 53	29 - 45
Scraper	37 - 75	38 - 77	30 - 44	< 30	25 - 34	32 - 41	32 - 47	22 - 31	20 - 30	26 - 37	30 - 45	36 - 52	41 - 72	42 - 74	33 - 43	37 - 64	36 - 65	31 - 48	25 - 40
Dump truck	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Compactor	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Grader	40 - 78	41 - 80	33 - 47	< 33	28 - 37	35 - 44	35 - 50	25 - 34	23 - 33	29 - 40	33 - 48	39 - 55	44 - 75	45 - 77	36 - 46	40 - 67	39 - 68	34 - 51	28 - 43
Up to 3 (noisiest) plant operating concurrently	51 - 88	52 - 90	43 - 58	31 - 44	39 - 48	46 - 55	46 - 60	36 - 45	34 - 44	40 - 51	44 - 59	50 - 66	55 - 86	56 - 88	46 - 57	51 - 78	50 - 79	45 - 62	39 - 54

Receiver ID	R01	R02	R03	R04	R05	R06	R07	R08	R09	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19
NCA	NCA5	NCA5	NCA5	NCA2	NCA1	NCA1	NCA1	NCA1	NCA3	NCA3	NCA4	NCA4	NCA4	NCA4	NCA6	NCA5	NCA5	NCA5	-
Receiver type[1]	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	Place of worship
Noise management level	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55
S5 - Stormwater works																			
Excavator with bucket	29 - 66	30 - 68	21 - 36	< 22	< 26	24 - 33	24 - 38	< 23	< 22	< 29	22 - 37	28 - 44	33 - 64	34 - 66	24 - 35	29 - 56	28 - 57	23 - 40	< 32
Dump truck	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Semi-trailer truck	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Franna crane	25 - 63	26 - 65	< 32	< <20	< 22	20 - 29	< 35	< <20	< <20	< 25	< 33	24 - 40	29 - 60	30 - 62	21 - 31	25 - 52	24 - 53	< 36	< 28
Concrete Agitator	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Truck & Dog	35 - 73	36 - 75	28 - 42	< 28	23 - 32	30 - 39	30 - 45	< 29	< 28	24 - 35	28 - 43	34 - 50	39 - 70	40 - 72	31 - 41	35 - 62	34 - 63	29 - 46	23 - 38
Tipper Truck	31 - 69	32 - 71	24 - 38	< 24	< 28	26 - 35	26 - 41	< 25	< 24	< 31	24 - 39	30 - 46	35 - 66	36 - 68	27 - 37	31 - 58	30 - 59	25 - 42	< 34
Up to 3 (noisiest) plant operating concurrently	40 - 77	40 - 79	32 - 47	< 33	27 - 37	35 - 44	35 - 49	24 - 34	23 - 32	29 - 40	33 - 48	39 - 55	44 - 75	45 - 76	35 - 46	40 - 67	39 - 67	34 - 51	28 - 43
S6 - Retaining walls																			
Excavator with bucket	21 - 69	22 - 69	22 - 55	< 27	21 - 33	24 - 39	24 - 39	< 24	< 22	< 29	< 37	23 - 44	28 - 66	28 - 53	22 - 35	26 - 55	23 - 57	< 43	< 34
Dump truck	27 - 75	28 - 75	28 - 61	< 34	27 - 39	30 - 45	30 - 45	< 30	< 28	21 - 35	25 - 43	29 - 50	34 - 72	34 - 59	28 - 41	32 - 61	30 - 63	25 - 49	21 - 40
Semi-trailer truck	27 - 75	28 - 75	28 - 61	< 34	27 - 39	30 - 45	30 - 45	< 30	< 28	21 - 35	25 - 43	29 - 50	34 - 72	34 - 59	28 - 41	32 - 61	30 - 63	25 - 49	21 - 40
Franna crane	20 - 65	20 - 65	20 - 51	< 24	< 29	20 - 35	20 - 35	< 20	< <20	< 25	< 33	< 40	24 - 62	24 - 49	< 31	22 - 51	20 - 53	< 39	< 30
Concrete Agitator	27 - 75	28 - 75	28 - 61	< 34	27 - 39	30 - 45	30 - 45	< 30	< 28	21 - 35	25 - 43	29 - 50	34 - 72	34 - 59	28 - 41	32 - 61	30 - 63	25 - 49	21 - 40
Truck & Dog	27 - 75	28 - 75	28 - 61	< 34	27 - 39	30 - 45	30 - 45	< 30	< 28	21 - 35	25 - 43	29 - 50	34 - 72	34 - 59	28 - 41	32 - 61	30 - 63	25 - 49	21 - 40
Tipper Truck	23 - 71	24 - 71	24 - 57	< 30	23 - 35	26 - 41	26 - 41	< 26	< 24	< 31	21 - 39	25 - 46	30 - 68	30 - 55	24 - 37	28 - 57	26 - 59	21 - 45	< 36
Up to 3 (noisiest) plant operating concurrently	32 - 79	33 - 80	33 - 66	25 - 38	32 - 43	35 - 50	35 - 49	24 - 35	21 - 33	26 - 40	30 - 48	34 - 55	39 - 77	39 - 63	33 - 46	37 - 66	34 - 68	30 - 54	25 - 45

Receiver ID	R01	R02	R03	R04	R05	R06	R07	R08	R09	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19
NCA	NCA5	NCA5	NCA5	NCA2	NCA1	NCA1	NCA1	NCA1	NCA3	NCA3	NCA4	NCA4	NCA4	NCA4	NCA6	NCA5	NCA5	NCA5	-
Receiver type[1]	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	Place of worship
Noise management level	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55
S7 - Road pavement construction																			
Excavator with large rockhammer (50t)	49 - 60	50 - 64	42 - 57	36 - 46	41 - 53	47 - 57	48 - 60	37 - 44	32 - 43	35 - 50	40 - 57	44 - 64	50 - 66	51 - 70	43 - 54	50 - 64	48 - 58	43 - 53	36 - 47
Grader	39 - 50	40 - 54	32 - 47	26 - 36	32 - 43	37 - 48	38 - 50	27 - 35	22 - 33	25 - 40	30 - 47	34 - 55	40 - 56	41 - 60	33 - 44	40 - 55	38 - 48	33 - 43	26 - 37
Compactor (Roller)	33 - 44	34 - 48	26 - 41	< 30	26 - 37	31 - 42	32 - 44	21 - 29	< 27	< 34	24 - 41	28 - 49	34 - 50	35 - 54	27 - 38	34 - 49	32 - 42	27 - 37	20 - 31
Concrete Agitator	34 - 45	35 - 49	27 - 42	21 - 31	27 - 38	32 - 43	33 - 45	22 - 30	< 28	20 - 35	25 - 42	29 - 50	35 - 51	36 - 55	28 - 39	35 - 50	33 - 43	28 - 38	21 - 32
Truck & Dog	34 - 45	35 - 49	27 - 42	21 - 31	27 - 38	32 - 43	33 - 45	22 - 30	< 28	20 - 35	25 - 42	29 - 50	35 - 51	36 - 55	28 - 39	35 - 50	33 - 43	28 - 38	21 - 32
Tipper Truck	30 - 41	31 - 45	23 - 38	< 27	23 - 34	28 - 39	29 - 41	< 26	< 24	< 31	21 - 38	25 - 46	31 - 47	32 - 51	24 - 35	31 - 46	29 - 39	24 - 34	< 28
Asphalt truck & sprayer	29 - 40	30 - 44	22 - 37	< 26	22 - 33	27 - 38	28 - 40	< 25	< 23	< 30	20 - 37	24 - 45	30 - 46	31 - 50	23 - 34	30 - 45	28 - 38	23 - 33	< 27
Up to 3 (noisiest) plant operating concurrently	49 - 60	50 - 65	42 - 58	36 - 47	42 - 53	48 - 58	48 - 60	38 - 45	32 - 43	36 - 51	41 - 58	44 - 65	51 - 67	51 - 70	44 - 54	50 - 65	48 - 58	44 - 54	37 - 48

Notes:

1. Predicted level not presented if less than 20 dB(A)

2. RES = Residential, IND = Industrial, COM = Commercial

3. In accordance with the ICNG, a 5 dB(A) 'penalty' is applied for activities identified as particularly annoying, such as rock hammers.

4. Construction noise levels with dark grey background identify residential receivers are predicted to be highly noise affected (HNA) (>75 dB(A)).

4.2.3 Discussion of construction noise results

The predicted noise levels presented above indicate that due to the close proximity of some residential receivers, when works are occurring nearby residential receivers are likely to be construction noise affected (i.e. experience noise levels above the NML) during all construction stages.

The predicted noise levels also indicate for works that are not required site wide, such as demolition, or access road construction works, nearby residential receivers are likely to be construction noise affected when works are in close proximity, but are unlikely to be 'highly noise affected' [>75 dB(A)]. While for other site wide works, when works are close to the residences they may be 'highly noise affected' [>75 dB(A)].

Noise emissions are predicted to be highest when high noise generating equipment such as excavators with rockhammers, bulldozers or graders operate close to the residences. For works where high noise generating equipment is not operating, and where the works are occurring within the site further away from the residential receivers, the predicted noise levels are generally below the NMLs.

The highest predicted noise levels are during the bulk earthworks stage, when excavation works are occurring near the residences adjacent to the northern boundary (R1 & R2). Construction noise levels are predicted to reach 90 dB(A) $L_{Aeq,15min}$ without mitigation and management.

In light of the predicted noise levels above, it is recommended that a feasible and reasonable approach towards noise mitigation measures be applied to reduce construction noise levels towards achieving the NMLs. Further details on construction noise mitigation and management measures are provided in Section 5.1 below.

4.2.4 Cumulative noise impacts

Following the approval of the MRP rezoning, large areas of this land have been purchased for industrial development, and construction has commenced on some approved developments. As such, there is the potential for several construction sites to be undertaking works concurrently.

The following approved construction projects have been identified as potentially undertaking noise generating works in proximity to the same noise sensitive receivers during the construction of the Project:

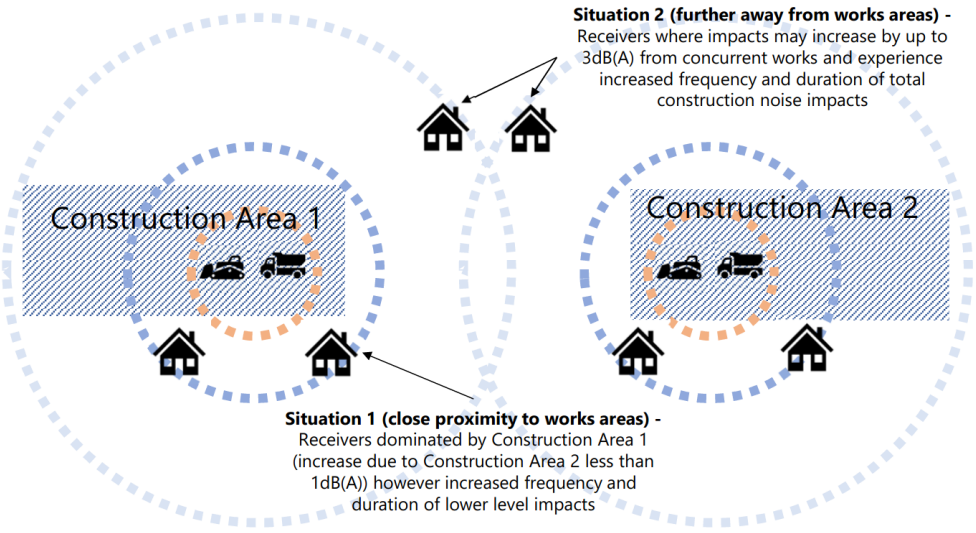
- 200 Aldington Road Industrial Estate (SSD 10479)
- Aspect Industrial Estate (SSD 10448)
- Place of Public Worship including Hindu Temple, 230 - 242 Aldington Road, Kemps Creek (Penrith Council DA17/1247)

However, noting the current rate of change and development across the MRP, there may be other sites where construction works are occurring concurrently with stages of the Project. These other construction projects should be considered as part of future construction planning.

As such, in accordance with CoC A38, the Mamre Road Precinct Working Group (MRPWG), issues with cumulative construction noise for industrial developments under construction are to be identified, considering community feedback, and feasible and reasonable mitigation or management considered, where this would assist to address cumulative impacts, beyond the management of a single development.

Typically, while impacts from one project or one construction site may be relatively short-term or noise intensive periods intermittent, when multiple construction projects are occurring at the same time near a receiver cumulative construction noise impacts can occur. This can mean that construction noise impacting a sensitive receiver may be louder than from an individual set up works [by up to 3 dB(A)], the overall duration of construction impacts may be overall longer or impacts more frequent. Typically, concurrent projects can impact nearby receiver locations in one of two ways, as also shown in Figure 4.

Figure 4: Cumulative construction



There is potential for cumulative noise impacts from the Project combined with other concurrent construction projects, and so it is recommended that mitigation and management measures are implemented to minimise cumulative impacts, as detailed in Section 5.1. In addition, the following measures are to be used to mitigate and manage cumulative noise impacts and reduce the likelihood of construction fatigue:

- Coordinating work between construction sites to minimise cumulative noise impacts, where feasible and reasonable. An example would be to ensure that where multiple sites are undertaking noise intensive works, such as noise intensive rock hammering works, and other noise intensive construction works could occur concurrently on multiple construction sites in proximity to the same noise sensitive receivers, these impacts are to be managed with consideration of both projects (ie. ensure that works do not occur during designated respite periods).
- Community consultation to gauge key noise impacts and issues and identify any unknown impacts from concurrent or consecutive sets of constructions works.

- Consideration of cumulative construction noise impacts during the development of noise mitigation and management measures for the worksites, including coordination between construction projects, where reasonable and feasible (ie. consideration of respite periods provided by other projects for high noise impact works or approved OOH, so that timetables between projects don't result in other projects or the Proposal impacting the same noise sensitive receivers during designated periods of respite).

The incorporation of the above measures into the works program would be further reviewed during construction planning, and updated where required throughout the project, considering the construction progress of the Project and the nearby other construction works.

4.2.5 Construction-related road traffic

As described in Section 1.4, Construction related heavy vehicles would include deliveries of accommodate site offices, amenities, plant and equipment, and removal of excavated spoil material.

Construction traffic within the site boundary is included as part of the construction noise assessment of the work activities identified in Section 4.1.1. When construction-related traffic moves onto the public road network, a different noise assessment methodology is appropriate as vehicle movements would be regarded as additional road traffic on public roads rather than as part of the construction site's activities.

The stage with the largest number of heavy vehicles movements would likely be the bulk earthworks stage. However, the majority of the bulk excavated material is not proposed to be exported from the site. Rather, it will be internally redistributed. Over the bulk earthworks period approximately 23,500 m^3 is expected to require export. This is estimated to require up to 15 trucks per day.

4.2.5.1 Existing and future road traffic details

For vehicles heading north to the M4 via Mamre Road, it is known that the road network in the general vicinity of the MRP is due to receive significant road upgrades in the future as part of the Mamre Road Upgrade (MRU) strategy. This is similar for vehicles heading south, as it these vehicles will go along Elizabeth Drive which is being upgraded as part of the Elizabeth Drive upgrade (EDU), in addition to being already being addressed by the M12 Motorway project which impacts some of the same receivers. However, as these road upgrade projects may not have been completed at the commencement of construction of the Project, the traffic data sourced for the following review is based upon either the opening year (2026) no-build (ie. without project) or based level 2017 traffic count volumes.

During August/September 2021, the Review of Environmental Factors (REF) for the proposed Mamre Road upgrade between the M4 Motorway and Erskine Park Road was on public display.

As part of the REF, a noise and vibration impact assessment (MRU NVIA) (*SLR, Mamre Road Upgrade - Stage 1 Noise and Vibration Assessment, report reference 610.30064-R02-v1.0, dated 23/07/2021)* was included. This assessment was based upon the road traffic volumes and modelling presented in the Traffic and transport assessment report (*Aurecon/SMEC, Mamre Road Upgrade - Stage 1 Concept Design,*

REF and Detailed Design – Traffic and Transport Assessment Report, report reference 509458, Rev G, dated 17/08/2021) (MRU TTAR).

The traffic generated as part of the MRP has also been considered as part of the M12 Motorway EIS. The traffic modelling detailed in the M12 EIS TTAR Section 7.4.2 was the basis of the noise and vibration impact assessment for the M12. The cumulative impact assessments of the operation of the Elizabeth Drive and Mamre Road upgrades include traffic volumes used for the cumulative assessments and are detailed in Section 4.2.5 of the M12 NVIA.

Additionally, presented in Appendix D of the MRU NVIA are the build and no-build traffic volumes for the upgrade project, as traffic volumes are expected to increase from 2020 levels. This presents the potential traffic volumes along the routes that the Project traffic will operate, to consider against the traffic generation by the Project. The proposed traffic volumes along Mamre Road north of the Project, are presented in Table 4-3.

Table 4-3: Existing traffic volume estimates during the construction stage

Location	Direction	Average hourly traffic from 7:00am – 10:00pm (15 hour)			Average hourly traffic from 10:00pm – 7:00am (9 hour)		
		Total Vehicles	Light	Heavy	Total Vehicles	Light	Heavy
MRU NVIA traffic volumes - Mamre Road (MRU NVIA, Appendix D, At-opening 2026) No Build (without project) 2026							
Between Bakers Ln & James Erskine Dr	Both direction	20,256	17,682	2,574	4,839	4,261	578
Erskine Park Road	Both direction	13,217	11,204	2,013	3,021	2,542	479
M12 Motorway traffic volumes (M12 NVIA, Appendix D) 2017 Existing traffic counts							
Elizabeth Drive (East of Mamre Road)	Both direction	20,256	17,682	2,574	4,839	4,261	578

4.2.5.2 Qualitative construction traffic assessment

Considering the existing traffic volumes of the primary potential routes to/from the site presented in Table 4-3 this volume of construction traffic generated by the Project is not expected to significantly alter existing traffic noise. As such, construction traffic from the site on public roads is predicted not to be a significant noise impact and will achieve the RNP requirements.

4.3 Construction vibration assessment

4.3.1 Vibration sources

The pattern of vibration radiation is very different to the pattern of airborne noise radiation. Unlike noise, vibration cannot be readily predicted. There are many variables from site to site, such the intervening geology between the activity and the receiver, building types and foundations. Vibration is also dependent on the actual plant used, its operation and the dominant frequencies of vibration generated, and the plant location on site relative to receivers.

The recommended minimum working distances for vibration intensive plant are presented in Table 4-4 and Table 4-5. The data relied upon for this assessment is taken from a database of vibration levels measured at various sites or obtained from other sources (such as BS5228-2:2009). They are not specific to this Project.

Site specific minimum working distances for vibration intensive plant items must be measured on site where plant and equipment are likely to operate close to or within the minimum working distances for cosmetic damage, as detailed in Table 4-4.

Table 4-4: Minimum working distances (m) for cosmetic damage (continuous vibration)

Plant item	Minimum working distance (m)[5]		
	Reinforced or framed structures (e.g. commercial buildings)[1,3]	Unreinforced or light framed structures (e.g. residential buildings)[1,3]	Sensitive structures (e.g. heritage structures)[2,4,5]
Large excavator with hydraulic hammer attachment (up to 90t)	5	15	30
Medium excavator with hydraulic hammer attachment (up to 15t)	5	5[7]	10
Small excavator with hydraulic hammer attachment (up to 5t)	5	5	10
Vibratory roller	5	15	20
Vibratory pile driver	5	20	25
Pile boring	5	5	5

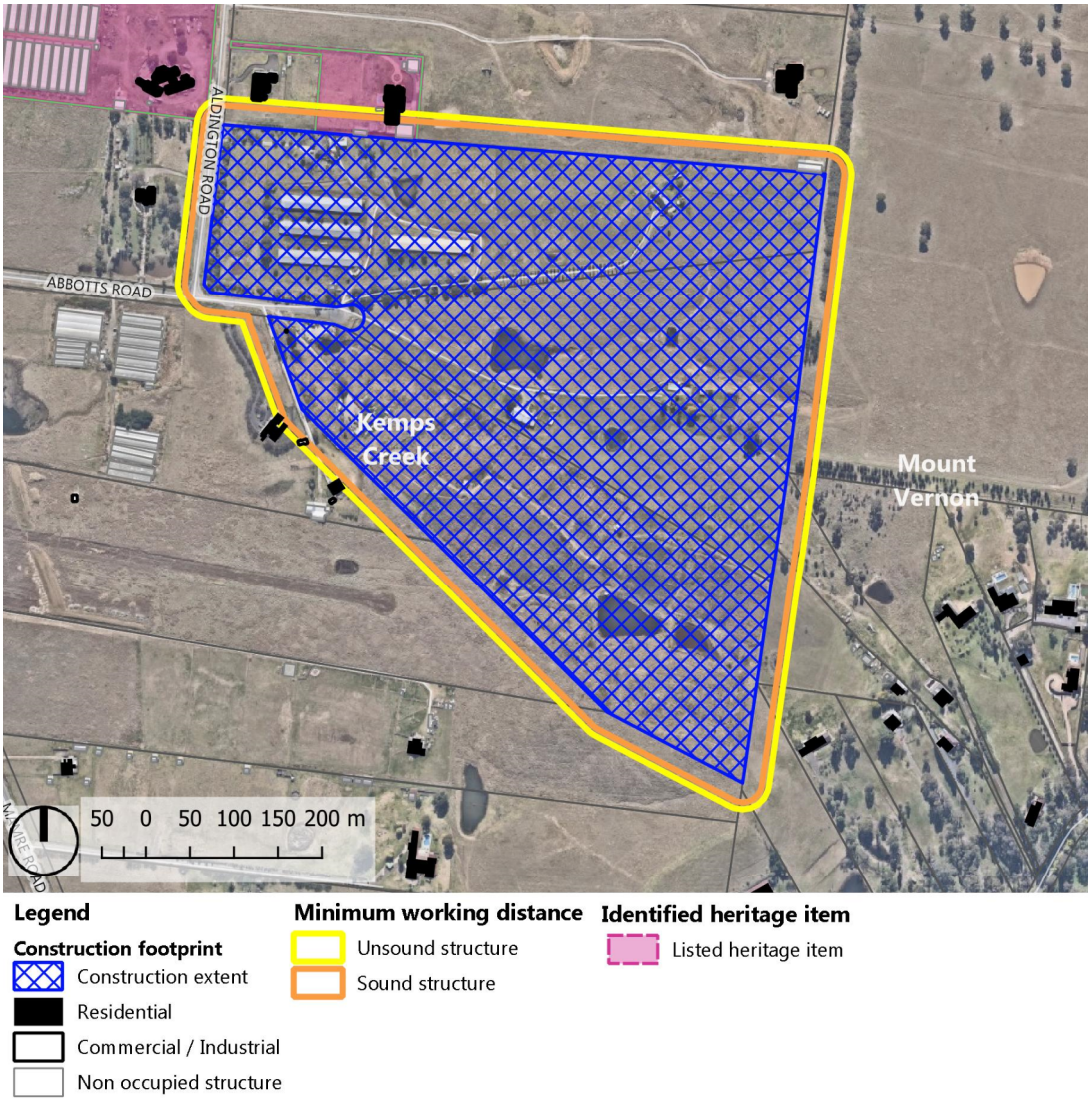
Notes
1. Criteria referenced from British Standard 7385: Part 2 '*Evaluation and measurement of vibration in buildings*'.
2. Criteria referenced from DIN 4150 Part 3, Structural Damage - Safe Limits for Short-term Building Vibration.
3. Initial screening test criteria reduced by 50% due to potential dynamic magnification in accordance with BS7385.
4. A building condition inspection should determine whether a heritage item is structurally unsound.
5. Heritage specialist will be consulted to determine appropriate vibration criteria and associated MWDs, vibration monitoring locations and monitor setup.
6. Minimum working distances are in 5m increments only to account for the intrinsic uncertainty of this screening method.

Potential vibration impacts are to be further reviewed during the construction design, planning stages to determine if the final selected plant and equipment could be located within the minimum working distances and/or result in vibration about the applicable vibration limits. Where then identified, and feasible and reasonable mitigation and management would be implemented to achieve the applicable vibration limits.

As a screening assessment, the largest minimum working distances from the various proposed vibration intensive activities has been mapped from the project construction boundary. Non-heritage structures of heritage items or heritage curtilages were classified as heritage for this review to identify heritage items within the minimum works distances.

The minimum working distance from the extent of the construction areas, based upon the most vibration intensive plant and the project construction boundary are presented in Figure 5.

Figure 5: Minimum working distances for cosmetic damage from the construction area extent (most vibration intensive plant)



1. Heritage data source: State Government of NSW and Department of Planning, Industry and Environment 2015
2. Imagery source: Nearmap (February 2022)

The recommended minimum working distances for vibration intensive plant for human annoyance are presented Table 4-5.

Table 4-5: Minimum working distances (m) for human annoyance (continuous vibration)

Plant item	Minimum working distances (m)				
	Critical areas[2,3] 0.28 mm/s	Residences		Offices[2] 1.1 mm/s	Workshops[2] 2.2 mm/s
		Day[1] 0.56mm/s	Night[1] 0.40 mm/s		
Large excavator with hydraulic hammer attachment (up to 90t)	145	90	115	55	30
Medium excavator with hydraulic hammer attachment (up to 15t)	30	20	25	15	10
Small excavator with hydraulic hammer attachment (up to 5t)	25	20	20	15	10
Vibratory roller (up to 11t)	120	70	90	40	25
Vibratory pile driver	40	30	35	20	15
Pile boring	20	15	15	10	10

Notes:
1. Daytime is 7:00am to 10:00pm and night-time is 10:00pm to 7:00am
2. Appliable when in use
3. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than the human comfort criteria specify above. Stipulation of such criteria is outside the scope of their policy and other guidance documents (e.g. relevant standards) should be referred to. Source: BS 6472-1992

4.3.2 Vibration assessment

4.3.2.1 Cosmetic damage

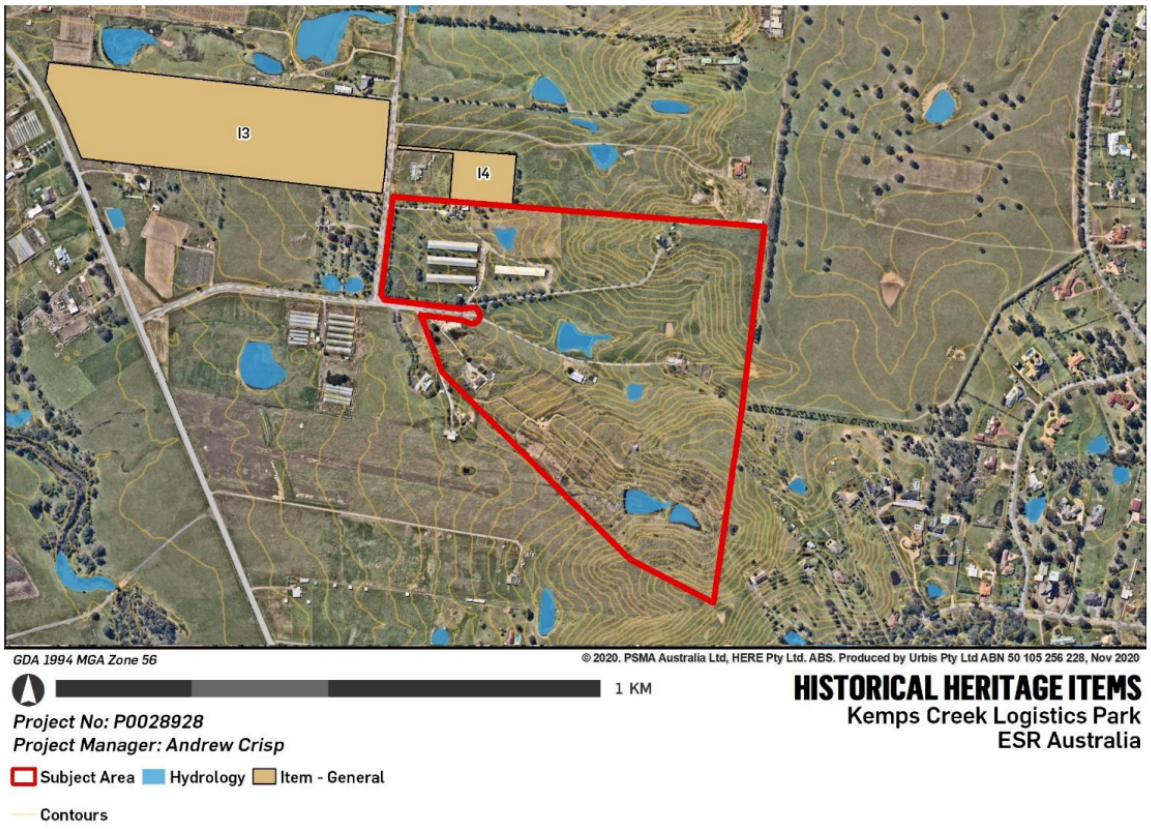
There are number of reinforced, unreinforced or heritage structures that are located within the minimum working distance identified in Table 4-4 above along the northern boundary of the project site, including Receiver R2 which is also heritage listed (see Section 4.3.3), as shown in in Figure 5.

Additionally, the residences (R13 & R14) and associated buildings/structures/sheds to the south-west are located at the minimum working distances, and so further review of the site specific minimum working distances is recommended when vibration intensive plant or equipment are operating in close proximity to these structures.

4.3.3 Heritage listed items

Heritage listed items that have been identified in close proximity to the Project site, as presented in the SSDA Heritage Impact Assessment (HIA) (Urbis, ref: P0028928, Rev 02, dated 16 December 2020).

Figure 6: Identified nearby heritage items



A number of the registered heritage items footprints have been identified in Table 4-6 as they are located nearby or within the minimum working distance for unsound structures for the most vibration intensive plant as detailed in Table 4-4. The locations of these identified registered heritage item footprints along with the minimum working distances are shown in in Figure 5. It should be noted that the specific vibration sensitive heritage structures/items within the identified heritage items footprints may not cover the full identified footprint. As such, although the registered heritage item is identified in Table 4-6, the actual vibration sensitive heritage structures/items may be located at further distances from the Project boundary.

Table 4-6: Number of registered heritage item footprints located nearby or within minimum working distances for vibration

Place/item name	Register(s) listed	Significance	Listing number	Distance from the Project
Brick farmhouse, 282 Aldington Road, Lot 142, DP 1033686	Western Sydney Employment Area 2009 State Environmental Planning Policy (WSSEPP)	Local	I4/104	Adjacent
Gateposts to Colesbrook, 269–285 Mamre Road, Lot 8, DP 253503	Western Sydney Employment Area 2009 State Environmental Planning Policy (WSSEPP)	Local	I3/105	Adjacent (Project boundary) 650m (to Gateposts)

Notes:
1. Aboriginal heritage items have not been reviewed as part of the screening assessment and were not included in the project heritage information. If required, these should be considered in accordance with the minimum working distances presented in 4.3.2.
2. See Figure 6 for locations.

As the brick farmhouse at 282 Aldington Road (Item I4/104) is identified as potentially within the minimum working distances, the heritage status and structural integrity of the item should be investigated during detailed design, and appropriate vibration limits should be adopted for management of these structures, as noted in Section 3.3.4.

Vibration monitoring will be required at the brick farmhouse at 282 Aldington Road where vibration intensive plant is required to operate within site specific minimum working distances, following the outcomes of the above investigation.

With the exception of the adjacent brick farmhouse at 282 Aldington Road, a review of the works areas and nearby sensitive buildings indicates there is generally a low risk of vibration impact as a result of the works considering the type of works and the distance offset to nearby vibration sensitive items/buildings/receivers. However, where vibration intensive activities are required such as vibratory rollers, then vibration impacts should be managed. Measures for managing vibration impacts are described in Section 5.2.

Reasonable and feasible mitigation measures for the proposed works are summarised in Section 5.2.

4.3.3.1 Human annoyance

The nearest residential receiver to the north is approximately 17 metres from the works, to the south is approximately 22 metres and to the east is approximately 55 metres.

Based on the minimum working distance of up to 100 metres for larger and vibration intensive plant used during the bulk earthworks or retaining wall phases of works during the day period, exceedances of the human annoyance criteria may result at nearby residential receivers when works are occurring close to occupied sensitive receiver buildings.

As such, potential human annoyance impacts should be further reviewed when vibration intensive works are proposed to take place within the minimum working distances, and feasible and reasonable mitigation and management measures adopted as detailed in Section 5.

Attended vibration measurements for human annoyance are proposed to be carried in response to vibration complaints (Section 5.2)

Reasonable and feasible mitigation measures for the proposed works are summarised in Section 5.2.

5 Construction mitigation and management measures

5.1 Construction noise mitigation measures

5.1.1 Noise management measures

The following recommendations provide feasible and reasonable noise control solutions to reduce noise impacts to sensitive receivers. **These should be considered and implemented where feasible and reasonable where there is potential for the noise management levels presented in Section 3.2 to be exceeded by the construction works either individually or cumulatively**.

Taking into account the predicted noise levels set out in Section 4.2.2 the following noise management are to be considered by a contractor during construction planning and implemented where feasible and reasonable. The advice provided here is in respect of acoustics only. Supplementary professional advice may need to be sought in respect of fire ratings, structural design, buildability, fitness for purpose and the like.

Table 5-1 summarises actions that can be applied to manage the potential for noise to impact on sensitive receivers near the Project construction works, which are to be applied where reasonable and feasible.

Table 5-1: Noise mitigation and management measures

Action required	Applies to	Details	Estimated noise benefit
At-source mitigation measures			
Equipment selection	Airborne noise Vibration	Use quieter and less noise/vibration emitting construction methods where feasible and reasonable. Where loud plant and/or equipment are being used in construction works, where feasible and reasonable the selection of alternative quieter plant and/or equipment should be considered for tasks.	Variable. Minimise noise impact and reduce risk of annoyance.
Equipment noise and vibration levels	Airborne noise Vibration	Plant and equipment must be properly maintained. Provide special attention to the use and maintenance of 'noise control' or 'silencing' kits fitted to machines to ensure they perform as intended.	Variable. Minimise noise impact and reduce risk of annoyance.
Rental plant and equipment	Airborne noise	The noise levels of plant and equipment items are to be considered in rental decisions, with quieter and less noise/vibration emitting construction methods where feasible and reasonable.	Variable. Minimise noise impact and reduce risk of annoyance.

Action required	Applies to	Details	Estimated noise benefit
Use and siting of plant	Airborne noise Vibration	• Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. • The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. • Plant used intermittently to be throttled down or shut down. • Noise-emitting plant to be directed away from sensitive receivers. • Any equipment not in use for extended periods during construction work must be switched off.	Up to 20 dB reduction + reduce vibration
Non-tonal and ambient sensitive reversing alarms	Airborne noise	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work. Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.	5-10 dB reduction
Minimise disturbance arising from delivery of goods	Airborne noise	Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers. Select site access points and roads as far as possible away from sensitive receivers. Dedicated loading/unloading areas to be shielded if close to sensitive receivers if possible. Delivery vehicles to be fitted with straps ratherthan chains for unloading, wherever possible.	Variable. Reduce noise/ vibration impact + risk of annoyance.
Silencers on mobile plant	Airborne noise	Where possible reduce noise from mobile plant through additional fittings including: - Residential grade mufflers - Air Parking brake engagement is silenced. Ensure plant including the silencer is well maintained.	0-20 dB reduction Reduce annoyance + sleep disturbance.
Prefabrication of materials off-site	Airborne noise	Where practicable, pre-fabricate and/or prepare materials off-site to reduce noise with special audible characteristics occurring on site. Materials can then be delivered to site for installation.	5-20 dB reduction Reduce noise/ vibration impact + risk of annoyance
Engine compression brakes	Airborne noise	Limit the use of engine compression brakes in residential areas. Ensure vehicles are fitted with a maintained original equipment manufacturer exhaust silencer or a silencer that complies with the National Transport Commission's 'In-service test procedure' and standard.	5-20 dB reduction
Reversing alarms	Airborne noise	Use of broadband "quacker" type of reverse/movement alarms instead of the tonal 'beeping" type.	Minimise noise impact and reduce risk of annoyance.
Path mitigation measures			
Noise bunds, mounds and stockpiles	Airborne noise	Noise bunds, mounds and stockpiles are beneficial when the line of sight is broken between source and receiver. As there are opportunities to use strategically located spoil stockpiles, and plan excavation works to strategically use noise bunds and cuttings, these should be incorporated into the construction planning where feasible and reasonable, with considering of other requirements, such as erosion and sediment control, potential dust and visual impacts.	Receiver **with** line of site of the works area: 5-10 dB reduction Receiver **without** line of site of the works area: 0-5 dB reduction

Action required	Applies to	Details	Estimated noise benefit
Site sheds	Airborne noise	Site sheds to be strategically located to provide shielding to nearby residences.	Receiver **with** line of site of the works area: 5-10 dB reduction
Laydown and stockpiling	Airborne noise	Locate laydown and stock piling as far from residences within the construction works areas. Alternatively, where this is not possible, they should be considered for use as noise mounds.	Variable. Minimise noise impact and reduce risk of annoyance.
Management measures			
Implement stakeholder consultation measures	Airborne noise	Periodic notification (monthly letterbox drop and website notification) detailing all upcoming construction activities delivered to sensitive receivers at least 7 days prior to commencement of relevant works. In addition to Periodic Notification, the following strategies may be adopted to notify the community of upcoming works: • Project Specific Website • Project Infoline • Email Distribution List • Web-based Surveys • Social Media • Community and Stakeholder Meetings.	Keeps stakeholders informed of the likely impact. Community may identify solution to assist in managing impacts.
Register of noise and vibration sensitive receivers	Airborne noise Vibration	A register of most affected noise and vibration sensitive receivers (NVSRs) would be kept on site. The register would include the following details for each NVSR: • Address of receiver • Category of receiver (e.g. Residential, Commercial etc.) • Contact name and phone number. The register may be included as part of the Project's Community Liaison Plan or similar document.	Assists with keeping stakeholders informed of the likely impact. Assists with planning and reducing potential noise/ vibration impact + risk of annoyance
Site inductions	Airborne noise Vibration	All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include: • All relevant project specific and standard noise and vibration mitigation measures • Permissible hours of work • Any limitations on noise generating activities with special audible characteristics • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/unloading areas and procedures • Site opening/closing times (including deliveries) • Environmental incident procedures.	Keeps construction workforce informed of actions required to minimise noise and vibration impact.
Construction hours and scheduling	Airborne noise Vibration	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise levels and vibration intensive plant identified within minimum working distances for human response should be scheduled during less sensitive time periods, such as after 9 am and before 5 pm. See Section 5.1.1.1 for additional information.	Minimise noise and vibration impact and reduce risk of annoyance.

Action required	Applies to	Details	Estimated noise benefit
High noise generating works and highly noise affected receivers	Airborne noise	Consistent with B50(d), where high noise generating works are proposed nearby to sensitive receivers, and noise levels at receivers could be above 75 dB(A) and so the receivers considered highly noise affected, respite periods should be considered where feasible and reasonable. See Section 5.1.1.1 for additional information.	Minimises noise impacts
Behavioural practices	Airborne noise	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors. No excessive revving of plant and vehicle engines. Controlled release of compressed air.	0-20 dB reduction Reduce annoyance + sleep disturbance.
Heavy vehicle routes	Airborne noise	Construction heavy vehicles and delivery vehicles should be scheduled during standard construction hours, unless permitted as part of approved construction works outside of standard construction hours.	Minimises noise impacts
Heavy vehicle code of conduct	Airborne noise	In accordance with CoC B60, develop a Heavy Vehicle Code of Conduct (HVCC) for all drivers to adhere to. The HVCC would require appropriate training of project contractors. It would include noise management methods such as limiting idling and compression braking, and traffic management practises to minimise noise emissions from vehicles entering and leaving the site.	Minimises noise impacts
Verification monitoring	Airborne noise	In response to noise complaints, a noise monitoring program should be carried out for the duration of works in accordance with the Construction Noise and Vibration Management Plan (CNVMP) or CEMP and any approval conditions.	Minimises noise impacts
Complaints management	Airborne noise Vibration	See Section 6.3 for further details. In addition to the noise mitigation measures outlined above, a management procedure will need to be put in place to deal with noise complaints that may arise from construction activities. Each complaint will need to be investigated and appropriate noise amelioration measures put in place to mitigate future occurrences, where the noise in question is in excess of allowable limits.	Minimise noise impact and reduce risk of annoyance.
Cumulative noise management	Airborne noise	Through the Mamre Road Precinct Working Group (MRPWG), identify any cumulative construction noise issue for developments under construction, considering community feedback. Where management measures to minimise, cumulative impacts are identified, implement them where feasible and reasonable.	Minimises cumulative noise impacts

Additionally, implementation of noise control measures, such as those suggested in Australian Standard 2436-2010 '*Guide to Noise Control on Construction, Demolition and Maintenance Sites*', are expected to reduce predicted construction noise levels. Australian Standard 2436-2010, Appendix C, Table C1 suggests possible remedies and alternatives to reduce noise emission levels from typical construction equipment. Table C2 in Appendix C presents typical examples of noise reductions achievable after treatment of various noise sources. Table C3 in Appendix C presents the relative effectiveness of various forms of noise control treatment.

5.1.1.1 Highly noise affected receivers

Some residential receivers nearest to the construction work areas may be 'highly noise affected' [ie exposed to noise levels that exceed 75 dB(A)] as a result of high noise generating works in close proximity.

As such, where construction noise is likely to be above the 'highly noise affected' level, respite periods should be considered where feasible and reasonable. The following potential respite periods would be considered:

- High noise impact activities carried out in continuous blocks of up to three hours. Respite provided between each block of high noise impact activities for at least one hour. No high noise impact activities carried out during this one hour respite period.
- Where an alternative approach to the above is preferable, a respite period can be agreed upon with the potentially impacted receivers if the premises are occupied during the construction period. Potential respite periods would limit the use of high impact activities, such as hammering, to say 9:00am to 5:00pm with a one hour break during this period.

5.1.1.2 Site specific practices

Noise bund and stockpiling along boundaries

- As part of the construction planning, the provision for constructing a noise bund along the boundary locations to reduce noise emissions to the adjacent residences should be made. A noise bund must block the line of site between the noise source and the receiver to be effective.
- The construction of noise bund and/or stockpiles should take place prior to the loud bulk excavation works taking place in close proximity to noise affected receivers.
- The noise bunds should then be maintained for as long as feasible during the bulk earthworks stage to minimise noise impacts.

5.1.2 Noise monitoring

The following approach could be adopted regarding noise monitoring procedures during the construction works in response to noise complaints or any unexpected levels of construction noise [to address CoC C1 (e)]. Details of the procedures for noise monitoring are presented in APPENDIX B.

- In the event of a confirmed construction noise complaint, noise monitoring may be carried out to examine construction noise impacts.
    - Reasonable and feasible noise reduction measures must be investigated, where necessary.
    - Typically short term (attended) noise monitoring would be undertaken to investigate a complaint as opposed to ongoing noise logging as this will enable a faster response time.

- Where short term attended noise measurements cannot produce a suitable outcome, long term noise monitoring will be considered. Typically, long term monitoring is useful primarily to check if start/finish times or respite periods have been adhered to. Given this limitation, that are not typically proposed in first instance.

5.2 Vibration management measures

In accordance with CoC B63, the following vibration management limits and associated mitigation and management measures are to be implemented by the Project to minimise vibration impact from construction activities of the project from potentially impacting receivers.

5.2.1 Cosmetic damage

1. Where construction activities occur in close proximity to:

   a. sensitive receivers/structures or on material that will likely cause vibration to any identified receiver/structures, or;

   b. within 30 metres of a residential building, in accordance with CoC B62,

   Vibration testing of actual equipment on site should be carried out prior to their commencement of site operation to determine site specific acceptable minimum working distance to the nearby sensitive receiver/structures location/s.

   The minimum working distances and vibration limits for the Project, as per CoC B63, will be based upon the vibration limits identified in Section 3.3.3 and Section 3.3.4.

   Undertake attended vibration measurements at the commencement of vibration-generating activities to establish site-specific minimum working distances and re-assess potential impacts (if required). This may include further detailed analysis based on the frequency content of the vibration levels.

2. If vibration intensive work is proposed to occur within the site specific acceptable minimum working distance, then the following would be carried out:

   c. Evaluate whether alternative construction methods, plant or equipment can be utilised for the works and re-assess potential impacts (if required).

   d. If there is any risk of exceeding the vibration objectives identified in Section 3.3.3 and Section 3.3.4 after all of the above options have been considered, a permanent vibration monitoring system should be installed, to warn plant operators (via flashing light, audible alarm, SMS, etc) when vibration levels are approaching the structural/cosmetic damage limits. It is recommended that for the operator alerts, that multiple alert levels are set. Typically, this would be an alert trigger level at 75% of the vibration criteria (ie. amber alert), and an alert trigger level at 100% of the vibration criteria (ie. red alert).

      Detailed vibration monitoring procedures are outlined in APPENDIX D.

e. A management procedure would be developed prior to the works taking place to determine the response to each trigger level. It is recommended that this includes a pause and management measures for an alert trigger level at 75% of the vibration criteria, and stop work at an alert trigger level at 100% of the vibration criteria. Where stop work is triggered, it is recommended that the following are undertaken:

STOP WORKS PROCEDURE

i. Investigate cause of exceedance

ii. Visual inspection of the vibration sensitive building/structure/item including photos

iii. If no cosmetic damage is found, works and vibration monitoring can be resumed

iv. If cosmetic damage has been identified, repair damage or undertake any specific required action (ie. data centre notification) and a different construction method with lower source vibration levels is to be used.

f. If works are proposed within the cosmetic damage minimum working distance, prior to starting work a building/structure condition survey would be carried out on vibration sensitive items/structures within the minimum working distances and vibration limits determined to manage cosmetic damage.

3. Dilapidation surveys must be conducted for the following;

a. all receivers within close proximity of the construction site.

b. In accordance with CoC B64, prior to commencement of earthworks, a preconstruction dilapidation report for adjoining properties that may be affected by proposed earthworks (including Lot 2 DP 250002, Lots 141 and 142 DP 1033686, Lot 15 DP 253503 and Lot 4132 DP 857093). The report must be submitted to the Planning Secretary and the relevant property owner(s) prior to construction works commencing on the site.

c. In accordance of CoC B65, if requested by the property owner, the Applicant must repair, or pay the full costs associated with repairing, any damage to adjoining properties caused by carrying out the development in accordance with the preconstruction dilapidation reports required by CoC B64, unless otherwise agreed by the Planning Secretary.

5.2.2 Human annoyance

Many building occupants assume that building damage is occurring when they feel vibration or observe rattling of loose objects, however the level of vibration at which people perceive vibration or at which loose objects may rattle is far lower than vibration levels that can cause damage to structures. At properties near the construction works, nearby receivers may be able to feel vibration when vibration-generating equipment is being utilised. For this reason, it is appropriate identify properties where there is a probability of adverse comment so that impacts can be managed.

1. Complaints in relation to vibration should be handled consistent with the Community Consultation and Complaints Handling Strategy (CCS). Following receipt of a complaint which related to construction vibration, acknowledgement of the complaint to the stakeholder or community contact should be made. A proposed response should then be developed by the Project team, which may require input from a noise and vibration consultant.

2. Each complaint should be investigated, and where there is potential that vibration levels could be exceeding the established limits, vibration monitoring should be undertaken as detailed in in APPENDIX D.

3. Where vibration levels are established as exceeding the established limits, appropriate amelioration measures should be put in place to mitigate future occurrences.

4. Where vibration is found to be excessive, management measures should be implemented to ensure vibration compliance is achieved. Management measures may include modification of construction methods such as using smaller equipment, establishment of safe buffer zones as mentioned above, and if necessary, time restrictions for the most excessive vibration activities. Time restrictions are to be negotiated with affected receivers.

5. Attended vibration measurements for human annoyance should be carried out as required to appropriately manage the works. The proximity of neighbouring residences will be communicated to subcontractors highlighting the relevant vibration restrictions and criteria for the area. This information will also be communicated during pre-tender meetings, start-up meetings and site inductions of personnel.

6. Notification by letterbox drop would be carried out for all buildings in the vicinity of the construction site. These measures are to address potential community concerns that perceived vibration may cause damage to property. Notification is to be provided to all occupants prior to any works that may cause vibration.

7. In relation to CoC B63, following the implementation of feasible and reasonable mitigation and management measures, where construction vibration levels remain above the human annoyance limits when a premises is occupied, vibration intensive works, including the use of vibratory compactors, may continue where there is an agreement in place with the potentially impacted receiver.

Detailed vibration monitoring procedures are outlined in APPENDIX D.

6 Compliance management

6.1 Roles and responsibilities

Section 3.2 of the Construction Environmental Management Plan (CEMP) details roles and responsibilities for environmental management for the Project, this includes noise and vibration aspects covered by this CNVMP. The items that will specifically be covered include:

- Ongoing management of construction works, and implementing the noise and vibration mitigation and management as per this CNVMP.
- Noise and vibration monitoring
- Responses to noise and vibration complaints

6.2 Training

All employees, contractors, sub-contractors and utility staff working on site will undergo site induction training that includes construction noise and vibration management issues. The induction training will address elements related to noise and vibration management including:

- Existence and requirements of this sub-plan
- Relevant legislation
- Approved construction hours
- Location of noise sensitive areas
- Complaints reporting
- General noise and vibration management measures
- Specific responsibilities to minimise impacts on the community and built environment from noise and vibration associated with the works.

6.3 Community consultation and complaints management

Noise and vibration levels generated by construction activities associated with the construction of the development must aim to comply with the noise and vibration goals set by the relevant regulations and guidelines.

Good relations with people living and working in the vicinity of a construction site should be established at the beginning of a project and be maintained throughout the project, as this is of paramount importance. Keeping people informed of progress and taking complaints seriously and dealing with them expeditiously is critical. The person selected to liaise with the community must be adequately trained and experienced in such matters.

A *Community Consultation and Complaints Handling* procedure has been established by ESR for the Project for implementation throughout the construction works. This procedure outlines the most effective communication methods to enable effective communication with the community and assist the Project team to deliver the Project with minimal disruption.

The construction contractor is responsible for ensuring that all reasonable and feasible mitigation and management measures are implemented such as the provision of a *Community Consultation and Complaints Handling Strategy* developed specifically for the Project, to minimise the generation of excessive noise and/or vibration levels from the site to nearby sensitive areas.

Additionally, as per CoC B50 (b), updates to this CNVMP should be undertaken considering feedback from owners of adjoining residential properties (including those still occupied for residential use in the MRP). Consultation with these nearby potentially impacted receivers has been undertaken, and the details of this consultation to date is presented in APPENDIX B. Construction noise and vibration was specifically discussed at these meeting, and property owners/residents were provided with further information in regard to construction noise and vibration, and how construction impacts are proposed to be managed. Based upon this consultation, there have been no specific additional updates to this CNVMP that have been identified.

Consultation outcomes with potentially impacted receivers should be considered as part of further construction planning in accordance of CoC B50(e). Examples of this would be for receiver respite as per Section 5.1.1.1.

Owners and occupants of nearby affected properties are to be informed by direct mail of a direct telephone line and contact person to either make a noise and/or vibration complaint or request information.

Nearby development should be notified of the proposed works.

The notification should outline:

- Detail of a site point of contact.
- The anticipated duration of the project as a work
- Identify the duration of the construction stages.
- Identify what stages will have greatest potential impact on each resident. This will provide much clearer information for each party about how the site work will impact them specifically (the duration over which the greatest noise impact will occur).

In accordance with CoC B50 (f), all noise and/or vibration complaints associated with the construction works shall be investigated in accordance with the Noise / Vibration Complaint Management Procedure identified in APPENDIX E.

In accordance with CoC C1 (e), where unforeseen construction works are required, they are to be managed consistent with this CNVMP following a review of potential noise and vibration impacts, with

management measures as detailed in Section 5 to be implemented where feasible and reasonable, including monitoring as per Section 5.1 for noise and Section 5.2 for vibration levels where required.

A complaints register will be maintained for the Project, and where the outcomes of investigations can identify improvements in noise and/or vibration management, these will be considered as part of construction planning in accordance with CoC B50(e), and adopted where feasible and reasonable.

7 Review and improvement

7.1 Continuous improvement

Continuous improvement of this CNVMP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, guidelines and objectives for the purpose of identifying opportunities for improvement. The continuous improvement process will be designed to:

- Identify areas for improved environmental management and performance;
- Determine the cause or causes of non-conformances and deficiencies;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from process improvement.

7.2 Update and amendment

The above process may result in the need to update or revise this CNVMP. Where this occurs, a copy of the updated CNVMP and changes will be distributed to all relevant stakeholders.

As part of the future development applications within the Project boundary, this CNVMP should be updated as follows:

- identify the likely noise and vibration impacts during construction, and
- review and update the construction mitigation and management measures in Section 5 so that potential noise and vibration impacts from the works can be appropriately managed in a feasible and reasonable manner. These controls are to be updated if required for the proposed works.

Additionally, consistent with the CoC B50 (h) requirements for periodic review and inline with the CEMP, the Project will undertake a bi-annually review of the adequacy of the environmental mitigation measures in the CEMP and Sub-Plans, including this CNVMP, as well as the effectiveness of their implementation to determine whether they are still applicable to the activities being carried out onsite. As part of the management plan review, complaints, incidents, stakeholder issues, critical issues, resourcing, recommendations of environmental audits and ER inspections would be reviewed to be included in the latest revision of the plan.

References

1. NSW Department of Climate Change and Water (2011), *Road Noise Policy* (RNP)
2. NSW Department of Environment and Climate Change (2009), *Interim Construction Noise Guideline* (ICNG)
3. NSW Environment Protection Authority (2017), *Noise Policy for Industry* (NPfI)
4. NSW Department of Environment and Conservation, *Assessing Vibration – a technical guideline* (AVTG), 2006
5. British Standard BS 6472-2008, *Evaluation of human exposure to vibration in buildings (1-80Hz)*
6. British Standard 7385: Part 2-1993 *Evaluation and measurement of vibration in buildings*
7. German Standard DIN4150-2016 *Structural vibration Part 3: Effects of vibration on Structures*
8. Standards Australia (2016), *Guide to Noise Control on Construction, Demolition and Maintenance Sites*, AS 2436:2010 (R2016)
9. Standards Australia (2018), *Acoustics—Description and measurement of environmental noise,* AS1055:2018
10. AS IEC 61672.1-2004 Electroacoustic - Sound Level Meters - Specifications

APPENDIX A Technical terms and concepts

A.1 Glossary of terminology - Noise

The following is a brief description of the technical terms used to describe noise and to assist in understanding the technical issues presented.

Absorption Coefficient α	The absorption coefficient of a material, usually measured for each octave or third-octave band and ranging between zero and one. For example, a value of 0.85 for an octave band means that 85% of the sound energy within that octave band is absorbed on coming into contact with the material. Conversely, a low value below about 0.1 means the material is acoustically reflective.
Adverse weather	Weather effects that enhance noise (particularly wind and temperature inversions) occurring at a site for a significant period of time. In the NSW INP this occurs when wind occurs for more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of nights in winter.
Air-borne noise	Noise which is fundamentally transmitted by way of the air and can be attenuated by the use of barriers and walls placed physically between the noise source and receiver.
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.
Amenity	A desirable or useful feature or facility of a building or place.
AS	Australian Standard
Assessment period	The time period in which an assessment is made. e.g. Day 7am-10pm & Night 10pm-7am.
Assessment Point	A location at which a noise or vibration measurement is taken or estimated.
Attenuation	The reduction in the level of sound or vibration.
Audible Range	The limits of frequency which are audible or heard as sound. The normal hearing in young adults detects ranges from 20 Hz to 20 kHz, although some people can detect sound with frequencies outside these limits.
A-weighting	A filter applied to the sound recording made by a microphone to approximate the response of the human ear.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the LA90 noise level if measured as an overall level or an L90 noise level when measured in octave or third-octave bands.
Barrier (Noise)	A natural or constructed physical barrier which impedes the propagation of sound and includes fences, walls, earth mounds or berms and buildings.
Berm	Earth or overburden mound.
Buffer	An area of land between a source and a noise-sensitive receiver and may be an open space or a noise-tolerant land use.
Bund	A bund is an embankment or wall of brick, stone, concrete or other impervious material, which may form part or all of the perimeter of a compound.
BS	British Standard
CoRTN	United Kingdom Department of Environment entitled "Calculation of Road Traffic Noise (1988)"
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of common sounds in our environment:

	threshold of hearing	0 dB	The faintest sound we can hear, defined as 20 micro Pascal
		10 dB	Human breathing
	almost silent	20 dB	
		30 dB	Quiet bedroom or in a quiet national park location
	generally quiet	40 dB	Library
		50 dB	Typical office space or ambience in the city at night
	moderately loud	60 dB	CBD mall at lunch time
		70 dB	The sound of a car passing on the street
	loud	80 dB	Loud music played at home
		90 dB	The sound of a truck passing on the street
	very loud	100 dB	Indoor rock band concert
		110 dB	Operating a chainsaw or jackhammer
	extremely loud	120 dB	Jet plane take-off at 100m away
	threshold of pain	130 dB	
		140 dB	Military jet take-off at 25m away
dB(A)	A-weighted decibel. The A- weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter is denoted as dB(A). Practically all noise is measured using the A filter.		
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies. The dB(C) level is not widely used but has some applications.		
Deemed-to-Satisfy Provisions	The Deemed-to-Satisfy Provisions are an optional means of achieving compliance with the mandatory Performance Requirements of the National Construction Code. (also see Alternate Solution)		
Diffraction	The distortion of sound waves caused when passing tangentially around solid objects.		
DIN	German Standard		
Discontinuous Construction	A wall system having a minimum 20mm cavity between two separate leaves, where, for other than masonry there is no mechanical linkage between leaves except at the periphery.		
DnT,w	Weighted Standardised Field Level Difference A measure of sound insulation performance of a building element. It is characterised by the difference in noise level on each side of a wall or floor. It is measured in-situ. It is a field measurement that relates to the Rw laboratory measured value but is not equal to it because an in-situ space is not of the same quality as a laboratory space. The value is indicative of the level of speech privacy between spaces. The higher its value the better the insulation performance.		
ECRTN	Environmental Criteria for Road Traffic Noise, NSW, 1999		
ENMM	Environmental Noise Management Manual, Roads and Maritime Services (Transport for NSW)		
EPA	Environment Protection Authority		
Field Test	A test of the sound insulation performance in-situ. See also 'Laboratory Test' The sound insulation performance between building spaces can be measured by conducting a field test, for example, early during the construction stage or on completion. A field test is conducted in a non-ideal acoustic environment. It is generally not possible to measure the performance of an individual building element accurately as the results can be affected by numerous field conditions.		

FIIC	Field Impact Isolation Class. A measure of the noise impact performance of a floor. The value indicates the resistance of the floor to the transmission of impact sound and is measured using a standard tapping machine. It is measured in-situ and is therefore subject to the inherent accuracies involved in such a measurement. The term is defined in ASTM E492 and E1007. It is a field measure of the level of impact sound transmitted to a space via a floor. The equivalent measurement in a laboratory is termed the IIC. The higher the value the better the performance.
Flanking	Flanking is the transfer of sound through paths around a building element rather than through the building element material directly. For example, sound travelling through a gap underneath a door or a gap at the top of a wall.
Fluctuating Noise	Noise that varies continuously to an appreciable extent over the period of observation.
Free-field	An environment in which there are no acoustic reflective surfaces. Free field noise measurements are carried out outdoors at least 3.5m from any acoustic reflecting structures other than the ground.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
FSTC	Field Sound Transmission Class A measure of the sound insulation performance of a building element. It is characterised by the difference in noise level on each side of a wall or floor. It is measured in the field and is therefore subject to the inherent inaccuracies involved in such a measurement. The term was referred to in older superseded versions of the Building Code of Australia and has now been replaced with the term DnT,w.
Ground-borne noise	Vibration propagated through the ground and then radiated as noise by vibrating building elements such as wall and floor surfaces. This noise is more noticeable in rooms that are well insulated from other airborne noise. An example would be vibration transmitted from an underground rail line radiating as sound in a bedroom of a building located above.
Habitable Area	Includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom. Excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.
Heavy Vehicle	A truck, transporter or other vehicle with a gross weight above a specified level (for example: over 8 tonnes).
IGANRIP	Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects, NSW DEC 2007
IIC	Impact Isolation Class A measure of the noise impact performance of a floor. It is measured in very controlled conditions in a laboratory and is characterised by how much sound reaches the receiving room from the operation a standard tapping machine placed on the floor. The term is defined in ASTM E492 and E1007. The higher the number the better the performance.
Impact Noise	The noise in a room, caused by impact or collision of an object onto the walls or the floor. Typical sources of impact noise are footsteps on the floor above a tenancy and the slamming of doors on cupboards mounted on the common wall between tenancies.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
INP	NSW Industrial Noise Policy, EPA 1999
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation.
Intertenancy wall	Walls that separate buildings or units within a building. They may provide sound resistance or serve as a fire wall. Synonymous with 'party wall'.
Intrusive noise	Refers to noise that intrudes above the background level by more than 5 dB(A).

ISEPP	State Environmental Planning Policy (Infrastructure), NSW, 2007
ISEPP Guideline	Development Near Rail Corridors and Busy Roads - Interim Guideline, NSW Department of Planning, December 2008
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L10(1hr)	The L10 level measured over a 1 hour period.
L10(18hr)	The arithmetic average of the L10(1hr) levels for the 18 hour period between 6am and 12 midnight on a normal working day.
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
LAeq or Leq	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time, which would produce the same energy as a fluctuating sound level. When A-weighted, this is written as the LAeq.
LAeq(1hr)	The LAeq noise level for a one-hour period. In the context of the NSW EPA's Road Noise Policy it represents the highest tenth percentile hourly A-weighted Leq during the period 7am to 10pm, or 10pm to 7am (whichever is relevant).
LAeq(8hr)	The LAeq noise level for the period 10pm to 6am.
LAeq(9hr)	The LAeq noise level for the period 10pm to 7am.
LAeq(15hr)	The LAeq noise level for the period 7am to 10pm.
LAeq (24hr)	The LAeq noise level during a 24 hour period, usually from midnight to midnight.
Lmax	The maximum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmax.
Lmin	The minimum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmin.
Ln,w	Weighted Normalised Impact Sound Pressure Level A measure of the sound level transmitted from impacts on a floor to a tenancy below. It is measured in very controlled conditions in a laboratory and is characterised by how much sound reaches the receiving room from a standard tapping machine. A lower value indicates a better performing floor.
LnT,w	Weighted Standardised Field Impact Sound Pressure Level As for Ln,w but measured in-situ and therefore subject to the inherent accuracies involved in such a measurement. The equivalent measurement in a laboratory is the Ln,w. A lower value indicates a better performing floor.
Laboratory Test	The performance of a building element when measured in a laboratory. The sound insulation performance of a building element installed in a building however can differ from its laboratory performance for many reasons including the quality of workmanship, the size and shape of the space in which the measurement is conducted, flanking paths and the specific characteristics of the material used which may vary from batch to batch.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on. That is, the sound of 85 dB is four times or 400% the loudness of a sound of 65 dB.
Microphone	An electro-acoustic transducer which receives an acoustic signal and delivers a corresponding electric signal.
NCA	Noise Catchment Area. An area of study within which the noise environment is substantially similar.
NCG	Noise Criteria Guideline, Roads and Maritime Services (Transport for NSW)

NMG	Noise Mitigation Guideline, Roads and Maritime Services (Transport for NSW)
Noise	Unwanted sound
Normalised	A method of adjusting the measured noise indices in a laboratory so that they are independent of the measuring space. The noise level in a room is affected by reverberation in the room. For example, the Ln,w impact sound pressure level measured in a laboratory is dependent upon the amount of absorptive material in the receiving room. The value is adjusted to what would be measured if the sound absorption in the receiving room is set at 10m2. This enables all laboratories to report the same value when measured under slightly different conditions. See also 'Standardised'.
NRC	Noise Reduction Coefficient. A measure of the ability of a material to absorb sound. The NRC is generally a number between 0 and 1 but in some circumstances can be slightly greater than 1 because of absorption at the edges of the material. A material with an NRC rating of 1 absorbs 100% of incoming sound, that is, no sound is reflected back from the material. The NRS is the average of the absorption coefficient measured in the octave bands 250Hz, 500Hz, 1kHz & 2kHz which correspond to the predominant frequencies associated with the human voice.
Partition wall	A wall dividing two rooms.
Party wall	A wall dividing two tenancies. Synonymous with 'Intertenancy Wall'.
Pre-construction	Work in respect of the proposed project that includes design, survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys, minor clearing (except where threatened species, populations or ecological communities would be affected), establishing ancillary facilities such as site compounds, or other relevant activities determined to have minimal environmental impact (e.g. minor access roads).
RBL	Rating Background Level is the representative LA90 background noise level for a period, as defined in the NSW EPA's noise policies.
Reflection	Sound wave reflected from a solid object obscuring its path.
RING	Rail Infrastructure Noise Guideline, NSW, May 2013
RMS	Root Mean Square value representing the average value of a signal.
Rw	Weighted Sound Reduction Index A measure of the sound insulation performance of a building element. It is measured in very controlled conditions in a laboratory. The term supersedes the value STC which was used in older versions of the Building Code of Australia. Rw is measured and calculated using the procedure in ISO 717-1. The related field measurement is the DnT,w. The higher the value the better the acoustic performance of the building element.
R'w	Weighted Apparent Sound Reduction Index. As for Rw but measured in-situ and therefore subject to the inherent accuracies involved in such a measurement. The higher the value the better the acoustic performance of the building element.
RNP	Road Noise Policy, NSW, March 2011
Sabine	A measure of the total acoustic absorption provided by a material. It is the product of the Absorption Coefficient (alpha) and the surface area of the material (m2). For example, a material with alpha = 0.65 and a surface area of 8.2m2 would have 0.65 x 8.2 = 5.33 Sabine. Sabine is usually calculated for each individual octave band (or third-octave).
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain Leq sound levels over any period of time and can be used for predicting noise at various locations.
Sole-occupancy Unit	An area within a building for the exclusive use of the owner or occupier.
Sound	A fluctuation of air pressure which is propagated as a wave through air.

Sound absorption	The ability of a material to absorb sound energy by conversion to thermal energy.
Sound Insulation	Sound insulation refers to the ability of a construction or building element to limit noise transmission through the building element. The sound insulation of a material can be described by the Rw and the sound insulation between two rooms can be described by the DnT,w.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 pico watt.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone referenced to 20 micro Pascal.
Spoil	Soil or materials arising from excavation activities.
Standardised	A method of adjusting the measured noise indices in-situ so that they are independent of the measuring space. The noise level in a room is affected by reverberation in the room. For example, the L'n,w impact sound pressure level measured in a room is dependent upon the amount of absorptive material in the receiving room. The value is adjusted to what would be measured if the reverberation time in the receiving room is set at 0.5 seconds. This enables the same value to be reported independent of whether the room contains carpet and furnishings and the like. See also 'Normalised'.
STC	Sound Transmission Class A measure of the sound insulation performance of a building element. It is measured in controlled conditions in a laboratory. The term has been superseded by Rw.
Structure-borne Noise	Audible noise generated by vibration induced in the ground and/or a structure. Vibration can be generated by impact or by solid contact with a vibrating machine. Structure-borne noise cannot be attenuated by barriers or walls but requires the isolation of the vibration source itself. This can be achieved using a resilient element placed between the vibration source and its support such as rubber, neoprene or springs or by physical separation (using an air gap for example). Examples of structure-borne noise include the noise of trains in underground tunnels heard to a listener above the ground, the sound of footsteps on the floor above a listener and the sound of a lift car passing in a shaft. See also 'Impact Noise'.
Tonal Noise	Sound containing a prominent frequency and characterised by a definite pitch.
Transmission Loss	The sound level difference between one room or area and another, usually of sound transmitted through an intervening partition or wall. Also the vibration level difference between one point and another. For example, if the sound level on one side of a wall is 100dB and 65dB on the other side, it is said that the transmission loss of the wall is 35dB. If the transmission loss is normalised or standardised, it then becomes the Rw or R'w or DnT,w.

A.2 Glossary of terminology - Vibration

The following is a brief description of the technical terms used specifically to describe vibration and to assist in understanding the technical issues presented.

Acceleration	The rate of change of velocity, often measured in m/s2 or g's. 1 g = 9.81 m/s2. Commonly used to assess human response to vibration and for machine condition monitoring.
Accelerometer	A vibration transducer sensor that is used to measure acceleration.
ANC	The Association of Noise Consultants, UK.
Ambient vibration	The all-encompassing vibration occurring at a given location, at a given time, composed of all vibration sources near and far.

Amplification	Vibration amplification refers to an increase in vibration. Amplification may occur due to resonance, when an object or structure is excited at its natural frequency.
Attenuation	Attenuation refers to a reduction in vibration. This may occur due to damping of a vibration system, the inclusion of attenuating devices or, in the case of ground vibration, during propagation through the ground. Ground attenuation is determined by the dynamic properties of the site's soil and rock.
AVTG	Assessing Vibration: A Technical Guideline. NSW Department of Environment and Conservation's (DEC) 2006 guideline for assessing human responses to vibration. Based on BS 6472–1992.
Axis	A fixed reference line for the measurement for the measurement of vibration in a particular direction. Vibration is commonly measured in transverse (T), longitudinal (L) and vertical (V) axes (or X, Y and Z).
Background vibration	The underlying level of vibration present in the ambient environment, measured in the absence of the vibration sources of interest.
Blasting	Excavation or demolition using explosives.
Borehole transducer	A geophone transducer rigidly mounted at the bottom of a borehole (either permanently or temporarily) to measure underground vibration.
Broadband vibration	The overall vibration level which encompasses a wide range of frequencies. As opposed to vibration levels for specific frequency bands (see Octave) or narrowband vibration levels as produced by FFT.
BS	British Standard.
Continuous vibration	Vibration that continues uninterrupted over a defined period.
Cosmetic damage	Damage to a structure due to vibration that only affects the appearance of the structure and can be easily repaired, e.g. hairline cracks in mortar joints of brick or concrete constructions, or cracks in plasterwork.
Coupling loss	The change in vibration level when vibration is transmitted from the ground to a building's foundations.
Crest factor	The ratio of the peak value of a vibration event to the RMS value of a vibration event.
Damping	Reduction of vibrational energy due to friction or other forces.
DEC	NSW Department of Environment and Conservation, now the Department of Planning, Industry and Environment.
Decibel [dB]	The logarithmic unit used to represent sound and vibration levels. A vibration level in dB equals 20 times the logarithm to the base 10 of the ratio of the vibration level relative to the reference level. For vibration velocity, the reference level is commonly 1 nm/s. For vibration acceleration, the reference level is commonly 1 $\mu m/s^2$. Other reference values are commonly used. The reference value should always be stated.
DIN	German Standard.
Displacement	Change in position of a body from a reference point. Usually measured in m or mm.
EPA	Environment Protection Authority.
eVDV	Estimated Vibration Dose Value. See also VDV.
Filter	An electrical circuit that allows signals of certain frequency ranges to pass through, and blocks all other frequencies. Types of filters include low pass filters, high pass filters, and band pass filters.
FFT	Fast Fourier Transform. An algorithm that converts a signal from the time domain to the frequency domain.
Frequency	In the case of vibration, frequency is the number of oscillations that occurs per second. Frequency is measured in units of Hertz (Hz).
Geophone	A vibration transducer sensor that is used to measure velocity.

Ground-borne noise	Vibration propagated through the ground and then radiated as noise by vibrating building elements such as wall and floor surfaces. This noise is more noticeable in rooms that are well insulated from other airborne noise. An example would be vibration transmitted from an underground rail line radiating as sound in a bedroom of a building located above.
Ground spike	A metal stake with a flat top that is driven into the ground and used to mount a vibration transducer to measure vibration levels.
Habitable Area	Includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom. Excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.
Intermittent vibration	Either interrupted periods of continuous vibration or repeated periods of impulsive vibration.
Impulsive vibration	Vibration that rapidly builds up to a peak followed by a damped decay. May consist of multiple impulsive events, typically less then 2 seconds in duration.
Isolation	The process of reducing the vibrational energy transmitted to an object, such as a piece of equipment or building, from the source of vibrations.
Minor damage	Damage to a structure due to vibration that affects the serviceability of residential style buildings or other sensitive structures but does not affect the structural elements. E.g. cracks in plastered or rendered surfaces, existing cracks enlarged or partitions detached.
Mode	A mode of vibration is a characteristic pattern or shape in which a mechanical system will vibrate. The actual vibration of a structure is a combination of all the vibration modes, but to varying degrees, depending on the vibration source.
Natural frequency	The frequency at which a system tends to oscillate in the absence of any driving or damping force.
Noise floor	The residual level of unwanted signal measured by an instrumentation system. The signal of interest must be above the noise floor to be measured accurately. See also Signal to noise ratio.
Octave	An octave represents a doubling or halving in frequency. Noise or vibration levels across a frequency spectrum are commonly given in octave or one-third octave frequency bands.
Peak-to-peak	The difference between the highest positive peak level and the lowest negative peak of a vibration event.
Peak vibration velocity	The absolute maximum value of the vibration velocity signal measured in the X, Y or Z axis during a given time interval. Also referred to as the peak component particle velocity.
PPV	Peak Particle Velocity. The absolute maximum value of the vibration velocity signal measured in any axis during a given time interval.
PVS	Peak Vector Sum. The vector sum of the peak vibration velocities measured in the three orthogonal axes.
Resonance	The phenomenon of increased amplitude that occurs when the frequency of an applied force is equal or close to the natural frequency of the system.
RMS	Root Mean Square value representing the average value of a signal.
Sampling rate	The number of samples per second taken from a continuous signal to make a discrete or digital signal. Measured in Hertz. To accurately record the signal and determine the spectrum, the sampling rate must two or more times the maximum frequency of interest.
Settlement	The movement of soil due to vibration or other forces, often in relation to a building's foundations. The indirect effect of settlement and ground movement may cause building damage, separately from the direct of effect of building vibration.
Signal to noise ratio	A ratio of the level of a desired signal to the level of the background, often expressed in decibels.
Source vibration	A source that generates vibration. Can be quantified by the amplitude, frequency content and duration of the vibration. Common sources of vibration include rail and road traffic, construction and demolition activities and blasting.
Spectrum	The result of transforming a signal from the time domain to the frequency domain.

Structural damage	Damage to a structure due to vibration that may affect its serviceability due to damage to structural elements. May result in the reduced stability of the building and/or reduction in load-bearing capacities.
Structural fatigue	The weakening of a material caused by cyclic loading that results in progressive and localised structural damage and the growth of cracks.
Structure-borne Noise	Audible noise generated by vibration induced in the ground and/or a structure. Vibration can be generated by impact or by solid contact with a vibrating machine. Structure-borne noise cannot be attenuated by barriers or walls but requires the isolation of the vibration source itself. This can be achieved using a resilient element placed between the vibration source and its support such as rubber, neoprene or springs or by physical separation (using an air gap for example). Examples of structure-borne noise include the noise of trains in underground tunnels heard to a listener above the ground, the sound of footsteps on the floor above a listener and the sound of a lift car passing in a shaft.
Tactile vibration	Vibration of a level that can be felt by humans, dependant on the amplitude and frequency of the source. Note that vibration may also be perceived through indirect effects such as ground-borne noise or the shaking of building elements.
Transducer	A device that converts energy from one form to another. Vibration transducers convert either acceleration, velocity or displacement to an electrical signal that is processed by the monitoring system.
Triaxial	Three axes. Measurement systems often consist of three vibration transducers arranged triaxially – oriented at 90° from each other.
VDV	Vibration Dose Value. A measure of tactile vibration levels used to assess intermittent vibration.
Velocity	The rate of change of vibration displacement, usually measured in mm/s.
Vibration	A mechanical phenomenon whereby oscillations occur about an equilibrium point; a periodic back-and-forth motion of an elastic body or medium, commonly resulting when almost any physical system is displaced from its equilibrium condition.
Vrms	Root mean square (RMS) vibration level for the train passby, typically expressed in mm/s
Waveform	A graphical representation of a vibration event in the time domain, showing the measured vibration levels for each sample.

APPENDIX B Community consultation record

Table B-1: Community consultation record

Landowner	Address	Date	Items Discussed	Outcome	Follow-up Required
	1 Abbotts Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report. - no concerns raised by landowner. Landowner was focused on subdivision DA for sale and wanting to know timing of payment	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
	19-105 Capitol Hill Drive Mount Vernon	Tuesday, 4 April 2023	- Noise and Vibration FAQ sheet distributed to landowner - No concern regarding construction noise, dust or air quality as no house is on the subject site - Dino requested investigation into a future road connection - Dino requested ESR to issue drawings to his consultant and ESR issued immediately after the meeting to JWP.	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
	2 Abbotts Road,	Thursday, 30 March 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident

	Kemps Creek				
	2 Abbotts Road, Kemps Creek	Friday, 31 March 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Monday, 3 April 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Thursday, 6 April 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Thursday, 20 April 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP/Air Quality fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Monday, 22 May 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP/Air Quality fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident
	272 Aldington Road, Kemps Creek	Thursday, 6 April 2023	- CNVMP / Air Quality FAQ sheet distributed to landowner - Key concern re. dust mitigation especially with winds coming from south-west. Concern relating to health impacts.	- ESR to review the construction management plan to address issues relating to dust management. - ESR proposed to place dust sensors surrounding property -	- Further discussion required, additional meeting scheduled

				this was not agreed at the time of offer	
	272 Aldington Road, Kemps Creek	Tuesday, 18 April 2023	- Email received from landowner outlining a number of issues not related to Noise / Vibration / Air quality, a summary of the relevant issues is below: - Resident has no confidence on dust, Nosie and vibration solutions. Monitoring requested along the boundary - Resident requested that they not experience dust more than 10 ug/g, and that ESR to agree to absorb cost of relocating family - Resident requested a reduction in the hours of work	- ESR responded with following: - Dust monitoring options are being investigated as a mitigation measure, monitors will be placed at the boundary - ESR will review mitigation measures with the consultant, however are proposing to use industry standard practices and are required by legislation to keep dust below levels set by the authorities - Hours of work as per standard approvals.	- ESR to schedule another meeting with the resident.

	272 Aldington Road, Kemps Creek	Thursday, 11 May 2023	-ESR visited landowner to discuss upcoming project. - ESR advised they will operate within their approved DA as per Regs and Guidelines. - ESR and landowner discussed noise and air quality, but no agreement was made to install noise / air quality monitors on the property	· ESR to follow up regarding the offer to place noise / dust monitors on the property	- Ongoing consultation and updating resident- Follow up required to close both items out. ESR to separate the matters.
	272 Aldington Road, Kemps Creek	Friday, 19 May 2023	- Response to visit with property owners (11/5/23) issued via email. - Response included offer to place dust monitors on the boundary and at the property, with the agreement to be confirmed	- No response from the resident to date regarding the acceptance of dust / noise monitors (19/06/23)	- ESR to follow up if complaints received during construction
	282 Aldington Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration / Air Quality FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was held around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report.	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans

	284 Aldington Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration / Air Quality FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was held around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report.	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern. - Privacy fence to be installed to screen landowner from construction works	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
Mt Vernon Residents	- 6-12 Mt Vernon Rd - 14 Mt Vernon Rd - 20 Mt Vernon Rd - 22-28 Mt Vernon Rd - 30-38 Mt Vernon Rd - 48 Mt Vernon Rd - 50 Mt Vernon Rd - 50A Mt Vernon Rd - 52-60 Mt Vernon Rd	Monday, 1 May 2023	Letter box drop for the residents of Mt Vernon that front the Eastern side of the ESR development. Letter box drop included the CNVMP and Air Quality Fact sheet, including contact details for ESR personnel	- No calls to date (19/6/23) from the recipients	- Ongoing letter box drops will be undertaken periodically throughout the project.

APPENDIX C Specification for Construction Noise Monitoring

C.1 Scope

This document specifies methods for undertaking noise monitoring during the construction phase of the project. This is for measurement of receivers construction noise levels, for either at-receiver measurement or intermediate locations.

C.2 Referenced standards and guidelines

- Standards Australia (2019), *Electroacoustics - Sound Level Meters - Specifications*, AS IEC 61672.1:2019 or Standards Australia (2013), Electroacoustics - Sound Level Meters - Specifications, IEC 61672.1:2013
- Standards Australia (2018), *Acoustics—Description and measurement of environmental noise*, AS 1055:2018
- NSW Department of Environment and Climate Change (2009), *Interim Construction Noise Guideline* (ICNG)
- NSW Environment Protection Authority (2017), *Noise Policy for Industry* (NPfI)

C.3 Monitoring procedures

The following procedures are to be followed by personnel suitably qualified and experienced in undertaking acoustic measurements.

All noise monitoring equipment used must be at least Class 2 instruments as described in IEC 61672.1:2013 and calibrated to standards that are traceable to *NATA General Accreditation Guidance: General Equipment Table* (July 2019), and consistent with the requirements of AS 1055:2018. The calibration of the monitoring equipment shall also be checked in the field before and after the noise measurement period, and in the case of long-term noise monitoring, calibration levels shall be checked at minimum weekly intervals.

Long-term noise monitoring equipment or Noise Loggers, consist of sound level meters housed in weather resistant enclosures. The operator may retrieve the data at the conclusion of each monitoring period in person or remotely if the logger is fitted with mobile communications.

All environmental noise measurements shall be taken with the following meter settings:

- Time constant: FAST (ie 125 milliseconds)
- Frequency weightings: A-weighting
- Sample period: 15 minutes

All outdoor noise measurements shall be undertaken with a windscreen over the microphone. Windscreens reduce wind noise at the microphones.

Measurements of noise should be disregarded when it is raining and/or the wind speed is greater than 5m/s (18km/h).

C.4 Long-term (unattended) noise monitoring

Noise monitoring shall be undertaken in accordance with the environmental noise measurement requirements stipulated in the reference standards and documents listed above.

Noise monitoring equipment shall be placed at positions which have unobstructed views of general site activities, while acoustically shielded as much as possible from non-construction site noise (eg. road traffic, rail noise and other surrounding noise).

Every 15 minutes, the data is to be processed statistically and stored in memory. The minimum range of noise metrics to be stored in memory for later retrieval is the following A-weighted noise levels: L_{min}, L_{90}, L_{eq}, L_{10}, L_1 and L_{max}.

Where the noise monitors are placed within 3.5 metres of building facades, walls or cliffs, then a reflection correction of up to -2.5dB(A) shall be applied to remove the effect of increased noise due to sound reflections from such structures.

Meteorological conditions including wind velocity, wind direction and rainfall shall be monitored over the entire noise monitoring period, either on site or recorded from the nearest weather station to the project site.

C.5 Short-term (attended) monitoring

Where noise complaints or requests from relevant authorities are received or as required by project approvals or this management plan, attended short-term noise monitoring shall also be conducted at the requested location and at any other relevant noise receiver location with closest proximity to the construction activities.

The noise verification monitoring locations will take into consideration the nature of construction activities being undertaken by the Project. The identification of monitoring locations will consider the following:

- Most affected noise sensitive receiver location in proximity to the assessed activities,
- Location of previous monitoring sites,
- Proximity of the receiver to a Project worksite,
- Sensitivity of the receiver to noise,
- Background noise levels, and

- Safety of personnel undertaking the measurements,
- Expected duration of the impact.

Noise monitoring should, where practicable, be in positions with unobstructed views of general site activities, whilst shielded as much as possible from non-construction site noise (e.g. road traffic, rail noise and other surrounding noise).

In accordance with Australian Standard AS1055, outdoor noise monitoring is to be undertaken at least 3.5m from any reflecting structure other than the ground. Outdoor noise monitoring is to be undertaken with the microphone at a height of 1.2 to 1.5m from the ground, unless noise measurements are taken from a balcony or veranda, in which case the same microphone height shall apply off the floor. Noise measurements inside buildings should be at least 1 m from the walls or other major reflecting surfaces, 1.2 m to 1.5m above the floor, and 1.5m from windows. Where the noise monitors are placed within 3.5 metres of building facades, walls or cliffs, then a reflection correction of up to -2.5 dB(A) shall be applied to remove the effect of increased noise due to sound reflections from such structures.

Short-term noise monitoring shall be used to supplement long-term noise monitoring undertaken at nearby locations, and to establish whether noise levels measured by the long-term noise monitors are determined by construction activities carried out on site.

All attended short-term noise monitoring shall be recorded over 15 minute sample intervals. Every 15 minutes, the data is to be processed statistically and stored in memory. The minimum range of noise metrics to be stored in memory and reported is the following A-weighted noise levels: L_{min}, L_{90}, L_{eq}, L_{10}, L_1 and L_{max}.

Noise monitoring shall be undertaken in accordance with the environmental noise measurement requirements stipulated in the reference standards and documents listed above.

The following information shall be recorded:

- Date and time of measurements;
- Name of person(s) undertaking the measurements;
- Qualifications and/or competency/suitability of the person carrying out the monitoring;
- Type and model number of instrumentation;
- Results of field calibration checks before and after measurements;
- Description of the time aspects of each measurement (ie. sample times, measurement time intervals and time of day);
- Measurement location details, measurement microphone height, and number of measurements at each location;

- Sketch map of area with critical measurement elements [ie. monitoring location, distance to operating plant/equipment, the location of noise/vibration generating items (construction activities and other environmental noise sources), the location and type of mitigation measures, the location of other acoustically relevant items (e.g. walls/barriers) along with relevant distances to the monitoring location];
- Photographs clearly identifying the monitoring location, setup, and critical measurement elements;
- Weather conditions during measurements, including wind velocity, wind direction, temperature, relative humidity and cloud cover;
- Description of operation and load conditions of the noise sources under investigation;
- Any adjustment made for presence or absence of nearby reflecting surfaces;
- Measured noise levels including the minimum descriptors required;
- Estimated noise level from construction activities only;
- Estimated noise levels from environmental noise sources other than construction; and
- Details of any extraneous noise due to other sources that influenced the measurement (eg traffic, aircraft, trains, dogs barking, insects, other construction equipment etc).

APPENDIX D Specification for Construction Vibration Monitoring

D.1 Scope

This document specifies methods for undertaking vibration monitoring during the construction phase of the project. Vibration monitoring during construction activities may be carried out for the following reasons:

- To confirm acceptability of construction techniques, or confirm compliance with limits for structural or cosmetic damage of buildings; or
- To assess compliance with vibration limits for human exposure to vibration.

Monitoring may be carried out in response to specific conditions of approval or complaint. However, the recommended work practice is to conduct proactive monitoring and establish procedures that provide greater assurance of compliance with relevant policy guidelines and Standards throughout all phases of the project works. It is noted that this specification does not address monitoring of blasting activities.

D.1.1 Requirements for vibration monitoring

Vibration monitoring is to be carried out at the following times in accordance with this Management Plan:

- At the commencement of operation of each piece of plant equipment or site activity which has the potential to generate significant vibration levels. The objective of this monitoring is to refine the indicative working distances for vibration generating equipment and provide site-specific minimum working distances. Refer to procedure below for establishment Vibration Minimum Working Distances.
- At any locations identified within the projects Conditions of Approval / Consent Condition.
- Where vibration complaints or requests from relevant authorities, at the requested location and at any other relevant vibration receiver location with closest proximity to the construction activities. This may be carried out with short-term or long-term monitoring methods.

Vibration amplitude may be measured as displacement, velocity, or acceleration.

- Displacement **(x)** measurement is the distance or amplitude displaced from a resting position. The SI unit for distance is the meter (m), although common industrial standards (including the TfNSW vibration limits) include mm.
- Velocity **($v=\Delta x/\Delta t$)** is the rate of change of displacement with respect to change in time. The SI unit for velocity is meters per second (m/s), although common industrial standards (including the TfNSW vibration limits) include mm/s. The Peak Particle Velocity (PPV) is the greatest instantaneous particle velocity during a given time interval. If measurements are made in 3-axis (x, y, and z) then the resultant PPV is the vector sum (i.e. the square root of the summed squares of the maximum velocities) regardless of when in the time history those occur.

- Acceleration **(a=Δv/Δt)** is the rate of change of velocity with respect to change in time. The SI unit for acceleration is meters per second squared (m/s^2).

D.2 Referenced standards and guidelines

- AS 2775-2004 *Mechanical vibration and shock – Mechanical mounting of accelerometers*
- AS 2670.2-1990 *Evaluation of human exposure to whole body vibration*
- BS 6472-1992 *Guide to evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz)*
- BS 6841–1987 *Guide to measurement and evaluation of human exposure to whole-body mechanical vibration and repeated shock*
- BS 7482–1991 Parts 1 and 3: *Instrumentation for the measurement of vibration exposure of human beings*
- BS 7385:1 *Evaluation and Measurement for Vibration in Buildings – Part 1: Guide for measurement of vibrations and evaluation of their effects on buildings*
- BS 7385:2 *Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Ground borne Vibration*
- DIN 4150-2016 Part 3 *Structural vibration – Effects of vibration on structures*
- ISO 4866 *Mechanical Vibration & Shock – Vibration of Buildings – Guidelines for the Management of the Vibrations and Evaluation of their Effects on Buildings*
- NSW DEC (EPA) 2006 *Assessing Vibration: A technical guide*

Vibration monitoring shall be undertaken in accordance with the vibration measurement requirements stipulated in the reference Standards and guidelines listed above; however, the following notes of importance are included herein.

D.3 Vibration minimum working distances

Minimum working distances are to be established for each vibration generating item of equipment, as identified in this Plan, to provide a site-specific minimum working distances.

The testing regime should commence at a suitable time to allow sufficient time to amend construction techniques as necessary, without affecting the overall construction program.

Minimum working distances are to be established using identical equipment or simulated practices at a location removed from the sensitive structure or receiver.

Sufficient measurements are to be carried out in accordance with the relevant Standards to confirm the minimum working distances and confirm the acceptable work practices that are likely to be compliant given the proximity of actual works to sensitive receivers and structures.

Consultation between consultants, engineers and the construction team may be required where revision to work practices is required.

D.3.1 Personnel and equipment

The following procedures are to be followed by personnel suitably qualified and experienced in undertaking vibration measurements.

All vibration monitoring equipment used must be checked for accuracy (to manufacturer's specification) at least every two years against a reference vibration transducer that is calibrated at least every three years [ref: NATA General Accreditation Guidance: General Equipment Table (July 2019)].

Vibration monitors consist of a computer unit connected by cable to a tri-axial vibration transducer which senses vertical, axial and horizontal vibration, or three separate uni-axial vibration transducers positioned in the vertical, axial and horizontal axes. The parameters to be measured differ dependent upon the relevant Standards but may include:

Assessment type	Type of vibration	Relevant standard/guideline	Measurement parameters
Human comfort	Continuous and impulsive	DECC guideline BS 6472-1992	RMS acceleration, 1-80Hz. 1/3 octave weighted as defined in BS6841-1987
	Intermittent vibration	DECC guideline BS 6472-1992	RMS acceleration, 1-80Hz Vibration Dose Values (VDVs) in accordance with BS6472-1992
Structural damage	Non-blasting	DIN 4150-2016 Part 3	Peak-particle velocity (PPV), 1-100Hz
	Non-blasting	BS 7385 Part 2	Peak-particle velocity (PPV), 4-250Hz
Structural damage – sensitive structures	Non-blasting	DIN 4150-2016 Part 3	Peak-particle velocity (PPV), 1-100Hz

Short-term vibration monitors should allow real-time analysis of vibration levels to assist assessment and feedback on the subject operations and procedures.

D.3.2 Monitoring procedure

Vibration monitoring equipment should be installed in accordance with the following guidance:

- At a location equivalent to the site and ground conditions at the sensitive receiver location. The working distances should not be established via immediate measurement and activities near the sensitive structure.
- The surface should be solid and rigid in order to best represent the vibration levels entering the building/structure under investigation.
- The vibration sensor or transducer should not be mounted on loose gravel or other unstable surfaces.

- The vibration geophone or transducer(s) should be directly mounted to the vibrating surface using bees wax, double sided adhesive tape, or magnetically fixed to a mounting plate fastened to the vibrating surface.
- Where a suitable mounting surface is unavailable, a metal stake (at least 300mm in length) with a mounting plate should be driven into solid ground adjacent to the building of interest. The vibration sensor or transducer shall be fixed on top of the mounting plate.

The following information shall be recorded:

- Date and time of measurements;
- Name of person(s) undertaking the measurements;
- Qualifications and/or competency/suitability of the person carrying out the monitoring;
- Type and model number of instrumentation;
- Description of the time aspects of each measurement (i.e. sample times, measurement time intervals and time of day);
- Sketch map of area with critical measurement elements [ie. monitoring location, distance to operating plant/equipment, the location of noise/vibration generating items (construction activities and other environmental noise sources), the location and type of mitigation measures, the location of other acoustically relevant items (e.g. walls/barriers) along with relevant distances to the monitoring location];
- Photographs clearly identifying the monitoring location, and critical measurement elements;
- Measurement location details (including distance from vibrating source) and number of measurements at each location;
- Operation and load conditions of the vibrating plant under investigation and distance from the measurement location; and
- Possible vibration influences from other sources (e.g. other mechanical plant, traffic, railway).

D.4 Long-term (unattended) monitoring

Long-term unattended vibration monitoring shall be undertaken continuously whilst the vibrating plant is operational within the pre-determined 'minimum working distances' from potentially affected buildings or sensitive structures. Long-term unattended vibration monitoring is generally carried out for the assessment of structural or cosmetic damage rather than human exposure.

D.4.1 Personnel and equipment

The following procedures are to be followed by personnel suitably qualified and experienced in undertaking vibration measurements.

All vibration monitoring equipment used must be checked for accuracy (to manufacturer's specification) at least every two years against a reference vibration transducer that is calibrated at least every three years [ref: NATA General Accreditation Guidance - General Equipment - Calibration and Checks, General Equipment Table (January 2018)].

Vibration monitors consist of a computer unit connected by cable to a tri-axial vibration transducer which senses vertical, axial and horizontal vibration, or three separate uni-axial vibration transducers positioned in the vertical, axial and horizontal axes.

Long-term monitoring for the management of structural and cosmetic damage should include the following:

- Vibration levels are to be monitored continuously with the following parameters being stored at a maximum interval period of 5 minutes:
    - Peak-particle velocity (PPV) between 1 Hz and 100 Hz for each direction of the tri-axial geophone (or transducers) and vector-sum peak-particle velocity [DIN4150.3];
    - Peak-particle velocity (PPV) between 4 Hz and 250 Hz for each direction of the tri-axial geophone (or transducers) and vector-sum peak-particle velocity [BS 7385.2].
- Vibration levels are to be stored at the pre-defined intervals in the logger memory for record, data analysis or post-processing. Data may be retrieved at the conclusion of each monitoring period either by operator download or remotely via a telephone modem if the logger is fitted with a remote communications option.
- Monitors should be fitted with an audible, visual, SMS or email alert system, triggered to provide warning when the measured level of vibration approaches or exceeds the limits defined by the relevant Standard.
- Where the trigger limits are exceeded, a detailed waveform recording should be stored including a detailed frequency spectrum for assessment against the frequency limit curve.

D.4.2 Monitoring location and mounting

Vibration monitoring equipment should be installed in accordance with the following guidance:

- Equipment should be positioned at the footings or foundations of the building of interest, closest to the vibrating plant.
- The mounting surface should be solid and rigid in order to best represent the vibration levels entering the structure of the building under investigation.
- The vibration geophone or transducer(s) should not be mounted on loose tiles, loose gravel or other unstable surfaces.

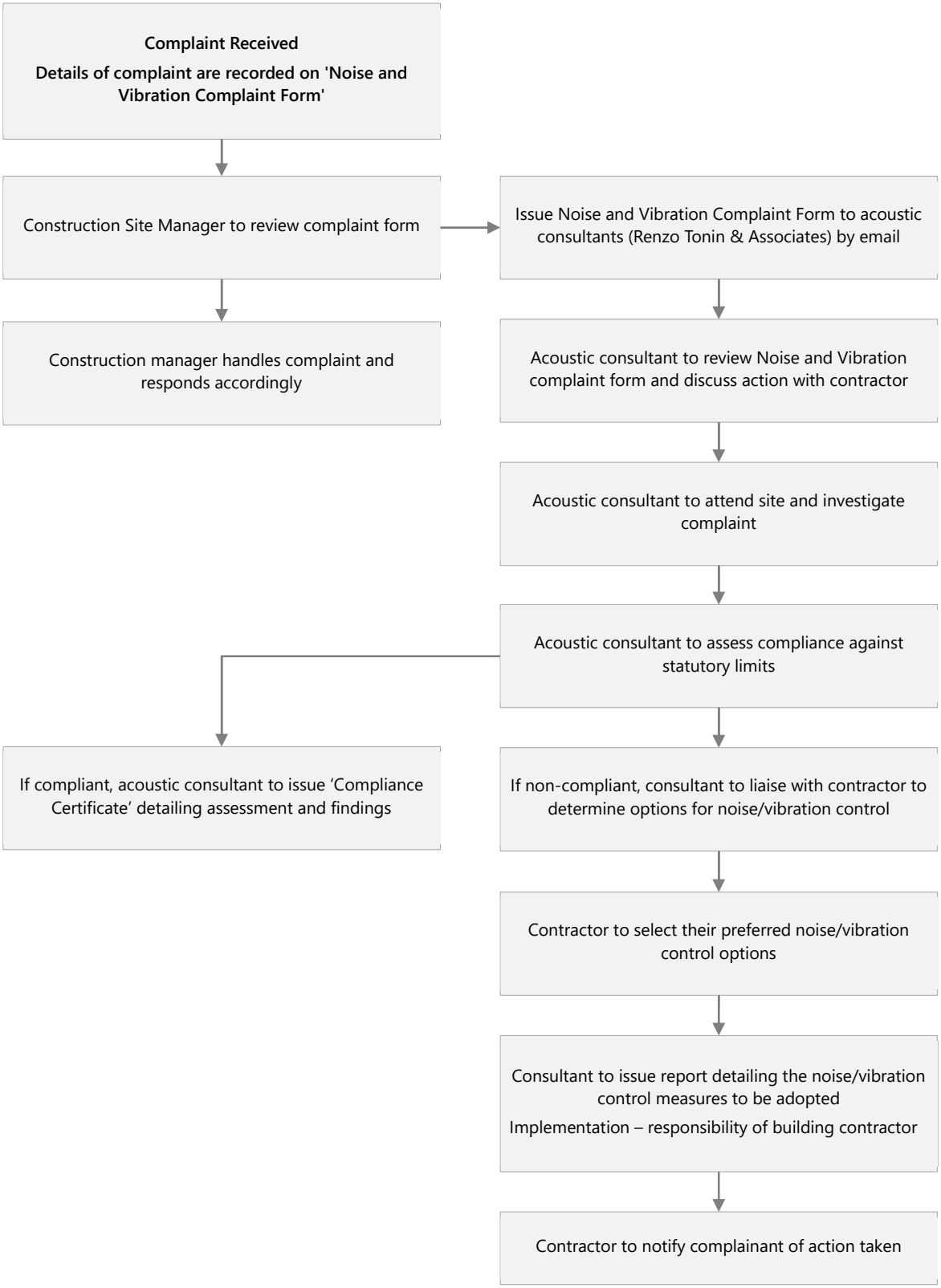
- The vibration geophone or transducer(s) should be directly mounted to the vibrating surface using bees wax, double sided adhesive tape, or magnetically fixed to a mounting plate fastened to the vibrating surface.
- Where a suitable mounting surface is unavailable, a metal stake (at least 300mm in length) with a mounting plate should be driven into solid ground adjacent to the building of interest. The vibration sensor or transducer shall be fixed to the mounting plate.

D.5 Vibration measurements in response to complaints

Proactive vibration monitoring and establishment of procedures that comply with the policy guidelines and Standards is the recommended work practice to reduce the risk of complaint regarding vibration from the site.

There may however be cases where specific monitoring is required to investigate a complaint or issue identified during the project works. Vibration monitoring may be carried out using either short-term or long-term methodologies depending on the nature of the complaint. Short-term attended manned procedures would generally be carried out when measurements are required inside a property or where immediate action and detailed observations are required to be made at the time of measurements. Short-term monitoring would generally follow the procedures outlined for the establishment of Minimum Working Distances. Long-term monitoring would be carried out as described in section C.4 above.

APPENDIX E Noise / vibration complaint management procedure



NOISE/ VIBRATION COMPLAINT FORM

Project title: _____ **Date:** _____

Site contractor: _____ **Phone:** _____

Site contact: _____ **Email:** _____

Complaint details

Received by (circle): Phone / Email / In person / Other: _____

Name: _____ H Ph: _____

Address: _____ W Ph _____

Email: _____ M Ph _____

Describe when the problem occurred (date and time), what equipment caused the complaint (if known) and where person was standing when he/she experienced the noise/vibration:

Investigation

Question foreman responsible on site and obtain information on what equipment or processes would most likely have caused the complaint:

Following approval from the Project Manager, email/fax this form to Renzo Tonin & Associates

Appendix E Contamination Unexpected Finds Protocol

CONTAMINATION UNEXPECTED FINDS PROTOCOL

1 Background

As per the amended Planning Secretary's Environmental Assessment Requirements (SEARs) which were issued on December 2020, the EIS assessed the potential contamination impacts of the Project and included an assessment of the site suitability for the proposed use(s) in accordance with Resilience and Hazards SEPP 2021. Separate Preliminary Environmental Site Investigations (PESI) were completed for different components of the Project site, namely that of 59-63 Abbotts Road (Lots 11 & 12) and 290-308 Aldington Road (Lot 13).

The PESI of Lots 11 and 12 was completed by Douglas Partners on 8 August 2019 and the PESI of Lot 13 was completed by Alliance Geotechnical on 18 October 2019 (Appendix R of the EIS – Ethos Urban, June 2021).

The PESI of Lots 11 and 12 confirmed that the potential for the presence of significant contamination constraints was low, notwithstanding a localised filling impacted with metals and asbestos in the western portion of Lot 11 and filling impacted with asbestos in a gully on Lot 12, which requires further investigation and/or remediation prior to bulk earthworks. Accordingly, a Detailed Site Investigation was recommended to be undertaken including delineation of metal and asbestos impact observed in the PESI to ascertain whether or not each identified Potential Area of Environmental Concern require further management and/or remediation prior to commencement of the development.

The PESI of Lot 13 concluded that the detected concentrations of identified contaminants of potential concern were considered unlikely to present a human health risk or ecological health risk. No asbestos was identified within the soil samples collected, and the concentrations of nutrients in the soils assessed were considered to be similarly low across the entire site. Therefore, no further investigation, management and/or remediation was considered necessary.

The PESI concluded that an Unexpected Finds Protocol for contamination should be prepared and included in the CEMP to ensure that potentially contaminated material is appropriately managed.

A Detailed Site Investigation and Dam Water and Sediment Assessment (Alliance Geotechnical, 1 December 2021) and a Remedial Action Plan (alliance Geotechnical, 10 February 2022) were subsequently completed for the Project site. The Remedial Action Plan included contingency plans for the proposed site remediation in the event of unexpected contamination finds or unsuccessful remediation strategies. This Unexpected Finds Protocol has been prepared with reference to these contingency plans.

2 Unexpected Finds Protocol

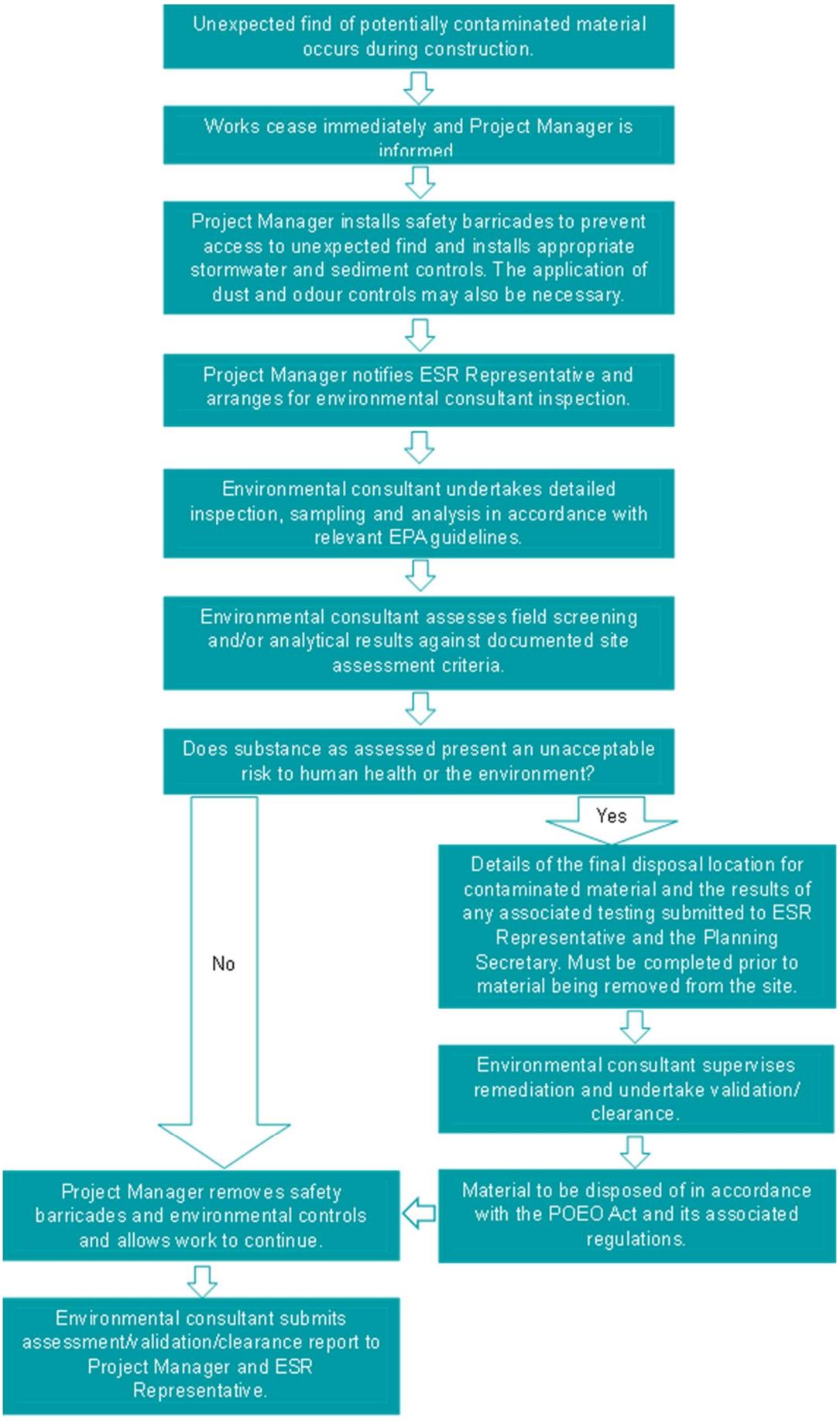
It is acknowledged that previous investigations of the Project site have been completed to assess contaminants of potential concern in selected parts of the site. Ground conditions between previous sampling points may vary, and further hazards may arise from unexpected sources and/or in unexpected locations during construction works.

Contamination unexpected finds could include:

- Petroleum hydrocarbons (e.g. fuels, oils and lubricants) that can be identified by either odour and/or visual indications of contamination
- Buried dry waste materials that may include a variety of construction and demolition waste materials including wood, plastic, metal fragments, building rubble (e.g. concrete, brick, asphalt and asbestos containing materials)
- Buried or surface bonded asbestos-containing material, asbestos fines/friable asbestos
- Buried organic materials associated with decomposed plant matter
- Structures or conduits containing possible hazardous materials
- Ash (light weight, grey and white sand and gravel sized particles (1mm to 10mm)) or slag deposits (can be varied in consistency and colour and may comprise pale grey to blue/green/grey and be loose or cemented
- Landfill type material that could include a combination of the other categories including domestic (e.g. rags and clothing), clinical (e.g. sharps, human tissue or hair, laboratory specimens and cultures), and/or putrescible waste (e.g. food scraps, nappies and animal waste)
- Unusual odours that a different from surrounding soils
- Per- and polyfluoralkyl substances (PFAS) which is foaming in waters (e.g. in excavations, dewatering sumps or discharges) with little agitation and minimal dissipation
- Buried drums which are metal or plastic drums containing potentially unknown hazardous substances.

As required by CoC B70 to ensure the protection of the workforce and surrounding community, should asbestos or soil containing other contamination be identified on site during construction, the Contamination Unexpected Finds Protocol (Figure 1) should be followed.

Figure 1: Contamination Unexpected Finds Protocol



Appendix F Construction Air Quality Management Plan

Construction Air Quality Management Plan

Westlink Stage 1

290-308 Aldington Road, 59-62 Abbotts Road & 63 Abbotts Road, Kemps Creek

SSD-9138102

DOCUMENT TRACKING

Version No.	Document No.	Description	Prepared By	Approved By	Date
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Rev 02	J1876230405.02	Amended draft to include: - ER comments - Drafted CoC	N. Yousefi	R. Salisbury	05/04/2023
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AUTHOR(S) DETAILS

Author Details	Qualifications and Experience
Joshua Jenkins	BEnvSc Over 6 years of environmental assessment experience in the infrastructure and transport sector.
Neda Yousefi	BAE MAE Phd (EnvSc) 5 years of environmental research and assessment experience in private and public sectors.

APPROVER DETAILS

Approver Details	Qualifications and Experience
Rob Salisbury	BSc DipEnvStud MSc Over 30 years of environmental management experience in the transport, industrial, water, energy, communications and other sectors.

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Glossary

AS	Australian standard
CAQMP	Construction Air Quality Management Plan
CEMP	Construction Environmental Management Plan
CPESC	Chartered Professional Erosion and Sediment Control
CO	Carbon monoxide
CoC	Condition(s) of Consent
DDG	Dust deposition gauge
DP	Deposited Plan
DPE	Department of Planning and Environment (formally DPIE)
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
ER	Environmental Representative
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
OU	Odour unit
PM	Particulate Matter
POEO Act	NSW Protection of the Environment Operations Act 1997
pphm	Parts per hundred million
ppm	Parts per million
SO_2	Sulphur dioxide
SSD	State significant development
The Project	Stage 1 of the Westlink industrial estate (formerly known as the Kemps Creek Logistics Park)
TSP	Total suspended particulates

1. INTRODUCTION

1.1. Background

This Construction Air Quality Management Plan (CAQMP) has been prepared by Aspect Environmental Pty Ltd (Aspect), on behalf of ESR Australia Pty Ltd (ESR), for the purposes of Stage 1 of an industrial estate known as Westlink (formerly known as the Kemps Creek Logistics Park) (the Project).

This CAQMP is a Sub-Plan of the Construction Environmental Management Plan (CEMP) and has been prepared with reference to:

- State significant development (SSD) 9138102 Development Consent and the included conditions of consent (CoC) dated 21 April 2023
- Amendment Report (Ethos Urban, 15 September 2022)
- Environmental Impact Statement (Ethos Urban, 17 June 2021)
- SSD 9138102 Planning Secretary's Environmental Assessment Requirements which were issued in December 2020.

1.2. Project Description

The Project comprises the first stage of an industrial estate located at 290-308 Aldington Road, Kemps Creek (Lot 13 Deposited Plan (DP) 253503), 59-62 Abbotts Road (Lot 12 DP 253503), and 63 Abbotts Road, Kemps Creek (Lot 11 DP 253503) within Penrith City Local Government Area. The Project site is approximately 319,800m^2 in area and is irregular in shape. In June 2020, the site was rezoned IN1 – General Industrial under *the State Environmental Planning Policy (Western Sydney Employment Area) 2009*. The site is also located in the Mamre Road Precinct and is subject to controls outlined in the Mamre Road Precinct Development Control Plan 2021. The location of the Project site is indicated by the red outline on Figure 1-1.

The SSD 9138102 Development Consent also includes Lots 3 and 4 DP 250002 in the development site. These lots are located immediately south of Lot 11 DP 253503 and works (e.g. batter slopes) may be required within them to allow earthworks to be safely undertaken within Lot 11.

The site is described as undulating rural land, with foundations of residential dwellings, farm sheds, and miscellaneous agricultural greenhouses and structures remaining on site. It is best described as being rural-residential in nature, with significant areas of land currently remaining unused.

As per the SSD 9138102 Development Consent the Project includes bulk earthworks (clearing, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction), subdivision, construction, fit out and operation of two warehouse buildings and ancillary office space with a total gross floor area of 81,317m^{2,} landscaping, construction of estate roads and external road upgrades, site servicing and stormwater infrastructure.

The site layout for Stage 1 is shown in Figure 1-2.

Figure 1-1: Site context (EIS, Ethos Urban, June 2021)

Figure 1-2: Stage 1 site layout (SSD 9138102 Development Consent, 21 April 2023)

1.3. Purpose of this Plan

This CAQMP has been prepared to address the conditions of the SSD 9138102 Development Consent related to air quality (CoC B74- B78), to provide methods to monitor and manage impacts to air quality during the construction of the Project. This AQCMP covers Stage 0 Pre-Commencement Works and Stage 1 Civil Works of the Project. Stages 2 and 3 Warehouse Construction will be covered by an updated CAQMP or a separate CAQMP.

Construction will be undertaken in accordance with the most recent, approved version of this CAQMP.

All Project personnel are responsible for the implementation of this CAQMP and have the responsibility to stop works if there is the potential for a safety or environmental incident to occur.

Roles and responsibilities for environmental management of the Project are outlined in Table 3-1 of the CEMP.

1.4. Objectives and Targets

The objectives and targets of this CAQMP are summarised in Table 1-1.

Table 1-1: Objectives and Targets

Objectives	Target	Timeframe	Responsibility	Monitoring Method
Enable compliance with relevant legislation, CoC, requirements and guidelines	No written warnings or infringement notices EPA air quality criteria	At all times	Environmental Manager Project Manager	Dust deposition monitoring Daily Site Inspection Checklist Daily logbook
Minimise impacts from dust emissions during construction for sensitive receivers	No complaints relating to air quality	At all times	Environmental Manager	Complaints register

2. LEGAL AND OTHER REQUIREMENTS

2.1. Legislation and Guidelines

Relevant legislation for management of air quality for this development includes:

- *Environmental Planning and Assessment Act 1979*
- *Protection of the Environment Operations Act 1997* (POEO Act)
- *Protection of the Environment Operations (Clean Air) Regulation 2010*
- *National Environment Protection (Ambient Air Quality) Measure 2021*.

Relevant guidelines for management of air quality for this development include:

- Approved Methods for Modelling and Assessment of Air Pollutants in NSW (NSW Environmental Protection Authority (EPA), 2016)
- Guidance on the Assessment of Dust from Demolition and Construction (EPA, 2016)
- Technical framework: Assessment and management of odour from stationary sources in NSW (EPA, 2006.

2.2. Development Consent Conditions

The Project will be constructed in accordance with SSD 9138102 Development Consent and in accordance with the documents referenced under CoC A2. The conditions which apply to air quality are identified in Table 2-1.

Table 2-1: Relevant CoC and where the CAQMP addresses them

SSD 9138102 CoC		CAQMP Section
Evidence of Consultation		
A9	Where conditions of this consent require consultation with an identified party, the Applicant must: (a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and (b) provide details of the consultation undertaken including: (i) the outcome of that consultation, matters resolved and unresolved; and (ii) details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.	Section 3 Appendix A
Operation of Plant and Equipment		
A26	All plant and equipment used on site, or to monitor the performance of the development, must be: (a) maintained in a proper and efficient condition; and (b) operated in a proper and efficient manner.	Table 6-1
Dust Minimisation		
B74	The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.	Section 6
B75	During construction, the Applicant must ensure that:	
	(a) exposed surfaces and stockpiles are suppressed by regular watering;	Table 6-1

SSD 9138102 CoC		CAQMP Section
	(b) all trucks entering or leaving the site with loads have their loads covered;	Table 6-1
	(c) trucks associated with the development do not track dirt onto the public road network;	Table 6-1
	(d) public roads used by these trucks are kept clean; and	Table 6-1
	(e) land stabilisation works are carried out progressively on site to minimise exposed surfaces.	Table 6-1
Construction Air Quality Management Plan		
B76	Prior to the commencement of earthworks, the Applicant must prepare a Construction Air Quality Management Plan (CAQMP) to the satisfaction of the Planning Secretary. The CAQMP must form part of the CEMP required by condition C2 and must:	This Plan
	(a) be prepared by a suitably qualified and experienced person(s);	Author and Approver details table
	(b) be prepared in consultation with owners of adjoining residential properties (including those still occupied for residential use in the MRP), include evidence of B7 this consultation, details of any issues raised and how the plan has responded to any issues raised during consultation;	Section 3 Appendix A
	(c) detail and rank all emissions from all sources during construction of the development, including particulate emissions;	Section 5.1
	(d) describe a program that is capable of evaluating the performance of the construction and determining compliance with key criteria, including installation of dust deposition gauges at neighbouring existing residences (where agreed by the landowner) or on the site boundary;	Section 7.8
	(e) identify the control measures that will be implemented for each emission source; and	Table 6-1
	(f) nominate the following for each of the proposed controls:	
	(i) key criteria;	Section 5.2
	(ii) monitoring method; and	Section 7.2
	(iii) location, frequency, and duration of monitoring;	Section 7.2
	(g) outline procedures that will be implemented in relation to:	
	(i) record keeping;	Section 0
	(ii) reporting to the Environmental Representative required under Condition A35;	Section 7.7
	(iii) complaints register;	Section 3.3
	(iv) response procedures; and	Section 7.6
	(v) compliance monitoring.	Section 7.2
	(h) detail contingency measures to be implemented to reduce any exceedances of relevant performance indicators or criteria and include a timetable for implementation.	Section 7.4

SSD 9138102 CoC		CAQMP Section
B77	The Applicant must: (a) not commence earthworks until the CAQMP required by condition B76 is approved by the Planning Secretary; and	This CAQMP will be submitted to the Planning Secretary for approval.
	(b) implement the most recent version of the CAQMP approved by the Planning Secretary for the duration of construction.	Noted
	(c) offer to enter into an agreement with a neighbouring landowner, that may involve at-property treatment, if a complaint is received from that landowner and a non-compliance is confirmed by dust monitoring. Evidence of any agreement must be provided to the Planning Secretary.	Section 3.3
Odour Management		
B78	The Applicant must ensure the development does not cause or permit the emission of any offensive odour (as defined in the POEO Act).	Table 6-1
Management Plan Requirements		
C1	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	Section 2.1
	(a) detailed baseline data	Section 4
	(b) details of:	
	(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 2.1
	(ii) any relevant limits or performance measures and criteria; and	Section 5.2
	(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Table 1-1 Section 5.2 Section 7.4
	(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Table 6-1
	(d) a program to monitor and report on the:	
	(i) impacts and environmental performance of the development; and	Section 7.2 Section 7.7
	(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Section 7.2 Section 7.7
	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 7.4
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 7.8
	(g) a protocol for managing and reporting any:	
	(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	Section 7.6
	(ii) complaint;	Section 3.3

SSD 9138102 CoC	CAQMP Section
(iii) failure to comply with statutory requirements; and	Section 7.5
(h) a protocol for periodic review of the plan.	Section 7.8
Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans	Noted

3. CONSULTATION

3.1. Consultation during Preparation of this Plan

As required by CoC B76(b), prior to the commencement of earthworks, the Applicant must prepare a CAQMP in consultation with owners of adjoining residential properties (including those still occupied for residential use in the MRP). Consultation undertaken is summarised in Table 3-1, with a detailed Consultation Log provided in Appendix A and the *CNVMP and CAQMP Fact Sheet* that was provided during consultation included in Appendix B.

Table 3-1: Consultation summary

Date	Person contacted	Comment
30/03/2023	Landowner contacted at 2 Abbotts Road, Kemps creek to discuss upcoming construction	No response received. Voicemail left.
31/03/2023	Landowner contacted at 2 Abbotts Road, Kemps creek to discuss upcoming construction	No response received. Voicemail left.
03/04/2023	Landowner contacted at 2 Abbotts Road, Kemps creek to discuss upcoming construction	No response received. Voicemail left.
04/04/2023	Meeting with property owner/residents of: - 19-105 Capitol Hill Drive, Mount Vernon - 282 Aldington Road, Kemps Creek - 284 Aldington Road, Kemps Creek	Discussion held around the dust mitigation measures ESR are proposing to implement on site to minimise the impact to the residents. Information sheets on the upcoming works were provided to attendees. *CNVMP and CAQMP Fact Sheet* distributed to landowners/residents. There were no major issues with the works raised. The owners were asked to call ESR immediately after any impact and the respective personnel from ESR will address the concern.
06/04/2023	Meeting with property owner/residents of 272 Aldington Road, Kemps Creek	Discussion held around the dust mitigation measures ESR are proposing to implement on site to minimise the impact to the residents. Information sheets on the upcoming works were provided to attendees. There were no major issues with the works raised. The owners were asked to call ESR immediately after any impact and the respective personnel from ESR will address the concern.

Date	Person contacted	Comment
06/04/2023	Property owner (door knock) of 1028 Mamre Road	No answer from the owner. No communication received to date from property owner in relation to concerns. Previous communication with the property owner has indicated no interest in talking to ESR regarding the site.
18/04/2023	Email received from landowner	Email received from landowner outlining issues regarding retailing wall, dust noise and vibration, hours of work. ESR provided response for the following issues
20/04/2023	Property owner (door knock) of 1028 Mamre Road	No answer from the owner. No communication received to date from property owner in relation to concerns. Previous communication with the property owner has indicated no interest in talking to ESR regarding the site.
01/05/2023	Letter box drop to the residents of Mt Vernon. Specific addresses: - 6-12 Mt Vernon Rd - 14 Mt Vernon Rd - 20 Mt Vernon Rd - 22-28 Mt Vernon Rd - 30-38 Mt Vernon Rd - 48 Mt Vernon Rd - 50 Mt Vernon Rd - 50A Mt Vernon Rd - 52-60 Mt Vernon Rd	*CNVMP and CAQMP Fact Sheet* and ESR contact details were delivered to mailboxes. Properties were mostly inaccessible due to large fences and locked gates.
11/05/2023	Visited landowner to discuss upcoming project at 272 Aldington Road, Kemps Creek	ESR invited landowner to discuss upcoming project. Retaining wall was raised and concern to develop on their site. ESR outlined expert advise provided by three engineers on the project. ESR advised they will operate within their approved DA as per Regulations and Guidelines. ESR walked the site boundary to discuss the retaining wall and relationship to the property. ESR advised they would investigate how we could incorporate retaining wall design without delaying programme for ESR. ESR advised if cut and fill amendments can be met from a programme perspective, we would be amenable to share costs. ESR and landowner discussed noise and odour.

Date	Person contacted	Comment
19/05/2023	Response to visit property owners at 272 Aldington Road	Response to visit with property owners (11/5/23) issued via email. Response included offer to place dust monitors on the boundary and at the property, with the agreement to be confirmed. Response issued included specifics around ESR willing to co-ordinate designs for retaining walls with the property owner and requested further information from the property owner to progress this further. No response from the resident to date (22/05/23).
22/05/2023	Property owner (door knock) of 1028 Mamre Road	No answer from the owner. *CNVMP and CAQMP Fact Sheet* left in the mailbox.

3.2. Ongoing Consultation during Construction

As described in Section 2.1 of the CEMP, a Community Consultation and Complaints Handling Strategy (Ethos Urban, May 2023 – Appendix I of the CEMP) has been prepared by ESR for the Project. This strategy outlines measures to enable effective communication with the community throughout the construction works, including:

- Regular community notifications
- Community updates when there are changes to construction works to those previously communicated
- Interactions between workers and the community
- Stakeholder) and community feedback protocol
- Issues management and dispute resolution
- Contact register and enquiries management
- Complaints management.

A range of communications channels will be used to communicate with the community and stakeholders. For stakeholders, ESR's participation in the Mamre Road Precinct (MRP) Working Group with other relevant development consent holders in the MRP will assist with the coordination of construction works within the MRP to assist with managing and mitigating potential cumulative environmental impacts (including air quality impacts).

The implementation of the strategy will assist the Project team to deliver the Project with minimal disruption to the community.

3.3. Complaints Handling Procedure

A detailed description of the complaints handling procedure is outlined in Section 2.2 of the CEMP. Complaints relating to air quality will be recorded in the Project complaints register (in accordance with mitigation measure AQ1) including the following details:

- Date and time of complaint

- Method by which complaint was made
- Nature of complaint
- Details of and initial response to complaint
- Potential causes of the complaint
- Action taken and any follow up actions
- Weather conditions corresponding to the time of the complaint.

Complaint's responses will be provided in accordance with the Community Consultation and Complaints Handling Strategy (Ethos Urban, May 2022 – Appendix I of the CEMP).

Exceptional weather events will be documented in the Environmental Manager log in accordance with mitigation measure AQ3 to assist with managing any complaints that may arise due to weather conditions.

All complaint details will be captured and logged in a stakeholder contact register, and all responses will be shared with the Project team. In accordance with CoC A38, this register will be made available to the Environmental Representative (ER) and the Chartered Professional Erosion and Sediment Control (CPESC) on a monthly basis.

As required by CoC B77(c), ESR will offer to enter into an agreement with a neighbouring landowner, in the event of a dust complaint being received from the landowner and a non-compliance being confirmed by dust monitoring. The agreement may involve at-property treatment. Evidence of any agreement between ESR and a landowner will be provided to the Planning Secretary.

4. EXISTING ENVIRONMENT

4.1. Meteorological Conditions

Meteorological conditions can have a large impact on air quality. In periods of high wind and dry weather there is a greater potential for dust and volatiles to be generated and transported offsite.

Wind data obtained from nearby St Marys air quality monitoring station (AQMS) show similar patterns of wind speed and wind direction over a 5-year period, with south-westerly and north-westerly winds prevailing (Figure 4-1).

4.2. Local Ambient Air Quality

Air quality monitoring is conducted at the nearby St Marys AQMS. The St Marys AQMS is operated by the NSW Department of Planning and Environment (DPE) and is located approximately 6km north-north-west from the Project. A summary of air quality monitoring data over a seven-year period from 2014-2020 against the NSW EPA air quality criteria (Table 5-2) is provided in Table 4-1 for particulate matter (PM_{10} and $PM_{2.5}$) and NO_2. The results indicate local ambient air quality is generally below the relevant NSW EPA air quality criteria, noting that elevated levels were recorded during 2019 due to bushfires and dust storms in the region.

Table 4-1: Ambient air quality monitoring concentrations in proximity to the Project

Pollutant	Average Annual Concentration (µg/m^3) 2014-2020	Average Annual NSW EPA Air Quality Criteria (µg/m^3)
PM_{10}	17.9	25
$PM_{2.5}$	8.1	8
NO_2	8.3	62

4.3. Sensitive Receivers

The Project is located within a rural setting, surrounded by a mix of rural dwellings and farms. The Oakdale South industrial area is located approximately 2.2km to the north-east and the Mount Vernon rural residential area is located between 100m and 700m to the east and south-east, depending on site location. Sensitive receivers located in the vicinity of the Project are located:

- In the Mount Vernon residential area (on Mt Vernon Road, Kerrs Road and Bowood Road) on the eastern boundary of the site within approximately 150m to 500m
- In the rural area across the northern, southern and western boundary of the site within approximately 40m to 500m.

These receivers are identified in Figure 4-2.

Figure 4-1: St Marys Wind Roses, 2015-2019 (RWDI, 2021)

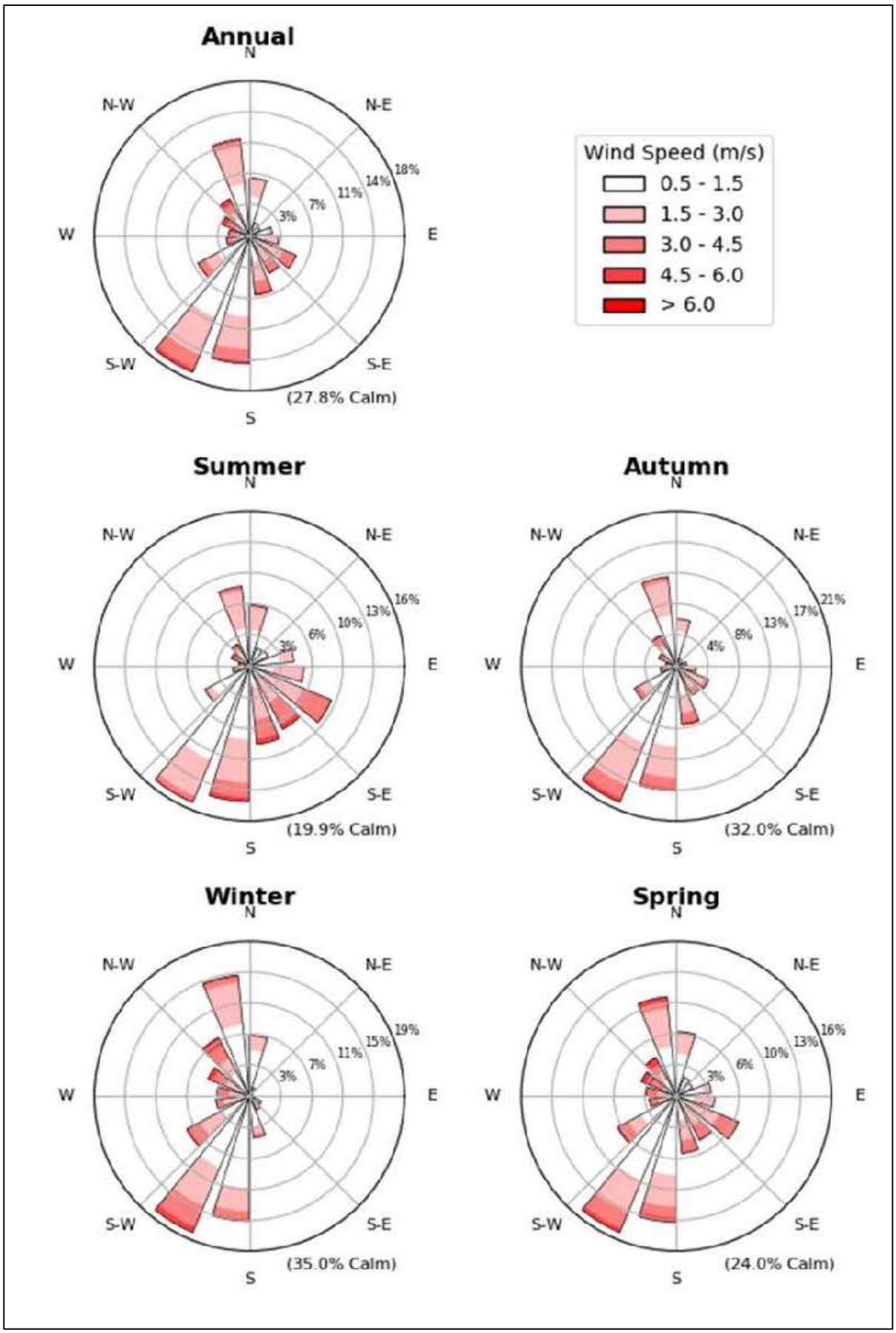
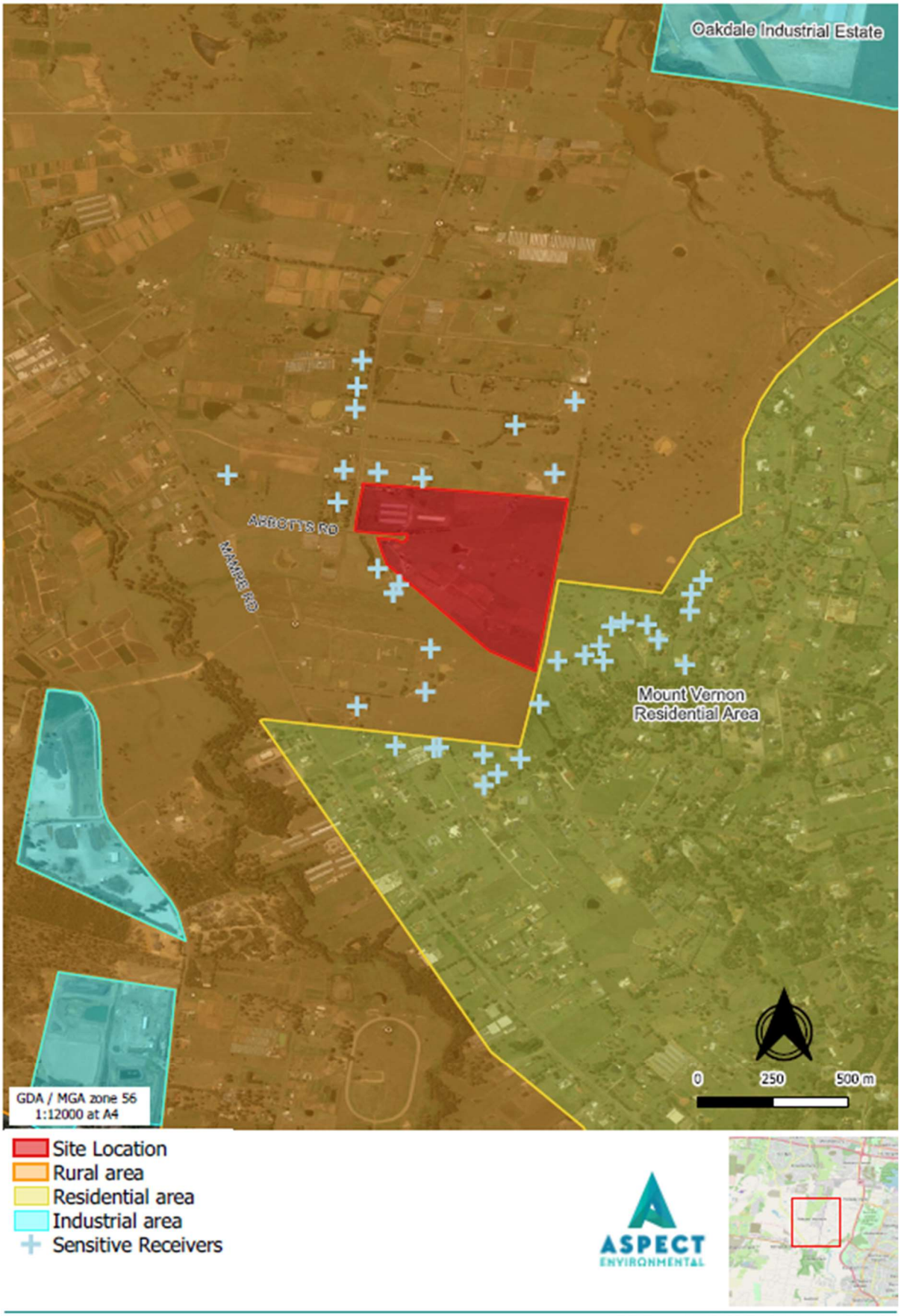


Figure 4-2: Sensitive receivers identified for the Project



5. ENVIRONMENTAL ASPECTS AND IMPACTS

5.1. Air Emissions Sources

Section 3.4 of the Air Quality Assessment (RWDI, February 2021) identified likely sources of air emissions during construction of the Project:

- Demolition:
  - Likely to the shortest and of least impact
  - Small number of structures to be removed using trucks, excavators and hand tools
- Earthworks:
  - Likely to the longest stage of works and of most impact
  - Significant earthworks required that will involve a large number of trucks, excavators, dozers, graders and associated equipment
- Construction of warehouses:
  - Given the staging it is likely to be of a short duration with less impact than earthworks.
  - Building works likely to involve a high number of truck movements, cranes and power tools.

Section 6.2 of the Air Quality Assessment (RWDI, February 2021) concluded that the Project is considered unlikely to result in unacceptable air quality impacts, subject to the implementation of the mitigation measures identified.

This CAQMP covers the Stage 0 Pre-Commencement Works and Stage 1 Civil Works of the Project, equivalent to the demolition and earthworks described above. The potential sources of air emissions during these stages are identified and ranked in additional detail in Table 5-1.

Table 5-1: Potential sources of air emissions

Source	Description	Potential Emissions	Potential Impact
Demolition	Removal of existing buildings and other structures on site using trucks, excavators and hand tools	Dust generation Vehicle, plant and equipment exhaust	Low Low
Earthworks	Active working of unsealed areas, including construction of internal roads, with excavators, bulldozers, scrapers, graders and other plant and equipment	Dust generation Vehicle, plant and equipment exhaust	High Medium
	Vehicle and equipment movements across unsealed areas	Dust generation Vehicle, plant and equipment exhaust	High Medium
	Screening, crushing or other processing of excavated material	Dust generation Plant and equipment exhaust	Medium Low
	Loading and unloading of excavated material to and from trucks	Dust generation Vehicle, plant and equipment exhaust	High Medium

Source	Description	Potential Emissions	Potential Impact
	Exhaust from generators and other plant	Plant and equipment exhaust	Low
	Stockpiling of excavated and other material	Dust generation Odour generation	High Low
Services/ utilities works	Site wide services and utilities installation using a variety of vehicles, plant and equipment	Dust generation Vehicle, plant and equipment exhaust	Low Low
Roads and other sealed surfaces	Sediment deposited on roads and other sealed surfaces	Dust generation	Medium
Site compound	Light vehicle movements	Dust generation Vehicle exhaust	Low Low
	Site ablutions facilities	Odours	Low

5.2. Air Emissions and Air Quality Criteria

Based on the potential sources of air emissions identified in Table 5-1, the following pollutants will require management during construction:

- Deposited dust particles – for management of nuisance dust
- Particulate matter – measured as total suspended particulates (TSP), PM_{10} and $PM_{2.5}$ – for management of potential health impacts
- Products of combustion of fuels in vehicles, plant and equipment – carbon monoxide (CO), oxides of nitrogen (NO_x) and in particular Nitrogen Dioxide (NO_2) and sulphur dioxide (SO_2) – for management of potential health impacts
- Odours generated during construction – for management of nuisance to community members outside of the site.

Air quality guidelines for these pollutants are specified in the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW EPA, 2017) and the Technical framework: Assessment and management of odour from stationary sources in NSW (NSW EPA, 2006). Relevant air quality criteria from these documents are provided in Table 5-2.

Table 5-2: Construction air quality criteria

Pollutant	Averaging Period	Air Quality Criteria	Application
Deposited dust	Annual	4g/m^2/month total	Off-site receiver
Total suspended particulates	Annual	90µg/m^3	Receiver
PM_{10}	Annual	25µg/m^3	Receiver
	24-hour	50µg/m^3	Receiver
$PM_{2.5}$	Annual	8µg/m^3	Receiver
	24-hour	25µg/m^3	Receiver

Pollutant	Averaging Period	Air Quality Criteria	Application
CO	8 hours	9ppm	Receiver
	1 hour	25ppm	Receiver
	15 minutes	87ppm	Receiver
NO_2	Annual	3pphm	Receiver
	1-hour	12pphm	Receiver
SO_2	Annual	2pphm	Receiver
	24 hours	8pphm	Receiver
	1 hour	20pphm	Receiver
	10 minutes	25pphm	Receiver
Odours	-	2OU	Site boundary

Subsequent to the publication of the NSW EPA documents, the National Environment Protection Council varied the *National Environment Protection (Ambient Air Quality) Measure* standards for NO_2, $PM_{2.5}$ and SO_2 in 2021. These updated criteria are:

- The updated criteria for $PM_{2.5}$ apply from 2025 and are:
  - annual average of 7µg/m^3
  - 1-hour average of 20µg/m^3
- The updated criteria for NO_2 are:
  - annual average of 1.5pphm
  - 1-hour average of 8pphm
- The updated criterion for SO_2 are:
  - 1-hour average of 10pphm.

6. MANAGEMENT MEASURES

The air quality mitigation measures to be implemented for the Project are identified in Table 6-1. These measures are consistent with the relevant measures included in Appendix 5 of SSD 9138102 Development Consent.

Table 6-1 identifies the emission sources (described in Table 5-1) that are addressed by each mitigation measure, as well at the timing and responsibility for the implementation of each measure. The air quality criteria and details of air quality monitoring are included in Section 5.2 and Section 7.2, respectively.

Table 6-1: Air quality mitigation measures

ID	Mitigation Measure	Source					Timing	Responsibility
		Demolition	Earthworks	Utilites works	Sealed surfaces	Site compound		
AQ 1	Record all air quality related complaints and record measures taken. Make complaints log available to relevant authorities (Council, EPA, DPE).	✓	✓	✓	✓	✓	When required	Communications and Community Liaison Representative
AQ 2	Identify cause(s) of complaints and take appropriate measures to reduce emissions in a timely manner.	✓	✓	✓	✓	✓	When required	Project Manager
AQ 3	Record any exceptional incidents that cause dust and/or air emissions on or off site and note action taken to resolve situation.	✓	✓	✓	✓	✓	When required	ESR Representative Environmental Manager
AQ 4	Undertake daily site inspections on site and off-site to monitor visible dust generation, dust suppression effectiveness, weather conditions and act if necessary.	✓	✓	✓	✓	✓	During construction	Environmental Manager
AQ 5	Where possible, locate high dust generating activities away from sensitive receivers and supervise these activities to allow immediate action to be taken should excessive dust generation occur.		✓				During construction	Project Manager
AQ 6	Impose and signpost 25km/h maximum speed limits on surfaced and 15km/h on unsurfaced haul routes and work areas to minimise dust generated from vehicle movements (if long haul routes are required these speeds may be increased with suitable additional control measures provided).	✓	✓		✓		During construction	All personnel
AQ 7	Utilise water cart(s) on site for dust suppression of haul roads, stockpiles and dust generating activities.	✓	✓	✓			During construction	Project Manager

ID	Mitigation Measure	Source					Timing	Responsibility
		Demolition	Earthworks	Utilites works	Sealed surfaces	Site compound		
AQ 8	Install a shaker grid and wheel wash bay on site to minimise and manage tracking of sediment on public roads.	✓	✓	✓	✓	✓	During construction	Project Manager
AQ 9	Remove materials that have a potential to produce dust as soon as possible, unless being used on site. If being reused, stabilise and cover materials.	✓	✓	✓	✓		When required	Project Manager
AQ 10	During periods of unsuitable weather (high winds and high temperatures), avoid or minimise dust generating activities where possible, or increase frequency of dust suppression activities.	✓	✓	✓	✓		When required	Project Manager
AQ 11	Avoid unnecessary idling and switch off engines during periods of inactivity.	✓	✓	✓		✓	During construction	Project Manager
AQ 12	Maintain vehicles, plant and monitoring and other equipment used on site in a proper and efficient condition and operate them in a proper and efficient manner. Replace, repair or service vehicles, plant and equipment observed to have excessively smoky exhausts.	✓	✓	✓		✓	When required	All personnel
AQ 13	Monitor weather conditions and stop works if dust generation is excessive.	✓	✓	✓		✓	Daily	Environmental Manager
AQ 14	Use water-assisted dust sweeper(s) on the access and local roads, as necessary.				✓		When required	Project Manager
AQ 15	Vehicles and trucks entering and exiting site are to be covered to prevent escape of materials during transport.	✓	✓	✓		✓	During construction	Project Manager
AQ 16	Where possible, prioritise land stabilisation works to minimise exposed surfaces.		✓	✓			During construction	Project Manager

ID	Mitigation Measure	Source					Timing	Responsibility
		Demolition	Earthworks	Utilites works	Sealed surfaces	Site compound		
AQ 17	Where feasible, locate potential odour sources (e.g. sewage pumpouts, portaloos and stockpiles) away from sensitive receivers and monitor the works avoid the emission of any offensive odour across the site boundary.	✓	✓			✓	During construction	Project Manager
AQ 18	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	✓	✓	✓	✓	✓	During construction	Communication and Community Liaison
AQ 19	Record inspection results and make available to relevant authorities. This should include regular dust soiling checks of surfaces such as street furniture, cars and window.	✓	✓	✓	✓	✓	During construction	ESR Representative
AQ 20	Develop and implement a Dust Management Plan* that considers, as a minimum, the measures identified herein.	✓	✓	✓	✓	✓	During construction	ESR Representative
AQ 21	Avoid site runoff of water or mud.		✓	✓	✓		During construction	Project Manager
AQ 22	Cover, seed or fence stockpiles to prevent wind erosion. Stockpiles to be stabilised in accordance with Blue Book requirements including: - Stockpiles to be less than 2m in height - Stockpiles to be away from sensitive receptors - Stockpiles to be trimmed with slopes - Stockpiles are to be retained when are onsite for more than 28 days - Use soil binding agents on exposed surfaces – these can form a crust that prevents wind erosion and can be more effective at dewatering		✓	✓			Where required	Project Manager

ID	Mitigation Measure	Source					Timing	Responsibility
		Demolition	Earthworks	Utilites works	Sealed surfaces	Site compound		
AQ 23	Check the equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods measures specific to haulage.	✓	✓	✓	✓	✓	During construction	Project Manager
AQ 24	Check there is no dry sweeping of large areas.	✓	✓	✓	✓	✓	Where required	Project Manager
AQ 25	Inspect on site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	✓	✓		✓		Where required	Project Manager
AQ 26	Record all inspections of haul routes and any subsequent action in a site logbook.	✓	✓		✓		During construction	Project Manager
AQ 27	Maintain an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	✓	✓	✓	✓	✓	During construction	Project Manager
AQ 28	Locate access gates at least 10m from receptor where possible.	✓	✓	✓	✓	✓	During construction	Project Manager
AQ 29	Maintain paved surfaces on site to avoid accumulation of dust and mud and tracking of sediment.				✓		During construction	Project Manager
AQ 30	Implement erosion and sediment control measures effectively.	✓	✓	✓	✓	✓	During construction	Project Manager
AQ 31	Install and maintain access and egress points in accordance with Blue Book requirements, with hardstand installed to prevent wheel rutting and degradation of the access points.	✓	✓	✓	✓	✓	During construction	Project Manager
AQ 32	Progressive and minimal disturbance of the site to optimise ground cover.	✓	✓	✓	✓	✓	During construction	Project Manager

* Note that this CAQMP fulfills this requirement.

7. MONITORING AND REVIEW

In addition to the monitoring outlined in Table 6-1, ongoing environmental inspections, monitoring and reporting for the Project is detailed in Section 5 of the CEMP. The monitoring and review actions relevant to this CAQMP are provided below.

7.1. Environmental Inspections

Environmental inspections to be undertaken are described in Section 5.1 of the CEMP. The regular environmental inspections undertaken by the Environmental Manager (daily), ESR (weekly) and the ER will include the implementation of this AQMP.

Environmental inspections with particular relevance to the implementation of this CAQMP are:

- Environmental Manager daily inspection to monitor and verify implementation of mitigations measures in this CAQMP, including:
  - Observation of dust generation on site and of dust leaving the site on a daily basis and during high wind events
  - Observation of exhaust emissions from vehicles, plant and equipment
  - Observation of the effectiveness of air quality mitigation measures
- Daily pre-start checks on vehicles, plant and equipment
- ER inspections to monitor implementation of this CAQMP
- CPESC supervision and inspection of erosion and sediment controls on site.

7.2. Environmental Monitoring

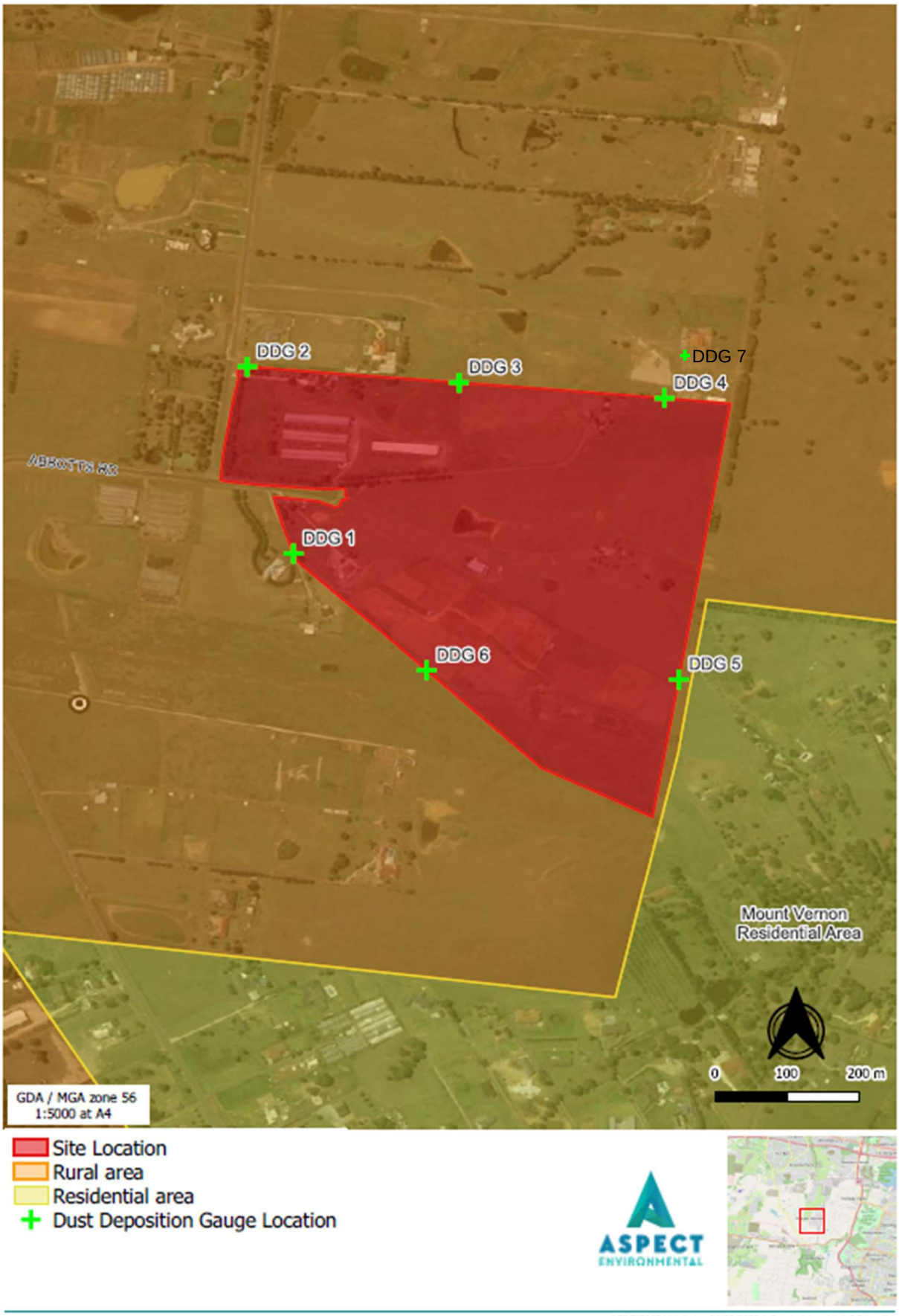
Environmental monitoring is summarised in Section 5.2 of the CEMP and will be undertaken to assist in the management of the following:

- Construction of the Project in accordance with environmental approvals
- Compliance with all relevant legislative requirements
- The minimisation of potential environmental incidents
- Effectiveness of environmental controls
- Implementation of this CAQMP.

In addition to the inspections required by the mitigation measures identified in Section 6 and noted in Section 7.1 (that will monitor dust generation, dust suppression effectiveness, weather conditions and odour emissions), dust deposition monitoring will be implemented for the Project. Real time monitoring of dust generation may also be undertaken.

Dust deposition gauges (DDGs) would be installed at neighbouring existing residences (where agreed by the landowner) or on the site boundary in the vicinity of locations identified in Figure 7-1. These locations have been determined based on historic meteorological conditions and the location of sensitive receivers, but may be changed during construction based on monitoring results or to address complaints received.

Figure 7-1: Dust deposition gauge locations



The air quality monitoring process is detailed below and would support the assessment of compliance for dust deposition against criteria specified in Section 5.2. The process would consist of:

- Maintaining DDGs at the Project site in accordance with Australian/New Zealand Standard (AS) 3580.10.1:2016 and other relevant standards.
- Collect dust samples each 30±2 days in accordance with AS 3580.10.1:2016 and other relevant standards and provide the collected samples to a NATA accredited laboratory for analysis.
- Compile monitoring results over a 12-month sampling period and calculate the annual average dust deposition rate (as g/m^2/month) for each monitoring location.
- Review the number, frequency and nature of any environmental complaints received over the same 12-month period, as relates to dust amenity issues.
- Every dust complaint should record a review and record of possible causes for inclusion in ER reports and monthly CPESC reports.
- Produce monthly Dust Monitoring Report specifying the results of the monitoring and whether compliance has been achieved.
- If the monitoring results reveal an exceedance of the dust deposition criteria (in any month of monitoring), identify and apply further dust mitigation measures.

In addition to the dust deposition monitoring, automated, real-time dust monitors would be considered for use during construction as required to monitor dust generation in areas close to adjacent sensitive receivers. The contingency management plan (Table 7-1) also includes real time monitoring of dust in response to additional community complaints.

7.3. Environmental Auditing

Environmental auditing is described in Section 5.3 of the CEMP. ESR will undertake an internal Health, Safety, Security and Environment audit of the Project annually. Audits will involve a review of all environmental documents, records and reports to verify compliance with the CEMP (and this AQMP) to satisfy CoC C16. In addition, the ER may at any time request documents and evidence confirming implementation of the CEMP and sub-Plans and the CPESC will undertake monthly audits of erosion and sediment control at the site.

Key environmental and procedural aspects to be covered by the audit may include:

- Environmental mitigation measures detailed in this AQMP
- Adherence to reporting procedures
- Complaint and incident management
- Legislative requirements.

Environmental and construction records include:

- Complaint records
- Incident, non-conformance and corrective action reporting
- Communications with stakeholders
- Records of environmental monitoring
- Monthly waste management reporting
- CEMP audit documentation.

Records of auditing and reporting will be maintained to demonstrate compliance.

7.4. Contingency Management Plan

If inspections, monitoring and/or auditing indicate that the mitigation measures listed in this AQMP are not effective in managing environmental impacts, the responses. outlined in Table 7-1 will be implemented. These responses will manage any unpredicted impacts and their consequences. This plan would check that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible.

This contingency management for the CAQMP is consolidated in Appendix J of the CEMP to form the Contingency Plan for the Project.

Table 7-1: AQMP contingency management plan

Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Dust Emissions	Trigger	Daily inspections show that there is no visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site multiple times during a day OR from multiple locations within the site.
	Response	Monitor weather conditions and stop works if dust generation is excessive. Continue implementation measures of the CAQMP	During periods of unsuitable weather (high winds and high temperatures), avoid or minimise dust generating activities where possible, or increase frequency of dust suppression activities. Where possible, locate high dust generating activities away from sensitive receivers. Remove, suppress, stabilise or cover materials that have a potential to produce dust as soon as possible, unless being used on site. Impose 20km/h speed limits on haul routes to minimise dust generated from vehicle movements. Record any exceptional events that cause dust and/or air emissions on or off site and note action taken to resolve situation.	Stop dust generating works on site, until weather conditions improve and/or mitigation measures are effective.
Dust Complaints	Trigger	No complaints received during construction.	An air-quality related complaint is received from a nearby resident.	Further complaints are received after the additional mitigation measures have been implemented.
	Response	Continue monitoring program and implementing CAQMP	Record all air quality related complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record measures taken.	Conduct real time air quality monitoring at the complaint location including meteorology if required. This monitoring should be conducted in

Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
			Make complaints log available to relevant authorities (Council, EPA, DPE). Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc), where appropriate.	consultation with a suitably qualified air quality professional.

7.5. Non-compliance and Actions

Section 5.5 of the CEMP details the Project team's response following the identification of a non-compliance with the CoC, the CEMP and Sub-Plans. This includes the reporting, investigation and notification of non-compliances. Non-compliances with this CAQMP will be addressed as required by the CEMP.

7.6. Environmental Incident and Emergency Response

Section 5.6 of the CEMP details environmental incidents and the response to environmental emergencies for the Project. This includes the reporting, notification and investigation of environmental incidents. Emergency contact details are also provided.

In the event of an environmental incident or emergency related to the implementation of this CAQMP, the responses detailed in the CEMP will be implemented.

7.7. Environmental Reporting

The reporting of environmental performance during construction will be undertaken as required by the Development Consent. Environmental reporting requirements for the Project is documented in Section 5.6 of the CEMP and reports relevant to this CAQMP are listed in Table 7-2.

Table 7-2: Summary of environmental reporting for the WMP

Report	Timing/ Frequency	Responsibility	CoC
Project Environmental Management Report	Weekly	Environmental Manager	-
Monthly Project Report	Monthly	Project Manager	-
ER Report	Monthly	ER	A36
ER Report to DPE	Quarterly	ER	A35(k)
Compliance Report	Within six months after the commencement of construction of the development, and in the same month each subsequent year	Project Manager	C14
Incident Report	Within 30 days of the date on which the incident occurred	Project Manager	C10 Appendix 6
Dust Monitoring Report to ER	Monthly	Project Manager	-

Monthly Project Reports will be provided to the ER and will include all dust and air quality complaints identified within the month, their causes and appropriate measures used to address the complaints and reduce the emissions in a timely manner.

7.8. CAQMP Review and Revision Process

This CAQMP will be reviewed in accordance with Section 5.8 of the CEMP. The Project will bi-annually review the adequacy of the environmental mitigation

measures within this CEMP and Sub-Plans (including this AQMP) as well as the effectiveness of their implementation to determine whether they are still applicable to the activities being carried out onsite. This review will be undertaken by the Environmental Manager in consultation with the Project Manager and ESR Representative.

CoC C8 also states that all strategies, plans and programs required under the SSD 9138102 Development Consent will be reviewed and the Planning Secretary notified of the review within three months of:

- the submission of a Compliance Report under CoC C14
- the submission of an incident report under CoC C10
- the approval of any modification of the conditions of the SSD 9138102 Development Consent or the issue of a direction of the Planning Secretary under CoC A2(b) which requires a review.

As per CoC C9, where documents are revised under the above reviews the revised documents will be sent to the Planning Secretary for approval within six weeks of the review.

All employees and contractors will be informed of any revisions to the AQMP during toolbox talks.

Appendix A Evidence of Consultation

SSD-9138102 Consultation Log					
Westlink Kemps Creek - Stage 1					
Landowner	**Address**	**Date**	**Items Discussed**	**Outcome**	**Follow-up Required**
	1 Abbotts Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report. - no concerns raised by landowner. Landowner was focused on subdivision DA for sale and wanting to know timing of payment	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
	19-105 Capitol Hill Drive Mount Vernon	Tuesday, 4 April 2023	- Noise and Vibration FAQ sheet distributed to landowner - No concern regarding construction noise, dust or air quality as no house is on the subject site - Dino requested investigation into a future road connection - Dino requested ESR to issue drawings to his consultant and ESR issued immediately after the meeting to JWP.	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
	2 Abbotts Road, Kemps Creek	Thursday, 30 March 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Friday, 31 March 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Monday, 3 April 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Thursday, 6 April 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Thursday, 20 April 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP/Air Quality fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Monday, 22 May 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP/Air Quality fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident
	272 Aldington Road, Kemps Creek	Thursday, 6 April 2023	- CNVMP / Air Quality FAQ sheet distributed to landowner - Key concern re. dust mitigation especially with winds coming from south-west. Concern relating to health impacts.	- ESR to review the construction management plan to address issues relating to dust management. - ESR proposed to place dust sensors surrounding property - this was not agreed at the time of offer	- Further discussion required, additional meeting scheduled
	272 Aldington Road, Kemps Creek	Tuesday, 18 April 2023	- Email received from landowner outlining a number of issues not related to Noise / Vibration / Air quality, a summary of the relevant issues is below: - Resident has no confidence on dust, nosie and vibration solutions. Monitoring requested along the boundary - Resident requested that they not experience dust more than 10 ug/g, and that ESR to agree to absorb cost of relocating family - Resident requested a reduction in the hours of work	- ESR responded with following: - Dust monitoring options are being investigated as a mitigiation measure, monitors will be placed at the boundary - ESR will review mitigation measures with the consultant, however are proposing to use industry standard practices and are required by legislation to keep dust below levels set by the authorities - Hours of work as per standard approvals.	- ESR to schedule another meeting with the resident.

	272 Aldington Road, Kemps Creek	Thursday, 11 May 2023	-ESR visited landowner to discuss upcoming project. - ESR advised they will operate within their approved DA as per Regs and Guidelines. - ESR and landowner discussed noise and air quality, but no agreement was made to install noise / air quality monitors on the property	- ESR to follow up regarding the offer to place noise / dust monitors on the property	- Ongoing consultation and updating resident - Follow up required to close both items out. ESR to separate the matters.
	272 Aldington Road, Kemps Creek	Friday, 19 May 2023	- Response to visit with property owners (11/5/23) issued via email. - Response included offer to place dust monitors on the bounadry and at the property, with the agreement to be confirmed	- No response from the resident to date regarding the acceptance of dust / noise monitors (19/06/23)	- ESR to follow up if complaints receievd during construction
	282 Aldington Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration / Air Quality FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was held around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report.	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
	284 Aldington Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration / Air Quality FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was held around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report.	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern. - Privacy fence to be installed to screen landowner from construction works	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
	- 6-12 Mt Vernon Rd - 14 Mt Vernon Rd - 20 Mt Vernon Rd - 22-28 Mt Vernon Rd - 30-38 Mt Vernon Rd - 48 Mt Vernon Rd - 50 Mt Vernon Rd - 50A Mt Vernon Rd - 52-60 Mt Vernon Rd	Monday, 1 May 2023	Letter box drop for the residents of Mt Vernon that front the Eastern side of the ESR development. Letter box drop included the CNVMP and Air Quality Fact sheet, including contact details for ESR personnel	- No calls to date (19/6/23) from the recipients	- Ongoing letter box drops will be undertaken periodically throughout the project.

Appendix B CNVMP and CAQMP Fact Sheet

Westlink ESR Development

ESR is in the late stages of DA approval for its Westlink industrial estate at Kemps Creek. Construction works are scheduled to commence soon, and include:

- Remediation works
- Cut to fill earthworks
- Construction of retaining walls
- Construction of utilities
- Construction of roadways

The works will be primarily contained within the ESR site, however, works will be required in the public road reserves fronting the ESR site to enable the successful delivery of the works.

ESR Stage 1 Works ESR Future Works

The works will be visible to the local community and ESR are committed to delivering the works with as minimal impact to the local community as possible. This notification has been produced to outline some of the construction related noise and vibration and air quality impacts that may be experienced whilst the works are underway and the measures ESR are implementing on site to minimise the impact to the local community.

Construction Noise and Vibration

What to Expect	What we are doing to minimise impact
Heavy earthworks equipment within the ESR property	• Selection of well maintained plant / equipment • Equipment fitted with silencing kits where appropriate • Avoiding simultaneous operations of heavy equipment within discernible range of receivers where appropriate • Creating noise bunds during the earthworks where feasible
Audible construction activities during construction hours: 7am-6pm (Mon-Fri) 8am-1pm (Sat)	• Maintaining as much distance as possible from noisy plant and receivers where possible • Plant shut off when not in use • Non-tonal reversing alarms will be fitted on all equipment • Working within the approved construction hours
Vibration will be noticeable at times during construction	• Dilapidation inspections (where accepted) on properties prior to commencing works • Construction procedures developed to minimise noise and vibration, with documented stop work procedures • Site inductions for all on site staff to cover off noise and vibration minimisation strategies • Conducting the works within strict vibration limits • Undertaking vibration monitoring during works adjacent receivers • Stopping works immediately if vibration limits are exceeded

Air Quality

What to Expect	What we are doing to minimise impact
Dust generating activities ESR are committed to minimising the impact to the local community with the construction activities on site, and as such are implementing several mitigation measures to control airborne dust leaving the site, these measures will be continuously reviewed and improved throughout the construction period.	• Air monitoring undertaken at the property boundary, with results kept on site • Daily site inspections reviewing effectiveness of site controls • Where possible locating high dust generating activities away from sensitive receivers • Imposing speed limits on construction vehicles within the site • Keeping work areas wet with water carts • Installing shaker grids at construction entries • Stabilise or cover materials that have a potential to produce dust • Monitor weather events and plan work activities appropriately • Covering loads which are entering / exiting site • Utilising street sweepers on the local roadways • Prioritising stabilisation works to minimise exposed surfaces

What to do if you are experiencing issues

If you are experiencing any issues during construction, get in contact with ESR project staff directly:

Daniel Galea

Mobile:

Email:

Appendix G Site Induction Training Material

Aboriginal Cultural Heritage Induction Training

Westlink Kemps Creek

Rev 01 28/04/2023

Known Aboriginal Archaeological Resource

Aboriginal cultural heritage assessment results – 16 Aboriginal artefacts identified across the site

Westlink site (red boundary) with identified surface artefact locations (yellow stars), areas of identified high disturbance (red), drainage line/open depression (aqua), ridge (purple) and simple slope (green). Test pits were dug at 20m intervals along each transect (white lines). (Aboriginal Cultural Heritage Assessment Report, Urbis 2021)

Unexpected Finds Procedure
Heritage Remains – What to look for

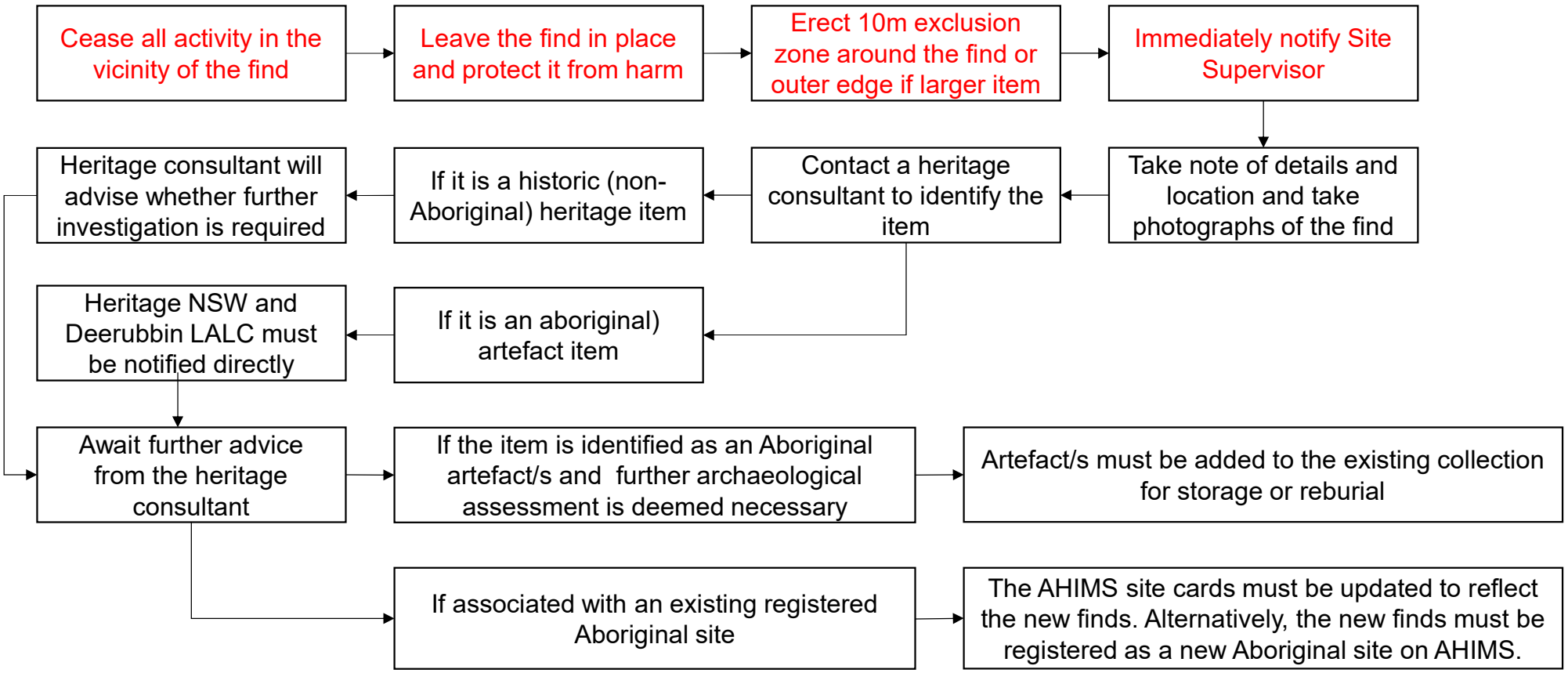
Aboriginal stone tools

Historical artefacts

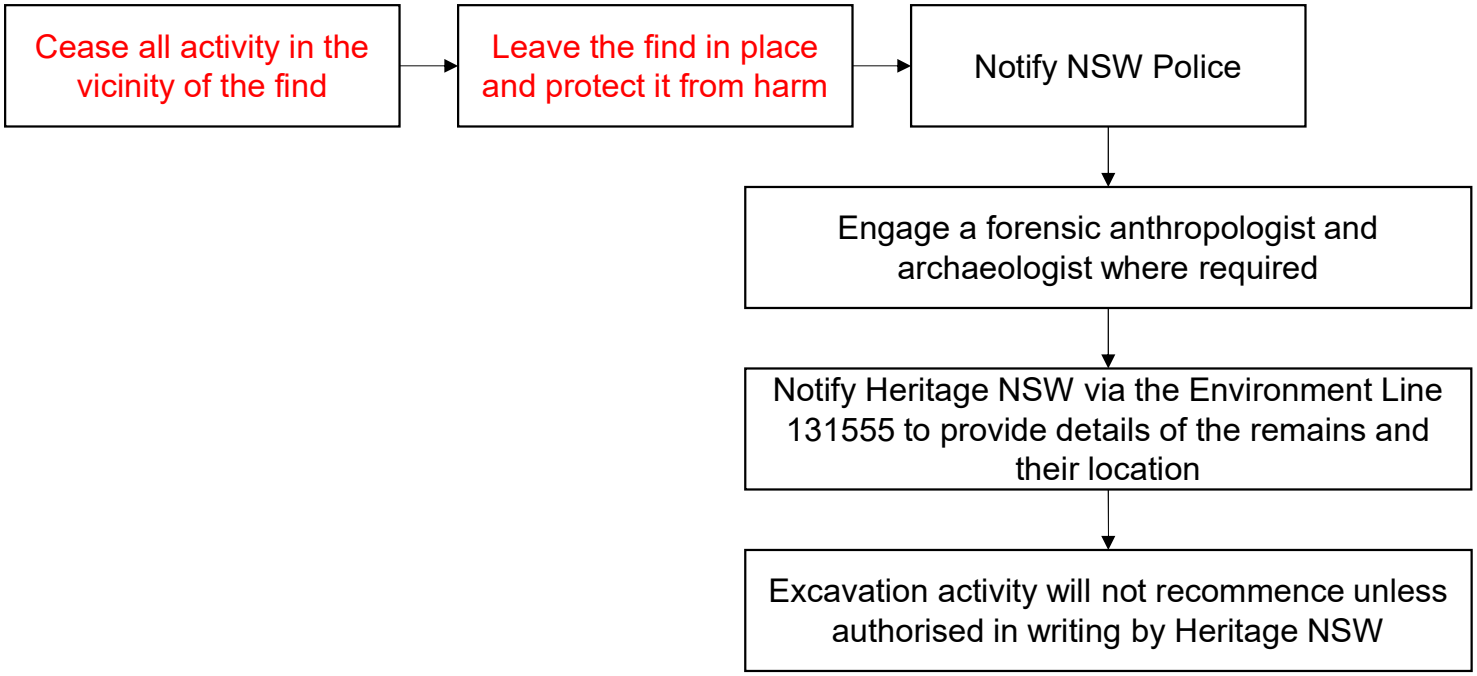
Historical footings

Historical footings

Unexpected Finds Procedure
Heritage Remains – What to do



Human Remains Procedure
Suspected Human Skeletal Remains – What to do



Roles and Responsibilities
Under the Aboriginal Cultural Heritage Management Plan

Project Manager

- ❑ Allocate sufficient resources for the implementation of the Aboriginal Cultural Heritage Management Plan
- ❑ Outcomes of the visual checks/ compliance construction monitoring/ incident reporting are systematically evaluated as part of ongoing management of construction activities

Environmental Manager

- ❑ Oversee the overall implementation of the Aboriginal Cultural Heritage Management Plan including the implementation of heritage training and the creation and maintenance of heritage training records
- ❑ Oversee and coordinate scheduled Registered Aboriginal Parties communications
- ❑ All relevant personnel have and understand the most up-to-date copy of the Aboriginal Cultural Heritage Management Plan
- ❑ Any required actions arising from the detection of unexpected heritage items or human remains are reported to the relevant personnel for further action and ensure that the actions are effectively implemented

Roles and Responsibilities
Under the Aboriginal Cultural Heritage Management Plan

Site supervisors/Site foreman/Contractors/Subcontractors

- ❑ Understand and implement mitigation protocols as required in the Aboriginal Cultural Heritage Management Plan and any other required measures during construction.
- ❑ Undertake relevant training to implement the requirements of the Aboriginal Cultural Heritage Management Plan
- ❑ All personnel are responsible for ensuring that heritage items to be retained are protected
- ❑ All site personnel to undertake environmental inductions which will include reference to the requirements of the Aboriginal Cultural Heritage Management Plan and the reporting process for unexpected finds

Qualified heritage professional (archaeologist)

- ❑ The archaeologist will be responsible for providing advice to minimise and mitigate potential impacts to any Aboriginal or historic heritage values that may be recorded during the construction activities.

Appendix H Wildlife Management Plan

Wildlife Management Plan

Westlink Stage 1

290-308 Aldington Road, 59-62 Abbotts Road & 63 Abbotts Road, Kemps Creek

SSD-9138102

DOCUMENT TRACKING

Version No.	Document No.	Description	Prepared By	Approved By	Date
Rev 01	J1876220413.01	Draft issued to client for review	A. Wiltshire	R. Salisbury	13/04/2023
Rev 02	J1876230503.02	Updated to include approved CoC	N. Yousefi	R. Salisbury	03/05/2023
Rev 03	J1876230522.03	Updated to address ER comments	N. Yousefi	R. Salisbury	22/05/2023

AUTHOR(S) DETAILS

Author Details	Qualifications and Experience
Andrew Wiltshire	BSc DipSci(Env Mgt) 14 years of experience in environmental assessment and management across mining, construction and infrastructure sectors, including State significant development and Commonwealth approvals.
Neda Yousefi	BA MAE PhD (EnvSc) 5 years environmental research and assessment.

APPROVER DETAILS

Approver Details	Qualifications and Experience
Rob Salisbury	BSc DipEnvStud MSc Over 30 years of environmental management experience in the transport, industrial, water, energy, communications and other sectors.

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The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client). Should additional information become available which may affect the opinions expressed in this report, Aspect Environmental Pty Ltd reserves the right to review such information and, if warranted, to modify the opinions accordingly.

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Glossary

CEMP	Construction Environmental Management Plan
CoC	Condition of Consent
DP	Deposited Plan
DPE	Department of Planning and Environment (formally DPIE)
EIS	Environmental Impact Statement
SSD	State significant development
The Project	Stage 1 of the Westlink industrial estate (formerly known as the Kemps Creek Logistics Park)
WMP	Wildlife management plan
WSA	Western Sydney Airport

1. INTRODUCTION

1.1. Background

This Wildlife Management Plan (WMP) has been prepared by Aspect Environmental Pty Ltd (Aspect), on behalf of ESR Australia Pty Ltd (ESR), for the purposes of Stage 1 of an industrial estate known as Westlink (formerly known as the Kemps Creek Logistics Park) (the Project).

This WMP is a Sub-Plan of the Construction Environmental Management Plan (CEMP) and has been prepared with reference to:

- State significant development (SSD) 9138102 Development Consent and the included conditions of consent (CoC) dated 21 April 2023
- Amendment Report (Ethos Urban, 15 September 2022)
- Environmental Impact Statement (Ethos Urban, 17 June 2021)
- SSD 9138102 Planning Secretary's Environmental Assessment Requirements which were issued in December 2020.

1.2. Project Description

The Project comprises the first stage of an industrial estate located at 290-308 Aldington Road, Kemps Creek (Lot 13 DP 253503), 59-62 Abbotts Road (Lot 12 DP 253503), and 63 Abbotts Road, Kemps Creek (Lot 11 DP 253503) within Penrith City Local Government Area. The Project site is approximately 319,800m^2 in area and is irregular in shape. In June 2020, the site was rezoned IN1 – General Industrial under *the State Environmental Planning Policy (Western Sydney Employment Area) 2009*. The site is also located in the Mamre Road Precinct and is subject to controls outlined in the Mamre Road Precinct Development Control Plan 2021. The location of the Project site is indicated by the red outline on Figure 1-1.

The SSD 9138102 Development Consent also includes Lots 3 and 4 DP 250002 in the development site. These lots are located immediately south of Lot 11 DP 253503 and works (e.g. batter slopes) may be required within them to allow earthworks to be safely undertaken within Lot 11.

The site currently comprises undulated rural land, with foundations of residential dwellings, farm sheds, and miscellaneous agricultural greenhouses and structures. It is best described as being rural-residential in nature, with significant areas of land currently remaining unused.

As per the SSD 9138102 Development Consent the Project includes bulk earthworks (clearing, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction), subdivision, construction, fit out and operation of two warehouse buildings and ancillary office space with a total gross floor area of 81,317m^2, landscaping, construction of estate roads and external road upgrades, site servicing and stormwater infrastructure.

The site layout for Stage 1 is shown in Figure 1-2.

Figure 1-1: Site context (EIS, Ethos Urban, June 2021)

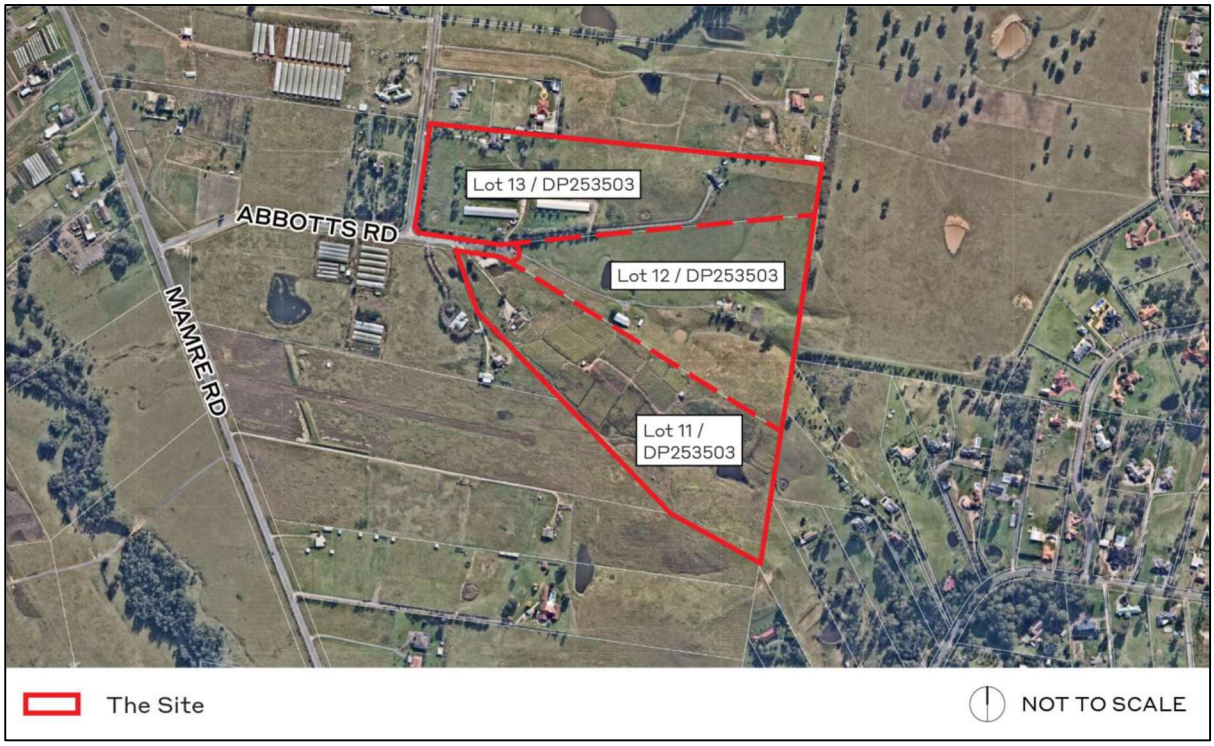

Figure 1-2: Stage 1 site layout (SSD 9138102 Development Consent, 21 April 2023))

1.3. Purpose of this Plan

This WMP has been prepared to address the conditions of the SSD 9138102 Development Consent related to biodiversity (CoC B86- B88), to provide methods to monitor and manage impacts to biodiversity and wildlife strike risk during the construction of the Project.

Construction will be undertaken in accordance with the most recent, approved version of this WMP.

1.4. Objectives and Targets

The objectives and targets of this WMP are summarised in Table 1-1.

Table 1-1: Objectives and targets

Objectives	Targets	Timeframe	Responsibility	Monitoring Method
Enable compliance with relevant legislation, CoC, requirements and guidelines	No written warnings or infringement notices	At all times	Environmental Manager Project Manager	Environmental Manager's daily checklist Environmental inspection checklist Daily logbook
Minimise impacts to biodiversity during construction	No impacts to biodiversity	At all times	Environmental Manager	Environmental Manager's daily checklist Environmental inspection checklist Six-monthly monitoring by suitably qualified ecologist
Minimise impacts of wildlife to WSA operations	Minimal occurrence of common strike species at the site	At all times	Environmental Manager	Environmental Manager's daily checklist Environmental inspection checklist Six-monthly monitoring by suitably qualified ecologist

2. LEGAL AND OTHER REQUIREMENTS

2.1. Legislation

The regulatory framework for the Project is summarised in Section 3.3.2 of the CEMP, which identifies relevant legislative instruments, including legislative and voluntary obligations, permits and licences, and their key objectives and relevance to the Project.

Relevant legislative instruments for management of biodiversity and wildlife for this development is summarised in Table 2-2 below.

Table 2-1: Legislative and related instruments relevant to the Project

Legislation	Key Project Requirements	Activity/Aspect
Environment Planning and Assessment Act 1979	Establishes a system of environmental planning and assessment of proposed developments in NSW. The Project must comply with the Development Consent.	All
Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)	Requirements in relation to protection and management of nationally and internationally important flora, fauna, ecological communities, and heritage places.	Threatened species and ecological environments
Biodiversity Conservation Act 2016	Comply with conservation requirements for any identified threatened species.	Threatened species and ecological environments

2.2. Development Consent Conditions

The Project will be constructed in accordance with SSD 9138102 Development Consent and in accordance with the documents referenced under CoC A2. The conditions which apply to biodiversity are identified in Table 2-2.

Table 2-2: Relevant CoC and where the WMP addresses them

SSD 9138102 CoC		WMP Section
Biodiversity		
B86	Prior to, and during, construction works the Applicant must implement the mitigation measures recommended in Section 2.2.5 of the *Biodiversity Development Assessment Report*, prepared by Eco Logical Australia Pty Ltd, dated 14 April 2022.	Section 3.1 Table 3-1
B87	Prior to the commencement of construction, a Wildlife Management Plan must be prepared in accordance with Section 6.2 of the *Westlink Industrial Estate Wildlife Assessment Report* prepared by Eco Logical Australia Pty Ltd dated 14 April 2022, and be submitted to the Planning Secretary.	Section 3.1 Table 3-2
B88	The Wildlife Management Plan must form part of the CEMP required by Condition C2 and the Applicant must implement the Wildlife Management Plan for the duration of construction and operation.	Noted.
Management Plan Requirements		
C1	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	This Plan

SSD 9138102 CoC		WMP Section
(a)	detailed baseline data;	Section 3
(b)	details of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures and criteria; and (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	 Section 2 Section 4 Section 4
(c)	a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 4
(d)	a program to monitor and report on the: (i) impacts and environmental performance of the development; and (ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Section 5.2
(e)	a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 5.4
(f)	a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 5.8
(g)	a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); (ii) complaint; (iii) failure to comply with statutory requirements; and	Section 5.5
(h)	a protocol for periodic review of the plan.	Section 5.8
Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for management plans		Noted

3. EXISTING ENVIRONMENT

3.1. Habitat

A *Biodiversity Development Assessment Report* (Eco Logical Australia, 2020) was prepared for the site and included habitat assessments for fauna within the Project site. The dominant habitat features identified on site included dams/aquatic vegetation and native vegetation as described in Table 4-1.

Table 3-1: Habitat Features and Risk Ratings

Habitat feature	Category	Wildlife attraction risk	Justification of potential risk rating
Dams/aquatic vegetation	Farm dam	High	The large dams across the Project site provide foraging habitat for ibis, ducks, wading birds and microbats. Dense wetland vegetation is limited.
Native vegetation	Conservation area (dryland)/ Natural areas	Moderate	Native vegetation within the Project site provides potential foraging and roosting habitat for a variety of species including, megabats (foraging only), and a wide variety of birds including raptors, crows and parrots.
Open grassland	Intensive Livestock Agriculture	Moderate	Open native and exotic grassland provides potential habitat for an array of native and non-native birds including raptors, lapwings, crows, galahs/cockatoos and parrots.

The farm dams within the site are currently the highest attracting habitat for wildlife as it provides resources for fauna to drink, forage, and nest/shelter within the banks of the dams. This is especially important for fauna in a landscape which is becoming increasingly urbanised.

The large open expanses of native and exotic grassland within the area also provides many bird species foraging or nesting habitat. Open grassland areas also provide habitat for larger mammals such as kangaroos, wallabies, and smaller rodents such as rabbits, mice, rats. This in turn attracts predators such as raptors and owls and pest species like foxes.

The native flowering canopy species within the site provide foraging habitat for native and non-native bird species and also provide habitat for microbats to forage and mega bats such as the Grey-headed Flying Fox.

4. MANAGEMENT MEASURES

4.1. Biodiversity Management

The measures for the management of biodiversity during the construction of the Project, required by CoC B86, are detailed in Section 2.2.5 of the *Biodiversity Development Assessment Report* (Eco Logical Australia, 14 April 2022) and in Table 4-1Table 4-1. These measures are consistent with the relevant measures included in Appendix 5 of SSD 9138102 Development Consent.

Table 4-1: Biodiversity management measures

ID	Measure	Action	Timing	Responsibility
BD 1	Implementation of clearing protocols, including pre-clearing surveys and staged clearing, the presence of a trained ecological or licensed wildlife handler during clearing events.	Pre-clearance survey of trees to be removed and identification/location of habitat trees (i.e. for birds or possums) by a suitably qualified ecologist. Supervision by a qualified ecologist/licensed wildlife handler during habitat tree removal in accordance with best practise methods. Any tree removal is to be undertaken by a suitably qualified and insured arborist.	Prior to and during all clearing works	Project Manager/ Ecologist
BD 2	Installation of artificial habitats for fauna in adjacent vegetation and habitat or human made structures to replace the habitat resources lost and encourage animals to move from the impacted site, e.g. nest boxes.	A ratio of one nest box per hollow removed. Nest boxes are to be of a similar dimension to hollows removed and installed under the supervision of an ecologist in an offset location. The location of nest boxes will be identified in consideration of the measures for management of potential bird strike species document in this plan.	Prior to and during all clearing works	Project Manager/ Ecologist
BD 3	Timing of works to avoid critical life cycle events such as breeding or nursing.	Where possible within construction timelines, avoid clearing works in later winter/ spring during breeding / nesting period for birds and mammals.	During works clearing	Project Manager
BD 4	Installation and maintenance of sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment.	Appropriate controls are to be utilised to manage exposed soil surfaces and stockpiles to prevent sediment discharge into waterways. Soil and erosion measures such as sediment fencing and clean water diversion must be in place prior to the commencement of the construction work.	During construction	Project Manager

ID	Measure	Action	Timing	Responsibility
BD 5	Minimisation of impacts of noise, dust and light spill on native fauna species.	Construction lights or development lights should be positioned to prevent shine into future planted vegetation. Streetlights should use ecologically sensitive designs including use of shields and timers and positioned away from retained vegetation. Noise should be limited to construction hours only. Dust should be managed through appropriate dust control management plan.	During construction	Project Manager
BD 6	Minimisation of potential damage to vegetation retained adjacent to site.	Clearly delineate clearance limits and identify all trees for removal.	During construction	Project Manager
BD 7	Minimisation of the dumping of rubbish found on site.	Waste bins to be present on site. Covers to be used to prevent blown litter and the entry of pest animals or rain. Removal and appropriate disposal of general waste.	During construction	Project Manager
BD 8	Implementation of hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas.	Vehicles, machinery and building refuse should remain only within the development site. Washdown protocols for vehicles should be observed to prevent the entry of soil borne pathogens. Weed management to be undertaken where required. Weeds should be removed and handled in accordance with relevant Biosecurity Act protocols if high threat weeds are present.	Prior to and during all clearing works	Project Manager
BD 9	Staff training and site briefings will communicate environmental features to be protected and measures to be implemented.	All training will be in accordance with Section 3.4 of the CEMP.	During construction	Project Manager
BD 10	Provision for the ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat on or adjacent to the development site.	It is recommended that landscaping in the development site considers the use of locally derived native species and those found within Plant Community Type 849/850.	During construction and following completion of construction activities.	Project Manager

ID	Measure	Action	Timing	Responsibility
BD 11	Manage pest, vermin, and declared priority weeds on the site. Note: For the purposes of this measure, priority weed has the same definition of the term in the Biosecurity Act 2015.	Implement suitable measures to manage pest, vermin, and declared priority weeds on the site. Inspect the site on a regular basis to ensure that these measures are working effectively, and that pests, vermin or priority weeds are not present on site in sufficient numbers to pose an environmental hazard or cause the loss of amenity in the surrounding area.	During construction	Environmental Manager
BD 12	Undertake ecological clearance of dams under the Dam Decommissioning Strategy.	Prior to dam dewatering and removal of dam structures, a suitably qualified ecologist will inspect the dam to identify the presence or likely presence of aquatic species of flora and fauna. The ecologist will determine whether the dam water is suitable for the proposed water reuse option and whether additional actions are required prior to or during the dam dewatering.	Prior to and during dam dewatering and removal of dam structures	Project Manager

4.2. Wildlife Management

A wildlife risk assessment was undertaken as part of the *Westlink Industrial Estate Wildlife Management Assessment Report* (Eco Logical Australia, 14 April 2022), utilising the wildlife hazard assessment process set out in the Aerotropolis Aviation Wildlife Safeguarding Framework (Appendix B of that report). Given that the Project site is within the area of the Western Sydney Airport (WSA), the assessment compared the wildlife attraction of the existing environment with the potential wildlife attraction associated to the Project to ascertain the impact to the risk of engine strike the Project poses to air traffic at the WSA.

The risk assessment methodology rated the risk associated to the identified strike species/groups on site and the existing habitat types against the proposed habitat type and the species/group it is likely to attract and the corresponding risk of strike.

The outcomes of the risk assessment are summarised below.

- Megabats were considered to pose the greatest potential of being involved in a strike incident and have potential to cause significant damage.
- Ibis, Galahs and Lapwings were considered to have moderate potential to be involved in a bird strike incident and cause damage.

The mitigation measures provided in Table 4-2are targeted towards these species.

The Project will reduce the overall wildlife attraction risk, primarily due to the removal of existing farm dams, which were identified as being the primary wildlife attractant onsite and the highest risk existing habitat feature. The retention basins that form part of the Project's stormwater system have been designed to fully drain within 24 hours of a storm, exceeding what is required by the Mamre Road Development Control Plan 2021, to further mitigate the potential attraction of that development element.

Additionally, the replacement of large swathes of open grassland with warehouse development will reduce the likelihood of many common strike species being attracted to the area. This includes cockatoos, galahs, ibis and magpies.

The Project includes restoration of riparian corridors, open space and retention basin that require monitoring and mitigation measures to further reduce the risk of wildlife being attracted to the area and causing bird strike. It is also important to note the risk of bird strike will increase through time as the demand for flights at WSA increases and aircraft movements increase accordingly.

The wildlife management measures to be implemented for Stage 1 of the Project are detailed in Table 4 2. As required by CoC B87 these measures have been sourced from the *Westlink Industrial Estate Wildlife Management Assessment Report* (Eco Logical Australia, 14 April 2022). The outcomes identify the trigger points for additional management measures linked to the presence of common strike species to reduce the wildlife attractant properties of the Project.

Table 4-2: Wildlife management measures

ID	Measure	Action	Timing	Responsibility
WL 1	Diurnal bird surveys to be undertaken during construction.	Monitoring of diurnal bird species, including common strike species, to be carried out by a suitably qualified ecologist.	Six-monthly, once WSA is operational	Environmental Manager
WL 2	Nocturnal megabat surveys to be undertaken for the landscaping and street trees.	Monitoring of nocturnal megabat species to be carried out by a suitably qualified ecologist.	Annually; during summer, once landscaping street trees is provided	Environmental Manager
WL 3	Monitoring of existing vegetation during construction (and landscaping during operations) for habitat availability for common strike species.	Monitoring of vegetation to be carried out by a suitably qualified ecologist.	Six-monthly	Environmental Manager
WL 4	Diurnal bird surveys to be undertaken for water management infrastructure (i.e. on-site detention basin and rain gardens).	Monitoring of diurnal bird species, including common strike species, to be carried out by a suitably qualified ecologist.	Six-monthly, after a rainfall event, once infrastructure is constructed	Environmental Manager
WL 5	Diurnal bird surveys to be undertaken for café.	Monitoring of diurnal bird species, including common strike species, to be carried out by a suitably qualified ecologist.	Six-monthly, once café is constructed	Environmental Manager
WL 6	Cover exposed/vacant areas during construction.	Grass excavations planned to be exposed for more than three months and vacant areas awaiting warehouse and other development.	Construction	Project Manager

ID	Measure	Action	Timing	Responsibility
WL 7	Implement additional management measures if monitoring identifies the ongoing use of the site by common strike species.	Monitoring outcomes will inform the need for additional management measures. The following additional measures will be considered: • Netting of waterbodies • Installation of bird deterrents, including sonic and visual deterrents • Vegetation management including the removal of fruits, nests, perches and replacement of landscaping/street trees • Installation of exclusionary devices such as netting or anti-perching spikes • Egg oiling and relocation of common strike species.	Construction	Project Manager

5. MONITORING AND REVIEW

In addition to the monitoring outlined in Table 4-2, ongoing environmental inspections, monitoring and reporting for the Project is detailed in Section 5 of the CEMP. The monitoring and review actions relevant to this WMP are provided below.

5.1. Environmental Inspections

Environmental inspections to be undertaken are described in Section 5.1 of the CEMP. The regular environmental inspections undertaken by the Environment Manager (daily), ESR (weekly) and the ER will include the implementation of this WMP.

5.2. Environmental Monitoring

Environmental monitoring is summarised in Section 5.2 of the CEMP and will be undertaken to assist in the management of the following:

- Construction of the Project in accordance with environmental approvals
- Compliance with all relevant legislative requirements
- The minimisation of potential environmental incidents
- Effectiveness of environmental controls
- Implementation of this WMP.

Monitoring required in this WMP is summarised in Table 5-1.

Table 5-1: Summary of environmental monitoring

Monitoring	Frequency/ Timing	Responsible	Reference
Monitoring of diurnal bird species, including common strike species, to be carried out by a suitably qualified ecologist.	Six-monthly, once WSA is operational	Environmental Manager	CoC B87
Monitoring of nocturnal megabat species to be carried out by a suitably qualified ecologist.	Annually; during summer, once landscaping street trees is provided	Environmental Manager	CoC B87
Monitoring of vegetation to be carried out by a suitably qualified ecologist.	Six-monthly	Environmental Manager	CoC B87
Monitoring of diurnal bird species, including common strike species, to be carried out by a suitably qualified ecologist.	Six-monthly, after a rainfall event, once infrastructure is constructed	Environmental Manager	CoC B87
Monitoring of diurnal bird species, including common strike species, to be carried out by a suitably qualified ecologist.	Six-monthly, once café is constructed	Environmental Manager	CoC B87

5.3. Environmental Auditing

Environmental auditing is described in Section 5.3 of the CEMP. ESR will undertake an internal Health, Safety, Security and Environment audit of the Project annually. Audits will involve a review of all environmental documents, records and reports to

verify compliance with the CEMP (and this WMP) to satisfy CoC C16. In addition, the ER may at any time request documents and evidence confirming implementation of the CEMP and sub-Plans.

Key environmental and procedural aspects to be covered by the audit may include:

- Environmental mitigation measures detailed in this WMP
- Adherence to reporting procedures
- Complaint and incident management
- Legislative requirements.

Records of auditing and reporting will be maintained to demonstrate compliance.

5.4. Contingency Management Plan

If inspections, monitoring and/or auditing indicate that the mitigation measures listed in this WMP are not effective in managing environmental impacts, the responses outlined in Table 5-2 will be implemented. These responses will would manage any unpredicted impacts and their consequences. This plan would check that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible.

Table 5-2: WMP contingency management plan

Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Biodiversity management	Trigger	No impacts to biodiversity identified.	Minor biodiversity impacts identified on-site.	Significant biodiversity impacts identified.
	Response	No response required.	Review effectiveness of management measures. Implement additional measures to manage impacts.	Stop works causing biodiversity impact. As for Condition Amber.
Wildlife management	Trigger	Minimal occurrence of common strike species at the site.	Common strike species occur regularly at the site.	Common strike species occurring at the site in large numbers.
	Response	No response required.	Review effectiveness of management measures. Consider implementing additional measures to manage species as listed in WL 7.	As for Condition Amber.

This contingency management plan for the WMP is consolidated in Appendix J of the CEMP to form the Contingency Plan for the Project.

5.5. Non-compliances and Actions

Section 5.5 of the CEMP details the Project team's response following the identification of a non-compliance with the CoC, the CEMP and Sub-Plans. This includes the reporting, investigation and notification of non-compliances. Non-compliances with this WMP will be addressed as required by the CEMP.

5.6. Environmental Incident and Emergency Response

Section 5.6 of the CEMP details environmental incidents and the response to environmental emergencies for the Project. This includes the reporting, notification and investigation of environmental incidents. Emergency contact details are also provided.

In the event of an environmental incident or emergency related to the implementation of this WMP, the responses detailed in the CEMP will be implemented.

5.7. Environmental Reporting

The reporting of environmental performance during construction will be undertaken as required by the Development Consent. Environmental reporting requirements for the Project is documented in Section 5.6 of the CEMP and reports relevant to this WMP are listed in Table 5-3.

Table 5-3: Summary of environmental reporting for the WMP

Report	Timing/ Frequency	Responsibility	CoC
Project Environmental Management Report	Weekly	Environmental Manager	-
Monthly Project Report	Monthly	Project Manager	-
ER Report	Monthly	ER	A36
ER Report to DPE	Quarterly	ER	A35(k)
Compliance Report	Within six months after the commencement of construction of the development, and in the same month each subsequent year	Project Manager	C14
Incident Report	Within 30 days of the date on which the incident occurred	Project Manager	C10 Appendix 6

5.8. WMP Review and Revision Process

As described in Section 5.8 of the CEMP, the Project will bi-annually review the adequacy of the environmental mitigation measures within this CEMP and Sub-Plans (including this WMP), as well as the effectiveness of their implementation to determine whether they are still applicable to the activities being carried out onsite. This review will be undertaken by the Environmental Manager, in consultation with the Project Manager and ESR Representative.

CoC C8 also states that all strategies, plans and programs required under the SSD 9138102 Development Consent will be reviewed and the Planning Secretary notified of the review within three months of:

- the submission of a Compliance Report under CoC C14
- the submission of an incident report under CoC C10
- the approval of any modification of the conditions of the SSD 9138102 Development Consent or
- the issue of a direction of the Planning Secretary under CoC A2(b) which requires a review.

As per CoC C9, where documents are revised under the above reviews the revised documents will be sent to the Planning Secretary for approval within six weeks of the review.

All employees and contractors will be informed of any revisions to the WMP during toolbox talks.

Appendix I Community and Stakeholder Communications Strategy

Community and Stakeholder Communications Strategy

Westlink Industry Park: Stage 1 – SSD-9138102

Abbotts Road, Kemps Creek, NSW, 2178
ESR Australia

Ethos Urban

Prepared by Ethos Urban
Submitted for ESR Australia

24 May 2023 | 2211029

'Gura Bulga'
Liz Belanjee Cameron

'Gura Bulga' – translates to Warm Green Country. Representing New South Wales.

By using the green and blue colours to represent NSW, this painting unites the contrasting landscapes. The use of green symbolises tranquillity and health. The colour cyan, a greenish-blue, sparks feelings of calmness and reminds us of the importance of nature, while various shades of blue hues denote emotions of new beginnings and growth. The use of emerald green in this image speaks of place as a fluid moving topography of rhythmical connection, echoed by densely layered patterning and symbolic shapes which project the hypnotic vibrations of the earth, waterways and skies.

Ethos Urban acknowledges the Traditional Custodians of Country throughout Australia and recognises their continuing connection to land, waters and culture.

We acknowledge the Gadigal people, of the Eora Nation, the Traditional Custodians of the land where this document was prepared, and all peoples and nations from lands affected.

We pay our respects to their Elders past, present and emerging.

Contact	Ross Hornsey Director

This document has been prepared by:		**This document has been reviewed by:**	
Vy Hoang	21/11/2022	Ross Hornsey	25/11/2022

Version No.	**Date of issue**	**Prepared By**	**Approved by**
1.0 DRAFT	25/11/2022	VH	KM
2.0 FINAL	24/05/2023	VH	RH

Ethos Urban | Ethos Urban Pty Ltd | ABN 13 615 087 931 | 173 Sussex Street Sydney NSW 2000 (Gadigal Land) | +61 2 9956 6962 | ethosurban.com

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1.0 Purpose and Scope of Community Communications Strategy

1.1 Purpose

This Community and Stakeholder Communications Strategy ('the Strategy') provides an overview of how communications and engagement will be undertaken between ESR Australia (ESR) and the community throughout the construction and development of Stage 1 of the Westlink Industry Park ('the Project').

This strategy aims to:

- Meet the reasonable needs and desires of the community for involvement, communication, and information.
- Detail communication and consultation activities to ensure that stakeholders, local residents and the broader community are kept informed and updated on the project as it progresses.
- Comply with community engagement requirements specified in the Conditions of Approval.
- Ensure members of the community have access to appropriate project information.
- Identify processes and procedures required to fulfil the community involvement obligations of ESR.
- Ensure all team members are aware of and follow procedures and processes.

Although the Strategy sets out an approach to communications and engagement between ESR and the community, a number of authorities such as the NSW Department of Planning and Environment, Penrith City Council, WorkCover NSW and the Environmental Protection Authority, have statutory obligations to investigate and perform necessary enforcement and complaint resolution in relation to compliance with consent conditions and the state's environment, safety, road traffic, and other relevant laws.

This Strategy does not affect the rights or abilities of the community to raise matters of compliance, environmental management, safety, or other matters to the relevant agency or authority.

1.2 Requirements

As required under the Development Consent SSD-9138102 issued on 21 April 2023, this Strategy provides mechanisms to facilitate communication between the Applicant, the relevant Council and the community (including adjoining affected landowners and businesses, and others directly impacted by the development), during the design and construction of the development and for a minimum of 12 months following the completion of construction.

The communications and engagement activities outlined within the Strategy have been developed in compliance with the Project's Conditions of Consent, specifically condition C3 which requires the inclusion of this plan within the Construction Environmental Management Plan as outlined in **Table 1** below.

The Project's full Conditions of Consent can be viewed on the Department's Major Projects Planning Portal.

Table 1 Consultation Conditions of Consent - SSD-9138102

Community Communication Obligation	Report Reference / Response
Mamre Road Precinct Working Group **A38.** Within three months of the commencement of construction of the development and until all components of the development are constructed and operational, the Applicant must establish and participate in a working group, or join and participate in an existing working group, with relevant consent holders in the MRP, to the satisfaction of the Planning Secretary. The purpose of the working group is to consult and coordinate construction works within the MRP to assist with managing and mitigating potential cumulative environmental impacts. The working group must: a) comprise at least one representative of the Applicant, the Applicant's ER, and relevant consent holders in the MRP;	It is understood that Mirvac have established the Mamre Road Precinct Working Group as part of SSD-10448. ESR will contribute to this working group within the specified 3-month period. • See **Section 6.1** for details about the anticipated operation and participation in the MRP working group

Community Communication Obligation	Report Reference / Response
b) meet periodically throughout the year to discuss, formulate and implement measures or strategies to improve monitoring, coordination of the approved industrial developments in the MRP; c) regularly inform Council, TfNSW, Sydney Water and the Planning Secretary of the outcomes of these meetings and actions to be undertaken by the working group; d) review the performance of approved industrial developments in the MRP and identify trends in the data with respect to cumulative construction traffic, erosion and sediment control, noise, stormwater management and waterway health objectives under the MRP DCP; e) review community concerns or complaints with respect to environmental management; f) identify interim traffic safety measures to manage construction traffic and how these measures will be coordinated, communicated, funded and monitored in the MRP; and g) provide the Planning Secretary with an update and strategies, if a review under subclause (d) and (e) identifies additional measures and processes are required to be implemented by the working group.	
Construction Noise and Vibration Management Plan **B50.** The Applicant must prepare a Construction Noise and Vibration Management Plan for the development to the satisfaction of the Planning Secretary, and must: (b) be prepared in consultation with owners of adjoining residential properties (including those still occupied for residential use in the MRP), include evidence of this consultation and detail how the plan has responded to any issues raised during consultation; (e) include strategies that have been developed with the community for managing high noise generating works; and (f) include a complaints management system that would be implemented for the duration of the development	A separate and detailed Construction Noise and Management Plan has been prepared to fulfil **Condition B50**. In relation to consultation-specific requirements, see: • **Section 3.1** which details communication management strategies with respect to the project site and anticipated construction issues. • **Sections 5.5, 5.6, 5.7, 5.8, 5.9, 5.10** which detail the proposed complaints and enquiries management system to be implemented throughout development of the site. • **Section 6.0** details engagement channels to utilise in ongoing consultation with community and stakeholders. • **Appendix A** for a copy of the enquiries register to date, which will continue to be updated throughout the project
Construction Environmental Management Plan **C3.** As part of the CEMP required under condition C2 of this consent, the Applicant must include the following: (i) Community Consultation and Complaints Handling	A separate and comprehensive Construction Environmental Management Plan has been prepared to fulfil **Condition C3**, of which this Strategy is a component. In relation to consultation-specific requirements, see: • **Section 5.0** for proposed communication procedures and protocols to manage complaints
Access to Information **C17.** At least 48 hours before the commencement of construction of the development and for the life of the development, the Applicant must: a) make the following information and documents (as they are obtained or approved) publicly available on its website:	A project website, https://au.esr.com/available-space/westlink/, has been established and will be updated with required information and documentation per **Condition C17**. In relation to consultation-specific requirements, see: • **Section 5.1** for team roles and responsibilities

Community Communication Obligation	Report Reference / Response
(vii) contact details to enquire about the development or to make a complaint; (viii) a complaints register, updated monthly;	• **Section 5.2** for project contact channels • **Appendix A** for a copy of the enquiries register to date, which will continue to be updated throughout the project

1.3 Strategic Objectives

The successful implementation of the Strategy will be continuously monitored, evaluated, and refreshed throughout the various delivery stages of this project. ESR has identified the following engagement objectives in **Table 2**:

Table 2 Strategic objectives and key performance indicators

Objective	Key Performance Indicators
To help ESR become good neighbours committed to high quality outcomes and ensuring minimal disruption to neighbours wherever possible.	• All disruptive works to neighbouring commercial operations and residents, are planned and communicated with as much notice as possible. • Undertake early and ongoing engagement with neighbouring residents prior to construction works taking place.
To enable early identification of potential problems and on-the-ground issues to ensure programme is not adversely affected.	• Provide multiple avenues for stakeholders and the community to provide feedback throughout all stages of the project. • Undertake early and ongoing engagement with neighbouring residents prior to construction works taking place. • Maintain enquiries register of all communications.
To provide a transparent and responsive engagement process that aligns with ESR's overarching commitments to community consultation.	• Provide multiple avenues for stakeholders and the community to provide feedback throughout all stages of the project. • Maintain enquiries register of all communications. • Maintain a 24-48-hour response rate time for general enquiries and 72-hour response rate time for more complex issues. • Clear communications strategy, key messages and FAQs aimed at advocating on behalf of the project. • Complaints register uploaded on project website and updated monthly.
To deliver high quality, consistent and integrated communications which support and complements the site's other engagement and communications.	• Communications to be coordinated strategically for all phases of the project. • Maintain enquiries register of all communications. • Maintain a 24-48-hour response rate time for general enquiries and 72-hour response rate time for more complex issues. • Complaints register uploaded on project website and updated monthly.

2.0 Project Background

2.1 Overview

ESR is proposing to develop Westlink as part of the Mamre Road Precinct. The Mamre Road Precinct sits within the Western Sydney Employment Area, where 850 hectares of rural land has been rezoned for industrial purposes.

This rezoning provides opportunities for immense growth in the area, including the potential for around 5,200 construction jobs and 17,000 ongoing jobs when fully developed and operational. Following the successful rezoning of the site, ESR is working on several State Significant Development Applications (SSDAs) for a new industrial estate named Westlink within the Mamre Road Precinct.

The proposed development will establish a state-of-the-art industrial and logistics hub dedicated to connecting businesses to Australian market. Located near the future Western Sydney Airport and major transport roads, Westlink will benefit from significant government and private infrastructure investment enabling it to become the most connected industrial precinct in Australia.

It will contribute to the area's future by facilitating growth and job opportunities for locals. Given the scope of the site, the project will be delivered via a series of staged SSDAs and will be assessed and determined by DPE.

This strategy focuses on the delivery of Stage 1 of the Westlink Industrial Park and will be updated as required for future stages of the project.

2.2 The Site

The site, outlined in Error! Reference source not found. below, is located within the Local Government Area of Penrith City Council and has a total area of approximately 158,185m^2 and is strategically located within the Mamre Road Precinct which aims to deliver significant warehousing and employment generating floorspace whilst minimising environmental impacts, and not comprising the amenity of surrounding land.

The site benefits from proximity to existing road infrastructure, including significant freight corridors (the M4 and M7 motorways) as well as the future planned Western Sydney Freight Line and Outer Sydney Orbital.

The redevelopment of the site is in full alignment with the objectives and intended outcomes established by the site's recent rezoning (June 2020) within the Mamre Road Precinct. In particular, it supports the development of land for industrial purposes, contributes to new industrial land supply in Western Sydney, and facilitates job creation in line with the 17,000 jobs additional jobs anticipated for the precinct.

ESR's vision for the site involves the delivery of a high-quality industrial estate that integrates with and supports the establishment and transition of the Mamre Road Precinct into a new warehousing industrial hub and contributes to the overall provision of in-demand industrial land in Western Sydney.

Project objectives for the overall site include:

- Establish the Mamre Road Precinct within Western Sydney as the foremost area for high-quality industrial developments and industrial employment land by delivering in-demand industrial floor space that will support significant employment growth, in a high-quality, sustainable and innovatively designed industrial estate;
- Accommodate emerging opportunities in future warehousing and logistics practice through the creation of a 'next-gen' industrial workplace;
- Deliver a development consistent with the underlying principles of the Western Parkland City in relation to the integration of landscaping and tree canopy elements by virtue of the sites scale and frontage;
- Ensure a high standard of architectural, urban and landscape design to ensure the provision of a highly recognisable and high quality development within the emerging Mamre Road Precinct; and
- Support the environmental performance of the Mamre Road Precinct through sustainability initiatives of the highest level.

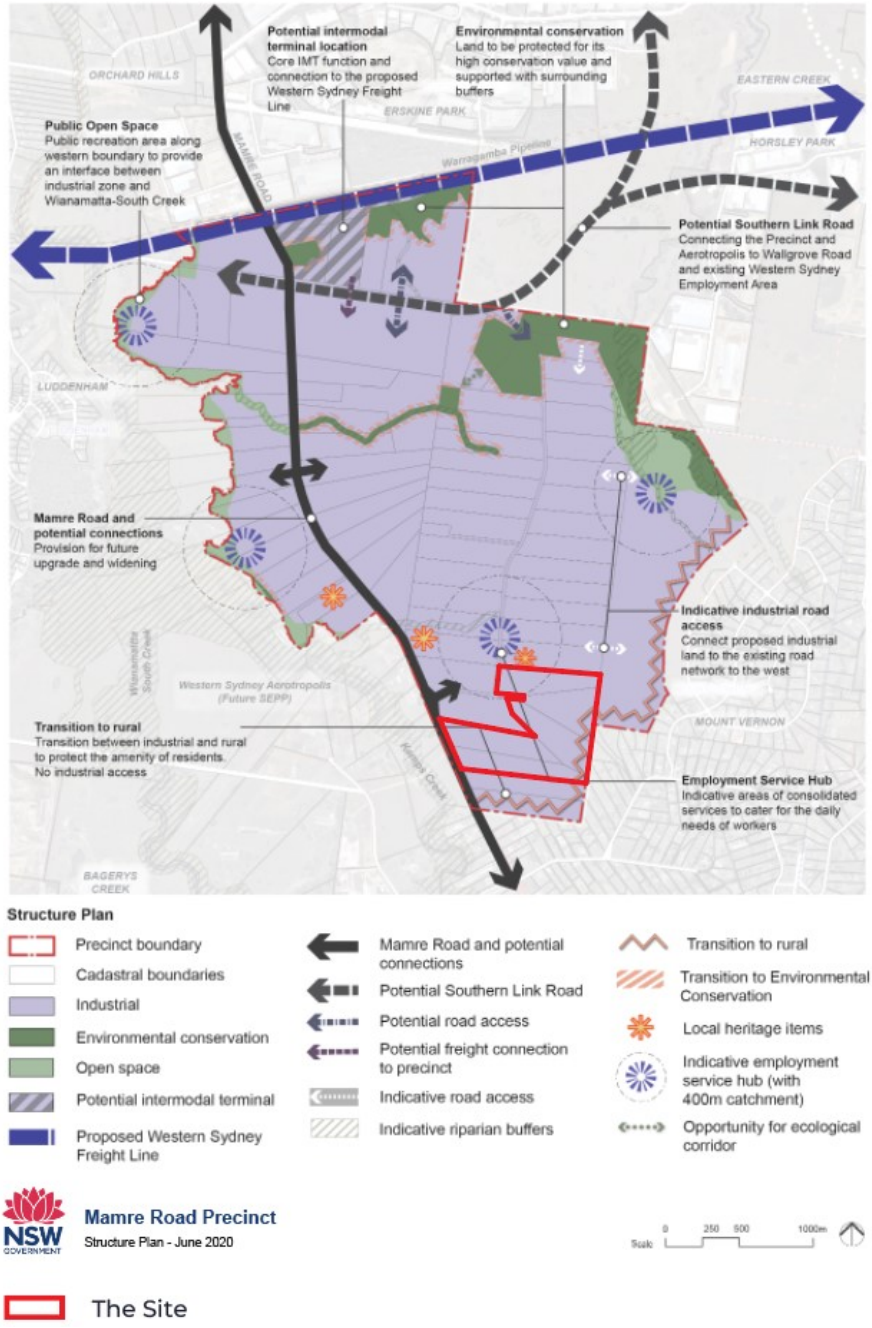

Figure 1 Site map

2.3 Consultation to date

2.3.1 Development Application

The project team has completed consultation to support the Development Application phase of the project. Key themes raised throughout this period related to the parameters of the development and how the proposed logistics estate would integrate with the surrounding area. A copy of the consultation outcomes Is available on the Department's website and here.

2.3.2 Pre-Construction

In preparation for construction, the project team conducted a doorknocking activity in April 2023 to immediate neighbours surrounding the site to advise of upcoming works and outline anticipated construction-related noise, vibration and air-quality impacts that may be experienced.

A copy of the letter is available in **Appendix A.3**

2.4 Project Delivery

Due to its large scale, the Westlink industrial park project is being delivered through multiple stages as identified in the **Table 3** and Error! Reference source not found. below:

Table 3 Current construction staging status

Stage	Works	Status
Stage 1 (current)	Stage 1 works include site preparatory works, subdivision of the site into seven lots, construction of a new industrial estate, internal road layout, with associated site servicing works and ancillary facilities, landscaping	SSDA approved 21 April 2023. Construction anticipated to comment in mid-2023.
Stage 2	Stage 2 works include the development of two new industrial warehouse buildings with supporting office and administrative spaces, a new internal road and car parking, bulk earthworks, associated site servicing and supporting facilities including a stormwater retention system and piping, and site landscaping works.	SSDA package anticipating lodgement in mid-2023.
Stage 3	Stage 3 works include the development of two new industrial warehouse buildings with supporting office and administrative spaces, associated site servicing and supporting facilities, and site landscaping and signage works.	SSDA lodgement anticipated by end 2023.
Stage 4	Stage 4 works include the delivery of the final warehouse building supporting warehouse and office space	Development application to be prepared.

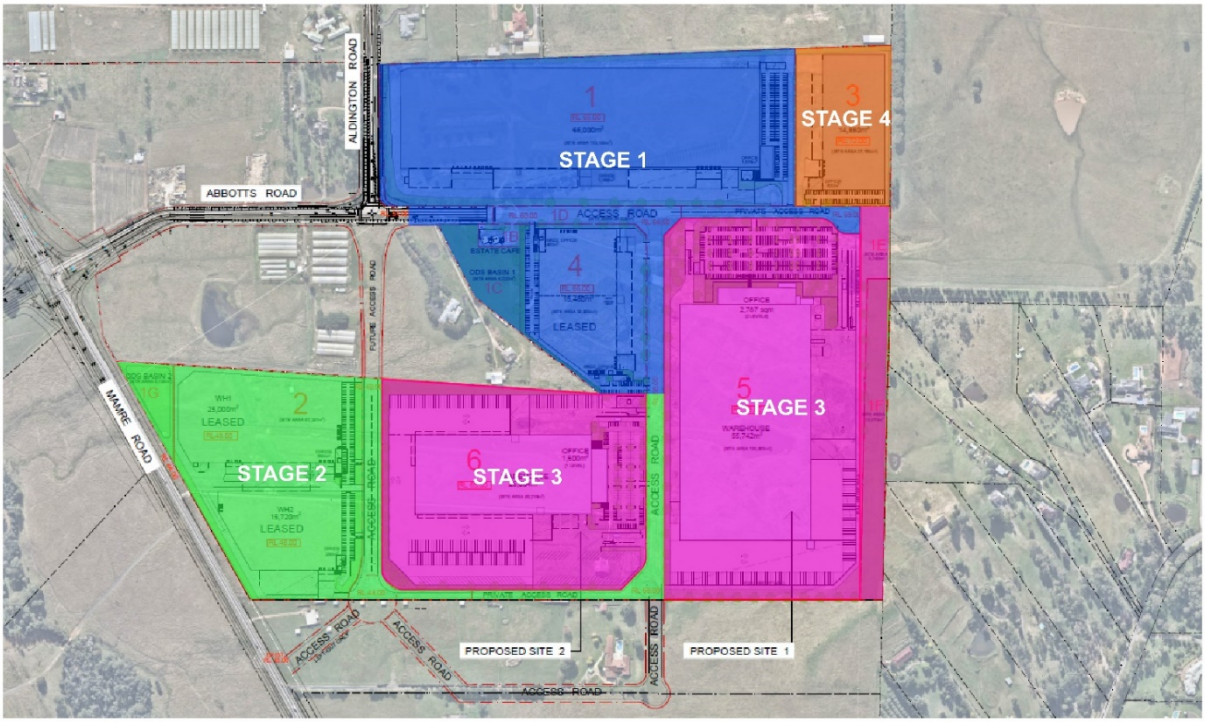

Figure 2 Current project staging

2.4.1 Stage 1 Works

For the purpose of this strategy, approved works for Stage 1 include:

- Site preparatory works, including:

  - Demolition and clearing of all existing built form structures and vegetation;
  - Bulk earthworks including 'cut and fill' to create flat development platforms for the proposed buildings, and topsoiling, grassing and site stabilisation works;

- Subdivision of the site;;
- Construction of a new internal road layout;
- Associated site servicing works and ancillary facilities, including OSD detention basin;
- Associated site landscaping; and
- Works-in-kind (WIK) arrangements through a Voluntary Planning Agreement (VPA) for external road upgrades including to Aldington and Abbotts Road, and a new signalised intersection at Mamre and Abbotts Road.

3.0 Key Issues for Construction

Whilst this project will bring many benefits to the wider community and region, a number of impacts may result from the construction and operations of the logistics park, which ESR is committed to helping minimise.

The following table provides a summary of high-level issues this project may face during the construction and delivery of Stage 1 and proposed strategies to help reduce adverse impacts. Some of these construction issues have been identified by the community and stakeholders during the SSDA public exhibition period.

This issues list will be updated as the project progresses and information about specific issues becomes available.

3.1 Project-specific Issues

A series of site and project-specific issues are detailed in **Table 4** below, including potential impacts and proposed mitigation measures for consideration.

Table 4 Project-specific issues for consideration

Issue	Potential Impacts	Communication Management Strategies
Traffic, parking and access disruption to residents, businesses, and visitors	• Disruptions, delays, temporary detours, traffic switches, construction access including changes to traffic conditions, and vehicle access to and from the work site • Impacts on taxis, buses and emergency access • Maintaining access and minimising disruption to local residents, landholders and businesses, during construction and operation • Road upgrades, including delivery of Abbotts and Aldington Roads	• Adherence to the *Construction Traffic Management Plan* prepared per Condition B1 and reference to Plan as required in project communications • Project communications including email updates to established database as required • One on one meetings with property owners as required • Provide adequate notification and consultation to ensure appropriate signage and access requirements • Variable Message Signs • Notification of disruptive work or traffic conditions well in advance of work / disruptions commencing • Coordination of equipment selection and work activities where necessary to minimise disturbance to neighbours • Ongoing record and maintenance of a community project enquiries register to capture any questions, complaints or feedback provided throughout construction works, including responses issued and actions taken to address submitted enquiries, per **Appendix A**
Air quality control and dust mitigation	• Dust due to start of construction caused by large machinery movements and bulk earthworks • Dust suppression measures • Aggravated dust related illnesses • Tracking to local roads	• Adherence to the *Construction Air Quality Management Plan* prepared per Condition B76, including relevant work notices • Early identification of sensitive receivers • Coordination of equipment selection and work activities where necessary to minimise disturbance to neighbours • One-on-one consultation, as required • Toolbox talks to ensure all measures which can be taken to mitigate have been taken • Damping down of dust on a regular basis • Special care taken on windy days • Ongoing record and maintenance of a community project enquiries register to capture any questions, complaints or feedback provided throughout construction works, including responses issued and actions taken to address submitted enquiries, per **Appendix A**
Construction and development impacts	• Noise caused by delivery trucks and heavy vehicle movements,	• Adherence to the broader *Construction Environmental Management Plan* prepared

Issue	Potential Impacts	Communication Management Strategies
	earthworks, night works, construction traffic • Stormwater management • Waste management • Wildlife attraction • Hours of operation • Visual impacts	per Condition C3 and reference to Plan as required in project communications • Early identification of sensitive receivers • Ongoing consultation with community and relevant service providers as required • Adherence to operating hours of work (Monday to Friday: 7:00 to 18:00; Saturday: 8:00 to 13:00; and No work on Sundays or public holidays) • Coordination of equipment selection and work activities where necessary to minimise disturbance to neighbours • Adhere to strategies outlined in this Strategy • Community notifications with contact details • Ongoing record and maintenance of a community project enquiries register to capture any questions, complaints or feedback provided throughout construction works, including responses issued and actions taken to address submitted enquiries, per **Appendix A**
Ongoing operations noise	• Ongoing noise generation due to activated use and operations of logistics park	• Adherence to the *Construction Noise and Vibration Management Plan* prepared per Condition B50 and reference to Plan as required in project communications • Adherence to *Operational Noise Limits* specified in Condition B52, including reference to approved conditions and limits as required in project communications • Appropriate consultation with specified nearby property owners as outlined in the SSDA Conditions of Consent • Coordination of equipment selection and work activities where necessary to minimise disturbance to neighbours • Ongoing record and maintenance of a community project enquiries register to capture any questions, complaints or feedback provided throughout construction works, including responses issued and actions taken to address submitted enquiries, per **Appendix A**
Noise and vibration attenuation	• Lack of consultation on detail or entitlement i.e., lack of understanding by community of how operational noise attenuation measures are determined • Lack of notification of property adjustment treatments	• Adherence to the *Construction Noise and Vibration Management Plan* prepared per Condition B50 and reference to Plan as required in project communications • Adherence to *Operational Noise Limits* specified in Condition B52, including reference to approved conditions and limits as required in project communications • Manage operational noise treatments, using the following procedures:

Issue	Potential Impacts	Communication Management Strategies
	• Lack of detailed design information at early stages of construction • Changes to stakeholders who will receive noise attenuation following changes in noise walls and results of independent noise/acoustic report	- Determine the most environmentally and cost-efficient measures to reduce noise and vibration levels - Scope the required treatments to meet the required noise reduction (according to relevant guidelines) in consultation with landowner. • Coordination of equipment selection and work activities where necessary to minimise disturbance to neighbours • Ongoing record and maintenance of a community project enquiries register to capture any questions, complaints or feedback provided throughout construction works, including responses issued and actions taken to address submitted enquiries, per **Appendix A**
Out of hours work (if required)	• Lack of warning and consideration of needs	• Engagement with the Department for relevant approval and follow up notification to impacted properties • Letterbox/email or doorknock notification and meetings with affected residents/businesses/services leading up to out of hours work • Maintain open phone line or line always directed to the construction site • Coordination of equipment selection and work activities where necessary to minimise disturbance to neighbours • Ongoing record and maintenance of a community project enquiries register to capture any questions, complaints or feedback provided throughout construction works, including responses issued and actions taken to address submitted enquiries, per **Appendix A**
Construction fatigue	• Same stakeholders impacted again and again, not interested in engaging, have a low threshold for construction impact or have been treated poorly before	• Ensure project team has background information and is able to demonstrate empathy and understanding throughout communication and engagement with residents and stakeholders • Ensure adherence to construction and delivery hours (Monday to Friday: 7:00 to 18:00; Saturday: 8:00 to 13:00; and No work on Sundays or public holidays) • Coordination of equipment selection and work activities where necessary to minimise disturbance to neighbours • Ongoing record and maintenance of a community project enquiries register to capture any questions, complaints or feedback provided throughout construction works, including responses issued and actions taken

Issue	Potential Impacts	Communication Management Strategies
		to address submitted enquiries, per **Appendix A**

4.0 Stakeholders

Ongoing identification and analysis of project stakeholders is crucial in determining the timing of communication activities, appropriate levels of engagement, and the most effective channels for delivering clear communication.

Stakeholder groups are ranked on their known and/or perceived level of interest and influence on this project with the following engagement aims:

- **Inform (low interest / low influence)**: To provide stakeholders with timely and accurate information on the activities and aspects of the project that may be of interest to the
- **Consult (high interest / low influence)**: To seek a degree of feedback and information from these stakeholders. The information provided may be used to inform the decision-making process
- **Involve (low interest / high influence)**: To work in consultation to manage aspects of the project which are reliant on the successful approvals and permissions from these stakeholder groups. To also seek a degree of feedback that may be used in the decision-making process
- **Collaborate (high interest / high influence)**: To partner with these stakeholders throughout the project's life cycle, seeking to ensure project objectives, concerns and aspirations are consistently understood and considered in the project's decision-making processes.

The following list of stakeholders builds on information contained in the environmental assessment and the SSDA submissions process. Key stakeholders include, but are not limited to the following:

4.1 Identification and Segmentation

The following stakeholders have been identified as being relevant to the project with anticipated and known interests detailed in **Table 5** below. It is recognised that stakeholders and level of interest may vary at different stages of the Project, and approaches will be reviewed and updated as required.

Table 5 Stakeholder identification and known issues / concerns

Stakeholder Stream	Spectrum of Engagement	Objective	Stakeholder/s	Known Issues / Concerns
Community	Inform	To provide these stakeholders with balanced, accurate and consistent information to assist in the understanding of the project, its vision and broader impact.	• Immediate neighbouring residents and specified residents as per SSDA conditions of consent	• Construction noise and ongoing noise of operations • Impacts caused during construction works (dust, noise, vibration) • Cumulative increase in construction vehicle movements from this project and adjacent sites • Communication during works • Loss of parking due to plant and equipment and/or contractor parking, including inappropriate parking and stopping

Stakeholder Stream	Spectrum of Engagement	Objective	Stakeholder/s	Known Issues / Concerns
				• Access to ongoing farming activities • Perceived loss of amenity due to construction presence and associated impacts • Improved amenity of the local area upon completion of works • Safety of works and management of any contaminated land • Construction traffic, including impacts to congestion, access routes, parking, pedestrian safety • Air quality • Ecology • Public interest • Site lines • Employment
			• Neighbour business landowners within the developing precinct - Altis - Dexus - Fife - Frasers - Gibb Group - GPT - Mirvac - ICON Oceania - Stockland • Mamre Road Precinct Working Group	• Construction noise and ongoing noise of operations • Impacts caused during construction works (dust, noise, vibration) • Cumulative increase in construction vehicle movements from this project and adjacent sites • Communication during works • Loss of parking due to plant and equipment and/or contractor parking, including inappropriate parking and stopping • Access to ongoing farming activities • Perceived loss of amenity due to construction presence and associated impacts • Improved amenity of the local area upon completion of works • Safety of works and management of any contaminated land • Construction traffic, including impacts to congestion, access routes, parking, pedestrian safety • Air quality • Ecology • Public interest

Stakeholder Stream	Spectrum of Engagement	Objective	Stakeholder/s	Known Issues / Concerns
				• Site lines • Employment
			Wider Community • Community stakeholder catchment area from west of Capitol Hill Drive, north of Mount Vernon Road, east of Mamre Road and south of Bakers Lane	• Air quality, noise and vibration • Construction traffic and traffic once operational • Ecology and environmental health • Public interest • Safety of works • Visual impacts
			Community organisations and groups • No prominent community groups based in the adjacent areas to the site have been identified.	• N/A
Government	Collaborate	To provide these stakeholders with a briefing containing balanced and accurate information to assist in the understanding of the project, its vision and broader impact.	Penrith City Council Staff / Planning Officers: • General Manager (currently Andrew Moore) • City Strategy Manager (currently Carlie Ryan) • Principal Planner (currently Kathryn Saunders)	• Impact of works to local residents and businesses • Methodology for demolition / expansion / construction of site • Public open space • Transport impact • Built form and view lines • Streetscape • Acoustic and noise impacts
	Inform	To provide these stakeholders with balanced, accurate and consistent information to assist in the understanding of the project, its vision and broader impact.	• Mayor: Cnr. Tricia Hitchen • Deputy Mayor: Cnr. Todd Carney	• Local residents are communicated with and consulted throughout the project • Impact of works to LGA / electorate • Contamination • Flooding and Stormwater • Air quality and Noise • Traffic, Transport and Accessibility • Soil and water • Ecology • Environmental Health
			East ward Councillors (where the site is located) • Cnr. Bernard Bratusa • Cnr. Robin Cook • Cnr. Marlene Shipley	
			State MPs:	

Stakeholder Stream	Spectrum of Engagement	Objective	Stakeholder/s	Known Issues / Concerns
			• Tanya Davies, Member for Badgerys Creek • Nathan Hagarty, Member for Leppington	• Site suitability • Public interest
			Federal MPs: • Chris Bowen, Member for McMahon • Anne Stanley, Member for Werriwa	
Agencies	Involve	To provide these stakeholders with a briefing containing balanced and accurate information to assist in the understanding of the project, its vision and broader impact.	Department of Planning and Environment – inclusive of Water Group	• Alignment with policies and priorities • Adherence to planning legislation • Consultation and engagement with relevant stakeholders
			Transport for NSW	• Access to residential properties during emergencies. • Impact of works on local infrastructure (if any). • Methodology for dismantle / expansion / construction of site
			Environmental Protection Agency (EPA)	• Waste and pollution management
			Endeavour Energy	• Impact on and demand for utilities
			Transgrid	• Easement through site
			Fire and Rescue NSW	• Fire risk • Emergency Management plans
			NSW Rural Fire Services	• Fire risk • Emergency Management plans
			Sydney Water	• Impact on and demand for utilities, including meeting stormwater targets without need for interim solution • Soils and Water • Flooding • Environmental Health
			Western Sydney Airport	• Impacts and alignment with masterplan

Stakeholder Stream	Spectrum of Engagement	Objective	Stakeholder/s	Known Issues / Concerns
				• Construction traffic management plan • Waste management • Noise management • Public interest
			Western Sydney Parklands Authority	• Consistency with Concept Plan • Flooding and stormwater • Air quality and noise • Traffic and access • Soil and water • Ecology • Environmental health • Public interest
			Investment NSW	• Alignment with priorities in innovation and investment
			Heritage NSW	• Heritage
Media	Inform	To provide these stakeholders with balanced and accurate information to assist in the understanding of the project, its vision and broader impact.	National / State / Metro media • Sydney Morning Herald • The Daily Telegraph • The Australian • ABC • SBS	• Community sentiment • Community consultation
			Local media • South Western Rural Advertiser	

5.0 Communication Procedures and Protocols

5.1 Community Relations Team Roles and Responsibilities

Table 6 Team roles and responsibilities

Name/ Role	Contact Details	Responsibilities
Jacob Dickson Role: Project Manager / Site Superintendent		• Overall management and coordination of community information and involvement • Manage the provision of information on the project website • Final approval and sign off of *Community Communications Strategy* • Day to day liaison for engagement enquiries and activities • Review and approval of communications materials • Will be available to the project from the date of the deed until 12 months after construction completion. • Ensure community notifications are prepared and issued with accurate information and with all environmental approvals in place • Respond to community enquiries and complaints about the project in a timely manner utilising the agreed system and ensure the system is monitored and updated • Contact for escalated issues management • PR and media plan and implementation • Media liaison • Responsible for managing calls from the project information line during construction hours of the project outside of normal business hours
Grace Macdonald Role: 1800 number responder (business hours)		• Responsible for managing call from the project information line during business hours (9am-5pm Monday to Friday). The secretary will forward calls or refer the enquiry or complaint to the appropriate project team member.
Carl Vincent Role: Environmental Representative		• Responsible for overseeing construction of the development • Correspondence with the Department in relation to the environmental performance of the development • Assist in resolution of community complaints, as required by the Department • Attend the Mamre Road Precinct Working Group in a consultative role in relation to the

Name/ Role	Contact Details	Responsibilities
		environmental performance of the development site
Richard Peterson Role: Environmental Representative (alternate)		• Responsible for overseeing construction of the development • Correspondence with the Department in relation to the environmental performance of the development • Assist in resolution of community complaints, as required by the Department • Attend the Mamre Road Precinct Working Group in a consultative role in relation to the environmental performance of the development site
Slavce Kirovski Role: Site Manager		• Onsite contact for issues management during out of construction hours in cases of emergency.
Jessica Gough Role: Environmental Manager		• Onsite contact for issues management during out of construction hours in cases of emergency.
Inleel William Role: Administration		• General project administrative duties.
Scott Falvey Role: Leasing Enquiries		• Liaison with future industrial park tenants and any other leasing enquiries

5.2 Community Relations Contact Details

A community information hotline, 1800 270 980 has been established to ensure that a representative from the project team is contactable. This hotline will operate on a 9:00am – 5:00pm, Monday to Friday basis. A project enquiry email address, aus_development@au.esr.com, has also been established to receive and manage written enquiries.

An emergency number for out of business hours calls and enquires will be established once construction has commenced and will be visible at the entry points to site.

The community will be continually advised of the 1800 number and email address via the project website and community information materials.

5.3 Project Website

ESR have established a project website at https://au.esr.com/available-space/westlink/ to provide an easily accessible location of up-to-date information, for community, stakeholders, and the public.

The content on the website will continue to be updated as the project progresses and referenced in all communications collateral to ensure local residents, stakeholders and the general public have a central repository of accurate, relevant information related to the project throughout construction and into future operations.

The website will fulfil **Condition C17** related to public access to information about complaints and enquiries submitted to the project team.

The ESR team will be responsible for the ongoing maintenance and administration required to ensure the content is timely and up to date, including monthly updates to the complaints register

5.4 Internal Communications

The effectiveness of the Strategy relies on the inclusion and support of the wider project team. Close relationships between the community relations team, design and construction teams is vital and will enable the community relations team to:

- Keep up to date with construction progress and proposed activities.
- Be a part of the decision-making process about construction, especially where it impacts on community and stakeholders, in order to minimise these impacts.
- Identify potential issues and impacts and plan proactive community relations and communication activities.
- Prepare accurate information for the stakeholders.
- Provide advance notice to stakeholders/communities and plan one on one consultation.
- Develop clear two-way communication with all staff.
- Train and promote community relations principles – increase general awareness and gain support.
- Provide feedback to the team on the outcomes of the Community Communication Strategy and incorporate feedback into project plans as appropriate.

Cross-disciplinary relationships will be achieved through the participation of community relations personnel in both formal and informal project team meetings, involving discussion of:

- Upcoming construction activities.
- Current and / or potential community impacts and / or issues.
- Proposed management and mitigation of community impacts / issues.
- Any potential marketing opportunities which will allow the project to be positively positioned.

5.5 Community Notifications

Project notifications will be used to inform the community of current and upcoming works which have the potential to impact stakeholders and the community. The notifications will be targeted to those impacted by the works and will consist of letter box notifications, door knocking and email correspondence with known stakeholders.

Figure 3 and **Figure 4** includes the recommended distribution area for ongoing doorknocking activities and a wider letterbox drop.

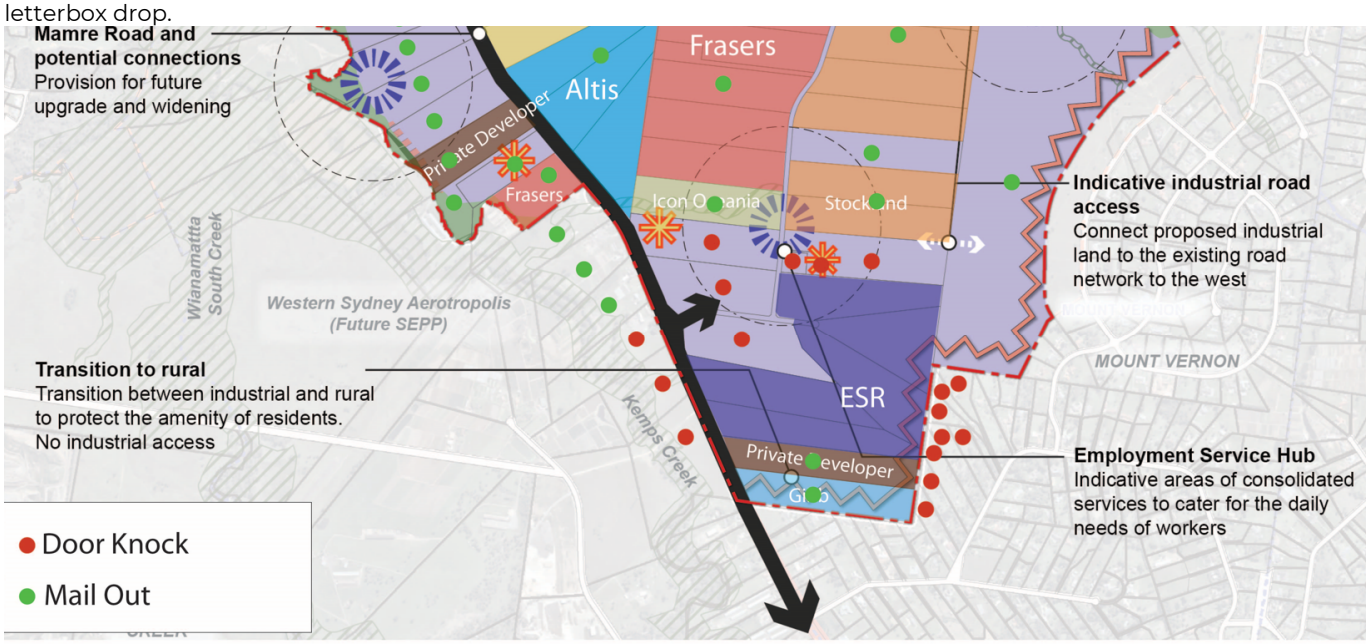

Figure 3 Doorknocking radius

Figure 4 Letterbox drop radius

5.6 Communicating Changes to Work Protocol

To enable flexibility in the communications provided to residents, a simple digital update (i.e. email or update to project webpage) will be distributed for when there are changes to activities that have been previously communicated. These could include:

- Changes to scheduled delivery days of plant and equipment
- Extension of anticipated works duration
- Overrun of working hours to enable completion of onsite activities (i.e. concrete pour)

5.7 Site Interface

Given the close proximity to residents, the development may lend itself to a high level of public interface, should a contractor be approach onsite and questioned on project specifics, they will be inducted to direct all public enquiries to

the Project Team. They will be instructed not to provide a response and instructed to hand out project information cards (containing 1800 number and email) to anyone who approaches.

All public interactions should be recorded and reported to the Project Team.

5.8 Stakeholder and Community Feedback Protocol

The ongoing and consistent management of project related feedback throughout the planning and design, as well as delivery of the redevelopment, is crucial to ensuring appropriate mitigation strategies are developed in response to issues identified and experienced. As such, the project team will document all stakeholder and community related feedback received directly, in a professional and timely manner.

Feedback is defined as any communication received from a stakeholder or community member which expresses support and/or dissatisfaction with any aspect of the project and its delivery. As such, the proposed contact response timings for general enquiries are as follows:

- Same day acknowledgement of all stakeholder and community contact
- Development of proposed response and issue within 48 hours by the project team. This timeframe can be extended where complex information is required, provided an acknowledgment of the enquiry is sent, outlining the need to gather more information before a response can be sent
- A 72-hour response target for complex enquiries (e.g. requires further consultation and planning with delivery team, request for meeting)
- All details will be captured and logged in a stakeholder contact register, and all responses will be shared with the project team.

Adherence to these response protocols fulfil requirement specified in **Condition B50 (f),** related to Construction Noise and Vibration Management Plan which requires a complaints management system that would be implemented for the duration of the development.

5.9 Issues Management and Dispute Resolution

Table 7 details issues management procedure that has been compiled to ensure the process for revolving onsite issues and complaints received through the 1800 number and/or project email address is consistent and ensures feedback is responded to in an appropriate and timely manner.

The procedure will assist in identifying issues that may escalate (from low to medium or medium to high) and offer mitigation measures

Table 7 Issues management and dispute resolution measures

Category	Description	Action
High (issue requires immediate involvement of ESR)	• Involves significant public or media interest • Relates to onsite safety or security • Involves political and/or government agencies	• Immediate written and verbal notification of issue to ESR. • ESR to proactively deal with the issue and advise project team on the response taken to resolve the issue • Register the issue in the project Contact Register with full details
Medium (issue cannot be immediately resolved)	• Involves an individual or group expressing negative sentiments towards project and / or its activities with the threat of further action (i.e. escalation to Council) • The stakeholder or community member raising the issue is not satisfied with the response provided	• Immediate verbal and written notification to ESR • ESR to proactively deal with the issue within 2 working days. • Register the issue in the project Contact Register with full details of the issue as well as how it was resolved.

Category	Description	Action
Low (issue can be responded to immediately)	• Involves an individual or group expressing negative sentiments towards project and / or its activities • There is no threat of further action	• Immediate written notification to ESR • ESR to proactively deal with the issue and advise on the response taken to resolve the issue • Register the issue in the project Contact Register with full details of the issue as well as how it was resolved.

5.10 Contact Register and Enquires Management

Consistent management of project related feedback throughout the engagement process is crucial to ensuring appropriate mitigation strategies are developed in response to any challenges and / or issues faced.

All stakeholder enquiries will be documented and tracked in an enquiries register in the form of a Microsoft Excel spreadsheet to be managed by ESR. A record will be created for all stakeholders with whom contact is made.

This register will provide an up-to-date, readily accessible central storage point for information and will provide a detailed history of feedback for future reporting purposes. This register will be used to manage, track, and maintain an activities and contacts register, capturing the relevant project stakeholders, key personnel, contact details, and escalation contacts.

A copy of the register will be made publicly available on the project website and updated monthly to fulfil access to information requirements, as specified in **Conditions B50 (f)** and **C17 (viii)** related to complaints and access to information.

A copy of the current enquiries log for the project to date is included in **Appendix A.1** and a suggested stakeholder contact database and enquiries register is included in **Appendix A.2**

6.0 Communication Tools and Channels

Due to the varying levels of stakeholder interest in this project, as well as the different levels of awareness, this project will require a multi-channelled approach to communications in order to facilitate consistent and proactive engagement with all stakeholder groups

6.1 Proposed Tools and Channels

A range of communication tools will be used to inform and engage the community and other stakeholder about the project as work proceeds. The Table below provides an overview of the tools to be used, frequency and timing, as well as the audience for each tool.

Table 8 Communication tools and channels

Tool	Frequency	Target Stakeholder Group	Purpose	Tool Specification
Mamre Road Precinct (MRP) Working Group	Periodically throughout the year as required. *Condition A38 requires establishment and participation in a workshop group within three months of construction commencing. It is understood that Mirvac have established this working group as part of SSD-10448, ESR will contribute to this working group within the specified three-month period*	Relevant consent holders in the MRP	• To fulfil **Condition A38**, the Working Group is designed to consult and coordinate construction works within the MRP to assist with managing and mitigating potential cumulative environmental impacts • To discuss, formulate and implement measures or strategies to improve monitoring, coordination of the approved industrial developments in the MRP • To review community concerns or complaints with respect to environmental management	• Meetings online and in-person as required • Meetings will review community concerns or complaints with respect to environmental management • Working group meeting outcomes and actions to be recorded and circulated to regularly inform Council, TfNSW, Sydney Water and the Planning Secretary
Stakeholder and resident briefings via video conference or in person	As required	As identified	• ESR will hold briefings if required on specific issues as identified. • Provide an opportunity for key stakeholders and members of the community to be a part of the project, find out information, ask questions and provide feedback. • Work with closely impacted residents to develop tailored strategies and mitigation measures for construction-related impacts such as noise and dust aggregation as the site is developed. This will fulfil **Condition B50 (b).**	• All known stakeholder issues included and prioritised for resolution on an issues and risk register. • A high-level record of all meeting details, agendas, issues discussed, decisions or commitments should be maintained for inclusion in the documentation of the consultation process.

Tool	Frequency	Target Stakeholder Group	Purpose	Tool Specification
Project website	As information becomes publicly available: • The website will be updated on a regular basis and reviewed as a minimum monthly to confirm information is still current and relevant • Relevant information will be provided prior to pre-construction and throughout construction • Will operate continuously until 12 months following the Date of Construction Completion	All community members and stakeholders identified in this plan	• To create a centralised point of project information for all stakeholders and the community members for Stage 1 and all subsequent project stages. • The existing webpage, https://au.esr.com/available-space/westlink/ will offer a separate landing page specifically targeted at providing information on the construction process. The website will fulfil **Condition C17 (a) (vii) and (viii)** in relation to contact details and a publicly accessible complaints register for the duration of development	• ESR to maintain website and provide updated material for the website which should contain: – Information on the current project timelines – Contact details for enquires and complaints – Information on key project milestones • Updated information and documentation as they are obtained or approved, per **Condition C17**: – all current statutory approvals for the development; – all approved strategies, plans and programs required under the conditions of this consent; – regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent; – a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;

Tool	Frequency	Target Stakeholder Group	Purpose	Tool Specification
				– a summary of the current stage and progress of the development; – contact details to enquire about the development or to make a complaint; – a complaints register, updated monthly; – the Compliance Report of the development; – any other matter required by the Planning Secretary
Project hotline	To be maintained until 12 months post construction completion.	All community members and stakeholders identified in this plan	• To provide all stakeholders a direct point of contact for any enquiries and the management of complaints. • The project information line (1800 270 980) will operate during hours that are consistent with the construction hours of the Project	• The phone number will be included on all project communication material • All calls received will be recorded in the Community Contacts Register • Details of the call will be included against caller names (if provided), including contact details and a description of the nature of the call • Staff responsible for answering calls on the line will be properly trained on 'etiquette' for speaking with stakeholders
Project email	To be maintained until 12 months post construction completion.	All community members and stakeholders identified in this plan	• Email contact details will be established where appropriate and email notifications will be used to inform those directly affected by any changes that may impact on individual properties, residents and businesses, such as traffic disruptions, construction of temporary detours and work required outside normal working hours. • Project email address is aus_development@au.esr.com	• All email enquiries will be responded to within 10 business days and email complaints received during working hours acknowledged within 8 hours, or if received out-of-hours on the next business day • All email correspondence will be recorded in the Community Contacts Register • All complaints received will be acknowledged within 8

Tool	Frequency	Target Stakeholder Group	Purpose	Tool Specification
				working hours. If an email complaint is received out-of-hours it will be acknowledged during the next business day
Doorknocking	Doorknocks are required prior to an activity which is likely to impact the property owner. Doorknocks would also be employed as required to obtain feedback from property owners after an activity.	Directly affected residents and businesses	• To raise awareness about the project with the local community and provide a point of contact for the project and provide them the opportunity to have their questions answered directly	• Doorknocks and feedback recorded.
Letterbox notifications	As required but will occur five Business Days prior to the proposed activity described.	Refer to notification map Figure 2	• To inform those directly affected by any changes that may impact on individual properties, residents and businesses	• Double sided letters in black and white or colour with detail about what is happening and/or changes, in plain English, supported by maps and drawings as required.
Media announcements and PR	As required, media releases containing information about relevant milestones including start of construction, road openings and initiatives that build the good reputation of the project	Media	• ESR will manage all media relations for the project.	• Media releases may only be issued by ESR • Other opportunities for media events, including the achievement of other projects milestones and the opening of Local Roads to traffic will be discussed at meetings with Lloyd Group at least four weeks prior to the expected event
Contact Register	From commencement of construction until 12 months post-completion	Community	• A register to record all community contact, including register of community who has interacted with the project until 12-month post construction completion. This will fulfil **Condition B50 (e)**	• To include names, dates of interaction, issues raised, details of how project team responded.

Appendix A

A.1 Consultation Register to date

SSD-9138102 Consultation Log					
Westlink Kemps Creek - Stage 1					
Landowner	**Address**	**Date**	**Items Discussed**	**Outcome**	**Follow-up Required**
	1 Abbotts Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report. - no concerns raised by landowner. Landowner was focused on subdivision DA for sale and wanting to know timing of payment	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
	19-105 Capitol Hill Drive Mount Vernon	Tuesday, 4 April 2023	- Noise and Vibration FAQ sheet distributed to landowner - No concern regarding construction noise, dust or air quality as no house is on the subject site - Dino requested investigation into a future road connection - Dino requested ESR to issue drawings to his consultant and ESR	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans

			issued immediately after the meeting		
	2 Abbotts Road, Kemps Creek	Thursday, 30 March 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Friday, 31 March 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Monday, 3 April 2023	-Attempted phone call to landowners son to seek meeting to discuss upcoming construction.	- Voicemail left. No response	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Thursday, 6 April 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Thursday, 20 April 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP/Air Quality fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident
	2 Abbotts Road, Kemps Creek	Monday, 22 May 2023	- Attempted (door knock) 1028 Mamre Road. No answer from the owner. ESR dropped the CNVMP/Air Quality fact sheet in the mail box and requested a meeting.	- ESR will continue to door knock up and try to engage with landowner.	- Ongoing consultation and updating resident

	272 Aldington Road, Kemps Creek	Thursday, 6 April 2023	- CNVMP / Air Quality FAQ sheet distributed to landowner - Key concern re. dust mitigation especially with winds coming from south-west. Concern relating to health impacts.	- ESR to review the construction management plan to address issues relating to dust management. - ESR proposed to place dust sensors surrounding property - this was not agreed at the time of offer	- Further discussion required, additional meeting scheduled
	272 Aldington Road, Kemps Creek	Tuesday, 18 April 2023	- Email received from landowner outlining a number of issues not related to Noise / Vibration / Air quality, a summary of the relevant issues is below: - Resident has no confidence on dust, noise and vibration solutions. Monitoring requested along the boundary - Resident requested that they not experience dust more than 10 ug/g, and that ESR to agree to absorb cost of relocating family - Resident requested a reduction in the hours of work	- ESR responded with following: - Dust monitoring options are being investigated as a mitigation measure, monitors will be placed at the boundary - ESR will review mitigation measures with the consultant, however are proposing to use industry standard practices and are required by legislation to keep dust below levels set by the authorities - Hours of work as per standard approvals.	- ESR to schedule another meeting with the resident.

	272 Aldington Road, Kemps Creek	Thursday, 11 May 2023	-ESR visited landowner to discuss upcoming project. - ESR advised they will operate within their approved DA as per Regs and Guidelines. - ESR and landowner discussed noise and air quality, but no agreement was made to install noise / air quality monitors on the property	- ESR to follow up regarding the offer to place noise / dust monitors on the property	- Ongoing consultation and updating resident - Follow up required to close both items out. ESR to separate the matters.
	272 Aldington Road, Kemps Creek	Friday, 19 May 2023	- Response to visit with property owners (11/5/23) issued via email. - Response included offer to place dust monitors on the boundary and at the property, with the agreement to be confirmed	- No response from the resident to date regarding the acceptance of dust / noise monitors (19/06/23)	- ESR to follow up if complaints received during construction
	282 Aldington Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration / Air Quality FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was held around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report.	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern.	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans

	284 Aldington Road, Kemps Creek	Tuesday, 4 April 2023	- Noise and Vibration / Air Quality FAQ sheet distributed to landowner - Discussion held with the property owner on the upcoming DA works - Discussion was held around Noise, Vibration and dust - ESR advised of the mitigation measures proposed in the Noise and odour construction management report.	- No major issues with the works raised - ESR and landowner agreed if they are experiencing impacts to call ESR immediately and the respective personnel from ESR will address the concern. - Privacy fence to be installed to screen landowner from construction works	- Ongoing consultation and updating resident - No rework required to the proposed construction management plans
	- 6-12 Mt Vernon Rd - 14 Mt Vernon Rd - 20 Mt Vernon Rd - 22-28 Mt Vernon Rd - 30-38 Mt Vernon Rd - 48 Mt Vernon Rd - 50 Mt Vernon Rd - 50A Mt Vernon Rd - 52-60 Mt Vernon Rd	Monday, 1 May 2023	Letter box drop for the residents of Mt Vernon that front the Eastern side of the ESR development. Letter box drop included the CNVMP and Air Quality Fact sheet, including contact details for ESR personnel	- No calls to date (19/6/23) from the recipients	- Ongoing letter box drops will be undertaken periodically throughout the project.

A.2 Stakeholder Contact and Enquiries Register

Date	Name	Organisation	Phone	Email	Address	Method of contact	Nature of enquiry / outreach	Feedback	Project team response / Close out actions	Notes

A.3 Letterbox drop

Westlink ESR Development

ESR is in the late stages of DA approval for its Westlink industrial estate at Kemps Creek. Construction works are scheduled to commence soon, and include:

- Remediation works
- Cut to fill earthworks
- Construction of retaining walls
- Construction of utilities
- Construction of roadways

The works will be primarily contained within the ESR site, however, works will be required in the public road reserves fronting the ESR site to enable the successful delivery of the works.

ESR Stage 1 Works ESR Future Works

The works will be visible to the local community and ESR are committed to delivering the works with as minimal impact to the local community as possible. This notification has been produced to outline some of the construction related noise and vibration and air quality impacts that may be experienced whilst the works are underway and the measures ESR are implementing on site to minimise the impact to the local community.

au.esr.com

ESR

Construction Noise and Vibration

What to Expect	What we are doing to minimise impact
Heavy earthworks equipment within the ESR property	• Selection of well maintained plant / equipment • Equipment fitted with silencing kits where appropriate • Avoiding simultaneous operations of heavy equipment within discernible range of receivers where appropriate • Creating noise bunds during the earthworks where feasible
Audible construction activities during construction hours: 7am-6pm (Mon-Fri) 8am-1pm (Sat)	• Maintaining as much distance as possible from noisy plant and receivers where possible • Plant shut off when not in use • Non-tonal reversing alarms will be fitted on all equipment • Working within the approved construction hours
Vibration will be noticeable at times during construction	• Dilapidation inspections (where accepted) on properties prior to commencing works • Construction procedures developed to minimise noise and vibration, with documented stop work procedures • Site inductions for all on site staff to cover off noise and vibration minimisation strategies • Conducting the works within strict vibration limits • Undertaking vibration monitoring during works adjacent receivers • Stopping works immediately if vibration limits are exceeded

Air Quality

What to Expect	What we are doing to minimise impact
Dust generating activities	• Air monitoring undertaken at the property boundary, with results kept on site • Daily site inspections reviewing effectiveness of site controls • Where possible locating high dust generating activities away from sensitive receivers • Imposing speed limits on construction vehicles within the site
ESR are committed to minimising the impact to the local community with the construction activities on site, and as such are implementing several mitigation measures to control airborne dust leaving the site, these measures will be continuously reviewed and improved throughout the construction period.	• Keeping work areas wet with water carts • Installing shaker grids at construction entries • Stabilise or cover materials that have a potential to produce dust • Monitor weather events and plan work activities appropriately • Covering loads which are entering / exiting site • Utilising street sweepers on the local roadways • Prioritising stabilisation works to minimise exposed surfaces

What to do if you are experiencing issues

If you are experiencing any issues during construction, get in contact with ESR project staff directly:

Daniel Galea

Mobile:

Email:

Appendix J Contingency Plan

Contingency Plan

Key Elements	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Traffic Management Plan				
Traffic Noise	Trigger	Noise levels do not exceed imposed noise constraints, as outlined within the Noise Assessment Report (<45dBA), nor has there been a traffic-related noise complaint.	Noise levels marginally (<10dBA) in excess of imposed noise constraints or receipt of a single traffic-related noise complaint.	Noise levels greatly (>10dBA) in excess of imposed noise constraints or consistent traffic-related noise complaints.
	Response	No response required.	Undertake all feasible and reasonable mitigation and management measures to minimise noise impacts.	Undertake all feasible and reasonable mitigation and management measures to ensure noise levels are below Highly Noise Affected criteria. As with Condition Amber, if noise levels cannot be kept below applicable limits, then a different construction method or equipment must be utilised. Response to also be consistent with the CNVMP.
Traffic Guidance Scheme (TGS)	Trigger	No observable traffic issues caused by construction traffic.	Minor inconsistencies with TGS to onsite operations (e.g. covered signs, missing signs and fallen cones).	Near miss or incident occurring regardless of/as a result of TGS being implemented.
	Response	No response required. Continue monitoring TGS implementation under CTMP.	Traffic Controller to amend TGS on site and to keep a log of all changes.	Stop work until an investigation has been undertake into the incident. Amend the TGS to ensure that the safety of all workers and community members are addressed.
Construction Movements	Tigger	Both peak hour and daily construction traffic volumes are in accordance with volume and time constraints as outlined within Section 2.3 and Section 3.1 of CTMP (287 Light Vehicle Movements per day (up to 25	Construction traffic volumes exceed programmed peak volumes but are within the daily volumes (287 Light Vehicle Movements per day and 200 Heavy Vehicle Movements per day).	Construction traffic volumes exceed permissible volume and time constraints (287 Light Vehicle Movements per day (up to 25 movements in the AM and 6 movements in PM Peak Periods) and 200 Heavy Vehicle Movements per day (up to 16 movements in the AM Peak Periods and

Key Elements	Trigger/ Response	Condition Green	Condition Amber	Condition Red
		movements in the AM and 6 movements in PM Peak Periods) and 200 Heavy Vehicle Movements per day (up to 16 movements in the AM Peak Periods and 12 movements in the PM peak).		12 movements in the PM peak).
	Response	No response required.	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: • Review CTMP and update where necessary • Provide additional training.	As for Condition Amber, plus: • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies • Stop all transportation into and out of the site.
Queuing	Trigger	No queuing identified.	Queuing identified within site, but not on to public road.	Queuing identified on the public road.
	Response	No response required. Continue monitoring program.	Review the delivery schedule prepared by the contractor. If drivers are not following the correct schedule, then they should be provided with additional training and an extra copy of the Drivers' Code of Conduct	As with Condition Amber, plus: • Review and investigate construction activities • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies • Temporary halting of activities and resuming when conditions have improved • Stop all transportation into and out of the site • Review CTMP and update where necessary, provide additional training.

Key Elements	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Dust Generated by Traffic	Trigger	No observable dust.	Minor quantities of dust in the air and/or tracking on to the road.	Large quantities of dust in the air and/or tracking on to the road.
	Response	No response required.	Review and investigate construction activities and respective control measures, where appropriate. Implement additional remedial measures, such as: • Deployment of additional water sprays • Relocation or modification of dust-generating sources • Check condition of vibrating grids to ensure they are functioning correctly • Temporary halting of activities and resuming when conditions have improved.	As with Condition Amber. • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies • Implement relevant responses and undertake immediate review to avoid such occurrence in future.
Air Quality				
Dust Emissions	Trigger	Daily inspections show that there is no visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site multiple times during a day OR from multiple locations within the site.
	Response	Monitor weather conditions and stop works if dust generation is excessive. Continue implementation measures of the CAQMP	During periods of unsuitable weather (high winds and high temperatures), avoid or minimise dust generating activities where possible, or increase frequency of dust suppression activities. Remove, suppress, stabilise or cover materials that have a potential to produce dust as soon as possible, unless being used on site. Impose 20km/h speed limits on haul routes to minimise dust generated from vehicle movements.	Where possible, locate high dust generating activities away from sensitive receivers. Record any exceptional events that cause dust and/or air emissions on or off site and note action taken to resolve situation.

Key Elements	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Dust Complaints	Trigger	No complaints received during construction.	An air-quality related complaint is received from a nearby resident.	Further complaints are received after the additional mitigation measures have been implemented.
	Response	Continue monitoring program and implementing CAQMP	Record all air quality related complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record measures taken. Make Contact Register available to relevant authorities (Council, EPA, DPE). Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc), where appropriate.	Conduct real time air quality monitoring at the complaint location including meteorology if required. This monitoring should be conducted in consultation with a suitably qualified air quality professional.
Noise and Vibration				
Noise Impacts at Sensitive Receiver	Trigger	Noise levels do not exceed noise management levels.	Noise levels exceed applicable noise management levels.	Noise levels exceed Highly Noise Affected threshold at a sensitive receiver. Noise complaints received.
	Response	Continue implementing existing measures in accordance with the CNVMP.	Implement every practical and logical mitigation and management strategy to keep noise levels below the Highly Noise Affected (90dBA) threshold.	Implement every practical and logical mitigation and management strategy to reduced noise levels below the Highly Noise Affected threshold. If noise levels cannot be kept below the imposed restrictions, an alternative construction method or equipment will be used.

Key Elements	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Vibration Impacts at Sensitive Receivers	Trigger	Vibration-intensive tasks carried out beyond the equipment's recommended working distance.	Vibration intensive works undertaken within minimum working distance for the specific equipment in use.	Vibration levels exceed applicable vibration limits.
	Response	Continue to implement existing measures in accordance with CNVMP.	Undertake vibration monitoring for the duration of the works to confirm vibration levels.	Stop work. Undertake all feasible and reasonable mitigation and management measures to ensure vibration levels are below applicable limits. If vibration levels cannot be kept below applicable limits then a different construction method or equipment will be utilised.
Unexpected Finds				
Unexpected Contamination Find	Trigger	No contamination uncovered during earthworks.	Areas of possible contamination uncovered during earthworks.	Areas of potentially hazardous substance identified during earthworks.
	Response	Continue to implement existing measures in accordance with CEMP.	Implement Contamination Unexpected Finds Protocol (Appendix E of CEMP).	Implement Contamination Unexpected Finds Protocol (Appendix E of CEMP).
Unexpected Heritage Find	Trigger	No Aboriginal or historical artefacts found	Unanticipated archaeological items uncovered	Potential human remains discovered
	Response	Continue to implement existing measures in accordance with ACHMP.	Implement Heritage Unexpected Finds Procedure (Appendix 3 of ACHMP).	Implement Heritage Unexpected Finds Procedure (Appendix 3 of ACHMP).
Waste Management				
Waste	Trigger	Inspections identified no waste from demolition and construction generated outside of dedicated bins and stockpiles.	Inspections identified minimal waste from demolition and construction generated outside of dedicated bins and stockpiles.	Inspections identified large quantities of waste from demolition and construction generated outside of dedicated bins and stockpiles. Complaints received regarding waste management.
	Response	Continue to implement existing measures in accordance with	Clean up the waste immediately and dispose according to CEMP requirements.	Clean up the waste immediately and dispose according to CEMP requirements.

Key Elements	Trigger/ Response	Condition Green	Condition Amber	Condition Red
		CEMP.	Toolbox talk with all workers to discuss waste management requirements.	Toolbox talk with all workers to discuss waste management requirements.
Civil Infrastructure				
Erosion	Trigger	No evidence of erosion	Minor gully or tunnel erosions or rilling. Evidence of sediment leaving the site	Significant gully or tunnel erosions present or rolling. Evidence of sediment leaving site
	Response	Continue to implement existing measures in accordance with CSWMP.	Site manager will inspect the site every rainfall event and at least weekly. Construct additional erosion and sediment control works to ensure desired protection	Environmental consultant to inspect the site. Review of erosion and sediment structures and CSWMP. Remediate as soon as practical
Water Management Structures	Trigger	Water management structures have been designed, constructed and managed in accordance with the Mamre Road Precinct DCP.	Inspections identify that water management structures are in minor non-compliance with the CSWMP and Mamre Road Precinct DCP.	Inspections identify a failure of the water management structures (discharging outside of site of boundary and/or water quality does not meet required criteria).
	Response	Continue to implement existing measures in accordance with CSWMP.	A suitably trained person to inspect the site and review adequacy of water management structures. Remediate as appropriate.	A suitably trained person to inspect the site. Remediate as soon as practical. Review of engineering design and CSWMP.
Flooding Assessment				
Flooding	Trigger	No evidence of flood hazard, flood levels or risk to property.	Slight increase in flood hazard, flood levels and risk to properties.	Significant increase in flood hazard, flood levels and risk to properties.
	Response	Continue implementing FIRA and ERP.	Monitor weather conditions and stay up to date. Continue implementing FIRA and ERP.	Revaluate the flood levels, velocities and hazard assessment under Benchmark condition and Masterplan conditions.

Key Elements	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Bushfire				
Bushfire	Trigger	No or 'Watch' bushfire warning covering the Project site.	'Watch and Act' bushfire warning covering the Project site.	'Emergency' bushfire warning covering the Project site.
	Response	Check fire warnings to stay updated.	Take action to protect Project workers and equipment.	Evacuate the site as directed by NSW Fire and Rescue.
Community				
Submission	Trigger	General feedback/comment (no complaint or query).	Enquiry made by formal or informal channels.	Complaint made by formal or informal channels.
	Response	Implement Community Consultation and Complaints Handling Strategy.	Implement Community and Stakeholder Communications Strategy.	Implement Community and Stakeholder Communications Strategy.
Wildlife				
Biodiversity Management	Trigger	No impacts to biodiversity identified.	Minor biodiversity impacts identified on-site.	Significant biodiversity impacts identified.
	Response	No response required.	Review effectiveness of management measures. Implement additional measures to manage impacts.	Stop works causing biodiversity impact. As for Condition Amber.
Wildlife Management	Trigger	Minimal occurrence of common strike species at the site.	Common strike species occur regularly at the site.	Common strike species occurring at the site in large numbers.
	Response	No response required.	Review effectiveness of management measures. Consider implementing additional measures to manage species as listed in WL 7 (Table 4.2 of the WMP)	As for Condition Amber.

Appendix K Aboriginal Cultural Heritage Management Plan

Westlink Industrial Estate – Stage 1 (SSD 9138102)

FINAL Aboriginal Cultural Heritage Management Sub-Plan

Report to ESR Developments Australia Pty Ltd

LGA: Penrith

May 2023

artefact

Artefact Heritage
ABN 73 144 973 526
Suite 56, Jones Bay Wharf
26-32 Pirrama Road
Pyrmont NSW 2009
Australia

+61 2 9518 8411
office@artefact.net.au

Document history and status

Revision	Date issued	Draft by	Reviewed by	Date reviewed	Revision type
1	13 July 2020	Emma Jones	Sandra Wallace	14 July 2022	Initial draft
2	15 March 2023	Nicola Jorgensen	Sandra Wallace	23 March 2023	Second draft
3	24 March 2023	Sandra Wallace	Aspect Environmental	24 March 2023	Final draft
4	18 April 2023	Nicola Jorgensen	Registered Aboriginal Parties	02 May 2023	RAP review
5	02 May 2023	Nicola Jorgensen	Aspect Environmental	17 May 2023	Final draft
6	17 May 2023	Nicola Jorgensen	Aspect Environmental	22 May 2023	Final draft

Last saved:	22 May 2023
Author/s:	Emma Jones, Nicola Jorgensen
Project manager:	Sandra Wallace
Name of organisation:	Artefact Heritage Pty Ltd
Name of Project:	290-308 Aldington Road, 69-62 and 63 Abbotts Road, Kemps Creek
Name of document:	290-308 Aldington Road, 69-62 and 63 Abbotts Road, Kemps Creek: FINAL Aboriginal Cultural Heritage Management Sub-Plan
Document version:	Version 6

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FIGURES

TABLES

1.0 INTRODUCTION

ESR Developments Australia (the Proponent) received final conditions of Development Consent (SSD 9138102) on 21 April 2023 to construct and operate warehousing and distribution centre within 290-308 Aldington Road, 59-62 Abbotts Road and 63 Abbotts Road (the study area). The study area is situated within the suburb of Kemps Creek, within the Penrith Local Government Area (LGA) and the boundaries of the Deerubbin Local Aboriginal Land Council (LALC).

This Aboriginal Cultural Heritage Management Sub-Plan (ACHMP) describes how Aboriginal heritage management and mitigation measures will be implemented prior to and during the Project's construction and operation and documents how the conditions of the Development Consent and the requirements of the Aboriginal Cultural Heritage Assessment Report (ACHAR) have and will be met.

The Project is defined as the scope of proposed works for stage 1 of an industrial estate known as Westlink (formerly known as the Kemps Creek Logistics Park) (SSD 9138102).

The conditions of Development Consent, as they relate to Aboriginal heritage, are listed below.

Table 1: Condition of consent requirements

Condition requirement	Location in this document
Statutory Requirements	
B79. Prior to the commencement of earthworks, the Applicant must undertake surface collection of the identified artefacts IF1, IF2 and IF3 as detailed in the Aboriginal Cultural Heritage Assessment Report prepared by Urbis and dated 12 April 2022. The identified artefacts must be registered on the OEH's Aboriginal Heritage Information Management System (AHIMS) Aboriginal Sites Register, prior to construction.	Section 6.1.1.1
Consultation	
B80. The Applicant must continue to consult with Registered Aboriginal Parties (RAPs) for the duration of construction. The RAPs should be consulted to determine the appropriate management of unexpected finds on the site.	Section 6.1.2.1
Site Induction	
B81. Prior to the commencement of earthworks, the Applicant must prepare and implement Aboriginal cultural heritage induction training for all staff and contractors. The Applicant must involve Aboriginal knowledge holders in the development of the induction training. The training must outline the obligations of staff and contractors under the *National Parks and Wildlife Act, 1974* and the conditions of this consent. The Applicant must ensure any new staff or contractors receive the induction training prior to commencing works on the site. The induction training material must form part of the CEMP required by condition C2.	Section 6.1.1.3

Condition requirement	Location in this document
Unexpected Finds Protocol B82. If any item or object of Aboriginal heritage significance is identified on site: (a) all work in the immediate vicinity of the suspected Aboriginal item or object must cease immediately; (b) a 10 m wide buffer area around the suspected item or object must be cordoned off; and (c) Heritage NSW must be contacted immediately. B83. Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the *National Parks and Wildlife Act 1974*.	Section 6.1.2.2

1.1 Project overview

The Project comprises the first stage of an industrial estate located at 290-308 Aldington Road, Kemps Creek (Lot 13 DP 253503), 59-62 Abbotts Road (Lot 12 DP 253503), and 63 Abbotts Road, Kemps Creek (Lot 11 DP 253503) within Penrith City Local Government Area. The Project site is approximately 319,800m^2 in area and is irregular in shape. The location of the Project site is indicated by the red outline on Figure 1.

The site currently comprises undulated rural land, with foundations of residential dwellings, farm sheds, and miscellaneous agricultural greenhouses and structures. It is best described as being rural-residential in nature, with significant areas of land currently remaining unused.

As per the SSD 9138102 Development Consent the project includes bulk earthworks (clearing, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction), subdivision, construction, fit out and operation of two warehouse buildings and ancillary office space with a total gross floor area of 81,317m^2, landscaping, construction of estate roads and external road upgrades, site servicing and stormwater infrastructure.

The site layout for Stage 1 is shown in Figure 2.

Figure 1: Map showing the location of the study area outlined in red (EIS, Ethos Urban, June 2021)

Figure 2: Stage 1 site layout (SSD 9138102 Development Consent, 21 April 2023)

GFA DEFINITION:
According to Standard Instrument – Principal Local Environmental Plan
Gross Floor Area means
the sum of the floor area of each floor of a building measured from the internal face of external walls, or from the internal face of walls separating the building from any other building, measured at a height of 1.4 metres above the floor, and includes—
(a) the area of a mezzanine, and
(b) habitable rooms in a basement or an attic, and
(c) any shop, auditorium, cinema, and the like, in a basement or attic, but excludes—
(d) any area for common vertical circulation, such as lifts and stairs, and
(e) any basement—
(i) storage, and
(ii) vehicular access, loading areas, garbage and services, and
(f) plant rooms, lift towers and other areas used exclusively for mechanical services or ducting, and
(g) car parking to meet any requirements of the consent authority (including access to that car parking), and
(h) any space used for the loading or unloading of goods (including access to it), and
(i) terraces and balconies with outer walls less than 1.4 metres high, and
(j) voids above a floor at the level of a storey or storey above.

DEVELOPMENT SUMMARY	
GROSS LAND AREA	320,258m²
ROAD AREA (24M WIDE)(TBC)	20,379m²
ALDINGTON ROAD WIDENING	1285m²
NETT DEVELOPABLE AREA	298,594m²
STORMWATER DETENTION BASIN (WITHIN LOT 4)	9,721m²
SITE AREA (LOT 1)	110,793m²
WAREHOUSE (GFA) INCL. WAREHOUSE AMENITIES EXCL. LOADING ZONE (3720 m²)	61,271m²
BATTERY CHARGING CHAMBER	850m²
OFFICE (2 STOREY)	1,576m²
TRANSPORT OFFICE	160m²
TOTAL BUILDING AREA (GFA)	63,857m²
TOTAL CARS REQUIRED (RMS)	252
WAREHOUSE 1300m² (GFA)	
OFFICE 140sqm (GFA)	
TOTAL CARS PROVIDED	300
PERMEABLE CARPARKING 42	
SITE AREA (LOT 4)(INCL. OSD)	43,420m²
WAREHOUSE (GFA) EXCL. LOADING ZONE (1470m²) AND INCL. DOOK OFFICE (100 m²)	17,010m²
OFFICE	450m²
TOTAL BUILDING AREA (GFA)	17,460m²
TOTAL CARS REQUIRED (RMS)	79
WAREHOUSE 1300m² (GFA)	58.2
OFFICE 140sqm (GFA)	11.3
TOTAL CARS PROVIDED	96
SITE AREA (RESIDUAL LOT)	144,381m²
LAND SUBJECT TO FUTURE DA	144,381m²

NOTE:
PP: Permeable Paving Carparking

ESR
SSD APPROVAL
Key Plan
Project Name: Westlink
Project Address: Mamre Road, Kemps Creek
Bar Scales
Estate Plan - Stage 1
BC/HS MA A1
1:1000@A1 1:2000@A3
12587_DA102
P20
nettletontribe

1.2 Authorship

This management plan has been written by Emma Jones (Heritage Consultant), Nicola Jorgensen (Aboriginal Heritage Team Leader [Assistant]) and Sandra Wallace (Managing Director), who also provided input and review.

1.3 Heritage approvals

1.3.1 *Environmental Planning and Assessment Act 1979*

Part 4, Division 4.7 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) specifies that any State environmental policy may declare any development to be State significant development (SSD) as can the Minister, by a Ministerial planning order.

Under Part 4, Division 4.7, section 4.41 the following authorizations are not required for SSD that is authorized by a development consent granted after the commencement of this Division (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply):

1 (c) an approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*

1 (d) an Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974* (NPW Act)

The Project was assessed under Part 4 of the EP&A Act. As such, agency heritage approvals under the NPW Act were not required.

Aboriginal Cultural Heritage Assessment Report

An Aboriginal Cultural Heritage Assessment Report (ACHAR) (Urbis 2022) was prepared for the Project EIS in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011). The ACHAR recommended:

- Comprehensive Aboriginal stakeholder consultation in accordance with the requirements of *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (OEH, 2010a)
- Surface collection of identified artefacts in accordance with the Code of Practice and with the involvement of the Registered Aboriginal Parties
- Aboriginal Cultural Heritage Induction for any contractors working within the study area
- An unexpected finds procedure must be followed should any archaeological deposits be uncovered during site works
- If any human remains are uncovered during site works, all works in the vicinity of the find must immediately stop and NSW Police and DPC must be contacted.

1.4 Purpose and objectives

1.4.1 Purpose

The purpose of this plan is to describe how Aboriginal heritage management and mitigation measures will be implemented prior to and during the Project's construction and operation, and to document how the conditions of Development Consent and the requirements of the ACHAR have and will be met.

1.4.2 Objectives

The objective of the ACHMP is to ensure that impacts to Aboriginal heritage are minimised and limited to the scope permitted by the planning approval for the Project. To achieve this the following will be undertaken:

- Ensure mitigation measures related to the salvage and recording of Aboriginal heritage are implemented prior to impacts.
- Ensure appropriate measures are implemented to comply with the conditions of Development Consent and ACHAR.

2.0 CONSULTATION AND STAKEHOLDER ENGAGEMENT

2.1 Registered Aboriginal Parties

Consultation with Registered Aboriginal Parties (RAPs) was undertaken during the preparation of the ACHAR for the Project in accordance with OEH's guidelines *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010a; hereafter the Consultation Requirements).

In accordance with Step 4.1.2 of the Consultation Requirements, Urbis corresponded with the following organisations by letter and email on the 2nd and 8th of November 2020 requesting the details of Aboriginal people who may hold cultural knowledge relevant to determining the Aboriginal significance of Aboriginal objects and/or places within the local area:

- National Native Title Tribunal
- Office of the Registrar, Aboriginal Land Rights Act 1983
- Heritage NSW, Department of Premier and Cabinet
- NTS Corp
- Deerubbin Local Aboriginal Land Council
- Local Land Services, Greater Sydney
- Penrith City Council

In addition to this, and in accordance with Step 4.1.3 of the Consultation Requirements, an advertisement was placed in Koori Mail Advertisements on the 16 December 2020, inviting the participation of Aboriginal people who may hold cultural knowledge relevant to determining the Aboriginal significance of Aboriginal objects and/or places within the local area.

In accordance with Step 4.1.3 of the Consultation Requirements, on the 4 December 2020, emails or letters were sent to all Aboriginal persons or organisations identified through advertisement or through responses from agencies contacted as part of Step 4.1.2. In accordance with Step 4.2 the letters provided details about the location and nature of the Project, as well as an invitation to register as an Aboriginal stakeholder.

As a result of that process 24 groups registered their interest (Table 2).

Table 2: List of Registered Aboriginal Parties

Contact	Organisation
Steven Randall	Deerubbin LALC
Carolyn Hickey	A1 Indigenous Services
Jamie Eastwood	Aragung Aboriginal Cultural Heritage Site Assessments
Judy Kulakowski	Barking Owl Aboriginal Corporation

Contact	Organisation
Janaya Smith	Biamanga
Clive Freeman	Clive Freeman
Marilyn Carroll Johnson	Corroboree Aboriginal Corporation
Corey Smith	Cullendulla
Lillie Carroll and Paul Boyd	Didge Ngunawal Clan
Basil Smith	Goobah Developments
Wendy Smith	Gulaga
Cherie Carroll Turrise	Gunjeewong Cultural Heritage Aboriginal Corporation
Phil Khan	Kamilaroi Yankuntjatjara Working Group
Shaun Carroll	Merrigarn
Jesse Johnson	Muragadi Heritage Indigenous Corporation
Darleen Johnson and Ryan Johnson	Murra Budgee Mullangari Aboriginal Corporation
Roxanne Smith	Murramarang
Danny Franks	Tocomwall
Rodney Gunther	Waawaar Awaa Aboriginal Corporation
Philip Boney	Wailwan Aboriginal Group
Vicky Slater	Wurrumay Pty Ltd
Lowanna Gibson	Butucarbin Aboriginal Corporation

Contact	Organisation
Kaarina Slater	Ngambaa Cultural Connections
Kayla Williamson	Worona Plateau Gundangara Elders Council

In accordance with stages 2 and 3 of the Consultation Requirements, the scope of the Project, cultural heritage assessment and ACHA methodology process were sent to RAPs on 15 January 2021. A response to this information was requested by 12 February 2021.

As a result of that process, 5 groups provided comments on the Project, cultural heritage assessment and ACHA methodology (Table 3)

Table 3: Comments on proposed ACHA methodology (Urbis 2022)

RAP	Response	Urbis Response
Goobah Basil Smith	This is to confirm that we support the above proposed redevelopment and also confirm that we are traditional owners, we have participated in many surveys in the western and greater Sydney including {WSA} Western Sydney Airport, Mt Gilead and many more, we have attached my insurances with our rate of pay (redacted) and wish to be considered for field work with the redevelopment of 290-308 Aldington Road, Kemps Creek, please confirm.	Acknowledged, we will keep all RAPs informed.
Murramarang Roxanne Smith	This is to confirms that we support stages 2 and 3 for this project and want to be kept informed on any further developments	Acknowledged, we will keep all RAPs informed.
Murrabidgee Mullangari Ryan Johnson	I have read the project information and methodology for the above project. I endorse the recommendations made	Acknowledged.
A1 Indigenous Services Carolyn Hickey	I am the founder of A1 Indigenous Services PTY LTD I represents, a group of Indigenous youth and job seekers, A1 is designed to help provide employment and training opportunities	Acknowledged.
Biamanga Janaya Smith	Please keep me informed on any further developments	Acknowledged, we will keep all RAPs informed.

In accordance with Stage 4 of the Consultation Requirements, a draft of Urbis' ACHAR for the Project was sent to RAPs via email on 20 May 2021. Comments on the draft ACHAR were requested by 17 June 2021.

As a result of this process, one group provided comments on the draft ACHAR (Table 4).

Table 4: RAP responses to the Stage 4 Draft ACHAR

RAP	Response	Urbis Response
Kamilaroi Yankuntjatjara Working Group	Thank you for your ACHA for 290-308 Aldington Road, Kemps Creek, us Aboriginal people have walked this land for tens of thousands of years and we continue to do so today. We hold a deep connection to the land, skies and water ways. We would like to agree to your recommendations, will there an interpretation plan for this project? We look forward to working alongside you on this project	Urbis acknowledges the deep connection Aboriginal hold with the landscape and environment. As part of the project, the, the subject area will include native plantings.

2.2 RAP comments on the ACHMP

A draft version of this ACHMP was issued to RAPs for review and feedback on 18 April 2023. Responses were requested by 02 May 2023. Two responses were received during this review period (Table 5, Appendix 5).

Table 5: RAP comments on ACHMP and how addressed in this document

RAP	Response	How addressed
Muragadi Heritage Indigenous Corporation	"I have read the project information and draft ACHM plan for the above project, I agree with the recommendations. 6.1.1.3 I agree 6.1.2.1 I agree 6.1.2.2 I agree 6.2.1 I would like option 2 or option 3"	Response included in this report.
Wailwan Aboriginal Group	"I would like to confirm that Wailwan Aboriginal Group has read ACHAR draft and would like to inform you that we support the proposed measure that will be undertaken for this project. We would like to be updated with any information regarding the project."	Response included in this report.

3.0 LEGISLATIVE REQUIREMENTS

3.1 Legislation

This ACHMP has been prepared in accordance with the relevant legislative requirements, policies and procedural guidelines applicable to Aboriginal and non-Aboriginal heritage and its protection in New South Wales. These are summarised below:

Table 6: Summary of relevant legislation

Legislation	Description	Implication for this HMP
Environmental Planning and Assessment Act 1979	This Act establishes a system of environmental planning and assessment of development projects for the State.	Project approval conditions and obligations have been incorporated into the current HMP.
National Parks and Wildlife Act 1974	The NPW Act provides statutory protection to all Aboriginal places and 'objects'. In order to undertake a proposed activity which is likely to involve harm to an Aboriginal place or object, it is necessary to obtain an Aboriginal Heritage Impact Permit (AHIP), to be issued under Section 90 of the NPW Act.	Impacts to Aboriginal heritage items have been identified for the Project. The Project has been assessed as an SSD under Section 4.37 of the EP&A Act. An AHIP under the NPW Act is therefore not required. Aboriginal heritage items not salvaged will be protected from unintended impacts. Management of Aboriginal heritage is outlined in Section 6.1 of this plan.
Aboriginal Land Rights Act 1983	*The Aboriginal Land Rights Act 1983* is administered by the NSW Department of Human Services -Aboriginal Affairs. This Act established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the Act to; (a) take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law, and (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area. The Project site is within the boundary of the Deerubbin LALC.	The Project site is not subject to a claim under the *Aboriginal Land Rights Act 1983*. No specific implications for this HMP.

Legislation	Description	Implication for this HMP
Native Title Act 1994	The *Native Title (New South Wales) Act 1994* was introduced to work in conjunction with the Commonwealth *Native Title Act 1993*. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.	Native title has not been determined over the subject site. There are no active native title claims over the subject site. No specific implications for this HMP.

3.2 Guidelines

Several guidelines and standards relating to the management of Aboriginal and historic cultural heritage have been used as part of the assessment process. These include:

- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010a)
- Code of Practice for the archaeological investigation of Aboriginal objects in New South Wales (DECCW 2010b)
- Guide to investigating, assessing, and reporting on Aboriginal cultural heritage in NSW (OEH 2011).

4.0 EXISTING ENVIRONMENT

The existing environment and heritage context of the Project has been subject to assessment in the following background reports prepared to support the Project's EIS:

- 290-308 Aldington Road, 59-62 and 63 Abbotts Road, Kemps Creek: Aboriginal Cultural Heritage Assessment. Report to ESR Australia, prepared by Urbis (April 2022).

4.1 Aboriginal heritage

4.1.1 Aboriginal archaeological resource

Extensive archaeological research has taken place across the Cumberland Plain, on which the study area is situated, particularly in response to development within Greater Western Sydney. Urbis (2022) undertook an Aboriginal Cultural Heritage Assessment of the study area. A pedestrian survey undertaken on 16 February 2021 by Andrew Crisp (Senior Archaeologist, Urbis), Steven Randall (Deerubbin LALC), Kevin Meredith (Deerubbin LALC) and Jack Donovan (Deerubbin LALC) identified three new Aboriginal sites (Table 7 and Figure 4).

Table 7: Aboriginal sites identified during archaeological survey

Site name	AHIMS site ID	Site description
Isolated Find 01	TBC	Proximal flake fragment (grey silcrete)
Isolated Find 02	TBC	Angular fragment (grey silcrete)
Isolated Find 03	TBC	Medial flake fragment (grey silcrete)

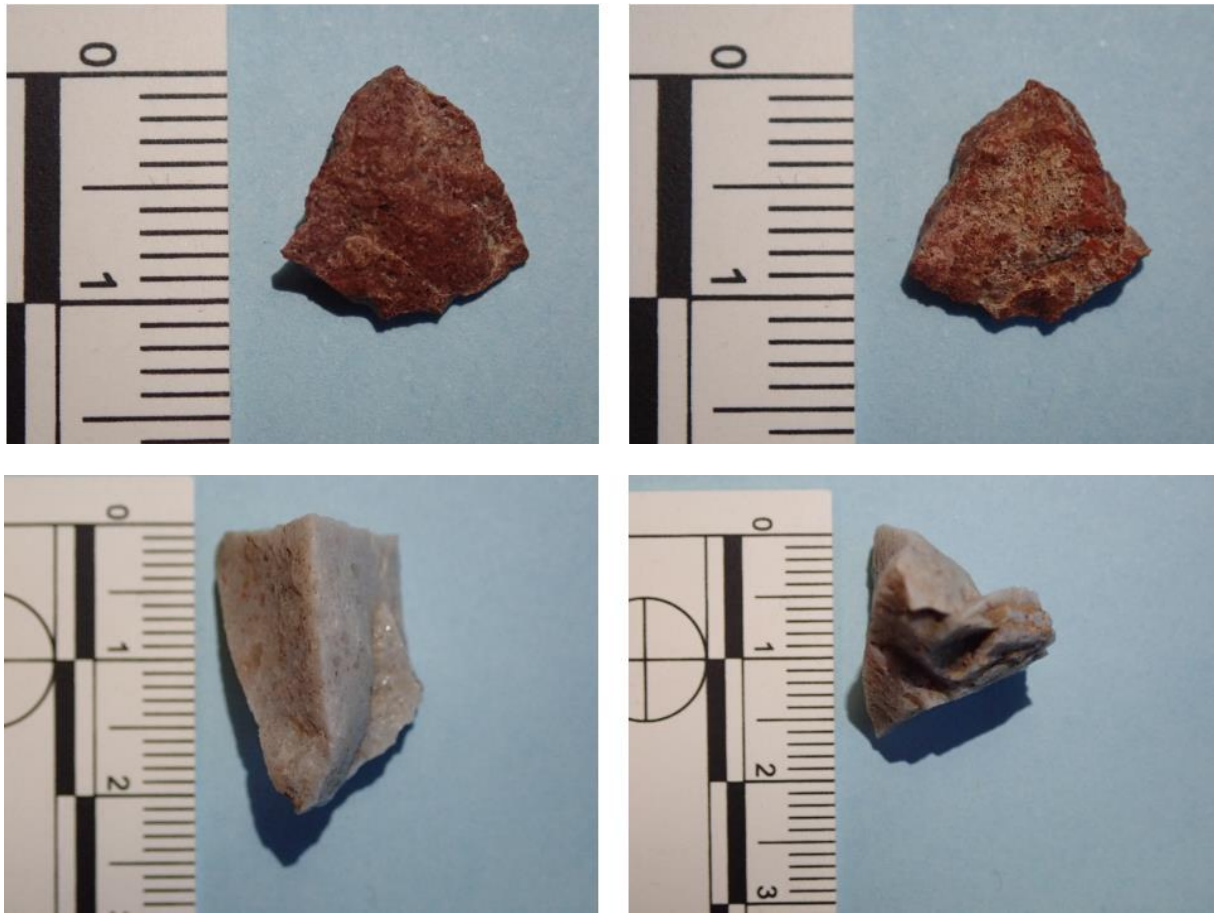
Figure 3: Location of newly identified sites in the survey undertaken by Urbis. New sites are represented by yellow stars (Urbis 2022: 53)

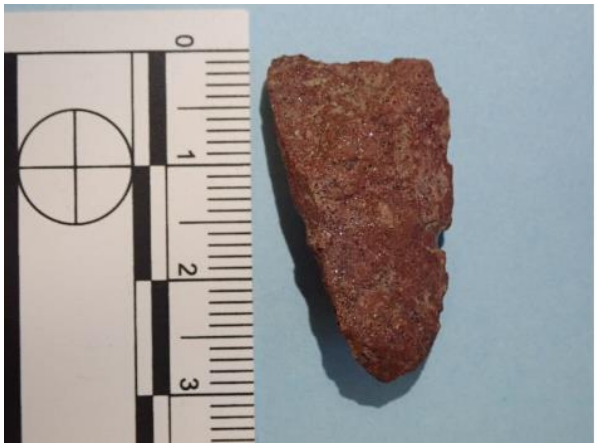
Following the survey undertaken on 16 February 2021, test excavation was conducted in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b). A ten day test excavation of the study area was undertaken over the 19th-23rd and 26th-30th of April and 3rd May 2021 and recovered 13 artefacts (Figure 4). As a result, one new site was identified, Aldington Road Subsurface Assemblage (Table 8).

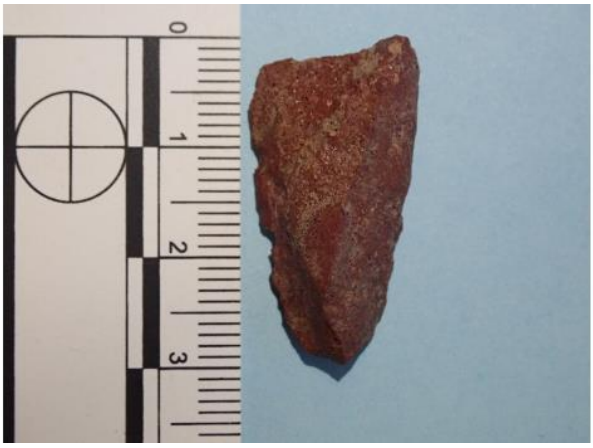
Table 8: Aboriginal sites identified during test excavation

Site name	AHIMS site ID	Site description
Aldington Road Subsurface Assemblage	TBC	Low density assemblage with artefacts present across lower hill slope, terrace, crest and spur landforms reflective of small and temporary occupation across the study area.

Figure 4: Artefacts recovered during test excavation. Top: complete silcrete flake. Middle: Angular quartzite fragment. Bottom: Complete silcrete tool. (Urbis 2022)







5.0 IMPACTS AND RISKS

5.1 Aboriginal archaeological impact assessment

Four Aboriginal archaeological sites have been identified in the study area, consisting of three isolated finds (Isolated Find 01 [AHIMS ID pending]), Isolated Find 02 [AHIMS ID pending], Isolated Find 03 [AHIMS ID pending] and a low-density sub-surface assemblage (Aldington Road Subsurface Assemblage [AHIMS ID pending]).

The impact assessment carried out by Urbis identified that all four sites will be subject to direct harm which will result in the total loss of value of the sites. Impacts to Aboriginal archaeological resources during the construction and operation phase of the project are summarised below (Table 9).

Table 9: Impacts to Aboriginal archaeological resources during the construction and operation phase of the project

Site name	AHIMS site ID	Significance	Type of Harm	Degree of Harm	Consequence of harm
Isolated Find 01 (IF-1)	TBC	Low	Direct	Total	Total loss of value
Isolated Find 02 (IF-2)	TBC	Low	Direct	Total	Total loss of value
Isolated Find 03 (IF0-)	TBC	Low	Direct	Total	Total loss of value
Aldington Road Subsurface Assemblage	TBC	Low	Direct	Total	Total loss of value

The ACHAR (Urbis 2022) recommended that the impacts of the proposed works be mitigated through the following measures.

Surface Collection

Following SSDA approval and prior to construction surface collection of identified artefacts Isolated Find 01, Isolated Find 02 and Isolated Find 03 must be undertaken in accordance with the Code of Practice and with the involvement of the Registered Aboriginal Parties.

- Isolated Find 01 (IF-1) – proximal flake fragment (grey silcrete) (33 degrees 51’33.5”S, 150 degrees 47’57.7”E)
- Isolated Find 02 (IF-2) - angular fragment (grey silcrete) (33 degrees 51’28.6”S, 150degrees 47’47.2”E)
- Isolated Find 03 (IF-3) – medial flake fragment (grey silcrete) (33 degrees 51,30”S, 150 degrees 47’47.9”E)

Repatriation or Deposition in Keeping Place

Through consultation with the RAPs a decision will be made as to the destination of the artefacts recovered during survey and test excavation. The options identified by Urbis are:

Option 1: Deerubbin LALC enters into a Care and Control agreement and the artefacts are then stored at their designated keeping place (Old Parramatta Gaol).

Option 2: Repatriation of artefacts to Country. Following construction of the proposed developments, the artefacts would be reburied within the study area and registered on AHIMS.

Option 3: Designation of alternative keeping place such as a local museum, the Australian Museum or with another RAP group.

6.0 MANAGEMENT MEASURES

This section describes the overall approach associated with the management and mitigation of Aboriginal cultural heritage throughout the lifetime of the Project. The following management measures are based on the following Project documents:

- 290-308 Aldington Road, 59-62 Abbotts Road and 63 Abbotts Road, Kemps Creek: Aboriginal Cultural Heritage Assessment Report. Report to ESR Australia. (Urbis, April 2022).
- Final conditions of Development Consent, issued to ESR by The Department of Planning and Environment (DPE) on 21 April 2023.

6.1 Specific management measures

Four Aboriginal archaeological sites were identified in the Project study area:

- Isolated Find 01 (IF-1) (AHIMS ID pending)
- Isolated Find 02 (IF-2) (AHIMS ID pending)
- Isolated Find 03 (IF-3) (AHIMS ID pending)
- Aldington Road Subsurface Assemblage (AHIMS ID pending)

The following sections detail measures required to mitigate damage to these sites through construction of the Project, with reference to the risks identified in Section 0.

No further investigation (including further archaeological excavations) is recommended for Aldington Road Subsurface Assemblage (AHIMS ID pending).

6.1.1 Prior to commencement of works

6.1.1.1 Artefact collection

In accordance with the recommendations in the Project ACHAR (Urbis 2022) and the condition of Development Consent B79, surface collection of Isolated Find 01, Isolated Find 02 and Isolated Find 03 must be undertaken following final SSD approval and prior to construction. The location of these artefacts is shown in Figure 3. Surface collection must be undertaken in accordance with the Code of Practice and with the involvement of the Registered Aboriginal Parties. The methods of surface collection are detailed further in Appendix 2: Surface Collection Methodology.

Surface collection of Isolated Find 01, Isolated Find 02 and Isolated Find 03 is scheduled to take place prior to the commencement of construction.

6.1.1.2 Registration of Aboriginal sites on AHIMS

In accordance with the recommendations in the Project ACHAR (Urbis 2022) and the condition of Development Consent B79, the identified artefacts must be registered on the OEH's Aboriginal Heritage Information Management System (AHIMS) Aboriginal Sites Register, prior to construction. These identified sites include Isolated Find 01, Isolated Find 02, Isolated Find 03 and Aldington Road Subsurface Assemblage.

6.1.1.3 Heritage induction

In accordance with the recommendations in the Project ACHAR (Urbis 2022) and the condition of Development Consent B81, Aboriginal cultural heritage induction training must be prepared and implemented for all staff and contractors. Aboriginal knowledge holders must be involved in the

development of the induction training. The information appended to this plan should be used in the CEMP to address CoC B81.

The training must outline the obligations of staff and contractors under the *National Parks and Wildlife Act, 1974* and the conditions of Development Consent, and the requirements of the Unexpected Finds Protocol (see Appendix 3: Unexpected finds procedure). The training should also include the protocol for discovery of human remains (see Appendix 4: Human Remains Procedure) Any new staff or contractors must receive this induction training before commencing works on site and the induction training material must form part of the Construction Environment Management Plan (CEMP). The induction material may be paper-based, included in any hard-copy site management documents or electronic such as a PowerPoint presentation for face-to-face induction.

Feedback was requested from the project RAPs regarding details or processes to be incorporated into the Aboriginal cultural heritage training. A copy of the cover letter issued to RAPs with the draft ACHMP, and the responses received, are included in Appendix 5.

6.1.2 After commencement of works

6.1.2.1 Consultation

In accordance with the recommendations in the Project ACHAR (Urbis 2022) and the condition of Development Consent B80, consultation with the RAPs identified in Table 2 must continue for the duration of construction. The RAPs should be consulted to determine the appropriate management of unexpected finds on the site, and should be involved in the selection of culturally appropriate native plantings to be incorporated into the landscape design.

Ongoing consultation with RAPs should also occur as the project progresses, to ensure ongoing communication about the project and key milestones, and to ensure the consultation process does not lapse. Communications with RAPs must be conducted every 6 months to avoid a lapse in consultation.

Key points in the Project timeline may include:

- at commencement of construction;
- at mid-point of construction (or every 6 months if delayed); and
- on commencement of operation.

These updates will include general information on:

- key construction goals and timelines;
- construction methods and strategies;
- project contacts and key staff; and
- opportunities for community engagement.

A record of all correspondence with RAPs must be maintained by appropriate levels of Project management as identified in Table 10 of this report.

6.1.2.2 Unexpected finds

In accordance with the recommendations in the Project ACHAR (Urbis 2022) and the conditions of Development Consent B82 and B83, if at any time previously unidentified Aboriginal heritage items are detected, the Unexpected Finds Procedure provided in Appendix 3: Unexpected finds procedure of this document must be followed. This procedure sets out case specific procedural guidelines for recording and reporting on potential finds.

6.1.2.3 Human remains

If at any time Aboriginal ancestral remains (or any human remains) are identified, all works must cease in the vicinity of the remains and immediate surrounds (within 10m), the remains must be covered from view, secured from unauthorised trespass and NSW Police must be contacted immediately. If the remains are determined by NSW Police to be Aboriginal ancestral remains, Deerubbin LALC and Heritage NSW must be informed. The mode of exhumation and repatriation of Aboriginal ancestral remains is to be as determined by the Deerubbin LALC and by Aboriginal people with connection to local country.

If the Deerubbin LALC and Aboriginal people with connection to local country are of the opinion that study of these ancestral remains or their archaeological context is desirable then an archaeological program must be formulated for this purpose under their oversight. This may include forensic and osteological investigatory methods as deemed culturally appropriate by the Deerubbin LALC and by Aboriginal people with connection to local country.

6.2 General heritage management

6.2.1 Repatriation or deposition in keeping place

Through consultation with the RAPs a decision will be reached as to the destination of the artefacts recovered during test excavation and surface collection. The options identified by Urbis are:

Option 1: Deerubbin LALC enters into a Care and Control agreement and the artefacts are then stored at their designated keeping place (Old Parramatta Gaol).

Option 2: Repatriation of artefacts to Country. Following construction of the proposed developments, the artefacts would be reburied within the study area and registered on AHIMS.

Option 3: Designation of alternative keeping place such as a local museum, the Australian Museum or with another RAP group.

6.2.1 Changes to development footprint

If changes are made to the development footprint, further archaeological assessment will be required.

7.0 ROLES AND RESPONSIBILITIES

Responsibility for the implementation of the management measures outlined in Section 6.0 are presented in Table 9.

All personnel are responsible for ensuring heritage items are protected and managed in accordance with the current ACHMP.

Failure to report discovery or damage or destruction resulting from unauthorised removal or alteration to a site of an archaeological object may be prosecuted under the *NP&W Act* and/or *Heritage Act*.

Table 10: Summary of roles and responsibilities

Roles	Responsibilities
ESR Australia	• ACHMP adequately addresses heritage compliance. • Heritage incidents are escalated to the relevant authorities.
Project Manager	• Allocate sufficient resources for the implementation of this ACHMP. • Outcomes of the visual checks/ compliance construction monitoring/ incident reporting are systematically evaluated as part of ongoing management of construction activities.
Environmental Manager	• Oversee the overall implementation of this ACHMP including the implementation of heritage training and the creation and maintenance of heritage training records • Oversee and coordinate scheduled RAP communications • All relevant personnel have and understand the most up-to-date copy of this HMP. • Any required actions arising from the detection of unexpected heritage items or human remains are reported to the relevant personnel for further action and ensure that the actions are effectively implemented.
Site supervisors/ Site foreman/ contractors/subcontractors	• Understand and implement mitigation protocols as required in the HMP and any other required measures during construction. • Undertake relevant training to implement the requirements of this HMP. • All personnel are responsible for ensuring that heritage items to be retained are protected. • All site personnel to undertake environmental inductions which will include reference to the requirements of this Heritage Management Plan and the reporting process for unexpected finds.
Qualified heritage professional (archaeologist)	• The archaeologist will be responsible for providing advice to minimise and mitigate potential impacts to any Aboriginal or historic heritage values that may be recorded during the construction activities.

8.0 REFERENCES

Urbis 2022, 290-308 Aldington Road, 59-62 and 63 Abbotts Road, Kemps Creek Aboriginal Cultural Heritage Assessment Report. Report to ESR Australia.

Guidelines

DECCW 2010a, *Aboriginal cultural heritage consultation requirements for proponents 2010*

DECCW 2010b, *Code of Practice for the archaeological investigation of Aboriginal objects in New South Wales*

OEH 2011 *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*

APPENDIX 1: CARE AGREEMENT/REBURIAL METHODOLOGY

To be inserted if required.

APPENDIX 2: SURFACE COLLECTION METHODOLOGY

Collection of surface artefacts (Isolated Find 01, Isolated Find 02, Isolated Find 03 and any other artefacts identified on the surface within the development), will be carried out by suitably qualified archaeologist(s) and RAPs following final SSD approval and prior to construction.

The surface collection must be carried out according to the following methodology:

- The three previously identified sites (Isolated Find 01, Isolated Find 02 and Isolated Find 03 will be located using a handheld, non-differential GPS.
- Maps showing the location of the sites mapped onto a satellite image will also be carried and photographs of the sites will also be used to assist in identifying their locations.
- Grass trimmers and leaf blowers will be used as necessary to clear vegetation which impedes surface visibility.
- All Aboriginal objects retrieved during surface collection will be photographed, catalogued and placed in double re-sealable bags for further analysis and identification. Permanent marker will be used to record the name of the site and its provenance on an archival grade tag.
- Key attributes such as material, artefact type, platform type and dimensions will be recorded and entered into a Microsoft Excel table with detail linked to the provenance of each artefact.

APPENDIX 3: UNEXPECTED FINDS PROCEDURE

Examples of Aboriginal and historical artefacts are provided below.

If unanticipated archaeological items are uncovered at any time throughout the life of the project the following actions must be followed:

- Cease all activity in the vicinity of the find
- Leave the find in place and protect it from harm
- Erect a 10 m exclusion zone (temporary fencing/signage) around the find or the outer edge of the find if a larger item
- Immediately notify the Site Supervisor, proponent and Heritage NSW
- Take note of the details of the find and its location and take photographs of the find *in situ*
- Contact a heritage consultant to identify whether the item is a heritage item
- If the item is identified as a historic (non-Aboriginal) heritage item, the heritage consultant will advise whether additional investigation is required in accordance with the conditions of approval and Heritage NSW guidelines
- If the item is confirmed as an Aboriginal artefact, Heritage NSW and Deerubbin LALC must be notified directly
- Await further advice from the heritage consultant before proceeding with work in the exclusion zone. Further archaeological investigation may be required as advised by the heritage consultant prior to work proceeding in the exclusion zone. Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the *National Parks and Wildlife Act 1974*
- If the item is identified as an Aboriginal artefact/s and no further archaeological assessment is deemed necessary, the artefact/s must be added to the existing collection for storage or reburial.
- If associated with an existing registered Aboriginal site, the AHIMS site cards must be updated to reflect the new finds. Alternatively, the new finds must be registered as a new Aboriginal site on AHIMS.

Examples of Aboriginal heritage and historical archaeological remains

Aboriginal stone tools

Historical artefacts

Historical footings

Historical footings

APPENDIX 4: HUMAN REMAINS PROCEDURE

If suspected human skeletal remains are uncovered at any time throughout the life of the project the following steps should be undertaken:

- Cease all activity in the vicinity of the find
- Leave the remains in place and protect them from harm
- Notify NSW Police
- Engage a forensic anthropologist and archaeologist where required
- Notify Heritage NSW via the Environment Line 131555 to provide details of the remains and their location

Excavation activity will not recommence unless authorised in writing by Heritage NSW.

APPENDIX 5: RAP CONSULTATION LOG (URBIS 2022)

Date	Time	Type	Contacted	Contacted Individual	Contacted by	Contacted by Individual	Subject	Reply	Follow-up needed?	Person actioned	Comment
Stage 1 Agency notice											
2/11/2020	12:11pm	email	NNTT	n/a	Urbis	Aaron Oliver (AO)	Stage 1.1 Request	n/a	No	n/a	n/a
2/11/2020	7:26pm	email	Urbis	AO	NNTT	n/a	Stage 1.1 RESPONSE	No Native Title	No	n/a	n/a
6/11/2020	12:53pm	email	NTSCORP	n/a	Urbis	Andrew Crisp (AC)	Stage 1.2 Notice	n/a	No	n/a	n/a
6/11/2020	12:53pm	email	DRALRA	n/a	Urbis	AC	Stage 1.2 Notice	n/a	No	n/a	n/a
6/11/2020	12:53pm	email	DPC	n/a	Urbis	AC	Stage 1.2 Notice	n/a	No	n/a	n/a
6/11/2020	12:53pm	email	DSLGI	n/a	Urbis	AC	Stage 1.2 Notice	n/a	No	n/a	n/a
6/11/2020	12:53pm	email	Penrith Council	n/a	Urbis	AC	Stage 1.2 Notice	n/a	No	n/a	n/a
6/11/2020	12:58pm	email	DLALC	n/a	Urbis	AC	Stage 1.2 Notice	n/a	No	n/a	n/a
9/11/2020	3:07pm	email	Urbis	AC	DPC	Paul Houston	Stage 1.2 RESPONSE	n/a	No	n/a	n/a
Stage 1 RAP notice/advertisement											
4/12/2020	2:08pm	email / letter	81 potential RAPs	n/a	Urbis	AO	Stage 1.3 Notice	n/a	No	n/a	n/a
4/12/2020	2:10pm	email	Urbis	AC	DNC	Lilly Carroll	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
4/12/2020	2:19pm	email	Urbis	AO	Murra Bidgee	Ryan Johnson	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
4/12/2020	2:21pm	email	Urbis	AO	Merrigarn	Shaun Carroll	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
4/12/2020	2:22pm	email	Urbis	AO	Munagadi	Jesse Johnson	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
4/12/2020	4:45pm	email	Urbis	AC	Wawaar-Awaa		Stage 1.3 RESPONSE	n/a	No	n/a	n/a
6/12/2020	12:02pm	email	Urbis	AO	Clive Freeman	Clive Freeman	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
6/12/2020	1:51pm	email	Urbis	AC	Aragung	Jamie Eastwood	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
6/12/2020	6:45pm	email	Urbis	AC	A1	Carolyn Hickey	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
7/12/2020	2:22pm	email	Urbis	AO	KWO	Phil Kahn	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
7/12/2020	3:46pm	email	Urbis	AC	Tocomwall	Danny Franks	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
8/12/2020	8:50am	email	Urbis	AC	Goobah	Basil Smith	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
8/12/2020	10:05am	email	Urbis	AC	Biamanga	Jamaya Smith	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
8/12/2020	10:11am	email	Urbis	AC	Mormanong		Stage 1.3 RESPONSE	n/a	No	n/a	n/a
8/12/2020	10:27am	email	Urbis	AC	Cullendulla	Corey Smith	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
8/12/2020	12:08pm	email	Urbis	AC	Gunjeewong	Charlie Carroll Turrise	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
8/12/2020	12:09pm	email	Urbis	AC	Corroboree	Marilyn Carroll-Johnson	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
13/12/2020	11:20pm	email	Urbis	AC	Barking Owl	Jody Kulakowski	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
14/12/2020	8:11pm	email	Urbis	AO	Gulaga	Wendy Smith	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
18/12/2020	7:28pm	email	Urbis	AO	Wallaan	Phil Boney	Stage 1.3 RESPONSE	n/a	No	n/a	n/a
	7:25am	email	Urbis	AC	Woronora Plateau Gundangara Elders Council	Kayla Williamson	Stage 1.3 RESPONSE	n/a	No	MW	n/a
28/12/2020	4:00pm	email	Urbis	AC	Ngambaa Cultural Connection	Kaarina Slater	Stage 1.3 RESPONSE	n/a	No	MW	n/a
31/12/2020											
31/12/2020	4:17pm	email	Urbis	AC	Wurramay	Vicky Slater	Stage 1.3 RESPONSE	n/a	No	MW	n/a
4/01/2021	3:40pm	email	Urbis	AC	Bunurrbin	Lowanna Gibson	Stage 1.3 RESPONSE	n/a	No	MW	n/a
12/01/2021	10:50am	Email	Urbis	AC	Yulay Cultural Services	Ainka Iatomakli	Stage 1.3 Response	Stage 1.3 Invitation to Register	N	MW	n/a
Stage 2 and 3											
13/01/2021	11:45am	email	All RAPs	N/A	Urbis	MW	Stage 2 & 3 Letter	set to 12th Feb 2021	Y - 2 week reminder	MW	N/A
	11:55am	email	Corroboree Corp, DNC, Gunjeewong, Munagai, MurrabidgeeMullangari, James Eastwood, Clive Freeman, Tocomwall	N/A	Urbis	MW	Stage 2 & 3 Letter	set to 12th Feb 2021	Y - 2 week reminder	MW	Re-sent due to file attachment too large for inboxes
15/01/2021											
18/01/2021	9:28am	email	LALC/DPC	N/A	Urbis	MW	Stage 1.3 letter	n/a	n/a	MW	N/A
	9:42am	email	Urbis	MW	Goobah	Basil Smith	Stage 2 & 3 Letter	Read and supports, are traditional owners	n/a	MW	N/A
19/01/2021	1:11pm	email	Urbis	MW	Murramarang	Roxanne Smith	Stage 2 & 3 Letter	read and support, want to be kept informed	n/a	MW	N/A
19/01/2021											
9/02/2021	9:15am	email	Urbis	MW	MurraBidgeeMullangari	Ryan Johnson	Stage 2 & 3 Letter	Read and endorsed recommendations	n/a	MW	N/A
	2:40pm	email	Urbis	MW	Biamanga	Jamaya Smith	Stage 2 & 3 Letter	"please keep me informed on any further developments"	n/a	MW	N/A
9/02/2021											
11/02/2021	8:11pm	email	Urbis	MW	A1	Carolyn Hickey	Stage 2 & 3 letter	reviewed,supports, keep informed.	N/A	MW	N/A
Stage 4											
20/05/2021	10:57am	email	All RAPs	N/A	Urbis	AO	Stage 4 Draft ACHAR/ATR	Response deadline 17 June 2021	No	AO	n/a
		email						Thank you for your ACHA for 200- 308 Aldington Road, Kemps Creek, us Aboriginal people have walked this land for tens of thousands of years and we continue to do so today. We hold a deep connection to the land, skies and water ways. We would like to agree to your recommendations, will there be an interpretation plan for this project?, we look forward to working alongside you on this project.	No	AO	n/a
15/06/2021	12:26pm		Urbis	AO	KWO	Kadibulla Khan	Stage 4 RESPONSE				

APPENDIX 5: RAP RESPONSES TO DRAFT ACHMP

18 April 2023

Re: Westlink Industrial Estate – Stage 1 (SSD 9138102): DRAFT Aboriginal Cultural Heritage Management Sub-Plan

Good morning,

Thank you for registering as a stakeholder for the Westlink Industrial Estate – Stage 1 Project. In accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* we are contacting you regarding preparation of an Aboriginal Cultural Heritage Management Sub-Plan for the Project.

I would like to invite you to review the following document and provide any feedback you may have by **2 May 2023.**

In your response, please include feedback on the following:

- Details or processes to be incorporated into the Aboriginal cultural heritage induction training for all staff and contractors, outlined in Section 6.1.1.3
- The process for ongoing consultation, outlined in Section 6.1.2.1
- The unexpected finds procedure, outlined in Section 6.1.2.2 and Appendix 3
- The final destination of artefacts recovered during test excavation and surface collection. Options are outlined in Section 6.2.1.

If you have any questions, please do not hesitate to contact Artefact Heritage on 9518 8411, or by email at consultation@artefact.net.au.

Yours sincerely,

Nicola Jorgensen
Aboriginal Heritage Team Leader (Assistant)
Artefact Heritage Services Pty Ltd

From: Phillip Boney
Sent: Tuesday, 18 April 2023 4:41 PM
To: Aboriginal Heritage Team Consultation
Subject: Westlink Industrial Estate - Stage 1

Follow Up Flag: Follow up
Flag Status: Completed

Att: Nicola Jorgensen

Hello,

Phil Boney here. I would like to confirm that Wailwan Aboriginal Group has read ACHAR draft and would like to inform you that we support the proposed measure that will be undertaken for this project. We would like to be updated with any information regarding the project.

Regards, Phil Boney
Wailwan Aboriginal Group

Lily Hackett

From: jesse johnson
Sent: Wednesday, 26 April 2023 12:56 PM
To: Lily Hackett
Subject: Re: Westlink Industrial Estate – Stage 1 - Draft review

Hi Lily,
I have read the project information and draft ACHM plan for the above project, I agree with the recommendations.
6.1.1.3 I agree
6.1.2.1 I agree
6.1.2.2 I agree
6.2.1 I would like option 2 or option 3
Kind regards
Jesse Johnson
0418970389

On Tuesday, 18 April 2023 at 12:25:17 pm AEST, Lily Hackett <lily.hackett@artefact.net.au> wrote:

Good morning,

Thank you for registering as a stakeholder for the Westlink Industrial Estate – Stage 1 Project. In accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 we are contacting you regarding preparation of an Aboriginal Cultural Heritage Management Sub-Plan for the Project.

I would like to invite you to review the attached document and provide any feedback you may have by 2 May 2023

In your response, please include feedback on the following:

- Details or processes to be incorporated into the Aboriginal cultural heritage induction training for all staff and contractors, outlined in Section 6.1.1.3
- The process for ongoing consultation, outlined in Section 6.1.2.1
- The unexpected finds procedure, outlined in Section 6.1.2.2 and Appendix 3
- The final destination of artefacts recovered during test excavation and surface collection. Options are outlined in Section 6.2.1

If you have any questions, please do not hesitate to contact Artefact Heritage on 9518 8411, or by email at consultation@artefact.net.au.

Kind regards,

Lily Hackett

Graduate Heritage Consultant

ARTEFACT

Telephone: 61 2 9518 8411 **Mobile:**

Address: Suite 56, Jones Bay Wharf, 26-32 Pirrama Rd, Pyrmont NSW 2009

artefact

Artefact Heritage

ABN 73 144 973 526
Level 4, Building B
35 Saunders Street
Pyrmont NSW 2009
Australia

+61 2 9518 8411
office@artefact.net.au
www.artefact.net.au

Appendix L CEMP Related Conditions

Ref.	Condition	How addressed
Part A ADMINSTRATIVE CONDITIONS		
A1	In addition to meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.	This CEMP and associated Sub-Plans have been developed to prevent/minimise any material harm to the environment.
A2	The development may only be carried out: (a) In compliance with the conditions in this consent; (b) In accordance with written directions of the Planning Secretary; (c) In accordance with the EIS, RTS, ADR and additional information (d) In accordance with the Development Layout in Appendix 1, and (e) In accordance with the management and mitigation measures in Appendix 5.	This CEMP and associated Sub-Plans have been developed to comply with the CoC, written directions of the Secretary, EIS, RTS, ADR and additional information, Development Layout and management and mitigation measures outlined in Appendix 5 of the Development Consent.
A3	Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to: (a) The content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Planning Secretary; and (b) The implementation of any actions or measures contained in any such document referred to in Condition A3(a).	Section 5.8 details when revisions of the CEMP may be undertaken including upon written direction by the Planning Secretary.
A4	The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document listed in condition A2(c) or A2(e). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in condition A2(c) or A2(e), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.	Noted
A5	This consent lapses five years after the date from which it operates, unless the development has physically commenced on the land to which the consent applies before that date.	Noted

Ref.	Condition	How addressed
A7	The commencement of each of the following phases of the development must be notified to the Planning Secretary in writing, at least one month before that date, or as otherwise agreed with the Planning Secretary: (a) Construction; (b) Operation; and (c) Cessation of operation.	Noted
A8	If the construction or operation of the development is to be staged, the Planning Secretary must be notified in writing at least one month before the commencement of each stage (or other timeframe agreed with the Planning Secretary), of the date of commencement and the development to be carried out in that stage.	Noted
A9	Where conditions of this consent require consultation with an identified party, the Applicant must: (a) Consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and (b) Provide details of the consultation undertaken including: i. The outcome of that consultation, matters resolved and unresolved; and ii. Details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.	Section 2 Consultation with stakeholders during the preparation of this CEMP was not required. Where required, consultation with stakeholders has occurred and is documented in the relevant Sub-Plan.
A10	With the approval of the Planning Secretary, the Applicant may: (a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program); (b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); and (c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development).	ESR has prepared and submitted a Staging Letter to the Planning Secretary. This letter identified how the Project is to be staged, including preparing strategies and plans and identifying a program for the staged construction. The letter also identified if a strategy or plan needs to be updated, as ESR move through its proposed staging.

Ref.	Condition	How addressed
A11	If the Planning Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this consent.	This condition applies to all stages. If an update is required with subsequent stages with a consultation requirement, it will be addressed under this table at the relevant condition.
A12	If approved by the Planning Secretary, updated strategies, plans or programs supersede the previous versions of them and must be implemented in accordance with the condition that requires the strategy, plan or program.	Noted
A13	Before the commencement of construction of the development, the Applicant must: (a) Consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure; (b) Prepare a dilapidation report identifying the condition of the public infrastructure in the vicinity of the site (including roads, gutters and footpaths); and (c) Submit a copy of the dilapidation report to the Planning Secretary and Council.	Consultation with relevant owners will be undertaken and a dilapidation report will be prepared and submitted to Secretary and Council.
A14	Unless the Applicant and the applicable authority agree otherwise, the Applicant must: (a) Repair, or pay the full cost associated with repairing, any public infrastructure that is damaged by carrying out the development; and (b) Relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.	Noted
A15	All demolition must be carried out in accordance with *Australian Standard AS 2061-2001 The Demolition of Structures* (Standards Australia, 2001).	Demolition will be carried out in Stage 0 and in accordance with Standards Australia.
A17	Engineering plans are to be prepared in accordance with the development consent, Penrith City Council's *Design Guidelines for Engineering Works for Subdivisions and Developments, Engineering Construction Specification for Civil Works and* Austroads Guidelines.	Engineering plans will be prepared in accordance with required guidelines.
A18	All earthworks and retaining walls subject to this development must be contained within the site and not cause any constraint on future development of any adjoining properties, as described in the information titled 'Westlink Stage 1 (SSD-9138102) – Retaining Wall and Earthworks', prepared by ESR and dated 20 April 2023 and supporting attachments.	All earthworks and retaining walls will be contained within the site.
A23	The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.	Section 3.4

Ref.	Condition	How addressed
A25	A special infrastructure contribution must be made in accordance with the Environmental Planning and Assessment (Special Infrastructure Contribution – Western Sydney Aerotropolis) Determination 2022 (2022 Determination) as in force when this development consent takes effect. A person may not apply for a subdivision certificate or construction certificate (as the case may require, having regard to the Determination) in relation to the development unless the person provides, with the application, written evidence from the Department of Planning and Environment that the special infrastructure contribution for the development (or that part of the development for which the certificate is sought) has been made or that arrangements are in force with respect to the making of the contribution.	Noted
A26	All plant and equipment on site, or to monitor the performance of the development, must be: (a) Maintained in a proper and efficient condition; and (b) Operated in a proper and efficient manner.	Section 4.2 and Sub-Plans

Ref.	Condition	How addressed
A35	The Applicant must engage an Environmental Representative (ER) to oversee construction of the development. Unless otherwise agreed to by the Planning Secretary, construction of the development must not commence until an ER has been approved by the Planning Secretary and engaged by the Applicant. The approved ER must: (a) Be a suitably qualified and experienced person who was not involved in the preparation of the EIS, RTS, ADR, and any additional information for the development and is independent from the design and construction personnel for the development; (b) Receive and respond to communication from the Planning Secretary in relation to the environmental performance of the development; (c) Consider and inform the Planning Secretary on matters specified in terms of this consent; (d) Consider and recommend to the Applicant any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community; (e) Review the CEMP required in Condition C2 and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this consent and if so: i. Make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or ii. Make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary/ Department for information or are not required to be submitted to the Planning Secretary/Department); (f) Regularly monitor the implementation of the CEMP to ensure implementation is being carried out in accordance with the document and the terms of this consent; (g) As may be requested by the Planning Secretary, assist the Department in the resolution of community complaints; (h) As may be requested by the Planning Secretary, assist the Department in the resolution of community complaints; (i) Provide advice to the Applicant on the management and coordination of construction works on the site with adjoining sites in the Mamre Road Precinct in relation to construction traffic management, earthworks and sediment control and noise; (j) Attend the Mamre Road Precinct Working Group (see Condition A38) in a consultative role in relation to the environmental performance of the development; and (k) Prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an Environmental Representative Quarterly Report providing the information set out in the Environmental Representative Protocol under the heading 'Environmental Representative Quarterly Reports'. The Environmental Representative Quarterly Report must be submitted within seven calendar days following the end of each quarter for the duration of the ER's engagement for the development, or as otherwise agreed with the Planning Secretary.	Section 3.2 and Section 1.2.3
A36	The Applicant must provide the ER with all documentation requested by the ER in order for the ER to perform their functions specified in condition A35 (including preparation of the ER monthly report), as well as: (a) The complaints register (to be provided on a daily basis); and (b) A copy of any assessment carried out by the Applicant of whether proposed work is consistent with the consent (which must be provided to the ER before the commencement of the subject work).	Section 2.2and Section 3.2

Ref.	Condition	How addressed
A37	The Planning Secretary may at any time commission an audit of an ER's exercise of its functions under condition A35. The Applicant must: (a) Facilitate and assist the Planning Secretary in any such audit; and (b) Make it term of their engagement of an ER that the ER facilitate and assist the Planning Secretary in any such audit.	Section 3.2
A38	Within three months of the commencement of construction of the development and until all components of the development are constructed and operational, the Applicant must establish and participate in a working group, or join and participate in an existing working group, with relevant consent holders in the MRP, to the satisfaction of the Planning Secretary. The purpose of the working group is to consult and coordinate construction works within the MRP to assist with managing and mitigating potential cumulative environmental impacts. The working group must: (a) Comprise at lease one representative of the Applicant, the Applicant's ER and relevant consent holders in the MRP; (b) Meet periodically throughout the year to discuss, formulate and implement measures or strategies to improve monitoring, coordination of the approved industrial developments in the MRP; (c) Regularly inform Council, TfNSW, Sydney Water and the Planning Secretary of the outcomes of these meetings and actions to be undertaken by the working group; (d) Review the performance of approved industrial developments in the MRP and identify trends in the data with respect to cumulative construction traffic, erosion and sediment control, noise, stormwater management, and waterway health objectives under the MRP DCP; (e) Review community concerns or complaints with respect to environmental management; (f) Identify interim traffic safety measures to manage construction traffic and how these measures will be coordinated, communicated, funded and monitored in the MRP; and (g) Provide the Planning Secretary with an update and strategies, if a review under subclause (d) and (e) identifies additional measures and processes are required to be implemented by the working group.	Section 3.1 and Section 3.2
A39	Three months prior to the completion of construction of all components of the development, the Applicant is eligible to exit the working group required under condition A38. The Applicant must: (a) Consult with the Planning Secretary (b) provide confirmation that all components of the development are operational; and (c) advise on the date of the proposed exit.	Section 3.2
A40	Reference in the conditions of this consent to any guideline, protocol, Australian Standards or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this consent.	Section 3.3
A41	However, consistent with the conditions in this consent and without altering any limits or criteria in this consent, the Planning Secretary may, when issuing directions under this consent in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.	Section 5.8

Ref.	Condition	How addressed
AN1	All licences, permits, approvals and consents as required by law must be obtained and maintained as required for the development. No condition of this consent removes any obligation to obtain, renew or comply with such licences, permits, approvals and consents.	Section 3.3.3
PART B SPECIFIC ENVIRONMENTAL CONDITIONS		
B1	Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan for the development to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by condition C2 and must: (a) be prepared by a suitably qualified and experienced person(s); (b) be prepared in consultation with Council and TfNSW; (c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction works to: i. ensure access to the site and road safety and network efficiency is maintained; ii. manage cumulative construction traffic from other concurrent construction works within the Mamre Road Precinct; iii. address the necessary interim traffic safety controls and management measures, including consideration of any traffic control measures required to manage traffic entering Mamre Road in the period before Mamre Road/Abbotts Road intersection construciton is complete; (d) detail heavy vehicle routes, access and parking arrangements; (e) include a Driver Code of Conduct to: i. minimise the impacts of earthworks and construction on the local and regional road network; ii. minimise conflicts with other road users; iii. minimise road traffic noise; and iv. ensure truck drivers use specified routes, including entering and exiting Mamre Road via Abbotts Road and not Bakers Lane. (f) include a program to monitor the effectiveness of these measures; and (g) if necessary, detail the procedures for notifying residents and the community (including local schools), of any potential disruptions to routes.	CTMP
B2	The Applicant must: (a) not commence construction until the Construction Traffic Management Plan required by Condition B1 is approved by the Planning Secretary; and (b) implement the most recent version of the Construction Traffic Management Plan approved by the Planning Secretary for the duration of construction.	CTMP

Ref.	Condition	How addressed
B5	Prior to the commencement of construction works for the Mamre Road/Abbotts Road intersection works and signalised intersection of Abbotts Road and Aldington Road, the Applicant must enter into a Works Authorisation Deed with TfNSW. TfNSW fees for administration, plan checking, civil works inspections and project management shall be paid by the Applicant prior to the commencement of works.	CTMP
B6	Prior to the commencement of construction of signalised intersection road works, the proposed Traffic Control Signal/s at the intersection of Mamre Road/Abbotts Road and Aldington and Abbotts Road must be designed to meet TfNSW requirements. The Traffic Control Signal (TCS) plans shall be drawn by a suitably qualified person and endorsed by a suitably qualified practitioner. The submitted design shall be in accordance with Austroads Guide to Road Design in association with relevant TfNSW supplements (available on www.transport.nsw.gov.au). The certified copies of the TCS design and civil design plans shall be submitted to TfNSW for consideration and approval prior to the release of a Construction Certificate and commencement of signalised intersection road works. Please send all documentation to development.sydney@transport.nsw.gov.au.	CTMP
B13	Prior to the commencement of any stage of road construction, detailed design plans showing the provision of passively irrigated street trees within the relevant stage of works must be submitted to the satisfaction of the relevant road authority. The plans must be: (a) prepared in consultation with Council; and (b) demonstrate compliance with the Sydney Water Stormwater Scheme Infrastructure Design Guideline and MRP DCP.	Not relevant to Stage 0. The condition will be satisfied prior to Stage 1D.

Ref.	Condition	How addressed
B17	The Applicant must ensure: (a) internal roads, driveways, and parking (including grades, turn paths, sight distance requirements, aisle widths, aisle lengths, and parking bay dimensions) associated with the development are constructed and maintained in accordance with the latest version of AS2890.1:2004 Parking facilities Off-street car parking (Standards Australia 2004), AS 2890.2:2018 Parking facilities Off-street Commercial Vehicle Facilities (Standards Australia, 2018) and AS 2890.6:2009 Parking facilities Off-street parking for people with disabilities (Standards Australia, 2009). (b) the swept path of the longest vehicle entering and exiting the site, as well as manoeuvrability through the site, is in accordance with the relevant AUSTROADS guidelines; (c) the development does not result in any vehicles queuing on the public road network; (d) heavy vehicles and bins associated with the development are not parked on local roads or footpaths in the vicinity of the site; (e) all vehicles are wholly contained on site before being required to stop; (f) all loading and unloading of materials is carried out on-site; (g) all trucks entering or leaving the site with loads have their loads covered and do not track dirt onto the public road network; (h) the proposed turning areas in the car park are kept clear of any obstacles, including parked cars, at all times; (i) all vehicles accessing and departing the site from/to Mamre Road must travel via Abbotts Road and not Bakers Lane, until the completion of the ultimate upgrade of Aldington Road and delivery of the Southern Link Road or otherwise agreed in writing by Secretary, Council and TfNSW; (j) use of 30m PBS Level on local roads will require approval from the National Heavy Vehicle Regulator (NHVR) and Council's Asset section.	CTMP
B20	The Applicant must: (a) ensure that only VENM, ENM, or other material approved in writing by EPA is brought onto the site; (b) keep accurate records of the volume and type of fill to be used; and (c) make these records available to the Planning Secretary upon request.	Construction Soil and Water Management Plan (EIS)

Ref.	Condition	How addressed
B21	Prior to the commencement of earthworks for the development, the Applicant must design and detail the erosion and sediment control measures for the site to ensure the construction phase IWCM controls in the MRP DCP are achieved. Detailed Erosion and Sediment Control Plans (ESCP) and drawings must: (a) be prepared by a Chartered Professional Erosion and Sediment Control (CPESC) specialist; (b) be prepared in accordance with *Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book* (Landcom 2004) and with the WSUD design principles set out in the *Technical Guidance for achieving Wianamatta South Creek Stormwater Management Targets* (Technical Guidance) (NSW Government 2022); (c) include: i. each major phase of construction work including catchment plans and calculations and sizing for all major drainage and sediment control for each phase; ii. the type of sediment basin, details of all functional components and calculations demonstrating compliance with the DCP; (d) demonstrate the construction approach and timing to ensure the construction phase stormwater quality targets can be met; and (e) detail measures to manage external catchment flows and dispersive soils; (f) detail measures to protect passively irrigated street trees during construction works, if these are installed before construction is completed; (g) be included in the CEMP required by Condition C2.	Erosion and Sediment Control Plan
B22	The Applicant must: a) not commence earthworks until the Erosion and Sediment Control Plan required by condition B21 is approved by the Planning Secretary; and b) implement the most recent version of the Erosion and Sediment Control Plan approved by the Planning Secretary for the duration of earthworks and construction.	Erosion and Sediment Control Plan
B23	The Applicant must ensure delivery and operation of all construction phase erosion and sediment controls on the site is supervised and certified by a CPESC. Monthly audits are to be completed by CPESC and kept on record for the duration of the construction and an additional 12 months following completion of construction works.	Section 5.7 Erosion and Sediment Control Plan
B24	The development must comply with section 120 of the POEO Act, which prohibits the pollution of waters, except as expressly provided for in an EPL.	Construction Soil and Water Management Plan (EIS)

Ref.	Condition	How addressed
B25	Within two months of the date of this consent, the Applicant must design the stormwater management system to the satisfaction of the Planning Secretary. The stormwater management system design must: (a) be prepared in consultation with the Environment & Heritage Group, Sydney Water and Council; (b) be prepared and certified by a suitably qualified chartered professional engineer with experience in modelling, design and supervision of WSUD systems, whose appointment has been endorsed by the Planning Secretary; (c) be consistent with the plan shown on Figure 2 in Appendix 1 and the updated Stormwater Management Plan required by Condition B30; (d) include all private, Council and trunk drainage infrastructure within the site including connections to adjacent landholdings (e) be designed in accordance with the Technical Guidance for Achieving Wianamatta South Creek Stormwater Management Targets (Technical Guidance) (NSW Government, 2022) and detail how: i. the requirements and objectives of the IWCM controls of the DCP will be achieved; ii. the waterway health objectives and targets set out in the Technical Guidance will be achieved; iii. levels are resolved to demonstrate the system functions effectively; iv. the development will ultimately connect to the MRP Stormwater Scheme and interim measures to meet the waterway health objectives and targets will be decommissioned; v. all stormwater management devices will contain an impermeable liner and all naturalised trunk drainage (or other open drainage) is either lined with an impermeable liner, or ameliorated (i.e., gypsum), and compacted to a suitable depth and topsoiled (AS44119) to limit infiltration to soils (f) demonstrate the on-site stormwater detention design is free draining; (g) demonstrate maintenance access driveways to water storage or bio-retention basins are designed in accordance with Council's specifications; (h) demonstrate that sufficient land is reserved on site for stormwater management purposes (such as irrigation areas and undeveloped areas) as shown on Figure 2 in Appendix 1, to ensure the development meets the controls in the DCP and the waterway health targets in the Technical Guidance, unless an alternative stormwater management strategy has been approved by the Planning Secretary (i) include civil design drawings that define the design for the WSUD systems in accordance with the Technical Guidance and the requirements of Sydney Water and Council; (j) include landscape drawings that include planting and hardscape details of the WSUD systems; and (k) include certification (and appropriate designed checklists) of the civil and landscape drawings by suitably qualified chartered professional engineer with experience in modelling, design and supervision of WSUD systems that the design drawings comply with the Technical Guide requirements and the stormwater targets are achieved; and (l) include evidence that the design and mix of WSUD infrastructure has considered ongoing operation and maintenance, including a detailed lifecycle cost assessment (including capital, operation / maintenance and renewal costs over 30 years).	Not relevant to Stage 0. Stage 1 to follow this condition. Stormwater Management Plan will be developed as per this condition.

Ref.	Condition	How addressed
B26	The Applicant must: (a) not commence construction of the stormwater management system until the design required by Condition B25 is approved by the Planning Secretary; (b) ensure construction of the stormwater management system is supervised and certified by a suitably qualified chartered professional engineer with experience in modelling, design and supervision of WSUD systems; and (c) implement the stormwater management system approved by the Planning Secretary prior to the commencement of operation of the first warehouse building.	Not relevant to Stage 0. Stage 1 to follow this condition. Stormwater Management Plan will be developed as per this condition.
B27	The Applicant must not carry out earthworks or construction, other than those works approved under this consent, on land shown as 'undeveloped land' on Figure 2 in Appendix 1 (including Lots 3 and 4 on DP 250002) unless the site is connected to the Stormwater Scheme or an alternative Stormwater Management System for the site has been approved by the Planning Secretary.	Section 1.2
B28	Within two months of the date of this consent, the Applicant must design the trunk drainage infrastructure on the site, to the satisfaction of the Planning Secretary. The trunk drainage infrastructure must: (a) be designed in consultation with the Regional Stormwater Authority (Sydney Water); (b) be integrated into the Stormwater Management System required under Condition B25; (c) be designed in accordance with the Mamre Road *Stormwater Scheme Plan and Sydney Water's Stormwater Scheme Infrastructure Design Guidelines (draft) 2022*, or its latest version, unless otherwise agreed with the Regional Stormwater Authority; (d) be designed so that the naturalised trunk drainage channel is used to carry all overland flows greater than the 5% AEP piped drainage capacity where the catchment upstream of the commencement of the trunk drainage exceeds 15 ha or where overland flows are unsafe to pedestrians and vehicles; (e) be modelled with demonstration of flow modelling using either XP-Rafts (Laurenson's Method) or DRAINS (ILSAX or Laurenson's Methods) with full catchment diagrams – discretised to accurately show development catchments and external catchments. Input data sets shall be fully described and can be provided in spreadsheet form. (f) include access for management and maintenance by the Regional Stormwater Authority as per the Stormwater Scheme Infrastructure Design Guideline (draft) 2022, including provision of an easement in accordance with Condition B32; (g) include appropriate connections from the trunk drainage channel on site to the existing downstream flow paths, until such time as the trunk drainage channel downstream of the site is constructed; (h) ensure any piped infrastructure that intersects or connects into the trunk drainage channel on the site is designed to accommodate the trunk drainage channel design; and (i) include landscape drawings with planting details.	Not relevant to Stage 0. This condition is proposed to be staged when earthworks is to occur for the trunk drainage corridor at Stage 1E. The reason is to enable works to commence on the broader site that will not affect the design and construction of the trunk drainage.

Ref.	Condition	How addressed
B29	The Applicant must: (a) not commence construction of the trunk drainage infrastructure until the design required by Condition B28 is approved by the Planning Secretary; (b) ensure construction of the trunk drainage infrastructure is supervised and certified by a suitably qualified chartered professional engineer with experience in modelling, design, and supervision of WSUD systems; and (c) implement the trunk drainage infrastructure approved by the Planning Secretary prior to the commencement of operation of first warehouse building.	Not relevant to Stage 0. Construction of Stage 1E will not commence until trunk drainage design is agreed as per Condition B28.
B30	Within four months of the date of this consent, the Applicant must prepare a separate Water and Stormwater Management Plan (WSMP) to the satisfaction of the Planning Secretary. The WSMP must: (a) be prepared by a suitably qualified chartered professional engineer with experience in modelling, design and supervision of WSUD systems, whose appointment has been endorsed by the Planning Secretary; (b) comply with the requirements of the Technical Guidance; (c) be consistent with the plan shown on Figure 2 in Appendix 1; (d) be prepared in consultation with the Environment & Heritage Group, Sydney Water, Council and the Department; (e) describe the baseline soil, surface water and groundwater conditions at the site; (f) define how the development will comply with the stormwater targets, including connection to the regional scheme; (g) include MUSIC modelling for each stage of the development in accordance with the Technical Guidance; (h) detail triggers for a review of the plan, including but not limited to, provide catchments plans, tables and all stormwater management details as per the Technical Guidance; (i) ensure; i. proprietary devices are located on private land and only include including sediment and nutrient removal if certified under SQIDEP; ii. ensure external catchments are drained to trunk drainage; iii. ensure all catchment areas are accounted for in the MUSIC modelling and post processing tool and there are no inconsistencies; iv. the strategy and stormwater elements are consistent with the design drawings required by Conditions B25 to B27 (including the detailed drawings in appendices to the report); (j) include a protocol for investigation of any non-compliances of the stormwater management system with the IWCM controls in the MRP DCP the waterway health objectives and targets in the Technical Guidance; (k) detail the contingency measures that would be implemented should issues arise; (l) include a Maintenance Plan for the WSUD measures; and (m) detail triggers for a review of the plan, including, but not limited to a review of the plan within 6 months of the Stormwater Scheme being available for the site to connect to.	Stormwater Management Plan will be developed as per this condition.

Ref.	Condition	How addressed
B36	Prior to commencement of construction of the development, the Applicant must prepare a Dam Decommissioning Strategy to the satisfaction of the Planning Secretary. The Dam Decommissioning Strategy must form part of the CEMP required by Condition C2. The Applicant must implement the most recent version of the Dam Decommissioning Strategy for the duration of construction.	DDS
B38	Within six months of the date of this consent, the Applicant must prepare a Landscape Management Plan to manage the revegetation and landscaping works on-site, to the satisfaction of the Planning Secretary. The plan must:: (a) detail the species to be planted on-site that: a. are consistent with the plant list of Appendix C of the Mamre Road Precinct Development Control Plan; and b. are suitable in relation to wildlife management in proximity to the Western Sydney Airport. (b) ensure planting including large trees with sufficient deep soil is provided in areas between retaining wall tiers and between retaining walls and the northern property boundary on Lot 1 (as shown in the landscape plans titled *Kemps Creek Logistics Park SSDA Report Landscape Concept Plan,* prepared by Site Image and dated 14 February 2023); (c) ensure adequate planting is implemented to provide screening between the basin and retaining wall on Lot 4 (as shown in the landscape plans titled *Kemps Creek Logistics Park SSDA Report Landscape Concept Plan,* prepared by Site Image and dated 14 February 2023); (d) demonstrate that the minimum tree canopy targets are achieved in accordance with MRP DCP; and (e) describe the monitoring and maintenance measures to manage revegetation and landscaping works, including the southern boundary landscaping.	Landscape management plan for retaining wall landscape to be complete for Stage 1.
B41	Prior to the commencement of retaining wall construction, the Applicant must submit details of retaining wall materials fronting the public domain demonstrating suitable visual presentation, particularly treatment of higher fill walls visible from the public domain, to the satisfaction of the Planning Secretary.	This condition will be addressed in Stage 1.
B42	All structures (foot, batter, tie backs/in and drainage) associated with retaining walls must be within private property and not within the public road reserve and not within any zone of influence.	This condition will be addressed in Stage 1.
B47	The Applicant must comply with the hours detailed in Table 2 unless otherwise agreed in writing by the Planning Secretary. ***Table 2*** *Hours of Work* **Activity** / **Day** / **Time** Earthworks and construction / Monday – Friday Saturday / 7 am to 6 pm 8 am to 1 pm Operation / Monday – Sunday / 24 hours	Section 1.2.2

Ref.	Condition	How addressed
B48	Works outside of the hours identified in condition B43 may be undertaken in the following circumstances: (a) works that are inaudible at the nearest sensitive receivers; (b) works agreed to in writing by the Planning Secretary; (c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or (d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.	Section 1.2.2
B49	The development must be constructed to achieve the construction noise management levels detailed in the *Interim Construction Noise Guideline* (DECC 2009) (as may be updated or replaced from time to time). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures in Appendix 5.	CNVMP
B50	The Applicant must prepare a Construction Noise and Vibration Management Plan for the development to the satisfaction of the Planning Secretary. The Plan must form part of a CEMP in accordance with condition C2 and must: (a) be prepared by a suitably qualified and experienced noise expert(s); (b) be prepared in consultation with owners of adjoining residential properties (including those still occupied for residential use in the MRP), include evidence of this consultation and detail how the plan has responded to any issues raised during consultation; (c) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009) (as may be updated or replaced from time to time); (d) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers; (e) include strategies that have been developed with the community for managing high noise generating works; and (f) include a complaints management system that would be implemented for the duration of the development.	CNVMP
B51	The Applicant must: (a) not commence earthworks until the Construction Noise and Vibration Management Plan required by Condition B50 is approved by the Planning Secretary; (b) implement the most recent version of the Construction Noise and Vibration Management Plan approved by the Planning Secretary for the duration of construction.	CNVMP

Ref.	Condition	How addressed
B54	Within three months of the commencement of earthworks for the development, the Applicant must prepare and submit a Design Noise Verification Report for the development to the satisfaction of the Planning Secretary. The Applicant must not commence construction of any warehouse buildings until the Design Noise Verification Report is approved by the Planning Secretary. The Design Noise Verification Report must: be prepared by a suitably qualified, experienced and independent acoustic consultant whose appointment has been endorsed by the Planning Secretary: (a) be prepared by a suitably qualified, experienced and independent acoustic consultant whose appointment has been endorsed by the Planning Secretary; (b) identify and justify the design noise emission scenario, including the adopted engineering safety factor, schedule of all noise generating sources on the site (including but not limited to, all vehicle types, mechanical plant and waste areas), stationary equipment specification and verifiable data of dynamic noise emission activities; (c) demonstrate the noise propagation modelling is capable of accurately predicting noise levels under noise enhancing meteorological conditions to surrounding receivers in Mount Vernon and Luddenham; (d) provide updated noise modelling to verify the predicted performance of the development and the predicted noise levels identified in the report *titled ESR Westlink Stage 1, Kemps Creek, NSW, Noise and Vibration Impact Assessment*, prepared by RWDI, dated 6 October 2022; (e) develop an Operational Noise Monitoring Plan in accordance with Section 7 of the Noise Policy for Industry to verify the operational performance of the development, including details of the nominated intermediate monitoring locations, reference noise levels at each intermediate location, and noise level relationship between each intermediate location and sensitive receivers identified in condition B52; (f) include: i. an analysis of compliance with noise limits specified in conditions B52 and B53; ii. an outline of at-source and transmission path mitigation measures required to ensure compliance with the limits specified in conditions B52 and B53; iii. a description of contingency measures (including specific measures to manage noise generating activities during the night time period) in the event management actions are not effective at reducing noise levels to comply with limits specified in conditions B52 and B53.	Design Noise Verification Report to be prepared.
B55	Should the Design Verification Report identify that the noise limits specified in Condition B52 and B53 cannot be achieved through the mitigation measures and contingency measures required to be considered under Condition B54, the Applicant must: (a) offer to enter into noise agreement(s) with eligible receivers outside of the Mamre Road Precinct where noise limits are assessed to be exceeded (b) provide written evidence to the Planning Secretary that an agreement is in place with these receivers.	CNVMP Design Noise Verification Report to be prepared.
B60	Prior to the commencement of construction of the development, the Applicant must prepare a Driver Code of Conduct and induction training for the development to minimise road traffic noise. The Applicant must update the Driver Code of Conduct and induction training for construction and operation and must implement the Code of Conduct for the life of the development.	CNVMP Drivers' Code of Conduct in CTMP

Ref.	Condition	How addressed
B61	Vibration caused by construction at any residence or structure outside the site must be limited to: (a) for structural damage, the latest version of *DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures* (German Institute for Standardisation, 1999); and (b) for human exposure, the acceptable vibration values set out in the *Environmental Noise Management Assessing Vibration: a technical guideline* (DEC 2006) (as may be updated or replaced from time to time).	CNVMP
B62	Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in Condition B61.	CNVMP
B63	The limits in Conditions B61 and B62 apply unless otherwise outlined in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by Condition C2 of this consent.	CNVMP
B64	Prior to the commencement of earthworks, the Applicant must offer and prepare (if the offer is accepted) a preconstruction dilapidation report for adjoining properties that may be affected by proposed earthworks (including Lot 2 DP 250002, Lots 141 and 142 DP 1033686, Lot 15 DP 253503 and Lot 4132 DP 857093). The report must be submitted to the Planning Secretary and the relevant property owner(s) prior to construction works commencing on the site.	Section 5.7
B66	Prior to the commencement of earthworks, the Applicant must undertake further soil sampling in areas on the site that were inaccessible during the Detailed Site Investigation prepared by Alliance dated 1 December 2021, to further refine the nature and extent of contamination on the site. The supplementary site investigation must: (a) be prepared by a suitably qualified and experienced consultant certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) of the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme; (b) be prepared in accordance with the relevant guidelines produce or approved under the *Contaminated Land Management Act 1997;* (c) define the nature and extent of contamination in areas not previously accessible for sampling; and (d) include an updated Remedial Action Plan that describes the preferred remediation approach to make the site suitable for the intended industrial land use and details the need for any long term management following completion of remediation.	Further soil sampling to be undertaken and Remedial Action Plan will be updated and implemented.
B67	The Applicant must remediate the site in accordance with the Remedial Action Plan approved under Condition B66 and relevant guidelines produced or approved under the Contaminated Land Management Act 1997. Remediation works must be undertaken by a suitably qualified and experienced consultant(s) and must be completed prior to the commencement of earthworks.	Remedial Action Plan will be updated and implemented.

Ref.	Condition	How addressed
B68	Within one month of completion of the remediation works for the development, the Applicant must submit a Remediation Validation Report (RVR) to the satisfaction of the Planning Secretary which has been prepared, or reviewed and approved, by a consultant 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 (CPPS CSAM) scheme. The validation report shall demonstrate: (a) the site is suitable for its intended industrial land use, or (b) the site is suitable for its intended industrial land use with the implementation of an environmental management plan or long term environmental management plan.	Remediation Validation Report will be prepared following completion of remediation works.
B69	The Applicant must ensure that any asbestos encountered during the remediation works for the development is monitored, handled, transported and disposed of by appropriately qualified and licensed contractors in accordance with the requirements of SafeWork NSW and relevant guidelines, including: (a) *Work Health and Safety Regulation 2017;* (b) SafeWork NSW Code of Practice - How to Manage and Control Asbestos in the Workplace September 2016; (c) SafeWork NSW Code of Practice - How to Safely Remove Asbestos September 2016; and (d) *Protection of the Environment Operations (Waste) Regulation 2014).*	Remedial Action Plan will be updated and implemented.
B70	Prior to the commencement of earthworks, the Applicant must prepare an unexpected contamination finds procedure to ensure that potentially contaminated material is appropriately managed. The procedure must form part of the CEMP in accordance with condition C2 and must ensure any material identified as contaminated is disposed of in accordance with the POEO Act and its associated regulations. Details of the final disposal location and the results of any associated testing must be submitted to the Planning Secretary prior to removal of the contaminated material from the site.	Section 4.3 CUFP
B72	The Applicant must ensure the entire site, including landscaping, is managed as an inner protection area (IPA) in accordance with *Planning for Bushfire Protection 2019*.	Landscape Management Plan
B74	The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.	CAQMP
B75	During construction, the Applicant must ensure that: (a) exposed surfaces and stockpiles are suppressed by regular watering; (b) all trucks entering or leaving the site with loads have their loads covered; (c) trucks associated with the development do not track dirt onto the public road network; (d) public roads used by these trucks are kept clean; and (e) land stabilisation works are carried out progressively on site to minimise exposed surfaces.	CAQMP

Ref.	Condition	How addressed
B76	Prior to the commencement of earthworks, the Applicant must prepare a Construction Air Quality Management Plan (CAQMP) to the satisfaction of the Planning Secretary. The CAQMP must form part of the CEMP required by Condition C2 and must: (a) be prepared by a suitably qualified and experienced person(s); (b) be prepared in consultation with owners of adjoining residential properties (including those still occupied for residential use in the MRP), include evidence of this consultation, details of any issues raised and how the plan has responded to any issues raised during consultation; (c) detail and rank all emissions from all sources during construction of the development, including particulate emissions; (d) describe a program that is capable of evaluating the performance of the construction and determining compliance with key criteria, including installation of dust deposition gauges at neighbouring existing residences (where agreed by the landowner) or on the site boundary; (e) identify the control measures that will be implemented for each emission source; and (f) nominate the following for each of the proposed controls: i. key performance indicator; ii. monitoring method; and iii. location, frequency and duration of monitoring; (g) outline procedures that will be implemented in relation to: i. record keeping; ii. reporting to the Environmental Representative required under Condition A35; iii. complaints register; iv. response procedures; and v. compliance monitoring; (h) detail contingency measures to be implemented to reduce any exceedances of relevant performance indicators or criteria and include a timetable for implementation.	CAQMP
B77	The Applicant must: (a) not commence earthworks until the CAQMP required by Condition B76 is approved by the Planning Secretary; and (b) implement the most recent version of the CAQMP approved by the Planning Secretary for the duration of construction; and (c) offer to enter into an agreement with a neighbouring landowner, that may involve at-property treatment, if a complaint is received from that landowner and a non-compliance is confirmed by dust monitoring. Evidence of any agreement must be provided to the Planning Secretary.	CAQMP
B78	The Applicant must ensure the development does not cause or permit the emission of any offensive odour (as defined in the POEO Act).	CAQMP

Ref.	Condition	How addressed
B79	Prior to the commencement of earthworks, the Applicant must undertake surface collection of the identified artefacts IF1, IF2, and IF3 as detailed in the Aboriginal Cultural Heritage Assessment Report prepared by Urbis and dated 12 April 2022. The identified artefacts must be registered on the OEH's Aboriginal Heritage Information Management System (AHIMS) Aboriginal Sites Register, prior to construction.	ACHMP
B80	The Applicant must continue to consult with Registered Aboriginal Parties (RAPs) for the duration of construction. The RAPs should be consulted to determine the appropriate management of unexpected finds on the site.	ACHMP
B81	Prior to the commencement of earthworks, the Applicant must prepare and implement Aboriginal cultural heritage induction training for all staff and contractors. The Applicant must involve Aboriginal knowledge holders in the development of the induction training. The training must outline the obligations of staff and contractors under the National Parks and Wildlife Act, 1974 and the conditions of this consent. The Applicant must ensure any new staff or contractors receive the induction training prior to commencing works on the site. The induction training material must form part of the CEMP required by condition C2.	Section 3.4 Site Induction Training Materia
B82	If any item or object of Aboriginal heritage significance is identified on site: (a) all work in the immediate vicinity of the suspected Aboriginal item or object must cease immediately; (b) a 10m wide buffer area around the suspected item or object must be cordoned off; and (c) Heritage NSW must be contacted immediately.	ACHMP Site Induction Training Material
B83	Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the *National Parks and Wildlife Act 1974.*	ACHMP Site Induction Training Material
B84	If any non-Aboriginal archaeological relics are uncovered during any works being carried out for the development: (a) all work in the immediate vicinity of the suspected relic(s) must cease immediately; (b) Heritage NSW must be contacted immediately; and (c) the suspected relic(s) must be evaluated, recorded and, if necessary, excavated by a suitably qualified and experienced expert in accordance with the requirement of Heritage NSW.	ACHMP Site Induction Training Material
B85	Work in the immediate vicinity of any suspected non-Aboriginal archaeological relic(s) must not recommence until this has been authorised by Heritage NSW.	ACHMP Site Induction Training Material
B86	Prior to, and during, construction works the Applicant must implement the mitigation measures recommended in Section 2.2.5 of the Biodiversity Development Assessment Report prepared by Ecological Australia Pty Ltd, dated 14 April 2022.	WMP
B87	Prior to the commencement of construction, a Wildlife Management Plan must be prepared in accordance with Section 6.2 of the *Westlink Industrial Estate Wildlife Management Assessment Report* prepared by EcoLogical Australia Pty Ltd dated 14 April 2022, and be submitted to the Planning Secretary.	WMP

Ref.	Condition	How addressed
B88	The Wildlife Management Plan must form part of the CEMP required by Condition C2 and the Applicant must implement the Wildlife Management Plan for the duration of construction and operation.	WMP
B89	The quantities of dangerous goods stored and handled at the site must be below the threshold quantities listed in the Department's *Hazardous and Offensive Development Application Guidelines - Applying SEPP 33* at all times.	Section 4.2
B90	The Applicant must store all chemicals, fuels and oils used on-site in appropriately bunded areas in accordance with the requirements of all relevant Australian Standards, and/or EPA's *Storing and Handling of Liquids: Environmental Protection - Participants Manual* (Department of Environment and Climate Change, 2007).	Section 4.2
B91	Prior to the commencement of construction of the first warehouse building, the Applicant must update the Waste Management Plan included in the EIS for the development. The Plan must: (a) detail the type and quantity of waste to be generated during construction and operation of the development; (b) describe the handling, storage and disposal of all waste streams generated on site, consistent with the *Protection of the Environment Operations Act 1997, Protection of the Environment Operations (Waste) Regulation 2014* and the *Waste Classification Guideline* (Environment Protection Authority 2014); and (c) detail the materials to be reused or recycled, either on or off site.	The Waste management Plan will updated prior to the commencement of construction of Warehouse 1.
B92	The Applicant must implement the Waste Management Plan for the duration of construction and operation.	Section 4.3
B93	Prior to the commencement of construction of the development, the Applicant must obtain agreement from Council for the design of the waste storage area for the development.	Discussion with Council to be held separately for each stage.
B94	Waste must be secured and maintained within designated waste storage areas at all times and must not leave the site onto neighbouring public or private properties.	Section 4.3
B95	The Applicant must assess and classify all liquid and non-liquid wastes to be taken off site in accordance with the latest version of EPA's *Waste Classification Guidelines Part 1: Classifying Waste* (EPA, 2014) and dispose of all wastes to a waste management facility or premises lawfully permitted to accept the waste.	Waste Management Plan will be prepared to address this condition
B96	The Applicant must: (a) implement suitable measures to manage pest, vermin, and declared priority weeds on the site; and (b) inspect the site on a regular basis to ensure that these measures are working effectively, and that pests, vermin or priority weeds are not present on site in sufficient numbers to pose an environmental hazard or cause the loss of amenity in the surrounding area. Note: For the purposes of this condition, priority weed has the same definition of the term in the Biosecurity Act 2015.	WMP

Ref.	Condition	How addressed
PART C ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING		
C1	Management plans required under this consent must be prepared in accordance with relevant guidelines and include: (a) detailed baseline data; (b) details of: i. the relevant statutory requirements (including any relevant approval, licence or lease conditions); ii. any relevant limits or performance measures and criteria; and iii. the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; (c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits or performance measures and criteria; (d) a program to monitor and report on the: i. impacts and environmental performance of the development; and ii. effectiveness of the management measures set out pursuant to paragraph (c) above; (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible; (f) a program to investigate and implement ways to improve the environmental performance of the development over time; (g) a protocol for managing and reporting any: i. incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); ii. compliant; iii. failure to comply with statutory requirements; and (h) a protocol for periodic review of the plan. Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.	This CEMP, Section 1.3.2 and Sub-Plans.
C2	The Applicant must prepare a Construction Environmental Management Plan (CEMP) for the development in accordance with the requirements of Condition C1 and to the satisfaction of the Planning Secretary.	This CEMP

Ref.	Condition	How addressed
C3	As part of the CEMP required under Condition C2 of this consent, the Applicant must include the following: (a) Construction Traffic Management Plan (see condition B1); (b) Erosion and Sediment Control Plan (see condition B21); (c) Dam Decommissioning Strategy (see condition B36); (d) Construction Noise and Vibration Management Plan (see condition B50); (e) Unexpected Finds Protocol (see condition B70); (f) Construction Air Quality Management Plan (see condition B76); (g) Site induction training material (see condition B81); (h) Wildlife Management Plan (see condition B87); (i) Community Consultation and Complaints Handling.	Appendices
C4	The Applicant must: (a) not commence construction of the development until the CEMP is approved by the Planning Secretary; and (b) carry out the construction of the development in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time.	Section 1.3
C8	Within three months of: (a) submission of a Compliance Report under Condition C14; (b) the submission of an incident report under Condition C10; (c) the approval of any modification of the conditions of this consent; or (d) the issue of a direction of the Planning Secretary under Condition A2(b) which requires a review, the strategies, plans and programs required under this consent must be reviewed and the Planning Secretary must be notified in writing of the outcomes of any review.	Section 5.8
C9	If necessary to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review required under Condition C8, or such other timing as agreed by the Planning Secretary. *Note: This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development*.	Section 5.8
C10	The Planning Secretary must be notified in writing via the Major Projects website immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 6.	Section 5.6.1
C11	The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Applicant becomes aware of any non-compliance.	Section 5.5

Ref.	Condition	How addressed
C12	A non-compliance notification must identify the development and the application number for it, set out the condition of consent that the development 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 5.5
C13	A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	Section 5.5
C14	Within six months after the commencement of construction of the development, and in the same month each subsequent year (or such other timing as agreed by the Planning Secretary) for the duration of construction works, the Applicant must submit a Compliance Report to the Planning Secretary reviewing the environmental performance of the development to the satisfaction of the Planning Secretary. Compliance Reports must be prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2020) and must also: (a) identify any trends in the monitoring data; (b) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and (c) describe what measures will be implemented over the next year to improve the environmental performance of the development.	Section 5.7
C15	The Applicant must make each Compliance Report publicly available no later than 60 days after submitting it to the Planning Secretary and notify the Planning Secretary in writing at least seven days before this is done.	5.7
C16	Any condition of this consent that requires the carrying out of monitoring or environmental audit, whether directly or by the way of a plan, strategy, program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting, and response, non-compliance notification, compliance reporting and independent auditing. Note: For the purposes of this condition, as set out in the EP&A Act, "monitoring" is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information or compliance with the consent of the environmental management or impact of the development.	Section 5 and Sub-Plans

Ref.	Condition	How addressed
C17	At least 48 hours before the commencement of construction of the development and for the life of the development, the Applicant must: (a) make the following information and documents (as they are obtained and approved) publicly available on its website: i. the documents referred to in Condition A2 of this consent; ii. all current statutory approvals for the development; iii. all approved strategies, plans and programs required under the conditions of this consent; iv. regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent; v. a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; vi. a summary of the current stage and progress of the development; vii. contact details to enquire about the development or to make a complaint; viii. a complaints register, updated monthly; ix. the Compliance Report of the development; x. any other matter required by the Planning Secretary; and (b) keep such information up to date, to the satisfaction of the Planning Secretary.	Section 2.1

Appendix M Daily Site Inspection Checklist

15-SP-01 Daily Site Inspection

Project No: _____ **Project Name:** _____ **Supervisor:** _____

Note: Supervisor to complete allocated checklists AM & PM at allocated times. Checklists are to be signed and dated at the end of each week and retained in the site records folder. All defects (x) are to be rectified immediately and all actions that are taken are to be documented. Any items which cannot be rectified immediately must be raised as a System Improvement Notice (16-SP-01)

AM Checklist

		M	T	W	T	F	S	COMMENTS / ACTION TAKEN
1.0	**Safety Systems Date →**							
1.1	Have all personnel received a site specific induction?							
1.2	Do SWMS accurately reflect works being carried out? Are they up to date?							
1.3	Is the SDS available for all hazardous substances on site? Are they recorded on the Hazardous Substance Form?							
1.4	Is the "SDS Emergency Response Summary" Plan displayed in the Site Office?							
1.5	Are emergency procedures understood and on display?							
1.6	Is the site attendance register up to date?							
1.7	Are all SWMS Evaluations completed for all subcontractors onsite?							
1.8	Are all site personnel appropriately qualified / ticketed to perform delegated work?							
1.9	Are all containers labelled correctly?							
1.10	Is the site incident register up to date?							
1.11	Are toilets in a clean and suitable condition?							
1.12	Does the site have sufficient handwashing facilities, does the soap require a refill?							
1.13	Are lunch room facilities in a clean and tidy condition?							
1.14	Do lunch room facilities adequately cater for the number of site personnel?							
1.15	Do all Site Offices & Lunch rooms display signs stating the requirements for using the microwave / water cooler?							
1.16	Is hand sanitiser and anti-bacterial wipes available in the site office & lunch Room?							
1.17	Are the Site Sheds, storage containers etc. graffiti free							
1.18	Is the perimeter fence secured and fit for intended purpose e.g. no openings?							
1.19	Have all Services been identified and DBYD current?							
1.20	Are works happening within 3m of a service? If so has a Permit been completed?							

15-SP-01 Daily Site Inspection

		M	T	W	T	F	S	COMMENTS / ACTION TAKEN
2.0	**Site**							
2.1	Are footpath control measures required? Are they in place?							
2.2	Are traffic control measures required? Are they in place?							
2.3	Is the local community being impacted by the works beyond normal expectations?							
2.4	Has wheel wash maintenance taken place?							
2.5	Are all access/egress clean and sufficient? (Trenches, Stockpiles, Excavations etc)							
2.6	JKW Banner is securely and appropriately fixed to the site fence?							
2.7	Have haul road signs been maintained?							
2.8	Have all relevant personnel signed the Haul Road Plan?							
2.9	Has the haul road been adequately risk assessed for the site conditions?							
2.10	Are barricades/fences required around work areas, trenches or floor openings? **Are they in place and secure?**							
2.11	Are excavations correctly shored, benched, battered or signposted?							
2.12	Are all Stockpiles designed as per 06-SP-18 Stockpile Procedure?							
2.13	Have stockpiles been inspected for scouring prior to use?							
2.14	If scouring is present, has this been corrected prior to use?							
2.15	Does the road require cleaning?							
2.16	Are all high-risk tasks monitored to ensure compliance with SWMS?							
3.0	**First Aid**							
3.1	Is there a fully stocked first aid kit onsite?							
3.2	Is there a qualified first-aider appointed/ available?							
3.3	Has the First Aid & Equipment Assessment been completed and reviewed when applicable?							
4.0	**Plant & Equipment**							
4.1	Is the Machine Pre-Start through Plant Assessor being completed prior to starting machines?							
4.2	Are flashing lights operational?							
4.3	Are reversing lights and/or audible warnings operational?							
4.4	Is plant operating within acceptable noise levels?							
4.5	Is equipment in good/presentable condition?							
4.6	Is any plant producing excessive exhaust							

15-SP-01 Daily Site Inspection

		M	T	W	T	F	S	COMMENTS / ACTION TAKEN
	emissions more than usual?							
4.7	Are all padlocks secured on the machines?							
5.0	**Electrical / Fire Equipment**							
5.1	Are portable power tools in good condition?							
5.2	Are all leads tested and tagged and recorded on the Electrical Tagging Register?							
5.3	Are fire extinguishers tagged within the last 6 months?							
6.0	**Personal Protective Equipment**							
6.1	Are Hard Hats being worn when required i.e. in trench or swing area?							
6.2	Are High visibility shirts/vests being worn at all times?							
6.3	Is ear protection being worn when required?							
6.4	Are sun/safety glasses or face shields being worn when required?							
6.5	Are safety boots, long sleeve shirts and long pants being worn?							
6.6	Are company issued hats being worn?							
7.0	**Fatigue**							
7.1	Are weather conditions within normal ranges? (expected to be and not extreme in nature)							
7.2	Is stress associated with the site what would ordinarily be expected?							
7.3	Is pressure to complete the works what would ordinarily be expected?							
7.4	Are the hours worked onsite what would ordinarily be expected?							
7.5	Are levels of concentration within what would ordinarily be required?							
8.0	**Vegetation**							
8.1	Are trees and plants that are to be retained clearly identified and protected?							
8.2	Are soil levels around existing trees retained where possible?							
8.3	Are stockpiles or vehicles parked where no native vegetation is present?							

15-SP-01 Daily Site Inspection

		M	T	W	T	F	S	COMMENTS / ACTION TAKEN
9.0	**Fuels & Chemicals**							
9.1	Is refuelling carried out in a safe manner and location?							
9.2	Are fuels, oils or chemicals stored onsite in a safe manner in accordance with their SDS?							
10.0	**Air Quality**							
10.1	Are practical measures taken to minimise the creation of any dust?							
10.2	Are works that generate dust carried out during periods of minimum winds?							
11.0	**Weather Conditions**							
11.1	Rainfall Recording (mm)							
11.2	Weather Forecast							
12.0	**Traffic Control**							
12.1	Are the correct TCP(s) and VMP installed prior to commencement of works?							
12.2	Are all signs and devices in good working order and installed correctly?							
12.3	Are pedestrians measures installed correctly and in good working order?							
12.4	Has a drive through of the works area been completed by the supervisor prior to commencement of works?							
12.5	Have suppliers been notified of the VMP/ delivery locations prior to arrival onsite?							
12.6	Do any TCP(s) or VMP(s) require updating?							
12.7	Have any complaints been received?							
12.8	Do modifications need to be made regarding complaints received?							
12.9	**Comments**							

PM Checklist

		M	T	W	T	F	S	COMMENTS/ ACTION TAKEN
13.0	**Site**							
13.1	Are safety signs required? Are they in place?							
13.2	Are barricades/fences required around work areas, trenches or floor openings? Are they in place and secure?							
13.3	Is the perimeter fence secured and fit for intended purpose e.g. no openings?							
13.4	Are excavations correctly shored, benched, battered or signposted?							
13.5	Is footpath protection required? Is it working effectively?							
13.6	Are traffic control measures required? Are they working effectively?							
13.7	Are all materials stacked and separated from work areas and the site office?							
13.8	Works are not impacting the local community beyond normal expectations?							
13.9	Are all access/egress clean and sufficient? (Trenches, Stockpiles, Excavations etc)							
13.10	Have the site gates, site sheds, site containers and machines been secured with padlocks?							
13.11	Does the road require cleaning							
14.0	**Erosion & Sedimentation**							
14.1	Are silt fences supported every 2.5m (max) with the lower edge trenched to a depth of 150mm?							
14.2	Are silt fences cleared when 50-60% full? Is this disposed of in an appropriate manner?							
14.3	Are sediment basins more than 30% full?							
14.4	Are erosion and sediment controls are placed where required onsite?							
15.0	**Waste**							
15.1	Is waste generated on site such as pipes, concrete, steel or trees sorted and recycled?							
15.2	Is the site left in a nice tidy condition? Are bins provided? No rubbish around?							

		M	T	W	T	F	S	COMMENTS/ ACTION TAKEN
16.0	**Recyclable Waste – weight**							
16.1	Timber							
16.2	Concrete							
16.3	Metal							
16.4	Bricks							
16.5	Other							
17.0	**Inspection Test Plans (ITP's)**							
17.1	Are all ITP's current and up to date?							
17.2	Are all ITP's reflective of the activities being undertaken?							
17.3	Are all Hold Points signed off by the nominated party?							
17.4	Is all supporting documentation available and cross referenced?							
17.5	Are all completed ITPs correctly listed below?							
18.0	**Traffic Management**							
18.1	Are the correct TCP(s) and VMP installed at the end of the shift?							
18.2	Are all signs and devices in good working order and installed correctly for the end of the shift?							
18.3	Are pedestrian measures installed correctly and in good working order?							
18.4	Do any TCP(s) or VMP(s) require updating?							
18.5	Have any complaints been received?							
18.6	**Comments**							

15-SP-01 Daily Site Inspection

Maintenance of Soil & Water Management and WH&S Controls		
Date	**Action Required**	**Signature**

15-SP-01 Daily Site Inspection

Maintenance of Soil & Water Management and WH&S Controls		
Date	**Action Required**	**Signature**

Supervisor Signature: _____ **Date:** _____