OAKDALE WEST INDUSTRIAL ESTATE - LOT 1A

Construction Environmental Management Plan
SSD 7348

Prepared for:

Goodman Property Services (Aust) Pty Ltd
60 Castlereagh Street
Sydney NSW 2000

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
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1 Introduction

1.1 Development Overview

Oakdale West Industrial Estate (Oakdale West) is a regional warehouse and distribution hub, is located at Kemps Creek within the Penrith local government area (LGA) and forms part of the broader Oakdale Industrial Precinct located within the Western Sydney Employment Area (WSEA) (see **Figure 1**).

Goodman Property Services (Aust) Pty Ltd (Goodman) obtained Development Consent SSD 7348 on 13 September 2019 from the Department of Planning, Industry and Environment (DPIE) for the Oakdale West 'Concept Proposal' and 'Stage 1 Development'. The Concept Proposal essentially comprises a 'Master Plan' to guide the staged development of Oakdale West and core development controls that will form the basis for design and assessment of future development applications for the site. It includes:

- Establishing primary site access, road layouts (including internal road network and connections to the external road network), developable and non-developable lands, biodiversity offsets, indicative development stages and development controls for the future development of the site;
- Stage 1 Development of the Estate including:
  - Estate Works, including site preparation, bulk earthworks and retaining walls, catchment level stormwater infrastructure, trunk services connections and utility infrastructure, roads and access infrastructure associated with Stage 1 and subdivision in Stage 1 development works;
  - Precinct Development, including construction, fit out and use of warehouse buildings within Precinct 1, detailed earthworks, on lot stormwater, services and utility infrastructure and construction of industrial/warehouse buildings;
  - Construction of a new regional road known as the Western North South Link Road (WNSLR) connecting to Lenore Drive to provide the primary access to the site; and
  - Western boundary landscaping.

Development Consent SSD 7348 has been modified on four occasions, including:

- MOD 1 – approved on 26 March 2020 to modify the concept plan and Stage 1 development, including changes to building pad level of Precinct 2, bio-retention basins and biodiversity offset strategy;
- MOD 2 – approved on 21 April 2020 to modify the concept layout and Stage 1 development to accommodate the design of the warehouse on Lot 1A;
- MOD 3 – approved on 3 April 2020 to modify the Concept Proposal and Stage 1 DA; and
- MOD 4 – approved on 24 March 2020 for additional works associated with the WNSLR.

A copy of Development Consent SSD 7348 (as modified) is attached as **Appendix A**.

This Construction Environmental Management Plan (CEMP) has been prepared to cover the construction at Lot 1A by Richard Crookes Constructions (RCC) (see **Figure 2**).

Note: Where Goodman is nominated as having responsibility as the Applicant, this may be delegated to their specialist consultants.

SEE DRAWING OAK MP03 FOR CONTINUATION

Goodman

BRICKWORKS LIMITED

Proposed Bridge

Proposed Western North South Link Road Subject to Just Terms Land Acquisition.

AMENITIES LOT

Substation

Kiosk

New Driveway Access track

Proposed Western North South Link Rd

Goodman Signage

30m Wide Road Reserve

Main Site Identification Signage

Goodman Signage Wall

WNS/R Up To SLR Subject to Subdivision

'Possible future Link Road by others, as depicted on SEPP Transport Infrastructure Map, subject to Just Terms land acquisition'.

SLR Road Reserve

Aecom Concept Alignment (Ref 60301100-00-FIG-PL0001 TO PL0003)

Future Southern Link Road

Proposed Future Development

Estate Road 01

Estate Road 02

Estate Road 03

Estate Road 04

Estate Road 05

Estate Road 06

Estate Road 07

Estate Road 08

1A RL 70.00 (+/- 1000mm)

RL 69.00 (+/- 1000mm)

2A RL 66.50 (+/- 1000mm)

2B RL 66.50 (+/- 1000mm)

3A RL 75.00 (+/- 1000mm)

3B RL 75.00 (+/- 1000mm)

3C RL 75.00 (+/- 1000mm)

3D RL 75.00 (+/- 1000mm)

1B1 RL 74.80 (+/- 1000mm)

1B2 RL 74.80 (+/- 1000mm)

1C RL 74.80 (+/- 1000mm)

4A RL 83.00 (+/- 1000mm)

4B RL 79.80 (+/- 1000mm)

4C RL 72.80 (+/- 1000mm)

4D RL 72.80 (+/- 1000mm)

4E RL 75.55 (+/- 1000mm)

4F RL 73.05 (+/- 1000mm)

4G RL 72.30 (+/- 1000mm)

5A RL 60.55 (+/- 1000mm)

2E RL 67.30 (+/- 1000mm)

2F RL 69.80 (+/- 1000mm)

2G RL 69.80 (+/- 1000mm)

2H RL 72.05 (+/- 1000mm)

2J RL 72.05 (+/- 1000mm)

Services Lot (Substation)

Transmission Easement

60000

6000 ELECTRICAL EASEMENT

40000 SETBACK

98000 SETBACK

20000 SETBACK

7500 SETBACK

Emmaus Residential Aged Care Average RL 56.00

Emmaus Catholic College Average RL 64.00

OAKDALE SOUTH
Lot 12 DP1178389

Site Area Schedule

Total Site Area	**154.12 ha**
Less:	
Non Developable Land	20.70 ha
Easements	22.45 ha
Regional Roads	6.74 ha
Services Lot	1.26 ha
Estate Roads	8.09 ha
E2 Zone non developable	1.43 ha
	60.67 ha
Development Areas	
Precinct 1	21.92 ha
Precinct 2	19.51 ha
Precinct 3	18.50 ha
Precinct 4	22.39 ha
Precinct 5	6.02 ha
Proposed Future Development	4.85 ha
Amenities Lot	.258 ha
Total Developable	**93.45 ha**
Total Warehouse	423,592 sqm
Total Office	20,994 sqm
Others (for Site 1A)	4,004 sqm
Mezzanines (for Site 1A)	32,402 sqm
Total GFA	480,992 sqm
Total GLA	448,590 sqm

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

SSDA Estate Masterplan

0 60 300

1:3000 @ A1
1:6000 @ A3

23 Oct 2019

OAK MP02 (BQ)
Job No 15117

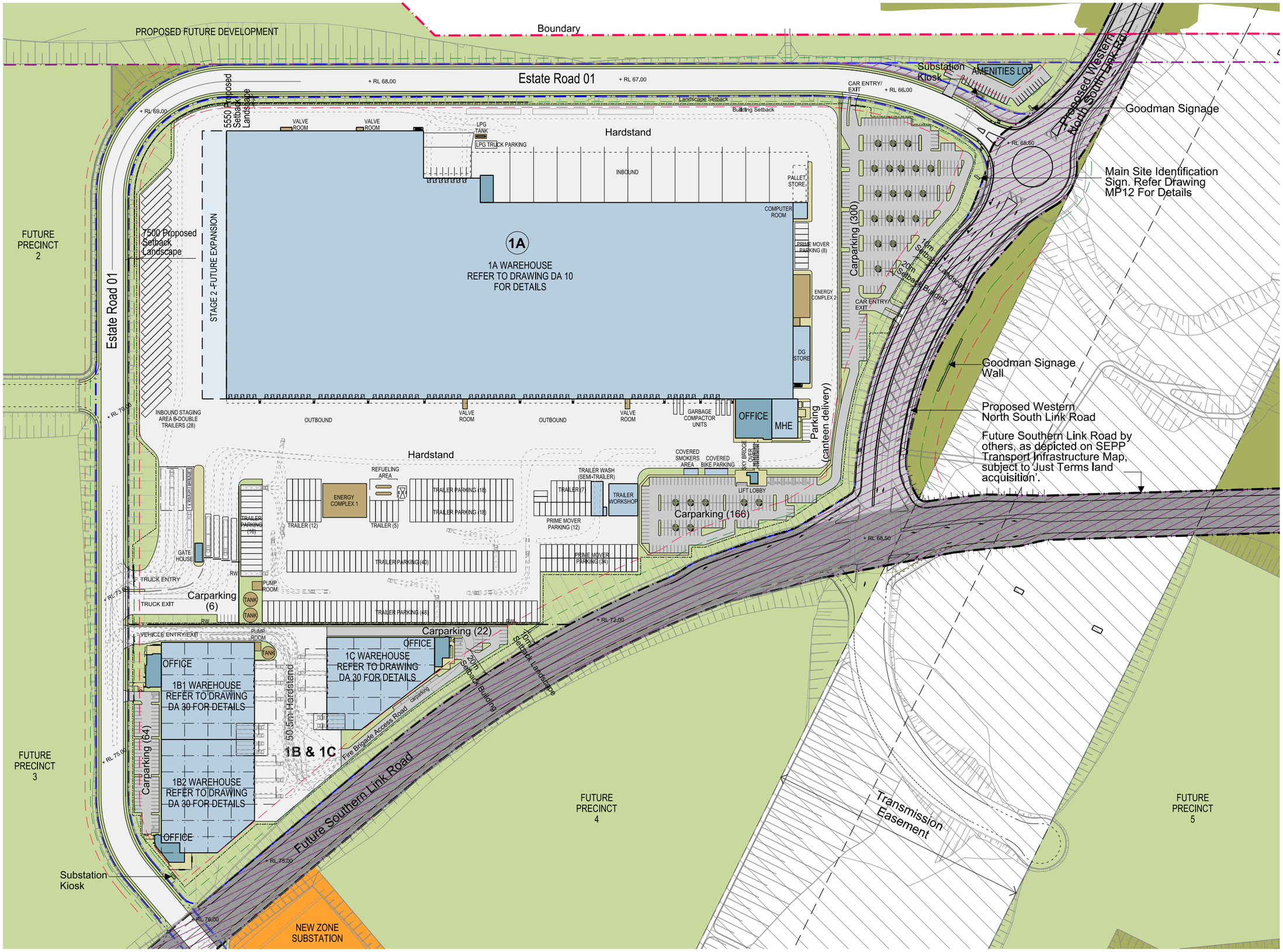
Goodman

BRICKWORKS LIMITED

Development Area Schedule	
Total Site Area	219,242 sqm
Total Warehouse	81,773 sqm
Total Office	3,903 sqm
Others (for Lot 1A)	4,004 sqm
Mezzanines (for Lot 1A)	32,402 sqm
Total GFA (includes all Mezzanines)	**122,082 sqm**
Total GLA (excludes all Mezzanines)	**89,680 sqm**
Carparking (total)	558

Lot 1A	
Site Area	187,270 sqm
Warehouse (includes Stage 2 future expansion 3,318 sqm)	68,160 sqm
Office (3 level)	2,646 sqm
Others (includes dock office, trailer workshop, trailer wash, dangerous goods store, computer room, gate house, energy complex 1 & 2, refuelling area, battery charge, skybridge & lobby)	4,004 sqm
Mezzanines (includes Stage 2 mezzanine 3,101 sqm)	32,402 sqm
Total GFA (Includes all Mezzanines)	107,212 sqm
Total GLA (excludes all Mezzanines)	74,810 sqm
Awning	8,620 sqm
Site Cover (exc. awning)	57 %
Floor Space Ratio	0.57 : 1
Hardstand Area	88,610 sqm
Light Duty Area	14,030 sqm
Prime Mover Parking	54
Trailer Parking	164
Carparking (inclusive of 6 for Gatehouse)	472
Carparking (motorcycles)	6

Lot 1B & 1C	
Site Area	31,972 sqm
Warehouse 1B1	4,625 sqm
Warehouse 1B2	4,998 sqm
Warehouse 1C	3,990 sqm
Office 1B1 (2 level)	500 sqm
Office 1B2 (2 level)	415 sqm
Office 1C (2 level)	342 sqm
Total GFA	14,870 sqm
Awning	2,095 sqm
Site Cover (exc. awning)	47 %
Floor Space Ratio	0.47 : 1
Hardstand Area	7,440 sqm
Light Duty Area	3,755 sqm
Carparking	86



SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Precinct 1 Plan

0 25 125

1:1250 @ A1
1:2500 @ A3

23 Oct 2019

OAK MP 05 (BA)
Job No 15117

For the purposes of this document, the development is described in:

- *Environmental Impact Statement, Oakdale West Estate – State Significant Development Application* (EIS) prepared by Urbis (2017), including all specialist assessments and other appendices;
- *Oakdale West Industrial Estate (SSD 7348) Modification 1* prepared by Urbis (2019), including all specialist assessments and other appendices;
- *Oakdale West Estate SSD 7348 S4.55(2), Modification No.2 – Environmental Assessment Report* prepared by Urbis (2019), including all specialist assessments and other appendices;
- *Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (MOD 3 SSD 7348) and Stage 2 Development Application (SSD 10397) – Environmental Impact Statement* prepared by GHD (2020), including all specialist assessments and other appendices; and
- *MOD 4, SSD 7348 – S4.55(1A) Application to Modify the consent to Include Works on Lot 9 DP 1157476* prepared by Goodman (2020).

1.2 Construction Contact Details

Table 1 lists the key contacts during the construction of Lot 1A.

Table 1 Construction Contact List

Role	Name	Company	Contact Details
Project Principal	Ben Milner	Goodman	0410 557 543 ben.milner@goodman.com
Contractor's General Manger – Industrial	Claude Concha	Richard Crookes Constructions	0434 077 660 ConchaC@richardcrookes.com.au
Contractor's Project Manager	Brendan Peera	Richard Crookes Constructions	0433 221 688 PeeraB@richardcrookes.com.au
Contractor's Senior Design Manager	Alex Hovy	Richard Crookes Constructions	0439 262 066 HovyA@richardcrookes.com.au
Environmental Representative	Carl Vincent	ERSED	0424 203 046 carl.vincent@ersed.com.au
Communications and Community Liaison Representative	Dan Thompson	SLR	0428 060 995 dthompson@slrconsulting.com

1.3 Construction Environmental Management Plan

The CEMP has been prepared to address the specific requirements of SSD 7348 and in consideration of the *Guideline for the Preparation of Environmental Management Plans* (Department of Infrastructure, Planning and Natural Resources 2004). As required by SSD 7348, the following specialist management plans have been prepared to support this CEMP for Lot 1A:

- Soil and Water Management Plan (RCC);
- Flora and Fauna Management Plan (FFMP) (Ecologique);
- Landscape Management Plan (LMP) (Scape Design);
- Construction Traffic Management Plan (CTMP) (Ason);
- Community Communication Strategy (CCS) (SLR);
- Community Consultation and Complaints Handling Procedure (SLR);
- Construction Noise and Vibration Management Plan (CNVMP) (SLR);
- Construction Air Quality Management Plan (CAQMP) (SLR);
- Salinity Management Plan (Pells Sullivan Meynink);
- Fill Importation Protocol (AECOM);
- Waste Management Plan (WMP) (SLR);
- Unexpected Finds Protocol – Archaeological Items (Artefact); and
- Unexpected Contamination Protocol (AECOM).

1.3.1 Scope

This CEMP has been prepared to satisfy Conditions D118 – D122 of SSD 7348. The specific requirements of these consent conditions, along with where these requirements have been addressed within this CEMP, are listed in **Table 2**.

Table 2 CEMP Context

SSD 7348 Consent Condition	CEMP Section
D118. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
a) 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, Stage 1 or any management measures;	(i) Section 3.3 (ii) Section 4 (iii) Refer to specialist management plans
b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 4
c) a program to monitor and report on the: (i) impacts and environmental performance of Stage 1; and (ii) effectiveness of the management measures set out pursuant to paragraph (b) above;	Section 5
d) 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
e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time;	Section 6
f) 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	(i) Section 3.5 and 5.2 (ii) Section 3.6 and 5.2 (iii) Section 5.2
g) 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*	Section 6
D119. The Applicant must prepare a Construction Environmental Management Plan (CEMP) for Stage 1, including the WNSLR, in accordance with the requirements of Condition D118 and to the satisfaction of the Planning Secretary. The Applicant may prepare separate CEMPs for the Stage 1 works and the WNSLR, addressing all relevant requirements of this consent.	This Plan

SSD 7348 Consent Condition	CEMP Section
D120. Prior to finalising the CEMP, the Applicant must consult with TfNSW (including the former RMS), Council and Water NSW. The Applicant must also attend a site visit with Water NSW personnel to mark the exact works area for the WNSLR bridge crossing.	**Appendix B** A site inspection of Oakdale West was undertaken on 10 July 2019.
D121. As part of the CEMP required under Condition D119 of this consent, the Applicant must include:	
a) detailed procedures for managing bulk earthworks to avoid adverse water quality impacts on Ropes Creek, including, but not limited to: (i) any staging of earthworks to minimise disturbed areas; (ii) limits on the areal extent of earthworks; (iii) progressive grassing of exposed areas, as soon as reasonably practicable, focusing on areas where building construction will occur at a later stage;	This was undertaken as part of the CEMPs prepared for the WNSLR / Oakdale West Infrastructure.
b) Landscape Management Plan (LMP) (see Condition D35);	Section 4.9
c) Construction Traffic Management Plan (CTMP) (see Condition D65);	Section 4.5
d) Consultation Schedule for TfNSW and Water NSW (see Conditions D57 and D58);	This was undertaken as part of the CEMPs prepared for the WNSLR / Oakdale West Infrastructure.
e) Construction Noise and Vibration Management Plan (CNVMP) (see Condition D73);	Sections 4.2 and 4.3
f) Fill Importation Protocol (see Condition D79) and Erosion and Sediment Control Plan (see Condition D80);	Section 4.6
g) Flora and Fauna Management Plan (FFMP) (see Condition D88);	Section 4.8
h) Snake Management Measures (see Condition D96);	Section 4.8
i) Construction Air Quality Management Plan (CAQMP) (see Condition D100);	Section 4.4
j) Unexpected Finds Protocol (see Conditions D106 and D108);	Section 4.10
k) Unexpected Contamination Protocol (see Condition D116); and	Section 4.11
l) a Community Consultation and Complaints Handling Procedure.	Section 4.13
D122. The Applicant must: a) not commence construction of Stage 1 until the CEMP is approved by the Planning Secretary; and b) carry out the construction of Stage 1 in accordance with the CEMP approved by the Planning Secretary	Noted

1.3.2 Objectives

The objectives of this CEMP are to:

- Establish the framework for managing and mitigating the potential for adverse environmental impacts as a result of the construction of Lot 1A;
- Clearly and concisely document the commitments made in the EIS (Urbis 2017) and Response to Submissions (RTS), including relevant management plans, that are required to be implemented with during construction;
- Demonstrate to DPIE how the applicant proposes to meet all of its regulatory obligations including those outlined in the Conditions of consent;
- Outline the controls to be implemented by the contractor in order to meet those obligations;
- Clearly and concisely document the conditions imposed by SSD 7348 that are required to be implemented and/or complied with during the construction phase; and
- Assist to establish Lot 1A in a manner that avoids (where possible) or minimises impact to the surrounding environment and populace.

1.3.3 Consultation

In accordance with SSD 7348, consultation has been undertaken with the applicable stakeholders which is summarised in **Table 3**. A Consultation Schedule for Transport for New South Wales (TfNSW) (former RMS) and Water NSW (SSD Conditions D57 and D58) have been previously completed and provided as part of the Oakdale West Infrastructure CEMP. All evidence of consultation related to this CEMP prepared for Lot 1A is attached as **Appendix B**.

Table 3 Consultation

Condition	Comment
Construction Management C18. A Construction Environmental Management Plan (CEMP) shall be submitted to the Consent Authority for each stage of the Concept Proposal prior to the commencement of construction of the relevant stage. The CEMP must: a) be prepared by a suitably qualified and experienced environmental consultant, or the Environmental Representative appointed for Stage 1 of the Development; b) be prepared in consultation with relevant Government agencies, infrastructure and utility providers, including but not limited to, TransGrid, Endeavour Energy, Water NSW and TfNSW, where relevant for each stage; c) detail the construction activities to be undertaken in the relevant Stage of the Development; d) include detailed procedures for managing the environmental impacts of construction, including stormwater, erosion and sediment controls, dust, noise and traffic management; and e) detail the roles and responsibilities for environmental management on the Site.	**Appendix B**

Condition	Comment
D10. 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.	**Appendix B**
WATER NSW D31. The Applicant must: d) consult with Water NSW during preparation of the CEMP, in accordance with Condition D119, and attend a site visit with Water NSW personnel, prior to finalising the CEMP, to mark the exact works area for the WNSLR bridge crossing.	This was undertaken as part of the CEMPs prepared for the WNSLR/Oakdale West Infrastructure. A site inspection of Oakdale West was undertaken on 10 July 2019.
Landscape Management Plan D35. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Landscape Management Plan (LMP), to the satisfaction of the Planning Secretary. The plan must form part of the CEMP in accordance with Condition D119 and the OEMP in accordance with Condition D130 and must: a) be prepared in consultation with Council;	This was undertaken as part of the Landscape Management Plan (see **Appendix N**).
D43A. Prior to construction of any signage for Stage 1, the Applicant must consult with Council on the final signage strategy and obtain approval of the final signage strategy from the Planning Secretary.	Noted
D57. The Applicant must develop a schedule for consultation with and approval by TfNSW for the construction of the bridge foundations over the future WSFL, including geotechnical and structural certification as required by TfNSW. The schedule must form part of the CEMP required by Condition D119.	This was undertaken as part of the CEMPs prepared for the WNSLR/Oakdale West Infrastructure.
D58. The Applicant must develop a schedule for consultation with and approval by Water NSW for the construction of the bridge over the water pipelines corridor. This schedule must form part of the CEMP required by Condition D119.	This was undertaken as part of the CEMPs prepared for the WNSLR/Oakdale West Infrastructure.
Construction Traffic Management Plan D65. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Construction Traffic Management Plan to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by Condition D119 and must: b) be prepared in consultation with Council, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School;	This was undertaken as part of the Construction Traffic Management Plan (see **Appendix C**). Consultation evidence as attached as **Appendix B**.
Construction Noise and Vibration Management Plan D73. The Applicant must prepare a Construction Noise and Vibration Management Plan (CNVMP) for Stage 1, to the satisfaction of the Planning Secretary. The CNVMP must form part of a CEMP in accordance with Condition D119 and must: f) describe the community consultation undertaken to develop the strategies in Condition D73(e);	This was undertaken as part of the Construction Nose and Vibration Management Plan (see **Appendix G**).

Condition	Comment
Community Engagement D117. The Applicant must consult with the community regularly throughout Stage 1, including consultation with the nearby sensitive receivers identified in Appendix 5, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy approved in accordance with Condition C19.	**Appendix F**
D120. Prior to finalising the CEMP, the Applicant must consult with TfNSW, Council, RMS and Water NSW. The Applicant must also attend a site visit with Water NSW personnel to mark the exact works area for the WNSLR bridge crossing.	**Appendix B** A site inspection of Oakdale West was undertaken on 10 July 2019.
D121. As part of the CEMP required under Condition D119 of this consent, the Applicant must include: d) Consultation Schedule for TfNSW and Water NSW (see Conditions D57 and D58);	This was undertaken as part of the CEMPs prepared for the WNSLR/Oakdale West Infrastructure.

DPIE completed a review of the CEMP, with comments provided on 15, 19, 22 and 23 June 2020. The CEMP was subsequently updated.

2 Development Description

2.1 Location

Oakdale West is legally described as Lot 11 DP 1178389 at the far south-western extent of the WSEA within the Penrith LGA. Lot 1A is located in Precinct 1 of Oakdale West (see **Figure 1**).

Oakdale West is bound to the north by the Water NSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with Transgrid infrastructure. To the east of the site is Goodman's Oakdale South estate. Emmaus Catholic College and Emmaus Retirement Village is located to the west of the site. Other boundaries interface with adjoining rural lands used for a mix of rural-residential, agricultural.

2.2 Construction Staging and Activities

Construction at Lot 1A is scheduled to commence in December 2020 and will likely extend until March 2022. The construction activities will be staged and are summarised in **Table 4**.

Table 4 Construction Staging and Activities

Stage	Indicative Duration	Activities
Stage 1	24 weeks (December 2020 – May 2021)	Civil works and excavation
Stage 2	24 weeks (February 2021 – July 2021)	Concrete pours – Warehouse, external hardstand and office
Stage 3	16 weeks (March 2021 – June 2021)	Structure and general construction
Stage 4	20 weeks (June 2021 – October 2021)	External finishes – Warehouse cladding and facade
Stage 5	20 weeks (November 2021 – March 2022)	External boundary, kerb and footpath works

2.3 Construction Hours

Construction hours will be in accordance with Conditions D70 and D71 of Development Consent SSD 7348, which are reproduced below:

> *D70. The Applicant must comply with the hours detailed in Table 5, unless otherwise agreed in writing by the Planning Secretary.*

***Table 5**: Hours of Work*

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

D71. Works outside of the hours identified in Condition D70 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

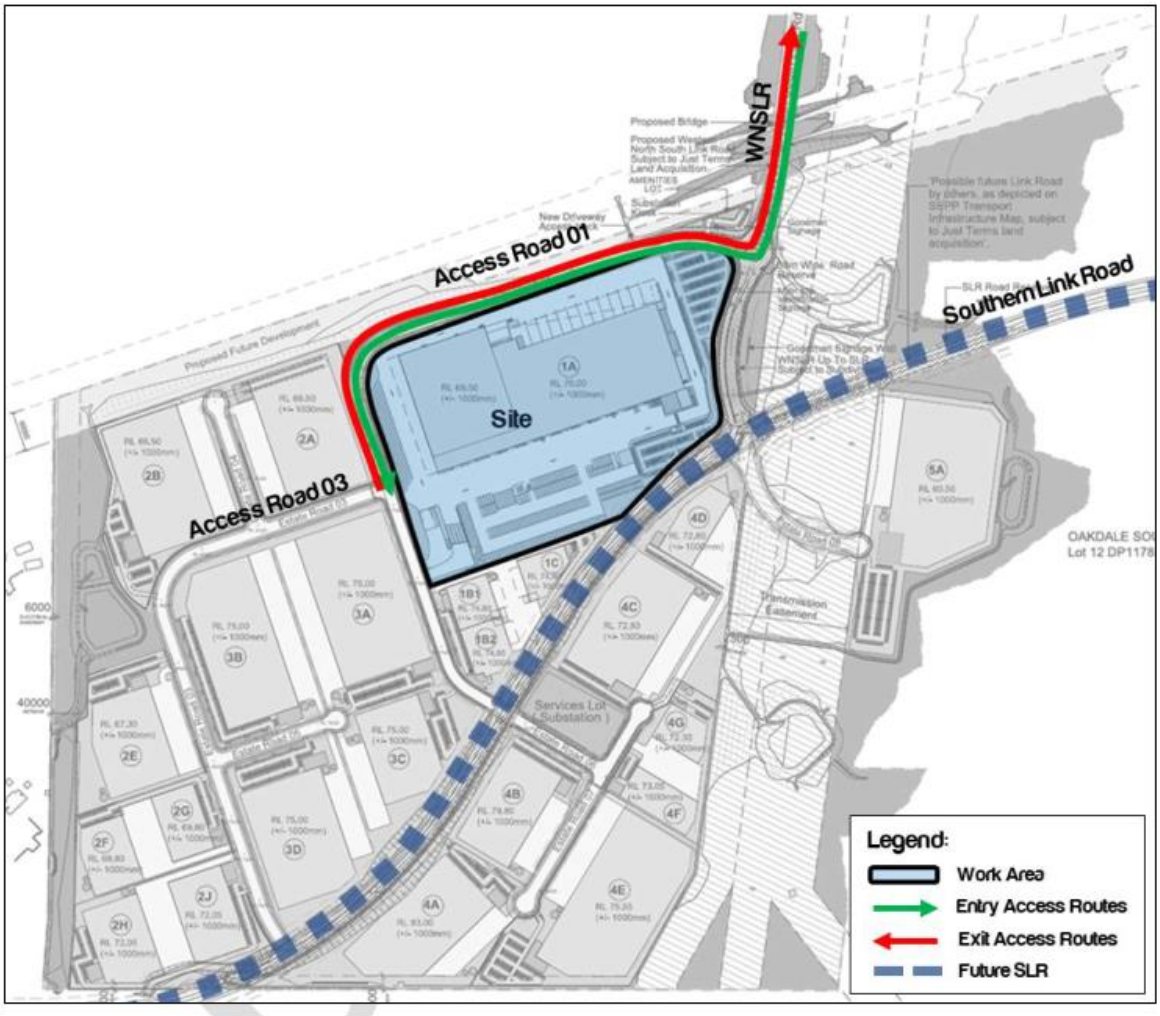
d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.

The construction hours will be provided to all staff and contractors in the induction. The movements of staff and contractors will be recorded for this project.

2.4 Construction Site Access

Access to Lot 1A will be via the WNSLR and Access Road 01, as shown in **Figure 3**.

Figure 3 Construction Site Access



3 Environmental Management Framework

3.1 Environmental Policy

RCC implements an Environmental Management System which assists in meeting their corporate responsibilities. RCC management intends that all employees, relevant sub-contractors and suppliers are made aware of their environmental responsibilities and the environmental impacts associated with their activities, products and services.

RCC's Environmental Policy is certified to AS/NZS ISO 14001:2016 Environmental Management Systems. A copy of the Environmental Policy is attached as **Appendix D**.

3.2 Roles and Responsibilities

The key personnel responsible for environmental management during construction of Lot 1A are listed in **Table 5**.

Table 5 Personnel Responsible for Environmental Management

Role	Responsibilities
Project Principal (Goodman)	Environmental reporting responsibility associated with the development.
Contractor's Project Manager (RCC)	• Overall responsibility for environmental management and compliance with SSD 7348 and relevant legislation; • Oversee the implementation of this CEMP and request adequate resources to enable implementation of this CEMP; • Report on the performance of the CEMP to the Project Manager for review and as a basis for system improvement; • Liaise with Goodman to keep them informed of the project's progress; • Coordinate environmental inspections and reporting and authority liaisons; • Record, notify, investigate and respond to any environmental incidents and, where necessary, develop and implement corrective actions; • Direct reasonable steps be taken to avoid or minimise any unintended or adverse environmental impacts, and, failing the effectiveness of such steps, direct that the relevant actions cease immediately should an adverse impact on the environment be likely to occur; • Attend the Environmental Review Group (ERG) meetings if ERG meetings are deemed necessary by the Environmental Consultant; and • Provide adequate environmental inductions/training to employees and contractors regarding their requirements under this CEMP.
Contractor's Senior Design Manager (RCC)	• Ensure the legislative and corporate safety, health and environment management measures and controls are implemented and maintained; • Participate in risk and hazard identification and control; • Participate in incident investigations and management; and • Participate in health and safety inspections.

Role	Responsibilities
Communications and Community Liaison Representative (SLR)	• Lead and manage the community involvement activities, including liaison with property owners and key stakeholders; • Attend the ERG meetings if ERG meetings are deemed necessary by the Environmental Consultant; • Be the primary daily contact to the public handling of enquiries / complaints management / interface issues; • 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, forums and arranging interviews to address concerns from community; • Provide advice and participate with the project teams to improve and enhance the delivery of communication services to the community; • Build, maintain collaborative and consultative working relationships with internal and external stakeholders; and • Be available for contact by local residents, key stakeholders and community representatives to answer queries and provide more information or feedback.
All employees, contractors and subcontractors	• Ensure familiarity, implementation and compliance with this CEMP and appended management plans; • Support RCC and Goodman's commitment to sustainability, environmental management and compliance; • Work in a manner that will not harm the environment or impact on surrounding receptors; • Report all environmental incidents and complaints to the Project Manager without delay; and • Report any inappropriate construction practices and/or environmental management practices to the Project Manager without delay.

3.3 Statutory Requirements

The Development will be constructed in accordance with SSD 7348 (as modified) and also in accordance with the documents referenced under Condition B5 of the Consent:

- The EIS (Urbis 2017) and RTS;
- The development layout plans and drawings attached to the Development Consent as Appendix 1, which have been sourced from the EIS (Urbis 2017);
- MOD 1 EIS (Urbis 2019);
- MOD 2 EIS (Urbis 2019)
- MOD 3 EIS (GHD 2020);
- MOD 4 SEE (Goodman 2020); (and
- The management plans and mitigation measures (attached to the Development Consent as Appendix 7).

If there is any inconsistency between the plans and documentation referred to in Condition B5, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of SSD 7348 prevail to the extent of any inconsistency. The Project Manager will be notified if any inconsistencies are identified.

A copy of SSD 7348 is attached as **Appendix A**.

3.4 Inductions and Environmental Training

The Contractor's Project Manager will ensure that all employees and contractors involved in the construction of Lot 1A are appropriately inducted and trained prior to commencing work on site. Training in relation to environmental responsibilities and implementation of this CEMP will take place initially through the site induction training and then on an ongoing basis through 'toolbox talks' (or similar).

The environmental induction training will cover all elements of the CEMP and will include, as a minimum, the following:

- Purpose and objectives of the CEMP;
- Requirements of due diligence and duty of care;
- Conditions of any environmental licences, permits and approvals;
- Potential environmental emergencies on site and the emergency response procedures (including the Emergency Spill Response Plan), locations and training in the use of emergency spill kits for spills on water and on land;
- Reporting, notification and management requirements for pollution, contamination and other environmental incidents, and for damage and maintenance to environmental controls;
- High-risk activities and associated environmental safeguards i.e. earthworks, vegetation clearing, night works, operation and maintenance of concrete washouts, and washing, refuelling and maintenance of plant and equipment;
- Working in or near environmentally sensitive areas; and

- Site-specific issues including:
  - Erosion and sediment controls, water quality controls and sediment basin management (see **Section 4.6**);
  - Responsibilities under the *National Parks and Wildlife Act 1974*, including the need to cease work immediately and report any object of potential Aboriginal heritage unearthed during clearing, grubbing and earthworks operations (see **Section 4.10**);
  - Responsibilities under the *Heritage Act 1977* if an object of potential non-Aboriginal heritage is uncovered during construction;
  - Access into the Water NSW pipeline corridor is prohibited unless written access consent has been obtained from Water NSW;
  - Noise, vibration and air quality management controls (see **Sections 4.2, 4.3** and **4.4**);
  - Requirement to maintain surrounding property access for residences and businesses and to minimise disruptions to these properties for the duration of construction;
  - Location of reuse bins, washing, refuelling and maintenance of vehicles, plant and equipment;
  - Waste minimisation principles (see **Section 4.7**);
  - Boundaries for vegetation clearing, fauna and fauna habitat management, including awareness of threatened fauna species and fauna rescue (see **Section 4.8**);
  - Identification, reporting and management of contaminated land (see **Section 4.11**); and
  - Incident management processes (see **Section 3.5**).

Toolbox talks will be held to identify environmental issues and controls when works commence in a new area of the site or a new activity, as well as when environmental issues arise on site. The toolbox talk will include but not be limited to:

- A description of the activity and the area;
- Identification of the environmental issues and risks for the area (including fauna or flora); and
- Outline the mitigations measures for the works and the area (see **Section 4**).

All employees conducting environmental training and site staff assigning work activities will demonstrate that they are competent and appropriately trained to train and manage construction site specific environmental issues.

A register of all environmental training carried out, including dates, names of persons trained and trainer name and qualification details will be established and maintained for the duration of works.

3.5 Incident and Non-Compliance Response and Handling Procedure

For the purposes of this CEMP, SSD 7348 describes an ‘incident’ 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. SSD 7348 describes a ‘non-compliance’ as an occurrence, set of circumstances or development that is a breach of the consent.

3.5.1 Performance Objective

To ensure that any incident and/or non-compliance caused by or relating to the construction of Lot 1A is effectively responded to, and any resulting adverse environment and/or human health impact is promptly prevented or effectively managed.

3.5.2 Responsibility

The Contractor's Project Manager is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an incident and/or non-compliance. All employees, contractors and subcontractors are to:

- Notify the Contractor's Project Manager who will notify the Environmental Representative (ER) of any hazard or potential hazard that may result in an incident and/or non-compliance, regardless of the nature or scale; and
- Take immediate action (where it is safe to do so) to prevent, stop, contain and/or minimise any adverse impact associated with an incident and/or non-compliance.

The induction and toolbox talks outlined in **Section 3.4** will be used to ensure all site employees, contractors and subcontractors are aware of and understand their obligations for incident and/or non-compliance response.

3.5.3 Notification Requirements

3.5.3.1 Incidents

Section 147 of the *Protection of the Environment Operations Act 1997* (POEO Act) defines material harm as:

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

Notification responsibilities for incidents that have caused or threatened to cause material harm to the environment are detailed in Section 148 of the POEO Act. In summary, these are broadly categorised as:

Duty of an employee or any person undertaking an activity:

Any person engaged as an employee or undertaking an activity with regard to Lot 1A will, immediately after becoming aware of any potential incident (even if outside of normal business hours), notify the Contractor's Project Manager who will notify the ER of the incident and all relevant information about it. 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.

Duty of an employer or occupier of the premises to notify:

The employer or occupier of the premises (in this case, the ER) on which the incident occurred, who is notified (or otherwise becomes aware of) of the incident, will immediately notify the relevant authorities about the incident and all relevant information.

Under the POEO Act, "relevant authority" means any of the following:

- The appropriate regulatory authority – the Environment Protection Authority (EPA);
- If the EPA is not the appropriate regulatory authority – the local authority for the area in which the pollution incident occurs (i.e. Council);
- NSW Public Health Unit;
- SafeWork NSW; and
- Fire and Rescue NSW.

Table 6 lists the contact details for these authorities. The person reporting the pollution incident will provide the following key details:

- Location of the pollution incident/emergency;
- Nature of the pollution incident/emergency;
- Their name and contact details; and
- Details of any required assistance.

Table 6 Regulatory Authority Contact List

Regulatory Authority / Stakeholder	Key Contact	Contact Details
Department of Planning, Industry and Environment (DPIE)	Compliance Unit	1300 305 695 or 02 9228 6111 compliance@planning.nsw.gov.au
Environment Protection Authority (EPA)	Environment Line	131 555 info@environment.nsw.gov.au
	Head office (Sydney)	02 9995 5000
Penrith City Council	Main switchboard	02 4732 777 council@penrith.city
Water NSW	Main switchboard	1300 662 077 Customer.Helpdesk@waternsw.com.au
	Incident Notification Number – 24 hours	1800 061 069
NSW Public Health Unit	Sydney Local Health District	Business hours: 1300 066 055 After hours: 02 9515 6111

Regulatory Authority / Stakeholder	Key Contact	Contact Details	
SafeWork NSW	Incident Notification Hotline	131 050 Select Option 3 to report a "Serious Incident or Fatality" – this will result in the incident being recorded and the appropriate person being contacted.	
Emergency Services	NSW Police NSW Fire and Rescue NSW Ambulance Service	131 444 1300 729 579 -	In case of emergency – 000

In accordance with Condition D135 of Development Consent SSD 7348, once Goodman becomes aware of an incident Goodman is required to immediately (within 24 hours) provide a written incident notification via email to the DPIE and other relevant agencies of an incident, or potential incident, that causes (or may cause) harm to the environment. A detailed incident report is then to be provided to the DPIE within 30 days of the incident.

3.5.3.2 Non-Compliances

In accordance with Condition D136 of SSD 7348, the DPIE will be notified in writing to compliance@planning.nsw.gov.au within seven days of becoming aware of any non-compliance.

D137 and D138 of SSD 7348 states a non-compliance notification will 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.

A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

3.5.4 Incidents and Non-Compliance Handling Procedure

Upon becoming aware of an incident and/or non-compliance, the procedure outlined below will be followed.

1. Preventative Action

Where possible and safe to do so, immediate action will be taken to prevent, stop, contain and/or minimise the environmental impact of the incident and/or non-compliance.

In the unlikely event that an incident and/or non-compliance requires the evacuation of the site, actions will be completed in accordance with evacuation procedures. All employees and contractors are to be made aware of the location of emergency assembly areas through site inductions, signage and regular toolbox talks.

2. Assistance

If adequate internal resources are not available and the incident and/or non-compliance threatens public health, property or the environment, it is essential that Fire and Rescue NSW be contacted by telephoning "000" for emergency assistance.

Contacting Fire and Rescue NSW does not negate the notification requirements in **Section 3.5.3**.

3. Notify

Under the provisions of the POEO Act, there is a duty to notify any incident that has caused or threatens to cause material harm to the environment and all relevant information about the incident. The specific duties to notify are outlined above in **Section 3.5.3**.

In the event of a serious incident or emergency, it is more than likely that Fire and Rescue NSW will take control and manage the required investigation and remedial activities. Any instructions issued will be strictly adhered to.

Condition D135 and Appendix 8 of Development Consent SSD 7348 requires that the DPIE and other relevant authorities be provided with a written incident notification via email within 24 hours after the incident.

A written notification will:

- Identify the development and application number;
- Provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
- Identify how the incident was detected;
- Identify when the Applicant became aware of the incident;
- Identify any actual or potential non-compliance with conditions of consent;
- Describe what immediate steps were taken in relation to the incident;
- Identify further action(s) that will be taken in relation to the incident; and
- Identify a project contact for further communication regarding the incident.

Non-compliances will be notified in accordance with **Section 3.5.3.2**.

4. Investigate

Undertake immediate investigative work to determine the cause of the incident and/or non-compliance.

5. Remedial Action

Undertake appropriate remedial action to address the cause of the incident and/or non-compliance and mitigate any further environmental impact. In some instances, outside resources such as specialist contractors/consultants may be required.

6. Record

It is imperative that an honest assessment of the situation is carried out and documented in order to minimise the potential for similar events in the future. On this basis, every incident is to be recorded in an Incident Register (**Appendix E**). A copy of the completed report will be maintained for at least five years by RCC.

Condition D135 and Appendix 8 of Development Consent SSD 7348 requires that a detailed incident report be provided to the DPIE within 30 days of the incident occurring.

The Incident Register will include:

- A summary of the incident;
- Outcomes of an incident investigation, including identification of the cause of the incident;
- Details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
- Details of any communication with other stakeholders regarding the incident.

All non-compliances are recorded in accordance with Condition D137 of SSD 7348.

7. Preventative Action

Once the incident and/or non-compliance has been suitably handled, appropriate measures will be identified and implemented to reduce the possibility of re-occurrence.

3.5.5 Incidents and Non-Compliance Register

An Incidents and Non-Compliance Register will be maintained during construction and will contain the following:

- A copy of the environmental incident and non-compliance notification requirements and handling procedure contained above in **Section 3.5.3** and **3.5.4**;
- Site evacuation procedures;
- A separate reference sheet containing the contact details for the contacts listed in **Table 1** and the contact details for the regulatory authorities listed in **Table 6**;
- Blank hard copies of the Incident Register; and
- Copies of all completed Incident Register, which are to be maintained for at least five years after the event to which they relate.

3.5.6 Minor Environmental Incidents

There is the possibility of minor environmental incidents occurring as part of this project. SLR have defined a 'Minor Environmental Incident' as an incident where there has been no potential or actual material harm to the environment (see 'material harm' definition outlined in **Section 3.5.3**). Examples may include excessive dust impacts sighted by the project team or a small contained hydrocarbon spill that does not leave a site boundary and are cleaned up without residual on-site environmental harm.

Minor environmental incidents will still be handled under the process outlined in **Section 3.5.4** except there will be no requirement for government notification. All minor or major incidents will be recorded in the Incidents Register, with details of the events also included in the Environmental Representative Monthly Report. A minor incident does not constitute a non-compliance with the Development Consent.

3.6 Complaints Response and Handling Procedure

All complaints will be handled in accordance with the sections below and the *Community Communication Strategy* (CCS) (SLR 2020a) (see **Appendix F**).

3.6.1 Performance Objective

To ensure that all environmental complaints in relation to the construction of the Lot 1A are promptly and effectively received, handled and addressed.

3.6.2 Responsibility

The Communications and Community Liaison Representative is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an environmental complaint. The induction and toolbox talks outlined in **Section 3.4** will be used to ensure all site employees are aware of and understand their obligations for complaints response.

All employees who take 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.

3.6.3 Complaints Handling Procedure

Upon becoming aware of a complaint, the protocol outlined below will be followed.

1. Record and Acknowledge

Any employee who take 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. All relevant contact details are available in **Table 1**.

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 Communications and Community Liaison Representative will prioritise all complaints by considering the seriousness of the complaint including risk to health and safety and will attempt to provide an immediate response via phone or email. This will be undertaken in accordance with the CCS (SLR 2020a).

3. Investigate

A field 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.

If the complaint is due to an incident, the notification requirements and handling procedures outlined in **Section 3.5.3** and **3.5.4** respectively will be followed.

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 Communications and Community Liaison Representative 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 Communications and Community Liaison Representative 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 in order to minimise the potential for similar complaints in the future. On this basis, every complaint received is to be recorded in the Complaints Register attached to the CCS (**Appendix F**). A copy of the completed form will be maintained for at least five years. The complaint will also be recorded in the Complaints Register, as per **Section 3.6.4**.

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 Complaints Register is not finalised until the preventative actions are completed and recorded on the form.

3.6.4 Complaints Register

A Complaints Register will be maintained during construction and will contain the following:

- A copy of the environmental complaint handling procedure contained in **Section 3.6.3**;
- A separate reference sheet containing the contact details listed in **Table 1**;
- Blank hard copies of the Complaints Register attached to the CCS (see **Appendix F**); and
- Copies of all completed Complaints Register which are to be maintained for at least five years after the event to which they relate.

3.7 Dispute Resolution

In the event that a dispute arises between Goodman and Council or a public authority, in relation to an applicable requirement in this consent or relevant matter relating to the construction of Lot 1A, either party may refer the matter to the Planning Secretary for resolution. The Planning Secretary's determination of any such dispute will be final and binding on the parties.

In the case of a dispute between Goodman and a community member/complainant, either party may refer the matter to the DPIE and/or relevant regulatory authority for consideration, advice and/or negotiation. If the matter escalates, a third party mediator may be required. It should be noted that Condition D127g states 'as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints'.

Additional information can be located in the CCS (SLR 2020a) attached as **Appendix F**.

4 Environmental Management Commitments

Environmental aspects with the potential to be impacted through the construction of Lot 1A are addressed in the following sub-sections. These issues have specific regulatory requirements imposed by SSD 7348 and/or are considered to have the highest potential to result in a non-compliance with a legislative requirement or generate community complaints. The tables in this section are a compliance management tool outlining how controls are to be implemented.

4.1 General

Table 7 lists the general environmental controls that will be implemented throughout the construction of Lot 1A to minimise the potential for adverse impacts on the local environmental and surrounding receptors.

Table 7 General Construction Environmental Management Controls

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Safe and unobstructed access will be provided for TransGrid plant and personnel to access the transmission towers, lines and easement on the Site, 24 hours a day, 7 days a week.	RCC	Ongoing	SSD 7348 Condition B21 and D30
All staff will comply with the requirements of TransGrid for any works in the TransGrid easement.			
TransGrid will be advised of any proposed amended or modified encroachment into the easement.	Goodman / RCC		
The requirements of Endeavour Energy for the provision of land for a new zone substation (as shown on the plans in the RTS) will be complied with	RCC		SSD 7348 Condition B22
Safe and unobstructed access will be provided for Water NSW plant and personnel to access the water pipelines corridor adjacent the site, 24 hours a day, 7 days a week.			SSD 7348 Condition B23
All staff will comply with the requirements of Water NSW for any works adjacent to or over, the water pipelines corridor.			
Water NSW will be advised of any proposed amended or modified encroachment into the water pipelines corridor.	Goodman / RCC		
All reasonable and feasible measures will be implemented to prevent and minimise, any material harm to the environment.	RCC		SSD 7348 Condition D1
All demolition will be carried out in accordance *with Australian Standard AS 2601-2001 The Demolition of Structures* (Standards Australia 2001).		If required	SSD 7348 Condition D17
All plant and equipment will be maintained and operated in a proper and efficient manner.		Ongoing	SSD 7348 Condition D21

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
All signage and fencing will be erected in accordance with the plans in the RTS.	RCC	Prior to commencing construction and ongoing	SSD 7348 Condition D43
All fencing along building frontages will be located behind the landscape setbacks and not along the front boundary. The fencing will be a maximum height of 2.1 metre and be an open style.			SSD 7348 Condition D44
Lot 1A will be constructed within the hours outlined in **Section 2.3.**			SSD 7348 Condition D70
All works on or adjacent to waterfront land will be carried out in accordance with the Department of Industry (2012) *Guidelines for Controlled Activities on Waterfront Lands*.			SSD 7348 Condition D87
Environmental Work Method Statements (EWMS) will be prepared and implemented.		Prior to commencing construction and ongoing	Best practice
All monitoring records will be maintained to demonstrate compliance with the CEMP, including: • Site environmental inspection reports • Environmental monitoring data and • Internal and external audit reports • Reports of environmental incidents, environmental, associated actions taken, and follow-up actions • Minutes of management review meetings • Induction and training records		For 5 years after completion date	
The incidents and complaints management strategies contained within **Sections 3.5 and 3.6** will be implemented to ensure that any incidents and/or complaints relating to the construction activities are promptly and effectively addressed.		Ongoing	CEMP Sections 3.5 and 3.6
Construction employees and contractors will be suitably inducted and trained prior to commencing any work on site.		Prior to commencing construction and ongoing	CEMP Section 3.4

4.2 Noise

Construction noise at Lot 1A will be managed in accordance with the CNVMP (SLR 2020c) prepared to fulfil Condition D73 and D74 of SSD 7348, attached as **Appendix G**.

Table 8 outlines the project specific Noise Management Levels (NMLs) to be adhered to during the construction of Lot 1A as outlined in the CNVMP (SLR 2020c).

Table 8 Project Specific Construction Noise Management Levels

Location	Receiver Type	Rating Background Level (RBL)[1]			Construction Noise Management Levels (NML) $L_{Aeq(15minute)}$ (dBA)				
		Day	Evening	Night	Standard Construction Hours[2]	Day Out of Hours[2]	Evening Out of Hours[2]	Night Out of Hours[2]	Highly Noise Affected
Erskine Park Residential[3]	Residential	37	40	39	47	42	42[5]	42[5]	75
Emmaus Village Residential	Residential	39	38	36	49	44	43	41	
Kemps Creek Residential	Residential	34	35	32	44	39	39[5]	37	
Any	Industrial	n/a			External 75 when in use				n/a
Any	Commercial	n/a			External 70 when in use				
Any	School[4]	n/a			External 55 when in use				

Note 1: RBL Periods – Day: 7:00 am to 6:00 pm Monday to Saturday, 8:00 am to 6:00 pm Sunday; Evening: 6:00 pm to 10:00 pm; Night: 10:00 pm to 7:00 am Monday to Saturday, 10:00 pm to 8:00 am Sunday.

Note 2: Standard construction hours: 7:00 am to 6:00 pm Monday to Friday, 8:00 am to 1:00 pm Saturday (see **Section 2.3**).
Day out of hours: 1:00 pm to 6:00 pm Saturday, 8:00 am to 7:00 pm Sunday and Public Holidays.
Evening out of hours: 6:00 pm to 10:00 pm Monday to Sunday.
Night out of hours: 10:00 pm to 7:00 am Monday to Saturday, 10:00 pm to 8:00 am Sunday and Public Holidays.

Note 3: RBL for Erskine Park Residential taken from *Western North-South Link Road DA Noise Impact Assessment* prepared by SLR in September 2016.

Note 4: External criteria equivalent to internal criteria plus 10 dB.

Note 5: RBL reduced to be equal to Daytime RBL in accordance with the ICNG and NPfI.

The noise criteria outlined in Condition B18 is applicable to the operation of Lot 1A and will form part of the Operation Environmental Management Plan (OEMP).

The environmental management controls in **Table 9** will be implemented to minimise the potential for adverse noise emissions from the construction of Lot 1A.

Note: **Table 9** and **Table 12** are replicated as Table 14 in the CNVMP.

Table 9 Environmental Management Controls for Noise

Measure	Responsibility	Timing / Frequency	Reference / Notes
Project Planning			
Less noise and vibration intensive construction techniques for rock breaking and concrete sawing will be used.	RCC	Ongoing	Best practice and CNVMP Section 6
Works will be completed during standard daytime construction hours outlined in **Section 2.3**.			
Truck routes to site will be in accordance with the approved Construction Traffic Management Plan.			
Scheduling			
Respite offers will be considered where high-noise works are predicted to exceed 75 dBA for residential receivers. For schools and retirement villages (Emmaus Village) a lower level of 65 dBA will be used to account for the sensitive daytime uses of these receivers. Respite offers will be considered for high-vibration works where the works are undertaken within the human comfort minimum working distances for all receiver types. Consultation with these receivers will be undertaken to determine appropriate respite periods, such as exams periods for schools.	Communications and Community Liaison Representative	Ongoing	SSD 7348 Condition D73
High-noise or vibration generating works will be carried out in continuous blocks no longer than three hours in length, with a minimum respite period of one hour between each block. 'Continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing these works. High-noise or vibration generating works conducted outside standard construction hours (where approved) will be limited to no more than two consecutive nights except where there is a Duration Respite (see below). For night-works these periods will be separated by no less than one week, and limited to six nights per month. Where possible, high-noise and vibration generating works will be completed before 11:00 pm.			
Duration Respite will be considered where it may be beneficial to the sensitive receivers to increase the duration of blocks of work or number of consecutive periods in order to complete the works more quickly. The project team will engage with the community where Duration Respite is considered in accordance with the CCS.			

Measure	Responsibility	Timing / Frequency	Reference / Notes
Notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone numbers will be undertaken in accordance with the CCS.	Communications and Community Liaison Representative	Ongoing	Best practice and CNVMP Section 6
Site Layout			
Compounds and worksites will be designed to promote one-way traffic and minimise the need for vehicle reversing.	RCC	Ongoing	Best practice and CNVMP Section 6
Where practicable, work compounds, parking areas, and equipment and material stockpiles will be positioned away from noise-sensitive locations and take advantage of existing screening from local topography.			
Equipment that is noisy will be started away from sensitive receivers			
Training			
Training will be provided to all personnel on noise and vibration requirements for the project. Inductions and toolbox talks to be used to inform personnel of the location and sensitivity of surrounding receivers.	RCC	Ongoing	Best practice and CNVMP Section 6
Plant and Equipment Source Mitigation			
All construction plant and equipment used on Site will be, in addition to other requirements: a) regularly inspected and maintained in an efficient condition; b) operated in a proper and efficient manner.	RCC	Ongoing	SSD 7348 Condition D21
Where practicable, tonal reversing alarms (beepers) will be replaced with non-tonal alarms (squawkers) on all equipment in use (subject to occupational health and safety requirements).			Best practice and CNVMP Section 6
Noisy equipment will be sited behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.			
Noise generating equipment will be regularly checked and effectively maintained, including checking of hatches/enclosures regularly to ensure that seals are in good condition and doors close properly against seals.			
Dropping materials from a height will be avoided.			
Loading and unloading will be carried out away from noise sensitive areas, where practicable.			

Measure	Responsibility	Timing / Frequency	Reference / Notes
Trucks will not queue outside residential properties. Truck drivers will avoid compression braking as far as practicable.	RCC	Ongoing	Best practice and CNVMP Section 6
Truck movements will be kept to a minimum i.e. trucks are fully loaded on each trip.			
Screening			
Purpose-built acoustic screening or enclosures will be installed around long-term fixed plant such as generators in site compounds.	RCC	Ongoing	Best practice and CNVMP Section 6
The MOD 3 noise barriers will be constructed to the satisfaction of the Planning Secretary.		By 31 October 2020	SSD 7348 Condition D75(c)
Community Consultation			
Notifications will be provided to the affected community where high impacts are anticipated or where out of hours works are required. Notification will be a minimum of seven working days. Refer to the CCS.	Communications and Community Liaison Representative	Ongoing	Best practice and CNVMP Section 6
Where complaints are received, work practices will be reviewed and feasible and reasonable practices implemented to minimise any further impacts. See **Section 3.6**.			
Monitoring			
Noise and/or vibration monitoring will be conducted (as appropriate) when noise/vibration intensive works are being undertaken in close proximity to sensitive receivers.	RCC	Ongoing	Best practice and CNVMP Section 6
Noise and/or vibration monitoring will be conducted (as appropriate) in response to any complaints received to verify that levels are not substantially above the predicted levels.			
Refer to Section 8 of CNVMP for full details of monitoring requirements.			
EIS Measures			
Construction hours will be limited to 7:00 am - 6:00 pm Monday to Friday and 8:00 am - 1:00 pm Saturdays..	RCC	Ongoing	EIS mitigation commitment
Where construction noise levels are predicted to be above the NMLs, all feasible and reasonable work practices will be investigated to minimise noise emissions as detailed in the CNVMP.			
Construction works will be conducted during Standard Construction Hours, with out of hours work minimised as far as feasible and reasonable, and undertaken in accordance with Condition D71.			
Locations for vibration intensive equipment will be reviewed during the planning of construction works adjacent to the most affected receivers.			

4.3 Vibration

Vibration during the construction of the Lot 1A will be managed in accordance with the CNVMP (SLR 2020c) prepared to fulfil Condition D73 and D74 of SSD 7348, and attached as **Appendix G**. The key vibration criteria is listed in Condition D76: *Vibration caused by construction works on the site, as measured 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).

The vibration dose values (VDVs) recommended in the EPA's *Assessing Vibration: a technical guideline* (2006) for vibration of an intermittent nature are listed in **Table 10**.

Table 10 Acceptable Vibration Dose Values for Intermittent Vibration

Location	Daytime[1]		Night-time[1]	
	Preferred Value	Maximum Value	Preferred Value	Maximum Value
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Note 1: Daytime is 7:00 am to 10:00 pm and night-time is 10:00 pm to 7:00 am.

The recommended safe working distances for vibration intensive construction plant are listed in **Table 11**. These recommendations are for the practical management of potential vibration to minimise the likelihood of cosmetic damage to buildings and disturbance or annoyance in humans.

Table 11 Recommended Safe Working Distances for Vibration Intensive Plant

Plant Item	Rating / Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline)[1]
		Residential and Light Commercial (BS 7385)[1]	Heritage Items (DIN 4150 Group 3)[2]	
Vibratory Roller	< 50 kN (Typically 1-2t)	5 m	11 m	15 m to 20 m
	< 100 kN (Typically 2-4t)	6 m	13 m	20 m
	< 200 kN (Typically 4-6t)	12 m	15 m	40 m
	< 300 kN (Typically 7-13t)	15 m	31 m	100 m
	> 300 kN (Typically 13-18t)	20 m	40 m	100 m
	> 300 kN (Typically > 18t)	25 m	50 m	100 m
Small Hydraulic Hammer	300 kg – 5 to 12t excavator	2 m	5 m	7 m

Plant Item	Rating / Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline)[1]
		Residential and Light Commercial (BS 7385)[1]	Heritage Items (DIN 4150 Group 3)[2]	
Medium Hydraulic Hammer	900 kg – 12 to 18t excavator	7 m	15 m	23 m
Large Hydraulic Hammer	1600 kg – 18 to 34t excavator	22 m	44 m	73 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m	5 m to 40 m	20 m
Pile Boring	≤ 800 mm	2 m (nominal)	5 m	4 m
Jackhammer	Hand held	1 m (nominal)	3 m	2 m

Note 1: Criteria reference from RMS (2016) Construction Noise and Vibration Guideline (CNVG).

Note 2: Criteria reference from German Institute for Standardisation (Deutsches Institut für Normung) (1999) DIN 4150 – Structural vibration - Effects of vibration on structures.

The environmental management controls in **Table 12** will be implemented to minimise the potential for adverse vibration impacts from the construction of the Lot 1A.

Note: **Table 9** and **Table 12** are replicated as Table 14 in the CNVMP.

Table 12 Environmental Management Controls for Vibration

Measure	Responsibility	Timing / Frequency	Reference / Notes
Vibration			
Where works are required within the minimum working distances, vibration monitoring will be undertaken to confirm that vibration is within acceptable levels.	RCC	Ongoing	Best practice and CNVMP Section 6
Where works are required within the cosmetic damage minimum working distances, building condition surveys will be completed before and after the works to ensure no cosmetic damage has occurred.			
Vibratory compactors will not be used closer than 30 m from residential and educational buildings unless vibration monitoring confirms compliance with the vibration criteria.			SSD 7348 Condition D77
Where there is a risk that vibration activities may cause damage to nearby structures and buildings or if these are located within the minimum working distance from the construction activity, a building condition inspection will be undertaken at least three weeks before the construction activity commences.		Before and after any vibration activities within minimum distances	Best practice and CNVMP Section 6

Measure	Responsibility	Timing / Frequency	Reference / Notes
The Building Condition Inspection Reports will contain photographs of the inspected properties and include details of the inspectors' qualification and expertise, together with a list of any identified defects, where relevant. The reports will be submitted to the owner of each property and to Goodman before the commencement of any vibration intensive activities.	RCC	Before and after any vibration activities within minimum distances	Best practice and CNVMP Section 6
A copy of the Building Condition Inspection Reports and CNVMP will be submitted to Goodman at least 10 working days prior to commencement of piling, excavation by hammering or ripping, compaction, demolition operations, or any activity which may cause damage through vibration.			

4.4 Air Quality

In accordance with Condition D100 of SSD 7348, a Construction Air Quality Management Plan (CAQMP) has been prepared by SLR (2020b) and is attached as **Appendix H**.

The CAQMP will be implemented during the construction of the Lot 1A to ensure that acceptable levels of amenity are maintained for surrounding residents and the relevant ambient air quality criteria are complied with for particulate matter at surrounding receptor locations.

The environmental controls in **Table 13** will be implemented to minimise the potential for adverse dust emissions and impacts during the construction.

Note: **Table 13** is replicated as Table 8 in the CAQMP.

Table 13 Environmental Management Controls for Air Quality

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Communications			
The Community Communications Strategy will be implemented.	Communications and Community Liaison Representative	Prior to commencing construction and ongoing	Best practice
The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary. This may be the Contractor's Project Manager.	RCC		
The head or regional office contact information will be displayed on site signage.			
Site Management			
All dust and air quality incidents will be undertaken as per **Section 3.5**.	RCC	Ongoing	CEMP Section 3.5
All dust and air quality complaints will be undertaken as per **Section 3.6**.			CEMP Section 3.6
Where excessive dust events occur (i.e. prolonged visual dust in a particular area), additional watering of dust producing activities will be undertaken or activities temporarily halted until such times that the dust source is under control.		During excessive dust events	Best practice
Horsley Park Bureau of Meteorology station weather forecast will be reviewed daily (i.e. wind, rain) to inform site dust management procedures for the day.		Daily	
Preparing and Maintaining the Site			
All reasonable steps to minimise dust generated will be undertaken during construction.	RCC	Ongoing	SSD 7348 Condition D98
Exposed surfaces and stockpile will be suppressed by regular watering or use of approved dust suppressants.			SSD 7348 Condition D99a

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Land stabilisation works will be carried out in such a way on site to minimise exposed surfaces.	RCC	Ongoing	SSD 7348 Condition D99e
Construction of Lot 1A will not cause or permit the emission of any offensive odour, as defined in the POEO Act.			SSD 7348 Condition D102
Dust generating activities in areas close to receptors will be closely monitored and additional mitigation applied as required to best manage potential dust emissions			Best practice
Stockpiles that will be in place for more than 20 days and are not actively used as well as any stockpiles that are susceptible to wind or water erosion will be suitably protected from erosion within 10 days of the establishment of each stockpile. Temporary stabilisation of disturbed surfaces will be undertaken within two weeks of the stockpile being established.			
Site fencing and barriers will be kept clean using wet methods.			
Operating Vehicle/Machinery and Sustainable Travel			
Trucks associated with Stage 1 will not track dirt off site and onto the public road network.	RCC	Ongoing	SSD 7348 Condition D99c
Project access roads used by delivery trucks will be kept clean.			SSD 7348 Condition D99d
All on-road vehicles will comply with relevant vehicle emission standards (prescribed by the NSW RMS), where applicable, and will be maintained in good condition, in accordance with manufacturer's specifications and POEO Act.			Best practice
Delivery trucks will switch off engines whilst undertaking a delivery on-site, if idling time is likely to exceed 5 minutes.			
Vehicle speed limit restrictions are implemented on site, including: • General - 20km/h • High risk area - 10km/h • Haul routes – 50 km/h			
Truck queuing and unnecessary trips will be minimised through logistical planning and by the identification and use of specific park up/hold areas away from the Project.			
Operations			
Only cutting, grinding or sawing equipment fitted with suitable dust suppression systems, such as water sprays will be used.	RCC	Ongoing	Best practice

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Adequate water supply will be available on the site for effective dust/particulate matter suppression/ mitigation using a combination of potable and non-potable water sources.	RCC	Ongoing	Best practice
Water carts will be used on all denuded or exposed surfaces and unsealed roads to minimise dust emissions.			
Equipment, inclusive of, but not limited to Environmental spill kits will be 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.			
Works will be assessed during strong winds or in weather conditions where high levels of airborne particulates may potentially impact the sensitive receivers. Continual monitoring of wind speed and direction will be undertaken to guide this decision and ensure that adequate mitigation measures are undertaken		Continuously and during high winds	
Waste Management			
All trucks entering or leaving the Site will have their loads covered.	RCC	Ongoing	SSD 7348 Condition D99b
No waste materials, timbers or any other combustible materials will be burnt on site.			Best practice
Earthworks			
Scopes of work will be planned in such a way to assist in minimising the duration that surfaces are left denuded	RCC	Ongoing	Best practice
Rehabilitation of disturbed surfaces will be undertaken within 20 days of final construction levels.		Within 20 days of final construction levels	
If unanticipated strong odours or significant visual dust emissions are noted or observed on site, an investigation will be undertaken by the RCC Project Manager to identify the scope of work or source of the emission prior to undertaking and applying any additional mitigation measures.		Ongoing	
Construction			
Sand and other aggregates will not be allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	RCC	Ongoing	Best practice
Trackout			
Water-assisted road sweeper(s) will be used on an as required basis should any material be tracked out of the site.	RCC	Ongoing	Best practice

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Record all regular inspections and maintenance undertaken of site haul routes and project related access roads in a site log book.	RCC	Ongoing	Best practice
A wheel washing system and/or cattle grid system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site) will be implemented.			
Demolition			
Ensure effective water suppression of dust is used during demolition operations.	RCC	Ongoing	Best practice
Bag and remove any biological debris or damp down such material before demolition.			

As required by condition D100(e), **Table 14** summarises the parameters identified to assess the effectiveness of the control measures shown in **Table 13**. It should be noted that all real time dust monitoring is currently undertaken by the construction contractors for the WNSLR and Oakdale West infrastructure. The data from this ongoing monitoring program will be utilised to inform the management measures and contingency response for the construction of Lot 1A.

Table 14 Summary of the Parameters to Assess the Effectiveness of Control Measures

Parameter	Visible Dust	Dust Deposition	Complaints	PM_{10}
Key performance indicator	No visible dust leaving the site boundary	<4 g/m^2/month	No complaints related to nuisance dust	<50 $\mu g/m^3$ as a 24-hour average
Monitoring method	Visual inspection / observations	Dust deposition gauges	-	See note
Location, frequency and duration of monitoring	Daily onsite inspection	Section 10 of CAQMP	-	See note
Record keeping	Section 3.5 and 3.6 of CEMP	Section 3.5 and 3.6 of CEMP	Section 3.6 of CEMP	See note
Response procedures	Section 5.4 of CEMP	Section 5.4 of CEMP	Section 3.6 of CEMP	See note
Compliance monitoring	-	Section 10 of CAQMP	-	See note

Note: Real-time suspended particulate monitors are installed at the site to assist with dust management. The monitoring system used however, does not meet the requirements of a compliance instrument. Should compliance-level monitoring be required as per Table 10 of the **CAQMP**, then this table will be updated to reflect the expanded monitoring programme.

4.5 Traffic

Construction traffic will be managed in accordance with the Construction Traffic Management Plan (CTMP) (Ason 2020) prepared to fulfil Condition D65 of SSD 7348 and is attached as **Appendix C**.

The CTMP seeks to minimise traffic impacts on the surrounding road network, ensure safety and efficiency for workers, pedestrians and other road users, and provide information regarding the construction vehicle access routes and any changed road conditions.

Construction-related traffic will be made up of both heavy vehicle (HV) and light vehicle (LV) movements. Based on the construction stages outlined in **Table 4**, **Table 15** provides a summary of the estimated daily construction vehicle movements, as listed in the CTMP (Ason 2020).

Table 15 Daily Construction Vehicle Movements

Stage	Morning Peak		PM Peak		Daily Total
	LV	HV	LV	HV	
Stage 1	20	24	20	24	**222**
Stage 2	20	32	20	32	**490**
Stage 3	40	10	40	10	**410**
Stage 4	40	10	40	10	**410**
Stage 5	20	10	20	10	**200**

The environmental management controls in **Table 16** will be implemented to ensure road safety and network efficiency during construction.

Table 16 Environmental Management Controls for Traffic

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
The internal estate roads and intersections will be constructed to accommodate the turning path of a B-Double, to the satisfaction of the Relevant Roads Authority.	RCC	Ongoing	SSD 7348 Condition D67
Construction will not result in any vehicles queuing on the public road network.			SSD 7348 Condition D69
Heavy vehicles will not be parked on local roads or footpaths in the vicinity of the Site.			
All vehicles will be wholly contained on site before being required to stop.			
All loading and unloading of materials will be carried out on Site.			
All trucks entering or leaving the Site will have their loads covered and will not track dirt onto the public road network.			

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
All endeavours will be undertaken to limit vehicular movements with the TransGrid easement areas, wherever practicable.	RCC	Ongoing	CTMP Section 4.1.4
No vehicle circulation will be undertaken within 5 m of any transmission structure or guy-wires.			
All drivers will adhere to the Driver Code of Conduct outlined in Section 5 of the CTMP.			CTMP Section 4.2.1
RCC will nominate the parking zones without obstructing any vehicle manoeuvre routes.		Prior to commencing construction and ongoing	CTMP Section 4.2.2
All deliveries, materials handling, equipment, materials and waste will be kept within the construction site boundary at all times.		Ongoing	CTMP Section 4.2.3
An application to Council will be submitted in the event that any special or discreet work activities require the use of kerbside parking for the purposes of a Works Zone.		As required	CTMP Section 4.2.4
Man-proof fencing will be provided along all site frontages accessible by the public to prevent unwanted pedestrian access.		Prior to commencing construction and ongoing	CTMP Section 4.2.5
Man-proof fencing will be provided along all site frontages accessible by the public to prevent unwanted cyclist access.			CTMP Section 4.2.6
Any signage and/or line marking required will be installed as per Council's *Engineering Construction Specification for Civil Works document* (October 2017).		As required	CTMP Section 4.2.7
Any Traffic Control Plans (TCPs) will be prepared by an accredited person, in accordance with the *Traffic Control at Work Sites Manual* (RMS 2018e) and AS 1742.3.			CTMP Section 4.2.8
Drivers will be responsible and accountable for their actions when operating a company vehicle or driving for the purposes of work.	Drivers	Ongoing	CTMP Section 5.3
The highest level of professional conduct will be displayed when driving a vehicle at work.			
All drivers will have a current driver licence for the class of vehicle they are driving, and this licence is to be carried at all times.	Drivers / RCC		
Management will be immediately notified if their drivers licence has been suspended, cancelled, or has had limitations applied.	Drivers		
All traffic and road legislation will be complied with when driving.			
Hazards will be assessed while driving.			
The oil, tyre pressures, radiator and battery levels of all company vehicles will be checked.	Drivers / RCC		

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
All drivers will drive within the legal speed limits, including driving to the conditions.	Drivers	Ongoing	CTMP Section 5.3
All drivers will not drive outside of the approved Heavy Vehicle routes. Heavy Vehicles will adhere to the routes outlined in Section 4 of the CTMP.	Drivers / RCC		
All drivers will obey the weight, length and height restrictions imposed by the National Vehicle Regulator, and other Government agencies.			
Drivers will be cognisant of the noise and emissions requirements imposed within the EIS, and in a broader sense, the NSW/ Australian Road Rules.	Drivers		
Drivers will not queue on roads unless a prior approval has been sought.			
No tracked vehicles will be driven on a paved road.			
Drivers will not 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.	Drivers / RCC		
A safety seat belt will be worn at all times when in any vehicle.	Drivers		
All drivers will avoid distractions when driving i.e. the driver will adjust car stereos/mirrors etc. before setting off, or pull over safely to do so.			
All near-hits, crashes and scrapes will be reported to management.	Drivers / RCC		
All infringements will be reported to management at the earliest opportunity.			
Vehicle defects will be reported to management.		Prior to the next vehicle use	
The authorised site access and egress route will be followed.		Ongoing	
The speed limits within the construction site will be adhered to.	RCC		
Pre-commencement checks will be undertaken for all new traffic related plant arriving on site.		Prior to first use	CTMP Section 5.4
Prestart inspections will be completed for all traffic related plant and equipment currently on-site.	Drivers / RCC	Daily	
All construction plant will be fitted with a flashing light, fire extinguisher and reverse alarms.	RCC	Prior to first use	
All operators onsite will have a current verification of competency (VOC) for their current driver's licence of the appropriate class.		Ongoing	
All maintenance requirements will be completed.			

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Appropriate driver training or re-training will be arranged (where required), including: • Operator assessment as part of all inductions; • Regular Toolbox talks on safety features, managing fatigue, approved heavy routes, driver responsibility and drink-driving (see **Section 3.4**).	RCC	Ongoing	CTMP Section 5.4
RCC will be informed if staff become unlicensed.	Subcontractors / Employees		
Management will not cover or reimburse staff speeding or other infringement notices.	RCC		
Only legal use of mobile phones in vehicles while driving will be undertaken.	Drivers / RCC		
Improved fuel efficiency will be encouraged by: • Use of other transport modes or remote conferencing, whenever practical; • Providing training on, and circulating information about, travel planning and efficient driving habits.	RCC		
If a vehicle crash occurs, the vehicle will be stopped as close as possible to the scene without hindering traffic.	Drivers / RCC	Following a vehicle crash	CTMP Section 5.5
If a vehicle crash occurs, the list of information listed in Section 5.5 of the CTMP should be recorded.			
The CTMP will be reviewed in accordance with Section 7.1 of the CTMP.	RCC	As required	CTMP Section 7.1

4.6 Soil and Water

The following documents have been prepared to ensure appropriate soil and water management during the construction of the Lot 1A:

- Soil and Water Management Plan (SWMP) (Rubicon Enviro 2020) – prepared to address Conditions D80 and D81 of SSD 7348 and includes an Erosion and Sediment Control Plan (ESCP). The SWMP describes how RCC propose to manage and minimise soil and water impacts during construction of Lot 1A. A copy of the SWMP is attached as **Appendix I.**
- Salinity Management Plan (Pells Sullivan Meynink 2015b) – prepared in accordance with WSROC's *Salinity Code of Practice* (2004) to provide controls for the potential impacts of salinity during construction. The Salinity Management Plan was approved as part of the Oakdale West infrastructure CEMP and is attached as **Appendix J**.
- Fill Importation Protocol (FIP) (AECOM 2020a) – prepared to address Condition D79 of SSD 7348 and attached as **Appendix K**. The FIP aims to ensure that materials imported to the site are suitable for commercial / industrial land use.

While these documents should be referred to for specifics, the environmental management controls are summarised in **Table 17**.

Table 17 Environmental Management Controls for Soil and Water

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
General			
Construction will comply with section 120 of the POEO Act, which prohibits the pollution of waters.	RCC	Ongoing	SSD 7348 Condition D82
All works on or adjacent to waterfront land will be carried out in accordance with the Department of Industry's (2012) *Guidelines for Controlled Activities on Waterfront Lands.*			SSD 7348 Condition D87
Water			
The stormwater system will be constructed in accordance with Condition D83 of SSD 7348.	RCC	Ongoing	SSD 7348 Condition D83
If groundwater is intersected during construction the following will be undertaken: • Obtain the necessary water licences or approvals from Natural Resource Access Regulator (NRAR) • Develop a Groundwater Management Plan (GMP) for the testing, dewatering, storage, movement and treatment of groundwater, to the satisfaction of NRAR	Goodman / RCC	If required	SSD 7348 Condition D86
Irrigation and toilet flushing will be plumbed to rainwater tanks.	RCC	Ongoing	SSD 7348 Appendix 7
Consideration will be given to other possible rainwater reuse opportunities such as for truck washing.			

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Gross Pollutant Trap (GPT) will be installed within each development site on the final downstream stormwater pit prior to discharge.	RCC	Ongoing	SSD 7348 Appendix 7
Clean and dirty water runoff will be adequately separated to avoid mixing where possible through the use of diversions, clean water drains, and the early installation of permanent drainage infrastructure.			Best practice
The soil and water management controls outlined in Table 6-1 of the SWMP will be implemented.			SWMP Section 6
Disturbance of natural drainage patterns will be avoided. Where these are disturbed or altered, appropriate artificial drainage will be installed.		As required	Salinity Management Plan Section 5.5
Stormwater and surface water will be managed to restrict infiltration.		Ongoing	
Temporary water retaining structures used during construction will be managed to restrict infiltration.			
Stormwater and surface water infrastructure will be constructed to minimise the likelihood of leakage.			
Surface water runoff will be directed around all exposed surfaces, temporary stockpiles and landscaped areas.			
Erosion and Sediment Control			
The SWMP will be implemented to ensure stormwater flows do not increase in any downstream areas.	RCC	Prior to commencing construction and ongoing	SSD 7348 Condition D81
EWMS will be prepared and implemented to manage soil and water impacts.			Best practice
The locations of site compounds, access tracks, stockpile sites and temporary work areas will be placed to minimise erosion.			
Construction will be programmed to minimise the duration and extent of soil that is left exposed.		Ongoing	
Control measures will be implemented at construction access points to minimise dirt and mud tracking. Any material transported onto road surfaces to be removed.		Daily and before rainfall	
All temporary erosion and sediment control devices will not be removed until the permanent measures are sufficiently established.		Ongoing	

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Prior to forecast storm events, rainfall greater than 10mm or flooding events: • The site will be inspected to ensure that all erosion/sedimentation and stabilisation controls are in place and in effective working order; • All work in the vicinity of flood-prone areas will cease and all loose materials and waste will be collected; and • If there is a possibility that work sites could be flooded, action will be taken to prevent any environmental incidents such as potential pollution incidents and protecting disturbed ground from erosion, including relocating all materials that could cause harm onto higher ground and away from flood prone areas.	RCC	Prior to forecast storm events, ≥10mm rain or flooding events	Best practice
All construction sediment retention basins and sediment traps will be removed before completion, but not before all upstream areas have been vegetated or otherwise stabilised.		At the completion of construction	
Erosion control and sediment capture measures will be installed prior to stockpiling material.		Prior to stockpiling material	
Stockpiles will be located outside of the tree protection zone of trees or native vegetation identified for retention. The tree protection zone will be delineated in accordance with AS 4970.		Ongoing	
Stockpiles will be located in areas of low ecological or heritage significance.			
Stockpiles will be located away from sensitive receivers, at least 5 m from likely areas of concentrated water flows and at least 10 m from waterways that are classified as Class 1 and Class 2 ("*Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings*" (DPI Fisheries guideline)).			
Stockpiles and material will not be located within the 1 in 10 year ARI floodplain.			
Height of stockpiles to be limited (where possible and space is available) especially near sensitive receptors. Slopes will be no steeper than 2:1.			
Topsoil that is not contaminated by noxious weeds will be kept in stockpiles for later spreading on fill batters and other areas. Other material may also be stockpiled but kept separated from the topsoil stockpiles.			
Measures to prevent the growth of weeds in topsoil stockpiles will be implemented.			

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
If any stockpile site is to be located on private land, an approved notice under s.143 of the POEO Act will be obtained from the landholder prior to commencement of stockpiling.	RCC	Prior to stockpiling	Best practice
Specialist expertise and advice will be sought from an accredited Project Soil Conservationist (CPESC) in regard to the broad spectrum of erosion and sediment control issues.		Ongoing	ESCP Section 7.4
A structured erosion and sediment control training program will be implemented for all relevant site personnel in the form of inductions, toolbox talks and workshops / training presentations.			CEMP Section 3.4 ESCP Section 7.4
The extent and duration of construction disturbance will be minimised.			
Off-site water flows around or across site will be controlled and diverted.			
On-site flows to installed sediment controls and sediment basins will be controlled and diverted.			
Topsoils for site rehabilitation and revegetation will be conserved.			
Progressive erosion methods and techniques will be implemented throughout various work stages.			
Suitable sediment controls including sediment filters, traps, sumps and basins will be constructed and managed.			ESCP Section 7.4
A thorough inspection and maintenance program will be developed to monitor, record and schedule actions for maintenance and upgrades of controls, rectification works, and sediment removal and handling.			
A procedure will be established to monitor forecast weather events and implementing response plans for significant wind or rainfall events and flooding.			
Timely and progressive stabilisation will be undertaken of disturbed areas prior to final landscaping.			
Stabilisation measures will be monitored, and prompt and effective revegetation and permanent stabilisation promoted.			
The erosion and sediment control management measures outlined in Table 9 of the ESCP will be implemented.			ESCP Section 9

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Salinity			
Vegetation cover will be established and maintained on permanent batters to control erosion.	RCC	As soon as practical upon completion	Salinity Management Plan Section 5.2
The final surface of all areas of the development will be graded to prevent the ponding of surface water.		Ongoing	
Subsoil drainage will be considered for areas where the designer considers accumulation of groundwater may occur. We do not consider that any significant such areas are likely at this site.		As required	
Roads, footpath and hardstand surfaces will be graded to prevent ponding of surface water at locations where this can result in infiltration into the underlying soils (e.g. pavement joints).		Ongoing	Salinity Management Plan Section 5.4
Connections between the roads, footpath and hardstand surfaces and the surface water and stormwater drainage infrastructure will be constructed to restrict infiltration into underlying soils.			
Services that are to be located below the roads, footpath and hardstand surfaces will be installed at the time of construction of the road, where possible.		During construction	
Where ponds are intended to be permanently full i.e. recreational / aesthetic ponds / fountains, it is recommended that the base of the ponds / fountains be lined with an impermeable liner or other suitable methods i.e. clay liners.		As required	Salinity Management Plan Section 5.6
Fill Importation			
Only Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM) or other material approved in writing by EPA will be brought onto the site.	RCC	Ongoing	SSD 7348 Condition D79
Accurate records of the volume and type of fill used on site will be maintained and made available to the DPIE if requested.			
Materials imported to Site will be either Excavated Natural Material (ENM) or Virgin Excavated Natural Material (VENM). Assessment requirements in Section 2 of the FIP (**Appendix K**) will be adhered to.		Prior to importation of fill	FIP Section 2
Inspections of vehicles importing fill to site will be undertaken. Where suspicious loads and/or evasive answers are apparent, permission to unload will not be granted.			

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Where contaminants or suspected contaminants are observed in imported material during tipping, the truck will be reloaded and be sent back to the source site. Cartage from the source site shall cease and will only recommence when the Contractor is satisfied that the issue has been addressed.	RCC	Prior to importation of fill	FIP Section 2
A Materials Tracking Register will be implemented to ensure that only "approved" ENM or VENM is imported to the Site. The Materials Tracking Register will include the requirements listed in Section 3 of the FIP (**Appendix K**).		Weekly	FIP Section 3

4.7 Waste

Construction waste will be managed in accordance with the Waste Management Plan (SLR 2020d) (WMP) included to fulfil Condition D112 of Development Consent SSD 7348 and attached as **Appendix L**. The WMP approved as part of the MOD 2 EIS has been used in this CEMP.

4.7.1 Earthworks Waste

The earthworks for Lot 1A have been addressed in a separate study – Fill Importation Protocol, completed by AECOM (2020a). All earthworks and filling works are to be undertaken in accordance with this protocol.

4.7.2 Construction Waste

The construction of Lot 1A is likely to generate the following broad waste streams:

- Excavation material;
- Construction wastes;
- Plant maintenance waste;
- Packaging waste;
- Green waste from site clearing activities; and
- Work compound waste from on-site employees.

A summary of likely waste types generated from site preparation and construction activities, along with their waste classifications and proposed management methods, is provided in **Table 18**.

For further information on how to classify a waste type refer to the NSW EPA (2014) *Waste Classification Guidelines*. Further information on managing site preparation and construction wastes is available from the NSW EPA website.

Table 18 Construction Waste Types

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Construction		
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Off-site recycling; Cleaned for reuse, rendered over or crushed for landscaping or driveway use
Gyprock or plasterboard	General solid waste (non-putrescible)	Off-site recycling or returned to supplier
Sand or soil	General solid waste (non-putrescible)	Off-site recycling
Metals such as fittings, appliances and bulk electrical cabling	General solid waste (non-putrescible)	Off-site recycling

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Conduits and pipes	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling; *Treated*: reused for formwork, bridging, blocking, propping or second hand supplier; *Untreated*: reused for floorboards, fencing, furniture, mulched second hand supplier
Doors, Windows, Fittings	General solid waste (non-putrescible)	Off-site recycling at second hand supplier
Insulation material	General solid waste (non-putrescible)	Off-site disposal
Glass	General solid waste (non-putrescible)	Off-site recycling; glazing or aggregate for concrete production
Asbestos	Hazardous waste	Off-site disposal
Fluorescent light fittings and bulbs	Hazardous waste	Off-site recycling or disposal; contact *FluoroCycle* for more information
Paint	Hazardous waste	Off-site recycling, Paintback collection or disposal
Synthetic Rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling; reprocessed and used in safety devices and speed humps
Carpet	General solid waste (non-putrescible)	Off-site recycling or disposal; reused for landscaping, insulation or equestrian uses
Plant Maintenance		
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups	Hazardous waste: Containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid waste (non-putrescible): Containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Oil filters	Hazardous waste	Off-site recycling
Batteries	Hazardous waste	Off-site recycling; Contact the Australian Battery Recycling Initiative for more information
Packaging		
Packaging materials, including wood, plastic, including stretch wrap or LLPE, cardboard and metals	General solid waste (non-putrescible)	Off-site recycling

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Wooden or plastic crates and pallets	General solid waste (non-putrescible)	Reused for similar projects, returned to suppliers, or off-site recycling. Contact *Business Recycling* for more information
Work Compound and Associated Offices		
Food Waste	General solid (putrescible) waste	Compost on site. Alternatively dispose to landfill with general garbage
Recyclable beverage containers, including glass and plastic bottles, aluminium cans and steel cans	General solid waste (non-putrescible)	Co-mingled recycling at off-site licensed facility or at a local NSW container deposit scheme 'Return and Earn' off-site licensed facility
Clean paper and cardboard	General solid waste (non-putrescible)	Paper and cardboard recycling at off-site licensed facility
General domestic waste generated by workers including soiled paper and cardboard, food stuffs and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

In the absence of readily available construction waste generation rates from Council, SLR has adopted the 'Factory' and 'Office' waste generation rates from Appendix A of The Hills Development Control Plan (DCP) 2012 for estimating the type and quantities of waste generated from construction of the Precinct 1.

In the absence of readily available published information for 'Carpark' construction waste generation rates, SLR has developed 'Carpark' construction rates based on the 'Office' rates by:

- Removing timber, bricks and gyprock as these materials are unlikely to be present in significant quantities in a modern carpark structure; and
- Increasing the rates for concrete, sand or soil, metal and 'other', in proportion, to maintain the total assumed tonnage per 1000 m^2 of construction.

The waste generation rates for Precinct 1 are shown in **Table 19**.

Table 19 Construction Waste Generation Rates (Precinct 1)

Rate Type	Floor Area (m^2)	Waste types and quantities (m^3)						
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Factory	1,000	0.25	2.10	1.65	0.45	4.80	0.60	0.50
Office	1,000	5.1	18.8	8.5	8.6	8.8	2.75	5
Carpark	1,000	--	30.6	--	--	14.3	4.5	8.1

Using the waste generation rates provided in **Table 19**, SLR has estimated the quantities of construction waste for Lot 1A displayed in **Table 20**.

Table 20 Estimated Quantities of Waste from Construction

Lot 1A Component	Area (m^2)	Waste types and quantities (m^3)						
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Warehouse	68,160	20	145	115	35	330	45	35
Offices	2,646	15	50	25	25	25	10	15
Mezzanines	32,402	10	70	55	15	160	20	20
Outbuildings	4,004	5	10	10	5	20	5	5
Hardstand	88,610	0	2,715	0	0	1,270	400	720
Light Duty	13,295	0	410	0	0	195	60	110
Totals	**209,117**	**50**	**3,400**	**205**	**80**	**2,000**	**540**	**905**

Waste estimates have been rounded up to the nearest 5 m^3.

Table 21 lists the environmental controls that will be implemented to minimise the potential for adverse impacts as a result of waste generated during the construction of Lot 1A.

Table 21 Environmental Management Controls for Waste

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
All existing rural fencing along the water pipelines corridor adjacent the site will be removed and dispose to an appropriate waste facility licensed to accept the waste.	RCC	As required	SSD 7348 Condition D44
Waste will be secured and maintained within designated waste storage areas at all times and will not leave the site onto neighbouring public or private properties.		Ongoing	SSD 7348 Condition D111
The WMP will be implemented for the duration of construction.			SSD 7348 Condition D112
All liquid and non-liquid wastes to be taken off site will be assessed and classified in accordance with the latest version of the *Waste Classification Guidelines Part 1: Classifying Waste* (EPA 2014) and dispose of all wastes to a facility that may lawfully accept the waste.			SSD 7348 Condition D113
Waste generated outside the site will not be received for storage, treatment, processing, reprocessing, or disposal.			SSD 7348 Condition D114
The *Protection of the Environment Operations (Waste) Regulation 2005* (as amended) will be complied with for monitoring and reporting the disposal of any hazardous, industrial and/or Group A (liquid waste).			Best practice

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
A Waste Management Register will be maintained, and will include: • Type of waste and its classification (according to the POEO Act and Waste Classification Guidelines); • Quantities of waste, measured in tonnes; • How and where the waste was reused, recycled, stockpiled or disposed of; • Date when the waste was reused, recycled, stockpiled or disposed of; and • Name and waste transport licence (if applicable) of the transporter used.	RCC	Ongoing during construction	Best practice
No waste will be buried on site.			
Opportunities for waste avoidance will be identified in accordance with Section 5.4 of the WMP.		Prior to commencing construction and ongoing	WMP Section 5.4
The re-use, recycling and disposal procedures listed in Section 5.5 of the WMP will be implemented.		Ongoing	WMP Section 5.5
Waste storage and servicing will be managed in accordance with Section 5.6 of the WMP.			WMP Section 5.6
Standard signage will be posted in all waste storage and collection areas. All waste containers will be labelled correctly and clearly to identify stored materials.			WMP Section 5.7
All staff will be appropriately inducted to the provisions of the WMP.		Prior to commencing works	WMP Section 5.8
Visual inspections of waste storage areas will be undertaken.		Daily	WMP Section 5.9

4.7.3 Waste Management Measures

To manage wastes produced by the earthworks and construction of Lot 1A, SLR recommends the following measures are employed on site.

Reduce, Reuse and Recycling Strategies

The Contractor's Project Manager will consider the following:

- Sort and segregate demolition and site preparation wastes to ensure efficient recycling of wastes;
- Store wastes on site appropriately to prevent cross-contamination and/or mixing of different waste types;
- Re-use formwork where appropriate;
- Recycle or dispose of waste oil in an appropriate manner;
- Retain roofing material cut-offs for re-use;
- Retain used crates for storage purposes unless damaged;
- Recycle cardboard, glass and metal wastes;
- Return packaging to suppliers where possible and practicable;
- Recycle or dispose of solid waste timber, brick, concrete, asphalt and rock, where such waste cannot be re-used on site, to an appropriately licenced construction and demolition waste recycling facility or an appropriately licenced landfill;
- Dispose of all asbestos and/or hazardous wastes in accordance with SafeWork NSW and NSW EPA requirements; and
- Deliver batteries and florescent lights to drop off-site recycling facility.

Waste Segregation and Storage

Waste materials produced from site preparation activities are to be segregated and stored separately on site, with clear signage identifying the purpose of different storage areas. See 'Signage' section below for recommended signage. It is anticipated that Lot 1A will have available space provided by the building contractor for separate storage in separate skip bins and/or appropriately managed stockpiles, of the following waste types:

- Bricks, concrete and scrap metal;
- Metal and steel, if any, in a condition suitable for recycling at metal recycling facilities;
- Timber;
- Glass;
- Hardstand rubble;
- Excavation spoil, uncontaminated, if present;
- Contaminated excavation spoil, if present;
- Hazardous waste, if present;
- Paper and cardboard;

- Recyclable general waste; and
- Non-recyclable general waste.

If there is insufficient space onsite for full segregation of waste types, the building contractor is to consult with waste or recycling collection facilities to confirm which waste types may be co-mingled prior to removal from Lot 1A. Areas designated for waste storage will:

- Allow unimpeded access by site personnel and waste disposal contractors;
- Not be located on footpaths, public reserves and street gutters without Council approval;
- Employ adequate environmental management controls, for example, consideration of slope, drainage and proximity relative to waterways, stormwater outlets and vegetation, to prevent off-site migration of waste materials and/or contamination from the waste; and
- Not present hazards to human health or the environment.

Signage

Clear, standard signage will be posted in all waste storage and collection areas. All waste containers will be labelled correctly and clearly to identify stored materials.

4.8 Biodiversity

As required by Condition D88 and D96 of SSD 7348, a Flora and Fauna Management Plan (FFMP) (Ecologique 2020) was prepared for the construction of Lot 1A and is attached as **Appendix M**.

Table 22 outlines the mitigation measures to be implemented during construction to management the impacts to biodiversity.

Table 22 Environmental Management Controls for Biodiversity

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
Suitable measures will be implemented to manage pests, vermin and declared noxious weeds on the Site.	RCC	Ongoing	SSD 7348 Condition D115
The Site will be inspected to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on Site in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in the surrounding area.	RCC / ER	During ER inspections	
Wildlife Protection			
All personnel including contractors will be made aware of the possibility of encountering fauna, through the site works induction process.	RCC	Prior to commencing construction and ongoing	FFMP Section 3
Vehicle and mobile plant operators will remain vigilant when entering and exiting the works area, particularly at dusk and dawn. Specifically: • Should kangaroos be observed transiting across the entrance/exit to the works area, vehicle/mobile plant is to stop until animals have moved to a safe distance to ensure vehicle/mobile plant strike is prevented • All on site personnel will alert vehicle/mobile plant entering or existing the works area if kangaroo movement is observed (via two way radio)		Ongoing	
Should unexpected fauna be encountered within the works site, the stop works procedure provided in Section 4 of the FFMP will be followed.		As required	
Erosion and Sediment Control			
The potential for adverse environmental impacts on downstream waterways, riparian zones, and other identified sensitive areas will be limited.	RCC	Ongoing	FFMP Section 3
The risk and subsequent occurrence of erosion and sedimentation will be minimised to mitigate the impacts on sensitive areas and downstream environments.			
The occurrence of pollution incidents causing environmental harm will be prevented.			
Existing downstream waterway attributes and water quality parameters will be maintained.			

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
Weed, Pest Species and Pathogen Management			
The following hygiene procedures are to be implemented to avoid the introduction and/or spread of soil borne pathogens and weeds: • Minimise work during wet/rainy periods • Vehicles, plant and machinery are to be clean and free of soil on arrival to the works area • Truck wash down, rumble grids to be installed and operated to ensure mud, weeds or pathogens are not transported around the region or onto roads • Mud spilt on roads to be immediately removed by a road sweeper	RCC	Ongoing	FFMP Section 3
Future tenants will install rodent (electronic or sonar) repellents to minimise prey for snakes.		As required	

4.9 Landscaping and Visual Amenity

As required by Condition D35 of SSD 7348, the Lot 1A Landscape Management Plan (LMP) was prepared by Scape Design (2020) and is attached as **Appendix N.** The LMP seeks to manage the visual impacts of the project to comply with the landscape performance criteria and ensure the landscape treatments are consistent with the ecological revegetation works described in the Oakdale West LMP.

Table 23 outlines the mitigation measures to be implemented during construction to management the impacts to landscaping and visual amenity.

Table 23 Environmental Management Controls for Landscaping and Visual Amenity

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
Landscaping			
All landscaping implemented as shown on Figure 5 in Appendix 2 of SSD 7348 will be maintained.	RCC	Ongoing	SSD 7348 Condition D38
If the monitoring carried out in accordance with the LMP indicates that any aspect of the landscaping has not been successful, re-planting and rehabilitation works will be undertaken, as soon as reasonably practicable.			
Use of pesticides will be in accordance with the *Pesticides Act 1999* (NSW), other relevant legislation, label directions and any relevant industry codes of practice.			Best practice
All personnel managing and using pesticides will receive appropriate training and hold appropriate licence prior to commencing work.		Prior to using pesticides on site	
Only pesticides registered for use near water will be used near water.		Ongoing	
Avoid applying pesticides: • On hot days when plants are stressed; • After the seed has set; • Within 24 hours of rain or when rain is imminent; and • When winds will cause drift of pesticides into non-target areas.			
A site walk-over will be undertaken with Goodman to confirm clearing boundaries before the start of work. No clearing will be undertaken outside the agreed clearing boundaries without the prior approval.		Prior to clearing	
All staff will be made aware of the Noxious Weeds present on-site and requirements related to the listing under the *Biodiversity Act 2015*.			
Weeds will be removed and disposed of in accordance with the requirements of Council.		Ongoing	

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
Existing trees, grasses and other ground cover will be retained within 15m of rivers, creeks and watercourses and in all drainage lines until immediately before construction commences in the area. All trees in these areas will be felled manually, leaving grasses and small understorey species wherever possible.	RCC	As required	Best practice
Stockpiles will be located away from drainage lines and watercourses and will be arranged to minimise damage to natural vegetation and trees.		Ongoing	
The management and mitigation measures listed in Section 4 of the LMP will be implemented.			LMP Section 4
The visual and landscape treatments listed in Section 5 of the LMP will be implemented.			LMP Section 5
Visual Amenity			
Lighting will comply with the latest version of AS 4282.	RCC	Prior to commencing construction and ongoing	SSD 7348 Condition D40
Lighting will be mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network.			
Any security cameras will be directed away from adjacent private properties.	Goodman / RCC		SSD 7348 Condition D41
All signage and fencing will be erected in accordance with the plans in the RTS.	RCC		SSD 7348 Condition D43

4.10 Heritage

As required by Condition D106 of SSD 7348, an Unexpected Finds Protocol – Archaeological Items (UFP – Archaeological Items) has been prepared by Artefact (2019) and is attached as **Appendix O**. The UFP – Archaeological Items was previously approved as part of the Oakdale West infrastructure CEMP.

If unanticipated archaeological items are uncovered at any time throughout the construction of Lot 1A the Protocol outlined in the UFP – Archaeological Items will be followed. This Protocol includes:

- Cease all activity in the vicinity of the find;
- Leave the material in place and protect it from harm;
- Erect a 10m exclusion zone (temporary fencing/signage); and
- Take note of the details of the material and its location, and take a photograph of the find in situ.

The Contractor's Project Manager will:

- Notify the Biodiversity Conservation Division (BCD) of DPIE on the Environment Line – 131 555;
- Notify the ER;
- Call the archaeologist to identify whether additional investigation is required in accordance with the conditions of approval and BCD guidelines. The Artefact archaeologist can be contacted on 02 9518 8411 and/or office@artefact.net.au;
- Notify BCD if confirmed as an Aboriginal object or relic; and
- Await further advice before proceeding with work in the area.

In addition to the above, the mitigation measures outlined in **Table 24** will be implemented during the construction of Lot 1A.

Table 24 Environmental Management Controls for Heritage

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Any identified Aboriginal items or objects will be registered on the OEH's Aboriginal Heritage Information Management System (AHIMS) Aboriginal Sites Register.	Goodman	Prior to commencing construction	SSD 7348 Condition D103
Construction of Stage 1 will not commence until the Archaeological Test Excavation has been undertaken and provided to the appropriate regulators.			SSD 7348 Condition D105
If any item or object of Aboriginal heritage significance is identified on Site the unexpected finds protocol will be implemented in accordance with the UFP – Archaeological Items and Condition D106 of SSD 7348.		As required	SSD 7348 Condition D106
Work in the immediate vicinity of the Aboriginal item or object will only recommence in accordance with the provisions of Part 6 of the *National Parks and Wildlife Act 1974* (NSW).			SSD 7348 Condition D107

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
If any archaeological relics are uncovered during construction of Stage 1, then all works in the immediate vicinity of the relic will cease immediately. Unexpected finds will then be evaluated and recorded in accordance the requirements of Department of Premier and Cabinet, Heritage (former NSW OEH Heritage Division).	RCC	As required	SSD 7348 Condition D108

4.11 Hazardous Goods and Contamination

As required by Condition D116 of SSD 7348 an Unexpected Finds Protocol – Contamination (UFP – Contamination) has been prepared by AECOM (2020b) and is attached as **Appendix P**.

The environmental controls that will be implemented to minimise the potential for environmental incidents relating to the hazardous goods and contamination are presented in **Table 25.**

Table 25 Environmental Management Controls for Dangerous Goods

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Chemicals, fuels and oils will be stored in bunded areas in accordance with relevant Australian Standards and/or the *Storing and Handling of Liquids: Environmental Protection – Participants Manual* (Department of Environment and Climate Change 2007).	RCC	Ongoing	SSD 7348 Condition D110
An UFP – Contamination (AECOM 2020b) has been prepared to ensure that potentially contaminated material is appropriately managed.		Prior to commencing construction	SSD 7348 Condition D116
Any material identified as contaminated will be disposed off site, with the disposal location and results of testing submitted to the Planning Secretary, prior to its removal from the site.	RCC / ER	As required	
The Contractor's Project Manager and the ER will be notified of any suspected or potential contamination exposed during construction activities, and cease all work activities within the vicinity of actual or suspected contaminated land.	RCC	Immediately	Best practice
Adequate quantities of suitable material will be kept on site to counteract spillage readily available i.e. Emergency spill kits.		Prior to commencing construction and ongoing	
Emergency spill kits will be kept on site at all points of transfer for fuels and hydrocarbons, and at all other locations deemed necessary.			
Safety Data Sheets (SDS) will be kept in the Site office and/or safety system for any potentially hazardous goods stored and/or used on site.		Ongoing	
The actions specified on the respective SDS will be implemented in the event of a minor chemical or fuel spill.			
Appropriate signage and spill kits will be maintained at key locations according to the construction schedule.			
All employees and contractors required to used potentially dangerous goods will be appropriate trained in the proper storage, use and handling.			

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Any liquid wastes or dangerous goods wastes generated by the construction activities (e.g. due to damage or leakage of containment) will be disposed of by a suitably qualified contractor to an appropriately licensed disposal facility.	RCC	Ongoing	Best practice
Where the contamination is known or an unexpected contamination find has been identified, a Remediation Action Plan (RAP) will be prepared (as required) in accordance with the UFP – Contamination (AECOM 2020b).		As required	UFP – Contamination Section 3.1
In the event that unexpected contamination finds are encountered: • RCC will immediately inform Goodman and the Environmental Consultant. • An Environmental Consultant will inspect the unexpected find (if required).	RCC / Goodman / Environmental Consultant	As required	UFP – Contamination Section 3.1
In the event that fragments of Asbestos Containing Materials (ACM) are identified during the earthworks, works will cease and the procedure outlined in Section 3.2 of the UFP – Contamination will be implemented.			UFP – Contamination Section 3.2
In the event that burial pits relating to the former grazing activities are exposed, works will cease in that area and the procedure outlined in Section 3.3 of the UFP – Contamination will be implemented.			UFP – Contamination Section 3.3
In the event that other contaminated materials are identified during the earthworks, works will cease and the procedure outlined in Section 3.4 of the UFP – Contamination will be implemented.			UFP – Contamination Section 3.4
A Materials Tracking Plan (MTP) will be developed and implemented in accordance with Section 4 of the UFP – Contamination.	RCC	Ongoing	UFP – Contamination Section 4
An Environmental Consultant will prepare a Validation Report in accordance with the requirements of the NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites* and EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*.	RCC / Environmental Consultant	At the completion of the earthworks and if any unexpected finds were encountered that required remediation	UFP – Contamination Section 5

4.12 Fire Safety and Emergency

As part of the development application for Oakdale West, Australian Bushfire Protection Planners Pty Ltd (ABPP) prepared a Bushfire Protection Assessment (2016) to outline the bushfire protection measures required for the development. The Bushfire Protection Assessment was included as part of the EIS for Oakdale West.

A copy of the Bushfire Protection Assessment (ABPP 2016) can be found on DPIE's Major Projects website at https://www.planningportal.nsw.gov.au/major-projects/project/11656.

The environmental controls that will be implemented to minimise the potential for environmental incidents relating to fire are presented in **Table 26**.

Table 26 Environmental Management Controls for Fire

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
The construction will comply with the relevant provisions of *Planning for Bushfire Protection* (NSW Rural Fire Service 2006).	RCC	Ongoing	SSD 7348 Condition B20 and D97
Oakdale West will be constructed in accordance with the Bushfire Protection Assessment (ABPP 2016).			
Oakdale West will comply with the requirements of AS 2419.1-2005 Fire Hydrant Installations for fire-fighting water supply.			
In the event of emergency, the contact details in **Table 5** will be contacted.		In the event of an emergency	CEMP Section 3.5.3
Cutting, welding, grinding or other activities likely to generate fires will not be undertaken in the open on days when a total fire ban is proclaimed, unless an exemption is granted by the relevant Fire Service.		Ongoing	Best practice
When there is a risk of fire being caused by work such as welding, thermal or oxygen cutting, heating or other fire producing or spark producing operations or when burning off is proposed, training will be provided to all personnel in fire prevention, fire safety and basic firefighting skills.			
Appropriate firefighting equipment will be provided as required for the safety of persons and property.		Prior to commencing construction and ongoing	
Emergency vehicle access to and from the Site will be available at all times during construction.		Ongoing	
Fire extinguishers will be located at work locations where hot work is being undertaken or flammable gases are stored.			
Construction plant will be fitted with fire extinguishers, as required/appropriate.			

Environmental Management Control	Responsibility	Timing / Frequency	Reference / Notes
Waste material will not be burnt on site and no fires of any kind will be lit on site.	RCC	Ongoing	Best practice
The Fire Protection Plan shown in Figure 2 of the Bushfire Protection Assessment will be implemented.			Bushfire Protection Assessment Page 7

4.13 Community

In accordance with Condition C19 of SSD 7348, a CCS has been prepared by SLR (2020a) and is attached as **Appendix F**.

The CCS identifies relevant stakeholders, key issues, communication methods and the details of how Goodman and their contractors will engage with relevant stakeholders and the community.

The community management controls in **Table 27** will be implemented during the construction of Lot 1A.

Table 27 Environmental Management Controls for the Community

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
Consultation with the community will be undertaken regularly during construction.	Communications and Community Liaison Representative	Ongoing	SSD 7348 Condition D117
Sensitive receptors will be consulted prior to actions likely to generate noise, vibration, air quality of traffic impacts.		No less than 48 hours prior	CCS Section 3.2
Should any works be likely to generate impacts beyond those identified within the approval's documentation, consultation will be undertaken with the applicable managing agency.		As required	
A Communications and Community Liaison Representative will be appointed as a single point of contact responsible for receiving and disseminating information requests and complaints, along with addressing any interface issues		Prior to commencing construction and ongoing	CCS Section 4
Community consultation meetings will be held to provide a project update and act as an opportunity for the community and stakeholders to discuss recent experiences and upcoming construction activities.	Community Consultation Team	Monthly. Frequency to be revised subject to the level of interest and the construction program	CCS Section 5.3
Community workshops will be held to identify the overarching construction program and communications protocols, with the event advertised via local newspaper and letter box drop.		Prior to commencing construction	
A Consultation Register will be maintained and record community and stakeholder interactions, along with associated remedial actions as required.	Communications and Community Liaison Representative	Ongoing	
ERG Meetings will be held with key environmental stakeholders and will be briefed on upcoming project tasks with key environmental implications, along with complaints and enquiries received.	ER	As required	
Individual Community Meetings will be held with stakeholders as required to discuss a specific item.	Community Consultation Team	As required	

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
Agency Meetings will be held to address matters relevant to specific agencies including the satisfaction of conditions of consent. These will be undertaken either directly by Goodman or facilitated by the Communications and Community Liaison Representative at Goodman's discretion.	Communications and Community Liaison Representative / Goodman	As required	CCS Section 5.3
Newspaper Advertisements will be published in The Western Weekender and Mt Druitt – St Marys Standard identifying the project hotline number and web page address.	Community Consultation Team	Prior to commencing construction and ongoing	
Notification Letterbox Drop will be provided to specific receivers identified as being potentially affected by construction. This could be undertaken in tandem with door knocking.		As required in accordance with Table 7 of the CCS	
Site Signage will display project information details including the hotline and web page, along with relevant project and safety information.		Prior to commencing construction and ongoing	
Online Feedback Forms will be available on the web page, with feedback provided to be incorporated into the consultation register and actioned as required.			
A 24 hour Project Information and Complaints Number will be available for reporting project feedback.	Communications and Community Liaison Representative		
Staff and Visitor Induction and Training will be undertaken in accordance with **Section 3.4**.	RCC		
Text Message and Email Alerts will provide important information at short notice to potentially affected receivers. Text message details to be recorded in the consultation register.	Community Consultation Team	As required	
A dedicated web page will be established to provide project updates, along with real time environmental performance monitoring.		Prior to commencing construction and ongoing	
Notification requirements will be undertaken in accordance with Table 6, 7 and 8 of the CCS.		Ongoing	CCS Sections 5.3.2 and 5.3.3

5 Monitoring and Reporting

5.1 Environmental Monitoring and Inspections

Table 28 summarises the monitoring requirements for the construction of Lot 1A as set out in SSD 7348 and relevant management plans.

Table 28 Monitoring and Inspection Requirements

Monitoring / Inspection Requirement	Responsibility	Timing / Frequency	References / Notes
General			
Inspection and maintenance of all plant and equipment items to ensure optimal operating condition.	RCC	As specified by the manufacturer / supplier	SSD 7348 Condition D21
The ER will regularly monitor the implementation of the CEMP, and any other documents identified by the Planning Secretary, to ensure implementation is being carried out in accordance with the CEMP and SSD 7348.	ER	Weekly	SSD 7348 Condition D127
Compliance monitoring and reporting will be undertaken in accordance with the Compliance Monitoring and Reporting Program (SLR 2019).		Ongoing	SSD 7348 Condition D139
All monitoring will be undertaken in accordance with Division 9.4 of Part 9 of the EP&A Act.	ER / RCC		SSD 7348 Condition D142
General environmental site inspection to ensure all relevant environmental controls listed in this CEMP are in place and any required maintenance and/or remediation works are identified and undertaken.	RCC	Weekly	SWMP Section 7.3
Noise and Vibration			
Attended and/or real-time noise and/or vibration monitoring will be undertaken at the start of any new noise or vibration intensive works which are close to potentially affected receivers to verify the levels are as predicted and to check the effectiveness of mitigation and management measures used to minimise the impacts. This includes where works are adjacent to the office of the Viridian site in Erskine Business Park and where works are adjacent to the nearest residences in Kemps Creek.	RCC	As required	CNVMP Section 8.1
Monitoring will also be undertaken in response to any complaints regarding noise or vibration.		Following a noise or vibration related complaint	
All items of acoustic instrumentation utilised will be designed to comply with applicable guidelines and carry current calibration certificates.		Ongoing	

Monitoring / Inspection Requirement	Responsibility	Timing / Frequency	References / Notes
Vibration will be monitored continuously within the minimum working distances (see **Table 11**) where vibration intensive works are proposed to be undertaken within the minimum working distances of sensitive receivers or structures.	RCC	Continuously	CNVMP Section 8.2
Attended vibration measurements will be undertaken at the commencement of vibration intensive works within the minimum working distances to confirm the levels of vibration are below the applicable vibration limits.		Prior to commencing vibration intensive works	
Geophones will be installed by an acoustic consultant at the closest points of the sensitive structure to the vibration intensive works to continuously monitor vibration for the duration of the works. Should the works location change, the geophones will be relocated to remain at the closest point of the structure to the works.		Prior to commencing construction and ongoing	
The monitoring equipment will have visible and audible alarms in accordance with Section 8.2 of the CNVMP.		Ongoing	
Baseline vibration measurements will be recorded for at least one week to determine background levels of vibration at the site prior to commencement of any works.		For 1 week prior to commencing any works on site	
Air Quality			
Meteorological data recorded at Horsley Park AWS will be monitored and reviewed on a daily basis.	RCC	Daily	CAQMP Section 8
Traffic			
Deliveries volumes will be monitored against the volumes outlined within report.	RCC	Ongoing	CTMP Section 7.1
Soil and Water			
Any material transported onto road surfaces to be removed.	RCC	Daily and before rainfall	Best practice
Rainfall inspections will be undertaken during events of 10mm or greater.		Prior to, during and within 24 hours after event	SWMP Section 7.3
Stabilisation measures will be monitored, and prompt and effective revegetation and permanent stabilisation promoted.		Ongoing	ESCP Section 7.4
Waste			
Skips/bins are to be checked by the Contractors Project Manager or delegated site personnel to ensure that no overflow occurs. If skips/bins are reaching capacity, removal and replacement will be organised for the next 24 hours.	RCC	Daily	WMP Section 5.6.2

Monitoring / Inspection Requirement	Responsibility	Timing / Frequency	References / Notes
Visual inspections of waste storage areas will be undertaken.	RCC	Daily	WMP Section 5.9
Landscaping and Visual Amenity			
The monitoring program outlined in Sections 6.1 - 6.4 of the LMP will be implemented.	RCC	As stated in LMP	LMP Sections 6.1 - 6.4
Community			
The following will be monitored: • Total number of complaints • Number of complaints relating to lack of consultation / misinformation / confusion • Number of enquiries relating to information previously disseminated • Number of complaints / enquiries within defined categories based on theme or subject • Response timeframes	Communications and Community Liaison Representative	Monthly	CCS Section 6.1

5.2 Reporting

Table 29 summarises the reporting requirements for the construction of Lot 1A as set out in SSD 7348 and relevant management plans.

Table 29 Reporting Requirements

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
General Environmental Performance			
The ER will prepare and submit an Environmental Representative Monthly Report.	ER	To be submitted within 7 days following the end of each month	SSD 7348 Condition D127
Compliance monitoring and reporting will be undertaken in accordance with the Compliance Monitoring and Reporting Program (SLR 2019).	Goodman	Ongoing	SSD 7348 Condition D139
Compliance Reports of the Development will be carried out in accordance with the *Compliance Reporting Post Approval Requirements* (DPIE 2018).		As set out in the DPIE guidelines	SSD 7348 Condition D140
Each Compliance Report will be made publicly available.		No later than 60 days after submitting it to the DPIE and notify the DPIE in writing at least 7 days before this is done.	SSD 7348 Condition D141
Regular reporting on environmental performance will be uploaded on the dedicated website as per the reporting arrangements in any plans or programs approved under the conditions of SSD 7348.		48 hours prior to commencing construction and ongoing	SSD 7348 Condition D143
RCC will record environmental performance during regular management meetings and/or 'toolbox talks'. Items to be discussed include: • Results of any monitoring activities undertaken; • Any environmental incidents that have occurred during the previous period, including the management / corrective actions taken; • Any complaints that have been received during the previous period, including any management / corrective actions taken.	RCC	Weekly	CEMP Section 3.4

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
A copy of all environmental records will be maintained, including: • Site environmental inspection reports • Environmental monitoring data • Internal and external audit reports • Reports of environmental incidents, environmental, associated actions taken, and follow-up actions • Minutes of management review meetings • Induction and training records	RCC	For at least 5 years after completion	Best practice
Meteorological data including rainfall will be recorded.		Daily	
Incident / Non-Compliance Reporting			
A written incident notification will be emailed to the DPIE at compliance@planning.nsw.gov.au and include the requirements outlined in Appendix 8 of SSD 7348.	Goodman / RCC	Within 7 days after Goodman becomes aware of the incident. See Section 3.5 for definition of incidents.	SSD 7348 Condition D135 and Appendix 8
A detailed incident report will be provided to the Planning Secretary and include the requirements outlined in Appendix 8 of SSD 7348.		Within 30 days of the incident occurring	
The DPIE will be notified of any non-compliance in writing to compliance@planning.nsw.gov.au.		Within 7 days after Goodman becomes aware of the non-compliance	SSD 7348 Condition D136
A register of all complaints and non-compliances will be kept.		For at least 5 years after completion	Best practice
Noise			
Monitoring reports will be produced following each monitoring survey.	RCC	Following each monitoring survey	CNVMP Section 8.1
Vibration			
Vibration monitoring reports will be prepared at the following stages: • Prior to commencement of works (baseline report) • Monthly during works (at a minimum) • Within one week of an exceedance of the vibration limit alarm level (15 mm/s PPV) • Upon completion of construction	RCC	Monthly at minimum	CNVMP Section 8.2

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
Soil and Water			
The ER will make a written statement to the Planning Secretary confirming the erosion and sediment controls are implemented and operational.	ER	Prior to commencing bulk earthworks	SSD 7348 Condition D81
Prepare and submit a Materials Tracking Register in accordance with the FIP.	RCC	Weekly	FIP Section 3
Waste			
Waste records are to be provided to Goodman.	RCC	Quarterly	WMP Section 5.9
Landscaping and Visual Amenity			
A Landscaping Logbook will be maintained.	Goodman / RCC	Monthly / Annually	LMP Sections 5.2.7 and 6.1
Hazardous Goods and Contamination			
Any material identified as contaminated will be disposed off site, with the disposal location and results of testing submitted to the Planning Secretary, prior to its removal from the site.	RCC / ER	As required	SSD 7348 Condition D116
Where the contamination is known or an unexpected contamination find has been identified, a Remediation Action Plan (RAP) will be prepared (as required) in accordance with the UFP – Contamination (AECOM 2020b).	RCC		UFP – Contamination Section 3.1
The Environmental Consultant will prepare a Validation Report in accordance with the requirements of the NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites* and EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*.	RCC / Environmental Consultant	At the completion of the earthworks and if any unexpected finds were encountered that required remediation	UFP – Contamination Section 5
Community			
The monthly community consultation summary will be made publicly available on the project web page and shall include: • A summary of community consultation activities undertaken within the preceding month • A summary of community consultation activities proposed within the following month • A summary of all enquiries and complaints received within the preceding month, including details of response and/or remediation activities	Communications and Community Liaison Representative	Monthly	CCS Section 6.2

5.3 Audits

Table 30 summarises the Audit requirements for the construction of the Lot 1A as set out in SSD 7348 and relevant management plans.

Table 30 Audit Requirements

Reporting Requirement	Responsibility	Timing / Frequency	References / Notes
The Planning Secretary may at any time commission an audit of an ER's exercise of its functions under Condition D142.	ER	As required	SSD 7348 Condition D129
All audits will be undertaken in accordance with Division 9.4 of Part 9 of the EP&A Act.	ER / RCC	Ongoing	SSD 7348 Condition D142
A project audit will be undertaken to ensure all aspects of the project are implemented.	ER	Within 6 months of the commencement of construction	ER recommendation

5.4 Contingency Management Plan

Table 31 lists the actions to be implemented if inspections, monitoring and/or auditing indicate that the mitigation measures listed in **Section 4** and the specialist management plans are not effective in managing environmental impacts.

All Condition Amber and Condition Red occurrences will be recorded in the Environmental Representative Monthly Report and discussed during the toolbox talks.

Table 31 Contingency Plan

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Noise impacts at sensitive receiver locations	Trigger	Noise levels do not exceed applicable NMLs.	Noise levels exceed applicable NMLs.	Noise levels exceed Highly Noise Affected criteria (75 dBA).
	Response	Ongoing best practice management measures to minimise noise emissions.	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. If noise levels cannot be kept below applicable limits then a different construction method or equipment will be utilised.
Vibration impacts at sensitive receiver locations	Trigger	Vibration intensive works undertaken outside minimum working distance for the specific equipment in use.	Vibration intensive works undertaken within minimum working distance for the specific equipment in use.	Vibration levels exceed applicable vibration limits.
	Response	Ongoing best practice management measures to minimise vibration emissions.	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.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Visible dust leaving the site	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	Continue monitoring program as normal.	Review and investigate construction activities and respective control measures, where appropriate. Implement additional remedial measures, such as: • Deployment of additional water sprays, water trucks etc.	Undertake an investigation of the dust generating activities, and if necessary, temporarily halt the dust generating activities.
Dust deposition reading of >4g/m^2/month	Trigger	Dust deposition rates are less than 4 g/m^2/month at all the dust gauges.	Dust deposition rate greater than 4 g/m^2/month is recorded by any of the dust gauges	Dust deposition rates greater than 4 g/m^2/month are recorded by two or more dust gauges for two months in a row.
	Response	Continue monitoring program as normal.	• OWE and WNSLR Project Managers to analyse data to try to identify the source(s) of dust. • RCC to review operations to reduce dust emissions from the identified key source(s). Implement any additional mitigation measures as required, such as additional watering.	• OWE and WNSLR Project Managers to review and investigate construction activities and respective control measures for the monitoring period. • If it is concluded that construction activities at Lot 1A were directly responsible for the exceedance (i.e. the exceedance event was not caused due to high regional dust levels or local non-project dust source), RCC to submit an incident report to government agencies.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Complaints received regarding nuisance dust	Trigger	There are no complaints received during the construction	An air-quality related complaint is received from a nearby resident	Further complaints are received from the same complainant after the additional mitigation measures have been implemented.
	Response	Continue monitoring program as normal.	• Report the complaint to the regulator, in line with complaints handling procedure. • Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc.), where appropriate.	Review real-time monitoring data at the existing continuous monitors to investigate the likelihood of onsite activities contributing.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Real-time suspended particulate matter monitoring (TSP and PM_{10})	Trigger	Running 24-hour average PM_{10} concentrations < 40 µg/m^3	Running 24-hour average PM_{10} concentrations >40 µg/m^3 but <50 µg/m^3	Running 24-hour average PM_{10} concentrations >50 µg/m^3
	Response	Continue monitoring program as normal.	Owe and WNSLR Project Managers to review and investigate construction activities and respective control measures. Where appropriate, implement additional remedial measures, such as: • Deployment of additional water sprays, water trucks etc; • Relocation or modification of dust-generating sources; • Record findings of investigations and actions taken to reduce dust levels; and • Continue to closely monitor dust levels to ensure they are decreasing. If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the Lot 1A site to minimise cumulative impacts, but also record details of the cause of the elevated background levels.	• OWE and WNSLR Project Managers to review and investigate construction activities and respective control measures for the monitoring period, in an air pollution incident report (see **Appendix E**). • If it is concluded that construction activities at Lot 1A were directly responsible for the exceedance (i.e. the exceedance event was not caused due to high regional dust levels or local non-project dust source), RCC to submit an incident report to government agencies.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Construction movements	Trigger	Construction traffic volume is in accordance with permissible and programmed volume and time constraints.	Construction traffic volumes exceeds programmed volume but is within permissible volume constraints.	Construction traffic volumes exceeds permissible volume and time constraints.
	Response	No response required. Continue monitoring program.	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: • Temporary halting of activities and resuming when conditions have improved • Review CTMP and update where necessary • Provide additional training	Review and investigate construction activities. Where appropriate, implement additional remediation measures such as: • 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 Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Construction movements	Trigger	Construction traffic does not utilise roads other than WNSLR to access the site.	Construction traffic utilises roads other than WNSLR to access the site.	Construction traffic utilises Bakers Lane to access the site.
	Response	No response required. Continue monitoring program.	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: • Review vehicles arriving to site and remind them of the strict access conditions. • Provide additional training (including toolbox talks and further notification of Driver Code of Conduct).	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. Where appropriate, implement additional remediation measures such as: • Stop all transportation into and out of the site. • Review CTMP and update where necessary. • Provide additional training (including toolbox talks and further notification of Driver Code of Conduct).

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Queuing	Trigger	No queuing identified.	Queuing identified within site.	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.	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. Where appropriate, implement additional remediation measures such as: • 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.
Traffic noise	Trigger	Noise levels do not exceed imposed noise constraints.	Noise levels in minor excess of imposed noise constraints.	Noise levels greatly in excess of imposed noise constraints.
	Response	No response required. Continue monitoring program.	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. If noise levels cannot be kept below applicable limits, then a different construction method or equipment must be utilised.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Traffic Control Plans	Trigger	No observable issues.	Minor inconsistencies with TCP to onsite operations.	Near miss or incident occurring regardless of / as a result of the TCP being implemented
	Response	No response required. Continue monitoring TCPs.	Traffic Controller to amend TCP 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 TCP to ensure that the safety of all workers, students and civilians are catered for.
Traffic Air Quality Impacts	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. Continue monitoring program.	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.	Provide approved AQMP contingency plan to ensure it is consistent. Review and investigate construction activities and respective control measures. 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.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Erosion	Trigger	No evidence of erosion.	Minor gully or tunnel erosions present and/or rilling. Evidence of sediment or sediment laden water leaving the site.	Significant gully or tunnel erosions present and/or rilling. Evidence of sediment or sediment laden water leaving the site.
	Response	Continue CEMP implementation.	A suitably trained person to inspect the site. Review of erosions and sediment structures. Remediate as appropriate.	A suitably trained person to inspect the site. Review of erosion and sediment structures. Remediate as soon as practical.
Water management structures	Trigger	Water management structures have been designed, constructed and managed in accordance with the Blue Book and the ESCPs.	Inspections indicate that water management structures illustrate minor non-compliance with the Blue Book and the ESCPs.	Inspections indicate a failure of the water management structures.
	Response	Continue CEMP implementation.	A suitably trained person to inspect the site. Review 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 revise ESCPs.
Waste	Trigger	Weekly ER inspections identified no waste outside of dedicated bins and stockpiles.	Weekly ER inspections identified minimal waste outside of dedicated bins and stockpiles.	Weekly ER inspections identified large quantities of waste outside of dedicated bins and stockpiles. Complaints received regarding waste.
	Response	Continue CEMP implementation.	The Project Manager is notified and the waste is cleaned up immediately.	The Project Manager is notified and the waste is cleaned up immediately. The Communications and Community Liaison Representative is also notified and the complaints handling process outlined in **Section 3.6** and the CCS is implemented.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Plant irrigation	Trigger	Irrigation system operating at optimum frequency.	Irrigation system yet to be installed.	Irrigation system fails.
	Response	No response required. Continue to monitor.	Provide additional hand watering until system is installed.	Provide additional hand watering until system is repaired. The irrigation system will be fully functional at all times to ensure that all plants, trees and lawns receive adequate water at optimal frequency.
Plant failure	Trigger	No significant plant failure is present. Monitoring verifies that there is <5% of plants failing.	Monitoring verifies there is plant failure at a rate between 5% - 10%	Monitoring verifies there is plant failure at a rate >10%.
	Response	No response required. Continue to monitor.	If the cause of failure is due to a controllable situation then correct situation prior to replacing plants. All planting areas are to be free of grass and weed. Replace plants with one of similar size and quality and identical species. of variety of the ones failed.	If the cause of failure is due to a controllable situation then correct situation prior to replacing plants. All planting areas are to be free of grass and weed. Replace plants with one of similar size and quality and identical species. of variety of the ones failed.
Revegetation failure	Trigger	Revegetation is growing to desired design surface levels.	Monitoring verifies that weed emergence has occurred.	Monitoring verifies that weed emergence and plant failure has occurred.
	Response	No response required. Continue to monitor.	Refer to LMP for monitoring requirements once problem has been identified. Possible solutions include the removal of weeds as per Section 5.3.7 of the LMP.	Refer to LMP for monitoring requirements once problem has been identified. Possible solutions include removal of weeds and re-seeding of revegetation cover crop as per Section 5.3.7 of the LMP.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Slope failure	Trigger	No significant erosion is present that would constitute a safety hazard or compromise the capability of supporting the end land use. Monitoring verifies there are no gully or tunnel erosion features, or rill erosion >200mm deep.	Monitoring verifies there is gully or tunnel erosion features, or rill erosion 200mm deep.	Monitoring verifies there is gully or tunnel erosion features, or rill erosion >200mm deep.
	Response	No response required. Continue to monitor.	A suitably trained person to inspect the site. Investigate opportunities to install water management infrastructure to address erosion. Remediate as appropriate.	Undertake a review of the drainage of the area and provide recommendations to appropriately remediate the erosion. Remediate as soon as practicable.
Heritage	Trigger	No unknown heritage items uncovered.	Potential heritage item uncovered.	Potential heritage item uncovered causing significant delays to project.
	Response	Continue CEMP implementation.	Stop work and implement the unexpected finds protocol.	Stop work and implement the unexpected finds protocol. Heritage item to be salvaged and removed from site by a qualified archaeologist.
Unexpected Contamination	Trigger	No contamination uncovered during earthworks.	Areas of possible contamination uncovered.	Areas of contamination uncovered.
	Response	Continue CEMP implementation.	Stop work immediately and the contamination assessed according to the UFP – Contamination (AECOM 2020b).	Stop work immediately and a RAP is to be prepared. A validation report is to be prepared following remediation.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Bushfire	Trigger	No bushfire or bushfire prone weather.	Bushfire prone weather during summer.	Bushfire in the vicinity of the site.
	Response	Continue CEMP implementation.	Ensure grass is kept short and vegetation is minimal at the site. Weather is to be monitored twice daily for chance of bushfire.	Stop work and contact NSW Fire and Rescue on '000'. Evacuate the site as directed by NSW Fire and Rescue.
Submission	Trigger	General feedback/comment (no complaint or query).	Enquiry made by formal or informal channels.	Complaint made by formal or informal channels.
	Response	Acknowledge receipt and record in consultation register. No further response required.	Acknowledge receipt and record in consultation register. Direct enquiry to relevant person for actioning and response within 5 days.	Acknowledge receipt and record in consultation register. Direct enquiry to relevant person for actioning and response within 48 hours.
Media	Trigger	Positive story in print, online, radio or television.	Neutral or advisory story in print, online, radio or television.	Negative story in print, online, radio or television.
	Response	Record in consultation register and advise Goodman media/marketing team. No further response required.	Record in consultation register and advise Goodman media/marketing team. No further response required.	Record in consultation register and advise Goodman Project Team for further action and response. Contact relevant person for actioning and response within 48 hours.
Unscheduled Event	Trigger	Event occurring outside of plan or schedule without impact or potential impact.	Event occurring outside of plan or schedule with minor impact or potential impact.	Event occurring outside of plan or schedule with major impact or potential impact.
	Response	No response required. Identify opportunities for improvement to manage potential future events.	Contact relevant person for actioning and response within 48 hours. Acknowledge in consultation register. Identify opportunities for improvement to manage potential future events.	Contact relevant person for actioning and response immediately. Acknowledge in consultation register. Identify opportunities for improvement to manage potential future events.

6 Review and Improvement of the CEMP

Review of the CEMP will be undertaken at least quarterly and will include participation by Goodman. The review will comprise, as a minimum, the following:

- Identification of areas of opportunity for improved environmental performance;
- Analysis of the causes of non-compliances, including those identified in environment inspections and audits;
- Verification of the effectiveness of corrective and preventative actions; and
- Highlighting any changes in procedures resulting from process improvement.

Condition D133 of SSD 7348 also states that all strategies, plans and programs required under SSD 7348 will be reviewed within three months of:

- The submission of a Compliance Report under Condition D141;
- The submission of an Environmental Representative Monthly Report under Condition D127;
- The submission of an incident report under Condition D135;
- The approval of any modification of the conditions of this consent; or
- The issue of a direction of the Planning Secretary under Condition D2(b) which requires a review.

This CEMP will also be reviewed and, if necessary, revised in the following circumstances:

- Where there is any change to the scope of the construction activities and/or disturbance footprint;
- Where it is identified that the environmental performance is not meeting the objectives of the CEMP; and/or
- At the request of a relevant regulatory authority.

As per Condition D134, the revised documents will be sent to DPIE within 6 weeks of review. All employees and contractors will be informed of any revisions to the CEMP by the Contractor's Project Manager during toolbox talks.

7 References

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SLR Consulting (2020b) *Construction Air Quality Management Plan*

SLR Consulting (2020c) *Construction Noise and Vibration Management Plan*

SLR Consulting (2020d) *Oakdale West Estate – Waste Management Plan*

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APPENDIX A

Development Consent SSD 7348

Development Consent

Section 4.38 of the Environmental Planning and Assessment Act 1979

As delegate of the Minister for Planning and Public Spaces under delegation executed on 11 October 2017, I determine:

(a) to grant consent to the Stage Development Application referred to in Schedule A subject to the Concept Proposal conditions in Schedule B and C and the Stage 1 Development Application conditions in Schedule D;

(b) that pursuant to section 4.37 of the *Environmental Planning and Assessment Act 1979*, any subsequent development not being for the purpose of a warehouse or distribution centre with a capital investment value in excess of $50 million is to be determined by the relevant Consent Authority and that development ceases to be State Significant Development.

These conditions are required to:

- prevent, minimise, or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

Anthea Sargeant
Executive Director
Regions, Industry and Key Sites

Sydney 2019 File: 15/15802

SCHEDULE 1

Application Number:	SSD 7348
Applicant:	Goodman Property Services (Aust) Pty Ltd
Consent Authority:	Minister for Planning and Public Spaces
Site:	Lot 1 DP 663937, Lot 2 DP 1215268, Lot 6 DP 229784, Lot 2 DP 84578, Lot 3 DP 85393 and Lot 11 DP 1178389 2 Aldington Road, Kemp Creek NSW 2178 Lot 9 DP 1157476 57-87 Lockwood Road, Erskine Park NSW 2759
Development:	A Concept Proposal including: • concept layout of 22 warehouse buildings inclusive of dock offices and ancillary offices providing 476,000 square metres of gross lettable area, built over five development stages; • concept layout of development lots, internal roads, drainage, landscaping, noise walls, basins and biodiversity offsets; and • development controls.

A Stage 1 Development including:

- bulk earthworks across all five stages including retaining walls and noise walls;
- lead in services including but not limited to drainage, power, sewer, water and telecommunications;
- service infrastructure to Precinct 1, including drainage, power, sewer, water and telecommunications;
- construction and operation of three warehouse buildings inclusive of dock offices and ancillary offices in Precinct 1 (1A, 1B and 1C) providing 118,000 square metres of gross lettable area;
- Western North-South Link Road and associated subdivision, basins and drainage;
- estate roads 1, 2 and 6 and eastern part of road 7;
- landscaping of Stage 1, the western boundary, Western North-South Link Road, estate roads 1, 2 and 6 and the eastern part of road 7, detention basins and the amenity lot
- subdivision of Stage 1 lots and road infrastructure including the services (substation) lot;
- stormwater drainage infrastructure for Lots 2A and 2B and all basins;
- temporary works to facilitate construction including but not limited to swales, haul road (construction access), landscaping and basins; ~~and~~
- works including construction of traffic signals at Lenore Drive/Grady Crescent/WNSLR intersection; and
- works within Lot 9 DP1157476 including reconfiguration of car park, relocation of car park access on Lockwood Road, infrastructure, landscaping and all works associated with the WNSLR.

SSD 7348 – Mod 1

SSD 7348 – Mod 2

SSD 7348 – Mod 3

SSD 7348 – Mod 4

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DEFINITIONS

Applicant	Goodman Property Services (Aust) Pty Ltd, or any person carrying out any development to which this consent applies
Biodiversity Covenant	A restriction on the use of land forming part of the Erskine Park Biodiversity Corridor, as shown on **Figure 7** in **Appendix 6**
Building 1A	Warehouse building 1A including high-bay (39 metres) and low-bay (28 metres) components, located on Lot 1A as described in the EIS and RtS for MOD 2
Bulk earthworks	As described in the EIS and RtS
Certifying Authority	A person who is authorised by or under section 6.17 of the EP&A Act to issue Part 6 certificates
CEMP	Construction Environmental Management Plan
CAQMP	Construction Air Quality Management Plan
Concept Proposal	Concept layout of 22 warehouse buildings and ancillary offices built over five development stages, as described in the EIS and RtS
Conditions of this consent	Conditions contained in Schedules B to D of this document
Consent Authority	The relevant consent authority for development in accordance with the EP&A Act
Construction	The demolition and removal of buildings or works, the carrying out of works for the purpose of the development, including bulk earthworks, and erection of buildings and other infrastructure permitted by this consent
Council	Penrith City Council
CTMP	Construction Traffic Management Plan
Day	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
Demolition	The deconstruction and removal of buildings, sheds and other structures on the site
Department	NSW Department of Planning, Industry and Environment
Development	The development described in the EIS and RtS, including construction and operation of 22 warehouse buildings, offices and associated infrastructure, as modified by the conditions of this consent and shown on the plans in **Appendix 1**, **Appendix 2** and **Appendix 3** and as modified by SSD 7348 MOD 1, SSD 7348 MOD 2 and SSD 7348 MOD 3 and SSD 7348 MOD 4
DA	Development Application submitted in accordance with the EP&A Act
EIS	The Environmental Impact Statement titled *Oakdale West Estate*, prepared by Urbis dated November 2017, submitted with the application for consent for the development, including any additional information provided by the Applicant in support of the application
ENM	Excavated Natural Material
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
Environmental Representative Protocol	The document of the same title published by the Department
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPL	Environment Protection Licence under the POEO Act
Erskine Park Biodiversity Corridor	The land described in the *Biodiversity Management Plan Erskine Park Employment Area*, HLA-Envirosciences, 2006 and shown on **Figure 7** in **Appendix 6**
Evening	The period from 6 pm to 10 pm
Feasible	Feasible relates to engineering considerations and what is practical to build
FFMP	Flora and Fauna Management Plan
Fibre ready facility	As defined in Section 372W of the *Telecommunications Act 1997*

GLA	Gross lettable area
GFA	Gross floor area
Heritage	Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement
Heritage item	An item as defined under the *Heritage Act 1977* (NSW), and assessed as being of local, State and/ or National heritage significance, and/or an Aboriginal Object or Aboriginal Place as defined under the *National Parks and Wildlife Act 1974* (NSW), the World Heritage List, or the National Heritage List or Commonwealth Heritage List under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), or anything identified as a heritage item under the conditions of this consent
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 *Note: "material harm" is defined in this consent*
Land	Has the same meaning as the definition of the term in section 1.4 of the EP&A Act
Landscape Bund	Landscaping along the western boundary of the Site, included as part of Stage 1 works as described in the EIS and RTS and shown on **Figure 4** in **Appendix 2**
LMP	Landscape Management Plan
Material harm	Is 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)
Minister	NSW Minister for Planning and Public Spaces (or delegate)
Mitigation	Activities associated with reducing the impacts of the development prior to or during those impacts occurring
Monitoring	Any monitoring required under this consent must be undertaken in accordance with section 9.40 of the EP&A Act
NCC	National Construction Code
Night	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
Non-compliance	An occurrence, set of circumstances or development that is a breach of this consent
NRAR	NSW Natural Resources Asset Regulator
OEH	(former) NSW Office of Environment and Heritage (now Biodiversity and Conservation of the Department)
OEMP	Operational Environmental Management Plan
Operation	The use of warehouse buildings for storage and distribution of goods upon completion of construction
Penrith DCP	Penrith Development Control Plan 2014
Planning Agreement	Planning Agreement titled *Oakdale West Estate Planning Agreement*, between the Minister for Planning and Public Spaces, Goodman Property Services (Aust) Pty Ltd and BGMG 11 Pty Limited as trustee for the BGMG 1 Oakdale West Trust, executed on 5 August 2019 and included in **Appendix 4**
PCA	Principal Certifying Authority in accordance with the EP&A Act
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Roads Authority	As defined in Dictionary of the *Roads Act 1993* (NSW)
Reasonable	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, costs of mitigation versus benefits provided, community views, and the nature and extent of potential improvements.
Registered Aboriginal Parties	Means the Aboriginal persons identified in accordance with the document entitled *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW)
Rehabilitation	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting

Relevant Roads Authority	The authority responsible for ownership and maintenance of the applicable road
RMS	(former) NSW Roads and Maritime Services (now TfNSW)
RtS	The Response to Submissions titled *Oakdale West Estate SSDA 15_7348 Response to Submissions* prepared by Urbis dated 8 May 2018 and document titled *Oakdale West Estate SSDA 15_7348 Response to Matters Raised by the Department of Planning*, prepared by Urbis dated 12 October 2018
Sensitive receivers	A location where people are likely to work, occupy or reside, including a dwelling, school, hospital, office or public recreational area
Site	The land defined in **Appendix 1**
SLR	(proposed) Southern Link Road as shown in the WSEA SEPP and the Broader WSEA SLRN Options Refinement Report prepared by AECOM, 2014
SSD 7348 MOD 1	The section 4.55(1A) modification application prepared by Goodman Property Services (Aust) Pty Ltd titled 'Section 4.55(1A) Modification Application (SSD 7348 MOD 1) Oakdale West Estate – Amendments to Concept Plan and Stage 1 development', dated 16 December 2019.
SSD 7348 MOD 2	The section 4.55(2) modification application prepared by Goodman Property Services (Aust) Pty Ltd titled 'Section 4.55(2) Modification Application (SSD 7348 MOD 2) Oakdale West Estate – Amendments to Concept Plan and Stage 1 development', dated 12 December 2019.
SSD 7348 MOD 3	The section 4.55(1A) modification application prepared by Goodman Property Services (Aust) Pty Ltd titled 'Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (SSD 7348 MOD 1), dated January 2020.
Stage	Each component or Stage of works to deliver the Concept Proposal, as shown on **Figure 2** in **Appendix 1**, or as amended by an approved Staging Plan under this consent
Stage 1	Bulk earthworks across the Site, construction and operation of three warehouse buildings (1A, 1B and 1C), the WNSLR and associated infrastructure and construction of the landscape bund along the western boundary of the Site, as described in the EIS and RTS and shown on the plans in **Appendix 2** and **Appendix 3**
TfNSW	Transport for New South Wales
VENM	Virgin Excavated Natural Material
Vicinity of the site	Bakers Lane, Kemps Creek
WAD	Works Authorisation Deed issued by TfNSW (former RMS)
Waste	Has the same meaning as the definition of the term in the Dictionary to the POEO Act
Water Pipelines	Two Sydney drinking water pipelines located on land owned by Water NSW along the northern boundary of the Site
WMP	Waste Management Plan
WNSLR	Western North-South Link Road as shown in the WSEA SEPP and the plans in **Appendix 3**
WSEA	Western Sydney Employment Area
WSEA SEPP	State Environmental Planning Policy (Western Sydney Employment Area) 2009
WSFL	Western Sydney Freight Line corridor as shown in TfNSW Western Sydney Freight Line Corridor Identification – Consultation, March 2018
Year	A period of 12 consecutive months

SCHEDULE B CONDITIONS FOR THE CONCEPT PROPOSAL

FUTURE DEVELOPMENT APPLICATIONS

B1. In accordance with section 4.22 of the EP&A Act, each stage of the Concept Proposal (excluding Stage 1) is to be subject to future development applications (DAs). Future DAs are to be consistent with this development consent.

B2. To avoid any doubt, this Concept Proposal consent does not permit the construction or operation of any Development, except for the Stage 1 DA covered by **Schedule D**.

B3. This Concept Proposal consent does not approve the building layouts shown on Lots 3A, 3B, 3C, 3D, 3E, 3F, 3G and 4A on **Figure 1** in **Appendix 1**. The location of the buildings on these lots must be assessed by separate DAs, and must satisfy the interface requirements of Conditions C3 and C4.

STATUTORY REQUIREMENTS

B4. The Applicant shall ensure that all licences, permits, and approvals/consents are obtained as required by law and maintained as required throughout the life of the Concept Proposal. No condition of this consent removes the obligation for the Applicant to obtain, renew or comply with such licences, permits or approvals/consents.

TERMS OF CONSENT

B5. The Applicant shall carry out the Concept Proposal in accordance with the:

(a) EIS and RtS;

(b) the plans in **Appendix 1** and **Appendix 2**;

(c) SSD 7348 MOD 1;

(d) the Applicant's Management and Mitigation Measures in **Appendix 7**; and

(e) modifications to this consent.

B6. If there is any inconsistency between the plans and documents referred to above, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.

B7. The Applicant shall comply with any reasonable requirement(s) of the Planning Secretary arising from the Department's assessment of:

(a) any reports, plans or correspondence that are submitted in accordance with this consent; and

(b) the implementation of any actions or measures contained within these reports, plans or correspondence.

LIMITS OF CONSENT

B8. This consent lapses five (5) years after the date from which it operates, unless any Stage of the Development has physically commenced on the land to which the consent applies before that date.

B9. The following limits apply to the Concept Proposal:

(a) the maximum GLA for the land uses in the Development shall not exceed the limits in **Table 1**;

(b) a minimum 60 metre (m) wide corridor along the northern Site boundary shall not be developed and shall be maintained and preserved for the future WSFL corridor, in accordance with the requirements of TfNSW;

(c) the building layouts and footprints shown on Lots 3A, 3B, 3C, 3D, 3E, 3F, 3G and 4A on **Figure 1** in **Appendix 1**, are not approved. The position, layouts and footprints of the buildings on these lots must be assessed by separate DAs, and must satisfy the interface requirements of Conditions C3 and C4;

(d) any rooftop mechanical plant on buildings on Lots 2C, 2D, 2E, 3A, 3B, 3C, 3D, 3E, 4A, 4B and 4E are not to be operated during the night-time period;

(e) forklifts are not to operate during the night-time period on Lots 2C, 2D, 2E, 3B, 3C, 3D, 3E, 4A, 4E and 5A; and

(f) vehicles associated with the Development shall adhere to the following speed limits when using estate roads within the Development:

(i) 25 kilometres per hour for heavy vehicles; and

(ii) 40 kilometres per hour for light vehicles.

(g) all traffic associated with operation of the Development shall use the West North South Link Road, and the future SLR, to access the site and shall not use Bakers Lane or Aldington Road.

Table 1: *GLA Maximum for Concept Proposal*

Land Use	Maximum GLA square metres (m^2)
Total Warehousing	529,101
Total Office	23,374
Other	4,349
Total GLA	**556,824**

Note: Other includes but is not limited to the skybridge, gatehouse, dangerous goods store and energy complex in Building 1A.

B10. The Applicant shall ensure the Concept Proposal is consistent with the development controls in **Table 2**:

Table 2: *Development Controls*

Development Aspect	Control
Minimum building setbacks from:	
• Southern Link Road	20 m
• Western North-South Link Road	20 m
• Local estate Roads	7.5 m
• Western site boundary	40 m
• Southern site boundary	20 m (excluding parking areas)
Rear boundary setbacks within the estate	5 m
Side boundary setbacks within the estate	0 m, subject to compliance with fire rating requirements
Height	15 m
- Building 1A	39 m
- Building 2B	28 m
Minimum lot size	5,000 m^2
Minimum frontage	40 m (excluding cul-de-sacs) 35 m minimum lot width at the building line
Site coverage	Maximum of 65 per cent (excluding awnings)

B11. Notwithstanding the controls listed in **Table 2** in Condition B10, no warehouse building in the Concept Proposal, except Building 1A in Precinct 1 and Building 2B in Precinct 2, shall exceed a ridgeline height of 13.7 m, excluding roof mounted mechanical plant and solar panels.

B12. The Applicant shall lodge the proposed revisions to the *Penrith Development Control Plan 2014* (Penrith DCP), in accordance with **Table 2** in Condition B10, with Council within 6 months of the date of this consent.

B13. The Applicant shall ensure the Concept Proposal provides car parking in accordance with the following rates:

(a) 1 space per 300 m^2 of warehouse GFA;

(h) 1 space per 40 m^2 of office GFA; and

(i) 2 spaces for disability parking for every 100 car parking spaces.

B14. The Applicant shall provide bicycle racks, and amenity and change room facilities for cyclists in accordance with *Planning Guidelines for Walking and Cycling* (December 2004, NSW Department of Infrastructure, Planning and Natural Resources and the Roads and Traffic Authority).

STAGING PLAN

B15. Prior to the commencement of construction of any stage of the Concept Proposal, the Applicant shall prepare a Staging Plan for the Development, to the satisfaction of the Planning Secretary. The plan shall:

(a) be prepared in consultation with Council, utility and service providers and other relevant stakeholders;

(b) describe how the implementation of the Concept Proposal, would be staged to ensure it is carried out in an orderly and economic way and minimises construction impacts on adjacent sensitive receivers;

(c) show the likely sequence of DAs that will be lodged to develop the Site, with the estimated timing for each Stage and identification of any overlapping construction and operational activities;

(d) include concept design for the staged delivery of landscaping, focusing on early implementation of screen planting to minimise the visual impact of subsequent development stages; and

(e) include conceptual design for the provision of services, utilities and infrastructure to the Site.

B16. The Applicant must:

(a) not commence construction of any stage of the Development until the Staging Plan required by Condition B15 is approved by the Planning Secretary; and

(b) implement the most recent version of the Staging Plan approved by the Planning Secretary.

B17. The Planning Secretary may require the Applicant to address certain matters identified in the Staging Plan. The Applicant must comply with any such requirements of the Planning Secretary given as part of the Staging Plan approval.

***Notes**:*

- *The Applicant may amend the Staging Plan as desired, with the approval of the Planning Secretary.*
- *The Staging Plan is intended to broadly describe the development sequence for the Site and the delivery of infrastructure for all stages. It is not required to provide detailed design for latter Stages.*

NOISE LIMITS

B18. The Applicant shall ensure the Development does not exceed the noise limits in **Table 3** at the receiver locations N1, N2, N3, N4 and N5 shown on the plan in **Appendix 5**.

***Table 3:** Noise Limits dB(A)*

Location	Day	Evening	Night	
	$L_{Aeq\ (15\ minute)}$	$L_{Aeq\ (15\ minute)}$	$L_{Aeq\ (15\ minute)}$	L_{AMax}
N1 Emmaus Village Residential	44	43	41	52
N3 Kemps Creek – nearest residential property	39	39	37	52
N4 & N5 Kemps Creek – other residences	39	39	37	52
All other non-associated residences	40[2]	35[2]	35[2]	52
N2 Emmaus Catholic College (school)	**When in use**: 45 $L_{eq\ (1h)}$			

Notes:

1. *Noise generated by the development is to be measured in accordance with the relevant procedures and modifications, including certain meteorological conditions, of the Noise Policy for Industry (EPA, 2017). Refer to the plan in Appendix 2 for the location of residential sensitive receivers.*
2. *or background + 5 dB, whichever is higher.*

B19. The noise limits in **Table 3** do not apply to receiver N3, N4 and N5 if the Applicant has a Noise Agreement with the relevant landowner to exceed the noise limits, and the Applicant has provided written evidence to the Planning Secretary that an agreement is in place.

BUSHFIRE PROTECTION

B20. The Applicant shall ensure the Development complies with:

(a) the relevant provisions of *Planning for Bushfire Protection 2006;*

(b) the construction standards and asset protection zone requirements recommended in the Oakdale Industrial Estate - West Bushfire Protection Assessment, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016 and updated 13 January 2020; and

(c) *AS2419.1 – 2005 Fire Hydrant Installations* for firefighting water supply.

TRANSGRID EASEMENT

B21. The Applicant must:

(a) provide safe and unobstructed access for TransGrid plant and personnel to access the transmission towers, lines and easement on the Site, 24 hours a day, 7 days a week;

(b) comply with the requirements of TransGrid for any works in the TransGrid easement; and

(c) advise TransGrid of any proposed amended or modified encroachment into the easement.

ENDEAVOUR ENERGY

B22. The Applicant must comply with the requirements of Endeavour Energy for the provision of land for a new zone substation as shown on the plans in the RtS.

WATER NSW

B23. The Applicant must:

(a) provide safe and unobstructed access for Water NSW plant and personnel to access the water pipelines corridor adjacent the Site, 24 hours a day, 7 days a week;

(b) comply with the requirements of Water NSW for any works adjacent to or over, the water pipelines corridor; and

(c) advise Water NSW of any proposed amended or modified encroachment into the water pipelines corridor.

AMENITIES LOT

B24. The amenities lot located north of Estate Road 1, as shown on the plans in **Appendix 1**, must only provide for small-scale local services such as commercial, retail, community facilities and landscaping that service or support the needs of local employment-generating uses.

SCHEDULE C CONDITIONS FOR FUTURE DEVELOPMENT APPLICATIONS

DEVELOPMENT CONTRIBUTIONS

C1. Future DAs shall identify whether any Development Contributions Plan made by Council (under Section 7.11 of the EP&A Act) applies to that stage of the Concept Proposal (excluding Stage 1).

C2. Prior to the issue of a Construction Certificate for any stage of the Development, the Applicant shall pay contributions to Council in accordance with the relevant Development Contributions Plan identified in accordance with Condition C1.

INTERFACE WITH RESIDENTIAL AREAS

C3. Future DAs for warehouses on lots 3A, 3B, 3C, 3D, 3E, 3F, 3G and 4A shall be accompanied by an Urban Design Assessment. The assessment must:

(a) be prepared by an independent urban design consultant;

(b) be prepared in consultation with Council and the Emmaus Catholic College;

(c) detail the key objectives for the interface with the sensitive receivers on the western and southern Site boundaries, including consideration of optimal uses and operational hours;

(d) determine the optimal building location and setbacks on the western and southern boundaries, noting the design controls in Condition B10 are the minimum setback requirements;

(e) present the optimal design for the building layouts along the western and southern site boundaries with detailed justification for the preferred option;

(f) identify appropriate orientations and architectural treatments for the facades facing sensitive receivers; and

(g) incorporate noise mitigation into the layout and design of buildings, internal roads, loading docks and parking areas to ensure the Development can meet the noise limits in Condition B18.

C4. Prior to the commencement of construction of warehouses or office buildings on lots 3A, 3B, 3C, 3D, 3E, 3F, 3G and 4A, the Applicant must obtain approval from the Consent Authority for the preferred design option, including uses, building and loading dock layouts, setbacks, façade treatments and colours.

VISUAL AMENITY

Landscaping

C5. Future DAs shall be accompanied by a Landscape Assessment. The assessment must:

(a) be prepared by a qualified landscape design consultant;

(b) be prepared in consultation with Council;

(c) describe how the landscaping for the relevant Stage of the Development is consistent with the Staging Plan approved in accordance with Condition B15;

(d) describes the landscaping works to be completed as part of the relevant Stage of the Development and details a program for monitoring the success of landscaping works over time;

(e) assesses the condition of and adequacy of landscaping completed as part of earlier Stages of the Development, in providing visual screening for adjacent sensitive receivers; and

(f) details any additional landscaping or rehabilitation works required to ensure the visual impacts of the Development are minimised for the adjacent sensitive receivers.

Outdoor Lighting

C6. Future DAs must ensure compliance with *AS/NZS 1158.3.1:2005 Pedestrian Area (Category P) Lighting* and *AS/NZS 4282:2019 Control of Obtrusive Effects of Outdoor Lighting*.

Signage

C7. Future DAs must ensure illuminated signage is oriented away from the sensitive receivers on the western and southern Site boundaries.

Reflectivity

C8. The visible light reflectivity from materials used on the façades and roofs of the warehouses and office buildings shall be designed to minimise glare. A report demonstrating compliance with these requirements must be submitted to the satisfaction of the Certifying Authority for each future warehouse and office building prior to the issue of the relevant Construction Certificate.

TRANSPORT, ACCESS AND PARKING

C9. Future DAs shall be accompanied by a transport, access and parking assessment. The assessment must:

(a) assess the impacts on the safety and capacity of the surrounding road network and access points during construction and operation of the relevant Stage;

(b) demonstrate internal roads and car parking complies with relevant Australian Standards and the car parking rates in Condition B13;

(c) detail the scope and timing of any required road upgrades to service the relevant Stage; and

(d) detail measures to promote non-car travel modes, including a Sustainable Travel Plan identifying pedestrian and cyclist facilities to service the relevant Stage of the Development.

NOISE AND VIBRATION

C10. Future DAs shall be accompanied by a noise and vibration impact assessment. The assessment must:

(a) identify the noise and vibration impacts during construction and operation;

(b) demonstrate compliance with the noise limits in Condition B18;

(c) provide an analysis of all external plant and equipment, including but not limited to, forklifts, air conditioners and refrigeration systems;

(d) incorporate noise mitigation measures, such as increased building setbacks, building insulation, noise barriers, layout of truck loading areas or source controls, to demonstrate the noise limits in Condition B18 can be achieved;

(e) detail the timing to construct the noise walls shown in **Appendix 5**, to ensure noise from operation of the Development does not exceed the noise limits in Condition B18; and

(f) recommend mitigation and management measures to be implemented to minimise noise during construction.

STORMWATER MANAGEMENT

C11. Future DAs shall demonstrate the design of the warehouses, offices and hardstand areas are consistent with (or the latest revision of) the:

(a) *Civil, Stormwater and Infrastructure Services Report*, prepared by At&L, dated October 2018; and

(b) *Flood Impact Assessment: Oakdale West Estate*, prepared by Cardno, dated 27 March 2017.

BUSHFIRE PROTECTION

C12. The Applicant shall ensure future DAs comply with:

(a) the relevant provisions of *Planning for Bushfire Protection 2006*;

(b) the construction standards and asset protection zone requirements recommended in the Oakdale Industrial Estate - West Bushfire Protection Assessment, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016 and updated 13 January 2020; and

(c) *AS2419.1 – 2005 Fire Hydrant Installations* for firefighting water supply.

TRANSGRID EASEMENT

C13. The Applicant must consult with TransGrid, prior to lodging DAs for Stages 4 and 5 of the Development as shown on **Figure 2** in **Appendix 1**, and any other Stage or road infrastructure that may affect the TransGrid easement. The Applicant must design, construct and operate each Stage of the development in accordance with the reasonable requirements of TransGrid relating to their use of the TransGrid easement.

C14. The Applicant must consult with TransGrid, prior to lodging DAs for buildings in Stage 5 adjacent to Ropes Creek, to identify and implement any required flood management measures within the transmission line easement.

ENDEAVOUR ENERGY

C15. The Applicant must obtain relevant approvals from Endeavour Energy, prior to the construction of any utility works to service each Stage of the Development.

WATER NSW

C16. The Applicant must consult with Water NSW, prior to lodging DAs for works on Lot 2A adjoining the water pipelines corridor, to identify and implement any requirements of Water NSW for protection of the water pipelines corridor.

WASTE

C17. Future DAs shall include a Waste Management Plan prepared in accordance with the *NSW Waste Classification Guidelines* (DECCW, 2009).

CONSTRUCTION MANAGEMENT

C18. A Construction Environmental Management Plan (CEMP) shall be submitted to the Consent Authority for each stage of the Concept Proposal prior to the commencement of construction of the relevant stage. The CEMP must:

(a) be prepared by a suitably qualified and experienced environmental consultant, or the Environmental Representative appointed for Stage 1 of the Development;

(b) be prepared in consultation with relevant Government agencies, infrastructure and utility providers, including but not limited to, TransGrid, Endeavour Energy, Water NSW and TfNSW, where relevant for each stage;

(c) detail the construction activities to be undertaken in the relevant Stage of the Development;

(d) include detailed procedures for managing the environmental impacts of construction, including stormwater, erosion and sediment controls, dust, noise and traffic management; and

(e) detail the roles and responsibilities for environmental management on the Site.

COMMUNITY COMMUNICATION STRATEGY

C19. No later than one month before the commencement of construction of any stage of the Development, a Community Communication Strategy (CCS) must be prepared and submitted to the Planning Secretary for approval.

The CCS is to provide mechanisms to facilitate communication between the Applicant, Council and the community (including adjoining affected landowners, schools, businesses, and others directly impacted by Stage 1), during design, construction and operation. The CCS must:

(a) assign a central contact person to keep the nearby sensitive receivers regularly informed throughout the Development;

(b) detail the mechanisms for regularly consulting with the local community throughout the Development, such as holding regular meetings to inform the community of the progress of the development and report on environmental monitoring results;

(c) detail a procedure for consulting with nearby sensitive receivers to schedule high noise generating works, vibration intensive activities or manage traffic disruptions;

(d) include contact details for key community groups, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders; and

(e) include a complaints procedure for recording, responding to and managing complaints, including:

(i) email, contact telephone number and postal addresses for receiving complaints;

(ii) advertising the contact details for complaints before and during operation, via the local newspaper and through onsite signage;

(iii) a complaints register to record the date, time and nature of the complaint, details of the complainant and any actions taken to address the complaint; and

(iv) procedures for the resolution of any disputes that may arise during the course of the Development.

C20. The Applicant must:

(a) not commence construction of the relevant stage of the Concept Proposal until the CCS required under Condition C19 has been approved by the Planning Secretary; and

(b) implement the CCS for each stage of the Concept Proposal and following the completion of operation of the Development.

SCHEDULE D CONDITIONS FOR STAGE 1 DA

PART 1 – GENERAL CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

D1. 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 Stage 1 development, and any rehabilitation required under this consent.

TERMS OF CONSENT

D2. Stage 1 of the Development may only be carried out:

(a) in compliance with the conditions of this consent;

(b) in accordance with all written directions of the Planning Secretary;

(c) in accordance with the EIS and RTS;

(d) in accordance with the plans in **Appendix 2** and **Appendix 3**;

(e) in accordance with SSD 7348 MOD 1;

(f) in accordance with the Applicant's Management and Mitigation Measures in **Appendix 7**; and

(g) in accordance with modifications to this consent.

D3. 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 D3(a).

D4. 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 D2(c). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in Condition D2(c), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

LIMITS OF CONSENT

D5. This consent lapses five (5) years after the date from which it operates, unless Stage 1 has physically commenced on the land to which the consent applies before that date.

D6. The following limits apply to Stage 1:

(a) the maximum GLA for the land uses shall not exceed the limits in **Table 4**; and

(b) a minimum 60 m wide corridor along the northern Site boundary shall not be developed and shall be maintained and preserved for the future WSFL corridor, in accordance with the requirements of TfNSW.

(c) all construction traffic associated with the Stage 1 warehouse buildings (Buildings 1A, 1B and 1C) must use the West North South Link Road to access the site.

Table 4: *GLA Maximum for Stage 1*

Land Use	Maximum GLA (m^2)
Total Warehousing	81,286
Total Office	4,151
Other	4,004
Total GLA	**89,440**

Note: Other includes, but is not limited to, the skybridge, gatehouse, dangerous goods store and energy complex in Building 1A.

D7. The Applicant shall ensure Stage 1 is consistent with the development controls in **Table 2**: **Development Controls** in Condition B10.

NOTIFICATION OF COMMENCEMENT

D8. The date of commencement of each of the following phases of Stage 1 must be notified to the Department in writing, at least one month before that date, or otherwise agreed with the Planning Secretary:

(a) construction; and

(b) operation.

D9. If the construction or operation of Stage 1 is to be delivered in sub-stages, the Department must be notified in writing at least one month before the commencement of each sub-stage, of the date of commencement and the works to be carried out in that sub-stage.

EVIDENCE OF CONSULTATION

D10. 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.

STAGING, COMBINING AND UPDATING STRATEGIES, PLANS OR PROGRAMS

D11. 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).

D12. 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.

D13. 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.

PROTECTION OF PUBLIC INFRASTRUCTURE

D14. Before the commencement of construction of Stage 1, the Applicant must:

(a) consult with the relevant owner and provider of services that are likely to be affected, to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure;

(b) prepare a dilapidation report identifying the condition of all 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.

D15. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:

(a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by carrying out Stage 1; and

(b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of Stage 1.

PROTECTION OF WATER NSW INFRASTRUCTURE

D16. Before the commencement of construction of Stage 1, the Applicant must:

(a) prepare a dilapidation report identifying the condition of all infrastructure within the water pipelines corridor, in the vicinity of the WNSLR bridge crossing;

(b) implement all practical measures to protect this infrastructure, as required by Water NSW; and

(c) repair, or pay the full costs associated with repairing, any water supply infrastructure that is damaged by carrying out Stage 1.

DEMOLITION

D17. All demolition must be carried out in accordance with *Australian Standard AS 2601-2001 The Demolition of Structures* (Standards Australia, 2001).

STRUCTURAL ADEQUACY

D18. All new buildings and structures, and any alterations or additions to existing buildings and structures, that are part of the development, must be constructed in accordance with the relevant requirements of the National Construction Code (NCC).

Notes:

- *Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*

COMPLIANCE

D19. 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 Stage 1.

DEVELOPER CONTRIBUTIONS

Planning Agreement

D20. The Applicant shall provide all monetary contributions and/or works-in-kind contributions under Subdivision 2 of Division 7.1 of Part 7 of the EP&A Act, in accordance with the Planning Agreement entered into between the Minister for Planning, Goodman Property Services (Aust) Pty Ltd (the developer) and BGMG 11 Pty Limited as trustee for the BGMG 1 Oakdale West Trust (the landowner) executed on 5 August 2019 and as attached in **Appendix 4**.

OPERATION OF PLANT AND EQUIPMENT

D21. All plant and equipment used on site, or to monitor the performance of Stage 1 must be:

(a) maintained in a proper and efficient condition; and

(b) operated in a proper and efficient manner.

EASEMENTS

D22. Within 12 months of commencing operation of Stage 1, or a timing otherwise agreed with Council, an easement under section 88A and/or restriction or public positive covenant under section 88E of the *Conveyancing Act 1919* (NSW) naming the Council as the prescribed authority, which can only be revoked, varied or modified with the consent of the Council, and provides for a drainage outlet swale from bio-retention basin 1, must be registered on title of Lot 19 DP 1250578.

EXTERNAL WALLS AND CLADDING

D23. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the NCC.

D24. Before the issue of a Construction Certificate and an Occupation Certificate, the Applicant must provide the Certifying Authority with documented evidence that the products and systems proposed for use or used in the construction of external walls including finishes and claddings such as synthetic or aluminium composite panels comply with the requirements of the NCC.

D25. The Applicant must provide a copy of the documentation given to the Certifying Authority to the Planning Secretary within seven days after the Certifying Authority accepts it.

UTILITIES AND SERVICES

D26. Before the construction of any utility works associated with Stage 1, the Applicant must obtain relevant approvals from service providers.

D27. Before the commencement of operation of Stage 1, the Applicant must obtain a Compliance Certificate for water and sewerage infrastructure servicing Stage 1, under section 73 of the *Sydney Water Act 1994* (NSW).

D28. Before the issue of a Subdivision or Construction Certificate for Stage 1, the Applicant (whether or not a constitutional corporation) is to provide evidence, satisfactory to the Certifying Authority, that arrangements have been made for the provision of communication facilities to Stage 1.

D29. The Applicant must demonstrate that the carrier has confirmed in writing they are satisfied that the fibre ready facilities are fit for purpose.

TRANSGRID EASEMENT

D30. The Applicant must:

(a) provide safe and unobstructed access for TransGrid plant and personnel to access the transmission towers, lines and easement on the Site, 24 hours a day, 7 days a week;

(b) comply with the requirements of TransGrid for any works in the TransGrid easement on the Site; and

(c) advise TransGrid of any proposed amended or modified encroachment into the easement.

WATER NSW

D31. The Applicant must:

(a) comply with the requirements of Water NSW for any works adjacent to, or over, the water pipelines corridor;

(b) consult with Water NSW during detailed design of Stage 1 works near the corridor including:

(i) design of drainage upgrade works within the corridor;

(ii) batters and access tracks;

(iii) final bridge design for the WNSLR;

(c) obtain from Water NSW, an access consent and construction licence to work within the water pipelines corridor, prior to the commencement of construction;

(d) consult with Water NSW during preparation of the CEMP, in accordance with Condition D119, and attend a site visit with Water NSW personnel, prior to finalising the CEMP, to mark the exact works area for the WNSLR bridge crossing; and

(e) notify any incidents that affect or could affect the water pipelines corridor to Water NSW on the 24-hour Incident Notification Number **1800 061 069**, as a matter of urgency.

WORKS-AS-EXECUTED PLANS

D32. Before the issue of the final Occupation Certificate for Stage 1, works-as-executed drawings signed by a registered surveyor demonstrating that the stormwater drainage and finished ground levels have been constructed as approved, must be submitted to the PCA.

APPLICABILITY OF GUIDELINES

D33. References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this consent.

D34. However, consistent with the conditions of 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.

ADVISORY NOTES

AN1**.** All licences, permits, approvals and consents as required by law must be obtained and maintained as required for Stage 1. No condition of this consent removes any obligation to obtain, renew or comply with such licences, permits, approvals and consents.

PART 2 – ENVIRONMENTAL PERFORMANCE CONDITIONS

VISUAL AMENITY

Landscape Management Plan

D35. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Landscape Management Plan (LMP), to the satisfaction of the Planning Secretary. The plan must form part of the CEMP in accordance with Condition D119 and the OEMP in accordance with Condition D130 and must:

(a) be prepared in consultation with Council;

(b) detail procedures for the retention of existing native vegetation in the north-western corner of the Site and protection of this vegetation from construction impacts;

(c) include visual impact mitigation measures for construction including but not limited to:

(i) the location of site sheds, compounds and machinery parking areas, avoiding the western and southern site boundaries, or other locations highly visible from adjacent residential properties;

(ii) ~~procedures for progressive grassing of exposed soil, as soon as reasonably practicable after disturbance, focusing on areas where building construction will occur at a later stage;~~ *The contractor shall employ the use of a dust supressing polymer agent ideally with a green tint to reduce the visual impact of the exposed building pads & to assist in reducing the dust generated on site.*

(d) detail the works required to construct the landscape bund along the western boundary of the Site, as shown on **Figure 4** in **Appendix 2**, including provision for the landscaping to incorporate mature trees (no less than 75 litre pot size);

(e) include a schedule of works which prioritises the construction of the landscape bund along the western boundary of the Site, as shown on **Figure 4** in **Appendix 2**.

(f) include a program for implementing the landscape bund as soon as reasonably practicable, and no later than prior to operation of Stage 1;

(g) describe the integration of landscaping with fixed elements, including retaining walls and noise walls;

(h) describe the monitoring and maintenance procedures to ensure the success of the landscaping works over the life of the Development; and

(i) update the LEMP to include modifications to the western bund, bio-retention basin 2/3 and the noise wall approved under MOD 3.

D36. The Applicant must:

(a) not commence construction of Stage 1 until the LMP is approved by the Planning Secretary.

(b) must implement the most recent version of the LMP approved by the Planning Secretary; and

(c) include the monitoring and maintenance procedures contained in the LMP within the OEMP required in accordance with Condition D130.

Landscaping

D37. The Applicant must complete the landscape bund along the western boundary of the Site as shown on **Figure 4** in **Appendix 2** within six months of commencing any construction including bulk earthworks.

D38. The Applicant must maintain all landscaping implemented as part of Stage 1, as shown on **Figure 4** in **Appendix 2**, for the duration of the Development. If the monitoring carried out as part of Condition D35 indicates that any aspect of the landscaping has not been successful, the Applicant must undertake re-planting and rehabilitation works, as soon as reasonably practicable.

Setbacks

D39. The Applicant must ensure building services including tanks are integrated into the building design and landscaped areas to reduce visibility from public areas, unless otherwise required by an authority or Australian Standard, to be located within the front boundary setback.

Lighting and Security Cameras

D40. The Applicant must ensure the lighting associated with Stage 1:

(a) complies with the latest version of AS 4282-1997 - Control of the obtrusive effects of outdoor lighting (Standards Australia, 1997); and

(b) is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network.

D41. The Applicant must ensure any security cameras installed as part of Stage 1 are directed away from adjacent private properties.

Reflectivity

D42. The visible light reflectivity from building materials used in the facades and roofs of the warehouses and offices must be designed to minimise glare. A report demonstrating compliance with these requirements is to be submitted to the satisfaction of the Certifying Authority prior to the issue of the relevant Construction Certificate.

Signage and Fencing

D43. All signage and fencing must be erected in accordance with the plans in the RtS.

Note: *This condition does not apply to temporary construction and safety related signage and fencing.*

D43A. Prior to construction of any signage for Stage 1, the Applicant must consult with Council on the final signage strategy and obtain approval of the final signage strategy from the Planning Secretary.

D44. All fencing along building frontages must be located behind the landscape setbacks and not along the front boundary. The fencing must be a maximum height of 2.1 metre and be an open style.

D45. The Applicant must:

(a) remove existing rural fencing along the water pipelines corridor adjacent the site and dispose to an appropriate waste facility licensed to accept the waste;

(b) install and maintain temporary security fencing along the water pipelines corridor adjacent the site, for the duration of construction, or until a permanent fence is installed;

(c) install permanent 2.4-metre-high fencing along the water pipelines corridor adjacent the site, including the approaches to the WNSLR bridge over the water pipelines corridor and above retaining walls, unless otherwise agreed with Water NSW;

(d) install concrete barriers or barrier guard rails (including barriers leading up to bridge structure) to the WNSLR where there is potential for large vehicles to drive over retaining walls and into the water pipelines corridor. Barriers must be rated to withstand impact from B-Double size vehicles; and

(e) install cranked throw screens on both sides of the WNSLR bridge crossing the Water NSW water pipeline corridor.

D45A. Prior to construction of Building 1, the Applicant must submit a final architectural design for Building 1A detailing building articulation, colour schemes and signage. The Applicant must not commence construction of Building 1A until the final architectural design is approved by the Planning Secretary.

WESTERN NORTH-SOUTH LINK ROAD (WNSLR)

General Requirements

D46. The Applicant must design and construct the WNSLR in accordance with the requirements of:

(a) Council, the PCA and any approval issued under section 138 of the *Roads Act 1993* including the Works Authorisation Deed (WAD);

(b) TfNSW for the bridge crossing of the future WSFL; and

(c) Water NSW for the bridge crossing of the water pipelines corridor.

D47. The Applicant must design and construct the intersections of the WNSLR with Estate Road 1 and Lockwood Road to the satisfaction of the relevant roads authority.

D47A. Prior to the commencement of construction of car park access for Lot 9, DP1157476 (57-87 Lockwood Road, Erskine Park NSW 2759), the Applicant must submit a Section 138 Application (including payment of fees together with any applicable bonds) to Penrith City Council for obtaining a *Roads Act 1993* approval. The Section 138 Application may include but is not limited to the following works:

- vehicular crossings (including kerb reinstatement of redundant vehicular crossings);
- road opening for utilities and stormwater (including stormwater connection to Council infrastructure); and
- road occupancy or road closures.

All works shall be carried out in accordance with the *Roads Act 1993* approval, the development consent including the stamped approved plans, and Penrith City Council's specifications.

Note: contact Penrith City Council's City Works Department on (02) 4732 7777 for further information regarding the application process.

Works at Lenore Drive/Grady Crescent/WNSLR Intersection

D48. Prior to the commencement of construction of the Lenore Drive/Grady Crescent/WNSLR intersection (the intersection), the Applicant must finalise the detailed design, including a Traffic Signal Plan, for the intersection works. The detailed design must:

(a) cut back the median further with a taper in Grady Crescent to accommodate the dual B-Double swept paths turning from WNSLR onto Lenore Drive; and

(b) include an angled pedestrian crossing on the south-eastern corner of the intersection so that pedestrians are not confused by the pedestrian lantern on the opposite side of the intersection.

D49. The Applicant must enter into a WAD for works at the intersection with TfNSW (former RMS). The WAD must be executed prior to the submission of the detailed design required under condition D48 to TfNSW for approval.

D50. The Applicant must design the proposed traffic control light at the intersection in accordance with Austroads guidelines, RMS Signal Design Manual and Australian Codes of Practice. The traffic control light design must be endorsed by a suitably qualified practitioner whose qualification has been approved by TfNSW (former RMS).

D51. The Applicant must submit the certified copies of the traffic signal design plans to TfNSW (former RMS) for approval prior to the issue of a Construction Certificate.

D52. The Applicant must submit a request to TfNSW (former RMS) Network Operations Team to obtain relevant approvals to remove the signalised pedestrian crossing on the eastern leg of the intersection.

D53. The Applicant must carry out all public utility adjustment/relocation works necessary for the intersection works as required by relevant public utility authorities and/or their agents.

D54. The Applicant must make a ten (10) year maintenance contribution for the intersection to TfNSW (former RMS).

D55. The intersection works must be carried out at no cost to TfNSW (former RMS).

Pre-Construction

D56. Prior to the commencement of construction of the WNSLR, the Applicant must:

(a) obtain the written consent of the Minister for Planning and Public Spaces under the Biodiversity Covenant, to construct the WNSLR over the Erskine Park Biodiversity Corridor; and

(b) provide evidence to the satisfaction of the Planning Secretary, demonstrating the design of the WNSLR and bridge crossings have been agreed with the relevant roads authority, Council, TfNSW and Water NSW.

Consultation

D57. The Applicant must develop a schedule for consultation with and approval by TfNSW for the construction of the bridge foundations over the future WSFL, including geotechnical and structural certification as required by TfNSW. The schedule must form part of the CEMP required by Condition D119.

D58. The Applicant must develop a schedule for consultation with and approval by Water NSW for the construction of the bridge over the water pipelines corridor. This schedule must form part of the CEMP required by Condition D119.

Pre-Operation

D59. Prior to operation of any Stage of the Development, the Applicant must complete construction of the WNSLR to the satisfaction of the relevant roads authority and the PCA.

D60. Prior to the commencement of operation of the WNSLR, the Applicant must provide works-as-executed drawings to Water NSW for the WNSLR bridge. The drawings must clearly show any changes to the bridge design or the works adjacent to the water pipelines corridor.

D61. Prior to the commencement of operation of the WNSLR, the Applicant must design and construct a stormwater management system for the WNSLR. The system must:

(a) be designed by a suitably qualified and experienced person(s);

(b) be generally in accordance with the conceptual design in the RtS;

(c) ensure that the system capacity has been designed in accordance with AUSTROADS guidelines;

(d) achieve the pollutant reduction targets specified in RMS's *Water Sensitive Urban Design (WSUD) Guidelines* (March 2016) and Council's *Water Sensitive Urban Design (WSUD) Policy* (December 2013); and

(e) ensure the outlet structures are designed in accordance with NRAR's *Guidelines for Controlled Activities on Waterfront Land* (May 2018).

Dedication of Infrastructure and Land

D62. Prior to the completion of construction of the WNSLR, the Applicant must consult with Water NSW regarding land subdivision and stratum arrangements for the acquisition and dedication of Water NSW land to Council for the WNSLR bridge.

D63. Following completion of construction of the WNSLR to the satisfaction of the relevant roads authority, the Applicant must dedicate the WNSLR and its associated land owned by Water NSW and BGMG 11 Pty Limited as trustee for the BGMG 1 Oakdale West Trust, to the relevant roads authority in accordance with the requirements of the Planning Agreement.

D64. The Applicant shall retain care, control and ownership of bio-retention basin no. 1 associated with the WNSLR.

TRANSPORT, ACCESS AND PARKING

Construction Traffic Management Plan

D65. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The CTMP must form part of the CEMP required by Condition D119 and must:

(a) be prepared by a suitably qualified and experienced person(s);

(b) be prepared in consultation with Council, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School;

(c) detail specific measures to manage construction traffic to avoid school drop off and pick up times (Monday to Friday 8 am – 9.30 am and 2.30 pm – 4 pm) and Higher School Certificate exam periods, including any temporary infrastructure arrangements and traffic safety measures;

(d) detail the measures to be implemented to ensure road safety and network efficiency during construction, including scheduling deliveries of heavy plant and equipment outside of peak periods, or during school holidays where possible;

(e) detail heavy vehicle routes, access and parking arrangements;

(f) include a Driver Code of Conduct to:

i. minimise the impacts of construction on the local and regional road network;

ii. minimise conflicts with other road users including the students, staff, visitors and residents of the neighbouring schools and aged care village;

iii. minimise road traffic noise, both on Bakers Lane and from construction vehicles on Site; and

iv. ensure truck drivers use specified routes and adhere to the speed restrictions on Bakers Lane;

(g) include a program to monitor the effectiveness of these measures;

(h) detail procedures for early notification to residents and the community (including local schools), of any potential disruptions to routes; and

(i) update the CTMP to include modifications to construction traffic management approved under MOD 2 and MOD 3.

D66. The Applicant must:

(a) not commence construction of Stage 1 until the CTMP required by Condition D65 is approved by the Planning Secretary; and

(b) implement the most recent version of the CTMP approved by the Planning Secretary for the duration of construction.

Estate Roads and Intersections

D67. The Applicant must design and construct the internal estate roads and intersections to accommodate the turning path of a B-Double, to the satisfaction of the Relevant Roads Authority.

D68. Following the issue of a Subdivision Certificate, the estate roads shall be dedicated to the Relevant Roads Authority. Prior to any dedication, the Applicant shall ensure construction of the estate roads has been completed to the satisfaction of the Relevant Roads Authority and measures (such as a performance bond) are in place for any prescribed maintenance period, to the satisfaction of the Relevant Roads Authority.

Operating Conditions

D69. 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) are constructed and maintained in accordance with the latest version of *AS 2890.1:2004 Parking facilities Off-street car parking* (Standards Australia, 2004) and *AS 2890.2:2002 Parking facilities Off-street commercial vehicle facilities* (Standards Australia, 2002);

(b) parking for Stage 1 is provided in accordance with the EIS and RtS for MOD 2;

(c) 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;

(d) Stage 1 does not result in any vehicles queuing on the public road network;

(e) heavy vehicles associated with Stage 1 are not parked on local roads or footpaths in the vicinity of the Site;

(f) all vehicles are wholly contained on site before being required to stop;

(g) all loading and unloading of materials are carried out on Site;

(h) all trucks entering or leaving the Site with loads have their loads covered and do not track dirt onto the public road network; and

(i) the proposed turning areas in the car parks are kept clear of any obstacles, including parked cars, at all times.

Operational Traffic Management Plan

D69A The Applicant must prepare an Operational Traffic Management Plan (OTMP) for Stage 1. The OTMP must form part of the OEMP required by condition D130 and must:

(a) be prepared by a suitably qualified and experienced expert, in consultation with Council and TfNSW;

(b) detail the numbers and frequency of truck movements, sizes of trucks, vehicle routes and hours of operation;

(c) include measures to maintain road safety and network efficiency;

(d) detail measures to minimise traffic noise, including procedures for receiving and addressing complaints from the community about Stage 1 related traffic and noise;

(e) include a Driver's Code of Conduct that addresses:

(i) travelling speeds and adherence to site-specific speed limits;

(ii) procedures to ensure drivers adhere to designated heavy vehicle routes; and

(iii) procedures to ensure drivers implement safe driving practices.

D69B The Applicant must:

(a) not commence operation of Stage 1 until the OTMP required by condition D69A is approved by the Planning Secretary; and

(b) implement the most recent version of the OTMP approved by the Planning Secretary for the duration of operation.

NOISE

Hours of Work

D70. The Applicant must comply with the hours detailed in **Table 5**, unless otherwise agreed in writing by the Planning Secretary.

Table 5: *Hours of Work*

Activity	Day	Time

Construction	Monday – Friday Saturday	7 am to 6 pm 8 am to 1 pm
Operation	Monday – Sunday (including public holidays)	24 hours

D71. Works outside of the hours identified in Condition D70 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.

Construction Noise Limits

D72. Stage 1 must be constructed with the aim of achieving 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 Construction Noise and Vibration Management Plan required by Condition D73.

Construction Noise and Vibration Management Plan

D73. The Applicant must prepare a Construction Noise and Vibration Management Plan (CNVMP) for Stage 1, to the satisfaction of the Planning Secretary. The CNVMP must form part of a CEMP in accordance with Condition D119 and must:

(a) be prepared by a suitably qualified and experienced noise expert;

(b) 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);

(c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;

(d) include strategies to minimise impacts to sensitive receivers, including, where practicable, starting noisy equipment away from sensitive receivers and implementing respite periods;

(e) include strategies that have been developed with the sensitive receivers identified in **Appendix 5** for managing high noise generating works;

(f) describe the community consultation undertaken to develop the strategies in Condition D73(e);

(g) include a monitoring program that:

(i) includes a protocol for determining exceedances of the relevant conditions in this approval;

(ii) evaluates and reports on the effectiveness of the noise and vibration management measures;

(iii) include procedures to relocate, modify, mitigate or stop work to ensure compliance with relevant criteria; and

(h) include a complaints management system that would be implemented for the duration of Stage 1.

D74. The Applicant must:

(a) not commence construction of Stage 1 until the CNVMP required by Condition D73 is approved by the Planning Secretary; and

(b) implement the most recent version of the CNVMP approved by the Planning Secretary for the duration of construction.

Operational Noise Limits

D75. The Applicant shall undertake operation of Stage 1 in a manner that ensures the Development complies with the noise limits for the Concept Proposal in Condition B18 of this consent.

Noise Barrier

D75A The Applicant must install the noise barrier, as shown on **Figure 7** in **Appendix 5**, within six months of commencing any construction including bulk earthworks, to the satisfaction of the Planning Secretary.

Noise Verification

D75B Within three months of commencing operation of any buildings on the site, the Applicant must prepare a noise verification report, to the satisfaction of the Planning Secretary. The noise verification report must:

(i) be prepared by an appropriately qualified and experienced noise expert;

(ii) describe the noise monitoring undertaken to verify the effectiveness of the noise barrier;

(iii) demonstrate compliance with the noise limits in Condition B18; and

(iv) if required, recommend, prioritise and implement measures to improve noise controls to ensure the development meets the noise limits in Condition B18.

(v) include monitoring during the night-time to confirm the development complies with the sleep disturbance limits in Condition B18.

Noise Barrier

D75C The Applicant must install the noise barrier as shown on Figure 7B in Appendix 5, no later than 31 October 2020, unless the noise barrier is installed in accordance with Condition D75(a).

VIBRATION

Vibration Criteria

D76. Vibration caused by construction works on the site, as measured 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).

D77. 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 D76.

D78. The limits in Conditions D76 and D77 apply unless otherwise outlined in a CNVMP, approved as part of the CEMP required by Condition D119 of this consent.

SOILS & WATER

Imported Soil

D79. The Applicant must prepare a Fill Importation Protocol for Stage 1. The protocol must form part of the CEMP required by Condition D119 and must detail the measures to:

(a) ensure 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 Department upon request.

Erosion and Sediment Control

D80. The Applicant must prepare an Erosion and Sediment Control Plan for Stage 1, including the WNSLR, to the satisfaction of the Planning Secretary. The Plan must form part of a CEMP in accordance with Condition D119 and must:

(a) be prepared by a suitably qualified and experienced person(s);

(b) be generally consistent with the Erosion and Sediment Control Plans in the RTS and those prepared by the contractor for each sequence of the works, as approved by the PCA;

(c) include detailed erosion and sediment controls developed in accordance with the relevant requirements of *Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book* (Landcom, 2004) guideline; and

(d) include procedures for maintaining erosion and sediment controls in efficient working order for the duration of construction, to ensure Stage 1 complies with Condition D82.

D81. Prior to the commencement of bulk earthworks as part of Stage 1, the Applicant must implement erosion and sediment controls identified by Condition D80 and maintain those controls throughout bulk earthworks and construction, to ensure stormwater flows do not increase in any downstream areas. The Environmental Representative, appointed in accordance with Condition D123, shall make a written statement to the Planning Secretary confirming the erosion and sediment controls are operational, prior to the commencement of bulk earthworks and other construction activities required for Stage 1.

Discharge Limits

D82. Stage 1 must comply with section 120 of the POEO Act, which prohibits the pollution of waters.

Stormwater Management System

D83. The Applicant must design, construct and operate a stormwater management system for Stage 1 that:

(a) is designed by a suitably qualified and experienced person(s);

(b) is generally in accordance with the conceptual design in the RtS;

(c) is in accordance with applicable Australian Standards;

(d) ensures the system capacity is designed in accordance with *Australian Rainfall and Runoff* (Engineers Australia, 2016), *Managing Urban Stormwater: Council Handbook* (EPA, 1997) and *Stormwater Drainage Specifications for Building Development* (Penrith Council, May 2018);

(e) ensures peak stormwater flows from the Site do not exceed pre-development flows in any downstream areas for all rainfall events up to and including the 1 in 100-year average recurrence interval (ARI);

(f) ensures peak stormwater flows from the Site do not exceed existing flows in the Water NSW drainage lines and water pipelines corridor; and

(g) achieves the pollutant reduction targets specified in Council's *Water Sensitive Urban Design (WSUD) Policy,* (December 2013).

D84. All stormwater drainage infrastructure on the Site, including bio-retention basins, shall remain under the care, control and ownership of the registered proprietor of the lots.

D85. The Applicant shall create a drainage easement for the outlet swales from the bio-retention basins on the site, in accordance with the requirements of Council and Condition D22.

Groundwater

D86. If groundwater is intersected during construction of Stage 1, the Applicant must:

(a) obtain the necessary water licences or approvals from NRAR; and

(b) develop a Groundwater Management Plan (GMP) for the testing, dewatering, storage, movement and treatment of groundwater, to the satisfaction of NRAR.

Waterfront Land

D87. The Applicant must carry out all works on or adjacent to waterfront land in accordance with the Department of Industry *Guidelines for Controlled Activities on Waterfront Lands 2012*.

BIODIVERSITY

Flora and Fauna Management Plan

D88. The Applicant must prepare a Terrestrial and Aquatic Flora and Fauna Management Plan (FFMP) for Stage 1, to the satisfaction of the Planning Secretary. The Plan must form part of a CEMP in accordance with Condition D119 and must:

(a) be prepared by a suitably qualified and experienced person(s);

(b) describe procedures to manage impacts on biodiversity values during earthworks, clearing and dam decommissioning;

(c) include procedures for clearing marking and protecting the areas of vegetation to be retained on the Site, including the mature vegetation in the north-western corner and the ~~Biodiversity Offset Area, established in accordance with Condition D91 adjacent to Ropes Creek; and~~ *Ripari*an Corridor adjacent to Ropes Creek in accordance with the Vegetation Management Plan (VMP) prepared under Condition D91*;*

(d) detail the specific erosion and sediment controls to protect the retained vegetation.

D89. The Applicant must:

(a) not commence bulk earthworks until the FFMP required by Condition D88 is approved by the Planning Secretary; and

(b) implement the most recent version of the FFMP approved by the Planning Secretary for the duration of bulk earthworks and construction.

Offsets for Stage 1

D90. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must retire ~~172~~ 173 ecosystem credits to offset the removal of ~~4.41~~ 4.36 hectares of native vegetation on the Site.

Note: *If the Applicant seeks a variation to the offset rules, the Applicant must demonstrate that reasonable steps have been taken to find like-for-like offsets in accordance with Section 10.5.4.2 of the FBA and Appendix A of the OEH's NSW Biodiversity Offsets Policy for Major Projects 2014.*

In accordance with Principle 3 of the OEH's NSW Biodiversity Offsets Policy for Major Projects 2014, the Policy does not allow variations to the offset rules to be applied to 'threatened species and ecological communities that are considered nationally significant (listed under the Environmental Protection and Biodiversity Conservation Act 1999)'. These must be offset in a like for like manner.

~~D91. The Applicant shall establish a Biodiversity Offset Area on the Site, consistent with the area described in the RtS, in accordance with a Biodiversity Stewardship Agreement with the Biodiversity Conservation Trust.~~

Vegetation Management Plan

D91. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must prepare and implement a Vegetation Management Plan (VMP) for the restoration and rehabilitation of 4.2 ha of Riparian Corridor adjacent to Ropes Creek to meet the objectives of the *Water Management Act 2000*.

~~**Biodiversity Management Action Plan**~~

~~D92. The Applicant must maintain the Biodiversity Offset Area on the Site in accordance with a Biodiversity Management Action Plan approved by the Biodiversity Conservation Trust.~~

Offsets for the WNSLR

D93. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must:

(a) offset 0.42 ha of vegetation lost in the Erskine Park Biodiversity Corridor as a result of the WNSLR by carrying out planting within the area shown in green edging on **Figure 8** in **Appendix 6**; and

(b) plant the area shown in green edging on **Figure 8** of **Appendix 6** with species similar to those identified for zone 4a, on the south-eastern side of Ropes Creek, in the Biodiversity Management Plan Erskine Park Employment Area (HLA-Envirosciences, 2 May 2006).

D94. The Applicant shall monitor and maintain the planting for a period of six months to ensure a minimum 85% survival rate of the planting.

D95. The Applicant must notify the Planning Ministerial Corporation at least one month before the completion of planting to enable the Planning Ministerial Corporation to arrange ongoing maintenance.

Snake Management Measures

D96. Prior to construction of Stage 1, the Applicant must implement snake management measures to limit, to the extent practicable, movement of snakes from the Site into the adjacent school and retirement village on the western boundary of the Site. The measures shall be detailed in the CEMP required by Condition D119 and shall include, but not be limited to, provision of alternative snake habitat on Site, fencing along the western boundary and installation of snake deterrents.

BUSHFIRE PROTECTION

D97. The Applicant shall ensure Stage 1 complies with:

(a) the relevant provisions of *Planning for Bushfire Protection 2006*;

(b) the construction standards and asset protection zone requirements recommended in the Oakdale Industrial Estate - West Bushfire Protection Assessment, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016; and

(c) *AS2419.1 – 2005 Fire Hydrant Installations* for firefighting water supply.

AIR QUALITY

Dust Minimisation

D98. The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.

D99. During construction of Stage 1, 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 Stage 1 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.

Construction Air Quality Management Plan

D100. Prior to the commencement of construction of Stage 1, 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 D119 and must:

(a) be prepared by a suitably qualified and experienced person(s);

(b) detail and rank all emissions from all construction activities, including particulate emissions;

(c) describe a program that is capable of evaluating the performance of the construction and determining compliance with key performance indicators;

(d) identify the control measures that will be implemented for each emission source; and

(e) nominate the following for each of the proposed controls:

(i) key performance indicator;

(ii) monitoring method;

(iii) location, frequency and duration of monitoring;

(iv) record keeping;

(v) complaints register;

(vi) response procedures; and

(vii) compliance monitoring.

D101. The Applicant must:

(a) not commence construction of Stage 1 until the CAQMP required by Condition D100 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.

Odour Management

D102. The Applicant must ensure Stage 1 does not cause or permit the emission of any offensive odour, as defined in the POEO Act.

ABORIGINAL HERITAGE

Statutory Requirements

D103. Prior to the commencement of construction of Stage 1, the Applicant must register identified Aboriginal items or objects on the OEH's Aboriginal Heritage Information Management System (AHIMS) Aboriginal Sites Register.

Archaeological Test Excavation

D104. Prior to the commencement of construction of Stage 1, the Applicant must undertake archaeological test excavation in the identified area of archaeological sensitivity adjacent to Ropes Creek and the ridgeline immediately to the west, that would be impacted by Stage 1. The test excavation must:

(a) be undertaken in accordance with a methodology developed in consultation with registered Aboriginal parties;

(b) be undertaken in accordance with the requirements of the Heritage and Community Engagement, Department of Premier and Cabinet (former NSW OEH Heritage Division); and

(c) include a report detailing any further work, including archaeological salvage and monitoring, conducted in the presence of Aboriginal stakeholders.

D105. The Applicant must not commence construction of Stage 1 until the Archaeological Test Excavation Report is provided to the Heritage and Community Engagement, Department of Premier and Cabinet (former NSW OEH Heritage Division) and the Planning Secretary.

Unexpected Finds Protocol

D106. 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) the Biodiversity and Conservation Division of the Department must be contacted immediately.

D107. 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* (NSW).

HISTORIC HERITAGE

Unexpected Finds Protocol

D108. If any archaeological relics are uncovered during construction of Stage 1, then all works in the immediate vicinity of the relic must cease immediately. Unexpected finds must be evaluated and recorded in accordance the requirements of Department of Premier and Cabinet, Heritage (former NSW OEH Heritage Division).

HAZARDS AND RISK

Dangerous Goods

~~D109. The quantities of dangerous goods stored and handled at the Site must be below the threshold quantities listed in the Department of Planning's Hazardous and Offensive Development Application Guidelines – Applying SEPP 33 at all times.~~

D109. The storage of dangerous goods in Building 1A must not exceed the quantities provided in Table 6.

Table 6: *Maximum storage quantities of dangerous goods*

Class	Description	Packing Group	Quantity (kg)
1.4s	Explosives	n/a	20,000
2.1	Flammable gas (LPG)	n/a	7,500L /4125
2.1	Flammable Gas (LPG) – kitchen	n/a	450L / 247.5
2.1	Flammable gas (aerosols)	n/a	70,000*
2.2	Non-flammable, non-toxic gas (aerosols)	n/a	25,000
3	Flammable liquids	II & III	300,000
4.1	Flammable solids	III	24,000
5.1	Oxidising agents	III	25,000
6.1	Toxic substances	III	45,000
8	Corrosive substances	II & III	45,000
9	Miscellaneous Dangerous Goods	III	105,000

D109A

Pre-Construction

(a) The Applicant must prepare the studies set out under sections (b) and (c) below (the pre-construction studies). Construction, other than of preliminary works that are outside the scope of the hazard studies, must not commence until study recommendations have been considered and, where appropriate, acted upon. The Applicant must submit the studies to the Planning Secretary no later than one month prior to the commencement of construction of Building 1A (other than preliminary works), or within such further period as the Planning Secretary may agree.

(b) A Fire Safety Study for Building 1A. This study must cover the relevant aspects of the Department of Planning's Hazardous Industry Planning Advisory Paper No. 2, 'Fire Safety Study Guidelines' and the New

South Wales Government's 'Best Practice Guidelines for Contaminated Water Retention and Treatment Systems'. The study must meet the requirements of Fire and Rescue NSW.

(c) A Final Hazard Analysis (FHA) of Building 1A, consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis'. The FHA must report:

- layout of dangerous goods storage area for specific dangerous goods classes;
- firewall and fire safety requirement between the dangerous goods storage and Energy Complex 2
- implementation of all recommendations of the Preliminary Hazard Analysis prepared by RiskCon Engineering dated 24 October 2019
- compliance with all relevant standards.

Pre-commissioning

(a) Prior to commissioning Building 1A, the Applicant must develop and implement the plans and systems set out under subsections (b) to (c) below. The Applicant must submit to the Planning Secretary documentation describing the plans and systems no later than two months prior to the commencement of commissioning of Building 1A, or within such further period as the Planning Secretary may agree.

(b) A comprehensive Emergency Plan and detailed emergency procedures for Building 1A. This plan must include detailed procedures for the safety of all people outside of the project who may be at risk from the project. The plan must be consistent with the Department of Planning's *Hazardous Industry Planning Advisory Paper No. 1, 'Emergency Planning'*.

(c) A document setting out a comprehensive Safety Management System, covering all on-site operations and associated transport activities involving hazardous materials. The document must clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to the procedures. The Safety Management System must be consistent with the Department of Planning's *Hazardous Industry Planning Advisory Paper No. 9, 'Safety Management'*. Records must be kept on-site and shall be available for inspection by the Planning Secretary upon request.

Pre-startup

Hazard Audit

(a) Twelve months after the commencement of operation of Building 1A and every five years thereafter, or at such intervals as the Planning Secretary may agree, the Applicant must carry out a comprehensive Hazard Audit of Building 1A and within one month of each audit submit a report to the Planning Secretary.

The audits must be carried out at the Applicant's expense by a qualified person or team, independent of the development, and must be consistent with the Department of Planning's *Hazardous Industry Planning Advisory Paper No. 5*, '*Hazard Audit Guidelines*'.

Bunding

D110. 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).

WASTE MANAGEMENT

Waste Storage

D111. 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.

Waste Management Plan

D112. The Applicant must implement the Waste Management Plan (WMP) in the EIS for the duration of construction and operation of Stage 1.

Statutory Requirements

D113. 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 facility that may lawfully accept the waste.

D114. Waste generated outside the Site must not be received at the Site for storage, treatment, processing, reprocessing, or disposal.

Pests, Vermin and Noxious Weed Management

D115. The Applicant must:

(a) implement suitable measures to manage pests, vermin and declared noxious 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 noxious 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, noxious weeds are those species subject to an order declared under the Biosecurity Act 2015 (NSW).*

CONTAMINATION

D116. Prior to the commencement of construction of Stage 1, the Applicant must prepare an unexpected finds protocol to ensure that potentially contaminated material is appropriately managed. The procedure must form part of the CEMP in accordance with Condition D119 and must ensure any material identified as contaminated is disposed offsite, with the disposal location and results of testing submitted to the Planning Secretary, prior to its removal from the Site.

COMMUNITY ENGAGEMENT

D117. The Applicant must consult with the community regularly throughout Stage 1, including consultation with the nearby sensitive receivers identified in **Appendix 5**, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy approved in accordance with Condition C19.

PART 3 – ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

MANAGEMENT PLAN REQUIREMENTS

D118. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:

(a) 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, Stage 1 or any management measures;

(b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;

(c) a program to monitor and report on the:

(i) impacts and environmental performance of Stage 1; and

(ii) effectiveness of the management measures set out pursuant to paragraph (b) above;

(d) 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;

(e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time;

(f) 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

(g) 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.*

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

D119. The Applicant must prepare a Construction Environmental Management Plan (CEMP) for Stage 1, including the WNSLR, in accordance with the requirements of Condition D118 and to the satisfaction of the Planning Secretary. The Applicant may prepare separate CEMPs for the Stage 1 works and the WNSLR, addressing all relevant requirements of this consent.

D120. Prior to finalising the CEMP, the Applicant must consult with TfNSW (including the former RMS), Council and Water NSW. The Applicant must also attend a site visit with Water NSW personnel to mark the exact works area for the WNSLR bridge crossing.

D121. As part of the CEMP required under Condition D119 of this consent, the Applicant must include:

(a) detailed procedures for managing bulk earthworks to avoid adverse water quality impacts on Ropes Creek, including, but not limited to:

(i) any staging of earthworks to minimise disturbed areas;

(ii) limits on the areal extent of earthworks;

(iii) progressive grassing of exposed areas, as soon as reasonably practicable, focusing on areas where building construction will occur at a later stage;

(b) Landscape Management Plan (LMP) (see Condition D35);

(c) Construction Traffic Management Plan (CTMP) (see Condition D65);

(d) Consultation Schedule for TfNSW and Water NSW (see Conditions D57 and D58);

(e) Construction Noise and Vibration Management Plan (CNVMP) (see Condition D73);

(f) Fill Importation Protocol (see Condition D79) and Erosion and Sediment Control Plan (see Condition D80);

(g) Flora and Fauna Management Plan (FFMP) (see Condition D88);

(h) Snake Management Measures (see Condition D96);

(i) Construction Air Quality Management Plan (CAQMP) (see Condition D100);

(j) Unexpected Finds Protocol (see Conditions D106 and D108);

(k) Unexpected Contamination Protocol (see Condition D116); and

(l) a Community Consultation and Complaints Handling Procedure.

D122. The Applicant must:

(a) not commence construction of Stage 1 until the CEMP is approved by the Planning Secretary; and

(b) carry out the construction of Stage 1 in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time.

ENVIRONMENTAL REPRESENTATIVE

D123. The Applicant must engage an Environmental Representative (ER) to oversee construction of Stage 1. Construction of Stage 1 must not commence until an ER has been approved by the Planning Secretary and engaged by the Applicant.

D124. The Planning Secretary's approval of an ER must be sought no later than one month before the commencement of construction of Stage 1, or within another timeframe agreed with the Planning Secretary.

D125. The proposed ER must be a suitably qualified and experienced person who was not involved in the preparation of the EIS or RtS and is independent from the design and construction personnel for Stage 1.

D126. The Applicant may engage more than one ER for Stage 1, in which case the functions to be exercised by an ER under the terms of this approval may be carried out by any ER that is approved by the Planning Secretary for the purposes of Stage 1.

D127. For the duration of construction of Stage 1, or as agreed with the Planning Secretary, the approved ER must:

(a) receive and respond to communication from the Planning Secretary in relation to the environmental performance of Stage 1;

(b) consider and inform the Planning Secretary on matters specified in the terms of this consent;

(c) 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;

(d) review the CEMP identified in Condition D119 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);

(e) regularly monitor the implementation of the CEMP, and any other documents identified by the Planning Secretary, to ensure implementation is being carried out in accordance with the document and the terms of this consent;

(f) as may be requested by the Planning Secretary, help plan, attend or undertake audits of Stage 1 commissioned by the Department including scoping audits, programming audits, briefings, and site visits;

(g) as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints;

(h) prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an **Environmental Representative Monthly Report** providing the information set out in the Environmental Representative Protocol under the heading "Environmental Representative Monthly Reports." The **Environmental Representative Monthly Report** must be submitted within seven calendar days following the end of each month for the duration of the ER's engagement, or as otherwise agreed with the Planning Secretary.

D128. 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 D127 (including preparation of the ER monthly report), as well as:

(a) the complaints register; 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).

D129. The Planning Secretary may at any time commission an audit of an ER's exercise of its functions under Condition D142. The Applicant must:

(a) facilitate and assist the Planning Secretary in any such audit; and

(b) make it a term of their engagement of an ER that the ER facilitate and assist the Planning Secretary in any such audit.

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

D130. The Applicant must prepare an Operational Environmental Management Plan (OEMP) in accordance with the requirements of Condition D118 and to the satisfaction of the Planning Secretary.

D131. As part of the OEMP required under Condition D130 of this consent, the Applicant must include the following:

(a) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of operation of Stage 1;

(b) describe the procedures that would be implemented to:

(i) keep the local community and relevant agencies informed about the operation and environmental performance of Stage 1;

(ii) receive, handle, respond to, and record complaints;

(iii) resolve any disputes that may arise;

(iv) respond to any non-compliance;

(v) respond to emergencies; and

(c) include the following environmental management plans:

(i) Landscape Management Plan (LMP) (see Condition D35);

(ii) Flora and Fauna Management Plan (FFMP) (see Condition D88);

(iii) Waste Management Plan (WMP) (see Condition D112); and

(iv) Operational Traffic Management Plan (OTMP) (see Condition D69A).

D132. The Applicant must:

(a) not commence operation until the OEMP is approved by the Planning Secretary; and

(b) operate Stage 1 in accordance with the OEMP approved by the Planning Secretary (and as revised and approved by the Planning Secretary from time to time).

REVISION OF STRATEGIES, PLANS AND PROGRAMS

D133. Within three months of:

(a) the submission of a Compliance Report under Condition D141;

(b) the submission of an Environmental Representative Monthly Report under Condition D127;

(c) the submission of an incident report under Condition D135;

(d) the approval of any modification of the conditions of this consent; or

(e) the issue of a direction of the Planning Secretary under Condition D2(b) which requires a review,

the strategies, plans and programs required under this consent must be reviewed.

D134. If necessary, to either improve the environmental performance of Stage 1, 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.

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 Stage 1.*

REPORTING AND AUDITING

Incident Notification, Reporting and Response

D135. The Department must be notified in writing to compliance@planning.nsw.gov.au 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 8**.

Non-Compliance Notification

D136. The Department must be notified in writing to compliance@planning.nsw.gov.au within seven (7) days after the Applicant becomes aware of any non-compliance.

D137. 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.

D138. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Compliance Reporting

D139. No later than 6 weeks before the date notified for the commencement of construction, a Compliance Monitoring and Reporting Program prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2018) must be submitted to the Department.

D140. Compliance Reports of the Development must be carried out in accordance with the Compliance Reporting Post Approval Requirements (Department 2018).

D141. The Applicant must make each Compliance Report publicly available no later than 60 days after submitting it to the Department and notify the Department in writing at least 7 days before this is done.

Monitoring and Environmental Audits

D142. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or 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 on compliance with the consent or the environmental management or impact of the development.*

ACCESS TO INFORMATION

D143. At least 48 hours before the commencement of construction until the completion of all works under this consent, the Applicant must:

(a) make the following information and documents (as they are obtained or approved) publicly available on its website:

(i) the documents referred to in Condition D2 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) the proposed staging plans for the Development if the construction, operation or decommissioning of the Development is to be staged;

(v) 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;

(vi) 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;

(vii) a summary of the current stage and progress of the Development;

(viii) contact details to enquire about the Development or to make a complaint;

(ix) a complaints register, updated monthly;

(x) the Compliance Report of the Development;

(xi) audit reports prepared as part of any monitoring or environmental audit of the Development and the Applicant's response to the recommendations in any audit report;

(xii) any other matter required by the Planning Secretary; and

(b) keep such information up to date, to the satisfaction of the Planning Secretary.

APPENDIX 1 CONCEPT PROPOSAL

Table 6: Schedule of Approved Plans – Concept Proposal

Architectural Plans prepared by SBA Architects		
Drawing	**Title**	**Date**
~~OAK MP 02 (AW)~~ OAK MP 02 (AWA)	SSDA Estate Masterplan	~~21 Sept 2018~~ 24 February 2020
OAK MP 03 (X)	Western North South Link Road	21 Sept 2018
OAK MP 07 (U)	Indicative Ultimate Lot Layout	21 Sept 2018
OAK MP 13 (S)	Fire Protection Plan	21 Sept 2018
OAK MP 14 (Y)	Biodiversity Management Plan	21 Sept 2018

Landscape Plans prepared by Site Image Architects			
Drawing	**Title**	**Issue**	**Date**
LC-002	Landscape Concept Master Plan	~~G~~ H	~~11.10.2018~~ 19.06.2019
LC-003	Landscape Concept Master Plan	~~G~~ H	~~11.10.2018~~ 19.06.2019
LC-004	Vegetation Typologies	~~G~~ H	~~11.10.2018~~ 19.06.2019
LC-005	Vegetation Typologies	~~G~~ H	~~11.10.2018~~ 19.06.2019
LC-006	Vegetation Typologies – Indicative Species List and Reference Table	~~G~~ H	~~11.10.2018~~ 19.06.2019
LC-007	Typical Landscape Site Section	H	19.06.2019
LC-008	Street Tree Master Plan	H	19.06.2019
LC-009	Streetscape Typical Detail	H	19.06.2019
LC-010	Signage Landscape Treatment	H	19.06.2019
LC-011	Boundary Landscape Treatment Key Plan	H	19.06.2019
LC-012	Western Boundary Treatment Plan	H	19.06.2019
LC-013	Western Boundary Treatment Section A & B	H	19.06.2019
LC-014	Western Boundary Treatment Section C & D	H	19.06.2019
LC-015	Western Boundary Treatment Sections E & F	H	19.06.2019
LC-016	Southern Boundary Treatment Section G, H & I	H	19.06.2019
LC-017	Southern Boundary Treatment Sections J & K	H	19.06.2019

Civil Plans prepared by AT&L			
Drawing	**Title**	**Issue**	**Date**
15-272-C0000	Cover Sheet	A5	24-07-19
15-272-C0001	General Arrangement Master Plan	~~A4~~ A7	~~05-10-18~~ 19-02-20
15-272-C0002	Existing Site Plan	A6	24-07-19
15-272-C0003	Precinct Plan	~~A3~~ A5	~~21-09-18~~ 24-07-19
15-272-C0006	Cut/Fill Plan	~~A3~~ A5	~~21-09-18~~ 20-03-20
15-272-C0007	Stormwater Drainage Catchment Plan (Pre-Developed)	A5	24-07-19
15-272-C0008	Stormwater Drainage Catchment Plan (Developed)	~~A3~~ A5	~~21-09-18~~ 24-07-19
15-272-C0009	Erosion and Sediment Control Master Plan	~~A2~~ A4	~~21-09-18~~ 24-07-19
15-272-C0010	Typical Sections Sheet 1	~~A3~~ A6	~~21-09-18~~ 21-08-19
15-272-C0011	Typical Sections Sheet 2	~~A3~~ A5	~~21-09-18~~ 24-07-19
15-272-C0012	Typical Sections Sheet 3	~~A3~~ A6	~~21-09-18~~ 20-03-20
15-272-C0013	Typical Sections Sheet 4	~~A2~~ A4	~~21-09-18~~ 24-07-19

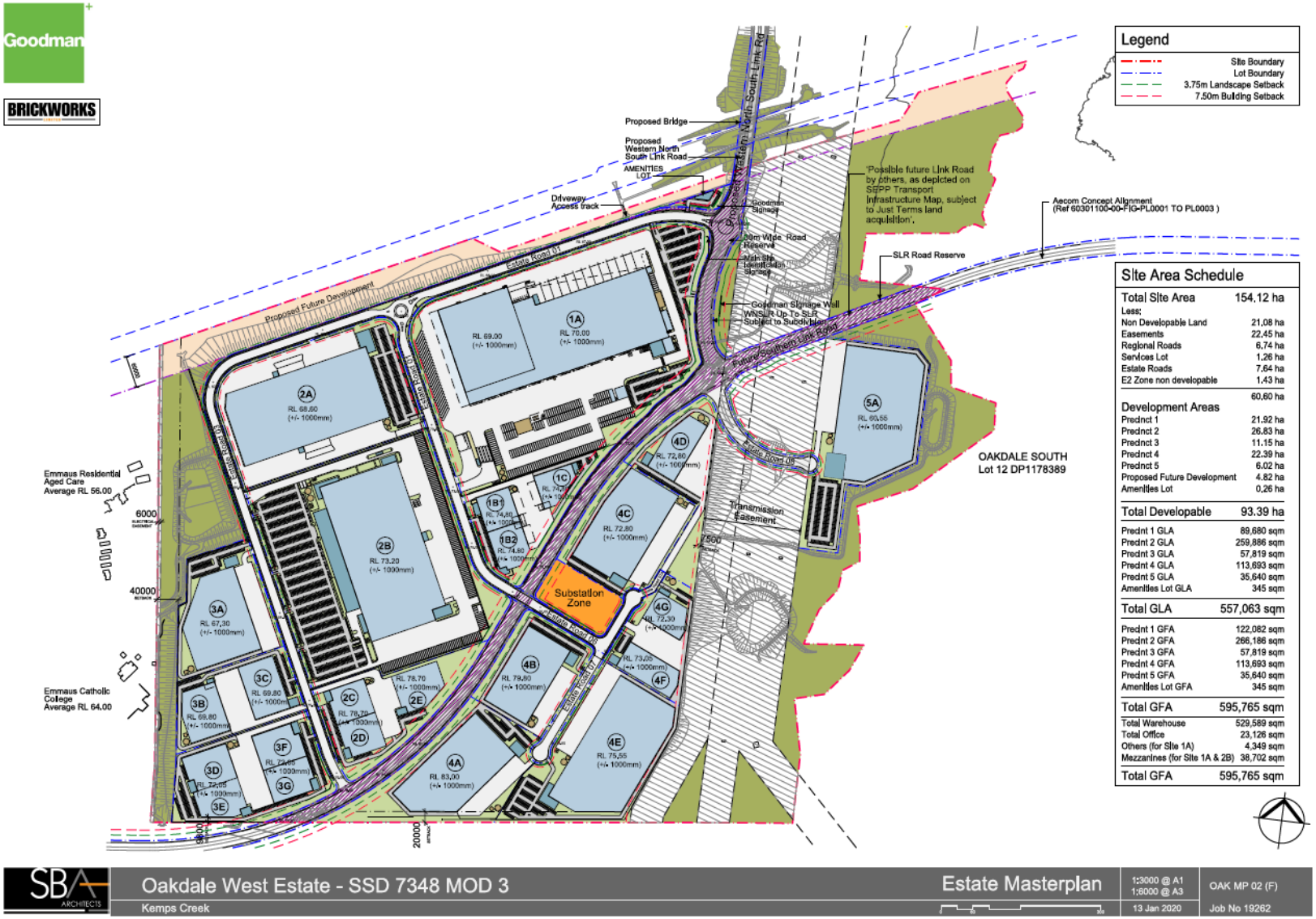


Figure 1: Concept Proposal Layout (MOD 3)

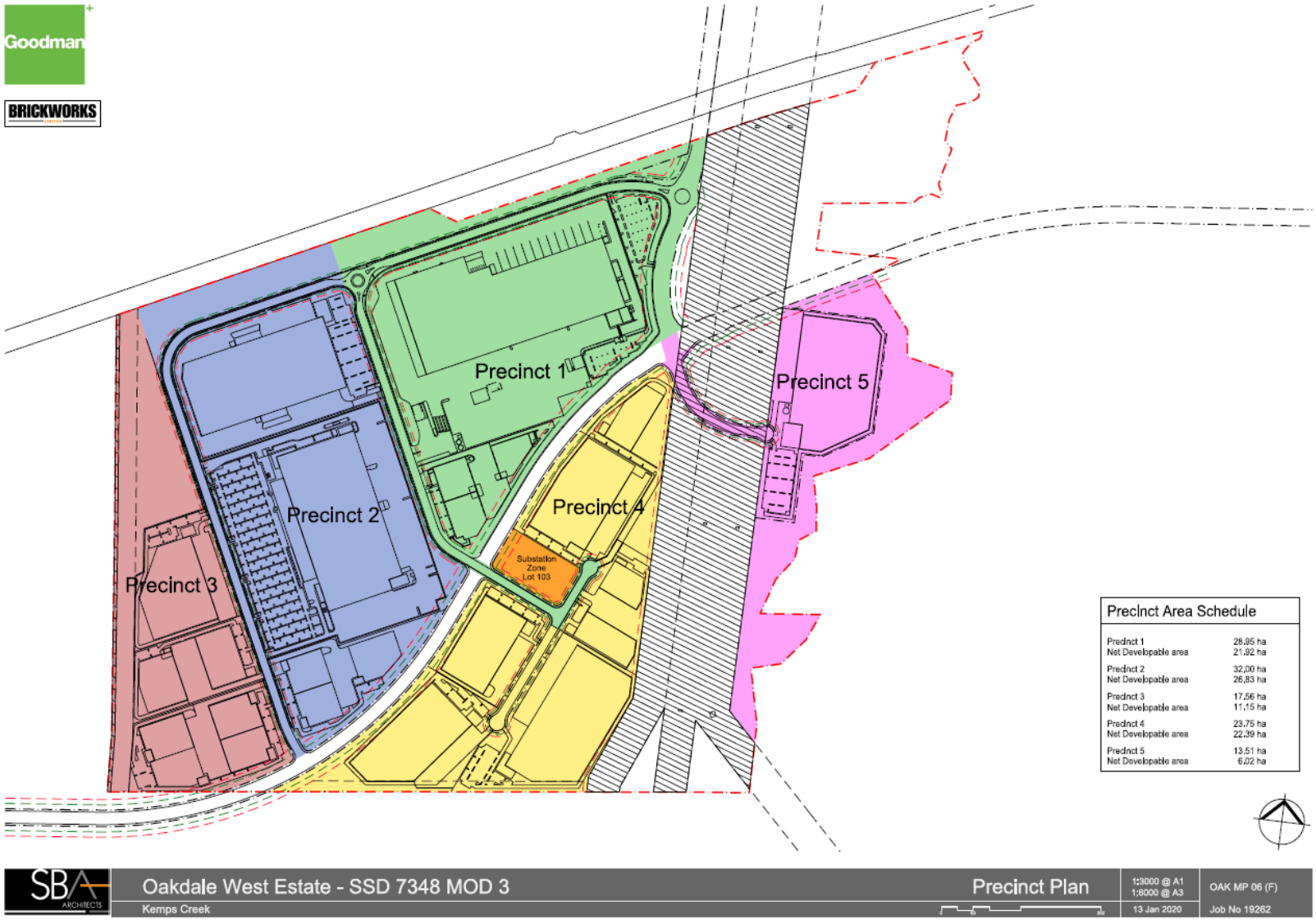


Figure 2: Staging Plan (MOD 3)

APPENDIX 2 STAGE 1 DA PLANS

Table 7: Schedule of Approved Plans – Stage 1 DA

Architectural Plans prepared by SBA Architects		
Drawing	**Title**	**Date**
OAK MP 04 (Z)	SSDA Stage 1 Development – Precinct 1	21 Sept 2018
OAK MP 05 (Z)	Precinct 1 Plan	21 Sept 2018
OAK MP 12 (12)	Signage Precinct 1 Plan	21 Sept 2018
Building 1A plans prepared by SBA Architects		
OAK 1A DA 10 (H)	Site Plan/Floor Plan	04 May 2018
OAK 1A DA 11 (C)	Roof Plan	03 April 2017
OAK 1A DA 12 (C)	Office Plan – Ground Floor	06 Sept 2016
OAK 1A DA 13 (c)	Office Plan – First Floor	06 Sept 2016
OAK 1A DA 14 (C)	Elevations Office	06 Sept 2016
OAK 1A DA 15 (C)	Elevations 1A	03 April 2017
OAK 1A DA 16 (D)	Sections	4 May 2018
Building 1B plans prepared by SBA Architects		
OAK 1B DA 20 (F)	Site Plan/Floor Plan	17 April 2018
OAK 1B DA 21 (C)	Roof Plan	06 Sept 2016
OAK 1B DA 22 (B)	Office Plan	06 Sept 2016
OAK 1B DA 24 (B)	Elevations Office	06 Sept 2016
OAK 1B DA 25(B)	Elevations 1B	06 Sept 2016
OAK 1B DA 26 (B)	Sections	06 Sept 2016
Building 1C plans prepared by SBA Architects		
OAK 1C DA 30 (H)	Site Plan/Floor Plan	17 April 2018
OAK 1C DA 31 (C)	Roof Plan	03 April 2017
OAK 1C DA 32 (B)	Office Plan – Ground Floor	06 Sept 2016
OAK 1C DA 33 (B)	Office Plan – First Floor	06 Sept 2016
OAK 1C DA 34 (B)	Elevations Office	06 Sept 2016
OAK 1C DA 35 (C)	Elevations Sheet 1	03 April 2017
OAK 1C DA 36 (C)	Elevations Sheet 2	03 Sept 2017
OAK 1C DA 37 (C)	Sections	03 April 2017

Landscape Plans prepared by Site Image Landscape Architects			
Drawing	**Title**	**Issue**	**Date**
ELW-101	-	G	11.10.2018
ELW-102	-	G	11.10.2018
ELW-103	-	G	11.10.2018
ELW-104	-	G	11.10.2018
ELW-105	-	G	11.10.2018
ELW-106	-	G	11.10.2018
ELW-107	-	G	11.10.2018
ELW-108	-	G	11.10.2018
ELW-109	-	G	11.10.2018
ELW-110	-	G	11.10.2018
ELW-111	-	G	11.10.2018
ELW-112	-	G	11.10.2018
ELW-113	-	G	11.10.2018
ELW-114	-	G	11.10.2018
WNSLR-101	-	G	11.10.2018
WNSLR-102	-	G	11.10.2018
ELW-502	Plant Schedule	G	11.10.2018
OLW-001	Precinct 1 Landscape Plan	G	11.10.2018
OLW-501	Planting Palette	G	11-10-2018

Civil Plans prepared by AT&L			
Drawing	**Title**	**Issue**	**Date**
15-272-C0004	Stage 1 SSD Approval Extents Sheet 1 of 2	A5 A7	11-10-18 24-07-19
15-272-C0005	Stage 1 SSD Approval Extents Sheet 2 of 2	A4 A6	21-09-18 24-07-19
15-272-C0020	Western North-South Link Road General Arrangement Plan	A3	21-09-18

		A5	24-07-19
15-272-C0021	Western North-South Link Road Stormwater Drainage Catchment Plan (Pre-Developed)	A5	24-07-19
15-272-C0022	Western North-South Link Road Stormwater Drainage Catchment Plan (Developed)	A3 A5	21-09-18 19-07-19
15-272-C0023	Western North-South Link Road Proposed Land Acquisition Plan	A8	24-07-19
15-272-C1000	Cover Sheet	A6	24-07-19
15-272-C1001	Drawing List	A6	24-07-19
15-272-C1002	General Notes	A6	24-07-19
15-272-C1003	Precinct General Arrangement Plan	A8	24-07-19
15-272-C1004	Typical Site Sections Sheet 1 of 6	A4 A8	21-09-18 20-03-20
15-272-C1005	Typical Site Sections Sheet 2 of 6	A4 A6	21-09-18 24-07-19
15-272-C1006	Typical Site Sections Sheet 3 of 6	A4 A8	21-09-18 20-03-20
15-272-C1007	Typical Site Sections Sheet 4 of 6	A3 A5	21-09-18 24-07-19
15-272-C1008	Typical Site Sections Sheet 5 of 6	A3 A6	11-10-18 20-03-20
15-272-C1009	Typical Site Sections Sheet 6 of 6	A4 A6	28-09-18 20-03-20
15-272-C1010	Typical Road Sections	A3 A5	21-09-18 24-07-19
15-272-C1011	Contour Plan	A5	20-03-20
15-272-C1014	Bulk Earthworks Cut/Fill Plan	A6	20-03-20
15-272-C1015	Earthworks and Stormwater Drainage Plan Sheet 1 of 20	A3 A5	21-09-18 24-07-19
15-272-C1016	Earthworks and Stormwater Drainage Plan Sheet 2 of 20	A3 A5	21-09-18 24-07-19
15-272-C1017	Earthworks and Stormwater Drainage Plan Sheet 3 of 20	A3 A5	21-09-18 24-07-19
15-272-C1018	Earthworks and Stormwater Drainage Plan Sheet 4 of 20	A3 A5	21-09-18 24-07-19
15-272-C1019	Earthworks and Stormwater Drainage Plan Sheet 5 of 20	A3 A5	21-09-18 24-07-19
15-272-C1020	Earthworks and Stormwater Drainage Plan Sheet 6 of 20	A3 A5	21-09-18 24-07-19
15-272-C1021	Earthworks and Stormwater Drainage Plan Sheet 7 of 20	A3 A5	21-09-18 24-07-19
15-272-C1022	Earthworks and Stormwater Drainage Plan Sheet 8 of 20	A3 A5	21-09-18 24-07-19
15-272-C1023	Earthworks and Stormwater Drainage Plan Sheet 9 of 20	A3 A5	21-09-18 24-07-19
15-272-C1024	Earthworks and Stormwater Drainage Plan Sheet 10 of 20	A3 A5	21-09-18 24-07-19
15-272-C1025	Earthworks and Stormwater Drainage Plan Sheet 11 of 20	A3 A5	21-09-18 24-07-19
15-272-C1026	Earthworks and Stormwater Drainage Plan Sheet 12 of 20	A3 A5	21-09-18 24-07-19
15-272-C1027	Earthworks and Stormwater Drainage Plan Sheet 13 of 20	A3 A5	21-09-18 24-07-19
15-272-C1028	Earthworks and Stormwater Drainage Plan Sheet 14 of 20	A3 A5	21-09-18 24-07-19
15-272-C1029	Earthworks and Stormwater Drainage Plan Sheet 15 of 20	A4 A6	04-10-18 24-07-19
15-272-C1030	Earthworks and Stormwater Drainage Plan Sheet 16 of 20	A3 A5	21-09-18 24-07-19
15-272-C1031	Earthworks and Stormwater Drainage Plan Sheet 17 of 20	A3 A5	21-09-18 24-07-19
15-272-C1032	Earthworks and Stormwater Drainage Plan Sheet 18 of 20	A3 A5	21-09-18 24-07-19
15-272-C1033	Earthworks and Stormwater Drainage Plan Sheet 19 of 20	A3 A5	21-09-18 24-07-19
15-272-C1034	Earthworks and Stormwater Drainage Plan Sheet 20 of 20	A3	21-09-18

		~~A5~~	~~24-07-19~~
~~15-272-C1040~~	~~Roadworks and Stormwater Drainage Plan Sheet 1 of 10~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1041~~	~~Roadworks and Stormwater Drainage Plan Sheet 2 of 10~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1042~~	~~Roadworks and Stormwater Drainage Plan Sheet 3 of 10~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1043~~	~~Roadworks and Stormwater Drainage Plan Sheet 4 of 10~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1044~~	~~Roadworks and Stormwater Drainage Plan Sheet 5 of 10~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1045~~	~~Roadworks and Stormwater Drainage Plan Sheet 6 of 10~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1046~~	~~Roadworks and Stormwater Drainage Plan Sheet 7 of 10~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1047~~	~~Roadworks and Stormwater Drainage Plan Sheet 8 of 10~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1048~~	~~Roadworks and Stormwater Drainage Plan Sheet 9 of 10~~	~~A2~~ ~~A4~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1049~~	~~Roadworks and Stormwater Drainage Plan Sheet 10 of 10~~	~~A2~~ ~~A4~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1050~~	~~Road and Longitudinal Sections Sheet 1 of 5~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1051~~	~~Road and Longitudinal Sections Sheet 2 of 5~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1052~~	~~Road and Longitudinal Sections Sheet 3 of 5~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1053~~	~~Road and Longitudinal Sections Sheet 4 of 5~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1054~~	~~Road and Longitudinal Sections Sheet 5 of 5~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1058~~	~~Western Boundary Layout and Sections~~	~~A4~~	~~24-07-19~~
~~15-272-C1059~~	~~Southern Boundary Layout and Sections~~	~~A4~~	~~24-07-19~~
~~15-272-C1062~~	~~Bio-Retention Basin No. 3 Detail Plan Sheet 1 of 2~~ ~~Bio-Retention Basin 2 and 3 Detail Plan Sheet 1 of 2~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1063~~	~~Bio-Retention Basin No. 3 Detail Plan Sheet 2 of 2~~ ~~Bio-Retention Basin 2 and 3 Detail Plan Sheet 2 of 2~~	~~A2~~ ~~A4~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1064~~	~~Bio-Retention Basin No. 5 Detail Plan Sheet 1 of 2~~ ~~Bio-Retention Basin 4 Detail Plan Sheet 1 of 2~~	~~A1~~ ~~A3~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1065~~	~~Bio-Retention Basin No. 5 Detail Plan Sheet 2 of 2~~ ~~Bio-Retention Basin 4 Detail Plan Sheet 2 of 2~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1066~~	~~Bio-Retention Basin No. 6 Detail Plan~~ ~~Bio-Retention Basin 5 Detail Plan~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1068~~	~~Stormwater Drainage Catchment Plan (Pre-developed)~~	~~A4~~	~~24-07-19~~
~~15-272-C1069~~	~~Stormwater Drainage Catchment Plan (Post-developed)~~	~~A4~~	~~24-07-19~~
~~15-272-C1070~~	~~Retaining Wall General Arrangement Plan~~	~~A4~~ ~~A6~~	~~11-10-18~~ ~~24-07-19~~
~~15-272-C1071~~	~~Retaining Wall Profiles Sheet 1 of 7~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1072~~	~~Retaining Wall Profiles Sheet 2 of 7~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1073~~	~~Retaining Wall Profiles Sheet 3 of 7~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1074~~	~~Retaining Wall Profiles Sheet 4 of 7~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1075~~	~~Retaining Wall Profiles Sheet 5 of 7~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1076~~	~~Retaining Wall Profiles Sheet 6 of 7~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~15-272-C1077~~	~~Retaining Wall Profiles Sheet 7 of 7~~	~~A2~~ ~~A4~~	~~21-09-18~~ ~~24-07-19~~
~~12-272-C1080~~	~~Stage 1 Services and Utilities Coordination Plan Sheet 1 of 6~~	~~A3~~ ~~A5~~	~~21-09-18~~ ~~24-07-19~~
~~12-272-C1081~~	~~Stage 1 Services and Utilities Coordination Plan Sheet 2 of 6~~	~~A3~~	~~21-09-18~~

		A5	24-07-19
12-272-C1082	Stage 1 Services and Utilities Coordination Plan Sheet 3 of 6	A3 A5	21-09-18 24-07-19
12-272-C1083	Stage 1 Services and Utilities Coordination Plan Sheet 4 of 6	A3 A5	21-09-18 24-07-19
12-272-C1084	Stage 1 Services and Utilities Coordination Plan Sheet 5 of 6	A3 A5	21-09-18 24-07-19
12-272-C1085	Stage 1 Services and Utilities Coordination Plan Sheet 6 of 6	A3 A5	21-09-18 24-07-19
12-272-C1086	Existing Transgrid Overhead Electrical Cables Plan	A5	24-07-19
12-272-C1087	Existing Transgrid Overhead Electrical Cables and Longitudinal Sections	A5	24-07-19
12-272-C1088	Existing Transgrid Overhead Electrical Cables Typical Sections Sheet 1 of 2	A5	24-07-19
12-272-C1089	Existing Transgrid Overhead Electrical Cables Typical Sections Sheet 2 of 2	A5	24-07-19
12-272-C1090	Erosion and Sediment Control Plan Sheet 1 of 7	A3 A5	21-09-18 24-07-19
12-272-C1091	Erosion and Sediment Control Plan Sheet 2 of 7	A3 A5	21-09-18 24-07-19
12-272-C1092	Erosion and Sediment Control Plan Sheet 3 of 7	A3 A5	21-09-18 24-07-19
12-272-C1093	Erosion and Sediment Control Plan Sheet 4 of 7	A3 A5	21-09-18 24-07-19
12-272-C1094	Erosion and Sediment Control Plan Sheet 5 of 7	A3 A5	21-09-18 24-07-19
12-272-C1095	Erosion and Sediment Control Plan Sheet 6 of 7	A3 A5	21-09-18 24-07-19
12-272-C1096	Erosion and Sediment Control Plan Sheet 7 of 7	A3 A5	21-09-18 24-07-19
12-272-C1097	Erosion and Sediment Control Details	A1 A4	21-09-18 24-07-19
15-272-C2003	General Arrangement Plan	A3	21-09-18
15-272-C2010	Siteworks and Stormwater Drainage Plan Sheet 1 of 15	A3	21-09-18
15-272-C2011	Siteworks and Stormwater Drainage Plan Sheet 2 of 15	A3	21-09-18
15-272-C2012	Siteworks and Stormwater Drainage Plan Sheet 3 of 15	A3	21-09-18
15-272-C2013	Siteworks and Stormwater Drainage Plan Sheet 4 of 15	A3	21-09-18
15-272-C2014	Siteworks and Stormwater Drainage Plan Sheet 5 of 15	A3	21-09-18
15-272-C2015	Siteworks and Stormwater Drainage Plan Sheet 6 of 15	A3	21-09-18
15-272-C2016	Siteworks and Stormwater Drainage Plan Sheet 7 of 15	A3	21-09-18
15-272-C2017	Siteworks and Stormwater Drainage Plan Sheet 8 of 15	A3	21-09-18
15-272-C2018	Siteworks and Stormwater Drainage Plan Sheet 9 of 15	A3	21-09-18
15-272-C2019	Siteworks and Stormwater Drainage Plan Sheet 10 of 15	A3	21-09-18
15-272-C2020	Siteworks and Stormwater Drainage Plan Sheet 11 of 15	A3	21-09-18
15-272-C2021	Siteworks and Stormwater Drainage Plan Sheet 12 of 15	A3	21-09-18
15-272-C2022	Siteworks and Stormwater Drainage Plan Sheet 13 of 15	A3	21-09-18
15-272-C2023	Siteworks and Stormwater Drainage Plan Sheet 14 of 15	A3	21-09-18
15-272-C2024	Siteworks and Stormwater Drainage Plan Sheet 15 of 15	A3	21-09-18
15-272-C2030	Pavement Plan	A3	21-09-18
15-272-C3003	General Arrangement Plan	A3	21-09-18
15-272-C3010	Typical Road Sections	A3	21-09-18
15-272-C3020	Roadworks Plan and Longitudinal Section Sheet 1 of 5	A3	21-09-18
15-272-C3021	Roadworks Plan and Longitudinal Section Sheet 2 of 5	A3	21-09-18
15-272-C3022	Roadworks Plan and Longitudinal Section Sheet 3 of 5	A3	21-09-18
15-272-C3023	Roadworks Plan and Longitudinal Section Sheet 4 of 5	A3	21-09-18
15-272-C3024	Roadworks Plan and Longitudinal Section Sheet 5 of 5	A3	21-09-18
15-272-C3030	Road Longitudinal Sections	A3	21-09-18
15-272-C3040	Bridge Elevation and Typical Section	A4	04-10-18
15-272-C3050	Stormwater Drainage Plan Sheet 1 of 5	A3	21-09-18
15-272-C3051	Stormwater Drainage Plan Sheet 2 of 5	A3	21-09-18
15-272-C3052	Stormwater Drainage Plan Sheet 3 of 5	A3	21-09-18
15-272-C3053	Stormwater Drainage Plan Sheet 4 of 5	A3	21-09-18
15-272-C3054	Stormwater Drainage Plan Sheet 5 of 5	A3	21-09-18
15-272-C3058	Stormwater Drainage Catchment Plan (Post-Developed)	A2	21-09-18

~~15-272-C3060~~	~~Bio-Retention Basin NO. 1 Detail Plan~~	~~A3~~	~~21-09-18~~
~~15-272-C3070~~	~~Pavement Plan Sheet 1 of 5~~	~~A3~~	~~21-09-18~~
~~15-272-C3071~~	~~Pavement Plan Sheet 2 of 5~~	~~A3~~	~~21-09-18~~
~~15-272-C3072~~	~~Pavement Plan Sheet 3 of 5~~	~~A3~~	~~21-09-18~~
~~15-272-C3073~~	~~Pavement Plan Sheet 4 of 5~~	~~A3~~	~~21-09-18~~
~~15-272-C3074~~	~~Pavement Plan Sheet 5 of 5~~	~~A2~~	~~21-09-18~~
~~15-272-C3080~~	~~Retaining Wall Plan and Elevation~~	~~A1~~	~~21-09-18~~
~~15-272-C3081~~	~~Retaining Wall Sections Sheet 1 of 4~~	~~A1~~	~~21-09-18~~
~~15-272-C3082~~	~~Retaining Wall Sections Sheet 2 of 4~~	~~A1~~	~~21-09-18~~
~~15-272-C3083~~	~~Retaining Wall Sections Sheet 3 of 4~~	~~A1~~	~~21-09-18~~
~~15-272-C3084~~	~~Retaining Wall Sections Sheet 4 of 4~~	~~A1~~	~~21-09-18~~

The architectural, landscape and civil plans included in the RtS dated 25 March 2020.

Table 8: SSD 7348 MOD 4 Approved Plans

Civil Plans prepared by AT&L			
Drawing	**Title**	**Issue**	**Date**
15-272-C5006	Typical Road Sections Sheet 1	3	31-01-20
15-272-C5018	Bulk Earthworks Cut/Fill Plan Sheet 1	2	31-01-20
15-272-C5021	Roadworks Plan Sheet 1	4	06-02-20
15-272-C5022	Roadworks Plan Sheet 2	4	31-01-20
15-272-C5033	Carpark Adjustment Siteworks Plans	4	31-01-20
15-272-C5057	Stormwater Drainage Plan Sheet 1	2	31-01-20
15-272-C5063	Subsurface Drainage Plan Sheet 1	2	31-01-20
15-272-C5101	Pavement Plan Sheet 1	3	31-01-20
15-272-C5121	Services and Utilities Coordination Plan Sheet 1	3	06-02-20
15-272-C5122	Services and Utilities Coordination Plan Sheet 2	4	06-02-20
15-272-C5131	Road Furniture Plan Sheet 1	3	31-01-20

Landscape Plans prepared by Scape Design Landscape Architecture			
Drawing	**Title**	**Issue**	**Date**
L.CD.101	Western North South Link Road Landscape Plan Sheet 1	S	14/2/20
L.CD.301	Western North South Link Road Planting & Revegetation Schedule	Q	31/1/20

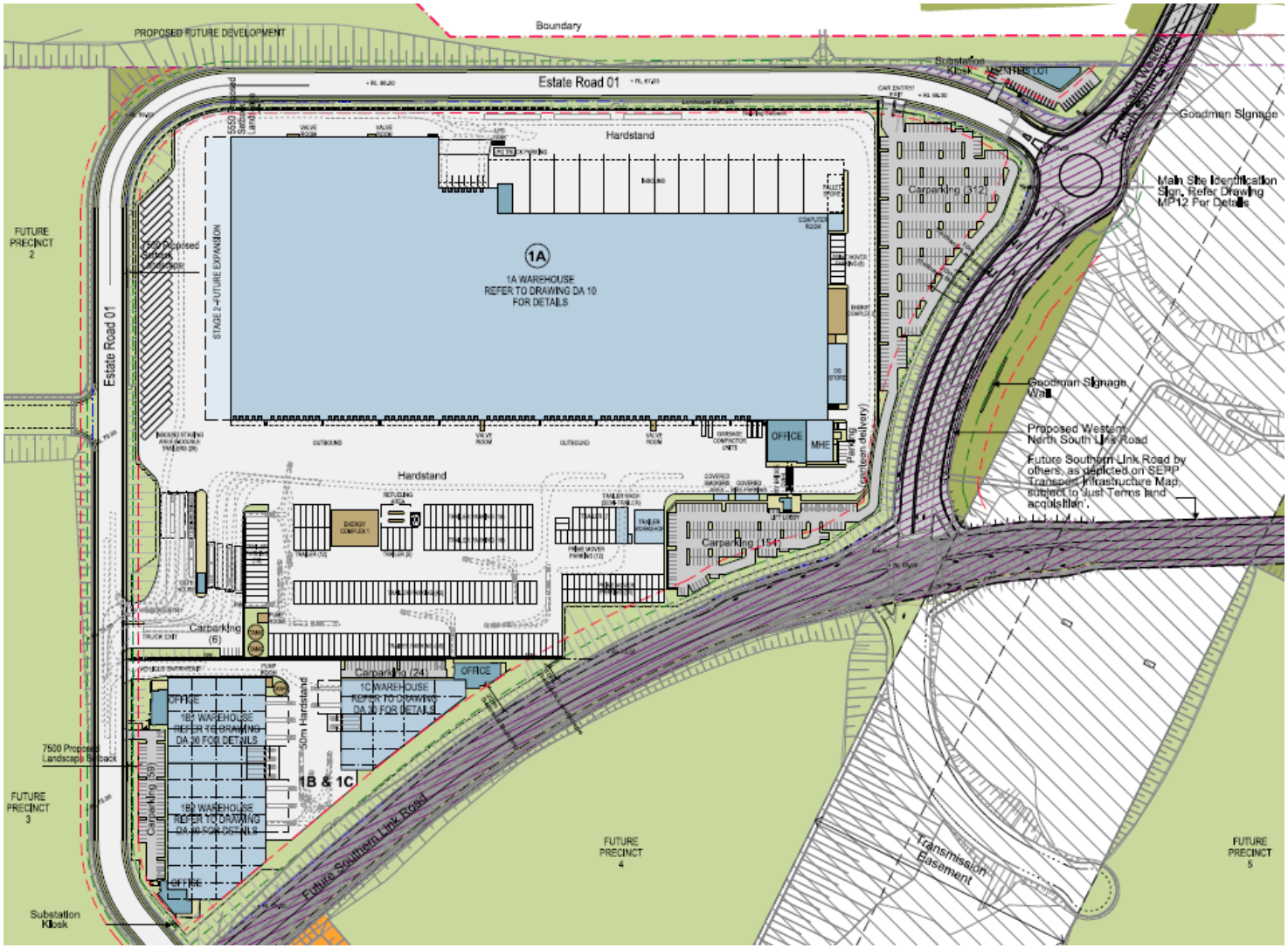


Figure 3: Stage 1 DA Layout



Figure 4: Stage 1 Landscape Plan

APPENDIX 3 WNSLR PLANS



Figure 5: WNSLR

APPENDIX 4 PLANNING AGREEMENT

APPENDIX 5 NOISE RECEIVER LOCATIONS

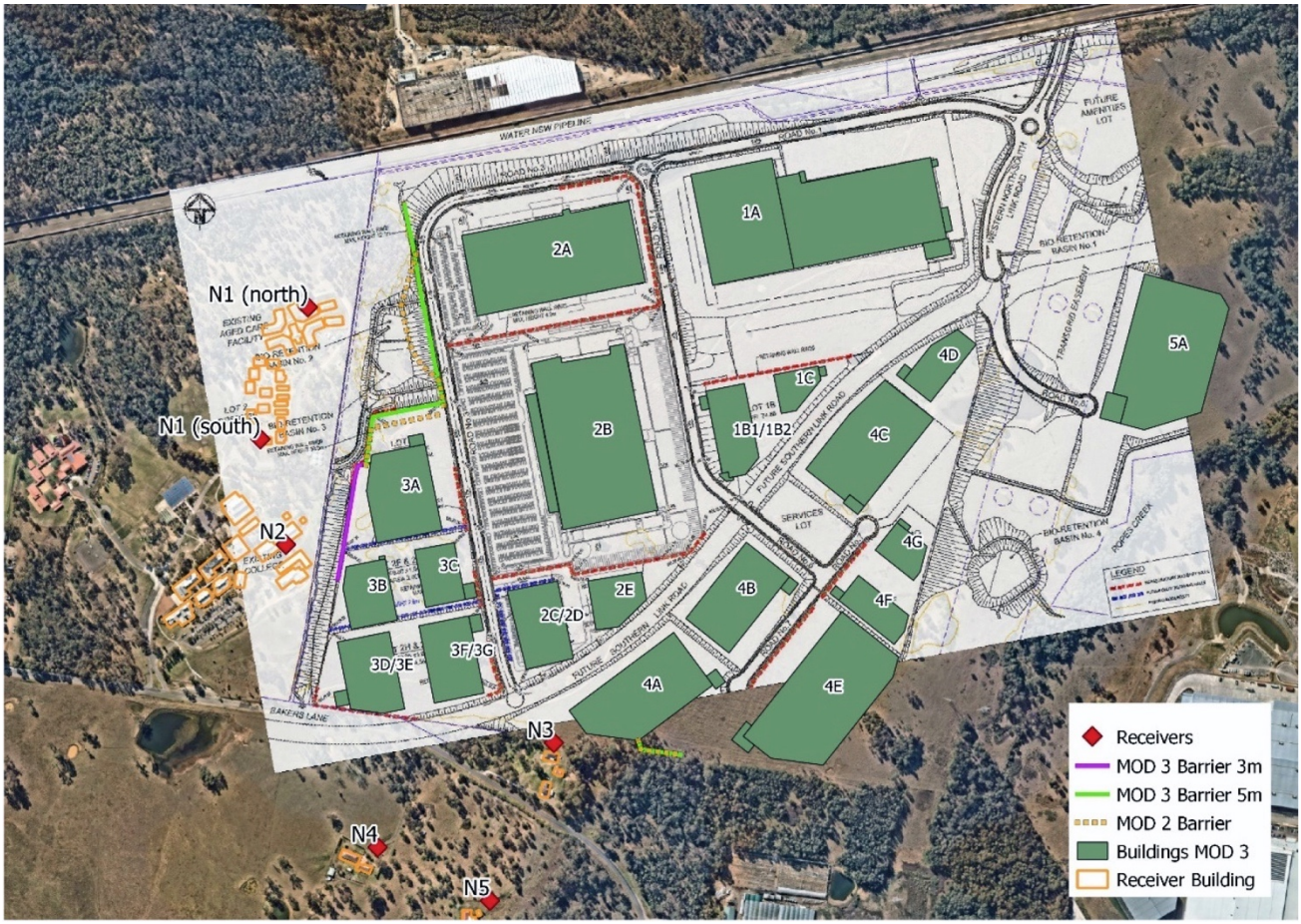


Figure 6: Sensitive Noise Receivers and Noise Wall Locations

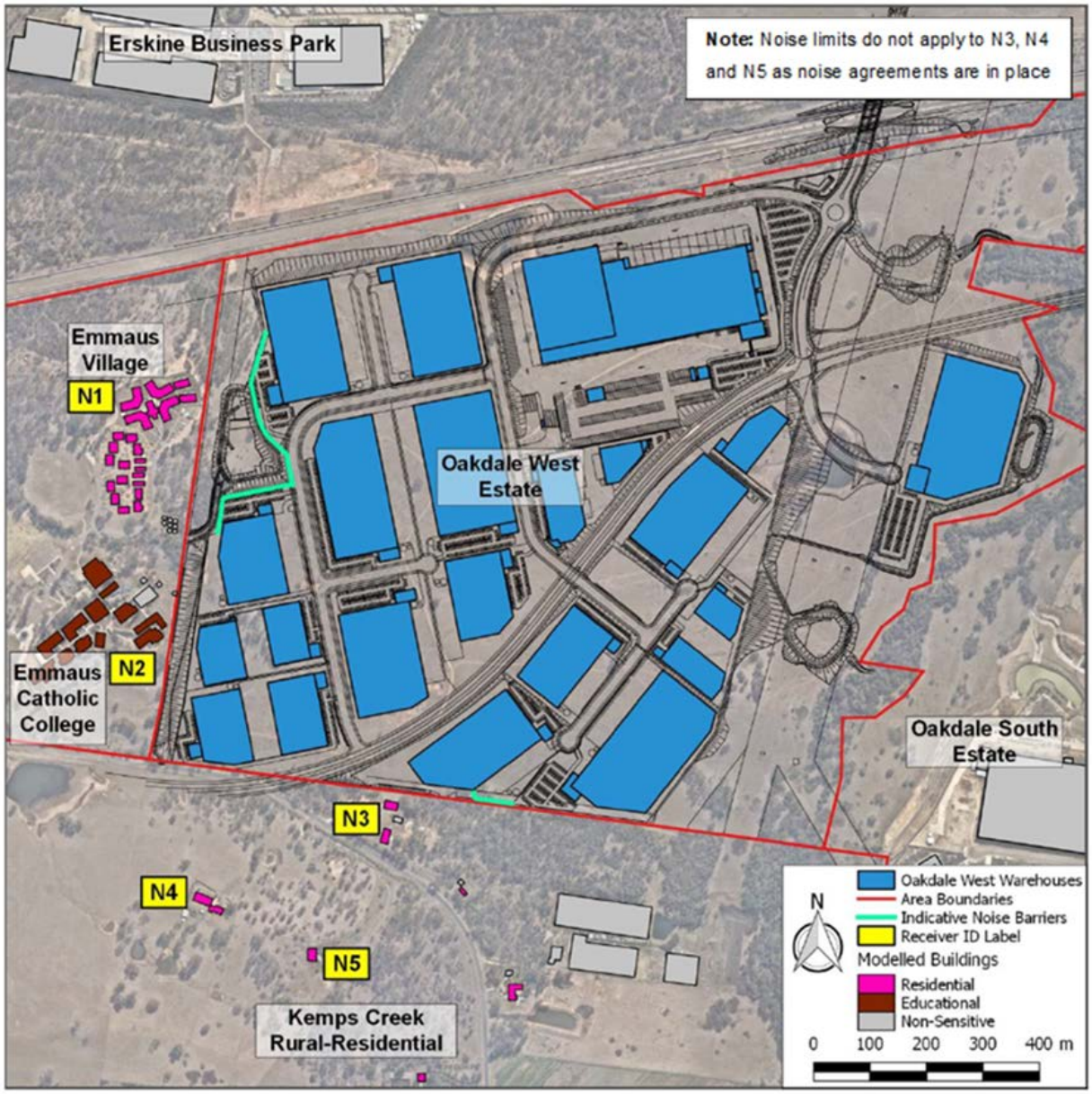


Figure 7: Noise Receivers and Noise Wall Locations (MOD 2)

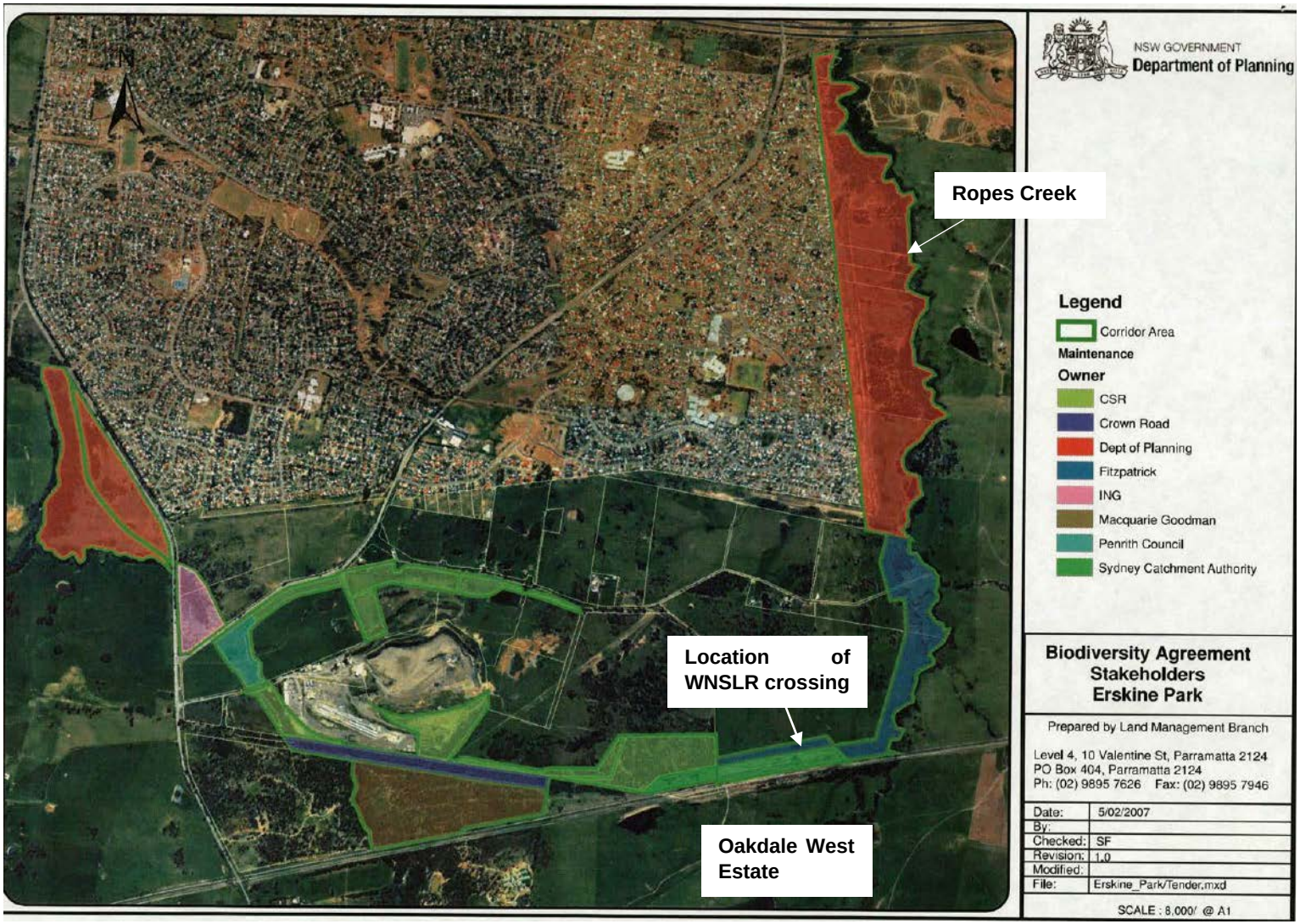


Figure 8: Erskine Park Biodiversity Corridor Land



Figure 9: Offsets for WNSLR – Planting Area

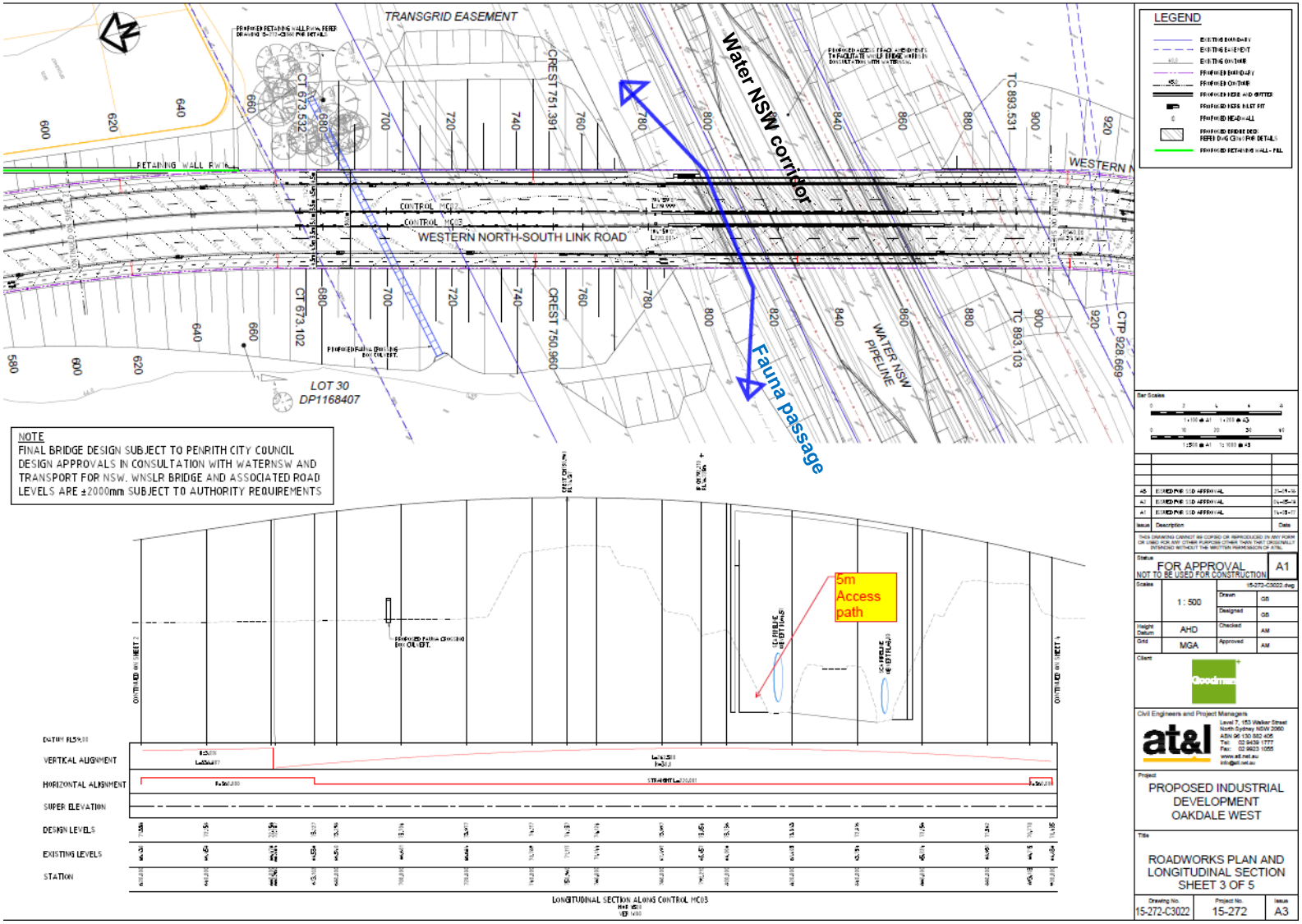


Figure 10: Fauna Passage under WNSLR

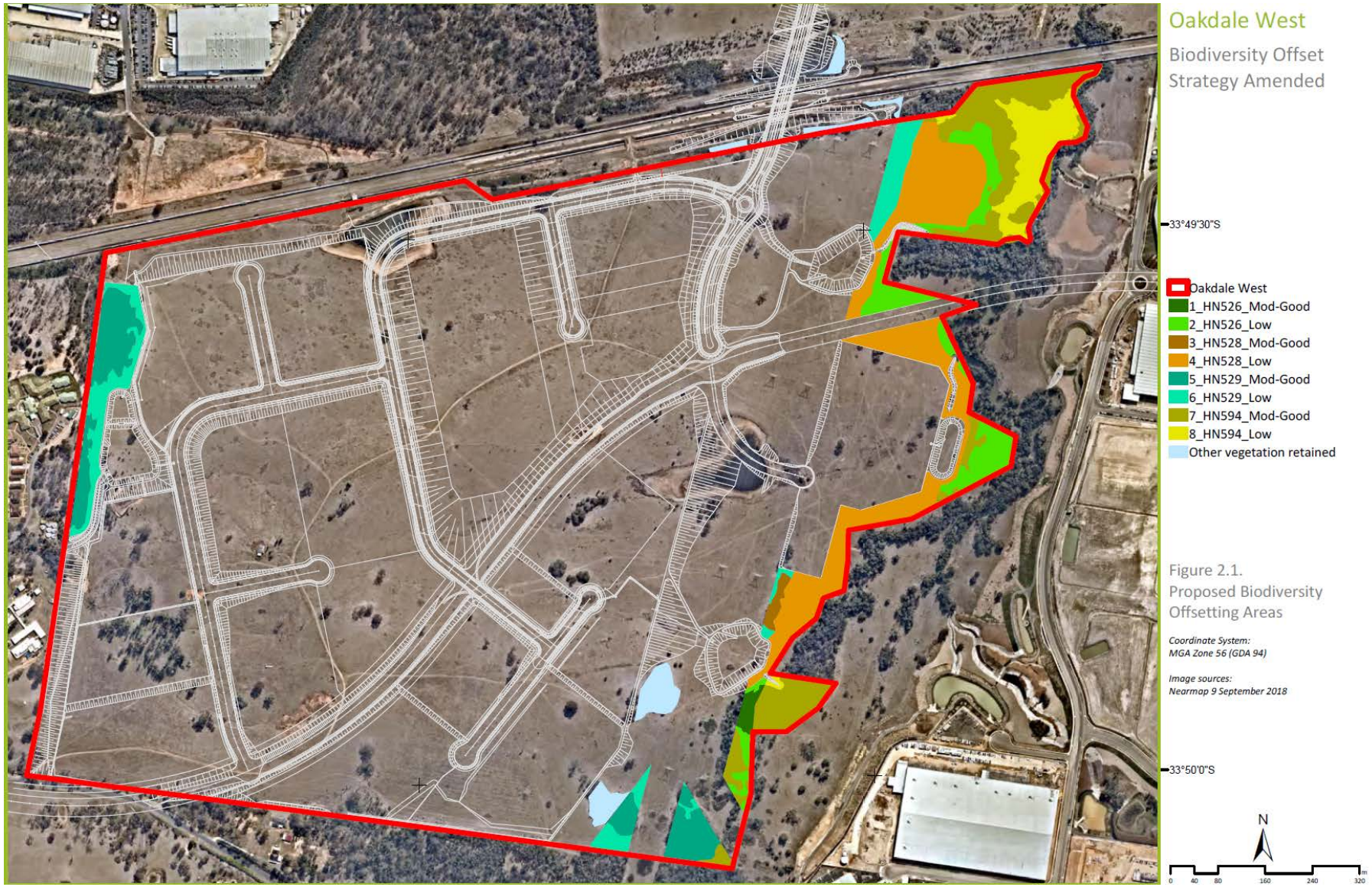


Figure 11: Offsets for Stage 1 - Biodiversity Offset Area

SUMMARY OF MITIGATION MEASURES

The collective measures required to mitigate the impacts associated with the proposed works are detailed in the table below.

Table 8: Applicant's Mitigation Measures

Issue	SSDA Component	Mitigation and Management
Construction Management		
General Construction Management	Stage 1 Development	• A CEMP to be prepared for the OWE Stage 1 Development capturing standard and specific management and mitigation measures as described in the SSDA, EIS and supporting technical documents.
Operational Management		
General Operational Management	Concept Proposal Stage 1 Precinct Development	• An OEMP to be prepared for the OWE capturing standard and specific operational management and mitigation measures as described in the SSDA, EIS and supporting technical documents.
Transport		
Construction Traffic	Stage 1 Development	• Preparation of a CTMP to form part of the CEMP addressing issues such as: – Truck haul routes, delivery schedules and curfews; – Protocols for the management of construction traffic moving onto and off the site.
Urban Design and Visual		
Site Layout and Design	Concept Proposal	• Future development of the OWE to proceed in accordance with the approved Development Concept Proposal and DCP.
Development Controls	Concept Proposal	• Design and development controls to be established for the OWE in the form of a DCP to guide future development on the site.
Visual Impact	Concept Proposal/Stage 1 Development	• Design and development controls to be established for the OWE in the form of a DCP to guide future development on the site. • Landscaping of key interfaces including the western boundary to minimise visual impact.
Soils and Water		
Water Usage	Stage 1 Development	• Rainwater tanks to be provided for each development site with size determined in accordance with Penrith Council DCP requirements. • Irrigation and toilet flushing for development to be plumbed to rainwater tanks. • Consideration to be given to other possible rainwater reuse opportunities such as for truck washing. • Measures and considerations for the minimisation of water use during construction and operation to be incorporated into CEMP and OEMP as relevant.

Issue	SSDA Component	Mitigation and Management
Soils	Stage 1 Development	• Mitigation measures inherent to the civil design of the proposal. • Sedimentation and erosion control measures are proposed as detailed in the Civil Design and Infrastructure Package and Traffic and Transport Impact Assessment.
Salinity	Stage 1 Development	• A Salinity Management Plan has been prepared for the proposed development. • Management measures described in the Salinity Management Plan to be adopted in the CEMP and OEMP as relevant.
Contamination	Stage 1 Development	• Identified areas of potential contamination to be subject to further investigation prior to the development of affected land.
Earthworks	Stage 1 Development	• Civil design achieves appropriate site levels with minimal impact upon hydrology. • Import of fill to be managed in accordance with CEMP. • Erosion and sediment controls included in the SSDA package.
Mineral Resources	Concept Proposal	• No mitigation required provided that mining activities under the existing mining lease applying to land to the east of the site (ref. ML1636) would not be constrained by the OWE development.
Surface Water	Stage 1 Development	• Stormwater issues addressed through design measures incorporated into proposed development. • Stormwater management system designed to meet the requirements of Penrith Council's Engineering Works and WSUD guidelines and relevant NOW guidelines. • Detailed on-lot stormwater for future stages of the OWE to be designed and assessed under future applications.
Groundwater	Stage 1 Development	• Methods and management of any required dewatering required during construction works to be detailed in the CEMP.
Flooding	Stage 1 Development	• OSD designed to ensure that development does not increase stormwater peak flows in downstream areas for events up to and including 1:100-year ARI. • OSD designed to mitigate post-development flows to pre-development flows for peak ARI events. • Finished floor levels to have minimum 500mm freeboard to 100-year overland flows. • Flood impacts on TransGrid easement would be mitigated through minor compensatory earthworks on the floodplain to convey locally diverted flows. These works are detailed in the civil drawings included in the SSDA package.
Water Quality	Stage 1 Development	• Erosion and sediment controls as detailed in SSDA package to be implemented through CEMP. • Stormwater to be treated to compliant levels prior to discharge. • Gross Pollutant Trap (GPT) to be installed within each development site on the final downstream stormwater pit prior to discharge.

Issue	SSDA Component	Mitigation and Management
		• WSUD measures adopted to achieve target reductions for the OWE: 85% Total Suspended Solids 60% Total Phosphorus 45% Total Nitrogen 90% Gross Pollutants
Infrastructure		
Capacity and Upgrades	Concept Proposal	• Management of issues in respect of infrastructure capacity and upgrades is in the form of design responses described in Section 4.0 of the EIS.
Delivery and Staging	Concept Proposal/Stage 1 Development	• Management of issues in respect of infrastructure capacity and upgrades is in the form of design responses described in Section 4.0 of the EIS. • Staging of development of the OWE would be aligned with infrastructure and services delivery.
TransGrid Easement	Concept Proposal/Stage 1 Development	• Further consultation would be undertaken with TransGrid in relation to potential impacts and required mitigation.
Other Environmental Issues		
Flora and Fauna	Concept Proposal Stage 1 Development	• Implementation of the Biodiversity Offset Strategy for the site. • Preparation of a Flora and Fauna Management Plan for the site to inform the CEMP and OEMP as relevant to manage potential impacts to biodiversity during construction and operation. • Retained areas of native vegetation, including the Ropes Creek riparian corridor, will be rehabilitated and/or restored and conserved in perpetuity under a Biodiversity Stewardship Agreement to be entered into with the Biodiversity Conservation Trust. • Other areas of the site including road batters, embankments and bio-retention basins will be planted with native plant species and turf species as specified in the Landscape Planting Schedule. • Ongoing maintenance and management of these areas in accordance with the provisions of both the Biodiversity Management Action Plan and Landscape Management Plan.
Waterways and Riparian Lands		• Restoration and ongoing management of Ropes riparian corridor to be in accordance with the Biodiversity Management Action Plan

APPENDIX 8 INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS

WRITTEN INCIDENT NOTIFICATION REQUIREMENTS

1. A written incident notification addressing the requirements set out below must be emailed to the Department at the following address: compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of an incident. Notification is required to be given under this condition even if the Applicant fails to give the notification required under Condition D135 or, having given such notification, subsequently forms the view that an incident has not occurred.
2. Written notification of an incident must:
   a. identify the development and application number;
   b. provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
   c. identify how the incident was detected;
   d. identify when the Applicant became aware of the incident;
   e. identify any actual or potential non-compliance with conditions of consent;
   f. describe what immediate steps were taken in relation to the incident;
   g. identify further action(s) that will be taken in relation to the incident; and
   h. identify a project contact for further communication regarding the incident.

INCIDENT REPORT REQUIREMENTS

3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, the Applicant must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
4. The Incident Report must include:
   a. a summary of the incident;
   b. outcomes of an incident investigation, including identification of the cause of the incident;
   c. details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
   d. details of any communication with other stakeholders regarding the incident.

APPENDIX B

Consultation

Transport for NSW

From: Malgy Coman <Malgy.COMAN@transport.nsw.gov.au>
Sent: Thursday, 18 June 2020 10:16 AM
To: Stephanie Partridge <Stephanie.Partridge@goodman.com>
Cc: Lee Farrell <Lee.Farrell@transport.nsw.gov.au>; Pahee Rathan <Pahee.RATHAN@transport.nsw.gov.au>
Subject: TfNSW comments for Oakdale West CEMP - Building 1A

Hi Stephanie,

Reference is made to your email correspondence dated 29 May 2020 seeking TfNSW comments for the Construction Environmental Management Plan (CEMP) for Building 1A. TfNSW has reviewed the submitted CEMP and has no further comment, provided that construction vehicle access for Building 1A will be via the WNSLR.

Regards,

Malgy

Malgy Coman
Senior Land Use Planner
[Part-time arrangements – I work flexibly. I send emails at times that suit me and unless it is urgent, I do not expect you to read my email or reply until normal business hours.]
Sydney Roads
Greater Sydney
Transport for NSW

Transgrid

On 1 Jun 2020, at 13:52, Kym Dracopoulos <Kym.Dracopoulos@goodman.com> wrote:

Hi Michael,

Re : TRANSGRID REFERENCE NUMBER : 2020-023

In accordance with our SSDA 7348 Mod 2 Consent, please find the following link to the OWE : Lot 1A– Project Broccoli – Construction Environment Management Plan (CEMP)

https://spaces.hightail.com/receive/TtNhgMryyF

Please note for information, we previously issued the Mod 2 consultation plans to you on 22.11.2019

If you have any queries at all , please call me on 0411 511 431 or return email.

If you have no queries, we would appreciate an email expressing this in return.

Regards,
Kym

–

Kym Dracopoulos
Manager, Technical Services

From: Michael Platt <Michael.Platt@transgrid.com.au>
Sent: Tuesday, 2 June 2020 10:24 AM
To: Kym Dracopoulos <Kym.Dracopoulos@goodman.com>
Subject: RE: Oakdale West Estate - SSD7348 Mod 2 : Project Broccoli - CEMP

Hi Kym,

TRANSGRID REFERENCE NUMBER : 2020-023

PROPOSAL: Modification to Oakdale West (SSD-7348-MOD-1)

TRANSGRID: Sydney North – Kemps Creek, Feeder 14, Structure Span 104-108 + Sydney West – Liverpool, Feeder 30, Structure Span 6 – 10 + Dapto - Sydney West 330kV Easement (60.96m Wide) – presently no HVTL infrastructure.

Based on your comments below : It does not change the scope of works as such TransGrid does not offer any comment.

Regards

Michael

Water NSW

From: Alasdair Cameron <Alasdair.Cameron@goodman.com>
Sent: Thursday, 4 June 2020 12:06 PM
To: Justine Clarke <Justine.Clarke@waternsw.com.au>
Subject: ARK: OWE Draft CEMP for Building 1A

Dear Justine

We write to inform you of the upcoming works to Precinct 1 at Oakdale West Industrial Estate, Kemps Creek that were approved under SSD 7348 (MOD 2).

Goodman is currently completing the CEMP for the proposed works to Building 1A at our Oakdale West Estate, with the intention to submit the CEMP to the Department of Planning, Industry, and Environment in early June 2020 for approval.

Refer to the below masterplan for reference.



Refer to below site plan for reference.



These works are being completed by Richard Crooks Constructions and are due to commence in Jan 2021.

The works include the following;

- Construction of a circa 70,000 sqm warehouse and distribution centre with a building a height between 28m and 36m;
- 2,600 sqm three level office space;
- Skybridge connecting car park and office entry;
- Drive around hardstand;
- 472 car spaces

The bulk earthworks for this project are already underway and will be completed by August 2020.

Construction access will be via the new Western North South Link Road (WNSLR) that is due for construction in Jan 2021. No construction access will be via Bakers Lane, Aldington Road, Abbotts Road, or through the Water NSW corridor.

These works are occurring adjacent to the TrfNSW setback for the proposed Western Sydney Freight Line (which provides for up to a 60m setback to the Water NSW corridor). We confirm that there is also a new 23.00m dual carriageway estate road between the main Water NSW corridor (& the TrfNSW setback) and the subject site. No development except landscaping and stabilisation works will be occurring within this setback zone. These works will not affect the Water NSW corridor.

The works are not occurring within the Transgrid easement.

We attach a draft copy of the CEMP for this project.

https://spaces.hightail.com/receive/TtNhgMryyF

Please advise if you have any comments on this documents, or any questions on how this relates to your site.

Regards
Alasdair

Goodman

Alasdair Cameron
Senior Project Manager - Infrastructure

Direct: +61 2 9230 7289
Mobile: +61 402 458 226
Alasdair.Cameron@goodman.com
info-au@goodman.com
www.goodman.com

Level 17
60 Castlereagh St
Sydney NSW 2000
Australia

From: Justine Clarke <Justine.Clarke@waternsw.com.au>
Sent: Thursday, 18 June 2020 4:43 PM
To: Alasdair Cameron <Alasdair.Cameron@goodman.com>
Subject: WaterNSW comment - OWE Draft CEMP for Building 1A

Dear Alasdair

Thank you for your email dated 4 June regarding the draft CEMP for Building 1A. WaterNSW has reviewed the plan and due to the separation from our corridor (and all works being contained to lot 1A), WaterNSW have no specific comment to make. Except that estate drainage systems, that will receive flows from lot 1A must be constructed and operationally ready to receive flows.

Please continue to consult with WaterNSW regarding any works within the estate.

Regards Justine

Justine Clarke
Catchment and Asset Protection Adviser

Endeavour Energy

From: Kym Dracopoulos
Sent: Monday, 1 June 2020 1:57 PM
To: Jason Lu <Jason.Lu@endeavourenergy.com.au>; cornelis.duba@endeavourenergy.com.au; property.development@endeavourenergy.com.au
Cc: Guy Smith <Guy.Smith@goodman.com>; Stephanie Partridge (Stephanie.Partridge@goodman.com) <Stephanie.Partridge@goodman.com>
Subject: Oakdale West Estate : SSDA 7348 Mod 2 CEMP approval

Hi Jason/ Cornelius,

In accordance with our SSDA 7348 Mod 2 Consent, please find the following link to the OWE : Lot 1A– Project Broccoli – Construction Environment Management Plan (CEMP)
https://spaces.hightail.com/receive/TtNhgMryyF

Please note for information, we previously issued the Mod 2 consultation plans to you on 22.11.2019

If you have any queries at all , please call me on 0411 511 431 or return email.

If you have no queries, we would appreciate an email expressing this in return.

Regards,
Kym

From:	Cornelis Duba
To:	Kym Dracopoulos
Cc:	Guy Smith; Stephanie Partridge; Jason Lu
Subject:	RE: Oakdale West Estate : SSDA 7348 Mod 2 CEMP approval
Date:	Monday, 15 June 2020 4:38:02 PM
Attachments:	image001.gif image002.png image003.png image004.png image006.jpg image007.jpg

---

Hello Kym

My apologies for the delay in responding but I was awaiting some further feedback from internal stakeholders which I now have received.

I hereby confirm that Endeavour Energy has no comments or objections to the Oakdale West Industrial Estate – Lot 1A Construction Environmental Management Plan SSD 7348 prepared for Goodman Property Services (Aust) Pty Ltd by for SLR Consulting Australia Pty Ltd (Ref 630.30016-R01-v1.0 Dated 26 May 2020) (CEMP).

As discussed, Endeavour Energy has some concerns over design issues related to the design of the land for the provision of the new zone substation which is part of the regulatory requirements imposed by SSD 7348. I understand that this matter is being separately addressed by the parties.

I trust that this email will satisfy the requirements of NSW Planning, Industry & Environment for the acceptance of the CEMP by Endeavour Energy as one of the Key Stakeholders. However should you wish to discuss this matter, or have any questions, please do not hesitate to contact me. Due to the high number of development application / planning proposal notifications submitted to Endeavour Energy, to ensure a response contact by email to property.development@endeavourenergy.com.au is preferred.

With the current COVID-19 health risk, as many as possible of Endeavour Energy staff are working from home. As a result there is only a small contingent located at the Huntingwood head office for essential operations. Although working from home, access to emails and other internal stakeholders is now somewhat limited and as a result it may take longer than usual to respond to enquiries. Thank you again for your understanding during this time.

Kind regards
Cornelis Duba
Development Application Specialist
Network Environment & Assessment
M: 0455 250 981
E: cornelis.duba@endeavourenergy.com.au
51 Huntingwood Drive, Huntingwood NSW 2148
www.endeavourenergy.com.au

Trinity Primary School

From: Kym Dracopoulos
Sent: Monday, 1 June 2020 2:00 PM
To: Catherine Hey <chey@parra.catholic.edu.au>
Cc: Guy Smith <Guy.Smith@goodman.com>; Stephanie Partridge (Stephanie.Partridge@goodman.com) <Stephanie.Partridge@goodman.com>
Subject: Oakdale West Estate : SSD 7348 Mod 2 CEMP approval

Dear Catherine,

In accordance with our SSDA 7348 Mod 2 Consent, please find the following link to the OWE : Lot 1A– Project Broccoli – Construction Environment Management Plan (CEMP)
https://spaces.hightail.com/receive/TtNhgMryyF

Please note for information, we previously issued the Mod 2 consultation plans to you on 22.11.2019

If you have any queries at all , please call me on 0411 511 431 or return email.

If you have no queries, we would appreciate an email expressing this in return.

Regards,
Kym

From: Catherine Hey <chey@parra.catholic.edu.au>
Sent: Wednesday, 3 June 2020 12:05 PM
To: Kym Dracopoulos <Kym.Dracopoulos@goodman.com>
Cc: Guy Smith <Guy.Smith@goodman.com>; Stephanie Partridge <Stephanie.Partridge@goodman.com>
Subject: Re: FW: Oakdale West Estate : SSD 7348 Mod 2 CEMP approval

Thanks Kym,
Yes, that is fine.
Kind regards,
Cathy Hey
Principal
Trinity Primary School
Kemps Creek
88566200

Mamre Anglican School

On Mon, Jun 1, 2020 at 2:15 PM Kym Dracopoulos <Kym.Dracopoulos@goodman.com> wrote:

> Dear Cathie,
>
> In accordance with our SSDA 7348 Mod 2 Consent, please find the following link to the OWE : Lot 1A– Project Broccoli – Construction Environment Management Plan (CEMP)
>
> https://spaces.hightail.com/receive/TtNhgMryyF
>
> Please note for information, we previously issued the Mod 2 consultation plans to you on 22.11.2019
>
> If you have any queries at all , please call me on 0411 511 431 or return email.
>
> If you have no queries, we would appreciate an email expressing this in return.

Regards,
Kym

Kym Dracopoulos
Manager, Technical Services

From: Cathie Graydon <cathie.graydon@mamre.nsw.edu.au>
Sent: Monday, June 1, 2020 5:52:01 PM
To: Kym Dracopoulos <Kym.Dracopoulos@goodman.com>
Cc: Guy Smith <Guy.Smith@goodman.com>; Stephanie Partridge <Stephanie.Partridge@goodman.com>
Subject: Re: Oakdale West Estate : SSD 7348 Mod 2 CEMP approval

Hi Kym,
Thanks for this information. It doesn't appear to state that heavy vehicles will not access Bakers Lane during the school peak drop off and pick up timeslots in the traffic section of the doc. Is that stated in the Traffic Management Plan?

On another matter, I am currently preparing a document/policy for my school in the event we have a COVID-19 positive case in our school. As you would probably be aware from media reports when other schools have a COVID case, the school is required to lockdown, identify close contacts, then evacuate the school pretty quickly, then organise a deep clean. In the highly unlikely event we have such a case at Mamre, and we require parents to collect their children within a couple of hours, who would I contact in your company to make you aware of increased traffic for those couple of hours, as it could be at any time during the school day. It could mean up to 500 vehicles in a short space of time.

We are of course hoping we won't have such an event occur, and if it was, ideally it would be out of school hours when we received the news of a positive case. We then would close the school for a few days while we sort out contact tracing etc.

Regards,

Cathie Graydon

Principal

Mamre Anglican School
45 Bakers Lane
Kemps Creek NSW 2178
PO Box 88 St Marys NSW 1790
Ph: 02 9834 1881

E: principal@mamre.nsw.edu.au

From: Kym Dracopoulos <Kym.Dracopoulos@goodman.com>
Sent: Monday, 1 June 2020 6:09 PM
To: Cathie Graydon <cathie.graydon@mamre.nsw.edu.au>
Cc: Guy Smith <Guy.Smith@goodman.com>; Stephanie Partridge <Stephanie.Partridge@goodman.com>; Kate McKinnon (kmckinnon@slrconsulting.com) <kmckinnon@slrconsulting.com>
Subject: Re: Oakdale West Estate : SSD 7348 Mod 2 CEMP approval

Hi Cathie,
I understand how it can be a bit confusing with multiple modifications, but Mod 2 relates to Project Broccoli on Lot 1A where all construction traffic for this building work will attend the site from the Western North South Link Rd.

With regard to notices of traffic increases, any advice or event you wish to bring to our attention , please send the details direct Kate McKinnon and please copy me in so that we can alert our stakeholders.

Could I please ask you send your approval through once you are happy we have addressed your concerns.

Regards,
Kym

From: Cathie Graydon <cathie.graydon@mamre.nsw.edu.au>
Sent: Wednesday, 3 June 2020 12:42 PM
To: Kym Dracopoulos <Kym.Dracopoulos@goodman.com>
Subject: Re: Oakdale West Estate : SSD 7348 Mod 2 CEMP approval

Yes, I approve the CEMP.

Regards,

Cathie Graydon

Principal

Mamre Anglican School
45 Bakers Lane
Kemps Creek NSW 2178
PO Box 88 St Marys NSW 1790
Ph: 02 9834 1881

E: principal@mamre.nsw.edu.au

Diocese of Parramatta

From: Robert Nastasi <rnastasi@parra.catholic.edu.au>
Sent: Monday, 1 June 2020 2:22 PM
To: Kym Dracopoulos <Kym.Dracopoulos@goodman.com>
Cc: Guy Smith <Guy.Smith@goodman.com>; Stephanie Partridge <Stephanie.Partridge@goodman.com>; Michael Pruscino <mpruscino@parra.catholic.edu.au>; Bill Togher <btogher@parra.catholic.edu.au>; HARVEY ANCHIQUE <hanchique@parra.catholic.edu.au>
Subject: Re: FW: Oakdale West Estate : SSD 7348 Mod 2 CEMP approval

Received, thank you Kym

Regards

Rob N

On Mon, 1 Jun 2020 at 14:10, Kym Dracopoulos <Kym.Dracopoulos@goodman.com> wrote:

> Dear Robert,
>
> In accordance with our SSDA 7348 Mod 2 Consent, please find the following link to the OWE : Lot 1A– Project Broccoli – Construction Environment Management Plan (CEMP)
> https://spaces.hightail.com/receive/TtNhgMryyF
>
> Please note for information, we previously issued the Mod 2 consultation plans to you on 22.11.2019
>
> If you have any queries at all , please call me on 0411 511 431 or return email.
>
> If you have no queries, we would appreciate an email expressing this and your approval in return.
>
> Regards,
> Kym
>
> Goodman
> Kym Dracopoulos
> Manager, Technical Services
>
> Direct: +61 2 9230 7453
> Mobile: +61 411 511 431
> Fax: +61 2 9230 7444
> Kym.Dracopoulos@goodman.com
> info-au@goodman.com
> www.goodman.com

From: Julian Concato <Julian.Concato@parracatholic.org>
Sent: Tuesday, 2 June 2020 10:57 AM
To: Kym Dracopoulos <Kym.Dracopoulos@goodman.com>
Cc: Bill Togher <btogher@parra.catholic.edu.au>
Subject: FW: FW: Oakdale West Estate : SSD 7348 Mod 2 CEMP approval

Morning Kym,

I hope you're well.

As discussed we note updated CEMP was triggered by a modification to the development on Lot 1A and that CEMP remains unchanged but for the modification relating to Lot 1A.

In that regard we are happy for you to proceed With the modification.

Kind regards.

DIOCESE of PARRAMATTA

Julian Concato
Manager – Property Developments
Diocese of Parramatta
Bethany Centre 470 Church St, Parramatta NSW 2150
T: 02 8838 3408 M: 0478 698 577
E: julian.concato@parracatholic.org
W: www.parracatholic.org

APPENDIX C

Construction Traffic Management Plan

Construction Traffic Management Plan

Building 1A
Oakdale West Estate, Kemps Creek

Ref: P0950r01v2
22/05/2020

Info@asongroup.com.au | +61 2 9083 6601 | Suite 5.02, Level 5, 1 Castlereagh Street, Sydney, NSW, 2000

Document Control

Project No: P0950r01v2

Project: Project Broccoli, Oakdale West Estate – Construction Traffic Management Plan

Client: Goodman Property Services (Aust) Pty. Limited

File Reference: P0950r01v2 CTMP_Project Broccoli , Oakdale West Estate

Revision History

Revision	Date	Details	Author	Approved by
-	15/05/2020	Draft	J. Laidler	
Issue I	20/05/2020	Issue I	J. Laidler	J. Laidler
Issue II	22/05/2020	Issue II	J. Laidler	J. Laidler

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Appendix A) Traffic Control Plans

1 Introduction

1.1 Overview

Ason Group has been engaged by Goodman Property Services (Aust) Pty. Limited (Goodman) to prepare a Construction Traffic Management Plan (CTMP) relating to the construction of Building 1A within the Oakdale West Industrial Estate (OWE) at Kemps Creek (the Site). A site plan and an overview of the proposed surroundings are provided in **Figure 1**.

This report has been prepared in response to the conditions of consent from the Department of Planning Industry and Environment (DPIE), which are outlined within Table 1:

1.2 Report Purpose

The purpose of this report is to detail a traffic plan for construction that seeks:

- To minimise traffic impacts on the surrounding road network,
- Ensure safety and efficiency for workers, pedestrians, other road, and
- Provide information regarding the construction vehicle access routes and any changed road conditions (if applicable).

It is expected that this plan will be updated should any necessary changes to the currently proposed arrangements arise in the future. Any special events (if required) would be subject to a separate request for a specific permit not covered by this report.

Ason Group is responsible for the preparation of this Plan only and not for its implementation, which is the responsibility of the Contractor.

In accordance with Condition D66 of the consent, no works can commence until a CTMP report is approved by the Planning Secretary of the Department of Planning, Industry & Environment.

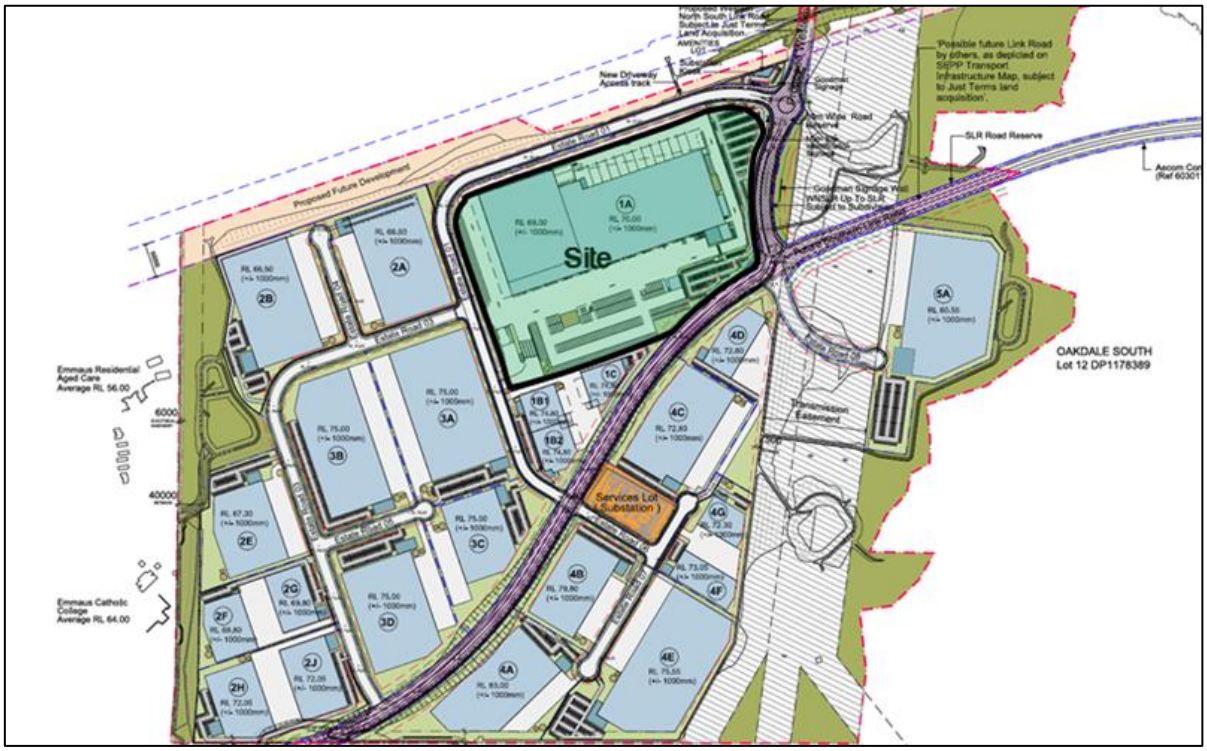


Figure 1: OWE Context Showing Building 1A

1.3 Site Context

- The estate has a range of works currently underway. This includes construction of Building 2B, construction of the Western North South Link Road (WNSLR) and the estate wide infrastructure works. These works are generally summarised as follows. Building 2B construction works. This project comprises the construction of the warehouse and ancillary infrastructure within the Site. Operational traffic will access the site via the WNSLR and ancillary internal roads within the site. This project is currently underway and will access the Site from the WNSLR and ancillary internal roads within the Site.
- OWE is a staged development for warehousing and distribution hub. The estate infrastructure works are currently underway as well as the construction of the WNSLR. Both of these projects are captured within the OWE CTMP.

Each of the above has been subject to a separate Construction Traffic Management Plan — versions referenced in preparing this CTMP:

- *Ason Group, Construction Traffic Management Plan, Oakdale West Estate, Kemps Creek, 0129r06v25 CTMP_ Oakdale West Estate, Kemps Creek Issue XXV, 07/05/2020*
- *Ason Group, Construction Traffic Management Plan, Building 2b, Kemps Creek, 1086r03v15 CTMP_ Building 2B, Kemps Creek, 06/05/2020*

It is noteworthy that the 2019 Approved Oakdale West Estate (OWE) will generate the following peak hourly traffic volumes associated with future operational traffic on the WNSLR:

- AM peak 1,108 veh/hr
- PM peak 879 veh/hr
- Daily 9,776 veh/day

1.4 Statutory Requirements

The following conditions have been imposed with respect to construction traffic management.

Table 1: SSD 7348 Approval - Compliance Table

Reference	Requirement	Response
D65	Prior to the commencement of Stage 1, the Applicant must prepare a Construction Traffic Management Plan (CTMP) for the Development to the satisfaction of the Planning Secretary. The CTMP must form part of the CEMP required by Condition D119 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. Further consultation is expected to occur, following issue of development approval, prior to finalisation of this CTMP.
	b) be prepared in consultation with Council, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School	Consultation will be undertaken with Council, however any consultation with the schools and aged care facility within Bakers Lane will not be required, as there shall be no construction vehicles utilising Bakers Lane during construction as a result of these works.
	c) detail specific measures to manage construction traffic to avoid school drop off and pick up times (Monday to Friday 8 am – 9.30 am and 2.30 pm – 4 pm) and Higher School Certificate exam periods, including any temporary infrastructure arrangements and traffic safety measures;	All construction vehicles will utilise WNSLR to access the Site, therefore there shall be no impact to the school drop off and pick up times. Therefore it is proposed that there shall be no limitations to timed deliveries other than being within the approved construction hours (outlined within Section 2.3).
	d) detail the measures to be implemented to ensure road safety and network efficiency during construction, including scheduling deliveries of heavy plant and equipment outside of peak periods, or during school holidays where possible.	Refer Section 0 with regard to impacts to traffic efficiency. This concludes that the construction traffic will not have a detrimental impact on the network. Furthermore, Traffic Control Plans (TCPs) shall be developed for all works impact public roads and approved by the Transport for NSW (TfNSW) Traffic Management Centre. As noted in previous Reference items above, there shall be no limitations to timed deliveries other than being within the approved construction hours (outlined within Section 2.3).

Reference	Requirement	Response
	e) 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 4).
	f) 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, including the students, staff, visitors and residents of the neighbouring schools and aged care village; (iii) minimise road traffic noise, both on Bakers Lane and from construction vehicles on Site; and (iv) ensure truck drivers use specified routes and adhere to the speed restrictions on Bakers Lane;	A driver Code of Conduct is a requirement of and included within this CTMP. The Drivers Code of Conduct (included in Section 5) addresses ways to minimise the impacts on the road network, with other road users, ensure truck routes are utilised and to manage pedestrian movements. Any reference to the schools and aged care facility within Bakers Lane within the Drivers Code of Conduct is not be required, as there shall be no construction vehicles utilising Bakers Lane during construction.
	g) include a program to monitor the effectiveness of these measures	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 or the purpose of assessing the effectiveness of these monitoring programs. These programs will be completed in accordance with Section 7.1.
	h) detail procedures for notifying residents and the community (including local schools), of any potential disruptions to routes.	Meetings are to be undertaken on a regular basis to keep key stakeholders informed of any upcoming events. Reference should also be made to the Community Consultation Strategy prepared by SLR. Consultation shall be undertaken with the community of any potential disruptions to the proposed access routes. Furthermore, the Contractor will notify the community liaison representative when traffic conditions are expected to exceed parameters with within Condition Green of Table 7. Measures that may be included within the strategy have been identified within Section 7.3.
	i) update the CTMP to include modifications to construction traffic management approved under MOD 2 and MOD 3	This CTMP has been updated in response to proposed modifications approved under MOD 2 works. Construction traffic is based on the proposed schedule, and is influenced by other CTMPs within the immediate vicinity. Reference should be made to Section 6.3 for cumulative impacts.
D66	The Applicant must:	
	a) not commence construction of Stage 1 until the CTMP required by Condition D65 is approved by the Planning Secretary; and	Noted and reiterated in Section 1.1.
	b) implement the most recent version of the CTMP approved by the Planning Secretary for the duration of construction.	Refer Section 7.1 of this Plan which outlines requirement for this Plan to be updated regularly.

Reference	Requirement	Response
D118	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
	a) 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, Stage 1 or any management measures;	Relevant requirements are outlined in this table. Other specific requirements are detailed in Section 4.
	b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Refer Section 4.
	c) program to monitor and report on the: i. impacts and environmental performance of Stage 1; and ii. effectiveness of the management measures set out pursuant to paragraph (b) above;	Refer Section 7.1 of this Plan which outlines requirement for this Plan to be updated regularly.
	d) 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;	Refer Section 7.1 of this Plan which outlines the requirement for this Plan to be updated regularly. Traffic Control Plans — outlined in Section 4.2.8 — shall be prepared to respond to specific work situations and subject to approval by the relevant Roads Authority (Council and/or RMS), providing a suitable level of independent oversight.
	e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time	Refer Section 7.1 of this Plan which outlines requirement for this Plan to be updated regularly.
	f) 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	Management and reporting protocols are outlined in the Construction Environmental Management Plan. Reference is also made to Section 5.5 of this Plan in relation to incident management.
	g) a protocol for periodic review of the plan.	Refer Section 7.1 of this Plan.

Refer to the Department of Planning, Industry & Environment's Major Project Assessments website for a full list of all conditions of approval and other background documents.

1.5 Site Location

At a regional level, the Site is located approximately 3 kilometres south of the nearest suburban area, Erskine Park, 18 kilometres west of Parramatta, and 37 kilometres west of the Sydney CBD. It is within the Local Government Area (LGA) of Penrith City Council, however, is also subject to controls of the State Environmental Planning Policy (Western Sydney Employment Area) 2009 (SEPP WSEA). Within the context of the OWE, Lot 1A is located on Estate Road.

1.6 Road Hierarchy

The road hierarchy in the locality is presented in **Figure 2** and summarised below for key roads.

1.6.1 M7 Motorway

The M7 motorway is a high capacity road link and provides a key north-south link, to the east of OWE, between the M2 motorway in the north and the M5 motorway to the south as part of the Sydney orbital road network. A major interchange between the M7 motorway and M4 Western motorway is located 2.5 km north of OWE, which connects the Sydney CBD and western Sydney suburbs. The motorway carries 4 trafficable lanes within a divided carriageway and is generally subject to a 100 km/h speed limit (within proximity of OWE).

1.6.2 Western North South Link Road

The Western North South Link Road (WNSLR) is a high capacity road and is part of a State Significant Development. The WNSLR provides a connection between Lenore Drive and the future Southern Link Road (SLR). In the short-term the WNSLR will be a public road, owned by Council, providing local access to the future Oakdale West Estate and other industrial areas north of the Water NSW Pipeline. It shall have signalised intersections at both ends of Lockwood Drive. And has a four lane dual carriageway arterial road with a speed limit of 80km/hr.

1.6.3 Wallgrove Road

Wallgrove Road is an arterial road that runs in a north-south direction to the east of OWE and parallel to the M7 motorway. It provides a link between Elizabeth Drive in the south and the Great Western Highway in the north. Similar to the M7 motorway, Wallgrove Road connects to the M4 motorway approximately 2.5 kilometres to the north of OWE. The posted speed limit on the road within proximity of the site is 70 km/h and the road carries approximately 30,000 vpd. Access to the M7 motorway is also provided from Wallgrove Road.

1.6.4 Lenore Drive

Lenore Drive is a recently upgraded sub-arterial route providing an east-west connection linking Old Wallgrove Road (OWR) to the east and Erskine Park Road to the west. It provides four lanes (two in each direction) within a divided carriageway with a shared path along the northern side of the road. It is subject to an 80 km/h speed zoning.

1.6.5 Old Wallgrove Road

OWR generally runs north-south in the vicinity of the site before turning to provide an east-west connection to Wallgrove Road. It forms part of an RMS Main Road (MR 629) route between Lenore Drive and Wallgrove Road. To the south of Lenore Drive, it functions as a local collector road.

1.6.6 Mamre Road

Mamre Road generally runs in a north-south direction to the west of the work area. It is a classified road and subject to an 80 km/h speed limit.

1.6.7 Estate Road 01

Estate Road 01 is currently a private road providing access to Precinct 1 and Precinct 2 and links the Future Southern Link Road (SLR) to the Western North South Link Road (WNSLR). In the longer term, the intention is for this road to be dedicated to Council as a public road, however that is expected to occur following completion of the construction works covered by this plan

1.6.8 Estate Road 03

Estate Road 03 is currently a private road providing access to Precinct 2 and Precinct 3 and links the Future Southern Link Road (SLR) to Estate Road 01. In the longer term, the intention is for this road to be dedicated to Council as a public road, however that is expected to occur following completion of the construction works covered by this plan

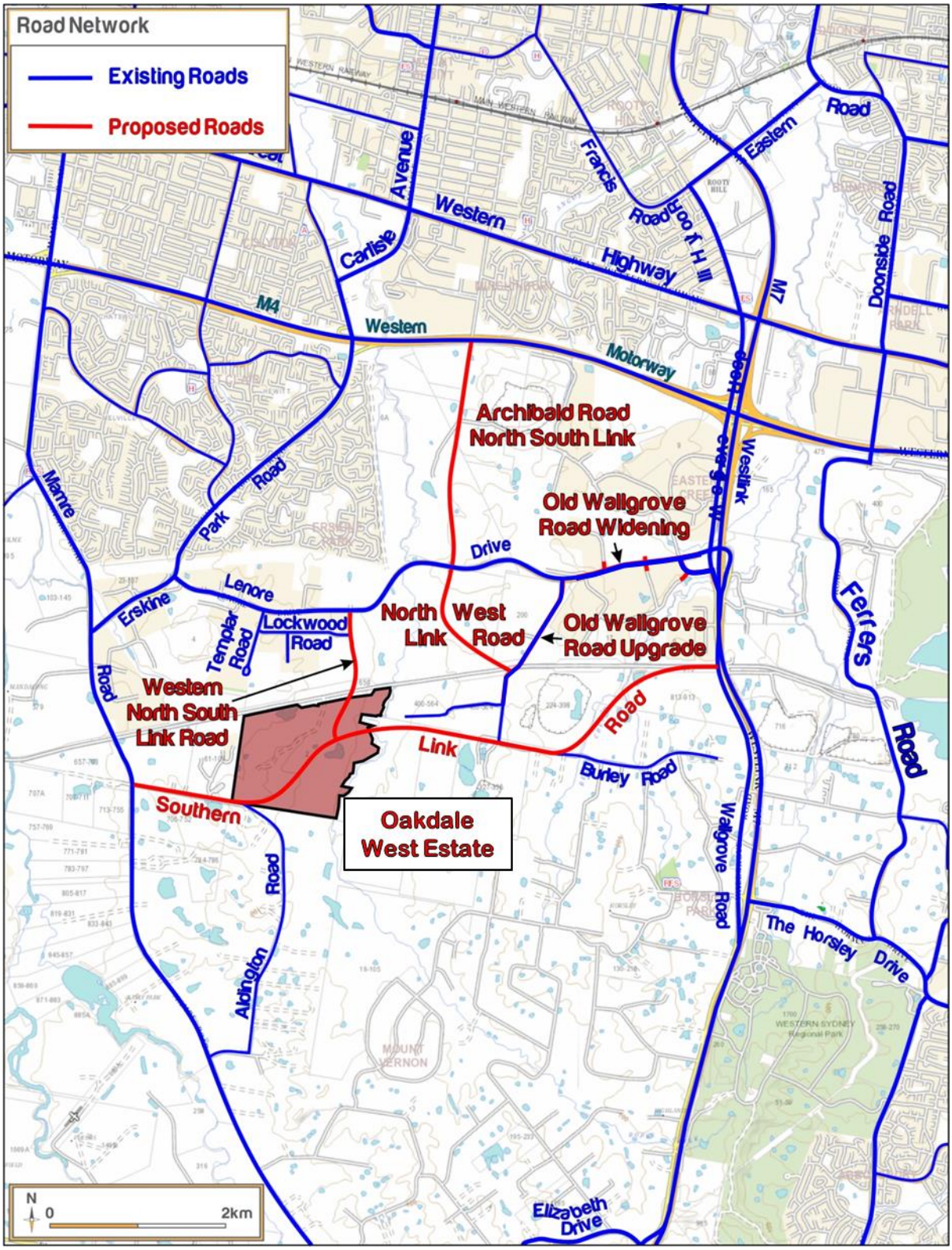


Figure 2: Road Hierarchy

2 Overview of Works

2.1 Works Stages

For the purposes of this CTMP, these works will commence following the completion of WNSLR. The access and traffic management required is outlined later within this report.

Recognising the purpose of this CTMP, it is estimated that the total duration of the construction works will be approximately 69 weeks from the commencement date. The following summarises key aspects of the construction stages:

- Stage 1: General earthworks and the construction of the temporary accesses. This stage is expected to commence January 2021 and be 24 weeks in duration. Primarily, this stage is to prepare a temporary construction entrance to the Site for the main construction of the proposed warehouse. It is proposed that these temporary construction accesses will be within the same locations as the final accesses, which is via Estate Road 01.
- Stage 2: Concrete Pours. This stage is expected to commence in March 2021 and will be 24 weeks in duration. Works involved will primarily to construct the slab for the remainder of the warehouse and ancillary infrastructure to be erected.
- Stage 3: The general construction and associated landscape works will commence in April 2021 and is expected to last 16 weeks.
- Stage 4: External Finishes to the Warehouse. This stage is expected to commence in July 2021 with a 20 week duration. Works involved in this stage will primarily relate to warehouse cladding and constructing the façade of the warehouse building.
- Stage 5: External Boundary / kerb and footpath works. This stage is expected to commence in December 2021 and continue for approximately 20 weeks. It is expected that during this stage or works, driveway crossovers and kerb and gutter will be formalised, while the footpaths along Estate Road 01 will be reconstructed.

2.2 Access Arrangements

Access to the Site shall be through the OWE and shall occur via Lenore Drive and the WNSLR. This is discussed in further detail below. All construction vehicles are to use the primary access from Lenore Drive, and shown within Figure 3.

2.3 Hours of Work

Having regard for the Conditions of Consent, Condition D65 outlines the permitted hours of works are as follows:

During General Construction:

- 7:00AM – 6:00PM Monday – Friday.
- 8:00AM – 1:00PM Saturday.
- No work public holidays.

Work outside these hours may be undertaken under the following:

- Works that are inaudible at the nearest sensitive receivers.
- 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 environmental harm.

3 Existing Conditions

3.1 Site Access

Access to the site shall be available via the WNSLR and Access Road 01.

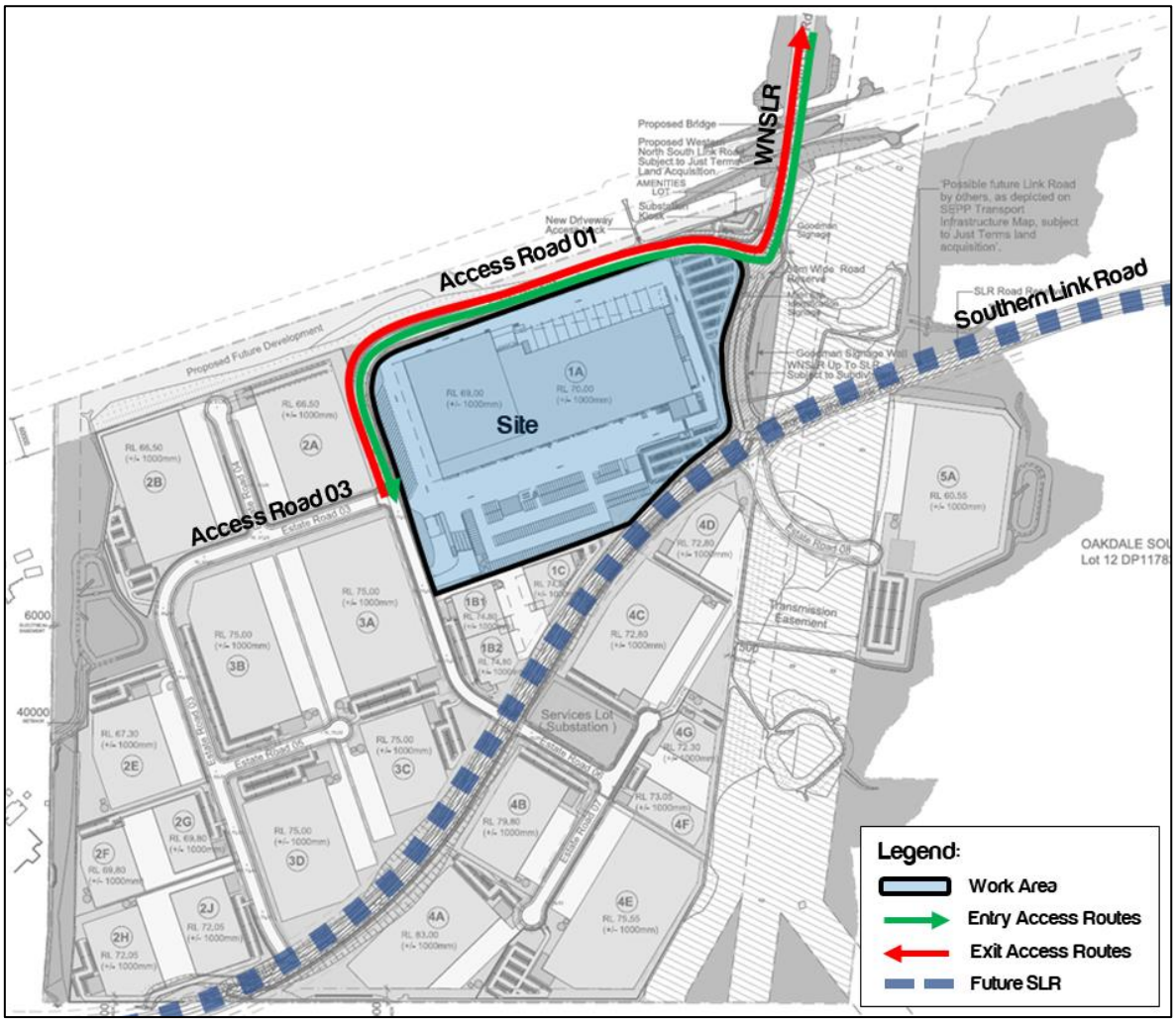


Figure 3: Access Arrangments

3.2 Active Transport Connections

A Shared Path (cyclists and pedestrians) is provided along the northern side of Lenore Drive and western side of Old Wallgrove Road, providing connections to the regional pedestrian and cycle networks. WNSLR and the Access Roads will include a 2.5-metre shared path for both pedestrians and cyclists

Footpaths and cycle routes do not carry high volumes of pedestrians or cyclists. Notwithstanding, any TCP shall maintain a suitable level of access past work areas for these users at all times.

3.3 Public Transport Services

3.3.1 Railway Services

The *Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area* (Transport for NSW, December 2013) states that rail services influence the travel mode choices of areas within 800 metres (approximately 10 minutes' walk) of a railway station. The closest railway station to the Oakdale West Precinct is Mt Druitt Station, is approximately 7km north of the site. This would imply that commuting by rail would have minimal influence on workplace travel.

It should be noted that several studies conducted for the Broader Western Sydney Employment Area (BWSEA) reference the potential development of connecting freight or passenger corridor to the Site's west, connecting the T1, T2 and T5 lines to Badgerys Creek Airport.

3.3.2 Bus Services

Having regard to the standard bus travel, the *Integrated Public Transport Service Planning Guidelines* state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes) of a bus stop. As there are no existing bus services in the proximity of the Site, this implies that bus commuting would have minimal influence on workplace travel.

As outlined in the WSEA, a new regional road network is being developed interlinking the industrial precincts within the region to support the growth and continued development of the area. This presents the potential for an accompanying expansion in the bus service network to connects places of employment within the region.

As shown in **Figure 4**, bus services operate along Lenore Drive. Accordingly, any works affecting traffic conditions along Lenore Drive shall require advanced notification to local bus operators and TfNSW.

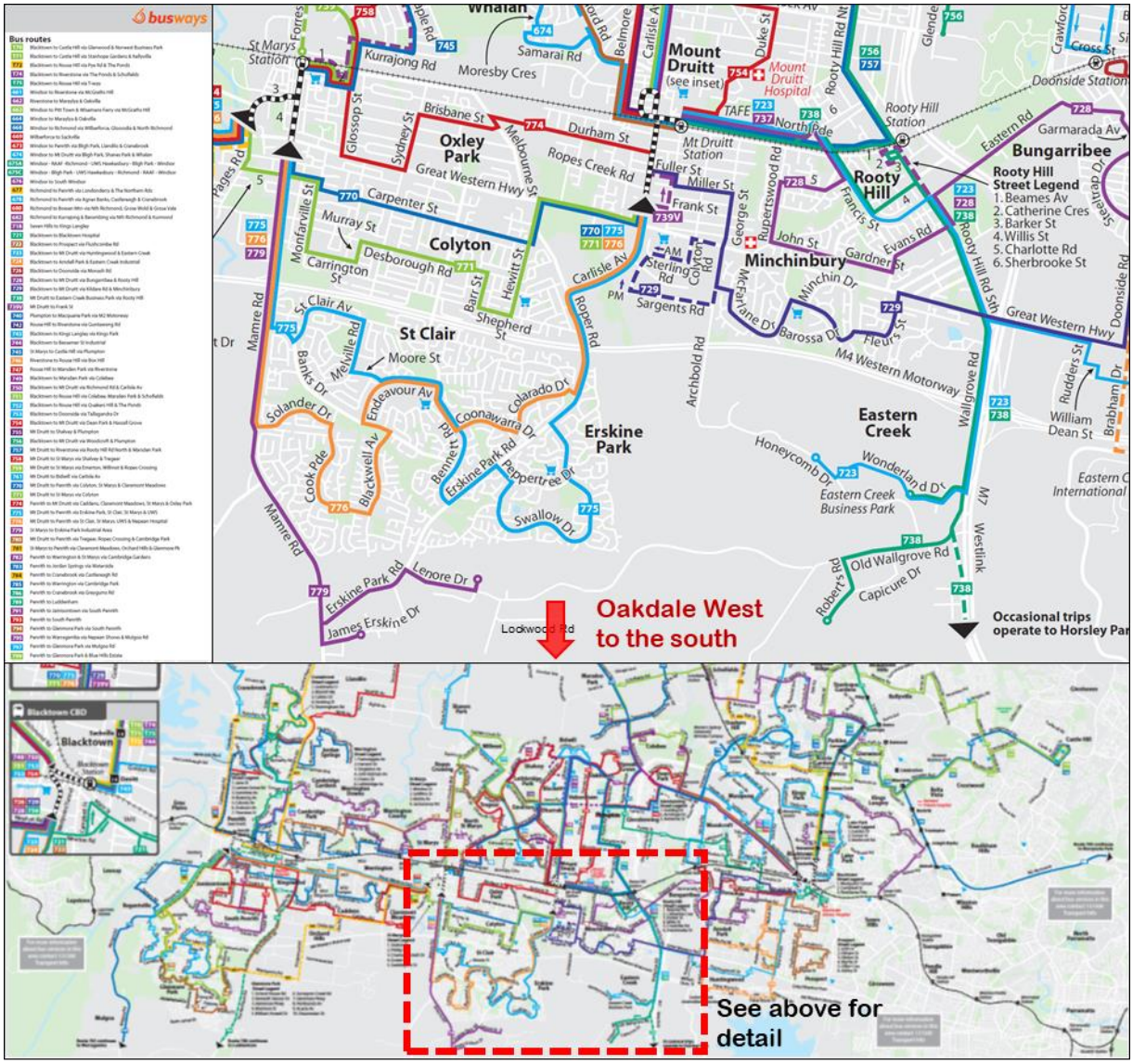


Figure 4: Public Transport Connections

4 Management Plan

4.1 Traffic Movements

4.1.1 Background

The traffic report (Ason Group Ref: 0950r01v12) supporting the Building 1A submission, outlined the following relevant figures with regard to future operational traffic volumes associated with the Site during the peak periods:

- AM Peak 215 movements per hour (movements, in & out combined)
- PM Peak 431 movements per hour (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

4.1.2 Current Construction Traffic Estimates

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 are as follows:

- Building 1A Construction Works – up to 1,630 light vehicle movements per day and 130 heavy vehicle movements per day (including truck and dog and 3 tonne rigid trucks) shall access the Building 1A site via the WNSLR, although not in the same time period per day. Notwithstanding the estimated maximum daily construction vehicle generation is up to 1,760 vehicle movements per day.

For reference, the definitions of light and heavy vehicles are as follows;

- Light Vehicles: For the purpose of this report a light vehicle is a car, ute, four-wheel drive, small bus, and/or concrete truck up to a 9.6m Medium Rigid Vehicle (MRV)
- Heavy Vehicle: For the purpose of this report, a heavy vehicle ranges from (but is not limited to) a 12.5m Heavy Rigid Vehicle (HRV) up to a 26.0m B-Double.

4.1.3 Truck Movements & Contractor Parking

Truck access routes under Stage 1 will use WNSLR and Access Road 01 within the Site to access work areas. Relevant truck routes are outlined within Figure 3. The implementation of the access route shall be done so in accordance with any and all conditions of consent received by the TfNSW.

It is expected that a schedule for deliveries of materials and goods will be established prior to that day, with Traffic Controllers maintaining radio contact with construction vehicles at all times. Thus, at no stage shall queueing occur on the public road network. In the event that vehicles were required to use a layover prior to arrival to site, it is expected that the vehicles shall laydown within WNSLR before arriving to site in order to avoid any on-street queuing.

It is expected that future contractors shall prepare Vehicle Movement Plans (VMP) for on-site circulation for key stages generating more than 20 truck movements (10 in, 10 out) per day.

In preparing relevant details VMPs, the contractor should:

- Minimise interaction with other work areas, as far as possible.
- Where possible, separate truck movements from contractor car parking areas
- Prepare Traffic Control Plans where necessary to provide additional management of on-site vehicle movements.

It should be noted that TfNSW is yet to complete detailed design of the SLR. As such, it is unlikely that SLR works will commence during the timeframes envisaged by this CTMP. Nevertheless, regular engagement with TfNSW should be undertaken to coordinate any final design and/or construction access requirements.

4.1.4 TransGrid Easement

A TransGrid easement runs to the east of the Work Area which is subject to a number of restrictions. Whilst contractors associated with the subject works are not likely to impact this area, it is important to note that no vehicle circulation is permitted within 5 metres of any transmission structure or guy-wires unless otherwise pre-arranged. All endeavours shall be undertaken to limit vehicular movements with the easement areas for all construction works, wherever practicable.

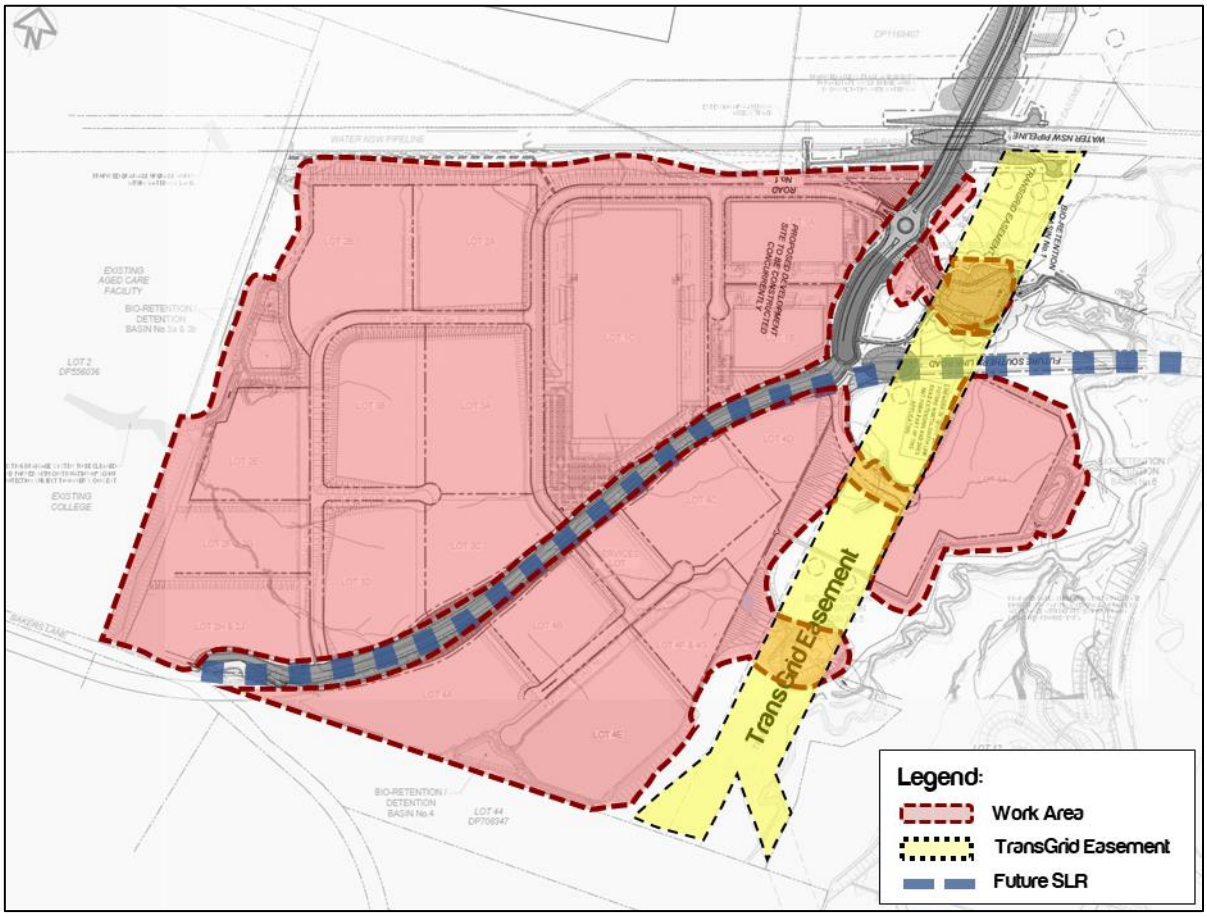


Figure 5: TransGrid Easement Within Site

4.2 Other General Requirements

4.2.1 Driver Code of Conduct

All drivers shall adhere to the Driver Code of Conduct, outlined in Section 5.

4.2.2 Contractor Parking

Contactors shall nominate the parking zones without obstructing any vehicle manoeuvre routes.

4.2.3 Loading & Materials Handling

Handling of all materials throughout the construction shall adhere to the following.

- It is proposed that all material loading will occur within the construction site boundary.
- No loading is proposed to occur outside of the provisioned areas.
- Equipment, materials and waste will be kept within the construction site boundary.

During latter stages of construction, tie in works will be required within the kerbside of Estate Road 03. All materials handling shall be undertaken off the public roadway, however in the event materials handling are required from the roadway, then prior approval shall be sought and obtained from the relevant Authorities. Noting that Estate Roads are currently in private ownership, this would require consent of the Estate Management and be subject to special management.

4.2.4 Work Zone Requirements

An on-street Works Zone is proposed for the use of hydrant fill points by Contractor water carts. The locations will be confirmed by the builder at a later date, however approval shall be given from the PCC prior to any filling.

A separate application to Council will therefore be required in the event that any special or discreet work activities do require the use of kerbside parking for the purposes of a Works Zone.

4.2.5 Pedestrian Management

Man-proof fencing shall be provided along all site frontages accessible by the public to prevent unwanted pedestrian access.

Careful consideration for pedestrian protection shall be included within relevant TCP, as outlined below.

4.2.6 Cyclist Management

Man-proof fencing shall be provided along all site frontages accessible by the public to prevent unwanted cyclist access.

Careful consideration for cyclist protection shall be included within relevant TCP, as outlined below.

4.2.7 Engineering Construction Specifications

Any Signage and/or line marking to be installed as a result of these construction works shall be installed as per Council's Engineering Construction Specification For Civil Works document (October 2017).

4.2.8 Traffic Control Plans

Any Traffic Control Plans (TCPs) shall be prepared by an accredited person, in accordance with the RMS *Traffic Control at Worksites Manual* and AS1742.3.

All TCPs involving signage or impacts to public roads shall be approved by RMS Traffic Management Centre, prior to the works for which they relate. These TCPs shall be updated to respond to any changes to prevailing traffic conditions throughout the life of the works.

Having regard for the anticipated truck movements in each stage exceeding 20 movements per day, it is expected that signage (e.g. “Trucks Turning”) may be required at the site access points to advise other road users of changed traffic conditions. In this regard, it is expected that site-specific versions of the standard TCP 195 would be implemented by the Contractor. The TCP’s shall be integrated to accommodate the spacing and clearances of each access.

In addition, site-specific versions of standard TCP 93 will be required for any works within Access Road 01 where the kerbside lane is obstructed or insufficient clearances to passing traffic cannot be maintained.

Supplementary site-specific TCPs shall be developed and submitted to TMC for approval, as required to reflect specific work activities and/or changes to road conditions.

4.3 Stage 1 –Earthworks

4.3.1 Key Stage Details Summary

Table 2: Stage Summary – Phase 1

Criteria	Response
Description of Key Activities	Bulk earthworks across the entire Lot 1A Construction of temporary crossovers to site
Max. Vehicle Size	Truck + Dog Trailer (Special Permits may be required for floating in plant)
Vehicle Movement Frequency	Approximately 150 light vehicle movements / day + Approximately 75 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via WNSLR
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing.
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Lane or Footpath Closures (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Traffic Control Plan	Refer below.

4.4 Stage 2 – Concrete Pouring Works

4.4.1 Key Stage Details Summary

Table 3: Stage Summary – Phase 2

Criteria	Response
Description of Key Activities	Construction of retaining and noise walls across the site. Construction of the base concrete slab
Max. Vehicle Size	8.8m Concrete Trucks
Vehicle Movement Frequency	Approximately 240 light vehicle movements / day + Approximately 250 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via WNSLR
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing.
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Lane or Footpath Closures (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Traffic Control Plan	Refer below.

4.5 Stage 3 –General Construction

4.5.1 Key Stage Details Summary

Table 4: Stage Summary – Phase 1

Criteria	Response
Description of Key Activities	General construction of warehouse and car parks
Max. Vehicle Size	19.0m Articulate Vehicles (Semi-Trailer)
Vehicle Movement Frequency	Approximately 360 light vehicle movements / day + Approximately 50 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via WNSLR
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing.
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Lane or Footpath Closures (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Traffic Control Plan	Refer below.

4.6 Stage 4 – External Finishes

4.6.1 Key Stage Details Summary

Table 5: Stage Summary – Phase 2

Criteria	Response
Description of Key Activities	Construction of retaining and noise walls across the site. Construction of the base concrete slab
Max. Vehicle Size	19.0m Articulate Vehicles (Semi-Trailer)
Vehicle Movement Frequency	Approximately 360 light vehicle movements / day + Approximately 50 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via WNSLR
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing.
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Lane or Footpath Closures (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Traffic Control Plan	Refer below.

4.7 Stage 5 – External Boundary Works

4.7.1 Key Stage Details Summary

Table 6: Stage Summary – Phase 2

Criteria	Response
Description of Key Activities	Boundary works including kerb and gutter rectification works Construction of footpath
Max. Vehicle Size	19.0m Articulate Vehicles (Semi-Trailer)
Vehicle Movement Frequency	Approximately 150 light vehicle movements / day + Approximately 50 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via WNSLR
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing.
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Lane or Footpath Closures (if yes, provide further details)	N – all affected internal road will be in private ownership until completion of construction.
Traffic Control Plan	Refer below.

5 Drivers Code of Conduct

Safe Driving Policy for Building 1A construction activities.

5.1 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 project approved routes only

5.2 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
- The use of roads other than internal roads, and WNSLR to arrive and/depart from the site to access the wider road network.

5.3 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 routes outlined in Section 4.
- 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 the approved site access/egress routes only.
- Follow speed limits as imposed within the estate.
- Keep loads covered at all times.

5.4 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.

5.5 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.

5.6 Environmental Procedures.

A range of measures — including those detailed in the Environmental and Sedimentation Control Plan (ESCP); Appendix F of the Erosion and Sediment Control Plan — 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;

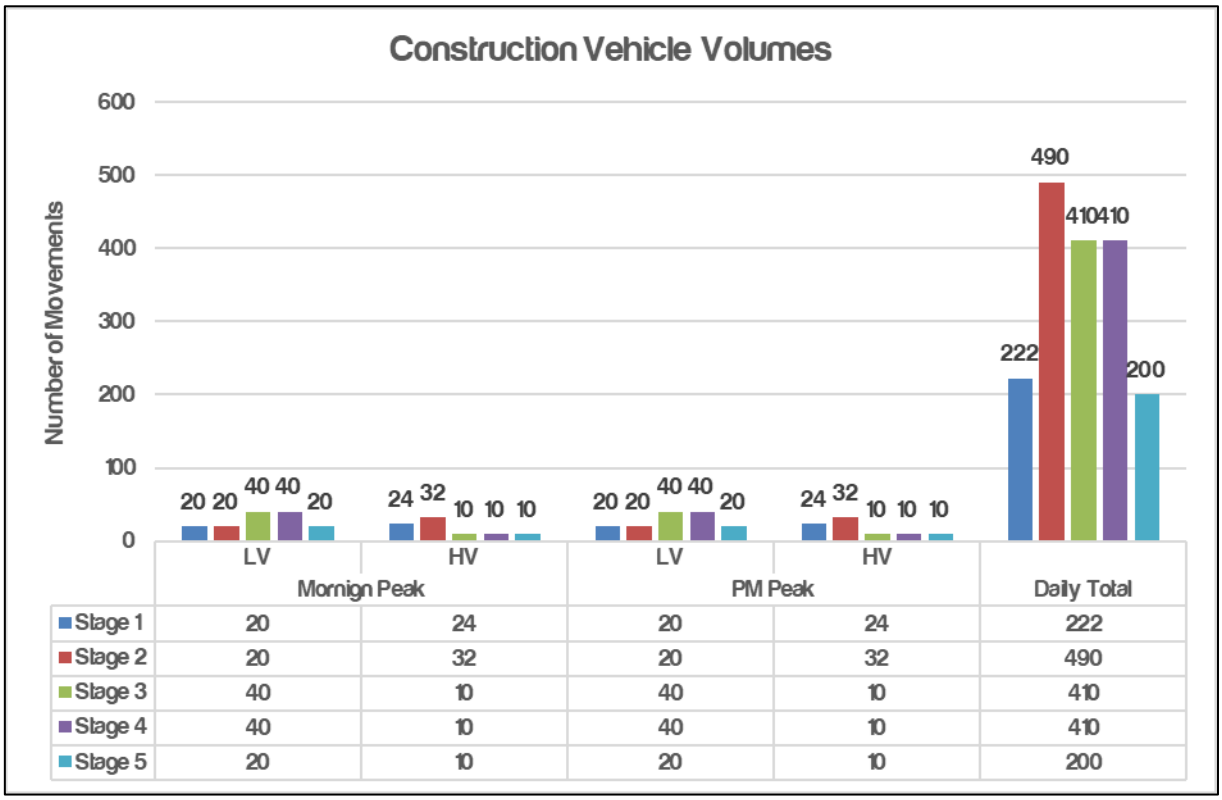
- Watering of dusty activities will be undertaken, or activities temporarily halted and then resumed once weather conditions have improved;
- Containment measures for spillages will be provided at appropriate locations and in close proximity to staff car park areas, dangerous goods stores areas and main 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.

6 Transport Impact Assessment

6.1 Construction Traffic Generation

As discussed above, the construction works are expected to generate up to 490 vehicle movements per day (during concrete pours). Vehicle movements will be spread throughout the day. Reference is made to the detailed breakdown of vehicle movements which details projected movements during morning and afternoon peak periods:

Works will typically generate peak hourly traffic before and after the 'network peak' periods, as demonstrated below. This adopts a similar Light Vehicle (LV) and Heavy Vehicle (HV) arrival profile to other construction works in the locality.



	Mornign Peak		PM Peak		Daily Total
	LV	HV	LV	HV	
Stage 1	20	24	20	24	222
Stage 2	20	32	20	32	490
Stage 3	40	10	40	10	410
Stage 4	40	10	40	10	410
Stage 5	20	10	20	10	200

Figure 6: Construction Vehicle Volumes

Following the above, it is expected that stages are to overlap and will therefore increase the demand during each Month. The below figure outlines the cumulative daily total for each month of the construction period.

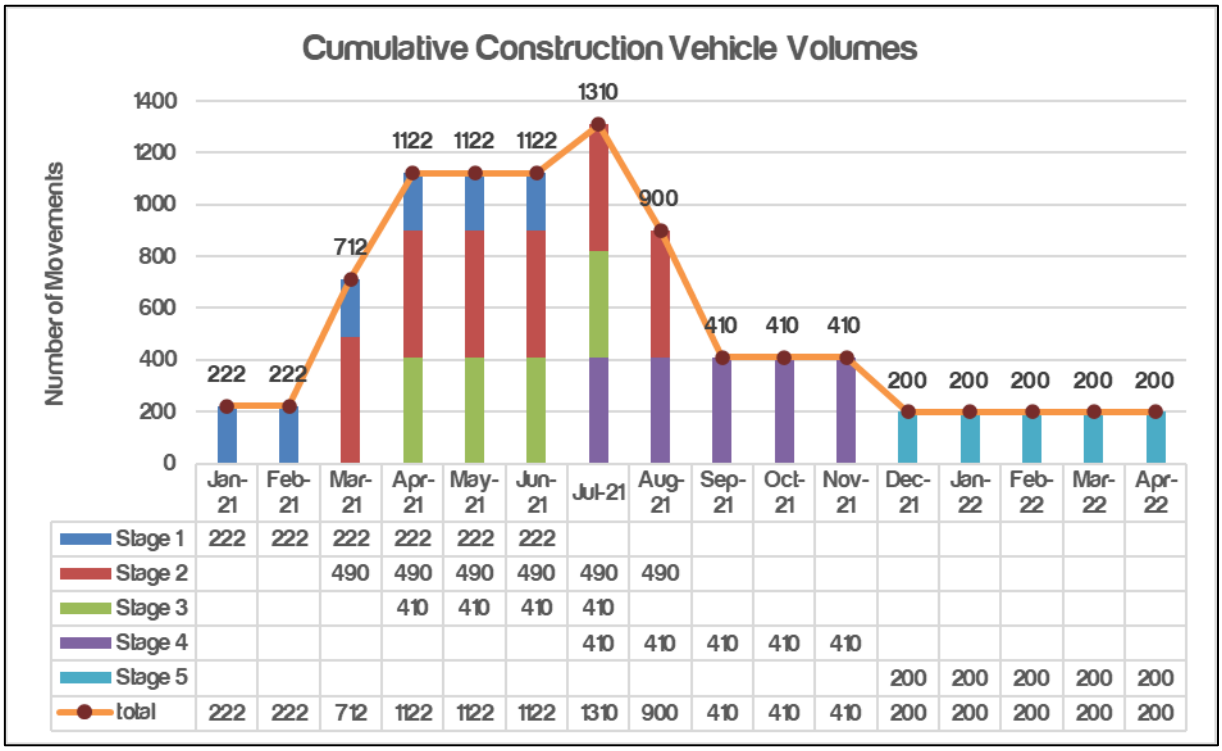


Figure 7: Cumulative Daily Construction Volumes

6.2 Impacts on Surrounding Network

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

- **Construction Traffic within WNSLR**: Highest construction traffic volumes will occur after completion of the WNSLR, providing an alternative access to OWE. Construction traffic is substantially less than the approved future operational traffic volumes and will therefore not create any unacceptable impacts on the surrounding road network.
- **Safety During Construction**: Safety to motorists and pedestrians throughout the area will be maintained during construction through the preparation and execution of Traffic Control Plans (TCP's). A range of TCP's will be prepared 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. TCP's shall be monitored and updated accordingly throughout the project.
- **Reporting**: Reporting and monitoring of movements is to be undertaken to ensure that drivers are adhering to approved construction hours, and to ensure that the approved traffic generation, and subsequent impacts on the road network, are in line with those approved.

In summary, based on the traffic numbers currently envisaged, the traffic impacts are considered acceptable.

6.3 Cumulative Impacts

The above relates to construction traffic associated with Building 1A works in isolation.

Noting that construction works for the remainder of the OWE infrastructure and Building 2B works will still be underway, each contractor shall liaise regularly in order to avoid any conflict of large deliveries and to ensure that the cumulative construction impacts are minimised and do not exceed approved operational limits.

The following graphs outline that cumulative volumes of these projects against the approved daily volumes of the OWE (once fully operational). As you can see, the cumulative volumes are significantly lower than the approved volumes, which suggests that the cumulative construction shall no create any unacceptable traffic impacts to the road network.

Further to the above, it is not estimated that any other construction works shall commence until after the completion of the WNSLR.

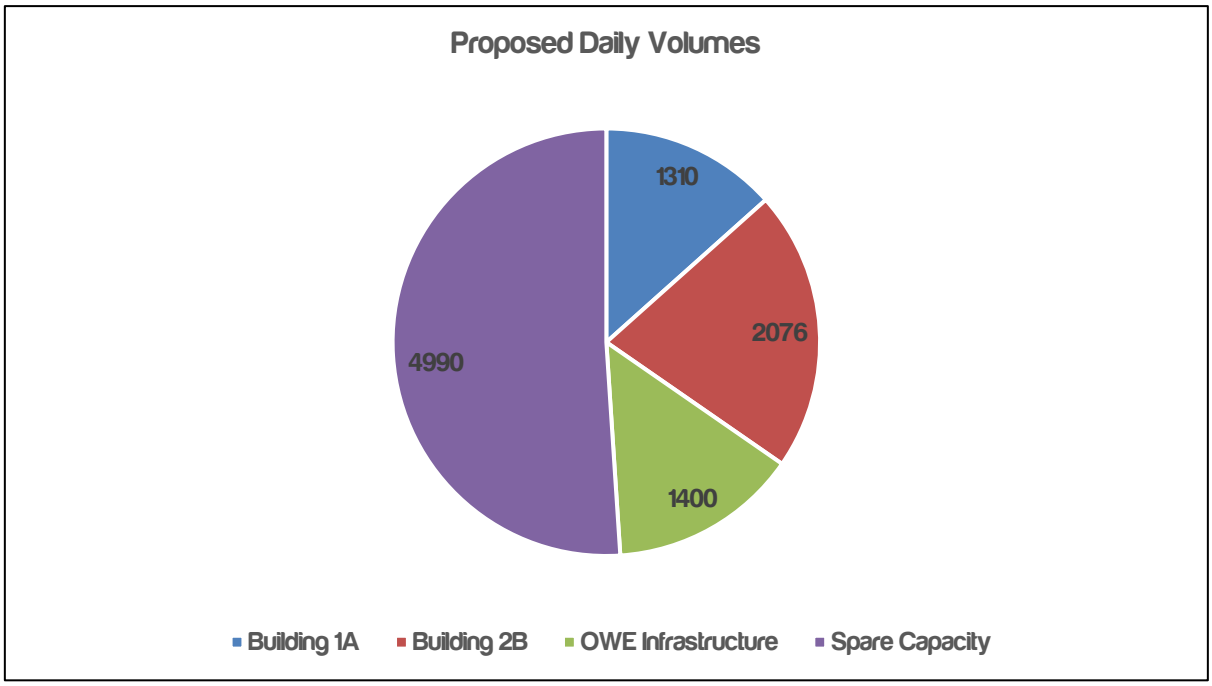


Figure 8: Cumulative Daily Construction Volumes

7 Plan Administration

7.1 Monitoring Program

This CTMP shall be subject to ongoing review and will be updated accordingly. Regular reviews will be undertaken by the on-site coordinator. As a minimum, review of the CTMP shall occur monthly. All and any reviews undertaken should be documented, however key considerations regarding the review of the CTMP shall be:

- 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.
- To identify any shortfalls and develop an updated action plan to address issues that may arise during construction (Parking and access issues)
- To ensure TCP'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 undertaken to ensure all loads are entering and leaving site covered as outlined within this CTMP.

The development of a program to monitor the effectiveness of this CTMP shall be established by the Contractor. This process is expected to form part of the monitoring plan required to be included as part of the overarching Construction Environmental Management Plan (CEMP), of which this CTMP forms a part.

7.2 Contingency Plan

A contingency plan shall be established by the Contractor and is to be included in the overarching CEMP. Notwithstanding, **Table 7** 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 7: Contingency Plan

Risk		Condition Green	Condition Amber	Condition Red
Construction Movements	Trigger	Construction traffic volume is in accordance with permissible and programmed volume and time constraints	Construction traffic volumes exceeds programmed volume but is within permissible volume constraints	Construction traffic volumes exceeds programmed volume and time constraints
	Response	No response required Continue monitoring program	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: - Temporary halting of activities and resuming when conditions have improved - Review CTMP and update where necessary - Provide additional training.	Review and investigate construction activities. Where appropriate, implement additional remediation measures such as: - 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.
	Trigger	Construction traffic does not utilise Roads other than WNSLR to access the site	Construction traffic utilises Roads other than WNSLR to access the site	Construction traffic utilises Bakers Lane to access the site
	Response	No response required Continue monitoring program	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: - Review vehicles arriving to site and remind them of the strict access conditions - Provide additional training (including toolbox talks and further notification of Driver Code of Conduct)	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. Where appropriate, implement additional remediation measures such as: - Stop all transportation into and out of the site. - Review CTMP and update where necessary - Provide additional training (including toolbox talks and further notification of Driver Code of Conduct).
Queuing	Trigger	No queuing identified	Queuing identified within site	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	Review and investigate construction activities. Where appropriate, implement additional remediation measures such as: - Temporary halting of activities and resuming

Risk		Condition Green	Condition Amber	Condition Red
				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	Noise levels in minor excess of imposed noise constraints	Noise levels greatly in excess of imposed noise constraints
	Response	No response required Continue monitoring program.	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. If noise levels cannot be kept below applicable limits, then a different construction method or equipment must be utilised.
Traffic Control Plans	Trigger	No observable issues	Minor inconsistencies with TCP to onsite operations	Near miss or incident occurring regardless of / as a result of the TCP being implemented
	Response	No response required Continue monitoring TCPs.	Traffic Controller to amend TCP 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 TCP 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 Continue monitoring program	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	Provide approved AQMP contingency plan to ensure it is consistent. Review and investigate construction activities and respective control measures. 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.

It is therefore proposed to incorporate the above items within the communications strategy. The contingency plan outlines the most effective methods to ensure that each item identified within the Monitoring Program is adhered to, resulting in the impacts to the wider community being minimised. It also represents the efforts undertaken to continually improve CTMP and ensure that the process being utilised are indeed best practice.

7.3 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 by SLR). The contractor is to notify the community liaison representative when traffic is expected to exceed the parameters set within "Condition Green" of Table 7. Notwithstanding, **Table 8** outlines an indicative communication strategy to ensure that adequate communication with key stakeholders have been met.

Table 8: Communication Strategy

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	

Appendix A

Traffic Control Plans

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

Team leader (on site):

Signature:

Date:

Ticket: Orange/Red/Yellow (Circle appropriate ticket):

Ticket No:

Reason for modification:

www.invarion.com

N

3A

RL 75.00

2A

RL 64.50

50.0 m

30.0 m

30.0 m

50.0 m

50.0 m

Access Road 03

Key:

- Pedestrian Barriers
- Construction Zone
- Site Fencing
- Pedestrian Gate

END ROADWORK

1B

RL TBC

1C

RL TBC

TC to allow accesss to Site 1B driveway at all times (if constructed)

Services / Substation Lot

NOTES

- All vehicles to have flashing orange lights
- Ensure signs are visible to vehicles
- Cover vehicle required for hard protection while TC's or workers are exposed to live traffic
- All staff to have reflective safety vests
- All signs to be Class 1 retro-reflective
- Maintain daily logs of ALL activities
- This PVMP is drawn in accordance with AS1742.3, the RTA's TCWS Manual & WHS Manual
- All staff to have reflective safety vests
- All trucks are to have prior notice of UHF channel to radio Foreman on arrival

Closure:
Lane Closure

Client:
Goodman

Project:
Job No: 0950
Address: Project Broccoli, Kemps Creek

Drawing Title:
0950-TCP-01-Project Broccoli_Kemps Creek

Date:
14/05/2020

Scale @ A3:

Drawing Number:
AG.01

asongroup

DESIGNER: JAMES LAIDLER
CERT: 0034322012

www.invarion.com

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

Team leader (on site):

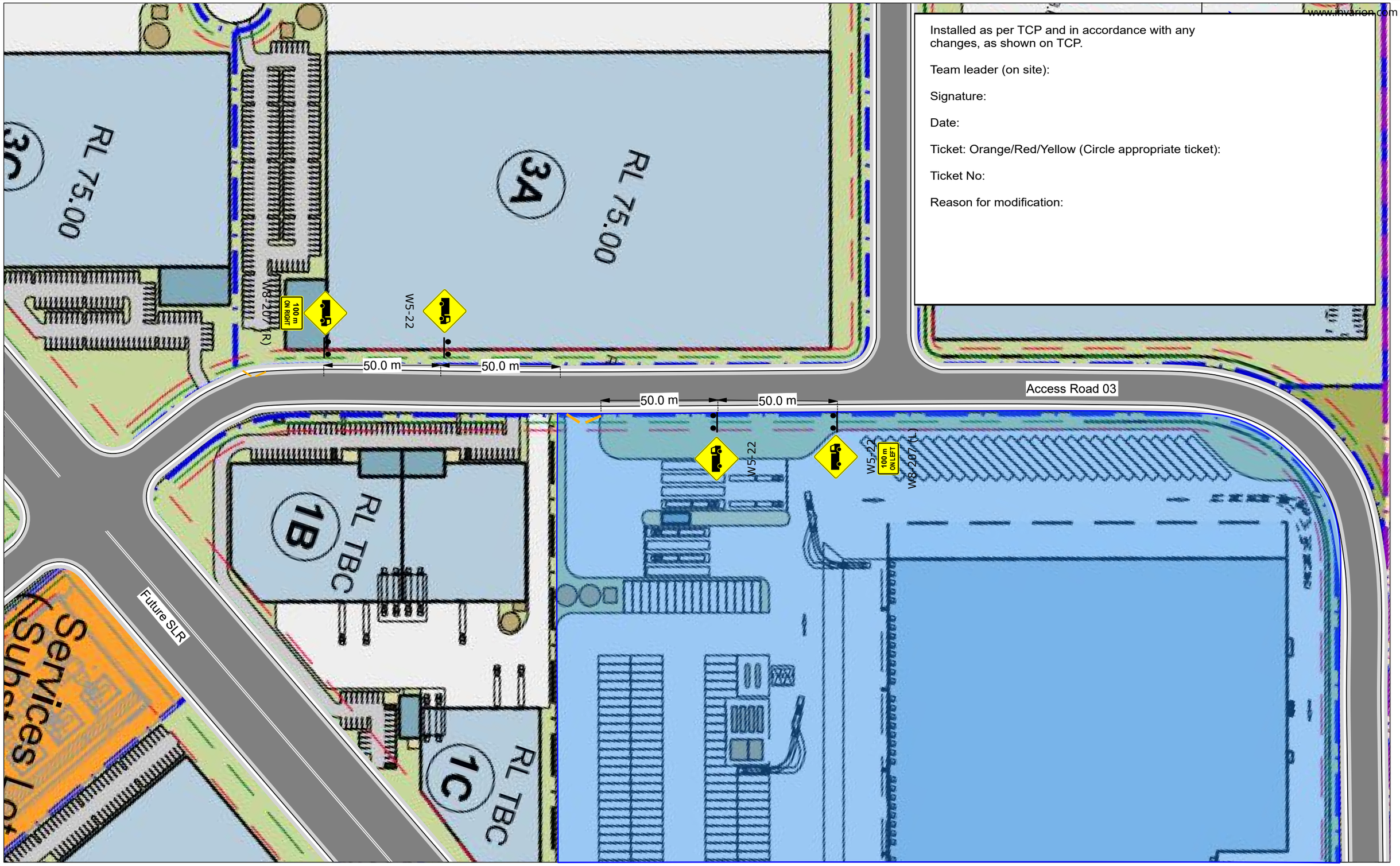
Signature:

Date:

Ticket: Orange/Red/Yellow (Circle appropriate ticket):

Ticket No:

Reason for modification:



NOTES

- All vehicles to have flashing orange lights
- Ensure signs are visible to vehicles
- Cover vehicle required for hard protection while TC's or workers are exposed to live traffic
- All staff to have reflective safety vests
- All signs to be Class 1 retro-reflective
- Maintain daily logs of ALL activities
- This PVMP is drawn in accordance with AS1742.3, the RTA's TCWS Manual & WHS Manual
- All staff to have reflective safety vests
- All trucks are to have prior notice of UHF channel to radio Foreman on arrival

Closure:
Trucks Turning

Client:
Goodman

Project:
Job No: 0950
Address: Project Broccoli, Kemps Creek

Drawing Title:
0950-TCP-02-Project Broccoli_Kemps Creek

Date:
14/05/2020

Scale @ A3:

Drawing Number:
AG.02

asongroup

DESIGNER: JAMES LAIDLER
CERT: 0034322012

www.invarion.com

New Driveway Access track

Substation Kiosk

AMENITIES LOT

Land Acquisition. ject to Just Terms Link Road

END ROADWORK

50.0 m

50.0 m

30.0 m

30.0 m

Access Road 03

END ROADWORK

Goodman Signage

30m Wide Road Reserve

END ROADWORK

WNSLR

Main Site Identification Signage

Goodman Wall

WNSLR Up To SLR Subject to Subdivi

N

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

Team leader (on site):

Signature:

Date:

Ticket: Orange/Red/Yellow (Circle appropriate ticket):

Ticket No:

Reason for modification:

NOTES
- All vehicles to have flashing orange lights
- Ensure signs are visible to vehicles
- Cover vehicle required for hard protection while TC's or workers are exposed to live traffic
- All staff to have reflective safety vests
- All signs to be Class 1 retro-reflective
- Maintain daily logs of ALL activities
- This PVMP is drawn in accordance with AS1742.3, the RTA's TCWS Manual & WHS Manual
- All staff to have reflective safety vests
- All trucks are to have prior notice of UHF channel to radio Foreman on arrival

Closure: Lane Closure

Client: Goodman

Project: Job No: 0950
Address: Project Broccoli, Kemps Creek

Drawing Title: 0950-TCP-03-Project Broccoli_Kemps Creek

Date: 14/05/2020

Scale @ A3:

Drawing Number: AG.03

asongroup

DESIGNER: JAMES LAIDLER
CERT: 0034322012

APPENDIX D

Richard Crookes Construction's Environmental Policy

ENVIRONMENTAL
POLICY

Richard Crookes Constructions Pty Limited promotes and encourages a sustainable environment throughout our business activities and sources our supplies and services in ways that prevent pollution and promote compliance with legal and other requirements.

The company implements Environmental Management System to aid us in meeting our corporate responsibilities. The System is certified by Global-Mark as meeting the requirements of AS/NZS ISO 14001:2016 Environmental Management Systems.

These form part of the company's Project Management Plans and are supported by company procedures and guidelines.

Management intends that all employees of our company, relevant subcontractors and suppliers, are made aware of their environmental responsibilities and the environmental impacts associated with their activities, products and services.

Our company objectives for continual improvement in environmental management include:

- Reducing the number of environmental notices issued on the projects by implementing a program of inductions, training and monitoring.
- Minimising the impacts to the community through the development of project specific Environmental, Traffic management plans, stakeholder consultation plans and by timely and appropriate response to complaints.
- Minimising impacts on the environment using dust, soil and water, waste and chemical management practices that are regularly inspected and maintained.
- Achieve a waste minimisation figure of 85% through monthly reporting

The Continual improvement of the project environmental management plans and progress with achieving the company's objectives will be reviewed during management meetings, project reviews and following the results of internal and external audits.

The Policy will be made available to the public and interested parties on request. This Policy will be reviewed every two years.



Jamie Crookes
Managing Director
26th February 2020

APPENDIX E

Incident Register

Incident Register

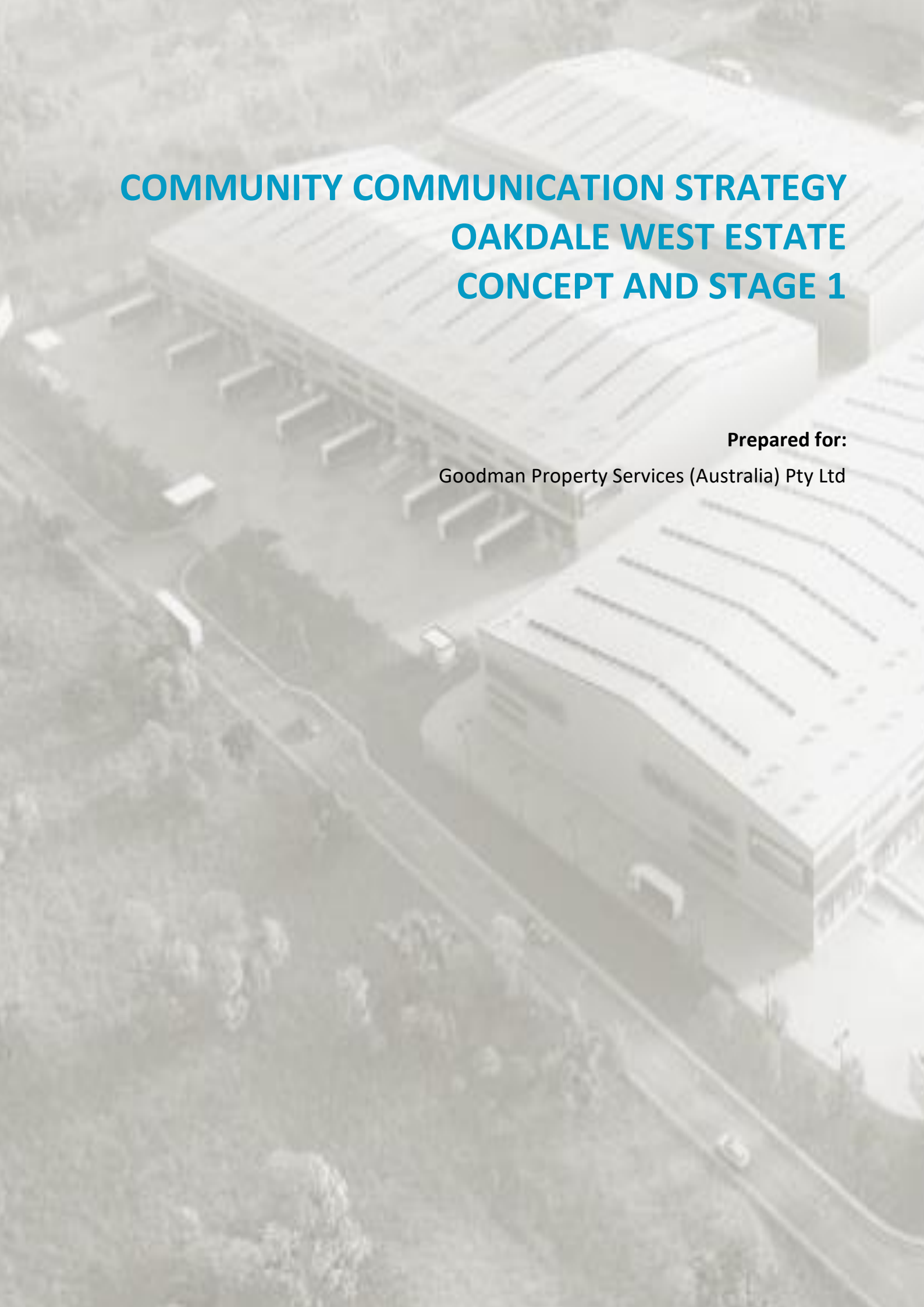
RICHARD CROOKES CONSTRUCTIONS

Project: OWE Broccoli NSW **Project No.** 1158 **Page No: 1**

No.	Date	Subcontractor	First Aid/Medical Treatment	Brief Description

APPENDIX F

Community Communication Strategy



COMMUNITY COMMUNICATION STRATEGY
OAKDALE WEST ESTATE
CONCEPT AND STAGE 1

Prepared for:

Goodman Property Services (Australia) Pty Ltd

PREPARED BY

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Australia) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.30016.00000-R01-v7.0	11 May 2020	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v6.0	11 November 2019	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v5.0	30 October 2019	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v4.0	20 September 2019	Kate McKinnon	Samantha Hayes	Dan Thompson

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1 Introduction

1.1 Background

This Community Communication Strategy (CCS) has been prepared on behalf of Goodman Property Services (Australia) Pty Ltd (Goodman) for the Oakdale West Estate (OWE) Concept and Stage 1 development (State Significant Development [SSD] application 7348). This CCS has also been updated to accommodate Modifications 1-4 to SSD7348.

This CCS has been prepared in accordance with Condition C19 and supporting conditions within the Development Consent, identifying relevant stakeholders, key issues and the communication methods. Specifically, it details how Goodman and their contractors will engage with relevant stakeholders and the community. The CCS integrates with the Construction Environmental Management Plan (CEMP) and associated suite of documents to provide a comprehensive guide and benchmark for the construction process that aligns with the Development Consent conditions.

1.2 Purpose

The OWE project has been assessed and determined under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The CCS includes the following key aspects:

- Identification of stakeholders to be consulted with during the CCS implementation including adjacent landowners and residents, key stakeholders, relevant agencies and the wider community.
- The tools and actions to be undertaken throughout the construction program to disseminate information to the identified stakeholders, providing opportunities for comment.
- Enquiry and Complaint management protocols.
- Monitoring and feedback mechanisms.

The CCS will be updated as the project progresses to account for variations in the construction program and methodology and modifications to SSD7348, along with changes in stakeholder situation that impacts on stakeholder interests, with these articulated through the feedback mechanisms.

SSD 7348 (as modified) contains the following conditions of relevance to this CCS used to benchmark the contents:

- C19 & C20 – Community Communication Strategy
- D37 – Landscaping
- D43A – Signage and Fencing
- D71 – Hours of Work
- D117 – Ongoing Community Engagement
- D118 - Management Plan Requirements
- D127 & D128 – Environmental Representative
- D133 – Document Review
- D143 – Access to Information

The details of these conditions are identified within **Table 1** below, along with a cross reference to the relevant section of this CCS.

The approved development includes the construction of the Western North-South Link Road (WNSLR). This road is to be constructed to Roads and Maritime Service (RMS) specifications, to the satisfaction of Penrith City Council (as the Nominated Road Authority). Details of these specifications as they relate to community consultation and communication are identified within **Table 2**, including cross reference to the relevant section of this CCS.

Table 1 Relevant Conditions of Consent

Condition Number	Condition Detail	Report Reference
C19 – Community Communication Strategy	No later than one month before the commencement of construction of any stage of the Development, a Community Communication Strategy (CCS) must be prepared and submitted to the Planning Secretary for approval. The CCS is to provide mechanisms to facilitate communication between the Applicant, Council and the community (including adjoining affected landowners, schools, businesses, and others directly impacted by Stage 1), during design, construction and operation. The CCS must: a) assign a central contact person to keep the nearby sensitive receivers regularly informed throughout the Development; b) detail the mechanisms for regularly consulting with the local community throughout the Development, such as holding regular meetings to inform the community of the progress of the development and report on environmental monitoring results; c) detail a procedure for consulting with nearby sensitive receivers to schedule high noise generating works, vibration intensive activities or manage traffic disruptions; d) include contact details for key community groups, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders; and e) include a complaints procedure for recording, responding to and managing complaints, including: i. email, contact telephone number and postal addresses for receiving complaints; ii. advertising the contact details for complaints before and during operation, via the local newspaper and through onsite signage; iii. a complaint register to record the date, time and nature of the complaint, details of the complainant and any actions taken to address the complaint; and iv. procedures for the resolution of any disputes that may arise during the course of the Development.	This CCS Document a) Section 4 b) Section 5 c) Sections 5 & 6 d) Section 2.2 e) Section 5.4
C20 – Community Communication Strategy	The Applicant must: a) not commence construction of the relevant stage of the Concept Proposal until the CCS required under Condition C19 has been approved by the Planning Secretary; and b) implement the CCS for each stage of the Concept Proposal and following the completion of operation of the Development.	a) Section 1.2 b) Sections 5 & 6
D37 – Landscaping	The Applicant must complete the landscape bund along the western boundary of the Site as shown on Figure 5 in Appendix 2 within six months of commencing any construction including bulk earthworks.	Section 2.2.1 Appendix A

Condition Number	Condition Detail	Report Reference
D43A – Signage and Fencing	Prior to construction of any signage for Stage 1, the Applicant must consult with Council on the final signage strategy and obtain approval of the final signage strategy from the Planning Secretary.	Section 5
D71 – Hours of Work	Works outside of the hours identified in Condition D70 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 5.3.2
D117 – Ongoing Community Engagement	The Applicant must consult with the community regularly throughout Stage 1, including consultation with the nearby sensitive receivers identified in Appendix 5, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy approved in accordance with Condition C19.	Sections 5 & 6

Condition Number	Condition Detail	Report Reference
D118 – Management Plan Requirements	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include: a) 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, Stage 1 or any management measures; b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria; c) a program to monitor and report on the: i. impacts and environmental performance of Stage 1; and ii. effectiveness of the management measures set out pursuant to paragraph (b) above; d) 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; e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time; f) 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 g) 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.	a) Refer to Project CEMPs (SLR, 2019a, SLR 2019b & SLR, 2020) b) Sections 3.2, 5.3 and 5.4 c) Section 6 d) Section 5.4.4 e) Section 6 f) Section 5.4 g) Section 6

Condition Number	Condition Detail	Report Reference
D127 - Environmental Representative	For the duration of construction of Stage 1, or as agreed with the Planning Secretary, the approved ER must: (a) receive and respond to communication from the Planning Secretary in relation to the environmental performance of Stage 1; (b) consider and inform the Planning Secretary on matters specified in the terms of this consent; (c) 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; (d) review the CEMP identified in Condition D119 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); (e) regularly monitor the implementation of the CEMP, and any other documents identified by the Planning Secretary, to ensure implementation is being carried out in accordance with the document and the terms of this consent; (f) as may be requested by the Planning Secretary, help plan, attend or undertake audits of Stage 1 commissioned by the Department including scoping audits, programming audits, briefings, and site visits; (g) as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints; (h) prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an Environmental Representative Monthly Report providing the information set out in the Environmental Representative Protocol under the heading "Environmental Representative Monthly Reports." The Environmental Representative Monthly Report must be submitted within seven calendar days following the end of each month for the duration of the ER's engagement, or as otherwise agreed with the Planning Secretary.	Section 6.2
D128 - Environmental Representative	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 D127 (including preparation of the ER monthly report), as well as: (a) the complaints register; 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 6.2

Condition Number	Condition Detail	Report Reference
D133 Revision of Strategies, Plans and Programs	Within three months of: (a) the submission of a Compliance Report under Condition D141; (b) the submission of an Environmental Representative Monthly Report under Condition D127; (c) the submission of an incident report under Condition D135; (d) the approval of any modification of the conditions of this consent; or (e) the issue of a direction of the Planning Secretary under Condition D2(b) which requires a review the strategies, plans and programs required under this consent must be reviewed.	Section 6.2
D143 – Access to Information	At least 48 hours before the commencement of construction until the completion of all works under this consent, the Applicant must: a) make the following information and documents (as they are obtained or approved) publicly available on its website: i. the documents referred to in Condition D2 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. the proposed staging plans for the Development if the construction, operation or decommissioning of the Development is to be staged; v. 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; vi. 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; vii. a summary of the current stage and progress of the Development; viii. contact details to enquire about the Development or to make a complaint; ix. a complaint register, updated monthly; x. the Compliance Report of the Development; xi. audit reports prepared as part of any monitoring or environmental audit of the Development and the Applicant's response to the recommendations in any audit report; xii. any other matter required by the Planning Secretary; and b) keep such information up to date, to the satisfaction of the Planning Secretary.	Section 5.3.1

It is a requirement of the RMS that communications and community liaison are undertaken in accordance with the RMS QA Specification G36 – Environmental Protection. All relevant requirements within the specification are included in **Table 2** below.

Table 2 Relevant RMS Specifications

Specification Number	Relevant Specification Detail	Report Reference
3.3 - Resources, Responsibilities and Authority	Communications and Community Liaison Representative Appoint a Communications and Community Liaison Representative (CCLR) to lead and manage the community involvement activities, including liaison with property owners and key stakeholders. This person is your representative for the requirements of RMS G36 Clause 3.7. The CCLR must have relevant qualifications with a minimum of 5 years' communications and community liaison experience, preferably in infrastructure development and delivery. The CCLR must be flexible and willing to work outside of normal working hours when required, such as nights and weekends. The CCLR is to be the primary daily contact to the public handling of enquiries/complaints management/interface issues. The CCLR must be available for contact by local residents and the community at all reasonable times to answer any questions and to address any concerns in relation to your construction activities. The CCLR must have up-to-date information on: emerging stakeholders; planned construction activities; planned traffic arrangements, including any temporary traffic switches; current landowner discussions with members of your staff; planned community and stakeholder consultations; complaints or enquiries received; duties and accountabilities of your staff; and, commitments to stakeholders made by you or Goodman. The CCLR is to handle document management administration and systems/contact database management and maintenance. The CCLR is to liaise with property owners to co-ordinate access and to deal with specific property related issues arising from the upgrade works. The CCLR is to lead in the development and delivery of communication and community engagement strategies and plans. The CCLR is to facilitate meetings, forums and arranging interviews to address concerns from community. The CCLR is to provide advice and participate with the project teams to improve and enhance the delivery of communication services to the community. The CCLR is to build, maintain collaborative and consultative working relationships with internal and external stakeholders. The CCLR is to possess excellent writing and digital media skills including writing and editing copy for printed and electronic material, internal and external materials such as letters, web brochures and public facing reports, and video and photography for promotional use, etc. The CCLR is to possess a current motor vehicle driver's licence. The CCLR must be available for contact by local residents, key stakeholders and community representatives to answer queries and provide more information or feedback.	Section 4

Specification Number	Relevant Specification Detail	Report Reference
3.7 - Communications	Describe in the CEMP the processes for external and internal communication in relation to the environmental aspects of the work under the Contract. Make all staff and subcontractors working on the Site aware of these external and internal communications procedures and ensure they are properly trained in their application.	Refer to Project CEMPs (SLR, 2019a, SLR 2019b & SLR, 2020) Section 5.3
3.7.1 - Liaison with EPA and/ or other Government Agencies	The CEMP must identify at least two persons (together with their contact telephone numbers) who will be available to be contacted by the EPA and/ or Other Government Agencies on a 24 hour basis and who have authority to take immediate action to shut down any activity, or to effect any pollution control measure, as directed by an authorised officer of the EPA and/ or Other Government Agencies. Immediately notify Goodman of any visit to the Site by the EPA and/ or Other Government Agencies. Prepare a report for each occasion when the Site is visited by the EPA and/ or Other Government Agencies, notifying Goodman of the purpose and outcome of the EPA and/ or Other Government Agencies visit, and of all actions taken by you in response to the EPA and/ or Other Government Agencies visit. Submit this report to Goodman within one working day of the EPA and/ or Other Government Agencies site visit.	Section 4
3.7.2 - Community Liaison and/or Notification 3.7.2.1 New or Changed Construction Activities	Notify local residents and other stakeholders about any new or changed construction activities including changes to bus stop locations and / or timetables which will affect access to their properties/ premises at least five 5 working days before commencing work affecting residents. Such notification must state the nature of the work, why it is necessary, the expected duration, details of any changes to the traffic arrangements or property access and the name and 24 hour contact telephone number of your representative who can respond to any resident/stakeholder concerns. Address any concerns raised by residents in accordance with the complaints procedure as required under Clause 3.7.3 and in accordance with any licence or approval held by you.	Section 5.3.2
3.7.2.2 - Extended Working Hours – No Environmental Protection Licence	Following approval from Goodman on each instance to extend working hours, inform affected residents by letter of the location, nature, scope and duration of the proposed work outside normal working hours, not less than 1 week and not more than 2 weeks, before commencing such work. Include the name and contact telephone number of your representative so that residents can contact him over any concerns about extended working hours and any other information required by any licence or approval held by you. Refer to Practice Note vii of RMS publication “Environmental Noise Management Manual” when preparing the letter and notifying the affected residents.	Section 5.3.2

Specification Number	Relevant Specification Detail	Report Reference
3.7.3 - Complaints and Enquiries Management	As part of your CEMP, prepare and implement a Construction Complaints and Enquiries Management procedure prior to the commencement of construction. You must follow the Construction Complaints and Enquiries Management procedure for the duration of construction. You must ensure your Construction Complaints and Enquiries Management procedure is consistent with AS 4269 "Complaints Handling". This must include: a) an advertised 24 hour contact telephone number listed with a telephone company and include a contact name; b) a postal address to which written complaints and enquiries can be sent; c) an email address to which electronic complaints and enquiries can be sent; d) a procedure to receive, record, track and respond to complaints and enquiries within a specified timeframe. When a complaint or enquiry cannot be responded to immediately, a follow-up verbal response on what action is proposed must be provided to the complainant/enquirer within two hours during night-time works and 24 hours at other times; e) a process for the provision of a written response to the complainant/enquirer within ten (10) days, if the complaint or enquiry cannot be resolved by the initial or follow-up verbal response; f) a mediation system for complaints unresolved through the above system. Within one working day of receiving a complaint about any environmental or other issue which has the capacity to damage Goodman's reputation, including any pollution incidents, arising from the Work Under the Contract, submit a written report to Goodman detailing the complaint and the action taken to remedy the problem. A final report together with your proposed measures to prevent the recurrence of such incidents must be submitted to Goodman within 5 working days. Keep a register of all complaints or enquiries, which must include the following details: (a) date and time of complaint or enquiry; (b) method by which the complaint or enquiry was made (telephone, letter, meeting, etc); (c) name, address, contact telephone number of complainant (if no such details were provided, a note to that effect); (d) nature of complaint or enquiry; (e) action taken in response including follow up contact with the complainant.; (f) any monitoring to confirm that the complaint or enquiry has been satisfactorily resolved; (g) if no action was taken, the reasons why no action was taken by you.	Section 5.4

<table>
<tr><th>Specification Number</th><th>Relevant Specification Detail</th><th>Report Reference</th></tr>
<tr><td>3.7.4 - Notification to communities and stakeholders</td><td>Notify Goodman in advance of the following construction activities:
<table>
<tr><th>Activity</th><th>Notification required</th></tr>
<tr><td>Work at night (any time between 6pm and 7am)</td><td>2 weeks where possible, a minimum of 1 week</td></tr>
<tr><td>Work on weekends (including public holidays)</td><td>2 weeks where possible, a minimum of 1 week</td></tr>
<tr><td>Major changes to configuration of road traffic</td><td>At least 4 weeks</td></tr>
<tr><td>Impacts on pedestrians and/or bicyclists</td><td>At least 4 weeks</td></tr>
<tr><td>Commencement, rescheduling or completion of key construction activities</td><td>At least 4 weeks for commencement and completion, 24 hours’ notice for rescheduling</td></tr>
<tr><td>Commencement or rescheduling of property adjustment work</td><td>At least 2 weeks (4 weeks for businesses)</td></tr>
<tr><td>Alteration to property access arrangements</td><td>At least 4 weeks</td></tr>
<tr><td>Other activities not identified above which may impact on the community stakeholders</td><td>At least 24 hours</td></tr>
<tr><td>Any form of community protest on site</td><td>Immediately</td></tr>
</table>
In your communications with the community, you must comply with the requirements of the Privacy and Personal Information Protection Act 1998 (NSW).
You must not make any undertakings on behalf of Goodman without the prior written approval of Goodman. Comply with the distribution for various notification types as follow:
<table>
<tr><th>Notification Type</th><th>Submission to Goodman</th><th>Distribution</th></tr>
<tr><td>Out of Hours Works / Night Works
(refer to clause 3.7.2.3)</td><td>Draft a notification letter at least 24 hours prior to the works being carried out</td><td>2 weeks where possible, a minimum of 1 week prior to the works being carried out</td></tr>
<tr><td>Traffic Conditions</td><td>Draft letter at least 4 weeks prior to the traffic conditions changing</td><td>At least 5 business days prior to the traffic conditions changing if deemed necessary by Goodman</td></tr>
<tr><td>Individual private properties regarding</td><td>Draft letter at least 4 weeks</td><td>At least 2 weeks prior to the works being</td></tr>
</table></td><td>Sections 5.3.2</td></tr>
</table>

Specification Number	Relevant Specification Detail			Report Reference
	property adjustments or changes to access (refer to clause 3.7.2.1)	prior to the works being carried out	carried out of access changes	
	Access for bridgeworks over the Water NSW pipelines	Final draft of notification at least 4 weeks prior to be works being carried out	At least 4 weeks prior to the works being carried out	
	Individual businesses regarding property adjustments or changes to access (refer to clause 3.7.2.1)	Draft letter at least 4 weeks prior to the works being carried out	At least 4 weeks prior to the works being carried out of access changes	

1.3 Community Communications Strategy Scope

The CCS applies to works undertaken by Goodman and their engaged contractors. The project comprises two components with separate contractors engaged for each:

- Bulk earthworks across the site, civil infrastructure and landscaping; and construction of warehousing within Precinct 1 (Stage 1).
- Construction of the WNSLR including a signalised intersection with Lenore Drive, roundabout with Lockwood Road and roundabout with the new internal Estate Road No. 1, earthworks, civil works, utility works, property adjustments and landscaping. A haul road will be constructed through Oakdale West (referred to as the Construction Access Road) as part of the WNSLR construction to provide access to the WNSLR corridor.

The CCS applies to both components of the project. Separate CEMPs have been prepared to address each component of the project with both CEMPs referencing this CCS. Both components will be serviced by the same project website and phone number to provide a simplified and consistent communications process across the project.

1.4 Project Description

SSD 7348 was approved on 13 September 2019, granting approval for the Stage 1 Development and Concept Approval for the Oakdale West Industrial Estate at Kemps Creek. The development, as approved under SSD 7348 and approved modifications are included in **Table 3** below:

Table 3 Previous Approved Development and Modifications

Application Number	Development Description
SSD 7348	A Concept Proposal including: • concept layout of 22 warehouse buildings inclusive of dock offices and ancillary offices providing 476,000 square metres of gross lettable area, built over five development stages; • concept layout of development lots, internal roads, drainage, landscaping, noise walls, basins and biodiversity offsets; and • development controls A Stage 1 Development including: • bulk earthworks across all five stages including retaining walls and noise walls; • lead in services including but not limited to drainage, power, sewer, water and telecommunications; • service infrastructure to Precinct 1, including drainage, power, sewer, water and telecommunications; • construction and operation of three warehouse buildings inclusive of dock offices and ancillary offices in Precinct 1 (1A, 1B and 1C) providing 118,000 square metres of gross lettable area; • Western North-South Link Road and associated subdivision, basins and drainage; • estate roads 1, 2 and 6 and eastern part of road 7; • landscaping of Stage 1, the western boundary, Western North-South Link Road, estate roads 1, 2 and 6 and the eastern part of road 7, detention basins and the amenity lot • subdivision of Stage 1 lots and road

Application Number	Development Description
	infrastructure including the services (substation) lot; • stormwater drainage infrastructure for Lots 2A and 2B and all basins; • temporary works to facilitate construction including but not limited to swales, haul road (construction access), landscaping and basins; and • works including construction of traffic signals at Lenore Drive/Grady Crescent/WNSLR intersection.
SSD 7348 MOD 1	Minor amendments to pad levels, stormwater changes and refinement of the infrastructure design of OWE has resulted in the need for minor amendments to the approved masterplan layout and necessitates minor modifications to SSD 7348.
SSD 7348 MOD 2	Modifications to the Oakdale West Estate approved concept plan and Stage 1 development, including master plan layout, increase in gross floor area and expansion of Building 1A (Warehouse building 1A including high-bay (39m) and low-bay (28m) components), changes to internal roads, civil design and building pad levels.
SSD 7348 MOD 3	Amendments to the Concept Proposal: •the OWE layout and staging •precinct boundaries •reconfigure estate road layout •basic design and infrastructure (including building height, basins, noise wall, pad levels and GLA) •civil strategy and servicing strategy •development standards applicable to the site including a height increase for Building 2B from 15 m to 28m and applicable noise limits for the development. Amendment to the Stage 1 Development: •construction of estate road 03, roundabout, retaining wall, noise wall, basins and infrastructure •subdivision of estate roads •extension to noise wall •change to pad levels, bulk earthworks and landscaping and construction hours.
SSD 7348 MOD 4	Inclusion of an additional lot (Lot 9 DP 1157476) in the subject site and carrying out works in the additional lot to facilitate development of the WNSLR

The site works will be undertaken by two contractors, with specific areas of responsibility. Areas of responsibility comprise the bulk earth works, civil infrastructure and services, along with the Stage 1 built form development. A second contractor is engaged for the WNSLR connection north to Lenore Drive and haul road civil works through to the south west corner of the site.

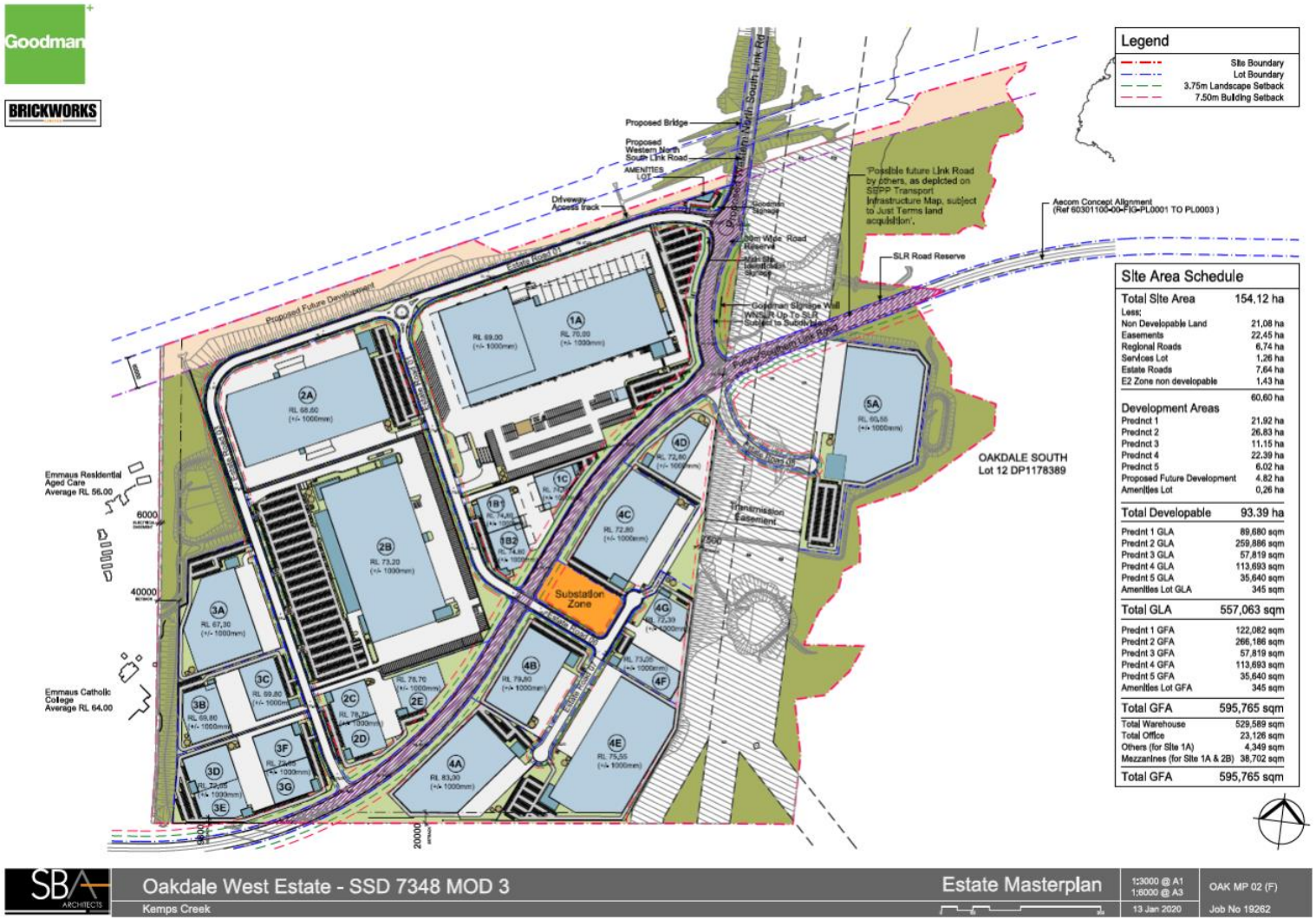
Figure 1 below identifies the site layout, inclusive of both the Stage 1 works and WNSLR.

The project involves construction activities including:

- Site establishment.
- Clearing and stripping.
- Site construction access.
- Demolition of existing buildings.

- Sediment erosion control works.
- Bulk earthworks and haulage of materials.
- Signage and fencing.
- Construction of civil infrastructure including access roads, bridge, drainage, retaining walls and utilities.
- Building construction and landscaping within Stage 1.

Figure 1 Site Layout Inclusive of the WNSLR



Source: SBA Architects

2 Stakeholder Identification

2.1 Community Overview

The site comprises historic agricultural land identified within the Western Sydney Employment Area (WSEA). The site is located across two Australian Bureau of Statistics (ABS) geographical boundaries, with Erskine Park to the north and Kemps Creek to the south. The ABS data below has been used to inform the communications methodology, with appropriate media and language used to reflect the statistical data.

2.1.1 Erskine Park

Erskine Park has a population of 6,436 accommodated in 2,016 dwellings. The median age is 34 compared to a State median of 38. The top ancestry response is Australian, followed by English, Irish, Scottish then Filipino, with languages other than English spoken at home comprising Arabic (2.6%), Tagalog (2.4%), Filipino (1.4%), then Hindi (1.2%).

17.7% of the Erskine Park population completed Year 12 compared to 15.3% for the State, with 66% of the population employed full time compared to a State average of 59.2%. Management comprised the highest percentage of employment, equating to 19.5%, with a median weekly income of $781, compared to $664 for the State.

2.1.2 Kemps Creek

Kemps Creek has a population of 2,268 accommodated in 700 dwellings. The median age is 41 compared to a State median of 38. The top ancestry response is Italian, followed by Australian, English, Lebanese then Maltese, with languages other than English spoken at home comprising Italian (10.1%), Arabic (6.4%), Cantonese (4.3%), then Assyrian Neo-Aramaic (3%).

14.2% of the Kemps Creek population completed Year 12 compared to 15.3% for the State, with 58.4% of the population employed full time compared to a State average of 59.2%. Clerical and Administrative Workers comprised the highest percentage of employment, equating to 20%, with a median weekly income of $588, compared to $664 for the State.

2.2 Key Stakeholders

The site is located in close proximity to sensitive receivers to the west comprising a Catholic Primary School and College, Anglican School and Age Care facility, along with a number of dwellings to the south. The northern and eastern boundaries comprise environmental corridors and infrastructure. Goodman and their representatives carried out extensive consultation with the community and stakeholders during the development of the EIS (Urbis, 2017). Previously identified stakeholders are categorised in **Table 4** below.

Table 4 Key Stakeholders

Stakeholder Agency/Authority	Interests/Issues
Directly affected stakeholders	Adjacent and directly affected properties, businesses and schools including: • Residential property – 20 Aldington Road • Emmaus Catholic College • Trinity Catholic Primary School • Emmaus Retirement Village • Mamre Anglican School • Catholic Healthcare Emmaus Village • Little Smarties Early Learning Centre
Local Councils	• Penrith City Council
State Government Departments and Offices	• NSW EPA • NSW Heritage Office • NSW Biodiversity and Conservation Division, Department of Planning Industry and Environment • NSW Department of Industry • Roads and Maritime Service • Transport for NSW • NSW Rural Fire Service • WaterNSW • National Resources Asset Regulator
Utility and Service Providers	• TransGrid • Endeavour Energy • WaterNSW • Sydney Water • Jemena • NBN • Telstra
Other Interested Parties	• Registered Aboriginal Parties

Contact details for the key stakeholders listed in **Table 4** above are included in **Appendix B & C**.

2.2.1 Properties receiving adjustments or architectural treatment and mitigating works

Temporary acoustic fencing treatments to assist in acoustic attenuation has been provided to dwellings located on Aldington Road and along the internal road boundaries within the Emmaus Village.

Double glazing has been installed previously within a dwelling located at 20 Aldington Road, Kemps Creek.

3 Key Issues Affecting Stakeholders

3.1 Previous Consultation

Goodman and their representatives have previously undertaken consultation with the community and stakeholders during the development of the project. Details of this consultation were included in the EIS (Urbis, 2017).

A total of 15 submissions were received, including one submission from a Local Council, three submissions from utilities providers, nine submissions from government authorities and two submissions from nearby properties and businesses. In response to the issues raised, Goodman revised several plans and consultant reports, which informed a Response to Submissions Report (Urbis, 2018a).

A further 10 submissions following these revisions were received and further modification to proposed plans and consultant reports were made, with a Supplementary Response to Submissions Report (Supplementary RTS) (Urbis, 2018b) prepared to the satisfaction of the determining authority.

For more information, refer to the Department of Planning and Environment's Major Project Assessments webpage at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7348v

3.2 Potential Issues and Strategies

Goodman are committed to ongoing proactive consultation with the community and stakeholders while understanding the importance of addressing potential issues and minimising construction related impacts. **Table 5** outlines project issues that are likely or known to be of interest or concern to the community and stakeholders. The table also details communications related measures and strategies that Goodman will undertake to manage and mitigate impacts. The CEMP identifies management and mitigation measures to address those matters extending beyond consultation.

Table 5 Issue Identification and Mitigation

Potential Issue	Potential Key Impacts	Mitigation Strategy
Noise, Vibration and Dust	Truck, machinery and light vehicle movements within, to and from the site, along with civil works have potential to result in negative impacts associated with noise, vibration and dust.	Sensitive receivers and affected stakeholders will be consulted prior to actions likely to generate high levels of noise or vibration in accordance with Section 5.4.2 of this strategy. Up to date information on current and proposed works will be accessible to stakeholders and the wider public on the project web page. Additionally, should any works be likely to generate impacts beyond those identified within the approval's documentation consultation would be undertaken with the applicable managing agency. The CEMP, along with the supporting Dust, Noise and Vibration management plans contain specific measures to manage these impacts. These management plans have been informed by commitments contained within the SSD approvals package, EPA standards and guidelines.
Stormwater, Sediment Control, Erosion, Water Quality	High rainfall events could result in localised flooding. Construction could result in impacts to local water quality, associated with sediment laden runoff.	Surrounding sensitive receivers will be consulted with in relation to adjacent works regarding flooding and water quality issues, with these items discussed at regular meetings, or as they arise via the construction hotline, in accordance with Section 5.4.2 of this Strategy. The CEMP, along with the supporting Soil and Water Management Plan and Water Quality Monitoring Program identify specific mechanisms to manage and mitigate these impacts in accordance with the relevant Penrith City Council standards and commitments within the SSD approvals package.
Construction Traffic	A temporary increase in traffic movements may be experienced associated with the import of fill material, the movement of construction machinery to and from the site and the movement of workers light vehicles.	Sensitive receivers will be notified prior to actions likely to cause traffic disruption in accordance with Section 5.4.2 of this strategy. The CEMP and supporting Construction Traffic Management Plan and Fill Importation Plan identify specific mechanisms to manage and mitigate these impacts.

Potential Issue	Potential Key Impacts	Mitigation Strategy
Local Infrastructure, Utilities and Services	Temporary interruption to existing services including surrounding roads may be required to allow for road connections and the extension of services to the site.	Affected receivers would be notified of possible service disruption via letter box drop and regular meetings, with these disruptions minimised where possible through implementation of the designs identified within the SSD approvals package, measures identified within the CEMP and subsequent engagement with utility providers.
Visual Amenity and Privacy	Visual impacts of earthwork and construction activities, along with potential impacts on the privacy of adjacent sensitive receivers.	Potentially affected receivers would be advised of works with the potential for impact via letter box drop and with these items discussed at regular meetings, or as they arise via the construction hotline, in accordance with Section 5.4.2 of this Strategy. The CEMP identifies specific mechanisms to manage and mitigate these impacts.
Removal of Flora and Fauna	The project approval requires the removal of native and exotic flora and fauna to facilitate the development, with the associated potential for impacts on safety of immediately adjacent receivers, along with biodiversity and visual amenity.	Potentially affected receivers are likely to comprise those receivers immediately adjacent, who are to be advised of works with the potential for impact via letter box drop and regular meetings, or as they arise via the construction hotline, in accordance with Section 5.4.2 of this Strategy. The CEMP, along with the supporting Flora and Fauna Management Plan identify specific mechanisms to manage and mitigate these impacts.
Out of Hours Work	The identified impacts could be magnified due to the works being carried out while surrounding receivers are more likely to be home in the early morning/evening, or asleep, with correspondingly lower background noise levels.	Out of hours works to only be undertaken where necessary and subject to endorsement from the applicable managing agency. Should out of hours work with the potential for impact be proposed the potentially affected receivers would be advised via letter box drop and/ or regular meetings in accordance with Section 5.4.2 of this Strategy.
Aboriginal Heritage	There is the potential for encountering items of Aboriginal Heritage during excavation.	Monitoring of works by appropriately qualified personnel, along with the implementation of an unexpected finds protocol in consultation with Aboriginal Stakeholders and Heritage Division of the Department of Planning, Industry and Environment would be put in place, as discussed within Section 5.4.2 of this document. The CEMP, along with the supporting Unexpected Finds Protocol (Heritage) identify specific mechanisms to manage and mitigate these impacts. .

Potential Issue	Potential Key Impacts	Mitigation Strategy
Misinformation and Misunderstanding	Lack of project awareness within the wider community may result in complaints being raised by those unaware of the extent of the approval, with these complaints not directed through the appropriate project hotline. Unauthorised release of project information by the project team to the media, stakeholders or the community has potential to impact on project perception in the community.	The CCS includes measures at Section 5.4.2 to provide regular updates in plain language, supported by imagery to stakeholders and the wider community through public and private media. Contact details including the hotline details will be provided on site, the project web page and in all information issued.
Emergency Event	Unforeseen emergency with the potential to impact on the community either directly, or indirectly through out of hours activities that may generate additional traffic or noise.	The CCS includes measures at Section 5.4.2 to provide updates in emergency events, with the CEMP and Emergency Management Plan identifying specific mechanisms to manage and mitigate these impacts.

4 Communications and Community Liaison Representative

Goodman have appointed a Communications and Community Liaison Representative (CCLR) who will provide the community and stakeholders with a single point of contact for both components of the project, responsible for receiving and disseminating information requests and complaints, along with addressing any interface issues. The CCLR will also facilitate property access should it be required.

The CCLR will be available for contact by local residents and the community at all reasonable times to answer any questions and address any concerns relating to the project. The CCLR will have up-to-date information on:

- Emerging stakeholders
- Planned construction activities
- Planned traffic arrangements, including any temporary traffic switches
- Current landowner discussions with members of staff
- Planned community and stakeholder consultation
- Complaints or enquiries received
- Duties and accountabilities of staff
- Commitments to stakeholders made by Goodman.

The CCLR will be supported by a community consultation team with the following responsibilities:

- Development and delivery of communications strategies, including meeting/workshop facilitation.
- Maintenance of the community and stakeholder consultation register.
- Property owner liaison to address property specific issues.
- Preparation of material and facilitating group and public meetings, workshops and forums for the works.
- Liaison with the construction team to identify items of potential community interest within the upcoming construction program.
- Identifying opportunities for improvement, monitoring community feedback and reporting back to the community via updates to the project web page and at regular community meetings.

The CCLR details are:

- Dan Thompson – Principal Planner – SLR

  dthompson@slrconsulting.com 1300 002 887
- Kate McKinnon – Associate – SLR

  kmckinnon@slrconsulting.com 1300 002 887

5 Community and Stakeholder Engagement

5.1 Objectives

The key objectives of the strategy are to meet the requirements of condition C19 of SSD7348 and:

- Keep the local community and key stakeholders informed of the commencement and progress of works relating to the OWE project.
- Ensure that enquires and complaints received from the community or key stakeholders are addressed and responded to in a timely and effective manner.
- Inform nearby sensitive receivers in advance of potential disturbances and events likely to cause impact.
- Be good neighbours and members of the local community throughout the duration of the project's lifespan.
- Providing an open two communications channel to allow ongoing, iterative engagement.
- Seek opportunities for improvement throughout the project.

5.2 Approach

Goodman are committed to delivering Community and Stakeholder Engagement outcomes utilising the following principles at the core of their approach:

- **Clarity –** Communication and engagement will be delivered in a clear and easy to understand manner to ensure the project and all associated works are fully understood by the community and stakeholders.
- **Proactivity –** Consultation and notice shall be given prior to the commencement of works or the undertaking of potentially impactful activities.
- **Transparency –** Communication and engagement will be undertaken in an open and transparent fashion, with information shared between the community and the project team.
- **Accessibility –** Information relating to the project will be accessible via a broad range of mediums and will be made readily available to the community and stakeholders. Several avenues of contact shall be provided for the purposes of enquiry or complaint.

In their communications and consultation with the community and key stakeholders, Goodman and their representatives will comply at all times with the requirements of the *Privacy and Personal Information Protection Act 1998 (NSW)* and the *Privacy Act 1988 (Cth)*.

5.3 Communication, Management and Mitigation Tools

A range of tools and techniques will be used to inform and engage with the community and stakeholders regarding the project. **Table 6** below provides an overview of the mechanisms to be utilised to regularly inform and consult with the local community and key stakeholders and measures to mitigate potential issues throughout the development.

Table 6 Communication Management and Mitigation Tools

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Community Consultation Meetings	Informal meetings, providing a project update and opportunity for the community and stakeholders to discuss recent experiences and upcoming construction activities.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Meetings would initially be held monthly, with the frequency then subject to the level of interest and the construction program.	Project updated including a review of any complaints received and remedial actions, followed by informal discussion with stakeholders and the community.
Community Workshops/Forums	An initial community workshop/forum to be held to identify the overarching construction program and communications protocols, with the event advertised via local newspaper and letter box drop.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Prior to commencement of construction.	The first portion of the workshop is formal, identifying the project program, key personnel and the communications protocol. The second portion is informal with time for stakeholders and the community to ask questions and discuss any concerns.

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Consultation Register	Recording community and stakeholder interactions, along with associated remedial actions as required.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Project duration.	The consultation register satisfies the requirements of Condition C19 of SSD7348, and Specification 3.7.3 of the RMS G36 Specifications requiring a Complaints Register. The register will be continually updated to record community engagement, including information provided by Goodman, feedback received, and remedial action undertaken where required.
Environmental Review Group Meeting	Meeting of key environmental stakeholders	Environmental Representative	All environmental stakeholders	As required for the project duration	The Environmental Review Group will be briefed on upcoming project tasks with key environmental implications, along with complaints and enquiries received
Individual Community Meetings	Meetings with stakeholders as required to discuss a specific item.	CCLR and Community Consultation Team	The wider community and key stakeholders.	As required.	Details and format subject to the meetings context, with a record of the discussion included in the consultation register and actioned as required.
Agency Meetings	Meetings with agencies to discuss matters relevant to their agency	CCLR and/or Goodman Representative	Relevant Agency	As required.	Meetings will be held as required to address matters relevant to specific agencies including the satisfaction of conditions of consent. These shall be undertaken either directly by Goodman or facilitated by the CCLR at Goodman's discretion.

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Newspaper Advertisement	Newspaper Advertisement(s) to be published in The Western Weekender and Mt Druitt – St Marys Standard identifying the project hotline number and web page address.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Prior to the commencement of the initial construction activities on the site and throughout the project prior to known key intrusive events.	An advertisement will be published advising of the commencement date of construction, a brief overview of the project and key contact details for enquires and complaints including the hotline, webpage and email address. Further advertisements will be published where intrusive events are scheduled advising of the nature and date(s) and time(s) of the event and key contact details for enquiries and complaints.
Notification Letterbox Drop	Letters would be provided to specific receivers identified as being potentially affected by construction. This could be undertaken in tandem with door knocking.	CCLR and Community Consultation Team	Residents of the immediate area.	As required for the project duration.	Letter box drop details to be recorded in the consultation register. Timing of construction activity to be identified along with relevant contact details.
On Site Signage	Project information details.	CCLR and Community Consultation Team	Visitors to the site and residents of the immediate area.	Project duration.	Contain key project contact details including the hotline and web page, along with relevant project and safety information.
Online Feedback Forms	Simple form allowing rapid ad hoc feedback.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Project duration.	Form available on the Oakdale project web page, with feedback provided to be incorporated into the consultation register and actioned as required.

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Project Information and Complaints Number	Project hotline available for 24 hours recording of project feedback.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Project duration.	Hotline number located on site signage, the web page and all project information material. Feedback provided to be incorporated into the consultation register and actioned as required.
Staff and Visitor Induction and Training	Project information details.	Site Forman and Management Staff	Staff and visitors to the site.	Project duration.	Key project safety information, contact details, emergency procedures and site information.
Toolbox and Prestart Meetings for WNSLR and Stage 1 Infrastructure Works	Project information details.	Site Forman and Management Staff	Staff and visitors to the site.	Project duration.	Task specific safety information, emergency procedures and relevant project updates. All staff and subcontractors to be made aware of external and internal communications procedures
Text Message and Email Alerts	Text messages providing prompt updates	CCLR and Community Consultation Team	Residents of the immediate area.	As required for the project duration.	Text Messages and email alerts will provide important information at short notice to potentially affected receivers. Text message and email details to be recorded in the consultation register.

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Website	A web page is established at: oakdaleopportunities.com	CCLR and Community Consultation Team	The wider community and key stakeholders.	Project duration.	Website address and phone number located on site signage and all project information material. Web page to provide contact details including hotline, email address and enquiry form, as well as project updates, along with environmental performance monitoring. Refer to Section 5.3.1 below for further details.

5.3.1 Project Website

Goodman has established a website for the project (oakdaleopportunities.com). The website was established prior to the commencement of works and will be maintained during the delivery of the project until the completion of all works.

The following information will be updated monthly or more frequently when necessary and made available on the website as required by SSD 7348 Condition D143:

- A copy of the documents listed in Condition D2 of the SSD Consent (SSD 7348).
- All current statutory approvals for the Development.
- All approved strategies, plans and programs required under conditions of the SSD Consent (SSD 7348).
- The proposed staging plans for the Development if the construction, operation or decommissioning of the Development is to be staged.
- A comprehensive summary of the monitoring results of the Development, reported in accordance with the specifications in any conditions of the SSD Consent (SSD 7348), or any approved plans and programs.
- A summary of the current stage and progress of the Development.
- Contact details (including email address, phone number and postal address) to enquire about the Development or to make a complaint.
- A complaints register, updated monthly and details of the complaints handling protocol for the project.
- The Compliance Report of the Development.
- Audit reports prepared as part of any monitoring or environmental audit of the Development and the Applicant's response to the recommendations in any audit report.
- Any other matter required by the Planning Secretary.

5.3.2 WNSLR Works Liaison and Notification Requirements

Where works relate to the construction of the WNSLR, the RMS QA Specification G36 – Environmental Protection sets out a number of specifications and measures addressing notification to the community and affected stakeholders. In order to comply with these requirements, Goodman shall undertake the following activities:

- Goodman shall notify local residents and other stakeholders about any new or changed construction activities including changes to bus stop locations and / or timetables, which will affect access to their properties/ premises at least five 5 working days before commencing work affecting residents.
- Such notification will state the nature of the work, why it is necessary, the expected duration, details of any changes to the traffic arrangements or property access and the name and 24-hour contact telephone number of the CCLR who can respond to any resident/stakeholder concerns.
- Any complaints shall be addressed in accordance with the complaint's procedure outlined in Section 5.4 of this strategy.
- Where extended working hours are proposed, the contractor shall inform Goodman who will subsequently inform residents of the proposed work outside normal working hours in accordance with the requirements outlined in this strategy. Written approval from the Planning Secretary will be sought for out of hours work.

- Within one working day of receiving a complaint about any environmental or other issue which has the capacity to damage Goodman's reputation, including any pollution incidents, arising from the Work Under the Contract, a written report to Goodman shall be submitted detailing the complaint and the action taken to remedy the problem. A final report together with proposed measures to prevent the recurrence of such incidents shall be submitted to the Goodman within 5 working days.

The contractor shall adhere to set timeframes for notification of Goodman and distribution of notice to the community and stakeholders for activities related to the WNSLR. This commitment is outlined in **Tables 6** and **7** below:

Table 7 Notification Requirements for Goodman prior to Construction Activities

Activity	Notification required
Work at night (any time between 6pm and 7am)	2 weeks where possible, a minimum of 1 week
Work on weekends (including public holidays)	2 weeks where possible, a minimum of 1 week
Major changes to configuration of road traffic	At least 4 weeks
Impacts on pedestrians and/or bicyclists	At least 4 weeks
Commencement, rescheduling or completion of key construction activities	At least 4 weeks for commencement and completion, 24 hours' notice for rescheduling
Commencement or rescheduling of property adjustment work	At least 2 weeks (four weeks for businesses)
Alteration to property access arrangements	At least 4 weeks
Other activities not identified above which may impact on the community stakeholders	At least 24 hours
Any form of community protest on site	Immediately

Table 8 Notification Requirements for works

Notification Type	Submission to Goodman	Distribution to Community and Stakeholders
Out of Hours Works / Night Works	Draft a notification letter at least 24 hours prior to the works being carried out	2 weeks where possible, a minimum of 1 week prior to the works being carried out
Traffic Conditions	Draft letter at least 4 weeks prior to the traffic conditions changing	At least 5 business days prior to the traffic conditions changing if deemed necessary by Goodman
Individual private properties regarding property adjustments or changes to access	Draft letter at least 4 weeks prior to the works being carried out	At least 2 weeks prior to the works being carried out of access changes
Access for bridgeworks over the Water NSW pipelines	Final draft of notification at least 4 weeks prior to be works being carried out	At least 4 weeks prior to the works being carried out
Individual businesses regarding property adjustments or changes to access	Draft letter at least 4 weeks prior to the works being carried out	At least 4 weeks prior to the works being carried out of access changes

5.3.3 Communication with Sensitive Receivers' Procedure

During the course of works the CCLR will consult with nearby sensitive receivers listed below when necessary to advise of and/or schedule events and activities with the potential to cause impact such as high noise generating works, vibration intensive activities or traffic management disruptions.

The CCLR shall also consult with sensitive receivers to arrange respite period offerings where high-noise works are predicted to exceed 75dBA for residential receivers and 65dBA for schools and the retirement village. Respite offers will also be considered for high vibration works where the works are undertaken within the human comfort minimum working distances for all sensitive receivers.

Sensitive receivers are considered to include adjacent and directly affected properties, businesses and schools including:

- Residential properties located along Aldington Road (As shown in **Appendix A)**.
- Emmaus Catholic College, Trinity Primary School and Emmaus Retirement Village.

Where development works have the potential to impact on sensitive receivers or respite offerings are proposed the CCLR will implement the sensitive receiver procedure outlined in **Table 9** below:

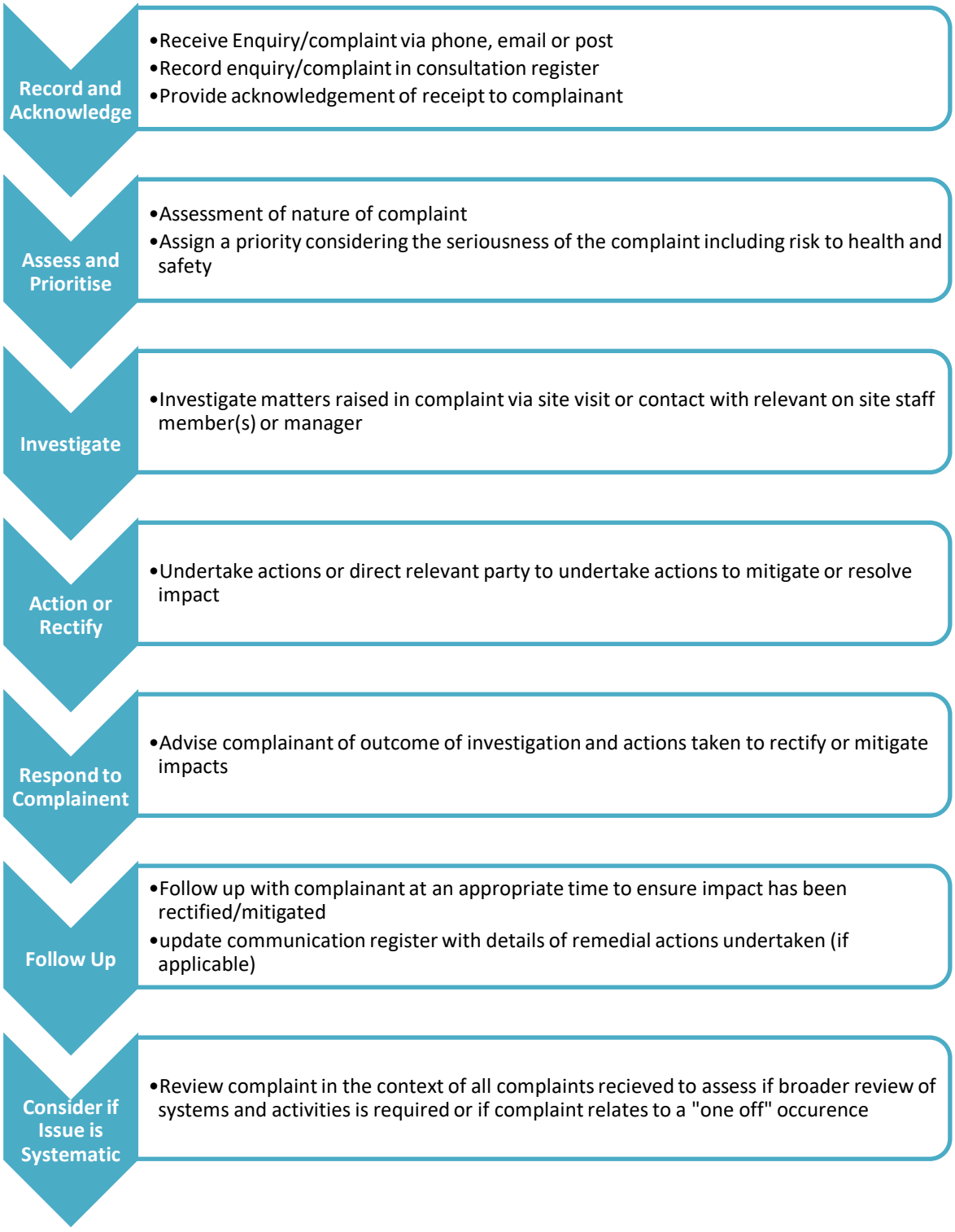
Table 9 Sensitive Receiver Procedure

Potential Impact or Issue	Method of Contact/Consultation	Timeframe
High noise generating work	Email, Text Message or Letterbox drop – notifying of expected commencement, duration and affected hours	No less than 24 hours prior to the activity
Vibration intensive activity	Email, Text Message or Letterbox drop – notifying of expected commencement, duration and affected hours	No less than 24 hours prior to the activity
Traffic management disruption	Email, Text Message or Letterbox drop – notifying of expected commencement, duration and affected hours Variable Message Signs	No less than 24 hours prior to the activity
Respite offerings	Email or phone calls will be undertaken to determine whether respite is required and appropriate scheduling and duration for respite periods	No less than 24 hours prior to the activity

5.4 Complaints Procedure

Goodman are committed to the timely and effective management of enquiries and complaints relating to construction activities for the OWE. To this end, the following complaints procedure shown in **Figure 2** will be adhered to, enabling the receipt and recording of enquiries and complaints, along with the methods of response and resolution of issues raised.

Figure 2 Complaints Handling Procedure



5.4.1 Protocol for Receiving and Recording Enquiries and Complaints

Goodman have established a project email and postal address for the receipt of enquiries and complaints relating to the development. The email and postal accounts will be regularly monitored to receive and respond to customer feedback and enquiries. The community information line (1300002887) is to be established from the commencement of works. The CCLR and community consultation team will manage the information line from the commencement of the project until the completion of works. Where calls are received during hours of construction work (including out of hours works) all calls will be answered by the CCLR. Where calls are received outside of hours of construction works the caller will be invited to leave a message. All approaches from the community and stakeholders will be registered in the project's consultation register. The facilities established for receiving enquiries and complaints about the project during construction are shown in **Table 10**.

Table 10 Enquires and Complaints Facilities

Facility	Purpose	Detail
Community Information Line	A contact phone number and associated contact name for questions/enquiries and the lodgement of complaints relating to the development.	1300 002 887
Email Address	An email address accessible via email and online enquiry form for questions/enquiries and the lodgement of complaints relating to the development.	community.oakdalewest@goodman.com
Postal Address	A postal address for the receipt of questions/enquiries and the lodgement of complaints relating to the development.	Level 17, 60 Castlereagh Street, Sydney, NSW 2000
In person verbal	Verbal enquiries and complaints can be made formally during community meetings or may be made informally where staff interact with members of the public in informal settings.	Verbal in person comments and submissions

Goodman have established a consultation register to record all complaints and enquiries received by the above means. The consultation register will be maintained on a regular basis and used to inform discussion at monthly community consultation and project team meetings. The consultation register shall include the following details for all complaints or enquiries received:

- Date and time of complaint or enquiry.
- Method by which the complaint or enquiry was made.
- Name, address, contact telephone number of complainant (if no such details were provided, a note to that effect).
- Nature of complaint or enquiry.
- Action taken in response including follow up contact with the complainant.
- Any monitoring to confirm that the complaint or enquiry has been satisfactorily resolved.
- If no action was taken, the reasons why no action was taken by you.

An excerpt of the consultation register is included at **Appendix B**.

5.4.2 Protocol for Responding to and Resolving Enquiries and Complaints

Where a complaint or enquiry is received the CCLR will attempt to provide an immediate response if possible via phone or email. Where a complaint or enquiry cannot be responded to immediately the CCLR will assess and prioritise the submission and provide the complainant or enquirer with a follow up verbal response on what action is proposed within two hours during construction works (including night and weekend works)and 24 hours at other times. Where a complaint or enquiry cannot be resolved by the initial or follow-up verbal response, a written response will be provided to the complainant or enquirer within ten days.

In the event of a complaint, the CCLR will assess whether the complaint is founded or unfounded and if necessary delegate the remediation of the issue to the project manager for action or to the relevant project engineer. The CCLR will oversee the rectification of the issue and respond to the complainant once the issue has been resolved.

In the event of an enquiry, the CCLR will endeavour to provide an immediate response where they are in possession of the relevant information. Where more specific or detailed information is required, the CCLR will liaise with the project manager or relevant project engineer to obtain the information required to respond to the enquiry and provide this information to the enquiring party once in hand.

Where the above protocol is unsuccessful in resolving complaints, mediation may be undertaken at the discretion of Goodman to facilitate negotiation between affected parties. This shall be performed by an independent person (mediator) appointed by Goodman.

5.4.3 Unreasonable Complainant Conduct

The NSW Ombudsman provides guidelines which define unreasonable complaint conduct as:

"…any behaviour by a current or former complainant which, because of its nature or frequency, raises substantial health, safety, resource or equity issues for the parties to a complaint."

Whilst it is not envisioned that the project will attract complainants that exhibit this behaviour, where a complainant is seen to potentially have a negative impact on the CCLR or support team's health, safety, resourcing or equity of service, Goodman shall adhere to the procedures and practices outlined within the NSW Ombudsman's "*Managing Unreasonable Complainant Conduct Practice Manual 2nd Edition"*.

5.4.4 Contingency Management Plan

In accordance with Condition D118(d) of the SSD 7348 consent, a contingency management plan has been developed to outline the management of unpredicted impacts and their consequences. Details of these events, their severity and response are detailed in **Table 11** below:

Table 11 Contingency Management Plan

Key Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Submission	Trigger	General feedback/comment (no complaint or query).	Enquiry made by formal or informal channels.	Complaint made by formal or informal channels.
	Response	Acknowledge receipt and record in consultation register. No further response required.	Acknowledge receipt and record in consultation register. Direct enquiry to relevant person for actioning and response within 5 days.	Acknowledge receipt and record in consultation register. Respond to complaint immediately if possible, if not direct enquiry to relevant person for actioning and provide complainant with a follow up verbal response on what action is proposed within two hours during construction works (including night and weekend works) and 24 hours at other times.
Media	Trigger	Positive story in print, online, radio or television.	Neutral or advisory story in print, online, radio or television.	Negative story in print, online, radio or television.
	Response	Record in consultation register and advise Goodman media/marketing team. No further response required.	Record in consultation register and advise Goodman media/marketing team. No further response required.	Record in consultation register and advise Goodman Project Team for further action and response. Contact relevant person for actioning and response within 48 hours
Unscheduled Event	Trigger	Event occurring outside of plan or schedule without impact or potential impact.	Event occurring outside of plan or schedule with minor impact or potential impact.	Event occurring outside of plan or schedule with major impact or potential impact.

Key Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
	Response	No response required. Identify opportunities for improvement to manage potential future events.	Contact relevant person for actioning and response within 48 hours. Acknowledge in consultation register. Identify opportunities for improvement to manage potential future events.	Contact relevant person for actioning and response immediately. Acknowledge in consultation register. Identify opportunities for improvement to manage potential future events.
Political Interest	Trigger	General or non-specific enquiry by Local, State or Federal political representative.	Enquiry or complaint relating to minor issue by Local, State or Federal political representative.	Enquiry or complaint relating to major issue by Local, State or Federal political representative.
	Response	Community consultation team in conjunction with Goodman Project Team to prepare and provide response or assign response task to relevant staff member for comment. Record in consultation register.	Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 48 hours. Record in consultation register.	Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 24 hours. Record in consultation register.

6 Monitoring, Reporting and Evaluation

Monitoring, Reporting and Evaluation will be undertaken to measure the effectiveness of community consultation, stakeholder engagement and responses to complaints and enquiries. Opportunities for improvement will be sought on a continuous basis, with an annual review of the CCS undertaken to formalise these incremental improvements.

6.1 Monitoring

The performance of this strategy will be monitored monthly based upon an assessment of the following data:

- Total number of monthly complaints.
- Review of number of monthly complaints relating to lack of consultation/misinformation/confusion.
- Review of number of monthly enquiries relating to information previously disseminated to the community through other channels.
- Monthly review of enquiries or complaints of a similar nature or theme indicative of underlying systematic issues with the project or communication strategy.
- Response timeframes, including initial acknowledgement and the response to enquiries or remediation of issue(s).

The parameters of monitoring and performance criteria are outlined in **Table 12** below.

Table 12 Summary of Monitoring Data

Monitoring Parameter	Rationale	Performance Criteria	Monitoring Frequency
Total number of complaints	The number of complaints received in total is indicative of the community's satisfaction with the project.	A reduction in number of complaints, baseline determined by number of complaints received in preceding months.	Monthly
Number of complaints relating to lack of consultation/misinformation/ confusion	Number of complaints relating to lack of consultation/ misinformation/ confusion is indicative of the effectiveness and clarity of communication tools utilized.	A reduction in number of complaints, baseline determined by number of complaints received in preceding month.	Monthly
Number of enquiries relating to information previously disseminated	Number of enquiries relating to information previously disseminated is indicative to the effectiveness of the delivery of information.	A reduction in number of enquiries, baseline determined by number of enquiries received in preceding month.	Monthly
Number of complaints/enquiries within defined categories based on theme or subject	A large number of complaints or enquiries relating to a single issue may be indicative of a systematic issue to be addressed as a priority.	A reduction in number of complaints, baseline determined by number of complaints received in preceding month.	Monthly

Monitoring Parameter	Rationale	Performance Criteria	Monitoring Frequency
Response timeframes	Response to enquiries and complaints should be timely to ensure effective responsiveness and rectification of issues and to encourage trust within the community.	Enquiries and complaints acknowledged within 48 hours. Urgent enquiries and complaints responded to within 48 hours of receipt, non-urgent enquiries and complaints responded to within 5 days.	Monthly

6.2 Reporting

Reporting shall be undertaken annually, with a monthly summary of results provided to the approved Environmental Representative (ER) in accordance with Conditions D127(e) and D128 of SSD77348 and the broader project team during monthly project team meetings. The monthly community consultation summary will be made publicly available on the project web page and shall include:

- A summary of community consultation activities undertaken within the preceding month
- A summary of community consultation activities proposed within the following month
- A summary of all enquiries and complaints received within the preceding month, including details of response and/or remediation activities.

Within three months of the submission of documentation identified by Condition D133 this CCS would be reviewed for compatibility.

6.3 Evaluation

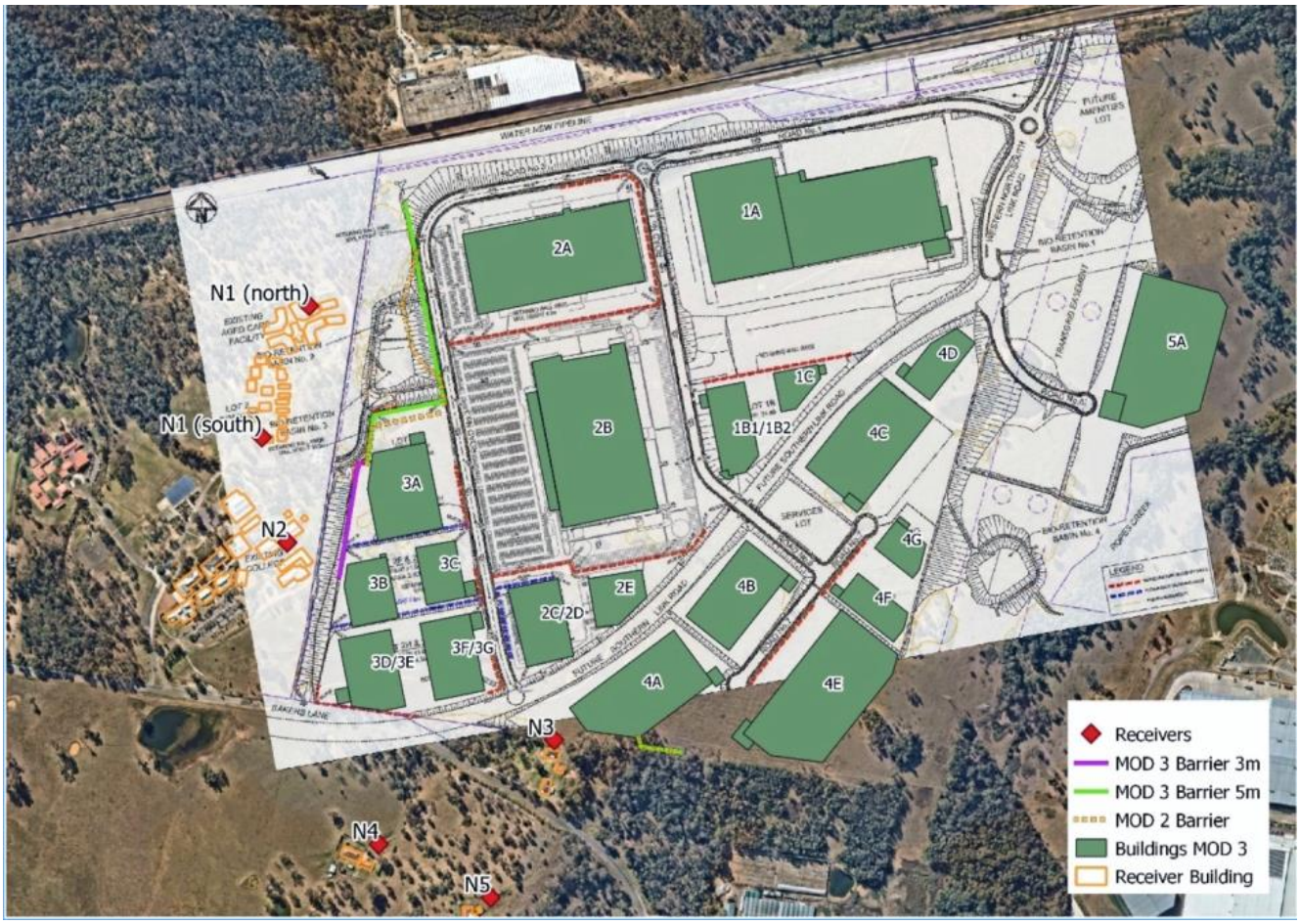
Where performance criteria are not being satisfied, review of this strategy and its implementation will be undertaken by the Community Consultation Team and changes to the strategy may be made to rectify the short fall. Where systematic issues are identified associated with construction activities, the project manager will be advised and immediate rectification of the issue will be requested.

7 References

- NSW Ombudsman (2012) *Managing Unreasonable Complainant Conduct Practice Manual 2nd Edition*
- SLR Consulting Australia (2019) *Construction Environmental Management Plan*
- SLR Consulting Australia (2020) *Construction Environmental Management Plan*
- Urbis (2017) *Environmental Impact Statement – Oakdale West Estate (State Significant Development Application Ref 7348)*
- Urbis (2018) *Response to Submissions (A)*
- Urbis (2018) *Response to Submissions (B)*

APPENDIX A

Sensitive Receiver Map


N1 (north)
N1 (south)
N2
N3
N4
N5
1A
2A
2B
1B1/1B2
1C
3A
3B
3C
3D/3E
3F/3G
2C/2D
2E
4A
4B
4C
4D
4E
4F
4G
5A
Receivers
MOD 3 Barrier 3m
MOD 3 Barrier 5m
MOD 2 Barrier
Buildings MOD 3
Receiver Building

APPENDIX B

Key Stakeholder Contact Details

Contact Name/Organisation	Contact Details
The Residents – 20 Aldington Road	
Emmaus Catholic College	Harvey Anchique - Business Manager P: (02) 9670 8300 F: (02) 9834 3403 M: 0428 063 119 E: hanchique@parra.catholic.edu.au
Trinity Catholic Primary School	Catherine Hey - Principal, chey@parra.catholic.edu.au, 02 8856 6200
Mamre Anglican School	Cathie Graydon – Principal (02)98341881, cathie.graydon@mamre.nsw.edu.au Marijana Motrivic, Business Manager 02, 8073 6908 marijana.mitrovic@mamre.nsw.edu.au,
Catholic Healthcare Emmaus Village	James Byrne Building Services Manager, M. 0434604370, jbyrne@chcs.com.au Kate Todd, Emmaus Village, ktodd@chcs.com.au, Ph: 02 8804 0200
Little Smarties Learning Centre	61 2 9834 2155 kempscreek@littlesmarties.com.au
Penrith City Council	61 2 4732 7777 council@penrith.city
NSW EPA	131 555 info@epa.nsw.gov.au
NSW Biodiversity and Conservation Division, Department of Planning Industry and Environment	61 2 9995 5000 info@environment.nsw.gov.au
NSW Department of Industry	61 2 9338 6600
Roads and Maritime Service	13 22 13
Transport for NSW	61 2 8202 2200
NSW Rural Fire Service	61 2 8741 5555 webmaster@rfs.nsw.gov.au
WaterNSW	1300 662 077 Customer.Helpdesk@waternsw.com.au
National Resources Asset Regulator	61 2 9338 6600
TransGrid	61 2 9284 3000
Endeavour Energy	131 081
Sydney water	13 20 92
Jemena	1300 536 362
NBN	1300 687 626
Telstra	13 22 00
Registered Aboriginal Parties	See Appendix C

APPENDIX C

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								OR Wandai Kirkbright??? Website: http://www.butucarbin.org.au/, postal address: PO Box E18 Emerton
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levi McKenzie-Kirkbright	Murrumbul					murrumbul@gmail.com		Or Levi McKenzie-Kirkbright?????
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William Bond	Wandandian					wandandianchts@gmail.com		
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Robert ParsonS	Yerramurra					yerramurra@gmail.com		

APPENDIX D

Complaints Register

Date	Time	Responsible Party	In/Out	Initial Communication Method/Tool	Contact Name/ Organisation	Contact Details	Documentation Location (if applicable)	Communication Type: Complaint/ Enquiry/ Communication	Summary of Issues/ Details	Action Taken	Further Action/ Monitoring to Confirm Resolution

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APPENDIX G

Construction Noise and Vibration Management Plan

OAKDALE WEST INDUSTRIAL ESTATE - LOT 1A

Construction Noise and Vibration Management Plan
SSD 7348

Prepared for:

Goodman Property Services (Aust) Pty Ltd
60 Castlereagh Street
Sydney NSW 2000

SLR Ref: 630.30016-R02
Version No: -v1.2
June 2020

PREPARED BY

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.30016-R02-v1.2	22 June 2020	Joshua Ridgway	Antony Williams	Antony Williams
630.30016-R02-v1.1	17 June 2020	Joshua Ridgway	Antony Williams	Antony Williams
630.30016-R02-v1.0	22 May 2020	Joshua Ridgway	Antony Williams	Antony Williams

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1 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Goodman Property Services (Aust) Pty Limited (Goodman) to prepare a Construction Noise and Vibration Management Plan (CNVMP) for construction works associated with the development of Project Broccoli located at Lot 1A of the Oakdale West Industrial Estate (Oakdale West) in Kemps Creek.

The CNVMP addresses the potential noise and vibration impacts associated with the construction of the development and details the mitigation and management procedures for dealing with potential impacts. Construction noise and vibration impacts were previously assessed for Oakdale West as part of the *Oakdale West Estate DA Noise Impact Assessment* prepared by SLR in June 2017 (the NIA).

1.1 Development Overview

Oakdale West is a regional warehouse and distribution hub located at Kemps Creek within the Penrith local government area (LGA) and forms part of the broader Oakdale Industrial Precinct located within the Western Sydney Employment Area (WSEA) (see **Figure 1**).

Goodman Property Services (Aust) Pty Ltd (Goodman) obtained Development Consent SSD 7348 on 13 September 2019 from the Department of Planning, Industry and Environment (DPIE) for the Oakdale West 'Concept Proposal' and 'Stage 1 Development'. The Concept Proposal essentially comprises a 'Master Plan' to guide the staged development of Oakdale West and core development controls that will form the basis for design and assessment of future development applications for the site. It includes:

- Establishing primary site access, road layouts (including internal road network and connections to the external road network), developable and non-developable lands, biodiversity offsets, indicative development stages and development controls for the future development of the site;
- Stage 1 Development of the Estate including:
  - Estate Works, including site preparation, bulk earthworks and retaining walls, catchment level stormwater infrastructure, trunk services connections and utility infrastructure, roads and access infrastructure associated with Stage 1 and subdivision in Stage 1 development works;
  - Precinct Development, including construction, fit out and use of warehouse buildings within Precinct 1, detailed earthworks, on lot stormwater, services and utility infrastructure and construction of industrial/warehouse buildings;
  - Construction of a new regional road known as the Western North South Link Road (WNSLR) connecting to Lenore Drive to provide the primary access to the site; and
  - Western boundary landscaping.

This CNVMP has been prepared to cover the construction at Lot 1A of Oakdale West (see **Figure 2**) being undertaken by Richard Crookes Constructions (RCC). AT&L Associates (AT&L) will act as the Project Manager and Contract Superintendent overseeing all construction at Oakdale West. Note: Where Goodman is nominated as having responsibility as the Applicant, this may be delegated to their specialist consultants.

For the purposes of this document, the development is described in *Environmental Impact Statement, Oakdale West Estate - State Significant Development Application* (EIS) prepared by Urbis (2017), including all specialist assessments and other appendices, and subsequent modification reports.

Figure 1 Oakdale West Masterplan

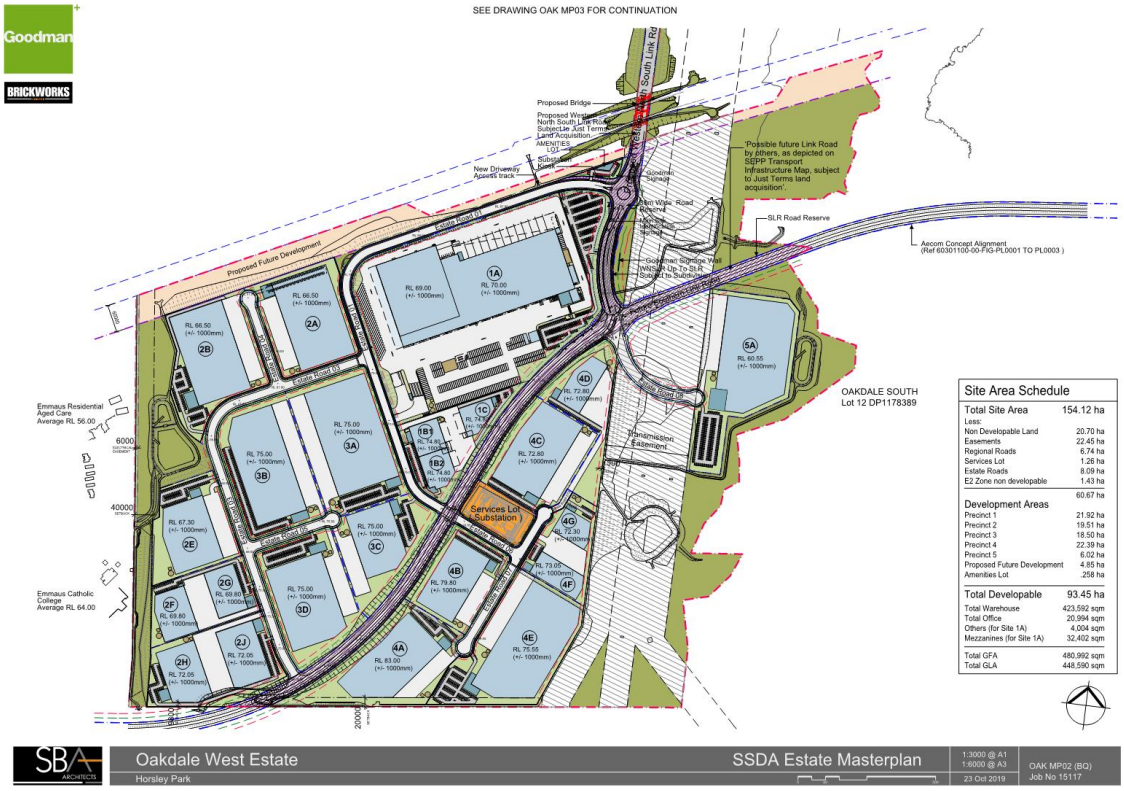
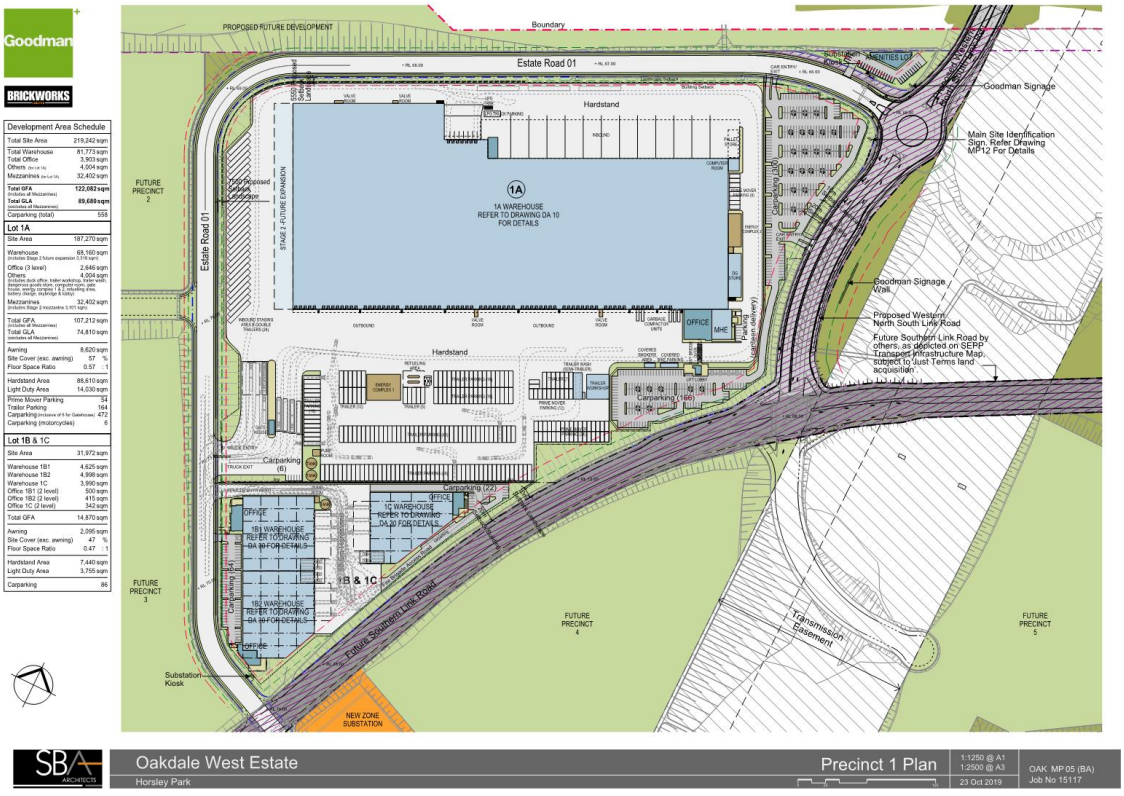


Figure 2 Lot 1A Plan



1.2 Objectives of the CNVMP

The objectives of this CNVMP are as follows:

- Document the statutory requirements applicable to construction noise and vibration emissions;
- Detail the mitigation and management measures required to achieve compliance with relevant noise and vibration criteria for surrounding sensitive receivers;
- Outline the roles and responsibilities in relation to the management of noise and vibration emissions during construction; and
- Promote environmental awareness among employees and subcontractors.

This CNVMP covers construction of Lot 1A at Oakdale West.

1.3 Terminology

Specific acoustic terminology is used in this report. An explanation of common acoustic terms is provided in **Appendix A**.

2 Statutory Requirements

This CNVMP has been prepared to accompany the Construction Environmental Management Plan (CEMP) for Lot 1A at Oakdale West. The conditions relevant to this CNVMP are outlined in the following sections.

2.1 Development Consent

Conditions for Oakdale West are specified in Department of Planning, Industry and Environment (DPIE) Development Consent SSD 7348, dated 13 September 2019, and subsequent modifications. The conditions relevant to this CNVMP are reproduced in **Table 1**.

Table 1 Development Consent Conditions

<table>
<tr><th>Development Consent Conditions</th><th>Section / Comment</th></tr>
<tr><td colspan="2">Operation of Plant and Equipment</td></tr>
<tr><td>D21. All plant and equipment used on site, or to monitor the performance of Stage 1 must be:
a) maintained in a proper and efficient condition; and
b) operated in a proper and efficient manner.</td><td>Section 6 / Table 14</td></tr>
<tr><td colspan="2">Hours of Work</td></tr>
<tr><td>D70. The Applicant must comply with the hours detailed in Table 5, unless otherwise agreed in writing by the Planning Secretary.
Table 5: Hours of Works
<table>
<tr><th>Activity</th><th>Day</th><th>Time</th></tr>
<tr><td>Construction</td><td>Monday – Friday
Saturday</td><td>7 am to 6 pm
8 am to 1 pm</td></tr>
<tr><td>Operation</td><td>Monday – Sunday (including public holidays)</td><td>24 hours</td></tr>
</table></td><td>Section 3.5</td></tr>
<tr><td>D71. Works outside the hours identified in Condition D70 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.</td><td>Section 3.5</td></tr>
<tr><td colspan="2">Construction Noise Limits</td></tr>
<tr><td>D72. Stage 1 must be constructed with the aim of achieving 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 Construction Noise and Vibration Management Plan required by Condition D73.</td><td>Section 4.1, Section 5.1 and Section 6 / Table 14</td></tr>
</table>

Development Consent Conditions	Section / Comment
Construction Noise and Vibration Management Plan	
D73. The Applicant must prepare a Construction Noise and Vibration Management Plan (CNVMP) for Stage 1, to the satisfaction of the Planning Secretary. The CNVMP must form part of a CEMP in accordance with Condition D119 and must:	This document
a) be prepared by a suitably qualified and experienced noise expert;	Prepared by SLR – Author CV in **Appendix B**
b) describe procedures for achieving the noise management levels in the EPA's *Interim Construction Noise Guideline* (DECC, 2009) (as may be updated or replaced from time to time);	**Section 4.1**, **Section 5.1** and **Section 6 / Table 14**
c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;	**Section 6 / Table 14**
d) include strategies to minimise impacts to sensitive receivers, including, where practicable, starting noisy equipment away from sensitive receivers and implementing respite periods;	**Section 6 / Table 14** and **Section 8**
e) include strategies that have been developed with the sensitive receivers identified in Appendix 5 for managing high noise generating works;	**Section 6 / Table 14** and **Section 8**
f) describe the community consultation undertaken to develop the strategies in Condition D73(e);	**Section 6** / **Table 14**, **Section 8** and the Community Communication Strategy (CCS)
g) include a monitoring program that: i) includes a protocol for determining exceedances of the relevant conditions in this approval; ii) evaluates and reports on the effectiveness of the noise and vibration management measures; iii) include procedures to relocate, modify, mitigate or stop work to ensure compliance with the relevant criteria; and	**Section 6 / Table 14**, **Section 8**, **Section 9** and the Compliance Monitoring and Reporting Program (CMRP)
h) include a complaints management system that would be implemented for the duration Stage 1.	**Section 7**
D74. The Applicant must: a) not commence construction of Stage 1 until the CNVMP required by Condition D73 is approved by the Planning Secretary; and; b) implement the most recent version of the CNVMP approved by the Planning Secretary for the duration of construction.	**Section 3.4** This document
Noise Barrier	
D75(c). The Applicant must install the noise barrier located on the western boundary, as shown on Figure 7 in Appendix 5, to the satisfaction of the Planning Secretary. The noise barrier must be completed no later than 31 October 2020, unless otherwise agreed by the Planning Secretary.	**Section 6 / Table 14**

Development Consent Conditions	Section / Comment
Vibration Criteria	
D76. Vibration caused by construction works on the site, as measured 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).	**Section 4.2**, **Section 5.2** and **Section 6 / Table 14**
D77. 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 D76.	**Section 4.2.3**, **Section 5.2** and **Section 6 / Table 14**
D78. The limits in Conditions D76 and D77 apply unless otherwise outlined in a CNVMP, approved as part of the CEMP required by Condition D119 of this consent.	Noted – D76 and D77 apply
Management Plan Requirements	
D118. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	Noted
a) 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, Stage 1 or any management measures;	i) **Section 2** ii) **Section 4** iii) **Section 4**, **Section 6 / Table 14** and **Section 8**
b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	**Section 5** and **Section 6 / Table 14**
c) a program to monitor and report on the: i) impacts and environmental performance of Stage 1; and ii) effectiveness of the management measures set out pursuant to paragraph (b) above;	**Section 8**
d) 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 6** and **Section 9**
e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time;	**Section 11**, and Section 6 of the CEMP
f) 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	i) **Section 9** ii) **Section 7** iii) **Section 9**
g) a protocol for periodic review of the plan.	**Section 11**, and Section 6 of the CEMP

2.2 Relevant Guidelines

The guidelines used to assess the construction impacts from the development are listed in **Table 2**. The guidelines aim to protect the community and environment from excessive noise and vibration impacts that may result from construction of the development.

Table 2 Construction Noise and Vibration Guidelines

Guideline/Policy Name	Where Used
Environment Protection Authority (EPA) (2009) *Interim Construction Noise Guideline* (ICNG)	Assessment of noise impacts on sensitive receivers.
Roads and Maritime Services (2016) *Construction Noise and Vibration Guideline* (CNVG)	Assessment and management protocols for noise and vibration impacts.
Environment Protection Authority (EPA) (2006) *Assessing Vibration: a technical guideline*	Assessment of vibration impacts on sensitive receivers.
British Standard Institution (BSI) (1993) *BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2* (BS 7385)	Assessment of vibration impacts (structural damage) to sensitive structures.
German Institute for Standardisation (Deutsches Institut für Normung) (1999) *DIN 4150 – Structural vibration - Effects of vibration on structures* (DIN 4150)	Assessment of vibration impacts (structural damage) to sensitive structures.

3 Project Overview

3.1 Description

The Oakdale West site is bound to the north by the WaterNSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with Transgrid infrastructure. To the east of the site is Goodman's Oakdale South Estate. Emmaus Catholic College and Emmaus Retirement Village are located to the west of the site. Other boundaries interface with adjoining rural lands used for a mix of rural-residential and agricultural.

Lot 1A is located in Precinct 1 of Oakdale West (see **Figure 1**).

3.2 Location

Located in the Penrith local government area (LGA) at the far south western extent of the WSEA, Oakdale West is made up of the land parcel legally described as Lot 11 DP 1178389, owned by Goodman.

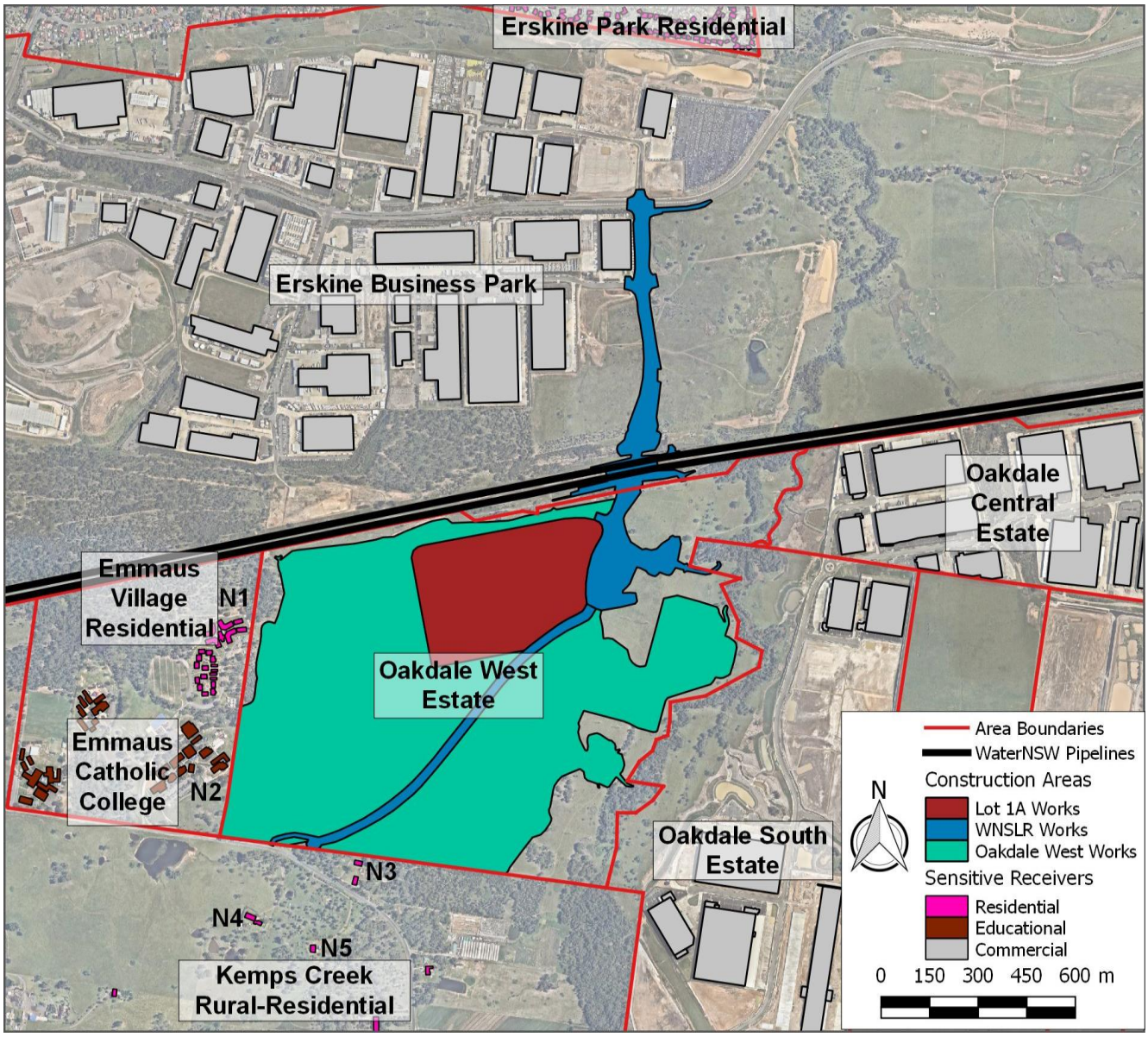
3.3 Surrounding Land Uses

The noise and vibration assessment locations representative of the nearest sensitive receiver areas surrounding Oakdale West were identified in the NIA for the project and are shown in **Figure 3**. Details of the nearest potentially affected sensitive receivers are provided in **Table 3**.

Table 3 Surrounding Sensitive Receivers

Sensitive Receivers	Receiver Type	Distance & Direction from Nearest Point of Lot 1A Works
Kemps Creek	Residential	630 m south
Emmaus Village	Residential	540 m west
Erskine Park	Residential	1,500 m north
Emmaus Catholic College	Educational	680 m southwest
Erskine Business Park	Commercial	250 m north
WaterNSW Pipeline	Structure	85 m north

Figure 3 Sensitive Receiver Areas



3.4 Construction Staging and Activities

Construction at Lot 1A is scheduled to commence in December 2020 and will extend until March 2022. The construction activities will be staged and are summarised in **Table 4**.

Table 4 Construction Staging and Activities

Stage	Duration	Activities
Stage 1	24 weeks (December 2020 – May 2021)	Civil works and excavation
Stage 2	24 weeks (February 2021 – July 2021)	Concrete pours – Warehouse, external hardstand and office
Stage 3	16 weeks (March 2021 – June 2021)	Structure and general construction
Stage 4	20 weeks (June 2021 – October 2021)	External finishes – Warehouse cladding and facade
Stage 5	20 weeks (November 2021 – March 2022)	External boundary, kerb and footpath works

3.5 Construction Hours

Construction hours will be in accordance with Conditions D70 and D71 of Development Consent SSD 7348, which are reproduced below:

> *D70. The Applicant must comply with the hours detailed in Table 5, unless otherwise agreed in writing by the Planning Secretary.*

***Table 5**: Hours of Work*

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

> *D71. Works outside of the hours identified in Condition D70 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.*

Condition D71(a) of Development Consent SSD 7348 notes that works may be undertaken outside of standard construction hours where the works are inaudible at the nearest sensitive receivers. Out of hours works can be undertaken without requiring approval from the Planning Secretary where it can be demonstrated that works will not be audible at any sensitive receivers.

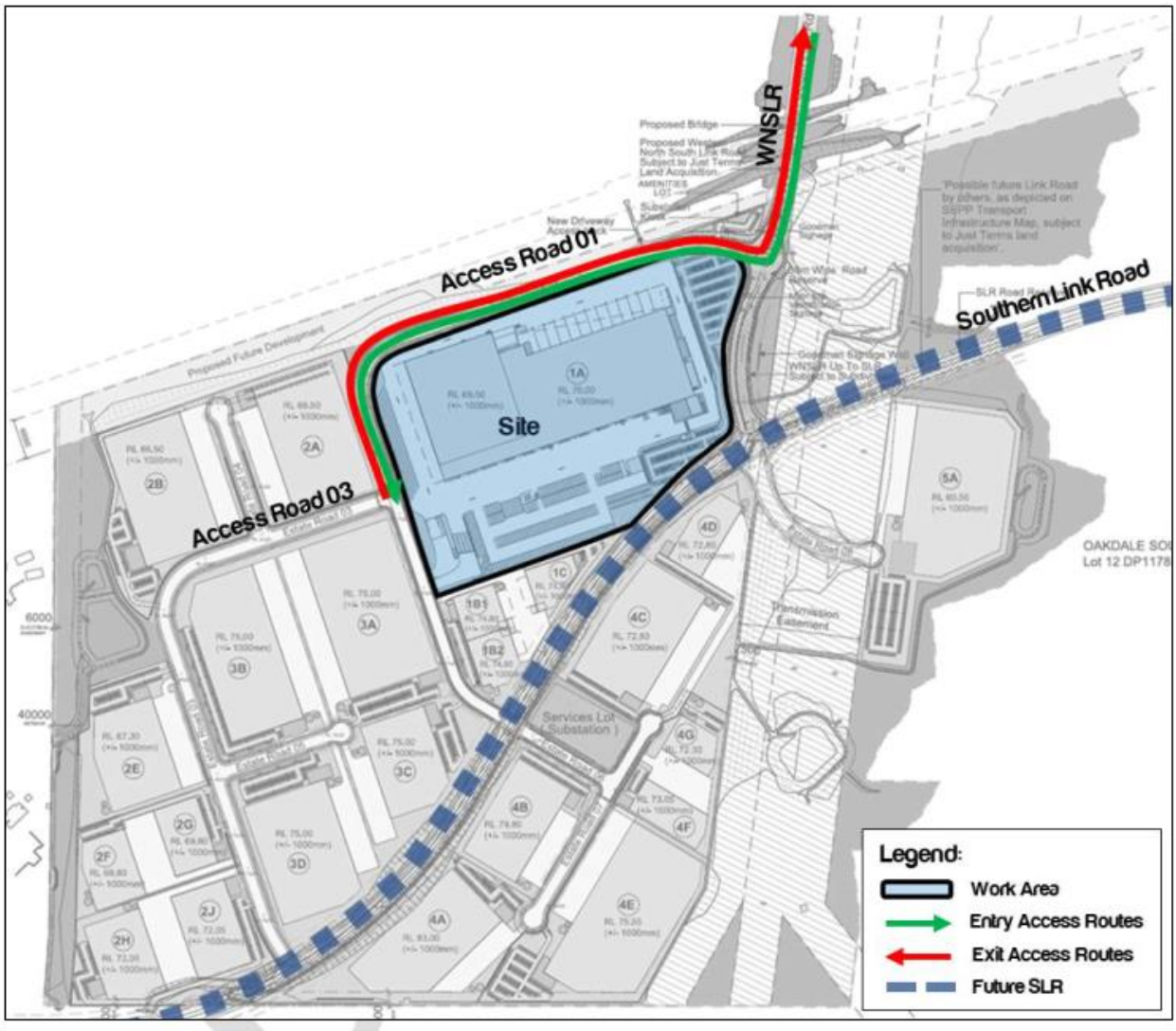
The potential for audible impacts can be assessed by calculating predicted noise levels with a construction noise model, or by undertaking test measurements during a period with similar background noise levels to the proposed works period (noting that audibility is subjective and dependent on the background noise level at the time of the works). The predictions/measurements must be confirmed at the commencement of works with attended noise monitoring at the nearest sensitive receivers. These predictions and measurements will be undertaken by a suitably qualified acoustic consultant.

In accordance with Condition D71(b) of Development Consent SSD 7348, where works are required out of hours and noise is predicted to be audible at the nearest receivers, then written approval from the Planning Secretary must be received prior to commencement of works, except where the works fall under Conditions D71(c) or D71(d).

3.6 Construction Site Access

Access to Lot 1A will be via the WNSLR and Access Road 01, as shown in **Figure 4**.

Figure 4 Construction Site Access



4 Construction Noise and Vibration Criteria and Guidelines

4.1 Construction Noise Criteria

In accordance with Condition D72 of the Development Consent SSD 7348, Oakdale West must be constructed with the aim of achieving the construction noise management levels (NMLs) detailed in the NSW *Interim Construction Noise Guideline* (ICNG). Explanation of what constitutes feasible and reasonable is outlined in Section 1.4 of the ICNG.

The ICNG process to determine NMLs is detailed in **Section 4.1.1**. The project specific noise criteria is summarised in **Section 4.1.2**.

4.1.1 Interim Construction Noise Guideline

The ICNG requires project specific NMLs to be established for noise affected receivers. The NMLs are not mandatory limits, however in the event construction noise levels are predicted to be above the NMLs, feasible and reasonable work practices are to be investigated to minimise noise emissions.

The ICNG provides an approach for determining NMLs at residential receivers based on Rating Background Level (RBL) for the area, as described in **Table 5**.

Table 5 Determination of NMLs for Residential Receivers

Time of Day	NML LAeq(15minute)	How to Apply
ICNG Standard construction hours Monday to Friday 7:00 am to 6:00 pm Saturday 8:00 am to 1:00 pm No work on Sundays or public holidays	RBL + 10 dBA	• The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured LAeq(15minute) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practises 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.
	Highly Noise Affected 75 dBA	• The Highly Noise Affected (HNA) 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 restructuring the hours that the very noisy activities can occur, taking into account: • Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools or mid-morning or mid-afternoon for works near residences. • If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Time of Day	NML LAeq(15minute)	How to Apply
Outside recommended standard construction hours	RBL + 5 dBA	• 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 practises have been applied and noise is more than 5 dBA above the noise affected level, the proponent should negotiate with the community.

Note 1 The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the NSW *Noise Policy for Industry*.

Works are recommended to be completed during Standard Construction Hours where possible. More stringent requirements are placed on works that are required to be completed outside of Standard Construction Hours (ie during the evening or night-time) which reflects the greater sensitivity of communities to noise impacts during these periods.

The ICNG also recognises other kinds of noise sensitive receivers and provides recommended NMLs for them. Those specific receivers and their recommended noise levels are presented in **Table 6**.

Table 6 Construction Noise Management Levels at Other Sensitive Land Uses

Land use	NML $L_{Aeq(15minute)}$
Classrooms at schools and other educational institutions	Internal noise level 45 dBA
Hospital wards and operating theatres	Internal noise level 45 dBA
Places of worship	Internal noise level 45 dBA
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level 65 dBA
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level 60 dBA
Community centres	Depends on the intended use of the centre

The ICNG notes that due to the broad range of sensitivities that commercial or industrial land can have to noise from construction, the process of defining management levels is separated into three categories:

- Industrial premises: external 75 dBA $L_{Aeq(15minute)}$
- Offices, retail outlets: external 70 dBA $L_{Aeq(15minute)}$
- For other businesses that may be very sensitive to noise, appropriate goals should be determined on a case by case basis with reference to Australian/New Zealand Standard *AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors* (AS2107).

4.1.2 Project Specific NML Summary

The NIA defined the airborne NMLs for the various surrounding receivers. The NMLs applicable for the receivers surrounding Oakdale West are outlined in **Table 7**.

Table 7 Project Specific Noise Management Levels

Location	Receiver Type	RBL[1]			Construction NMLs $L_{Aeq(15minute)}$ (dBA)				
		Day	Evening	Night	Standard Construction Hours[2]	Day Out of Hours[2]	Evening Out of Hours[2]	Night Out of Hours[2]	Highly Noise Affected
Erskine Park Residential[3]	Residential	37	40	39	47	42	42[5]	42[5]	75
Emmaus Village Residential	Residential	39	38	36	49	44	43	41	
Kemps Creek Residential	Residential	34	35	32	44	39	39[5]	37	
Any	Industrial	n/a			External 75 when in use				n/a
Any	Commercial	n/a			External 70 when in use				
Any	School[4]	n/a			External 55 when in use				

Note 1: RBL Periods – Day: 7:00 am to 6:00 pm Monday to Saturday, 8:00 am to 6:00 pm Sunday; Evening: 6:00 pm to 10:00 pm; Night: 10:00 pm to 7:00 am Monday to Saturday, 10:00 pm to 8:00 am Sunday.

Note 2: Standard construction hours: 7:00 am to 6:00 pm Monday to Friday, 8:00 am to 1:00 pm Saturday (refer to **Section 3.5**).
Day out of hours: 1:00 pm to 6:00 pm Saturday, 8:00 am to 7:00 pm Sunday and Public Holidays.
Evening out of hours: 6:00 pm to 10:00 pm Monday to Sunday.
Night out of hours: 10:00 pm to 7:00 am Monday to Saturday, 10:00 pm to 8:00 am Sunday and Public Holidays.

Note 3: RBL for Erskine Park Residential taken from *Western North-South Link Road DA Noise Impact Assessment* prepared by SLR in September 2016.

Note 4: External criteria equivalent to internal criteria plus 10 dB.

Note 5: RBL reduced to be equal to Daytime RBL in accordance with the ICNG and NPfI.

As noted in **Table 5**, where the predicted or measured $L_{Aeq(15minute)}$ construction noise levels exceed the NMLs in **Table 7**, all feasible and reasonable work practises will be applied with the aim of meeting the NMLs.

Where the predicted or measured construction noise levels are above the highly noise affected criteria (i.e. 75 dBA), the DPIE may require respite periods by restructuring the hours that the noisy activities can occur.

Predicted construction noise levels are discussed in **Section 5.1**.

4.2 Construction Vibration Criteria

In accordance with Condition D76 of the Development Consent SSD 7348, vibration from construction works on the site, as measured at any residence or sensitive structure, must be limited to the criteria outlined in:

- For structural damage – German Standard *DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures* (DIN 4150); and
- For human exposure, the EPA's *Assessing Vibration: a technical guideline*.

British Standard *BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2* (BS 7385) provides further guidance with regards to reducing the potential for structural damage.

Structural damage criteria is detailed in **Section 4.2.1** and human exposure criteria is detailed in **Section 4.2.2**.

Minimum working distances based on these criteria are summarised in **Section 4.2.3**.

4.2.1 Cosmetic Damage Vibration Thresholds

British Standard BS 7385

The recommended vibration limits from BS 7385 for transient vibration for minimal risk of cosmetic damage to residential and industrial buildings are shown in **Table 8**. These levels are judged to give a minimum risk of vibration-induced damage, where minimal risk is usually taken as a 95% probability of no effect.

Table 8 Transient Vibration Guide Values for Minimal Risk of Cosmetic Damage (BS 7385)

Line	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	50 mm/s at 4 Hz and above
2	Unreinforced or light framed structures	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

German Standard DIN 4150-3

For continuous long-term vibration or repetitive vibration with the potential to cause fatigue effects, DIN 4150 provides the following Peak Particle Velocity (PPV) values as safe limits, below which even superficial cosmetic damage is not to be expected:

- 10 mm/s for commercial buildings and buildings of similar design.
- 5 mm/s for dwellings and buildings or similar design.
- 2.5 mm/s for buildings of great intrinsic value (eg heritage listed buildings).

For short-term vibration events (ie those unlikely to cause resonance or fatigue), DIN 4150 offers the criteria shown in **Table 9**. These are maximum levels measured in any direction at the foundation or in the horizontal axes in the plane of the uppermost floor.

Table 9 Guideline Values for Short-term Vibration on Structures (DIN 4150)

Group	Type of Structure	Guideline Values Vibration Velocity (mm/s)				
		Foundation, All Directions at a Frequency of			Topmost Floor, Horizontal	Floor Slabs, Vertical
		1 to 10 Hz	10 to 50 Hz	50 to 100 Hz	All frequencies	All frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	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 as Group 1 or 2 **and** are of great intrinsic value (e.g. listed buildings)	3	3 to 8	8 to 10	8	20[1]

Note 1: It may be necessary to lower the relevant guideline value markedly to prevent minor damage.

The "*safe limits*" given in DIN 4150 are the levels up to which no damage due to vibration effects has been observed for the particular class of building. "*Damage*" is defined by DIN 4150 to include even minor non-structural effects such as superficial cracking in cement render, the enlargement of cracks already present, and the separation of partitions or intermediate walls from load bearing walls.

4.2.1.1 WaterNSW Pipelines

WaterNSW pipelines are located adjacent to the northern boundary of the Oakdale West site, around 85 m from the closest point of the works. The pipelines are installed above ground and are supported on reinforced concrete saddles. The standards for vibration damage (refer to **Section 4.2.1**) do not cater for structures similar to the pipelines construction.

PSM Consult Pty Ltd have completed an assessment of the WNSLR bridge (letter report PSM1541-381L, dated April 2019, refer to **Appendix C**), which recommends a criteria of 15 mm/s PPV for the pipelines during construction of the bridge. While the PSM1541-381L assessment was prepared for the WNSLR works, it is considered to be suitable for Oakdale West when vibration intensive works are being undertaken in within 50 m of the WaterNSW pipelines. This approach has been confirmed in correspondence with WaterNSW (refer to **Appendix D**).

As no vibration intensive works are proposed within 50 m of the WaterNSW pipelines as part of construction works at Lot 1A, vibration impacts on the pipelines have not been considered further in this CNVMP.

4.2.2 Human Exposure Vibration Thresholds

The EPA's *Assessing Vibration: a technical guideline* provides guideline values for continuous, transient and intermittent events that are based on a Vibration Dose Value (VDV) rather than a continuous vibration level. The VDV is dependent upon the level and duration of the short-term vibration event, as well as the number of events occurring during the daytime or night-time period.

The VDVs recommended in the document for vibration of an intermittent nature (i.e. construction works where more than three distinct vibration events occur) are presented in **Table 10**.

Table 10 Acceptable Vibration Dose Values for Intermittent Vibration (m/s$^{1.75}$) (*Assessing Vibration: a technical guideline)*

Location	Daytime[1]		Night-time[1]	
	Preferred Value	Maximum Value	Preferred Value	Maximum Value
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Note 1: Daytime is 7:00 am to 10:00 pm and night-time is 10:00 pm to 7:00 am.

4.2.3 Minimum Working Distances

Recommended minimum working distances for vibration intensive construction plant based on the BS 7385, DIN 4150 and *Assessing Vibration: a technical guideline* are referenced from the Roads and Maritime *Construction Noise and Vibration Guideline* (CNVG). Theses minimum working distances are summarised in **Table 11**.

The minimum working distances are based on empirical data which suggests that where works are further from receivers than the quoted minimum distances then impacts are not considered likely.

The minimum working distances are indicative and will vary depending on the particular item of equipment and local geotechnical conditions. The distances apply to cosmetic damage of typical building under typical geotechnical conditions.

Table 11 Recommended Minimum Working Distances for Vibration Intensive Equipment

Plant Item	Rating / Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline)[1]
		Residential and Light Commercial (BS 7385)[1]	Heritage Items (DIN 4150 Group 3)[2]	
Vibratory Roller	< 50 kN (Typically 1-2t)	5 m	11 m	15 m to 20 m
	< 100 kN (Typically 2-4t)	6 m	13 m	20 m
	< 200 kN (Typically 4-6t)	12 m	15 m	40 m
	< 300 kN (Typically 7-13t)	15 m	31 m	100 m
	> 300 kN (Typically 13-18t)	20 m	40 m	100 m
	> 300 kN (Typically > 18t)	25 m	50 m	100 m
Small Hydraulic Hammer	300 kg – 5 to 12t excavator	2 m	5 m	7 m
Medium Hydraulic Hammer	900 kg – 12 to 18t excavator	7 m	15 m	23 m
Large Hydraulic Hammer	1600 kg – 18 to 34t excavator	22 m	44 m	73 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m	5 m to 40 m	20 m
Pile Boring	≤ 800 mm	2 m (nominal)	5 m	4 m
Jackhammer	Hand held	1 m (nominal)	3 m	2 m

Note 1: Criteria reference from Roads and Maritime CNVG.

Note 2: Criteria reference from DIN 4150.

In addition to the above minimum working distances, Condition D77 of the Development Consent SSD 7348 specifies that 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 D76. However, there are no residential buildings within this distance of the site.

5 Construction Noise and Vibration Impacts

5.1 Construction Noise Impacts

The Oakdale West NIA presented construction noise predictions from a number of construction scenarios likely to occur on site. These construction scenarios are representative of the activities which will be required during the construction of the site.

Table 12 details the construction scenarios assessed in the NIA together with a list of activities considered to be represented by those scenarios.

Table 12 Construction Scenarios

NIA Construction Scenario	Relevant Activities
Site Clearing and Earthworks	Civil works and excavation
Paving Works including concrete pours	Concrete pours – Warehouse, external hardstand and office
Construction of Roadways	n/a
Landscaping and finishing works	External finishes – Warehouse cladding and facade External boundary, kerb and footpath works

The predicted worst-case noise levels and the exceedances of the NMLs from the various construction works at Oakdale West are presented in **Table 13**.

Table 13 Predicted NML Exceedances

Receiver	$L_{Aeq(15minute)}$ Construction Noise Levels (dBA)				
	Worst-case Predicted (any scenario)	NML (Standard Construction Hours)	NML Exceedance (Standard Construction Hours)[1]		
			Site Clearing and Earthworks	Paving Works	Landscaping
Erskine Park Residential	41	47	-	-	-
Emmaus Village Residential	49	49	-	-	-
Kemps Creek Residential	48	44	4	2	-
School Classrooms	46	55	-	-	-
Commercial Premises	58	70	-	-	-

Note 1: Refer to **Table 12** for which construction activities are covered by each scenario.

As detailed in the NIA and shown in **Table 13** above, the construction noise impacts for the scenarios in **Table 12** are predicted to exceed the NMLs at the nearest Kemps Creek residential receivers for some construction works during standard construction hours. The exceedance of the NMLs is minor (up to 4 dBA) and would generally be limited to when works are closest to the nearest receivers. Noise impacts would generally reduce in magnitude as construction works move away from the nearest receivers.

No exceedance of the standard construction hours NMLs are predicted at school, commercial or other residential receiver areas.

Best practise noise management measures will be undertaken for all construction works. Additional feasible and reasonable noise mitigation and management measures will be applied for works where an exceedance of the NMLs is identified, with the aim of achieving the applicable NMLs.

Mitigation and management measures are outlined in **Section 6**.

5.2 Construction Vibration Impacts

Vibration intensive items of plant proposed for use during the construction of the development would include plate compactors and vibratory rollers. These items of equipment are proposed to be used during various stages of works across the project.

During construction of Lot 1A at Oakdale West, vibratory rollers and plate compactors would not be operated within the recommended minimum working distances of the nearest receivers in Emmaus Village, Kemps Creek, and Emmaus Catholic College, which are located around 540 m, 630 m and 680 m respectively from the nearest point of works.

The separation distance from other buildings within Oakdale West, if built prior to construction of Lot 1A, will be maximised and all feasible and reasonable mitigation and management measures undertaken. Mitigation and management measures are outlined in **Section 6**.

Vibration at the nearest receivers is unlikely to be perceptible during the works.

6 Mitigation and Management Measures

In order to minimise noise impacts during works, the construction contractor will take all reasonable and feasible measures to mitigate noise effects. Impacts from the works will be minimised and managed in accordance with the procedures detailed below in **Table 14**.

Note: **Table 14** is replicated as Table 9 and Table 12 in the CEMP.

Table 14 Environmental Management Controls for Construction Noise and Vibration

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Project Planning			
Less noise and vibration intensive construction techniques for rock breaking and concrete sawing will be used.	RCC	Ongoing	Best practice
Works will be completed during standard daytime construction hours outlined in **Section 3.5**.			
Truck routes to site will be in accordance with the approved Construction Traffic Management Plan.			
Scheduling			
Respite offers will be considered where high-noise works are predicted to exceed 75 dBA for residential receivers. For schools and retirement villages (Emmaus Village) a lower level of 65 dBA will be used to account for the sensitive daytime uses of these receivers. Respite offers will be considered for high-vibration works where the works are undertaken within the human comfort minimum working distances for all receiver types. Consultation with these receivers will be undertaken to determine appropriate respite periods, such as exam periods for schools.	Communications and Community Liaison Representative	Ongoing	SSD 7348 Condition D73
High-noise or vibration generating works will be carried out in continuous blocks no longer than three hours in length, with a minimum respite period of one hour between each block. 'Continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing these works. High-noise or vibration generating works conducted outside standard construction hours (where approved) will be limited to no more than two consecutive nights except where there is a Duration Respite (see below). For night-works these periods will be separated by no less than one week, and limited to six nights per month. Where possible, high-noise and vibration generating works will be completed before 11 pm.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Duration Respite will be considered where it may be beneficial to the sensitive receivers to increase the duration of blocks of work or number of consecutive periods in order to complete the works more quickly. The project team will engage with the community where Duration Respite is considered in accordance with the CCS.	Communications and Community Liaison Representative	Ongoing	SSD 7348 Condition D73
Notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone numbers will be undertaken in accordance with the CCS.			
Site Layout			
Compounds and worksites will be designed to promote one-way traffic and minimise the need for vehicle reversing.	RCC	Ongoing	Best practice
Where practicable, work compounds, parking areas, and equipment and material stockpiles will be positioned away from noise-sensitive locations and take advantage of existing screening from local topography.			
Equipment that is noisy will be started away from sensitive receivers			
Training			
Training will be provided to all personnel on noise and vibration requirements for the project. Inductions and toolbox talks to be used to inform personnel of the location and sensitivity of surrounding receivers.	RCC	Ongoing	Best practice
Plant and Equipment Source Mitigation			
All construction plant and equipment used on Site must be, in addition to other requirements: a) regularly inspected and maintained in an efficient condition; b) operated in a proper and efficient manner.	RCC	Ongoing	SSD 7348 Condition D21
Where practicable, tonal reversing alarms (beepers) will be replaced with non-tonal alarms (squawkers) on all equipment in use (subject to occupational health and safety requirements).			Best practice
Noisy equipment will be sited behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Noise generating equipment will be regularly checked and effectively maintained, including checking of hatches/enclosures regularly to ensure that seals are in good condition and doors close properly against seals.	RCC	Ongoing	Best practice
Dropping materials from a height will be avoided.			
Loading and unloading will be carried out away from noise sensitive areas, where practicable.			
Trucks will not queue outside residential properties. Truck drivers will avoid compression braking as far as practicable.			
Truck movements will be kept to a minimum, ie trucks are fully loaded on each trip.			
Screening			
Purpose-built acoustic screening or enclosures will be installed around long-term fixed plant such as generators in site compounds.	RCC	Ongoing	Best practice
The MOD 3 noise barriers located on the western boundary (refer to Appendix 5 of SSD 7348 MOD 3 Development Consent) must be completed no later than 31 October 2020, to the satisfaction of the Planning Secretary.		Within six months of construction commencing	SSD 7348 Condition D75(c)
Community Consultation			
Notifications will be provided to the affected community where high impacts are anticipated or where out of hours works are required. Notification will be a minimum of 24 hours. Refer to the CCS.	Communications and Community Liaison Representative	Ongoing	Best practice
Where complaints are received, work practices will be reviewed and feasible and reasonable practices implemented to minimise any further impacts. Refer to **Section 7**.			
Monitoring			
Noise and/or vibration monitoring will be conducted (as appropriate) when noise/vibration intensive works are being undertaken in close proximity to sensitive receivers.	RCC	Ongoing	Best practice
Noise and/or vibration monitoring will be conducted (as appropriate) in response to any complaints received to verify that levels are not substantially above the predicted levels.			
Refer to **Section 8** for full details of monitoring requirements.			
Vibration			
Where works are required within the minimum working distances, vibration monitoring will be undertaken to confirm that vibration is within acceptable levels.	RCC	Ongoing	Best practice

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Where works are required within the cosmetic damage minimum working distances, building condition surveys will be completed before and after the works to ensure no cosmetic damage has occurred.	RCC	Ongoing	Best practice
Vibratory compactors will not be used closer than 30 m from residential and educational buildings unless vibration monitoring confirms compliance with the vibration criteria.			SSD 7348 Condition D77
Where there is a risk that vibration activities may cause damage to nearby structures and buildings or if these are located within the minimum working distance from the construction activity, a building condition inspection will be undertaken at least three weeks before the construction activity commences.		Before and after any vibration activities within minimum distances	Best practice
The Building Condition Inspection Reports will contain photographs of the inspected properties and include details of the inspectors' qualification and expertise, together with a list of any identified defects, where relevant. The reports will be submitted to the owner of each property and to AT&L and Goodman before the commencement of any vibration intensive activities.			
A copy of the Building Condition Inspection Reports and CNVMP will be submitted to AT&L and Goodman at least 10 working days prior to commencement of piling, excavation by hammering or ripping, compaction, demolition operations, or any activity which may cause damage through vibration.			
EIS Measures			
Construction hours will be limited to 7:00 am - 6:00 pm Monday to Friday and 8:00 am - 1:00 pm Saturdays (refer to **Section 3.5**).	RCC	Ongoing	EIS mitigation commitment
Where construction noise levels are predicted to be above the NMLs, all feasible and reasonable work practices will be investigated to minimise noise emissions, as detailed in this CNVMP.			
Construction works will be conducted during Standard Construction Hours, with out of hours work minimised as far as feasible and reasonable, and undertaken in accordance with Condition D71 (refer to **Section 3.5**).			
Locations for vibration intensive equipment will be reviewed during the planning of construction works adjacent to the most affected receivers.			

Initial consultation has been established with all potentially affected community groups and sensitive receivers (refer to the CCS). The mitigation and management measures detailed in **Table 14** are considered to be appropriate to minimise impacts on the potentially affected receivers.

These measures will be implemented and refined as informed by the results of monitoring and ongoing community consultation.

Specific consultation with the potentially affected receivers to determine suitable respite periods and management measures will be undertaken during the planning stage of high-noise generating works once specific details of the works have been identified, such as the location of the works, activities proposed to be undertaken and required equipment.

7 Complaints Handling and Response Procedure

All complaints will be handled in accordance with the sections below and the *Community Communication Strategy* (CCS) (SLR 2020a) (see Appendix G of the CEMP).

7.1 Performance Objective

To ensure that all environmental complaints in relation to the construction of Lot 1A at Oakdale West are promptly and effectively received, handled and addressed.

7.2 Responsibility

The Communications and Community Liaison Representative is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an environmental complaint. The induction and toolbox talks outlined in Section 3.4 of the CEMP will be used to ensure all site employees are aware of and understand their obligations for complaints response.

All employees who take 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.

7.3 Complaints Handling Procedure

Upon becoming aware of a complaint, the protocol outlined below will be followed.

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. All relevant contact details are available in Table 5 of the CEMP.

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 Communications and Community Liaison Representative will prioritise all complaints by considering the seriousness of the complaint including risk to health and safety and will attempt to provide an immediate response via phone or email. This will be undertaken in accordance with the CCS (SLR 2020a).

3. Investigate

A field 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.

If the complaint is due to an incident, the notification requirements and handling procedures outlined in Section 3.5.3 and 3.5.4 of the CEMP respectively will be followed.

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 Communications and Community Liaison Representative 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 Communications and Community Liaison Representative 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 in order to minimise the potential for similar complaints in the future. On this basis, every complaint received is to be recorded in Community Correspondence Register (Appendix H of the CEMP). A copy of the completed form will be maintained for at least five years. The complaint will also be recorded in the Complaints Register, as per Section 3.6.4 of the CEMP.

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.

7.4 Complaints Register

A Complaints Register will be maintained during construction and will contain the following:

- A copy of the environmental complaint handling procedure contained in Section 3.6.3 of the CEMP;
- A separate reference sheet containing the contact details listed in Table 5 of the CEMP;
- Blank hard copies of the Community Correspondence Register (see Appendix H of the CEMP); and
- Copies of all completed Community Correspondence Register entries which are to be maintained for at least five years after the event to which they relate.

8 Monitoring

8.1 Construction Noise Monitoring

Attended noise measurements will be undertaken at the start of noise intensive works in the vicinity of sensitive receivers to verify the levels are as predicted and to check the effectiveness of mitigation and management measures used to minimise the impacts. This includes where works are adjacent to Emmaus Catholic College and the nearest residences in Kemps Creek and Emmaus Village.

Attended monitoring will also be undertaken in response to any complaints regarding construction noise. The location and extent of monitoring would be determined in consultation with AT&L, Goodman, and an acoustic consultant and would be dependent on the activities taking place.

The monitoring will take place during the expected noisiest construction periods and be representative / indicative of any impact across all potentially affected sensitive receivers.

Monitoring reports will be produced following each monitoring survey and provided to AT&L and Goodman for review. In the event that an exceedance of the applicable NMLs is measured (refer to **Section 4.1**), actions to be carried out are detailed in **Section 9**.

All items of acoustic instrumentation utilised will be designed to comply with applicable guidelines and carry current calibration certificates.

8.2 Construction Vibration Monitoring

8.2.1 Sensitive Receivers and Structures

Where vibration intensive works (such as vibratory rolling and plate compacting) are proposed to be undertaken within the minimum working distances of sensitive receivers or structures (refer to **Section 4.2.3**), vibration will be monitored continuously for the duration of works within the minimum working distances. This is unlikely to be applicable to the residential or school sensitive receivers, but may be applicable to other buildings within Oakdale West, if built prior to construction of Lot 1A.

Attended vibration measurements will be undertaken at the commencement of vibration intensive works within the minimum working distances to confirm the levels of vibration are below the applicable vibration limits (refer to **Section 4.2**).

Geophones will be installed by an acoustic consultant at the closest points of the sensitive structure to the vibration intensive works to continuously monitor vibration for the duration of the works. Should the works location change, the geophones will be relocated to remain at the closest point of the structure to the works.

The vibration monitoring equipment will have visible and audible alarms installed where operators of equipment can see/hear them:

- A warning vibration level of 2/3 of the applicable vibration limit will set off the visual alarm if exceeded – the equipment operator must take care to limit vibration emissions when the warning level is exceeded.
- An exceedance vibration level equal to the applicable vibration limit will set off both the visual and audible alarms. Actions to be carried out if the exceedance alarm is set off are detailed in **Section 9**.

Monitoring data will be downloaded and reported monthly, at a minimum. Vibration monitoring reports will be prepared and provided to AT&L and Goodman for review at the following stages:

- Monthly during works (at a minimum)
- Within one week of an exceedance of the vibration limit alarm level (15 mm/s PPV)
- Upon completion of construction.

All items of vibration instrumentation utilised will be designed to comply with applicable guidelines and carry current calibration certificates.

9 Contingency Management Plan

The following contingency management plan, shown in **Table 15**, would be used to manage any unpredicted noise and vibration impacts and their consequences.

In the event of an incident, response will be carried out in accordance with the procedures detailed in Section 3.5 of the overarching CEMP. As detailed in Section 5.4 of the overarching CEMP, all Condition Amber and Condition Red occurrences will be recorded in the Environmental Representative Monthly Report and discussed during the toolbox talks.

The following events constitute an incident in terms of noise and vibration:

- Trigger of Condition Red for noise impacts during the standard construction hours detailed in Condition D70.
- Any works occurring outside the standard construction hours detailed in Condition D70, where those works do not meet the allowable circumstances defined in Condition D71.
- Trigger of Condition Red for vibration impacts at sensitive receiver locations.

Table 15 Contingency Management Plan

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Noise impacts at sensitive receiver locations	Trigger	Noise levels do not exceed applicable NMLs	Noise levels exceed applicable NMLs	Noise levels exceed Highly Noise Affected criteria (75 dBA)
	Response	On-going best practice management measures to minimise noise emissions	Undertake all feasible and reasonable mitigation and management measures to minimise noise impacts (aiming to achieve NMLs)	Undertake all feasible and reasonable mitigation and management measures to ensure noise levels are below Highly Noise Affected criteria. If noise levels cannot be kept below Highly Noise Affected criteria then a different construction method or equipment must be utilised.
Vibration impacts at sensitive receiver locations	Trigger	Vibration intensive works undertaken outside minimum working distance for the specific equipment in use	Vibration intensive works undertaken within minimum working distance for the specific equipment in use	Vibration levels exceed applicable vibration limits
	Response	On-going best practice management measures to minimise vibration emissions	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 must be utilised.

10 Roles and Responsibilities

Overall roles and responsibilities relating to the project are outlined in Section 3.2 of the overarching CEMP.

The key responsibilities specifically for noise and vibration management are as follows:

10.1 Contractor's Project Manager

- Ensuring appropriate resources are available for the implementation of this CNVMP;
- Assessing data from inspections and providing project-wide advice to ensure consistent approach and outcomes are achieved;
- Providing necessary training for project personnel to cover noise and vibration management;
- Reviewing and update of this CNVMP;
- Commissioning a suitably qualified consultant to install and maintain noise and vibration monitors and ensuring that the environmental coordinator undertakes any attended noise and vibration measurements required by this Plan;
- Assessing and (as required) mitigating risks of elevated noise and vibration levels before commencing works each day and ensuring that the appropriate controls are implemented and effective;
- Reviewing weather forecasts and current observations of meteorological conditions (as recorded at Horsley Park AWS);
- Ceasing works in the event of excessive noise and vibration generation due to noise enhancing weather conditions or inadequately controlled construction activities (e.g. strong winds blowing from the noise source to nearby receivers, temperature inversions, etc.); and
- In the event that a noise or vibration complaint is received, the procedure in Section 3.6 of the CEMP will be implemented (see **Section 7**).

10.2 Environmental Coordinator

- Undertaking noise monitoring program;
- Review that control measures are working in accordance with the CNVMP; and
- Identifying and reporting noise and vibration emissions incidents.

10.3 All Workers on Site

- Observing any noise and vibration emission control instructions and procedures that apply to their work;
- Taking action to prevent or minimise noise and vibration emission incidents; and
- Identifying and reporting noise and vibration emission incidents.

11 Review and Improvement of the CNVMP

Details on review and improvement are outlined in Section 6 of the overarching CEMP.

12 References

British Standard Institution (BSI) (1993) *BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2* (BS 7385)

German Institute for Standardisation (Deutsches Institut für Normung) (1999) *DIN 4150 – Structural vibration - Effects of vibration on structures* (DIN 4150)

Environment Protection Authority (EPA) (2006) *Assessing Vibration: a technical guideline*

Environment Protection Authority (EPA) (2009) *Interim Construction Noise Guideline* (ICNG)

PSM Consult Pty Ltd (2019) *WNSLR Bridge, Review and Recommendation for Allowable Vibration from Piling and Earthworks* (PSM1541-381L)

Roads and Maritime Services (2016) *Construction Noise and Vibration Guideline* (CNVG)

Roads and Traffic Authority (2001) *Environmental Noise Management Manual* (ENMM)

SLR Consulting Australia Pty Ltd (SLR) (2017) *Oakdale West Estate DA Noise Impact Assessment* (NIA)

SLR Consulting Australia Pty Ltd (SLR) (2016) *Western North-South Link Road DA Noise Impact Assessment*

Standards Australia (2004) Australian Standard *AS IEC 61672.1—2004 – Electroacoustics—Sound level meters, Part 1: Specifications*

Standards Australia (2016) *Australian/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors* (AS 2107)

Urbis (2017) *Environmental Impact Statement, Oakdale West Estate – State Significant Development Application* (EIS)

APPENDIX A

Acoustic Terminology

1. Sound Level or Noise Level

The terms 'sound' and 'noise' are almost interchangeable, except that 'noise' often refers to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure. The human ear responds to changes in sound pressure over a very wide range with the loudest sound pressure to which the human ear can respond being ten million times greater than the softest. The decibel (abbreviated as dB) scale reduces this ratio to a more manageable size by the use of logarithms.

The symbols SPL, L or LP are commonly used to represent Sound Pressure Level. The symbol LA represents A-weighted Sound Pressure Level. The standard reference unit for Sound Pressure Levels expressed in decibels is 2×10^{-5} Pa.

2. 'A' Weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an 'A-weighting' filter. This is an electronic filter having a frequency response corresponding approximately to that of human hearing.

People's hearing is most sensitive to sounds at mid frequencies (500 Hz to 4,000 Hz), and less sensitive at lower and higher frequencies. Different sources having the same dBA level generally sound about equally loud.

A change of 1 dB or 2 dB in the level of a sound is difficult for most people to detect, whilst a 3 dB to 5 dB change corresponds to a small but noticeable change in loudness. A 10 dB change corresponds to an approximate doubling or halving in loudness. The table below lists examples of typical noise levels.

Sound Pressure Level (dBA)	Typical Source	Subjective Evaluation
130	Threshold of pain	Intolerable
120	Heavy rock concert	Extremely noisy
110	Grinding on steel	
100	Loud car horn at 3 m	Very noisy
90	Construction site with pneumatic hammering	
80	Kerbside of busy street	Loud
70	Loud radio or television	
60	Department store	Moderate to quiet
50	General Office	
40	Inside private office	Quiet to very quiet
30	Inside bedroom	
20	Recording studio	Almost silent

Other weightings (eg B, C and D) are less commonly used than A-weighting. Sound Levels measured without any weighting are referred to as 'linear', and the units are expressed as dB(lin) or dB.

3. Sound Power Level

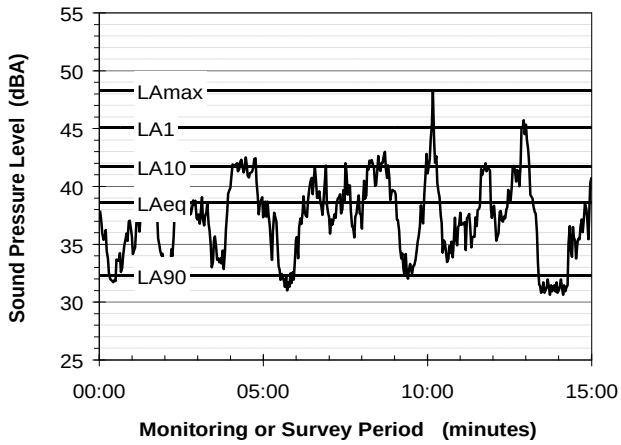
The Sound Power of a source is the rate at which it emits acoustic energy. As with Sound Pressure Levels, Sound Power Levels are expressed in decibel units (dB or dBA), but may be identified by the symbols SWL or LW, or by the reference unit 10^{-12} W.

The relationship between Sound Power and Sound Pressure is similar to the effect of an electric radiator, which is characterised by a power rating but has an effect on the surrounding environment that can be measured in terms of a different parameter, temperature.

4. Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels L_{AN}, where L_{AN} is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the L_{A1} is the noise level exceeded for 1% of the time, L_{A10} the noise exceeded for 10% of the time, and so on.

The following figure presents a hypothetical 15 minute noise survey, illustrating various common statistical indices of interest.



Of particular relevance, are:

L_{A1} The noise level exceeded for 1% of the 15 minute interval.

L_{A10} The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.

L_{A90} The noise level exceeded for 90% of the sample period. This noise level is described as the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

L_{Aeq} The A-weighted equivalent noise level (basically, the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.

5. Frequency Analysis

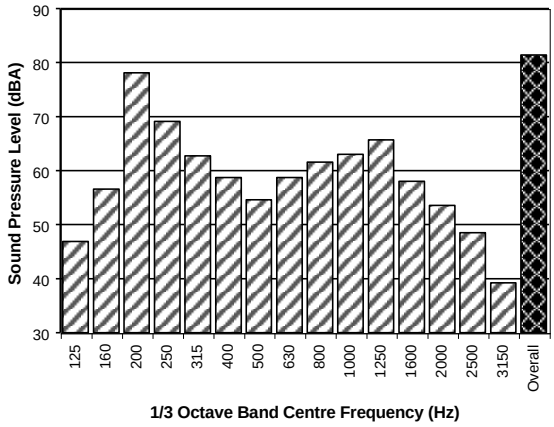
Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal.

The units for frequency are Hertz (Hz), which represent the number of cycles per second.

Frequency analysis can be in:

- Octave bands (where the centre frequency and width of each band is double the previous band)
- 1/3 octave bands (three bands in each octave band)
- Narrow band (where the spectrum is divided into 400 or more bands of equal width)

The following figure shows a 1/3 octave band frequency analysis where the noise is dominated by the 200 Hz band. Note that the indicated level of each individual band is less than the overall level, which is the logarithmic sum of the bands.



6. Annoying Noise (Special Audible Characteristics)

A louder noise will generally be more annoying to nearby receivers than a quieter one. However, noise is often also found to be more annoying and result in larger impacts where the following characteristics are apparent:

- **Tonality** - tonal noise contains one or more prominent tones (ie differences in distinct frequency components between adjoining octave or 1/3 octave bands), and is normally regarded as more annoying than 'broad band' noise.
- **Impulsiveness** - an impulsive noise is characterised by one or more short sharp peaks in the time domain, such as occurs during hammering.
- **Intermittency** - intermittent noise varies in level with the change in level being clearly audible. An example would include mechanical plant cycling on and off.
- **Low Frequency Noise** - low frequency noise contains significant energy in the lower frequency bands, which are typically taken to be in the 10 to 160 Hz region.

7. Vibration

Vibration may be defined as cyclic or transient motion. This motion can be measured in terms of its displacement, velocity or acceleration. Most assessments of human response to vibration or the risk of damage to buildings use measurements of vibration velocity. These may be expressed in terms of 'peak' velocity or 'rms' velocity.

The former is the maximum instantaneous velocity, without any averaging, and is sometimes referred to as 'peak particle velocity', or PPV. The latter incorporates 'root mean squared' averaging over some defined time period.

Vibration measurements may be carried out in a single axis or alternatively as triaxial measurements (ie vertical, longitudinal and transverse).

The common units for velocity are millimetres per second (mm/s). As with noise, decibel units can also be used, in which case the reference level should always be stated. A vibration level V, expressed in mm/s can be converted to decibels by the formula $20 \log (V/Vo)$, where Vo is the reference level (10^{-9} m/s). Care is required in this regard, as other reference levels may be used.

8. Human Perception of Vibration

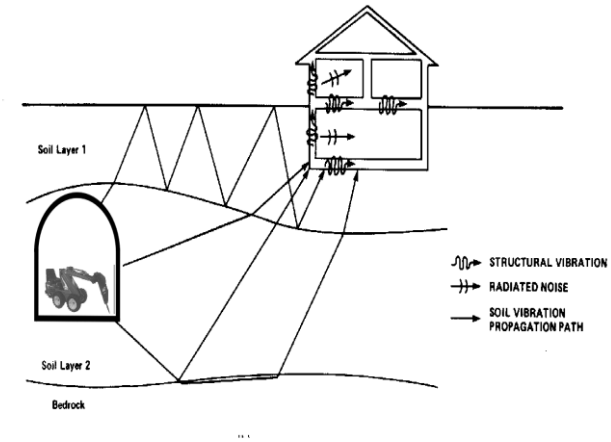
People are able to 'feel' vibration at levels lower than those required to cause even superficial damage to the most susceptible classes of building (even though they may not be disturbed by the motion). An individual's perception of motion or response to vibration depends very strongly on previous experience and expectations, and on other connotations associated with the perceived source of the vibration. For example, the vibration that a person responds to as 'normal' in a car, bus or train is considerably higher than what is perceived as 'normal' in a shop, office or dwelling.

9. Ground-borne Noise, Structure-borne Noise and Regenerated Noise

Noise that propagates through a structure as vibration and is radiated by vibrating wall and floor surfaces is termed 'structure-borne noise', 'ground-borne noise' or 'regenerated noise'. This noise originates as vibration and propagates between the source and receiver through the ground and/or building structural elements, rather than through the air.

Typical sources of ground-borne or structure-borne noise include tunnelling works, underground railways, excavation plant (eg rockbreakers), and building services plant (eg fans, compressors and generators).

The following figure presents an example of the various paths by which vibration and ground-borne noise may be transmitted between a source and receiver for construction activities occurring within a tunnel.



The term 'regenerated noise' is also used in other instances where energy is converted to noise away from the primary source. One example would be a fan blowing air through a discharge grill. The fan is the energy source and primary noise source. Additional noise may be created by the aerodynamic effect of the discharge grill in the airstream. This secondary noise is referred to as regenerated noise.

APPENDIX B

SLR Author CV

CURRICULUM VITAE



JOSHUA RIDGWAY

SENIOR PROJECT CONSULTANT

Acoustics & Vibration, Asia-Pacific

QUALIFICATIONS

MDesSc	2008	Master of Design Science (Audio and Acoustics), University of Sydney, NSW
DipPM	2018	Diploma of Project Management, Charter Australia Education and Training, NSW

EXPERTISE

- Transport (Rail, Road and Air) Noise and Vibration
- Construction Noise and Vibration
- Infrastructure and Industrial Noise and Vibration
- Noise and Vibration Measurement Systems

Joshua Ridgway completed his Master of Design Science (Audio and Acoustics) at University of Sydney in 2008, specialising in acoustic measurement, signal analysis and digital signal processing.

Joshua started his career in acoustics and vibration at SLR as a project consultant in the Acoustics and Vibration team in 2011, working on a broad range of projects involving field measurements, analysis, modelling, assessment and reporting.

Joshua's consulting experience has included measurement, analysis, modelling and control of noise and vibration from railways, roads, construction works, mining operations, infrastructure and industrial projects.

Joshua is experienced in the use of SoundPLAN predictive modelling software for a range of modelling applications including industrial noise, construction noise, road operational noise and rail operational noise.

PROJECTS

	Transport Noise and Vibration Projects
M12 Motorway EIS, NSW	Ambient noise monitoring, construction noise and vibration assessment, lead modeller for operational noise impacts and assessment.
WestConnex M4-M5 Link EIS, NSW	Ambient noise monitoring, construction noise and vibration assessment, lead modeller for operational noise impacts and assessment.
M4 Smart Motorways EIS, M4 Widening EIS and WestConnex M4 East EIS, NSW	Ambient noise monitoring, operational noise assessment and modelling.
Northern Beaches Hospital Road Network Upgrade EIS, NSW	Ambient noise monitoring, operational noise assessment and modelling.
CBD and South East Light Rail EIS, NSW	Noise and vibration environmental impact assessment.
North West Rail Link EIS, NSW	Ambient noise monitoring, operational and construction noise assessments and modelling.

Northern Sydney Freight Corridor, NSW	Operational noise assessment and modelling.
Sydney Light Rail, NSW	Operational noise and vibration measurements and compliance assessment.
Parramatta Rail Turnback Project, NSW	Ambient noise monitoring, operational and construction noise assessment.
	Industrial/Construction Projects
Oakdale Central, South and West Industrial Developments, NSW	Project manager and lead modeller for noise impact assessments for State Significant Development applications for large multi-stage industrial developments from DA stage to occupation and compliance stage, and preparation of construction and operational noise and vibration management plans.
Enfield Intermodal Logistics Centre, NSW	Preparation of construction and operational noise and vibration management plans.
Metropolitan Colliery, NSW	Ambient noise monitoring, operational noise measurements, risk assessment and noise mitigation strategy.
M2 Upgrade Project, NSW	OOHWs construction noise and vibration modelling and assessment.
	Built Environment Projects
Marsden Park North Precinct, NSW	Road traffic and ambient noise monitoring, assessment of noise impacts associated with the Precinct.
The Sheffield, Thornton, NSW	Acoustic assessment and advice for DA stage to CC stage mixed-use development.
Saint Mary Mackillop Catholic Church, Oran Park, NSW	Acoustic assessment and advice for CC to OC stage place of worship development.
Various Residential Developments, Epping, NSW	Acoustic assessment for DA stage residential developments.

MEMBERSHIPS

Member	Australian Acoustical Society

APPENDIX C

PSM Consult Letter, dated 10 April 2019 – *WNSLR Bridge, Review and Recommendation for Allowable Vibration from Piling and Earthworks*

Our Ref: PSM1541-381L

10 April 2019

AT&L
Level 7, 153 Walker Street
NORTH SYDNEY NSW 2060

Attention: Alex Lohrisch
By email: alexl@atl.net.au

G3 56 Delhi Road
North Ryde NSW 2113
P +61-2 9812 5000
F +61-2 9812 5001
E mailbox@psm.com.au
www.psm.com.au

Dear Alex

RE: WNSLR BRIDGE, REVIEW AND RECOMMENDATION FOR ALLOWABLE VIBRATION FROM PILING AND EARTHWORKS

1. Introduction

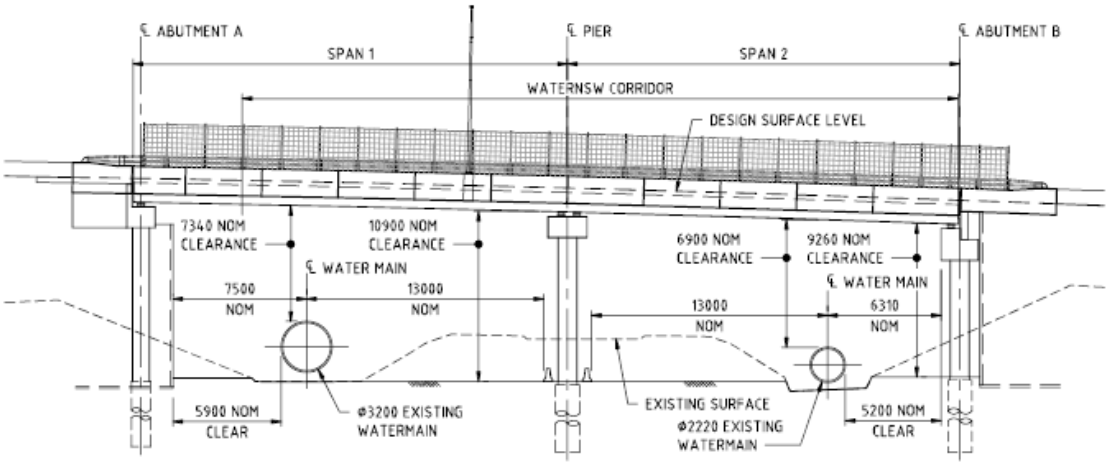
This letter provides advice on vibration for the proposed development of the bridge over the WaterNSW pipelines on the Western North-South Link Road (WNSlR).

We have been provided with the following documents:

- BG&E structural drawings "Bridge Over WaterNSW Pipelines" – Sheet 1 to 7 dated 17/12/2018.
- SLR "WNSLR Construction Noise and Vibration Management Plan" dated 8/11/2018.

We understand that as part of the proposed WNSLR development, a bridge will be constructed over the WaterNSW pipeline. The bridge will be supported on piles.

Insert 1 presents WaterNSW clearance diagram taken from BG&E drawing.



WATERNSW CLEARANCE DIAGRAM
NOT TO SCALE
DIMENSIONS SHOWN ARE NORMAL TO THE WATERMAIN, UNLESS NOTED OTHERWISE.
CLEARANCE DIMENSIONS SHOWN ARE SUBJECT TO FINIAL LOCATION AND LEVELS OF DESIGN SURFACES.

Inset 1: WaterNSW Clearance Diagram

Insert 2 presents selected site photos of the pipeline. The pipelines are above ground and are supported on saddles. We assume the pipe is welded.





Inset 2: WaterNSW pipeline

The horizontal distance between the proposed bridge piles and existing pipeline is at least 5.2 m.

The bored pile design requires the piles to be up to 17 m below surface. The pile excavation will be in soil units, eg. fill and residual soil (up to 3 m thick), very low to low strength shale (14 m thick) and founded on medium strength bedrock unit. The pile diameter will be between 1.2 m and 1.5 m.

2. Standards and Guidelines

We have reviewed the following documents regarding damage to structures due to vibration:

- BS 5228-2:2009 – Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration
- BS 7385-2:1993 – Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from groundborne vibration
- DIN 4150-3:1999 – Structural Vibration - Part 3: Effects of vibration on structures
- AS 2187.2:2006 – Explosives - Storage and use - Part 2: Use of explosives
- Construction Noise and Vibration guideline – Road & Maritime Services

We note that experienced contractors should make their own assessment of the appropriate piling and earthworks equipment. The contractor should recognise that there is a potential for damage to the existing pipeline and consider this in planning and executing its work.

3. Vibration

3.1 Reference

The following sections provide a discussion of references we have considered when advising on appropriate vibration limits.

AS2187.2 - *Explosives - Storage and use Part 2 - Use of explosives* (2006) of contains vibration damage limits for structures, the limits are informative (rather than normative) and although it has been written for blasting, it is still considered applicable to other sources of vibrations.

Table J4.4.2.1 of the standard presents "*transient vibration guide values for the prevention of minor or cosmetic damage occurring in structures*", for "*Unreinforced or light framed structure. Residential or light commercial type buildings*". The suggested vibration limit applicable is 15 mm/s or 50 mm/s depending on the type of building. The term cosmetic damage is described in Table J4.4.2.2.

TABLE J4.4.2.1 of AS2187.2: 2001

TABLE J4.4.2.1

TRANSIENT VIBRATION GUIDE VALUES FOR COSMETIC DAMAGE (BS 7385-2)

Line	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 structure. 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

NOTES:

1 Values referred to are at the base of the building.

2 For line 2, at frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) should not be exceeded.

TABLE J4.4.2.2 of AS2187.2: 2001

TABLE J4.4.2.2

BS 7385-1:1990—DAMAGE CLASSIFICATION

Damage classification	Description
Cosmetic	The formation of hairline cracks on drywall surfaces or the growth of existing cracks in plaster or drywall surfaces; in addition, the formation of hairline cracks in the mortar joints of brick/concrete block construction
Minor	The formation of cracks or loosening and falling of plaster or drywall surfaces, or cracks through bricks/concrete blocks
Major	Damage to structural elements of the building, cracks in support columns, loosening of joints, splaying of masonry cracks etc.

We also note that Table 1 of the German Standard DIN 4150 *Structural Vibration Part 3, Effects of vibration on structures* (1999) suggests vibration limit for buildings based on the type of building.

TABLE 1 of DIN4150-3:1999

Table 1: Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on structures

Line	Type of structure	Guideline values for velocity, v_i, in mm/s			
		Vibration at the foundation at a frequency of			Vibration at horizontal plane of highest floor
		1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz *)	at all frequencies
1	Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15
3	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (e.g. listed buildings under preservation order)	3	3 to 8	8 to 10	8

*) At frequencies above 100 Hz, the values given in this column may be used as minimum values.

Section 5.3 of DIN 4150: Part 3 also sets out guideline values for vibration on buried pipework.

Table 2: 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 velocity measured on the pipe, v_i, in mm/s
1	Steel (including welded pipes)	100
2	Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80
3	Masonry, plastic	50

3.2 Vibration Limit

Section 5.2.1.1 “Sydney Catchment Authority Pipelines” of SLR *Construction and Management Plan* dated November 2018 states:

> *The WNSLR passes over the SCA pipelines. The pipelines are installed above ground and are supported on saddles.*
>
> *The standards for vibration damage (Section 5.2.1* [BS 7385]*) do not cater for structures similar to the pipelines construction. For the purpose of protecting the pipelines from vibration associated with the proposed works a vibration criterion of 30 mm/s PPV has been adopted. This value applies at the top of the pipelines between saddles to capture vibration amplification effects.*
>
> *The proposed vibration threshold does not address settlement of the saddles and associated changes in static bending stresses of the pipelines.*

We note details of the pipeline footings, including saddles are not known to PSM.

Based on our review on the references in Section 3.1, we recommend a maximum peak particle velocity (PPV) of 15 mm/s be adopted as a vibration limit at the pipeline for the construction of the bridge. We note the recommended limit is less than that proposed by SLR in their monitoring plan, and that provided in the DIN guideline for buried steel pipes; thus it is more stringent. We consider the limit is very conservative but appropriate in the circumstances.

We consider the vibration from the construction work can be relatively easily controlled to be less than the recommended vibration limit.

We understand the following activities are the potential sources of vibration during bridge construction:

- Earthworks. We assume this relates mainly to the piling rig platform construction.
- Piling works. This comprises drilling of the bored piles into medium strength bedrock at 17 m below the surface.

We refer to Table 2 of RMS Construction Noise and Vibration Guideline regarding the minimum work distance from intensive plant.

Table 2: Recommended minimum working distances from vibration intensive plant of Construction Noise and Vibration Guideline – Road & Maritime Services NSW

Plant item	Rating / Description	Minimum working distance	
		Cosmetic damage (BS 7385)	Human response (OH&E Vibration guideline)
Vibratory Roller	< 50 kN (Typically 1-2 tonnes)	5 m	15 m to 20 m
	< 100 kN (Typically 2-4 tonnes)	6 m	20 m
	< 200 kN (Typically 4-6 tonnes)	12 m	40 m
	< 300 kN (Typically 7-13 tonnes)	15 m	100 m
	> 300 kN (Typically 13-18 tonnes)	20 m	100 m
	> 300 kN (> 18 tonnes)	25 m	100 m
Small Hydraulic Hammer	(300 kg - 5 to 12t excavator)	2 m	7 m
Medium Hydraulic Hammer	(900 kg – 12 to 18t excavator)	7 m	23 m
Large Hydraulic Hammer	(1600 kg – 18 to 34t excavator)	22 m	73 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m	20 m
Pile Boring	≤ 800 mm	2 m (nominal)	4 m
Jackhammer	Hand held	1 m (nominal)	2 m

With regards to the earthworks, we advise the following:

- Any fill should be placed and compacted using a static roller with no vibration.
- While excavation in bedrock is not expected during earthworks in the proposed bridge area, we consider that excavation in very low to low strength shale should be achievable using a conventional earthmoving equipment.

With regards to the piling works, based on our experience drilling bored piles in the inferred ground conditions within the bridge area is unlikely to trigger the recommended vibration limit, i.e. PPV of 15 mm/s.

4. Vibration Monitoring

Vibrations due to construction activities should be monitored by geophones with the measurement of peak particle velocity recorded by a data logger. Vibrations will be monitored continuously for the duration of earthworks and piling works.

Geophones shall be installed by an acoustic consultant on top of pipe between saddles to monitor the vibration due to the works. We suggest the geophones be located at permanent spots as such that they do not require to be relocated during the works.

Baseline readings should be undertaken for geophones. We recommend at least a week before any work starts. This is to allow monitoring of background vibration levels around the site. The acoustic consultant and the Contractor must provide results of the baseline vibration monitoring including details of the construction activities and monitoring locations to Goodman. Prior to work commencing, the monitoring locations and vibration baseline survey with respect to background vibration levels should be approved.

A vibration monitoring plan shall be prepared for the proposed work and shall include the following items as a minimum:

- Vibration trigger levels. We recommend a three-tier traffic-light system (levels) with a list of actions for each level to be adopted.
- Monitoring frequency. We recommend the data to be downloaded and reported every month.
- Reporting requirements. We recommend the report to be issued to Goodman for review at the following stages:
  - prior to the work (baseline report),
  - every month during construction,
  - any times that a trigger level is reached
  - upon completion of construction

If required, PSM can prepare a vibration monitoring plan for the proposed work.

5. Dilapidation Survey

With regards to dilapidation survey of the pipes, we suggest the dilapidation surveys be undertaken at least for the following stages:

- Prior to commencement of any work on site
- After completion of the work

As a minimum the survey for each stage shall involve:

- Collecting photos of the conditions of the site and existing pipeline and the foundations.
- Mapping / Identifying any existing issues or cracks, etc. prior to, during and after the work.

Should you have any queries regarding this letter, please do not hesitate to contact the undersigned.

For and on behalf of
PELLS SULLIVAN MEYNINK





JOSSELIN RIBOT
GEOTECHNICAL ENGINEER

AGUSTRIA SALIM
PRINCIPAL

APPENDIX D

Correspondance with WaterNSW

Consultation

Water NSW

From: Justine Clarke <Justine.Clarke@waternsw.com.au>
Sent: Wednesday, 11 September 2019 9:25 AM
To: Alex Lohrisch <Alex.L@atl.net.au>
Cc: Stephanie Partridge <Stephanie.Partridge@goodman.com>; Alison Kniha <Alison.Kniha@waternsw.com.au>; Kym Dracopoulos <Kym.Dracopoulos@goodman.com>; Luke Ridley <Luke.Ridley@goodman.com>
Subject: WaterNSW Response - Oakdale West Estate - STAGE 1 CEMP

Hi Alex

Thank you for allowing WaterNSW the opportunity to comment on the Construction Environmental Management Plan (CEMP) for stage 1 of the Oakdale West Estate as per draft consent condition D111.

WaterNSW understands the works covered by the CEMP will be completed by Burtons and include;

- Bulk earthworks across the entire site (with the exception to the WNSLR works area which covers the Construction Access Road and Basin 1);
- Construction of the retaining and noise walls across the site;
- Construction of the western bund;
- Construction of lead in services infrastructure, including potable water, sewer, telecommunications and electrical;
- Construction of Roads 1, 2, 6 and part of Road 7;
- Construction of Basins 2, 3, 4, and 5; and
- Landscaping across the site.

WaterNSW notes that no works are planned within our lands and no access consent is requested for this stage of works. Nevertheless, works will be occurring directly adjacent to the Pipelines corridor.

WaterNSW acknowledges that controls adopted for the North South Link Road (NSLR) where relevant are included within this CEMP including vibration controls and monitoring, fencing arrangements, erosion and sediment controls, incident reporting, dilapidation surveying, ongoing consultation, and traffic controls. The implementation of these controls is essential for the protection of Sydney's critical water supply infrastructure.

In general WaterNSW supports the implementation of this plan and makes the following additional comments;

- To manage any unpredicted impacts to water quality on Ropes Creek and protect WaterNSW stormwater drainage infrastructure, controls for monitoring water quality and discharge risk should be included in the contingency plan at section 5.1 (Table 30).
- Include an item within section 3.4 'Inductions and Environmental Training' to notify workers and visitors that *'Access into the WaterNSW pipeline corridor is prohibited unless written access consent has been obtained from WaterNSW'*.

If you have any questions please do not hesitate to contact me.

Regards

Justine Clarke
Catchment and Asset Protection Adviser

WaterNSW

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APPENDIX H

Construction Air Quality Management Plan

OAKDALE WEST INDUSTRIAL ESTATE - LOT 1A

Construction Air Quality Management Plan
SSD 7348

Prepared for:

Goodman Property Services (Aust) Pty Ltd
Level 17
60 Castlereagh Street
Sydney NSW 2000

SLR Ref: 630.30016-R03
Version No: -v1.0
May 2020

PREPARED BY

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.30016-R03-v1.0	22 May 2020	Varun Marwaha	Kirsten Lawrence	Varun Marwaha

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1 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Goodman Property Services (Aust) Pty Ltd (Goodman) to prepare a Construction Air Quality Management Plan (CAQMP) for Lot 1A within Precinct 1 the Oakdale West Estate (OWE) located in the western Sydney area of Erskine Park, New South Wales (NSW).

The CAQMP for construction of the OWE was finalised by SLR in January 2020 (SLR 2020) which was required under Condition D100 of Development Consent for State Significant Development 7348 (SSD 7348).

Whilst development consent (SSD 7348) has been granted for the OWE 'Concept Proposal' and 'Stage 1 Development', this CAQMP is specifically for the construction of Lot 1A and generally adheres to the requirements stipulated in the overarching OWE CAQMP.

1.1 Development Overview

OWE is a proposed regional warehouse and distribution hub, is located at Kemps Creek within the Penrith Local Government Area (LGA) and forms part of the broader Oakdale Industrial Precinct located within the Western Sydney Employment Area (WSEA).

The OWE is bound to the north by the Water NSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with Transgrid infrastructure. To the east of the site is Goodman's Oakdale South Estate. Emmaus Catholic College and Emmaus Retirement Village are located to the west of the site. Other boundaries interface with adjoining rural lands accommodating a mix of rural-residential and agricultural uses (see **Figure 1**).

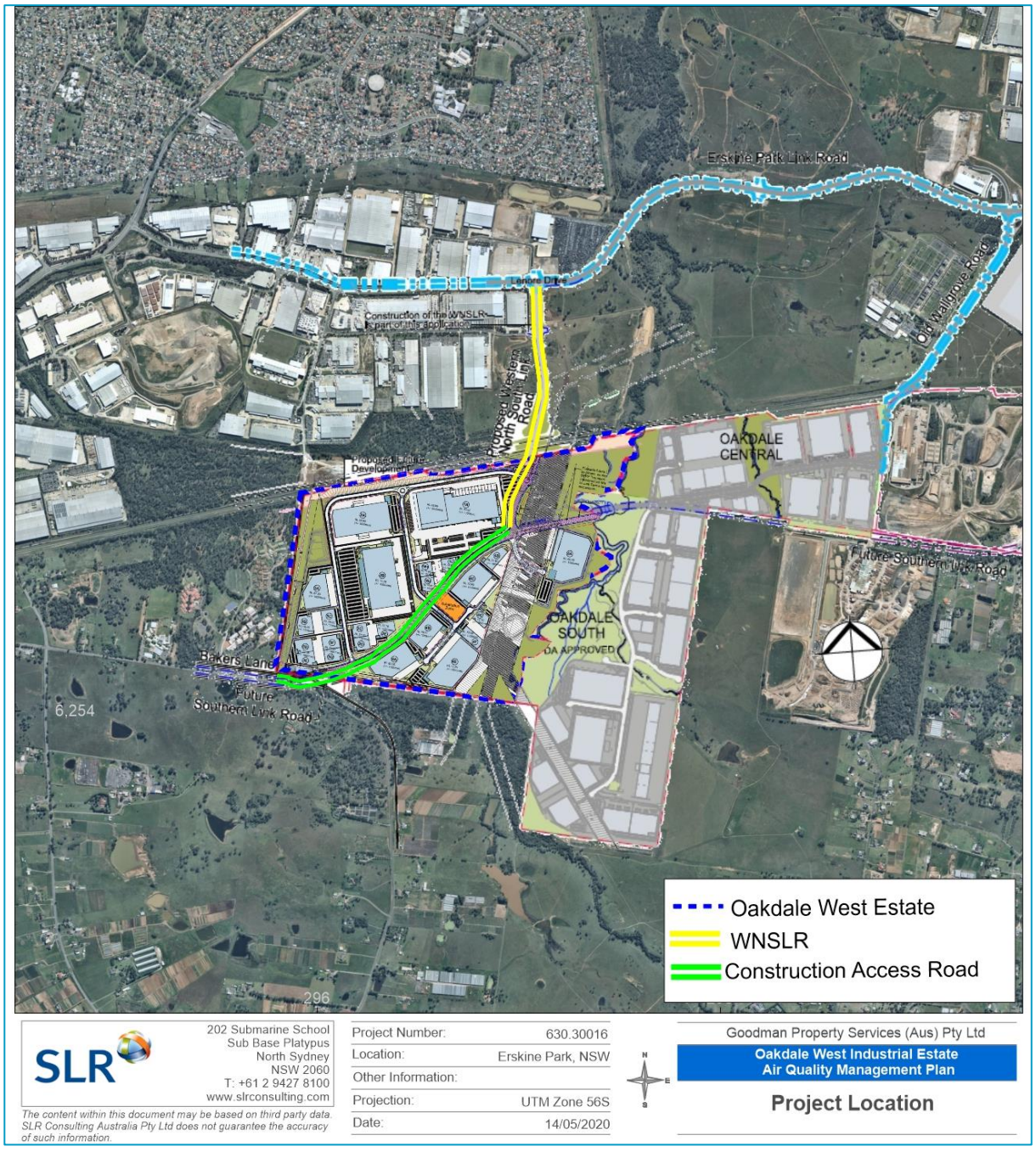
The Development Consent for OWE was granted for the OWE 'Concept Proposal' and 'Stage 1 Development'. The Concept Proposal essentially comprises a 'Master Plan' to guide the staged development of OWE and core development controls that will form the basis for design and assessment of future development applications for the site. It includes:

- Establishing primary site access, road layouts (including internal road network and connections to the external road network), developable and non-developable lands, biodiversity offsets, indicative development stages and development controls for the future development of the site;
- Stage 1 Development of the Estate including:
  - Estate Works, including site preparation, bulk earthworks and retaining walls, catchment level stormwater infrastructure, trunk services connections and utility infrastructure, roads and access infrastructure associated with Stage 1 and subdivision in Stage 1 development works;
  - Precinct Development, including construction, fit out and use of warehouse buildings within Precinct 1, detailed earthworks, on lot stormwater, services and utility infrastructure and construction of industrial/warehouse buildings;
  - Construction of a new regional road known as the Western North South Link Road (WNSLR) connecting to Lenore Drive to provide the primary access to the site; and
  - Western boundary landscaping.

This CAQMP has been prepared to cover the construction of Lot 1A by Richard Crookes Constructions (RCC). AT&L Associates (AT&L) will act as the Project Manager and Contract Superintendent overseeing all construction at Oakdale West Estate[1]. Lot 1A is located in Precinct 1 of OWE as shown in **Figure 2**.

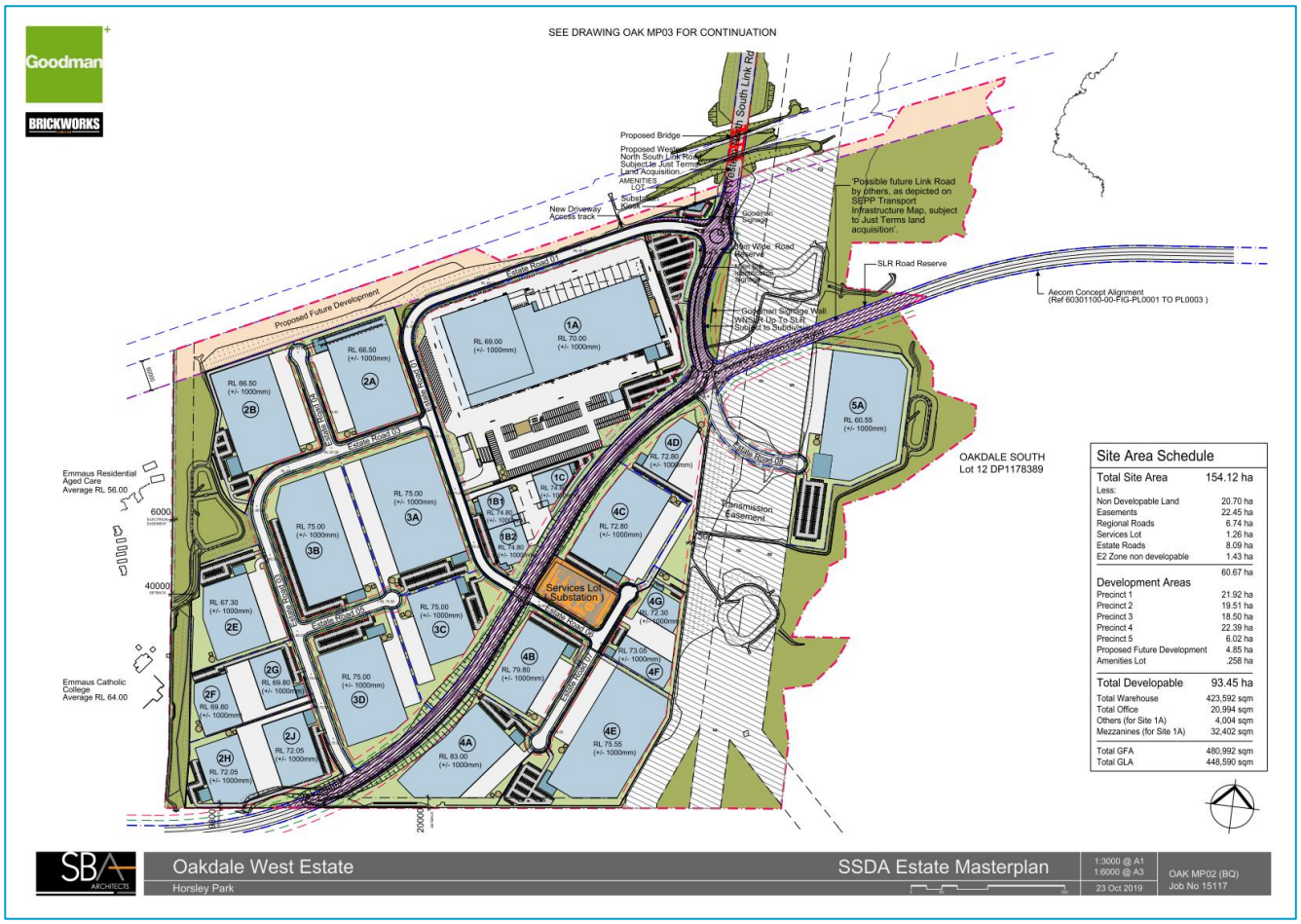
For the purposes of this document, the development is described in *Environmental Impact Statement, Oakdale West Estate - State Significant Development Application* (EIS) prepared by Urbis (2017), including all specialist assessments and other appendices.

Figure 1 Regional Locality



[1] Where Goodman is nominated as having responsibility as the Applicant, this may be delegated to their specialist consultants.

Figure 2 Oakdale West Masterplan



1.2 Objectives of the CAQMP

The objectives of this CAQMP are as follows:

- Maintain acceptable levels of amenity for surrounding residents;
- Ensure compliance with relevant ambient air quality criteria for particulate matter at surrounding receptor locations;
- Maintain an effective response mechanism to deal with issues and complaints relating to dust emissions from the construction works;
- Outline roles and responsibilities in relation to the management of dust emissions during construction; and
- Promote environmental awareness among employees and subcontractors.

2 Statutory Requirements

The Development Consent (SSD 7348) requirements stipulated for the construction of Lot 1A and where they have been addressed in this CAQMP are shown in **Table 1**.

Table 1 Assessment against SSD 7348 Conditions

Conditions	Response / Section Reference
Condition D98	
The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent	**Section 8**
Condition D99	
During construction of Stage 1, the Applicant must ensure that: (a) exposed surfaces and stockpiles are suppressed by regular watering and or other dust suppression methods; (b) all trucks entering or leaving the Site with loads have their loads covered; (c) trucks associated with Stage 1 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.	**Section 8**
Condition D100	
(a) be prepared by a suitably qualified and experienced person(s)	2-page CV of the author is attached in **Appendix D**
(b) detail and rank all emissions from all construction activities, including particulate emissions	**Section 7**
(c) describe a program that is capable of evaluating the performance of the construction and determining compliance with key performance indicators	**Section 10**
(d) identify the control measures that will be implemented for each emission source	**Section 8**
(e) nominate the following for each of the proposed controls: - key performance indicator - monitoring method - location, frequency and duration of monitoring - record keeping - complaints register - response procedures - compliance monitoring	**Section 8 &** **Section 10**
Condition D118	
(a) 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, Stage 1 or any management measures;	**Section 5.2**

Conditions	Response / Section Reference
(b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	**Section 8**
(c) a program to monitor and report on the: (i) impacts and environmental performance of Stage 1; and (ii) effectiveness of the management measures set out pursuant to paragraph (b) above;	**Section 10**
(d) 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 11**
(e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time;	**Section 10**
(f) 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 9 & Appendix C** See overarching CEMP
(g) a protocol for periodic review of the plan.	**Section 13**

3 Project Overview

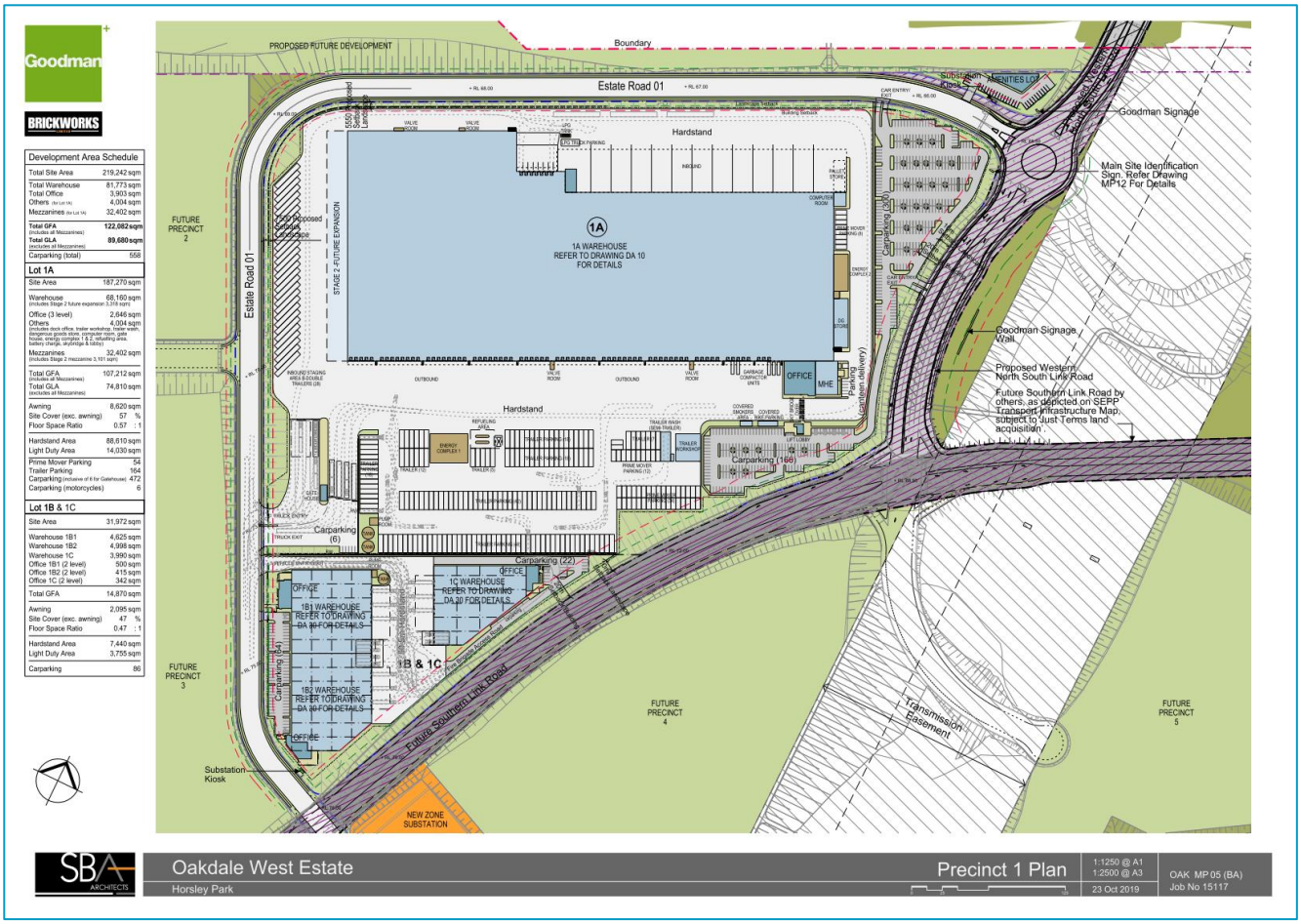
3.1 Surrounding Land Uses

The area surrounding OWE includes land uses such as industrial warehouses and factories, several of which have been identified as having the potential to be considered sources of air emissions. The nearest residential receptors to Oakdale West boundary is located approximately 50 m south on Aldington Road, Erskine Park. It is noted that Precinct 1 is located on the north side of OWE and is the approximately 1.5 km away from the nearest resident.

3.2 Precinct 1 Layout

Precinct 1 layout is shown in **Figure 3**. Lot 1A is located towards north and is the largest of the three proposed warehouses within Precinct 1.

Figure 3 Precinct 1 Layout



3.3 Construction Activities

Construction at Lot 1A is scheduled to commence in December 2020 and will extend until March 2022. The construction activities will be staged and are summarised in **Table 2**.

Table 2 Construction Staging and Activities

Stage	Duration	Activities
Stage 1	24 weeks (December 2020 – May 2021)	Civil works and excavation
Stage 2	24 weeks (February 2021 – July 2021)	Concrete pours – Warehouse, external hardstand and office
Stage 3	16 weeks (March 2021 – June 2021)	Structure and general construction
Stage 4	20 weeks (June 2021 – October 2021)	External finishes – Warehouse cladding and facade
Stage 5	20 weeks (November 2021 – March 2022)	External boundary, kerb and footpath works

3.4 Construction Hours

Construction hours will be in accordance with Conditions D70 and D71 of Development Consent SSD 7348, which are reproduced below:

> *D70. The Applicant must comply with the hours detailed in Table 5, unless otherwise agreed in writing by the Planning Secretary.*
>
> *Table 5: Hours of Work*

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

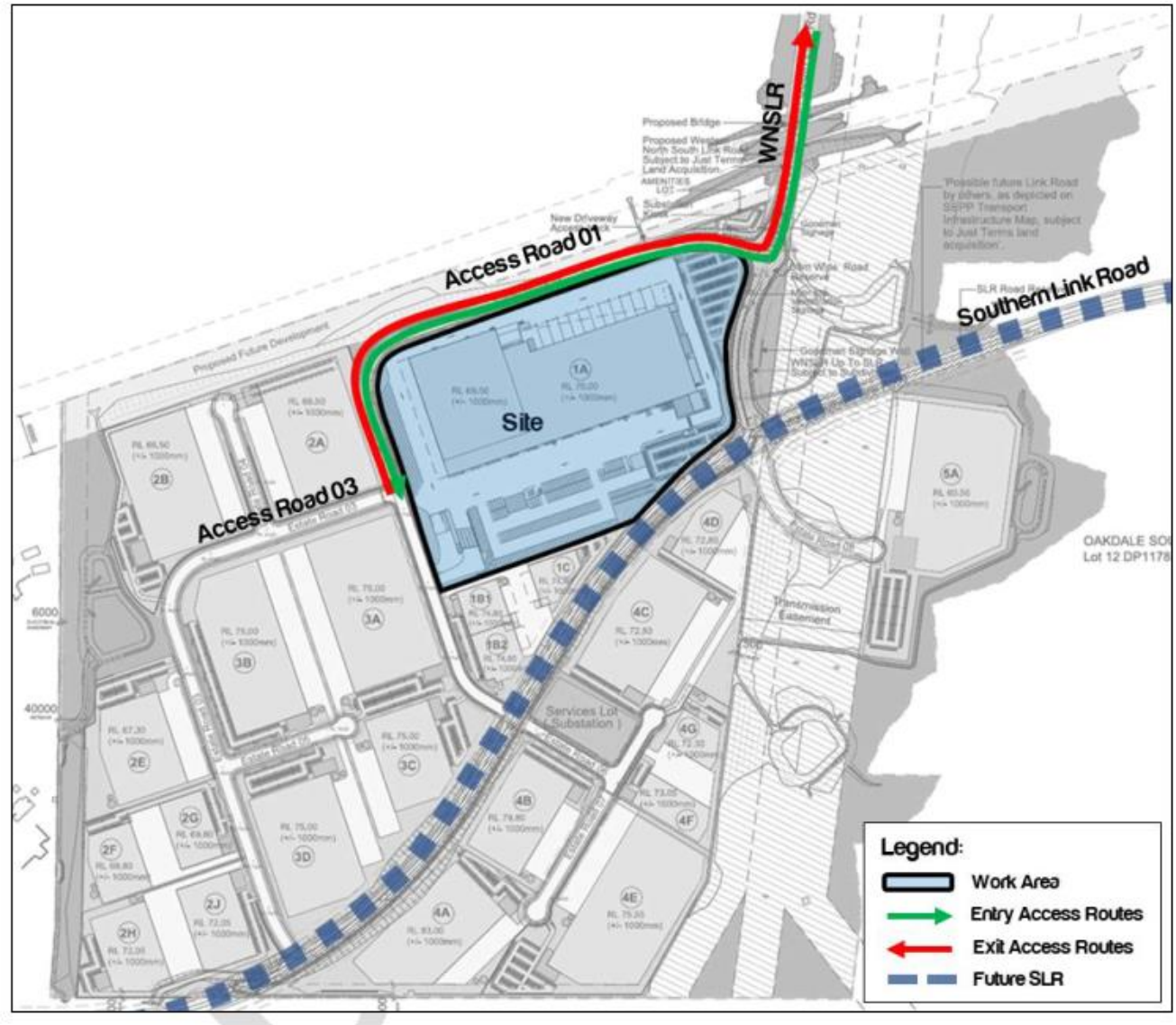
> *D71. Works outside of the hours identified in Condition D70 may be undertaken in the following circumstances:*
>
> *a) works that are inaudible at the nearest sensitive receivers;*
>
> *b) works agreed to in writing by the Planning Secretary;*
>
> *c) for the delivery of materials required outside 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.*

The construction hours will be provided to all staff and contractors in the induction. The movements of staff and contractors will be recorded for this project.

3.5 Construction Site Access

Access to Lot 1A will be via the WNSLR and Access Road 01, as shown in **Figure 4**.

Figure 4 Construction Site Access



3.6 Construction Contact Details

Table 3 lists the key contacts during the construction of Lot 1A.

Table 3 Construction Contact List

Role	Name	Company	Contact Details
Project Principal	Kym Dracopoulos	Goodman	0411 511 431 kym.dracopoulos@goodman.com
Principal's Superintendent	Dane Segail	AT&L	0405 715 306 dane.s@atl.net.au
Contract Superintendent	AT&L	AT&L	02 9437 1777 info@atl.net.au
Project Manager	Alex Lohrisch	AT&L	0415 398 014 alexl@atl.net.au
Contractor's General Manger – Industrial	Claude Concha	Richard Crookes Constructions	0434 077 660 ConchaC@richardcrookes.com.au
Contractor's Project Manager	Brendan Peera	Richard Crookes Constructions	0433 221 688 PeeraB@richardcrookes.com.au
Contractor's Senior Design Manager	Alex Hovy	Richard Crookes Constructions	0439 262 066 HovyA@richardcrookes.com.au
Environmental Representative	Carl Vincent	ERSED	0424 203 046 carl.vincent@ersed.com.au
Communications and Community Liaison Representative	Dan Thompson	SLR	0428 060 995 dthompson@slrconsulting.com

4 Potential Sources of Air Emissions

During the construction works, fugitive dust emissions are considered to be the primary emission type, which could give rise to nuisance and/or health impacts for the surrounding sensitive areas. The key potential sources of dust associated with construction of Lot 1A have been identified as:

- Dust emissions from earthworks activities (e.g. excavation and loading of soils to trucks);
- Wind-generated dust from disturbed surfaces and stockpiles;
- Wheel-generated dust and particulate matter emissions in diesel exhaust emissions from on-site plant and equipment and construction traffic movements; and
- Particulate matter associated with exhaust emissions from increased/congested traffic emissions due to road closures or diversions.

In addition to the construction activities being carried out at any point in time, a number of other environmental factors may also affect the generation and dispersion of dust emissions, including:

- Wind direction - determines whether dust and suspended particles are transported in the direction of the sensitive receptors;
- Wind speed - governs the potential suspension and drift resistance of particles;
- Surface type - more erodible surface material types have an increased soil or dust erosion potential;
- Surface material moisture - increased surface material moisture reduces soil or dust erosion potential;
- Other external factors such as current works being undertaken by others outside of the defined Project boundaries and current climatic (dry) weather conditions;
- Rainfall or dew - rainfall or heavy dew that wets the surface of the soil reduces the risk of dust generation.

The Environmental Impact Statement (EIS) for the construction and operation of the whole OWE was prepared by Urbis in November 2017 (Urbis 2017). Appendix U (Air Quality Impact Assessment) of the EIS states that the main emissions to air during the construction phase will be emissions of particulate matter (as TSP, PM_{10} and $PM_{2.5}$) and nuisance dust from the movement of vehicles and construction equipment, excavation and rehabilitation, demolition, clearing and grading, truck loading and unloading and wind erosion. The same sources are also identified for construction of Lot 1A.

The construction activities are broadly divided into four categories i.e. demolition, earthworks, construction (building) and trackout. Potential air quality impacts associated with construction of Lot 1A and the relative risk ratings are addressed in **Section 7**.

5 Relevant Pollutants and Air Quality Criteria

5.1 Pollutants of Concern

As identified in **Section 4**, potential air pollutants of interest for the construction of Lot 1A are considered to be both:

- Suspended particulate matter; and
- Deposited dust.

The following sections outline the potential health and amenity issues associated with the above pollutants, while **Section 5.2** outlines relevant air quality assessment criteria.

5.1.1 Suspended Particulate Matter

Airborne contaminants that can be inhaled directly into the lungs can be classified on the basis of their physical properties as gases, vapours or particulate matter. In common usage, the terms "dust" and "particulates" are often used interchangeably. The health effects of particulate matter are strongly influenced by the size of the airborne particles. Smaller particles can penetrate further into the respiratory tract, with the smallest particles having a greater impact on human health as they penetrate to the gas exchange areas of the lungs. Larger particles primarily cause nuisance associated with coarse particles settling on surfaces.

The term "total particulate matter" (TSP) refers to a category of airborne particles, typically less than 30 microns (µm) in diameter. Particulate matter with an aerodynamic diameter of 10 microns or less is referred to as PM_{10}. The PM_{10} size fraction is sufficiently small to penetrate the large airways of the lungs, while $PM_{2.5}$ (2.5 microns or less) particulates are generally small enough to be drawn in and deposited into the deepest portions of the lungs. Potential adverse health impacts associated with exposure to PM_{10} and $PM_{2.5}$ include increased mortality from cardiovascular and respiratory diseases, chronic obstructive pulmonary disease and heart disease, and reduced lung capacity in asthmatic children. In an urban setting, the emission of $PM_{2.5}$ is primarily associated with vehicles exhausts resulting from the incomplete combustion of diesel.

For the purposes of this CAQMP, suspended particulate matter refers to PM_{10} only.

5.1.2 Deposited Dust

Section 5.1.1 is concerned in large part with the health impacts of particulate matter. Nuisance impacts need also to be considered, mainly in relation to deposited dust. Dust can cause nuisance by settling on surfaces and possessions, affecting visibility and contaminating tank water supplies. High rates of dust deposition can also adversely affect vegetation by blanketing leaf surfaces.

5.2 Ambient Air Quality Criteria

There are no air quality criteria outlined within the Development Consent SSD 10397, therefore the NSW EPA criteria have been adopted in **Table 4** and **Table 5**.

5.2.1 Suspended Particulate Matter

State air quality guidelines specified by the NSW Environmental Protection Agency (EPA) for the pollutants identified in **Section 5.1** are published in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA 2017a) (hereafter 'Approved Methods'). The ground level air quality impact assessment criteria listed in Section 7 of the Approved Methods have been established by NSW EPA to achieve appropriate environmental outcomes and to minimise associated risks to human health as published in the Approved Methods. They have been derived from a range of sources and are the defining ambient air quality criteria for NSW, and are considered to be appropriate for use in this assessment.

A summary of the relevant impact assessment criteria for particulate matter is provided in **Table 4**.

Table 4 NSW EPA Criterion for Particulate Matter

Pollutant	Averaging Period	Concentration
PM_{10}	24 Hours	50 µg/m^3
	Annual	25 µg/m^3

Source: EPA 2017a

5.2.2 Deposited Dust

The relevant criterion for nuisance dust deposition is provided in **Table 5**. The rate of dust deposition is measured by means of a collection gauge, which catches the dust settling over a fixed surface area and over a period of about 30 days.

Table 5 NSW EPA Criterion of Nuisance Dust Deposition

Pollutant	Averaging Period	Assessment Criteria (g/m^2/month)
Deposited dust	Annual	2 (maximum increase in deposited dust level) 4 (maximum total deposited dust level)

5.3 Local Government Air Quality Toolkit

The NSW EPA has developed the Local Government Air Quality Toolkit (EPA 2018), in response to requests from local Council officers for information and guidance on the common air quality issues they manage. Guidance is available under Part 3 of the Local Government Air Quality Toolkit for Construction Sites.

This document lists the common sources of emissions and mitigation and management measures to control airborne dust levels from construction sites and has been consulted in the development of this CAQMP.

6 Existing Environment

6.1 Local Meteorology

The Bureau of Meteorology (BoM) maintains and publishes data from weather stations across Australia. The closest such station recording wind speed and wind direction data is the Horsley Park Automatic Weather Station (AWS) (Station ID 67119), located approximately 5.5 kilometres (km) southeast of the OWE. The long term and short term seasonal wind roses and long term rainfall patterns observed at the Horsley Park AWS indicate that:

- Winds that would blow fugitive dust emissions from the demolition/construction works towards the nearest sensitive receptors located to the west and south of the proposed construction activities occur rarely during autumn and winter, and are more likely to occur during summer and spring.
- The long term wind and rainfall patterns suggest that construction activities at the Development Site have the greatest potential to impact on surrounding sensitive receptors during the months of May (autumn), and July (winter) to October (spring).

Full analysis of the wind roses and rainfall can be found in **Appendix A**.

6.2 Background Air Quality

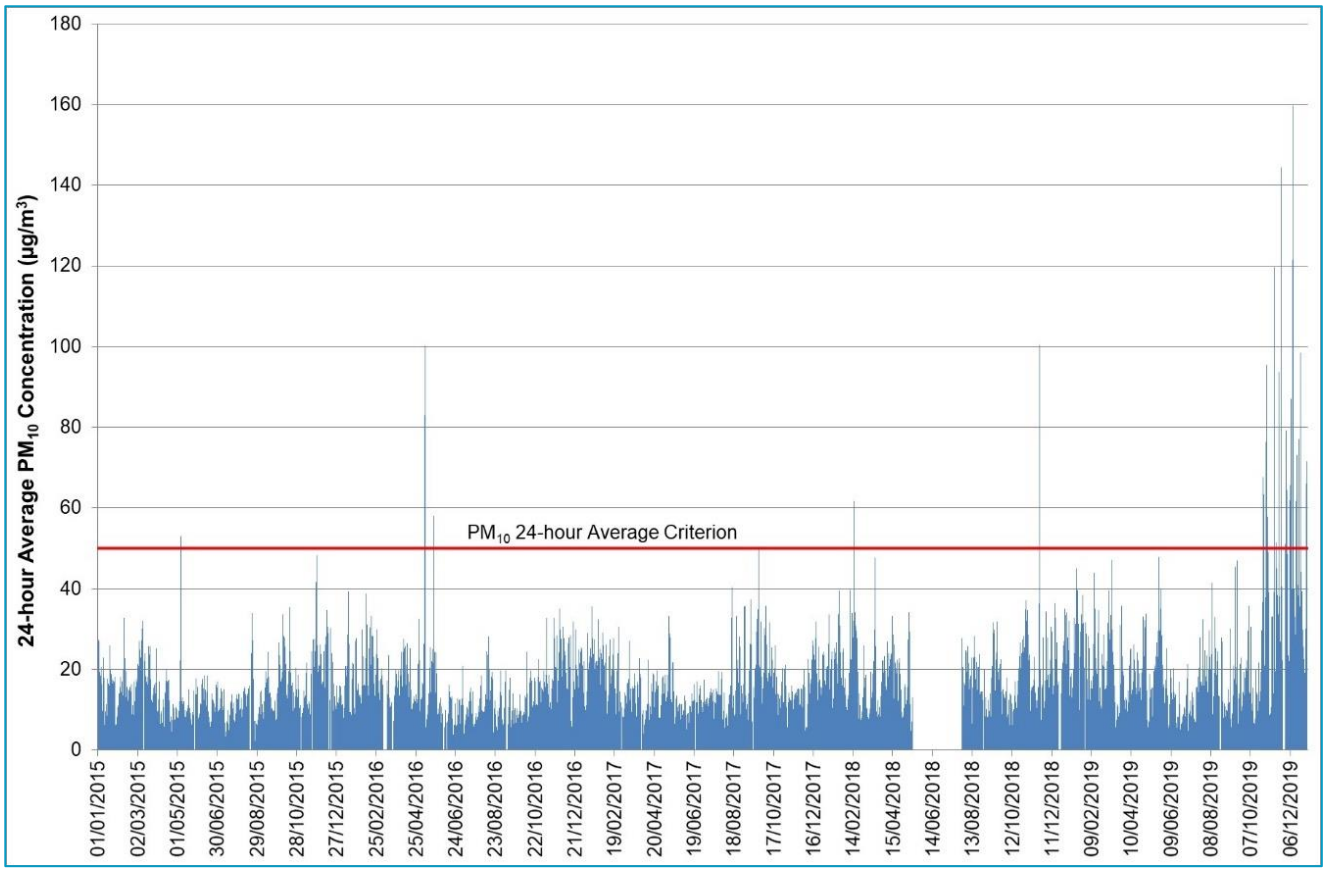
The NSW OEH maintains a network of Air Quality Monitoring Stations (AQMSs) across NSW. The nearest such station is located at St Marys, approximately 4.5 km northwest of OWE. The St Marys AQMS was commissioned in 1992 and is located on a residential property off Mamre Road, St Marys. It is situated in the centre of the Hawkesbury Basin and is at an elevation of 29 m.

A summary of the PM_{10} concentrations for the last five years (2015-2019) is tabulated in **Table 6** and presented graphically in **Figure 5**.

Table 6 Summary of PM_{10} Monitoring Data at St Marys AQMS (2015 – 2019)

Year	Maximum 24-hour Average	Annual Average
	µg/m³	µg/m³
2015	53.0	15.0
2016	100.2	16.1
2017	49.8	16.2
2018	100.5	19.4
2019	159.8	24.7
Criterion	**50**	**25**

Figure 5 Measured 24-Hour Average PM_{10} Concentrations at St Marys AQMS (2015 – 2019)



Exceedances of the 24-hour average PM_{10} criterion were recorded by the St Marys AQMS in all years except 2017. A review of the exceedances recorded during 2015 (OEH 2017a), 2016 (OEH 2017b), 2018 (OEH 2019) and 2019 indicates that they were associated with natural events such as bushfires or dust storms, or hazard reduction burns.

It has been noted the NSW EPA in their publication – NSW Annual Air Quality Statement 2019 (DPIE 2020) state that air quality levels varied across the NSW depending on regions. Overall, air quality met standards for 91% of days during the year on the Central Coast down to 60% of days in the Northern Tablelands. Air quality in NSW was greatly affected by the continuing intense drought conditions and unprecedented extensive bushfires during 2019. The poorer air quality than 2018 was primarily due to elevated particle pollution throughout the State.

For 2018, the air quality was generally 'good', and air quality standards were met for 98% of the days in Sydney. During this time, exceedances of the national air quality standards for particle pollution have usually been associated with regional dust storms and vegetation fires.

7 Assessment of Dust Emissions During Construction

The key potential health and amenity issues associated with construction of Lot 1A are, respectively:

- Elevated suspended particulate concentrations (PM_{10}); and
- Nuisance due to dust deposition (soiling of surfaces) and visible dust plumes that may potentially be observed to be leaving the site.

7.1 Construction Impact Assessment Methodology

Quantitatively assessing impacts of fugitive dust emissions from construction projects using predictive modelling is seldom considered appropriate, primarily due to the uncertainty in the details of the construction activities, including equipment type, number, location and scheduling, which are unlikely to be available at the time of the assessment. Furthermore, they are also likely to change as construction progresses. In comparison, the equipment and operations of a mine or quarry are determined during the planning stages and more likely to remain consistent for long periods (several months or years).

Instead, it is considered appropriate to conduct a qualitative assessment. Potential impacts of dust emissions associated with proposed demolition and construction activities at the Development Site has been performed based on the methodology outlined in the Institute of Air Quality Management (UK) (IAQM) document, "*Assessment of dust from demolition and construction*" (Holman et al 2014). This guidance document provides a structured approach for classifying construction sites according to the risk of air quality impacts, to identify relevant mitigation measures appropriate to the risk (see **Appendix C** for full methodology).

The IAQM approach has been used widely in Australia for the assessment of air quality impacts from construction projects and the identification of appropriate mitigation measures, which has been accepted by regulators across all states and territories for a variety of construction projects.

The IAQM method uses a four-step process for assessing dust impacts from construction activities:

- **Step 1**: Screening based on distance to the nearest sensitive receptor; whereby the sensitivity to dust deposition and human health impacts of the identified sensitive receptors is determined.
- **Step 2**: Assess risk of dust effects from activities based on:
  - the scale and nature of the works, which determines the potential dust emission magnitude; and
  - the sensitivity of the area surrounding dust-generating activities.
- **Step 3**: Determine site-specific mitigation for remaining activities with greater than negligible effects.
- **Step 4**: Assess significance of remaining activities after management measures have been considered.

7.2 Risk Assessment

Table 7 presents the preliminary risk of air quality impacts from uncontrolled construction activities at the OWE derived using the risk matrix provided in (**Table C4** in **Appendix C**), based on the identified receptor sensitivity and sensitivity of the area. It is noted that these risks are for the whole OWE construction project, not for the construction of Lot 1A in isolation.

Table 7 Preliminary Risk of Air Quality Impacts from Construction Activities (Uncontrolled)

Impact	Sensitivity of Area	Dust Emission Magnitude				Preliminary Risk			
		Demolition	Earthworks	Construction	Trackout	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Small	Large	Large	Medium	Negligible	Low Risk	Low Risk	Low Risk
Human Health	Low					Negligible	Low Risk	Low Risk	Low Risk

The results indicate that there is a low risk of adverse dust soiling and a low risk of human health impacts occurring at the off-site sensitive receptor locations if no mitigation measures were to be applied to control emissions during the works.

Based on the dust emission magnitudes and the preliminary risk from these activities, the activities are ranked as (highest risk to lowest risk):

1. Earthworks
2. Construction
3. Track out
4. Demolition

For almost all construction activity, the IAQM Methods notes that the aim should be to prevent significant effects on receptors through the use of effective mitigation, and experience shows that this is generally possible.

8 Mitigation Measures

The potential for dust emissions during construction of Lot 1A and the potential impact (as discussed in **Section 4**) on surrounding sensitive receptors are anticipated to be largely controllable through a range of mitigation measures, including good site management, good housekeeping measures, appropriate vehicle maintenance and applying appropriate dust mitigation measures where required. The dust mitigation measures to be implemented during construction of Lot 1A are detailed in **Table 8**, which are consistent with those stipulated in the CAQMP for OWE (SLR 2020). The dust mitigation measures specific to the key emission activities (i.e. earthworks, construction, track out and demolition) are also provided in **Table 8.**

Note: **Table 8** is replicated as Table 13 in the CEMP.

Table 8 Dust Mitigation Measures

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Communications			
The Community Communications Strategy will be implemented.	Communications and Community Liaison Representative	Prior to commencing construction and ongoing	Best practice
The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary. This may be the Contractor's Project Manager.	RCC		
The head or regional office contact information will be displayed on site signage.			
Site Management			
All dust and air quality incidents will be undertaken as per Section 3.5 of the CEMP.	RCC	Ongoing	CEMP Section 3.5
All dust and air quality complaints will be undertaken as per Section 3.6 of the CEMP.			CEMP Section 3.6
Where excessive dust events occur (i.e. prolonged visual dust in a particular area), additional watering of dust producing activities will be undertaken or activities temporarily halted until such times that the dust source is under control.		During excessive dust events	Best practice
Horsley Park Bureau of Meteorology station weather forecast will be reviewed daily (i.e. wind, rain) to inform site dust management procedures for the day.		Daily	
Preparing and Maintaining the Site			
All reasonable steps to minimise dust generated will be undertaken during construction.	RCC	Ongoing	SSD 7348 Condition D98
Exposed surfaces and stockpile will be suppressed by regular watering or use of approved dust suppressants.			SSD 7348 Condition D99a
Land stabilisation works will be carried out in such a way on site to minimise exposed surfaces.			SSD 7348 Condition D99e

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Construction of Lot 1A will not cause or permit the emission of any offensive odour, as defined in the POEO Act.	RCC	Ongoing	SSD 7348 Condition D102
Dust generating activities in areas close to receptors will be closely monitored and additional mitigation applied as required to best manage potential dust emissions			Best practice
Stockpiles that will be in place for more than 20 days and are not actively used as well as any stockpiles that are susceptible to wind or water erosion will be suitably protected from erosion within 10 days of the establishment of each stockpile. Temporary stabilisation of disturbed surfaces will be undertaken within two weeks of the stockpile being established.			
Site fencing and barriers will be kept clean using wet methods.			
Operating Vehicle/Machinery and Sustainable Travel			
Trucks associated with Stage 1 will not track dirt off site and onto the public road network.	RCC	Ongoing	SSD 7348 Condition D99c
Project access roads used by delivery trucks will be kept clean.			SSD 7348 Condition D99d
All on-road vehicles will comply with relevant vehicle emission standards (prescribed by the NSW RMS), where applicable, and will be maintained in good condition, in accordance with manufacturer's specifications and POEO Act.			Best practice
Delivery trucks will switch off engines whilst undertaking a delivery on-site, if idling time is likely to exceed 5 minutes.			
Vehicle speed limit restrictions are implemented on site, including: • General - 20km/h • High risk area - 10km/h • Haul routes – 50 km/h			
Truck queuing and unnecessary trips will be minimised through logistical planning and by the identification and use of specific park up/hold areas away from the Project.			
Operations			
Only cutting, grinding or sawing equipment fitted with suitable dust suppression systems, such as water sprays will be used.	RCC	Ongoing	Best practice
Adequate water supply will be available on the site for effective dust/particulate matter suppression/ mitigation using a combination of potable and non-potable water sources.			

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Water carts will be used on all denuded or exposed surfaces and unsealed roads to minimise dust emissions.	RCC	Ongoing	Best practice
Equipment, inclusive of, but not limited to Environmental spill kits will be 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.			
Works will be assessed during strong winds or in weather conditions where high levels of airborne particulates may potentially impact the sensitive receivers. Continual monitoring of wind speed and direction will be undertaken to guide this decision and ensure that adequate mitigation measures are undertaken		Continuously and during high winds	
Waste Management			
All trucks entering or leaving the Site will have their loads covered.	RCC	Ongoing	SSD 7348 Condition D99b
No waste materials, timbers or any other combustible materials will be burnt on site.			Best practice
Earthworks			
Scopes of work will be planned in such a way to assist in minimising the duration that surfaces are left denuded	RCC	Ongoing	Best practice
Rehabilitation of disturbed surfaces will be undertaken within 20 days of final construction levels.		Within 20 days of final construction levels	
If unanticipated strong odours or significant visual dust emissions are noted or observed on site, an investigation will be undertaken by the RCC Project Manager to identify the scope of work or source of the emission prior to undertaking and applying any additional mitigation measures.		Ongoing	
Construction			
Sand and other aggregates will not be allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	RCC	Ongoing	Best practice
Trackout			
Water-assisted road sweeper(s) will be used on an as required basis should any material be tracked out of the site.	RCC	Ongoing	Best practice
Record all regular inspections and maintenance undertaken of site haul routes and project related access roads in a site log book.			
A wheel washing system and/or cattle grid system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site) will be implemented.			
Demolition			

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Ensure effective water suppression of dust is used during demolition operations.	RCC	Ongoing	Best practice
Bag and remove any biological debris or damp down such material before demolition.			

As required by condition D100 (e), **Table 9** summarises the parameters identified to assess the effectiveness of the control measures shown in **Table 8**.

Table 9 Summary of the Parameters to Assess the Effectiveness of Control Measures

Parameter	Visible Dust	Dust Deposition	Complaints	PM_{10}
Key performance indicator	No visible dust leaving the site boundary	<4 g/m^2/month	No complaints related to nuisance dust	<50 $\mu g/m^3$ as a 24-hour average
Monitoring method	Visual inspection / observations	Dust deposition gauges	-	See note
Location, frequency and duration of monitoring	Daily onsite inspection	Section 10	-	See note
Record keeping	Section 9	Section 11	Section 9	See note
Response procedures	Section 11	Section 11	Section 9	See note
Compliance monitoring	-	Section 10	-	See note

Note: Real-time suspended particulate monitors are installed at the site to assist with dust management (see **Section 10**). The monitoring system used however, does not meet the requirements of a compliance instrument. Should compliance-level monitoring be required as per **Table 10**, then this table will be updated to reflect the expanded monitoring programme.

9 Complaints Handling and Response Procedure

All complaints will be handled in accordance with the sections below and the OWE *Community Communication Strategy* (CCS) (SLR 2019).

9.1.1 Performance Objective

To ensure that all environmental complaints in relation to the air emissions from construction of the OWE are promptly and effectively received, handled and addressed.

9.1.2 Responsibility

The Communications and Community Liaison Representative is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an environmental complaint. The induction and toolbox talks outlined in the CEMP will be used to ensure all site employees are aware of and understand their obligations for complaints response.

All employees who take 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.

9.1.3 Complaints Handling Procedure

Upon becoming aware of a complaint, the protocol outlined below will be followed.

1. Record and Acknowledge

Any employee who take receipt of a complaint, either verbal or written, is 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, must 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 Communications and Community Liaison Representative will prioritise all complaints by considering the seriousness of the complaint including risk to health and safety and will attempt to provide an immediate response via phone or email. This will be undertaken in accordance with the CCS (SLR 2019).

3. Investigate

A field investigation will be initiated in an attempt to confirm details relevant to the complaint and the cause of the problem. Any air quality monitoring information and/or site records at and around the time of the complaint will be reviewed for any abnormality or incident that may have resulted in the complaint.

If the complaint is due to an incident, the notification requirements and handling procedures outlined in CEMP will be followed.

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 Communications and Community Liaison Representative 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.

As outlined in **Section 11**, if a complaint regarding air quality impacts is concluded to be substantiated, the need for any changes to the air quality mitigation measures identified for the Project in **Section 8** and/or the air quality monitoring programme outlined in **Section 10** is to be reviewed and, the AQMP updated as appropriate.

5. Respond to Complainant

The Communications and Community Liaison Representative and the Contract Superintendent will oversee the rectification of the issue. The Communications and Community Liaison representative will then 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 investigation of the situation is carried out and proposed improvements documented in order to minimise the potential for similar complaints in the future. On this basis, every complaint received is to be recorded in the Complaint Enquiry Form. A copy of the completed form will be maintained for at least five years. The complaint will also be recorded in the Complaints Register.

7. Preventative Action

Once the complaint has been suitably handled, proposed improvements will be investigated and implemented to minimise the potential of re-occurrence. The Complaint Enquiry Form will not be closed out until the preventative actions are completed and recorded on the form.

9.1.4 Complaints Register

A Complaints Register will be maintained during construction and will contain the following:

- A copy of the environmental complaint handling procedure;
- A separate reference sheet containing the contact details;
- Blank hard copies of the Complaint Enquiry Form; and
- Copies of all completed Complaint Enquiry Forms, which are to be maintained for at least five years after the event to which they relate.

10 Air Quality Monitoring Program

As discussed in **Section 7**, the risk of construction dust emissions causing nuisance impacts at off-site sensitive receptor locations is concluded to be low. It is also noted that any impacts will be temporary and managed through the implementation of appropriate mitigation measures (see **Section 8**).

An air quality monitoring program has been implemented by Goodman as part of the management of air emissions during construction of the OWE and WNSLR. The data from this ongoing monitoring program for OWE and WNSLR will be utilised to inform the management measures and contingency response for the construction of Lot 1A.

A summary of the on-site air quality monitoring programme at OWE and WNSLR is shown in **Table 10**. The locations of these monitors are shown in **Figure 6**. Further details are provided in the OWE and WNLSR AQMPs.

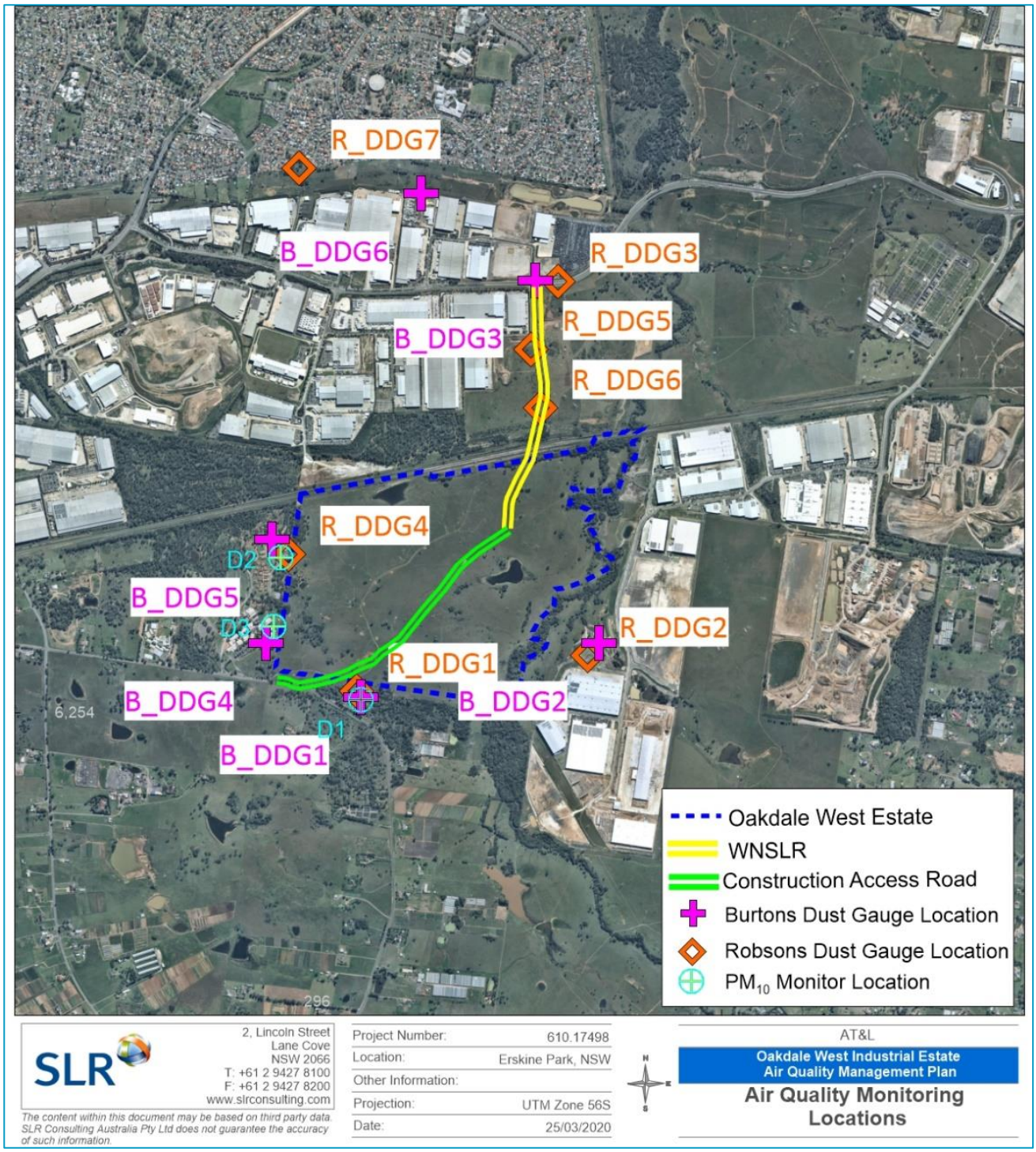
Table 10 Summary of On-Site Monitoring Programme

Pollutant	Equipment Used	Number of Monitoring Sites	Criterion (Averaging Period)
PM_{10}	Dust Pro 7000[a] (with telemetric capacity managed by Sentinex systems)	3	50 µg/m^3 (24-hour average)
Deposited dust	Dust Deposition Gauges (DDGs) - Robsons [b] Dust Deposition Gauges (DDGs) - Burtons [C]	7 6	4 g/m^2/month (annual average)

[a] The Dust Pro 7000 system is non-compliant with the *Approved Methods for Sampling and Analysis of Air Pollutants in NSW* (December 2006), and is used as a management tool to proactively manage the onsite operations to reduce dust impacts.

[b,C] The dust gauges were installed and maintained by construction contractor (Robson Civil and Burtons). It has not been confirmed by SLR if the installation of these dust gauges was undertaken in compliance with the AS/NZS 3580.1.1:2016.

Figure 6 Air Quality Monitoring Locations for the OWE and WNSLR Construction Project



11 Contingency Management Plan

The air quality contingency management plan for the construction of Lot 1A is shown in **Table 11**. As noted in **Section 10**, data from the ongoing monitoring program for OWE and WNSLR will be utilised to inform the appropriate contingency response for the construction of Lot 1A.

Table 11 Air Quality Contingency Management Plan for the Construction of Lot 1A

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Visible dust leaving the site	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	Continue monitoring program as normal.	Review and investigate construction activities and respective control measures. Where appropriate, implement additional remedial measures, such as: • *Deployment of additional water sprays, water trucks etc*	Undertake an investigation of the dust generating activities, and if necessary, temporarily halt the dust generating activities

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Dust deposition reading of >4g/m^2/month	Trigger	Dust deposition rates are less than 4 g/m^2/month at all the dust gauges.	Dust deposition rate greater than 4 g/m^2/month is recorded by any of the dust gauges	Dust deposition rates greater than 4 g/m^2/month are recorded by two or more dust gauges for two months in a row.
	Response	Continue monitoring program as normal.	• OWE and WNSLR Project Managers to analyse data to try to identify the source(s) of dust. • RCC to review operations to reduce dust emissions from the identified key source(s). Implement any additional mitigation measures as required, such as additional watering.	• OWE and WNSLR Project Managers to review and investigate construction activities and respective control measures for the monitoring period. • If it is concluded that construction activities at Lot 1A were directly responsible for the exceedance (i.e. the exceedance event was not caused due to high regional dust levels or local non-project dust source), RCC to submit an incident report to government agencies.
Complaints received regarding nuisance dust	Trigger	There are no complaints received during the construction	An air-quality related complaint is received from a nearby resident	Further complaints are received from the same complainant after the additional mitigation measures have been implemented
	Response	Continue monitoring program as normal.	• Report the complaint to the regulator, in line with complaints handling procedure (See **Section 9**). • Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc), where appropriate.	• Review real-time monitoring data at the existing continuous monitors to investigate the likelihood of onsite activities contributing (see **Appendix D**).

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Real-time suspended particulate matter monitoring (TSP and PM_{10})	Trigger	Running 24-hour average PM_{10} concentrations < 40 µg/m^3	Running 24-hour average PM_{10} concentrations >40 µg/m^3 but <50 µg/m^3	Running 24-hour average PM_{10} concentrations >50 µg/m^3
	Response	Continue monitoring program as normal.	Owe and WNSLR Project Managers to review and investigate construction activities and respective control measures. Where appropriate, implement additional remedial measures, such as: • Deployment of additional water sprays, water trucks etc • Relocation or modification of dust-generating sources • Record findings of investigations and actions taken to reduce dust levels • Continue to closely monitor dust levels to ensure they are decreasing If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the Lot 1A site to minimise cumulative impacts, but also record details of the cause of the elevated background levels.	• OWE and WNSLR Project Managers to review and investigate construction activities and respective control measures for the monitoring period, in an air pollution incident report (see **Appendix D**). • If it is concluded that construction activities at Lot 1A were directly responsible for the exceedance (ie the exceedance event was not caused due to high regional dust levels or local non-project dust source), RCC to submit an incident report to government agencies.

12 Roles and Responsibilities

Overall roles and responsibilities relating to the project are outlined in Section 3.2 of the overarching CEMP.

The key responsibilities specifically for dust management are as follows:

12.1 Contractor's Project Manager

- Ensuring appropriate resources/plant/personnel are available for the implementation of this CAQMP;
- Assessing data from inspections and providing project-wide advice to ensure consistent approach and outcomes are achieved;
- Providing necessary training for project personnel to cover air quality management;
- Reviewing and update of this CAQMP;
- Ensuring that the Environmental Coordinator monitors the PM_{10} data being supplied by the onsite Senitex system, and any other dust monitoring systems identified as being required;
- Assessing and engaging (as required) additional mitigation controls to best manage the risks of elevated dust levels before commencing works each day and ensuring that the appropriate controls are implemented and effective;
- Reviewing weather forecasts daily and current observations of meteorological conditions (as recorded at Horsley Park AWS);
- Throughout the day, visually assessing the dust levels and the effectiveness of any dust controls that have been implemented, which may include engaging additional resources to reduce or mitigate the risk of dust leaving the site;
- Ceasing particular scopes of works as required in the event of excessive dust generation due to extreme weather conditions or inadequately controlled construction activities (eg high winds, surface dirt accumulation, etc.); and
- In the event that an air quality complaint is received, the procedure in Section 3.6 of the CEMP will be implemented (see **Section 9**).

12.2 Environmental Coordinator

- Undertaking dust monitoring program; and
- Review that control measures are working in accordance with the CAQMP.

12.3 All Workers on Site

- Observing any dust emission control instructions and procedures that apply to their work;
- Taking action to prevent or minimise dust emission incidents; and
- Identifying and reporting dust emission incidents.

13 Review and Improvement of the CAQMP

The review of the CAQMP will be undertaken at least quarterly and will include participation by Goodman. The review will comprise, as a minimum, the following:

- Identification of areas of opportunity for ongoing improved environmental performance;
- Analysis of the causes of any recorded non-compliances, including those identified in environment inspections and audits;
- Verification of the effectiveness of corrective and preventative actions; and
- Highlighting any changes in procedures resulting from process improvement.

This CAQMP will also be reviewed and, if necessary, revised in the following circumstances:

- Where there is any change to the scope of the construction activities and/or disturbance footprint;
- Where it is identified that the environmental performance is not meeting the objectives of the CAQMP;
- In the event of a substantiated complaint being received regarding air quality impacts; and/or
- At the request of a relevant regulatory authority.

14 References

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APPENDIX A

WIND ROSES AND RAINFALL DATA ANALYSIS

Wind Conditions

Local wind speed and direction influence the dispersion of air pollutants. Wind speed determines both the distance of downwind transport and the rate of dilution as a result of 'plume' stretching. Wind direction, and the variability in wind direction, determines the general path pollutants will follow and the extent of crosswind spreading. Surface roughness (characterised by features such as the topography of the land and the presence of buildings, structures and trees) will also influence dispersion.

The Bureau of Meteorology (BoM) maintains and publishes data from weather stations across Australia. The closest such station recording wind speed and wind direction data is the Horsley Park Automatic Weather Station (AWS) (Station ID 67119), located approximately 5.5 kilometres (km) southeast of the Oakdale West. Considering the relatively flat terrain between Oakdale West and Horsley Park AWS, it is considered reasonable to assume that the wind conditions recorded at the Horsley Park AWS are representative of the wind conditions experienced at the Oakdale West.

Annual wind roses for the years 2014 to 2018 compiled from data recorded by the Horsley Park AWS are presented in **Figure A1**, with seasonal wind roses for 2018 presented in **Figure A2**. Wind roses show the frequency of occurrence of winds by direction and strength. The bars correspond to the 16 compass points (degrees from North). The bar at the top of each wind rose diagram represents winds blowing from the north (i.e. northerly winds), and so on. The length of the bar represents the frequency of occurrence of winds from that direction, and the widths of the bar sections correspond to wind speed categories, the narrowest representing the lightest winds. Thus it is possible to visualise how often winds of a certain direction and strength occur over a long period, either for all hours of the day, or for particular periods during the day.

The 'Beaufort Wind Scale' (consistent with terminology used by the BoM) presented in **Table A1** was used to describe the wind speeds experienced at Oakdale West.

Table A1 Beaufort Wind Scale

Beaufort Scale #	Description	m/s	Description on land
0	Calm	0-0.5	Smoke rises vertically
1	Light air	0.5-1.5	Smoke drift indicates wind direction
2-3	Light/gentle breeze	1.5-5.3	Wind felt on face, leaves rustle, light flags extended, ordinary vanes moved by wind
4	Moderate winds	5.3-8.0	Raises dust and loose paper, small branches are moved
5	Fresh winds	8.0-10.8	Small trees in leaf begin to sway, crested wavelets form on inland waters
6	Strong winds	>10.8	Large branches in motion, whistling heard in telephone wires; umbrellas used with difficulty

Source: http://www.bom.gov.au/lam/glossary/beaufort.shtml

The annual wind roses for the years 2015 to 2019 (**Figure A1**) indicate that predominant wind directions in the area are consistently from the southwest quadrant. Very low frequencies of winds from the north-eastern quadrant were recorded across all years. The annual frequency of calm wind conditions was recorded to be approximately 11.5-14.5% for all the years between 2015 and 2019.

A review of the annual wind roses (**Figure A1**) indicates that:

- Winds that would blow fugitive dust emissions from the demolition/construction works towards the nearest sensitive receptors located to the north and northwest of the proposed construction activities occur approximately 15-20% of the time.

The seasonal wind roses for the year 2019 (**Figure A2**) indicate that:

- In summer, wind speeds ranged from calm to fresh winds (between 0.5 m/s and 9.8 m/s). The majority of winds originated from eastern and south eastern quadrants, with very few winds from western directions. Calm wind conditions were recorded approximately 12% of the time during summer.
- In autumn, wind speeds ranged from calm to fresh winds (between 0.5 m/s and 8.9 m/s). The majority of winds originated from southwest quadrant, with very few winds from other directions. Calm wind conditions were observed to occur approximately 15% of the time during autumn.
- In winter, wind speeds ranged from calm to fresh winds (between 0.5 m/s and 8.6 m/s). The majority of winds originated from southwest quadrant, with very few winds from other directions. Calm wind conditions were observed to occur approximately 13% of the time during winter.
- In spring, wind speeds ranged from calm to fresh winds (between 0.5 m/s and 9.8 m/s). The frequency of winds are generally even in each direction, except for a relatively low frequency of winds originating from southern quadrant. Calm wind conditions were observed to occur approximately 12% of the time during spring.

Wind erosion of dust from exposed surfaces (ie, during the construction phase of the development) is usually initiated when wind speeds exceed the threshold friction velocity for a given surface or material, however a general rule of thumb is that wind erosion can be expected to occur above 5 m/s (USEPA 2006). The frequency of wind speeds for the period of 2015-2019 is presented in **Figure A3**. The plot showed that the frequency of wind speeds exceeding 5 m/s for the period 2015-2019 at Horsley Park AWS was approximately 6%.

Figure A1 Annual Wind Roses for Horsley Park (2014 to 2018)

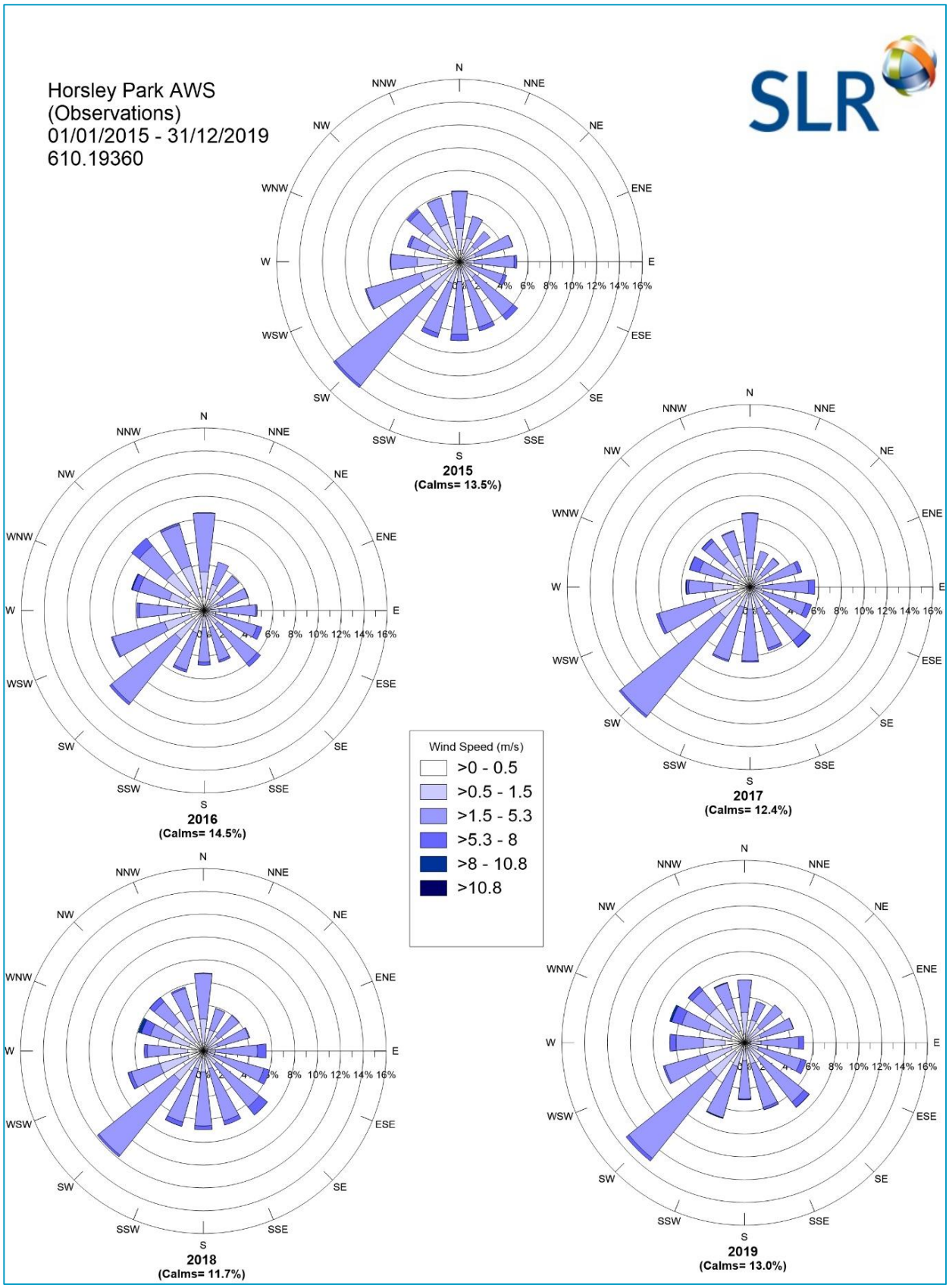


Figure A2 Annual and Seasonal Wind Roses for Horsley Park (2019)

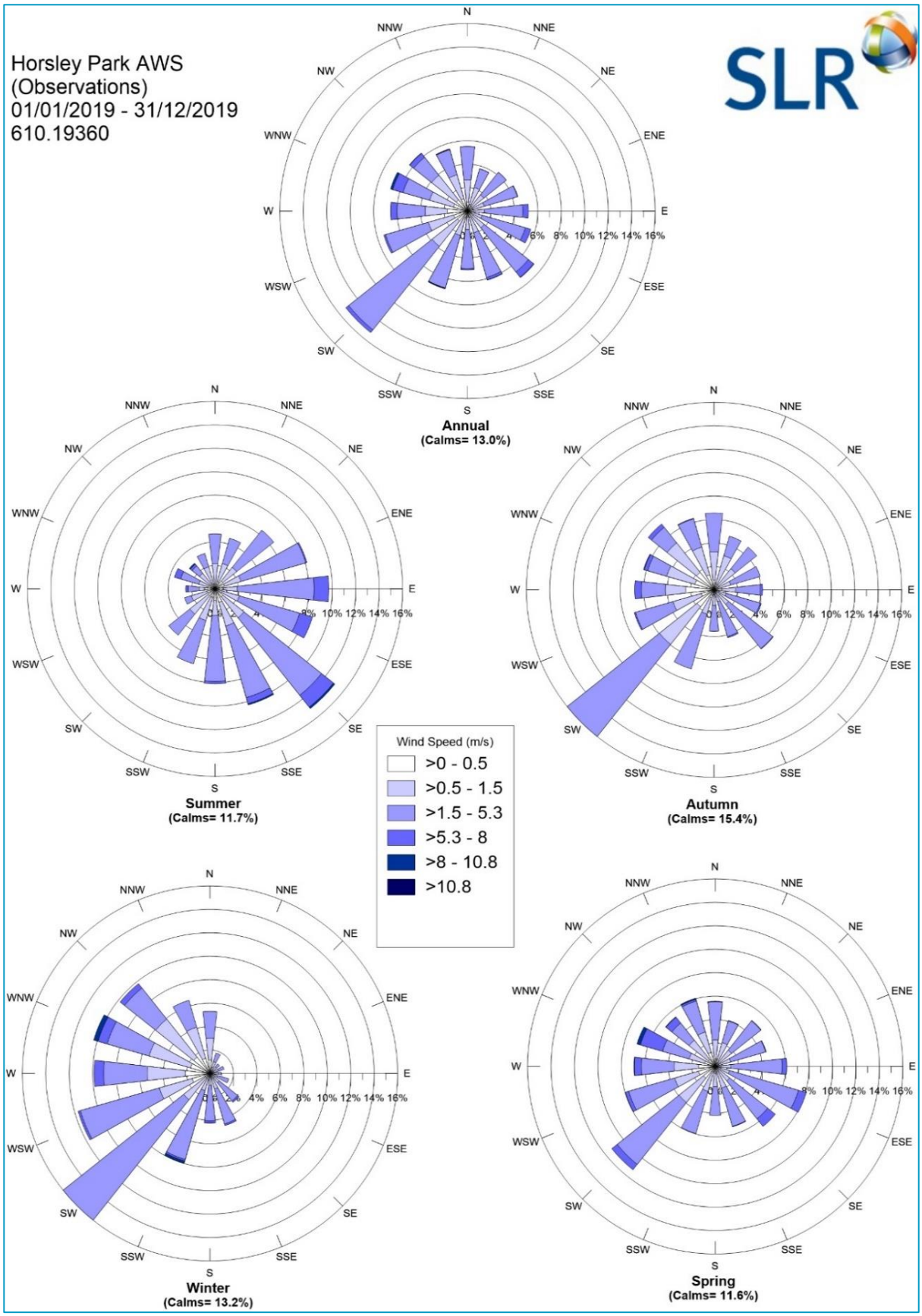
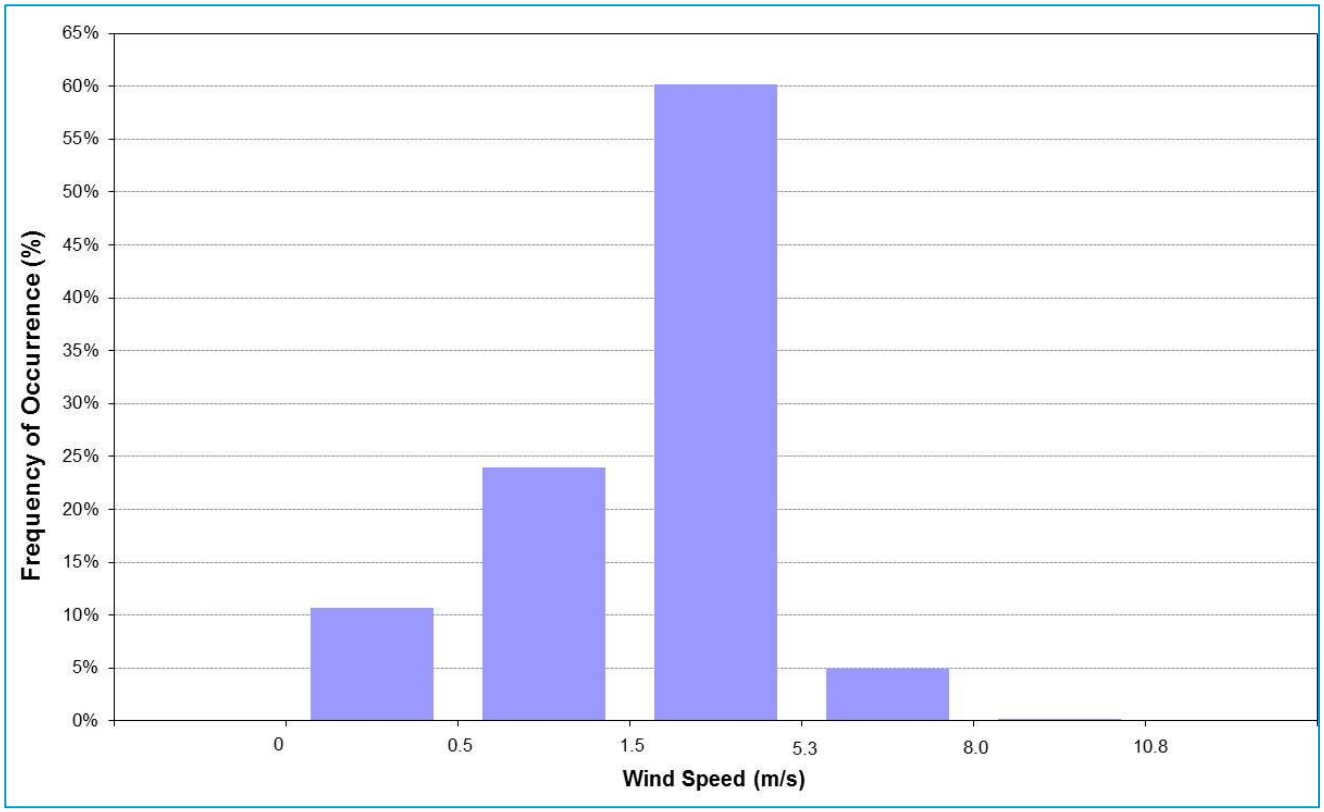


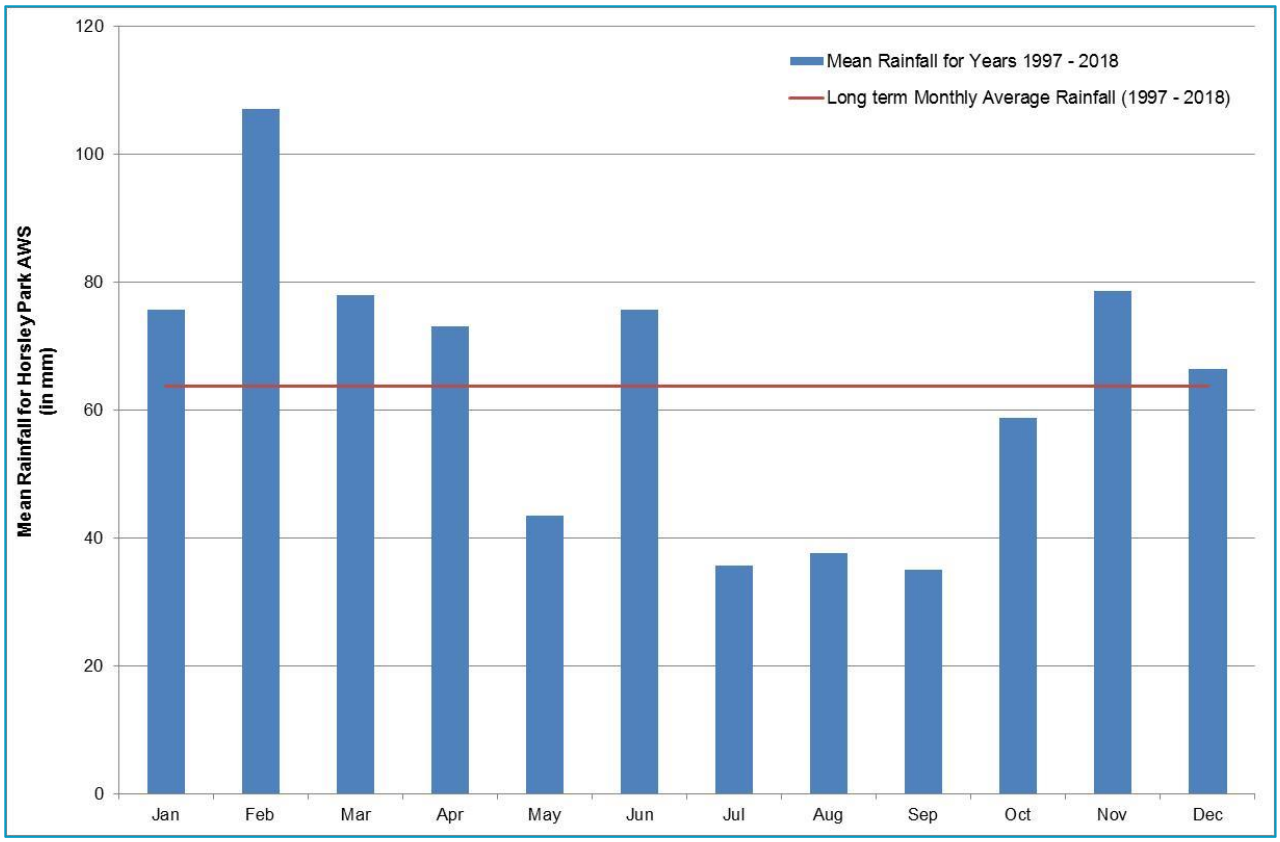
Figure A3 Wind Speed Frequency Chart for Horsley Park AWS – 2015-2019



Rainfall

Dry periods (no rainfall) have the greatest potential for fugitive dust emissions during construction. The long term monthly rainfall averages recorded at Horsley Park AWS rain gauge are shown in **Figure A4**. It is noted that generally rainfall is relatively low in mid-winter to mid spring periods. This rainfall pattern suggests that dust emissions from the demolition/construction activities at Oakdale West have the greatest potential to impact on receptors for the period of late autumn to early spring.

Figure A4 Long term Mean Rainfall for Horsley Park AWS – 1997 to 2018



APPENDIX B

CONSTRUCTION PHASE RISK ASSESSMENT METHODOLOGY

Step 1 – Screening Based on Separation Distance

The Step 1 screening criteria provided by the IAQM guidance suggests screening out any assessment of impacts from construction activities where sensitive receptors are located more than 350 m from the boundary of the site, more than 50 m from the route used by construction vehicles on public roads and more than 500 m from the site entrance. This step is noted as having deliberately been chosen to be conservative, and will require assessments for most projects.

The nearest sensitive receptor is located approximately 100 m from the nearest OWE boundary.

The screening criteria for detailed assessment are:

- a 'human receptor' within:
  - 350 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).
- an 'ecological receptor' within:
  - 50 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

Sensitive receptors (residences) are located within 350 m of the OWE boundary, therefore further assessment is required.

Step 2a – Assessment of Scale and Nature of the Works

Step 2a of the assessment provides "dust emissions magnitudes" for each of four dust generating activities; demolition, earthworks, construction, and track-out (the movement of site material onto public roads by vehicles). The magnitudes are: *Large*; *Medium*; or *Small*, with suggested definitions for each category. The definitions given in the IAQM guidance for earthworks, construction activities and track-out, which are most relevant to this Development, are as follows:

Demolition *(Any activity involved with the removal of an existing structure [or structures]. This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time)*:

- ***Large***: Total building volume >50,000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level;
- ***Medium***: Total building volume 20,000 m^3 – 50,000 m^3, potentially dusty construction material, demolition activities 10-20 m above ground level; and
- ***Small***: Total building volume <20,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.

Earthworks *(Covers the processes of soil-stripping, ground-levelling, excavation and landscaping)*:

- ***Large***: Total site area greater than 10,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), more than 10 heavy earth moving vehicles active at any one time, formation of bunds greater than 8 m in height, total material moved more than 100,000 t.
- ***Medium***: Total site area 2,500 m^2 to 10,000 m^2, moderately dusty soil type (e.g. silt), 5 to 10 heavy earth moving vehicles active at any one time, formation of bunds 4 m to 8 m in height, total material moved 20,000 t to 100,000 t.
- ***Small***: Total site area less than 2,500 m^2, soil type with large grain size (e.g. sand), less than five heavy earth moving vehicles active at any one time, formation of bunds less than 4 m in height, total material moved less than 20,000 t, earthworks during wetter months.

Construction *(Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc)*:

- ***Large***: Total building volume greater than 100,000 m^3, piling, on site concrete batching; sandblasting.
- ***Medium***: Total building volume 25,000 m^3 to 100,000 m^3, potentially dusty construction material (e.g. concrete), piling, on site concrete batching.
- ***Small***: Total building volume less than 25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Track-out *(The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network)*:

- ***Large***: More than 50 heavy vehicle movements per day, surface materials with a high potential for dust generation, greater than 100 m of unpaved road length.
- ***Medium***: Between 10 and 50 heavy vehicle movements per day, surface materials with a moderate potential for dust generation, between 50 m and 100 m of unpaved road length.
- ***Small***: Less than 10 heavy vehicle movements per day, surface materials with a low potential for dust generation, less than 50 m of unpaved road length.

Note: Demolition of existing structures will be performed as part of this Development.

In order to provide a conservative assessment of potential impacts, it has been assumed that if at least one of the parameters specified in the 'large' definition is satisfied, the works are classified as large, and so on.

Based on the above, dust emission magnitudes have been categorised as presented in **Table C1**.

Table C1 Categorisation of Dust Emission Magnitude

Activity	Dust Emission Magnitude	Basis
Demolition	Small	**IAQM Definition:** Total building volume <20,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months. **Relevance to this Project:** Demolition activities will predominantly be limited to removal of structures associated with the one old house within the site boundary.
Earthworks	Large	**IAQM Definition:** Total site area greater than 10,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), more than 10 heavy earth moving vehicles active at any one time, formation of bunds greater than 8 m in height, total material moved more than 100,000 t. **Relevance to this Project:** The footprint of the site is approximately 154 ha and the Development site involves construction of twenty two new buildings (total volume of approximately 4.6 Mm^3).
Construction	Large	**IAQM Definition:** Total building volume greater than 100,000 m^3, piling, on site concrete batching; sandblasting. **Relevance to this Project:** The footprint of the site is approximately 154 ha and the Development site involves construction of twenty two new buildings (total volume of approximately 4.6 Mm^3).
Trackout	Medium	**IAQM Definition:** Between 10 and 50 heavy vehicle movements per day, surface materials with a moderate potential for dust generation, between 50 m and 100 m of unpaved road length. **Relevance to this Project:** *The traffic volume during construction is estimated to be 20 vehicle movements per hour.*

Step 2b – Risk Assessment

Assessment of the Sensitivity of the Area

Step 2b of the assessment process requires the sensitivity of the area to be defined. The sensitivity of the area takes into account:

- The specific sensitivities that identified sensitive receptors have to dust deposition and human health impacts;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Other site-specific factors, such as whether there are natural shelters such as trees to reduce the risk of wind-blown dust.

Individual receptors are classified as having *high*, *medium* or *low* sensitivity to dust deposition and human health impacts (ecological receptors are not addressed using this approach). The IAQM method provides guidance on the sensitivity of different receptor types to dust soiling and health effects as summarised in **Table C1**. It is noted that user expectations of amenity levels (dust soiling) is dependent on existing deposition levels.

Table C2 IAQM Guidance for Categorising Receptor Sensitivity

Value	High Sensitivity Receptor	Medium Sensitivity Receptor	Low Sensitivity Receptor
Dust soiling	Users can reasonably expect a high level of amenity; or The appearance, aesthetics or value of their property would be diminished by soiling, and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods as part of the normal pattern of use of the land.	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or The appearance, aesthetics or value of their property could be diminished by soiling; or The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.	The enjoyment of amenity would not reasonably be expected; or Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.
	Examples: Dwellings, museums, medium and long term car parks and car showrooms.	*Examples: Parks and places of work.*	*Examples: Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.*
Health effects	Locations where the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).	Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).	Locations where human exposure is transient.
	Examples: Residential properties, hospitals, schools and residential care homes.	*Examples: Office and shop workers, but will generally not include workers occupationally exposed to PM10.*	*Examples: Public footpaths, playing fields, parks and shopping street.*

According to the IAQM methods, the sensitivity of the identified individual receptors (as described above) is then used to assess the *sensitivity of the area* surrounding the active construction area, taking into account the proximity and number of those receptors, and the local background PM_{10} concentration (in the case of potential health impacts) and other site-specific factors. Additional factors to consider when determining the sensitivity of the area include:

- any history of dust generating activities in the area;
- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between the source and the receptors;
- any conclusions drawn from analysing local meteorological data which accurately represent the area and if relevant, the season during which the works will take place;
- any conclusions drawn from local topography;
- the duration of the potential impact (as a receptor may be willing to accept elevated dust levels for a known short duration, or may become more sensitive or less sensitive (acclimatised) over time for long-term impacts); and
- any known specific receptor sensitivities which go beyond the classifications given in the IAQM document.

Based on the criteria listed in **Table C2**, the sensitivity of the identified receptors in this study is concluded to be *high* for health impacts and *high* for dust soiling, as they include residential areas where people may be reasonably expected to be present continuously as part of the normal pattern of land use.

The IAQM guidance for assessing the sensitivity of an area to dust soiling is shown in **Table C3**. The sensitivity of the area should be derived for each of activity relevant to the project (ie construction and earthworks).

Table C3 IAQM Guidance for Categorising the Sensitivity of an Area to Dust Soiling Effects

Receptor Sensitivity	Number of receptors	Distance from the source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Note: Estimate the total number of receptors within the stated distance. Only the *highest level* of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors < 20m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors < 50 m is 102. The sensitivity of the area in this case would be high.

A modified version of the IAQM guidance for assessing the *sensitivity of an area* to health impacts is shown in **Table C4**. For high sensitivity receptors, the IAQM methods takes the existing background concentrations of PM_{10} (as an annual average) experienced in the area of interest into account and is based on the air quality objectives for PM_{10} in the UK. As these objectives differ from the ambient air quality criteria adopted for use in this assessment (i.e. an annual average of 19.4 $\mu g/m^3$ for PM_{10}) the IAQM method has been modified slightly.

This approach is consistent with the IAQM guidance, which notes that in using the tables to define the *sensitivity of an area*, professional judgement may be used to determine alternative sensitivity categories, taking into account the following factors:

- any history of dust generating activities in the area;
- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between the source and the receptors;
- any conclusions drawn from analysing local meteorological data which accurately represent the area, and if relevant the season during which the works will take place;
- any conclusions drawn from local topography;
- duration of the potential impact; and
- any known specific receptor sensitivities which go beyond the classifications given in this document.

Table C4 IAQM Guidance for Categorising the Sensitivity of an Area to Dust Health Effects

Receptor sensitivity	Annual mean PM_{10} conc.	Number of receptors [a,b]	Distance from the source (m)				
			<20	<50	<100	<200	<350
High	>25 µg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	21-25 µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	17-21 µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<17 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>25 µg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	21-25 µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	17-21 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<17 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Notes:

(a) Estimate the total within the stated distance (e.g. the total within 350 m and not the number between 200 and 350 m); noting that only the highest level of area sensitivity from the table needs to be considered.

(b) In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties.

The nearest sensitive receptor is located within 350 m from the nearest OWE boundary. Based on the classifications shown in **Table C3** and **Table C4**, the sensitivity of the area to dust soiling and to health effects may both be classified as '*low*'. This categorisation has been made considering the individual receptor sensitivities derived above, the annual mean background PM_{10} concentration of 19.4 µg/m^3 recorded at St Marys AQMS (see **Section 6.2**) and the anticipated number of sensitive receptors present in the vicinity of the OWE.

Risk Assessment

The dust emission magnitude from Step 2a and the receptor sensitivity from Step 2b are then used in the matrices shown in **Table C5** (earthworks and construction), **Table C6** (track-out) and **Table C7** (demolition) to determine the risk category with no mitigation applied.

Table C5 Risk Category from Earthworks and Construction Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table C6 Risk Category from Track-out Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

Table C7 Risk Category from Demolition Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

APPENDIX C

AIR QUALITY NOTIFICATION FORM

Construction of Lot 1A	
Air Quality Notification Form ➢ This form to be completed within 24hrs of an exceedance of PM10 dust >50 µg/m^3 (24hr average) on site (CAQMP Sect 5.2.1 Table 4 – 24hr average) ➢ This form to be completed by the Contractor PM, PE or Environmental Representative ➢ Please attach site observation photographs as required	
Contract	
Prepared by (Print Name)	
Position (Project PM, Engineer etc)	
Time/Day/Date of notification	
What were the PM_{10} levels recorded at the start of the shift?	
Condition Red Notification Summary Provide PM_{10} level data for the three Sentinex units located on site Ref: CAQMP Sect 11 Table 12.	South µg/m^3(24hr) North µg/m^3(24hr) West µg/m^3(24hr)
Was there scope of work specific dust generation observed during the reporting period? (If yes, please provide site specific area)	
Was the measured dust level influenced by dust from external sources? (yes/no/possible)	
Dust generating construction related activities at the time of the notification (1) Provide a brief description of works being undertaken at the time of the dust being observed	
Background levels for PM10 recorded for the reporting period (St Mary's dust gauges) (2)	St Mary's AQMS µg/m^3(24hr)
Wind direction and speed relating to the reporting period (show variable wind directions and speed throughout the notification period. Attach wind charts if applicable) (3)	
Were additional dust mitigation resources implemented during the reporting period? (if yes, provide a brief description)	

Construction of Lot 1A	
Sign/Date	
OWE Contract Superintendent to Complete	
Notified ER Time/Day/Date	
Follow up required (yes/no)	
Is this notification issued as a result of an external complaint? If so, provide reference to CCCS report	
Sign/Date	

APPENDIX D - CURRICULUM VITAE OF AUTHOR

CURRICULUM VITAE



VARUN MARWAHA

ASSOCIATE

Air Quality, Asia-Pacific

QUALIFICATIONS

BEng	2006	Bachelor of Engineering - Chemical, University of Sydney

EXPERTISE

- Air Quality Dispersion modelling using a variety of software applications
- Meteorological and Ambient air quality monitoring & assessment for legislative compliance
- Australian state and federal regulatory compliance – Air Quality
- Opportunities and constraints reporting
- Detailed knowledge of air quality/meteorological interactions

Varun is an Associate Air Quality Consultant working within the Air Quality team. He has over 10 years of environmental and process engineering experience.

Varun has acquired a broad environmental experience including air quality (including odour) impact assessments, emission inventories (including National Pollutant Inventory), air quality dispersion modelling (including Ausplume, CALPUFF and CAL3QHCR), air quality monitoring (including odour), meteorological monitoring, meteorological modelling (The Air Pollution Model [TAPM] & CALMET), greenhouse gas assessments and overall project management.

Varun has conducted numerous environmental audits and prepared NPI reports for a range of industries including power stations throughout Australia.

Varun is a Certified Air Quality Professional (CAQP) and a Certified Practicing Project Manager (CPPM), and is respected for his contribution to the air quality industry.

PROJECTS

Sentosa Gateway Project, Singapore	The project involved the assessment of air impacts due to road traffic tunnel from Sentosa Island to mainland Singapore. The project proposed to build a tunnel for the outbound traffic from Sentosa with tunnel exits located on Lower Delta Road and Keppel Road. The emissions were quantified and modelled using CAL3QHCR and CALPUFF modelling suites to predict the roadside impacts. The project also included assessment of other sources of pollutants in the region for the cumulative assessment
Sydney Harbour Bridge, Sydney, NSW, Australia	Compliance Monitoring (Lead, PM_{10} and TSP). The project involves repainting the iconic Sydney Harbour Bridge. The process includes stripping the old paint (containing lead), preparation of the surface and repainting. The monitoring was conducted for lead concentration in the air along with the concentration of particulate (PM_{10} and TSP) was required. For lead monitoring, membrane filters were used and for particulate monitoring High Volume air samplers (HVAS) were employed.

CURRICULUM VITAE — VARUN MARWAHA

Capital Metro Project, Canberra, ACT, Australia (2018-2019)	The project involved preparation of Air Quality Impact Assessment (AQIA) for the proposed ACT Light Rail Stage 1 – Gungahlin to Civic Project, a 12 kilometre light rail service linking the fast- developing area of Gungahlin in the north, to the City. The emissions due to the operation of light rail network were quantified and compared to the existing regional air emissions levels. It was demonstrated that the regional emissions were likely to decrease significantly when compared with the current situation.
Proposed Residential Development, RMS	Road Traffic Impact Assessment. The project involved assessment of roadside impacts on the proposed residential development due to road traffic on a busy motorway. The aim of the project was to determine the maximum impacts and validating against the monitored roadside data. The emissions were quantified and modelled using CAL3QHCR modelling suite to predict the roadside impacts. The project also included assessment of other sources of pollutants in the region for the cumulative assessment. The modelling skills were put to test when integrating predicted results from several modelling suites (CAL3QHCR and CALPUFF)
Proposed Haul Roads (Fortescue Metals Group), WA, Australia	The project involved assessment of two possible options for building haul roads in separate directions. The aim of the project was to determine mine access route from the nearest transport facility. The emissions were quantified and modelled using CALPUFF modelling suite to predict the roadside impacts on the nearest receptors on each haul road route.
Confidential Highway Project, QLD, Australia	Emissions estimation and modelling for an air quality impact assessment for a proposed new highway in Queensland. Work included the estimation of vehicle emissions for the operational phase using the COPERT-Australia emissions modelling software and dispersion modelling of the road and tunnel emissions using CAL3QHCR and CALPUFF dispersion models.
MEMBERSHIPS	Clean Air Society of Australia and New Zealand (CASANZ)
	Member of Engineers Australia (EA)
	Institute of Chemical Engineers (IChemE)
ACCREDITATION	Certified Air Quality Professional (CAQP), CASANZ
	Certified Practicing Project Manager (CPPM), UNE
TRAINING	Advanced CALPUFF Course – Clean Air Society of Australia and New Zealand (CASANZ), 2008
	The Role of Meteorology in Dispersion Modelling – CASANZ, 2011
	Diploma of Project Management – University of New England, 2012

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APPENDIX I

Soil and Water Management Plan

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PROPOSED INDUSTRIAL DEVELOPMENT – OAKDALE WEST ESTATE – BUILDING 1A

SOIL & WATER MANAGEMENT PLAN

May 2020 - Revision 1

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				Name	Date	Name	Date
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Appendix E: Erosion & Sediment Control Plan

1.0 INTRODUCTION

1.1 Context

This Soil and Water Management Plan (SWMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the construction of Building 1A, Lot 11 DP 1178389 (the Project) on the Stage 1 Development of Oakdale West Estate (OWE). Building 1A is being constructed for the purposes of warehousing and distribution uses.

This SWMP is required to support the CEMP and has been prepared to address the requirements of a Development Application - State Significant Development 7348, including subsequent Modifications of Development Consent 1, 2 & 3.

1.2 Background

Goodman Group received approval on 13 September, 2019 for the state significant development of Oakdale West Industrial Estate (OWE). OWE comprises a warehousing and distribution hub located at Kemps Creek in Western Sydney, NSW. The overall site a 154-hectare tract of land that comprises of the combined parcels of land known as Lot 3031 DP 1168407, Lot 6 DP 229784, Lot 2 DP 84578, Lot 3 DP 85393, Lot 11 DP 1178389 off Bakers Lane, at Kemps Creek, extending to Lenore Drive, Erskine Park.

As part of the staged development of OWE, Goodman is seeking approval for a DA (SSD 7348) for the Stage 1 Development which involves the development of Lot 11 DP 1178389. The relevant portion of the industrial development will entail the construction of Building 1A; a three level (ground level+ 2 levels) warehouse and one level office building, with associated parking facilities for cars, trucks and motorcycles and associated landscaping.

The EIS produced for DA SSD 7348 has assessed the impacts of the project on surface water and soils. The EIS prepared by Urbis noted at Section 2.3 that;

Topography & landform

- *'Landform is relatively uniform, with undulating rises and alluvial flats bisected by narrow, ridge running from the south-west to the north-east of the site.*
- *No significant height variances with elevations from approximately 92m above AHD to approximately 50m at Ropes Creek in the east of the site.'*

Geology

- *'Underlying geology of the site is the Wiananmatta Group formation (Bringelly Shale) and alluvium associated with Ropes Creek. Surface and sub-surface conditions are as follows:*
    - *Topsoil: Clay, depth 0.0-0.04 m;*
    - *Natural Soil: Clay, depth 0.04-0.5 m;*
    - *Bedrock: Sandstone, Sandstone and shale, depth 0.7-5.0 m.*

Soils

- *'Residual soils, characteristic of the Blacktown soil landscape, generally consist of shallow duplex soils over a clay base (OEH 2014).*
- *Overlying fluvial soils, part of the South Creek soil landscape, are associated with the alluvium across the low-lying terrain bordering Ropes Creek.*
- *No acid sulphate soils have been identified.'*

Surface Water, Hydrology and Flooding

- *'The OWE is located within the Hawkesbury-Nepean catchment.*
- *Ropes Creek, a third order stream, flows along the eastern boundary of the site in a northerly direction into South/Wianamatta Creek approximately 13 km north of the OWE.*
- *The landscape is characterised by a series of ridgelines incised with drainage lines flowing into Ropes Creek. The drainage system within the development site is in relatively poor condition, due to erosion and trampling by cattle.*
- *An unnamed modified watercourse is to the west of the OWE.*
- *The eastern portion of the site is subject to flooding (associated with Ropes Creek) and is variably affected by the 100-year average recurrence interval (ARI) flood event.'*

Groundwater

- *'Groundwater is expected to be relatively deep below the OWE site – no groundwater was encountered during geotechnical investigations which included boreholes drilled up to 15m below ground level.'*

Prior to any works commencing that are the subject of this SWMP, the site will have bulk earthworks undertaken by others under the approved SSD 7348 Stage 1 Development. As a result of the preliminary bulk earthworks, the topography of the site will be altered, from having localised slopes to being a slightly graded, level pad with a cut batter on the western and southern boundaries.

The overall disturbance footprint of approximately 18.72 hectares would present a moderate risk of increased sediment and contaminant impacts on water quality of local waterways due to runoff from the Project.

The EIS concluded potential impacts would be minimised through the employment of safeguards and management measures stated in Section 7.1 of the EIS.

1.3 Environmental management systems overview

The overall Environmental Management System for the project is described in the Construction Environmental Management Plan (CEMP).

The SWMP is part of Richard Crookes Constructions (RCC) environmental management framework for the project, as described in the CEMP. Management measures identified in this Plan will be incorporated into site or activity specific Environmental Work Method Statements (EWMS).

EWMS will be developed and signed off by environment and management representatives prior to associated works. Construction personnel will be required to undertake works in accordance with the identified mitigation and management measures. Works that are proposed in or near to identified Environmentally Sensitive Areas will have an EWMS prepared that details relevant environmental protection measures.

The Progressive Erosion and Sediment Control Plans (PESCPs) will be prepared in consideration of the Primary Erosion and Sediment Control Plan (Appendix A), which describes the intentions and fundamental principles for erosion and sediment control management for the duration of the entire project.

The PESCPs will be developed by the Project environmental team in consultation with construction personnel, and with the assistance of the Project Soil Conservationist (CPESC) when required.

They will be developed prior to any construction works commencing in the work zone and will be modified as required when:

- Site conditions evolve.
- Flow paths change.
- Construction activities that affect the characteristics of ground conditions change.

A Project Soil Conservationist (CPESC) will be engaged and consulted throughout construction to provide advice on erosion and sediment control design, installation, maintenance and the development of PESCPs.

Used together, the CEMP, strategies, procedures, EWMS and PESCP form management guides that clearly identify required environmental management actions for reference by RCC personnel and contractors.

The review and document control processes for this Plan are described in the CEMP

2.0 PURPOSE & OBJECTIVES

2.1 Purpose

The purpose of this Plan is to describe how RCC proposes to manage and minimise soil and water impacts during construction of the project.

2.2 Objectives

The key objective of the SWMP is to ensure that the potential impacts to soil and water quality are minimised. To achieve this objective, RCC will undertake the following:

- Ensure appropriate controls and procedures are implemented during construction activities to avoid or minimise erosion and sedimentation impacts and potential impacts to water quality in creeks, waterways and groundwater along the project corridor.
- Ensure compliance with the Project's Development Application SSD 7348 Secretary's Environmental Assessment Requirements (SEARS)
- Ensure appropriate measures are implemented to address the relevant mitigation measures detailed in the EIS.
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Plan.

2.3 Targets

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

- Ensure compliance with the relevant legislative requirements and environmental safeguards.
- Meet New South Wales Environment Protection Authority (NSW EPA) water quality discharge parameters for all planned basin discharges.
- Manage downstream water quality impacts attributable to the project (ie maintain waterway health by avoiding the introduction of nutrients, sediment and chemicals outside of that permitted by the NSW EPA and ANZECC guidelines).
- Ensure training on soil and water management is provided to all construction personnel through targeted training, site inductions and toolbox talks.

3.0 ENVIRONMENTAL REQUIREMENTS

3.1 Relevant legislation and guidelines

3.1.1 Legislation

Legislation and regulations relevant to soil and water management includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Environmental Planning and Assessment Regulation 2000.*
- *Protection of the Environment Operations Act 1997* (POEO Act).
- *Water Management Act 2000.*

Relevant provisions of the above legislation are explained in the register of legal and other requirements included in the CEMP.

Section 120 of the NSW POEO Act states that it is illegal to pollute waters. Under the POEO Act, 'water pollution' includes introducing litter, sediment, oil, grease, wash water, debris, and flammable liquids such as paint etc. into waters or placing such material where it is likely to be washed or blown into waters or the stormwater system or percolate into groundwater. All practicable steps should be taken to minimise the risk of pollution of waters. The EPL regulates pollution of waters including discharge points for the project.

3.1.2. Guidelines and standards

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

- Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (EPA, March 2004).
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2000).
- Department of Environment and Conservation (DEC): Bunding & Spill Management. Insert to the Environment Protection Manual for Authorised Officers - Technical section "Bu" November 1997.
- Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004 (reprinted 2006) (the "Blue Book"). Volume 1 and Volume 2.
- Volume 2A Installation of Services (DECCW 2008).
- Water quality guidelines for the protection of aquatic ecosystems for lowland rivers and estuaries. (ANZECC, 2000).

3.2 Environmental management measures

Environmental safeguards and management measures are included in the EIS in Section 9. The environmental management measures relevant to this Plan are listed Table 3-1 below. This includes reference to required outcomes, the timing of when the commitment applies and the section of this Plan or other management system document which addresses the requirement.

Table 3-2: Management measures from the EIS relevant to construction soil and water management

Issue	SSDA Component	Mitigation & Management
General Construction Management	Stage 1 Development	• A CEMP to be prepared for the OWE Stage 1 Development capturing standard and specific management and mitigation measures as described in the SSDA, EIS and supporting technical documents.
Earthworks	Stage 1 Development	• Erosion and sediment controls included in SSDA package (Appendix E).
Soils & Water	Stage 1 Development	• Erosion and sediment controls, as detailed in Appendix E and Appendix J of the EIS, to be implemented through CEMP. • Stormwater to be treated to compliant levels prior to discharge. • Gross Pollutant Trap (GPT) to be installed within each development site on the final downstream stormwater pit prior to discharge.
Groundwater	Stage 1 Development	• Methods and management of any required dewatering required during construction works to be detailed in the CEMP.
Air Quality and Odour - Construction	Stage 1 Development	• CEMP to include standard air quality control measures, contingency plans and response procedures and suitable reporting and performance monitoring procedures. • CEMP to include standard odour mitigation measures for construction including keeping excavation surfaces moist covering excavation faces and/or stockpiles, use of soil vapour extraction systems and regular monitoring of discharges as appropriate

3.3 Construction Environmental Management Plan

The EIS Section 7.2 *'Construction Environmental Management Plan'* outlines the requirements for the CEMP to address construction methodology and associated management & mitigation measures, as follows;

> *'The proposed OWE development would proceed in accordance with a detailed CEMP to be prepared for the site to capture both standard construction methodology, mitigation and management measures and specific measures recommended for the OWE proposal by technical assessments and studies.*

The standard construction methodology to be followed in respect of the proposed development includes:

- *Diversion of "clean" water away from the disturbed areas and discharge via suitable scour protection.*
- *Provision of hay bale type flow diverters to catch drainage and divert to "clean" water drains.*
- *Diversion of sediment laden water into temporary sediment control basins to capture the design storm volume and undertake flocculation (if required).*
- *Provision of construction traffic shaker grids and washdown to prevent vehicles carrying soils beyond the site.*
- *Provision of catch drains to carry sediment-laden water to sediment basins.*
- *Provision of silt fences to filter and retain sediments at source.*
- *Where future construction and building works are not proposed, the rapid stabilisation of disturbed and exposed ground surfaces with hydroseeding.*

The above measures would remain in place for the duration of the total construction period (C Stages 1, 2 and 3) until such time as the individual development lots are completed. Regular inspection of erosion and sediment control measures and other construction mitigations would be undertaken by the site contractor in accordance with the protocols established under the CEMP.

The CEMP would be prepared prior to the commencement of construction works on the site.'

4.0 EXISTING ENVIRONMENT

The following sections summarise what is known about factors influencing soils and water quality within and adjacent to the project corridor. The key references in the Project EIS documents are Section 6.7 – Other Issues.

4.1 Topography and soil characteristics

Section 2.3 of the EIS for DA SSD 7348 describes the pre-existing topography and geology of the Project area as follows;

- *''Landform is relatively uniform, with undulating rises and alluvial flats bisected by narrow, ridge running from the south-west to the north-east of the site. No significant height variances with elevations from approximately 92m above AHD to approximately 50m at Ropes Creek in the east of the site.*
- *"Underlying geology of the site is the Wiananmatta Group formation (Bringelly Shale) and alluvium associated with Ropes Creek.*
- *Underlying geology of the site is the Wiananmatta Group formation (Bringelly Shale) and alluvium associated with Ropes Creek. Surface and sub-surface conditions are as follows:*
- *Topsoil: Clay, depth 0.0-0.04 m;*
- *Natural Soil: Clay, depth 0.04-0.5 m;*
- *Bedrock: Sandstone, Sandstone and shale, depth 0.7-5.0 m.'*
- *Residual soils, characteristic of the Blacktown soil landscape, generally consist of shallow duplex soils over a clay base (OEH 2014).*

- *Overlying fluvial soils, part of the South Creek soil landscape, are associated with the alluvium across the low-lying terrain bordering Ropes Creek.*
- *No acid sulphate soils have been identified.'*

The predominant soil landscape characteristics are described in general terms in the EIS, however, further reference to NSW Office of Environment & Heritage website resource '*eSPADE'*, identified the presence of two soil landscape units within the project footprint:

- the 'Luddenham' (lu) soil landscape unit, which encompasses the majority of the Project from the southern portion of the Project to the areas of lower elevation to the northwest
- the 'Blacktown' (bt) soil landscape unit which occurs on the north-western in areas of lower elevation

4.1.1. 'Luddenham' (lu) landscape unit

The 'Luddenham' (lu) soil landscape unit mainly occurs in the south and west in the Cumberland Lowland on the lesser isolated ridgelines. This soil landscape is also underlain by Wianamatta Group, Ashfield Shale and Bringelly Shale formations. The Ashfield Shale consists of laminite and dark grey shale. Bringelly Shale consists of shale, calcareous claystone, and laminite. Between these two shale members is the Minchinbury Sandstone consisting of fine to medium-grained lithic quartz sandstone. This soil landscape occurs on low rolling to steep low hills with slopes ranging from 5-20% grade. The main soils are shallow dark podzolic or massive earthy clays on crests and upper slopes loams ranging to Yellow Podzolic soils and prairie soils on lower slopes and drainage lines.

The erosion hazard of the soil type is rated as Moderate to Very High for non-concentrated flows and High to Very High for concentrated flows. Other physical limitations of the landscape unit include hard setting soil profiles, low wet strength, high shrink swell, mass movement hazard and moderately reactive soil materials. The chemical soil characteristics range from Strongly Acidic to Slightly Acidic (pH commonly ranging from 4.0 – 6.5), low fertility, and generally low available water capacity.

Figure 4.1.1 – Extract map of the occurrence of the 'Luddenham' (lu)soil landscape unit



4.1.2. ‘Blacktown’ (bt) landscape unit

The ‘Blacktown’ landscape unit is the predominant soil landscape in the western Sydney area. The soil landscape occurs over the Wianamatta Group and Ashfield Shale which consists of laminite and dark grey siltstone, Bringelly Shale which consists of shale with occasional calcareous claystone, laminite and infrequent coal, and Minchinbury Sandstone consisting of fine to medium-grained quartz lithic sandstone.

The soils are characterised by Red and Brown Podzolic soils on mid to upper slopes grading to Yellow Podzolic soils on lower slopes and drainage lines.

The erosion hazard of the varying soil types is rated as Slight to Moderate for non-concentrated flows, ranging to Moderate to High for concentrated flows. Other physical limitations of the landscape unit include hard setting soil profiles, moderately reactive deep clays and High shrink-swell potential (localised). The chemical soil characteristics include generally acidic soils (pH commonly ranging from 5.0 – 7.0), low to moderate fertility, and localised sub-soil salinity.

Figure 4.1.2 – Extract map of the occurrence of the ‘Blacktown’ (bt) soil landscape unit



The pre-existing topography of the Project area described above will be significantly altered by preparatory earthworks undertaken by others prior to the commencement of the works which are the subject of this plan. As a result of the preliminary bulk earthworks, the topography of the site will be altered, from having localised slopes to being a slightly graded, level pad with a cut batter on the western and southern boundaries. It is anticipated that the majority of the site will be regraded to form a level pad which will have been capped with stabilised dense-grade material.

4.2 Acid Sulphate Soils

Potential Acid Sulfate Soils are soils that have concentrations of iron sulphide layers that can oxidise when exposed to oxygen generating sulphuric acid. In general, these soils occur less than 5 metres elevation above sea level and are predominantly restricted to low-lying coastal areas, adjoining estuarine areas. More recently, acid sulphate soils have been identified in long-term, drought-affected inland areas where water levels have dropped in waterways and wetlands, exposing acid sulphate material that has subsequently oxidised.

Given the general elevation and the soil types described within the Project area, acid sulphate soils are unlikely to occur in the area. A review of the relevant Acid Sulfate Soil Risk Map (ASSMAC – DLWC 1998) confirmed the Project area falls outside the study area of this resource.

Further reference to the online soil mapping resource *'eSpade'* (NSW Department of Environment & Heritage) indicate that the site is not situated in an area at risk of Acid Sulphate soils. The map indicates the closest known occurrence is in the upper reaches of the Parramatta River and Georges River to the east and south east of the Project.

4.3 Surface water

The Project traverses a dissected ridge with a general north-south alignment. The drainage pattern is ephemeral with runoff generated in response to prolonged rainfall or storm events. The catchments on the eastern side of the ridgeline generally drain toward Ropes Creek, whilst the smaller catchment on the western slopes generally drain toward the upper tributaries of South Creek.

Section 2.3 of the EIS prepared for DA SSD 7348 describes the Surface Water and Hydrology as follows;

- *"The OWE is located within the Hawkesbury-Nepean catchment.*
- *Ropes Creek, a third order stream, flows along the eastern boundary of the site in a northerly direction into South/Wianamatta Creek approximately 13 km north of the OWE.*
- *The landscape is characterised by a series of ridgelines incised with drainage lines flowing into Ropes Creek. The drainage system within the development site is in relatively poor condition, due to erosion and trampling by cattle.*
- *An unnamed modified watercourse is to the west of the OWE.*
- *The eastern portion of the site is subject to flooding (associated with Ropes Creek) and is variably affected by the 100-year average recurrence interval (ARI) flood event.*
- *Two small farm dams are located on the western boundary of the site, while two larger dams and one smaller dam are located on the eastern and northern portions of the site."*

4.4 Water Quality and Receiving Environment Assessment

The Project activities that have the potential risk of negative impacts on water quality parameters include:

- Establishing 'clean' water diversions and erosion and sediment controls.
- Minor earthworks, site preparation and temporary access roads.
- Trenching and earthworks for service installation.
- In-situ concrete works and concrete curing.
- Stormwater construction and drainage stabilisation.
- Dewatering 'dirty' water from site areas and sediment basin operations.
- Spills & leaks of fuels & oils from mobile and static machinery.

- Storage of chemicals, fuels & oils.
- Generation of building and construction waste.
- Importing, handling, stockpiling and transporting materials & resources.
- Plant maintenance.
- General waste generation from compound/s & works areas.

The assessment of the existing water quality attributes of the Project catchments noted that vegetation across the Project has been heavily modified for agricultural purposes that would generally be limited to grazing. A remnant native vegetation structure is only present in a few isolated areas, generally confined to the steeper slopes and adjacent to drainage lines. All drainage lines are almost devoid of riparian vegetation over their length and the contributing catchments have been under scrubbed of low to mid storey native vegetation for the purposes of agriculture.

In general terms, water quality in the area is likely to be typical of aquatic ecosystems that have been disturbed by agricultural practices. Long term agricultural land use has given rise to surface water pollution which would likely exceed the levels considered to be suitable for the sustainability of ecosystem integrity. The existing land does not have water quality treatment measures in place as part of the drainage infrastructure.

The determination of the assessment of the drainage patterns, the heavily modified existing receiving environments, and the attributes of the receiving waters in the vicinity of the Project have been assessed as 'standard' in accordance with Blue Book Volume 1- Sect. 6.3.4 – (f) & Volume 2D – Table 6.1.

4.5 Groundwater

The presence of groundwater primarily impacts on erosion and sediment control during construction with regard to piling, foundation earthworks, trenching for drainage and services, culvert construction, and sediment basin construction. The EIS prepared for DA SSD 7348 at Section 2.3 describes the groundwater characteristics of the Project area as follows;

> *"Groundwater is expected to be relatively deep below the OWE site – no groundwater was encountered during geotechnical investigations which included boreholes drilled up to 15m below ground level."*

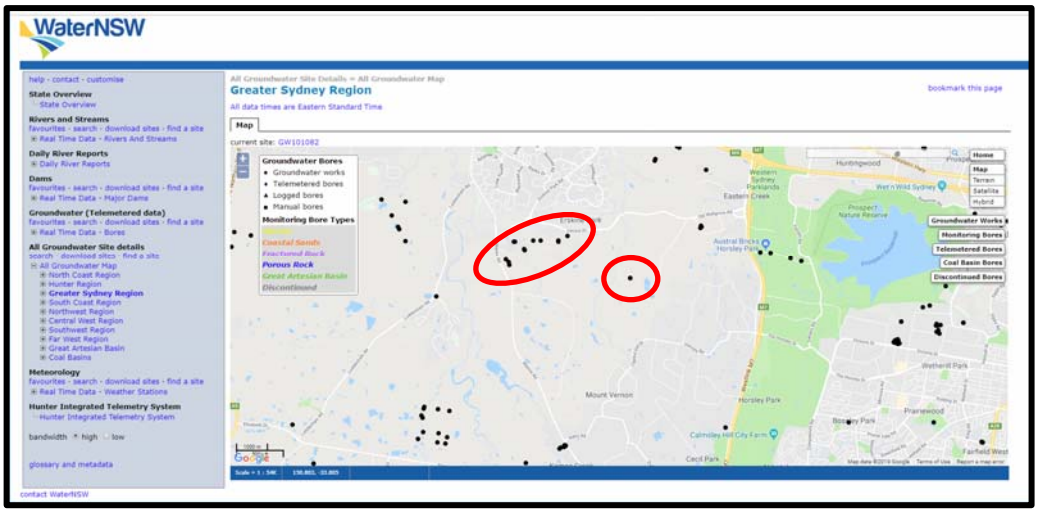
There are no obvious indicators of shallow groundwater sources, however the detectable presence of groundwater at or near the soil surface is highly dependent on seasonality and rainfall rates. Further assessment was undertaken the NSW Groundwater Bore Database (Department of Primary Industries – Water 2018).

The database was reviewed for information on existing groundwater bores in a three-kilometre radius of the Project area. Thirteen (13) groundwater sites were located in close proximity to the Project. Groundwater drill records for several sites were reviewed with final bore depths commonly being 50-60m below ground level. Groundwater table depths were not indicated.

In summary, the assessment indicates that groundwater is not likely to impact on the scope of the Project works.

Figure 4.5 – Extract map of the occurrence of groundwater bores in the Project vicinity.

(Note the nearest groundwater bores indicated are circled in red)



4.6 Rainfall

Rainfall data was assessed from the Sydney Equestrian Centre Automatic Weather Station (AWS), located approximately 5 kilometres south-east of the Project. This data was recorded between 1997 to 2019. (Bureau of Meteorology, 2019). The Sydney Equestrian Centre AWS was also selected for the Project as it will provide real time weather monitoring during the proposed construction period.

Rainfall data collected shows that typically rainfall is higher during summer and autumn. Winter and spring are generally drier periods during the year. February is the wettest month, with an average rainfall of 103.6 millimetres. Both the mean and median average annual rainfall totals are closely correlated at 757.3mm and 715.8 millimetres respectively.

Table 4-5 below provides a summary of climate data at the weather station.

Table 4-6 - Summary of rainfall records

Summary of climate records from 1997 - 2019													
Summer			Autumn			Winter			Spring			Summer	
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Year
Mean rainfall (mm)	75.6	103.6	83.3	70.3	41.9	75.7	35.7	37.6	35.1	58.8	78.6	66.4	757.3
Median rainfall (mm)	68.4	89.5	57.3	58.5	19.1	52.2	26.0	26.6	22.2	48.7	57.9	62.6	715.8
Mean of rain days >1mm	7.6	7.1	8.0	6.8	5.0	6.5	5.1	4.2	4.9	5.8	7.0	7.1	75.1

Red = highest value blue = lowest value

4.7 Rainfall erosivity factor and design rainfall depth

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

The rainfall erosivity factor which is referred to as the 'R' Factor has been assessed from an Intensity Frequency Duration Table (see below) prepared for the site based on the 2-year, 6 hours storm event of 10.0mm/hour. The R Factor value of 2210 is calculated from the 2-year ARI, 6 Hour storm of 10.0mm/hour being 'S', where $R = 164.74(1.1177)^{s}S^{0.6444}$, as per the Blue Book - Appendix A2 & B.

The nearest 'Blue Book' centre for detailed rainfall depths is Blacktown which is approximately 12kms north-east of The Project (Blue Book Volume 1- Table 6.3a). As noted above at Section 4.3, the Project was assessed as 'standard' in accordance with Blue Book Volume 1- Sect. 6.3.4 – (f) & Volume 2D – Table 6.1, however, we have elected to adopt the 5-day 85th percentile rainfall depth for Blacktown of 32.2mm.

Table 4.7 – Intensity Frequency & Duration Table

Intensity-Frequency-Duration Table

Location: 33.825S 150.800E NEAR.. Oaklands West

Rainfall intensity in mm/h for various durations and Average Recurrence Interval

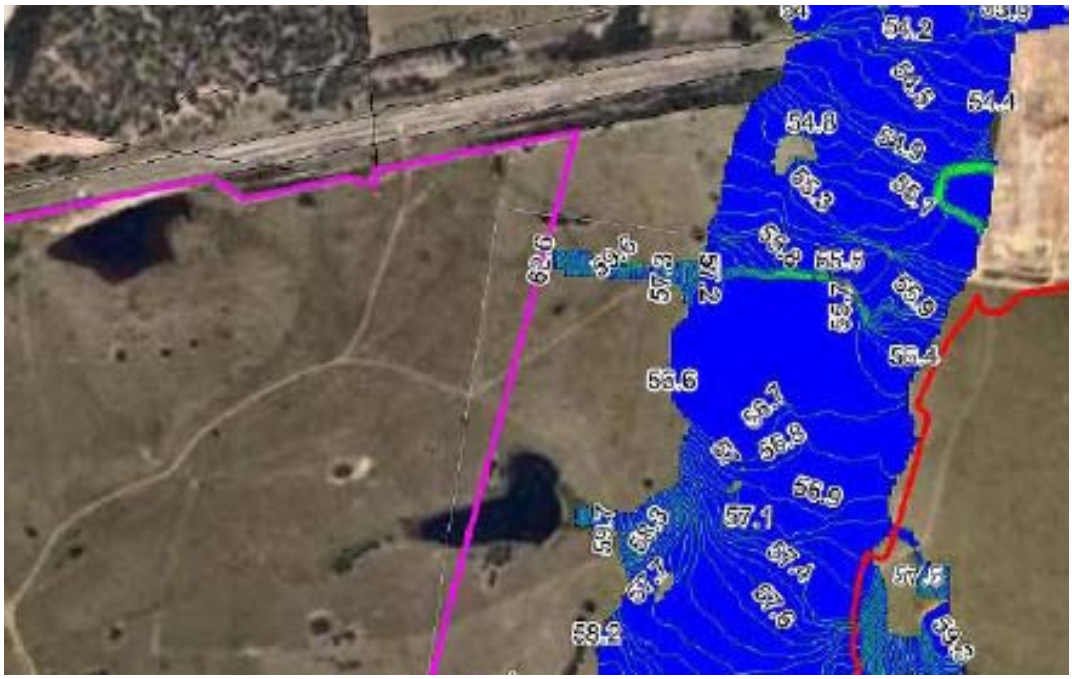
	Average Recurrence Interval						
Duration	1 YEAR	2 YEARS	5 YEARS	10 YEARS	20 YEARS	50 YEARS	100 YEARS
5Mins	76.6	98.7	127	144	166	195	217
6Mins	71.7	92.4	119	135	156	183	204
10Mins	58.6	75.5	97.5	110	127	149	166
20Mins	42.7	55.0	70.8	80.0	92.1	108	120
30Mins	34.6	44.6	57.4	64.8	74.6	87.5	97.3
1Hr	23.4	30.2	38.9	43.9	50.5	59.2	65.8
2Hrs	15.4	19.9	25.5	28.8	33.2	38.9	43.2
3Hrs	12.0	15.4	19.8	22.4	25.7	30.1	33.5
6Hrs	7.78	10.0	12.8	14.5	16.7	19.5	21.7
12Hrs	5.03	6.48	8.35	9.44	10.9	12.8	14.2
24Hrs	3.22	4.17	5.45	6.21	7.20	8.50	9.50
48Hrs	1.99	2.60	3.48	4.02	4.70	5.61	6.33
72Hrs	1.46	1.92	2.60	3.02	3.55	4.27	4.83

(Raw data: 30.31, 6.5, 1.92, 59.07, 12.68, 4.26, skew=0.01, F2=4.3, F50=15.8)

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4.8 Flooding

The Flood Impact Assessment was prepared for the approved SSD 7348 Concept Proposal and Stage 1 development EIS (at Appendix P), detailing the flooding risks and characteristics of the Project area. The EIS flood modelling concluded that flood impacts were mainly confined to the Ropes Creek flood plain and we note that Project site is elevated well above the 100-year ARI flood levels. The EIS does not propose any flood mitigation or management measures area during construction. We refer to the Figure 35, Page 145 of the EIS, partly reproduced below;


54.2
54.4
54.0
54.1
55.5
55.4
53.6
57.1
59.2

5 ENVIRONMENTAL ASPECTS AND IMPACTS

5.1 Construction activities

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

- Installation of preliminary erosion and sediment controls and establishment of off-site water diversions.
- Establishment of compounds, exclusion zones, stockpile areas, and soils treatment area/s.
- Minor earthworks, site preparation and site access/temporary access roads.
- Trenching and earthworks for service installation.
- In-situ concrete works and concrete curing.
- Asphalt paving activities.
- Operation of internal haulage and access routes.
- Stormwater construction and drainage stabilisation, including temporary sediment basins.
- Dewatering ‘dirty’ water from site areas and sediment basin operations
- Importing, handling, stockpiling and transporting materials & resources.
- Compound operation including fuel and chemical storage, refuelling and chemical handling.
- Storage of chemicals, fuels & oils.
- Spills & leaks of fuels & oils from mobile and static machinery.
- Plant maintenance.
- Generation of building and construction waste
- General putrescible waste from compound/s & works areas
- Noxious weed treatment including herbicide spraying.
- Topsoil replacement, revegetation, and landscaping
- Landscaping.

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

5.2 Impacts

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

- Exposure and disturbance of soils during earthworks, creating the potential for off-site transport of eroded sediments and pollutants.
- Alteration of surface and subsurface flows that could cause disturbances to hydrology and hydraulics.
- Off-site discharge of water containing sediment from dewatering activities.
- Contamination of soils, and surface and groundwater from accidental spills or oil leaks. This might include grease or fuel from machinery and vehicles, construction sites or compounds, or spills of other chemicals that may be used during the course of construction.
- Disturbance of unidentified contaminated land e.g. pesticide/chemical concentrations in soil from historical land use practices, and subsequent generation of contaminated runoff.

- Litter and gross pollutants from construction activities.
- Erosion and sedimentation of active construction zones during construction of the project as a result of a large rainfall event or storm event.

Some impacts on soil and water attributable to the Project are anticipated. Relevant aspects and the potential for related impacts have been considered in a risk assessment in the CEMP.

A full list of management measures associated with soil and water are detailed in Section 6 of this Plan below.

6 ENVIRONMENTAL CONTROL MEASURES

Specific measures and requirements to address soil and water management are outlined in in Table 6-1.

Table 6-1 - Management and mitigation measures

ID	Measure / Requirement	When to implement	Responsibility	Reference
General				
SW1	Training will be provided to all project personnel, including relevant sub-contractors on sound erosion and sediment control practices and the requirements from this plan through inductions, toolboxes and pre-start briefings.	Pre-construction Construction	Project Manager / Environmental Site Representative	Managing Urban Stormwater: Soils and Construction Volumes 1 & 2A
SW2	A Project Soil Conservationist (CPESC) will be engaged and consulted throughout construction to provide advice and review SWMP preparation, erosion and sediment control design, installation, maintenance and the development of PESCPs.	Pre-construction Construction	Project Manager / Environmental Site Representative	SSD Development Consent Condition D80 (a) Best Practice
SW3	EWMSs may be prepared and implemented to manage soil and water impacts that include but are not limited to: • Activities assessed as having high environmental risk; • Activities that impact on environmentally sensitive areas; • Activities that pose a risk to receiving water quality; • Earthworks including temporary stockpiling and disposal of excavated material and protocols for the management of contaminated material; • Work around drainage lines and where construction water may be discharged into natural waterways; • Construction and operation of sediment basins including connecting drainage for the associated catchment area; and drainage works.	Construction	Project Engineer / Supervisor / Environmental Site Representative	Best Practice
SW4	• Contaminated soils and Acid Sulfate Soils and / or Potential Acid Sulfate Soils are to be managed in accordance with the Erosion and Sediment Control Plan, which forms Appendix A of the this SWMP.	Pre-construction / Construction	Project Manager / Supervisor / Environmental Site Representative	Managing Urban Stormwater: Soils and Construction Volumes 1 & 2A
Erosion and sediment control				
SW5	A Primary Erosion and Sediment Control Plan (ESCP) has been prepared by the Soil Conservationist (CPESC) and are included in Appendix A of this Plan. The plan includes arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in wet weather. The Primary Erosion and Sediment Control Plan is to be referred to and considered when preparing progressive erosion and sediment control plans.	Pre-construction and construction	Environmental Site Representative / Project Soil Conservationist	SSD Development Consent Condition D80 (a) EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43

ID	Measure / Requirement	When to implement	Responsibility	Reference
SW6	Progressive Erosion and Sediment Control Plans (PESCPs) will be prepared and implemented in advance of construction. PESCPs will be updated as required.	Pre-construction and construction	Environmental Site Representative / Project Soil Conservationist	SSD Development Consent Condition D81 EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43
SW7	Hardstand material, rumble grids or similar will be provided at exit points from construction areas onto public roads to minimise the tracking of soil and particulates onto public roads.	Pre-construction / Construction	Project Engineer / Supervisor	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2
SW8	Site compounds, access tracks, stockpile sites and temporary work areas will be designed and located to minimise erosion.	Pre-construction / Construction	Project Manager / Supervisor / Environmental Site Representative	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43
SW9	Works will be programmed to minimise the extent and duration of unstabilised soil surfaces.	Pre-construction / Construction	Project Manager / Supervisor / Environmental Site Representative	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2
SW10	Clean and dirty water runoff will be adequately separated to avoid mixing where possible through the use of diversions, clean water drains, and the early installation of permanent drainage infrastructure.	Pre-construction / Construction	Supervisor	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2
SW11	Stabilisation will be implemented for dormant areas exposed for four weeks or more (including stockpiles and batters); by providing soil surface protection (i.e. geotextile fabric, stabilised mulch, soil binder or spray grass)	Construction	Project Engineer / Supervisor	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2
SW12	Drains, banks or diversions will be formed (and stabilised where required) to direct runoff from disturbed areas to sediment basins or to areas with adequate sediment control devices, and away from watercourses or tributary drainage lines. Lip berms and batter chutes with velocity dams will be progressively formed and maintained on fill formations.	Construction	Project Engineer / Supervisor	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2

ID	Measure / Requirement	When to implement	Responsibility	Reference
SW13	Staged re-vegetation and/or other permanent stabilisation will be implemented in Site areas as work proceeds.	Construction	Project Engineer / Supervisor / Environmental Site Representative	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2
Stockpiles				
SW14	Stockpiles will be: • located in designated stockpile sites, above 10-year flood levels, • located at least 5 m from likely areas of concentrated water flows and drainage lines, • Topsoil stockpiles formed to heights to no greater than 2 m, and all other soil materials to be no higher than 5m, and batter slopes to be no steeper than 2:1, • established so that any slump of the stockpile will not affect erosion and sediment control measures or infringe on specified minimum clearance requirement, • covered or otherwise protected from erosion where stockpiles will be in place for more than 20 days, or temporary stockpiles that are susceptible to wind or water erosion, within 5 days of forming each stockpile. • Managed to avoid contamination with noxious weeds and cross-mixing with other stockpiled materials. Weed growth on stockpiles will be monitored and suppressed as required.	Construction	Project Engineer / Supervisor / Environmental Site Representative	SSD Development Consent Condition D80 (c) EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
Sediment basins				
SW15	Construction sediment basins will be designed and constructed in accordance with the requirements and procedures detailed in the Blue Book Volume's 1 & 2D. The construction sediment basin design/s, restoration and revegetation methodology will be formulated and/or reviewed by the Project Soil Conservationist.	Pre-construction / Construction	Project Soil Conservationist / Supervisor	SSD Development Consent Condition D81 Managing Urban Stormwater: Soils and Construction Volume 1 & 2D
SW16	All sediment basins will have depth indicators installed that clearly show the sediment storage zone together with basin identification signage basin number.	Construction	Project Engineer / Supervisor / Environmental Site Representative	Managing Urban Stormwater: Soils and Construction Volume 1
SW17	Run-off from areas within catchments (that are controlled by sediment basins) is to be diverted to the sediment basins in stabilised drainage lines where possible.	Construction	Supervisor	SSD Development Consent Condition D81 EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1

ID	Measure / Requirement	When to implement	Responsibility	Reference
SW18	Suitable all-weather access will be constructed and maintained to sediment basins to allow for basin testing, treatment, discharge and maintenance.	Pre-construction / Construction	Project Engineer / Supervisor / Environmental Site Representative	Best Practice Managing Urban Stormwater: Soils and Construction Volume 1
SW19	Water quality basins shall be flocculated with an appropriate approved flocculant (eg. gypsum) using an early dosing system to minimise the settling time of suspended dispersible and small sediment particles and to maximise the efficiency of the basins.	Construction	Supervisor	SSD Development Consent Condition D81 & D82 EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW20	Prior to discharging any water from a sediment basin, representative water samples will be obtained and tested to ensure that it meets the NSW EPA water quality criteria.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 EIS Section 6.7.4. Managing Urban Stormwater: Soils and Construction Volume 1
SW21	Flocculant or coagulant (whether gypsum or another approved material) will be applied to settle suspended sediments within 24 hours of the conclusion of each rain event causing runoff. The cycle time to treat, dewater and return the maximum storage capacity to any individual construction water quality basin prior to the next rainfall event shall not exceed 5 days.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 EIS Section 6.7.4. & Section 7.1 – Table 43 Managing Urban Stormwater: Soils and Construction Volume 1
SW22	Subsequent to the initial series of basin sample tests, where a statistical correlation can be demonstrated between turbidity and Total Suspended Solids (TSS), an application will be made to the Principal to allow for the discharge of supernatant waters based on turbidity measurements before confirmatory laboratory data is available.	Construction	Environmental Site Representative	Managing Urban Stormwater: Soils and Construction Volume 1
SW23	A sediment basin management register will be maintained for each sediment basin that records; • personnel approving the dewatering activities; • time & date; • water quality test results and estimated volumes for each discharge.	Construction	Environmental Site Representative / Project Engineer	SSD Development Consent Condition D81 & D82 Best Practice Managing Urban Stormwater: Soils and Construction Volume 1

ID	Measure / Requirement	When to implement	Responsibility	Reference
Dewatering				
SW24	Personnel responsible for approval and/or carrying out dewatering activities will be adequately trained and inducted on the dewatering procedures and requirements.	Construction	Environmental Site Representative / Supervisor	Best Practice Managing Urban Stormwater: Soils and Construction Volume 1
SW25	Water to be discharged from site will be discharged in accordance with a Site Dewatering Procedure. In accordance with NSW EPA water quality criteria, the water quality parameters for discharge from site discharge points will be: • Total Suspended Solids <50mg/L • pH 6.5 - 8.5 • Oil & grease – not visible.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 Managing Urban Stormwater: Soils and Construction Volume 1
SW26	A site dewatering register will be maintained for site areas (other than sediment basins) that require treatment, dewatering and discharge to off-site areas. The register will record; • dewatering procedure; • date and time for each discharge at each location; • water quality test results for each discharge; • personnel approving the dewatering activities • evidence of discharge monitoring, or risk assessment and mitigation measures used to eliminate the risks of pollution or erosion.	Pre-construction / Construction	Environmental Site Representative / Project Engineer	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 Managing Urban Stormwater: Soils and Construction Volume 1
SW27	Water captured in sediment basins and other site works areas will be reused for dust suppression, compaction, or other construction activities where possible. If a proposed source, other than a town water supply or natural water source, procedures will be developed for regular testing to ensure that the water is suitable for the purpose and is not hazardous to health and the environment.	Construction	Environmental Site Representative / Project Engineer / Supervisor	EIS Section 7.1 – Table 43 Managing Urban Stormwater: Soils and Construction Volume 1
SW28	All dewatering activities will be subject to prior approval from relevant project personnel. The dewatering activities will be monitored to ensure: • intake suction devices are positioned to prevent extraction or disturbance of settled sediments, • no erosion is occurring at discharge locations and/or downstream areas, • no inadvertent or intentional controlled discharge of untreated waters occurs.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 Managing Urban Stormwater: Soils and Construction Volume 1
Site stabilisation and restoration				
SW29	Management and procedures for site stabilisation will be in accordance with the primary Erosion and Sediment Control Plan at Appendix A of this SWMP.	Construction	Environment Manager / Project Soil Conservationist	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1

ID	Measure / Requirement	When to implement	Responsibility	Reference
SW30	The rehabilitation of disturbed areas will be undertaken progressively as construction stages are completed and in accordance with procedures detailed in the Blue Book Volume's 1 & 2D.	Construction / Post construction	Environmental Site Representative / Supervisor	SSD Development Consent Condition D80 (c) EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW31	Restoration of these areas includes; • topsoiling of the areas; • seeding, planting, watering and maintenance; • removal of temporary erosion control devices and of accumulated sediments • removal of unused construction materials and waste materials.	Construction / Post construction	Environmental Site Representative / Supervisor	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
Spill prevention and response				
SW32	Management for spill prevention and response will be in accordance with the CEMP. An Emergency Spill Response Procedure has been developed in the CEMP.	Pre-construction / Construction	Environmental Site Representative / Supervisor / Project Manager	NSW POEO Act 1997 SSD Development Consent Condition D82 & D109
SW33	Emergency wet and dry spill kits will be kept on site at locations described within the Emergency Spill Response Management Procedures (ie at compounds). All personnel will be made aware of the spill kit locations and will be trained in their use.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D82
SW34	A schedule of all hazardous materials kept on site during construction will be maintained for the duration of the project.	Construction	Environmental Site Representative / Supervisor	Best Practice
SW35	The ancillary facilities will be managed within the ESCP. The following measures will be included to limit sediment and other contaminations entering receiving waterways: • Chemicals will be stored within a sealed or bunded area not within 5 m of any aquatic habitat, any areas of concentrated water flow, flood prone or poorly drained areas, or on slopes steeper than 1:10 • Vehicle movements will be restricted to designated pathways where feasible and appropriate controls will be in place where plant is stored • Areas that will be exposed for extended periods, such as car parks and main access roads, will be stabilised where feasible.	Contractor	Construction	NSW POEO Act 1997 SSD Development Consent Condition D82 & D110
SW36	All spills and associated environmental incidents are to be reported in accordance with the CEMP, and where applicable, in accordance with Section 148 of the NSW POEO Act 1997.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997

ID	Measure / Requirement	When to implement	Responsibility	Reference
Monitoring and inspections				
SW37	Nominated project personnel will conduct site inspections of erosion and sedimentation controls at least weekly.	Construction	Environmental Site Representative / Supervisor	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW38	All disturbed areas, revegetated/stabilised areas and all permanent and temporary erosion and sediment control works will be inspected: • At least weekly • Immediately before extended site shut down • At the conclusion of all rainfall events exceeding 10mm and during periods of prolonged rainfall as soon as practicable.	Construction	Environmental Site Representative / Supervisor	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW39	Any rectification measures which are identified will be addressed and / or recorded to ensure appropriate rectification within the nominated timeframe. The timeframe for rectification works is based on a risk assessment of deficiencies in controls, being; • High: within 24 hours of inspection • Medium: within 3 working days of inspection; and • Low: within 3 working days of inspection.	Construction	Environmental Site Representative / Supervisor	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW40	Monitoring of rainfall events (with observations of rainfall in millilitres) will be undertaken daily during normal work days.	Construction	Environmental Site Representative	Best Practice Managing Urban Stormwater: Soils and Construction Volume 1

7 COMPLIANCE MANAGEMENT

7.1 Roles and responsibilities

The RCC Project Team's organisational structure and overall roles and responsibilities are outlined in CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Plan.

7.2 Training

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

- Existence and requirements of this sub-plan.
- Relevant legislation.
- Incident response, management and reporting.
- Roles and responsibilities for soil and water management.
- Water quality management and protection measures.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in soil and water management. Examples of training topics include:

- ERSED control installation methodology.
- Sediment basin construction.
- Sediment basin operation.
- Sediment basin maintenance.
- Working near or in drainage lines.
- Emergency response measures in high rainfall events.
- Preparedness for high rainfall events.
- Lessons learnt from incidents and other event e.g. high rainfall/flooding.
- Spill response.
- Stockpile location criteria.

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

7.3 Monitoring and inspection

Regular monitoring and inspections will be undertaken during construction. Monitoring and inspections will include, but not be limited to:

- Immediate areas and drainage lines adjacent to the Project area
- Construction sediment basin water quality prior to discharge.
- Weekly and post rainfall inspections to evaluate the effectiveness of erosion and sediment controls measures in accordance with Table 6-1.

Table 7-3 Inspection Schedule

Activity	Frequency	Location	Responsibility	Record
Environmental Site Inspection	Weekly	Site wide	Environmental Site Representative	Site inspection log
Rainfall Inspection (10mm or greater rainfall).	Prior to rainfall event, during event, within 24 hours after the event	Site wide	Environmental Site Representative	Site inspection log

Additional requirements and responsibilities in relation to inspections, in addition to those in Table 6-1, are documented in the CEMP.

7.4 Licences and permits

The water quality discharge criteria for the project are listed below, in Table 7-4.

Table 7-4 Discharge water quality criteria

Parameter	Criteria	Sampling method	Frequency
pH	6.5 –8.5	Probe	Daily during any discharge
Turbidity	TBA following correlation with TSS results	Probe or Grab Sample	Likely to be required daily during any discharge
Total Suspended Solids*	50 mg/L	Grab Sample	Daily during any discharge
Oil and Grease*	No visible	Visual inspection	Daily during any discharge

Any other relevant licences or permits will be obtained in the lead up to and during construction as required.

7.5 Weather monitoring

A rain gauge to be installed in the main compound will be used in the monitoring of rainfall events. The Wet Weather Contingency Procedure is detailed in the Project ESCP at Annexure E.

7.6 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental mitigation and management measures, compliance with this plan and other relevant approvals, licences and guidelines. Audit requirements are detailed in the CEMP.

7.7 Reporting

Reporting requirements and responsibilities are documented in the CEMP.

8 REVIEW AND IMPROVEMENT

8.1 Continuous improvement

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

The continuous improvement process will be designed to:

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

8.2 SWMP update and amendment

The processes described in the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Any revisions to the SWMP will be in accordance with the process outlined in the CEMP.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure located within the CEMP.

Appendix A
Erosion and Sediment Control Plan

RUBICON ENVIRO PTY LTD
ABN: 75 616 518 211

PROPOSED INDUSTRIAL DEVELOPMENT – OAKDALE WEST ESTATE – BUILDING 1A

EROSION AND SEDIMENT CONTROL PLAN

May 2020 – Revision 1

Prepared for:

RICHARD CROOKES CONSTRUCTIONS

Prepared by:

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Rev No.	Date	Revision Description	Prepared by	Reviewed		Approved	
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Document Authorship Information

Project	Proposed Industrial Development – Oakdale West Estate – Lot 11 DP 1178389
Document	Erosion and Sediment Control Plan – Construction of Building 1A
Document Author	Andrew Littlewood – Senior Soil Conservationist
Qualification	Certified Professional in Erosion and Sediment Control (CPESC No. 5988).
Relevant Training	• SEEC and IECA (Australasia) – 'Water Management on Construction sites' & 'Preparing and Reviewing Plans for Soil and Water Management' – 2009 • University of Western Sydney and Hawkesbury Global Ltd - Certificate of Attainment in Soil and Water Management for Urban Development - 2000
Experience – Years	20 years (2000 – 2020)
Current Employment	Director & Principal - Rubicon Enviro Pty Ltd (2016-2020)
Previous Employment	Senior Soil Conservationist & CPESC – TREES Pty Ltd (2008-2016)
Previous Employment	Erosion and Sediment Control Officer - Lake Macquarie City Council (2000 – 2007)
Professional Affiliations	Member of International Erosion Control Association (Australasia)

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Appendices

Appendix A Site Characteristics & Revised Universal Soil Loss Equation Assessment ()

Appendix B RUSLE Catchment Assessment & Sediment Basin Calculations

Appendix C Sediment Basin Management & Dewatering Procedure

Appendix D Wet Weather Contingency Procedure

Appendix E Progressive Erosion & Sediment Control Plans

Appendix F Standard drawings

Oakdale West Estate: Building 1A – Erosion and Sediment Control Plan

1 Introduction

This Primary Erosion and Sediment Control Plan (Sub-plan) has been prepared as Appendix A in accordance with the Project Soil and Water Management Plan (SWMP).

The Sub-plan has been prepared to reduce the potential for risk of environmental impacts caused by erosion and sedimentation associated with project activities.

2 Purpose

The purpose of this Sub-plan is to outline the planning, methodologies, techniques and monitoring to minimise the potential environmental impacts of erosion and sedimentation arising from the Project construction activities.

3 Scope

The scope of the Primary ESCP will;

- Provide a strategy and framework for construction to be planned, implemented and maintained to mitigate any adverse environmental impacts,
- Propose control measures and management procedures to be implemented during construction, to avoid or minimise potential adverse impacts to soils, surface water and groundwater,

This Primary ESCP has been prepared in accordance with the requirements of the 'Blue Book' being a collective of;

- Managing Urban Stormwater: Soils and Construction 4th Edition Volume 1 – Landcom, reprinted 2006
- Volume 2A: Installation of Services – NSW Department of Environment & Climate Change (DECC), 2007
- Volume 2D: Main Road Construction – (DECC), 2007.

4 Objectives

The key objectives of the Primary ESCP is to;

- Identify potential impacts to soil and water quality such as erosion and sedimentation arising from construction activities,
- Outline the soil and water management strategy for the construction phase of the development,
- Promote the adoption of sound principles and criteria for planning and implementation of erosion and sediment controls,
- Ensure the design and construction of controls is undertaken in accordance with the relevant guidelines,
- Minimise the adverse risks to soils and water by detailing mitigation measures and strategies,
- Provide an outline of a monitoring, inspection and reporting framework for the ongoing assessment of adherence to the ESCP.

5 Performance Criteria & SSD Development Approval Condition Compliance

The performance criteria for the ESCP are to:

- Limit potential for adverse environmental impacts on downstream waterways, riparian zones, and other identified sensitive areas,
- Minimise the risk and subsequent occurrence of erosion and sedimentation, to mitigate the impacts on project areas, sensitive areas, and downstream environments,
- Prevent the occurrence of pollution incidents causing environmental harm,
- Maintain existing downstream waterway attributes and water quality parameters,

- Manage erosion and sedimentation with sound management practices of effective planning and formation of relevant controls
- Ensure compliance with legislative & regulatory requirements, and to maintain liaison and communication with statutory authorities and/or delegates.

5.2 SSD Development Approval Condition Compliance

The following table details this ESCP's compliance with the State Significant Development (SSD) Consent Condition requirements for SSD 7348 Development Consent.

Table 5.2

SSD 7348 Development Consent Condition	ESCP Section & Page
D80(a) – '*Erosion and Sediment Control Plan must.... be prepared by a suitably qualified and experienced person(s);'*	See '*Document Authorship Information'* – Page 2
D80(b) – '*Erosion and Sediment Control Plan must....be generally consistent with the Erosion and Sediment Control Plans in the RTS and those prepared by the contractor for each sequence of the works, as approved by the PCA.'*	See Section 3 - '*Scope of ESCP'* – Page 4. The ESCP has been prepared in accordance with the requirements of the Managing Urban Stormwater - Soils and Construction 4th Edition, Volumes 1, 2A & 2D, known as the 'Blue Book'
D80(c) – '*Erosion and Sediment Control Plan must.... include detailed erosion and sediment controls developed in accordance with the relevant requirements of Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline;'*	• See Section 8 – *'Erosion Control Measures and Sediment Control Methods'* – Table 8 – Page 10, and; • See Section 9 – '*Soil & Water Management Activities & Controls'* Table 9 – Page 13
D80(d) – '*Erosion and Sediment Control Plan must.... include procedures for maintaining erosion and sediment controls in efficient working order for the duration of construction, to ensure Stage 1 complies with Condition D82.*	• See Section 7.6 '*Erosion and Sediment Control Training for Site Personnel'* – Page 8, and; • See Section 7.7 *'Inspection and Maintenance'* – Page 8

6. Guidelines, Standards and Procedures

Name of Document/Publication	Author	Published
Acid Sulfate Soil Manual	ASSMAC	1998
Approved Methods for the Sampling and Analysis of Water Pollutants in NSW	NSW EPA	2004
Australian and New Zealand Guidelines for Fresh and Marine Water Quality	ANZECC and ARMCANZ	2000
Bunding & Spill Management	NSW DEC	1997
Environmental Best Management Practice Guideline for Concreting Contractors	NSW DEC	2004
Guidelines for the Management of Acid Sulphate materials: Acid Sulphate Soils, Acid Sulphate Rock and Monosulphidic Black Ooze	NSW RTA	2005
Guideline for Environmental Management - Spraying Bituminous Materials	VIC EPA	2002
Guideline for Handling Liquids	NSW DECCW	2007
Managing Urban Stormwater ('Blue Book'): Soils and Construction Volume 1, 4th Edition	NSW Landcom	2004
'Blue Book' - Volume 2A Installation of Services	NSW DECCW	2008
'Blue Book' - Volume 2D Main Roads Construction	NSW DECCW	2008
Noxious and environmental weed control handbook	NSW DPI	2014
Table Drains - Erosion Control Guideline	Brisbane City Council	2001

7. Environmental Planning

Erosion and sediment control planning is based on the principle that preventing erosion where possible provides the best environmental outcomes, is more economical, and effective than controlling the capture of sediment. This is a significant goal, given the Project topography, drainage patterns and soils that have a significant proportion of sodic soils that are highly erodible.

7.1 Construction Activities

The scope and anticipated duration of the Project works present risks of environmental impacts to the environment. Key aspects of the project that could result in adverse impacts to soils and water include:

- Installation of preliminary erosion and sediment controls and establishment of off-site water diversions.
- Establishment of compounds, exclusion zones, stockpile areas, and soils treatment area/s.
- Minor earthworks, site preparation and site access/temporary access roads.
- Trenching and earthworks for service installation.
- In-situ concrete works and concrete curing.
- Asphalt paving activities.
- Operation of internal haulage and access routes.
- Stormwater construction and drainage stabilisation, including temporary sediment basins.
- Dewatering 'dirty' water from site areas and sediment basin operations

- Importing, handling, stockpiling and transporting materials & resources.
- Compound operation including fuel and chemical storage, refuelling and chemical handling.
- Storage of chemicals, fuels & oils.
- Spills & leaks of fuels & oils from mobile and static machinery.
- Plant maintenance.
- Generation of building and construction waste
- General putrescible waste from compound/s & works areas
- Noxious weed treatment including herbicide spraying.
- Topsoil replacement, revegetation, and landscaping
- Landscaping.

7.2 Impacts

The possible impacts on soil and water from the activities described include;

- Unnecessary disturbance of existing areas outside the Project footprint,
- Erosion of soils that degrade the water quality of runoff to downstream receivers, dependant flora and fauna, and sensitive areas,
- Degraded soil or water quality from exposure to contaminated soils or ASS material, or run-off from these soils,
- Contamination of soils, and surface and groundwater from accidental spills or oil leaks
- Disturbance or degradation of groundwater aquifers,
- Litter and gross pollutants from construction activities
- Atmospheric dust pollution affecting air quality of areas surrounding the Project.

7.3 'Blue Book' receiving waters classification

The recommended minimum design criteria for temporary erosion and sediment control measures are based upon an assessment of the sensitivity of receiving environments. Reference to Project EISs describes the surrounding environmental sensitivity and land uses. In accordance with the REF and SWMP assessment, the attributes of the receiving waters in the vicinity of the Project have been assessed as 'standard' in accordance with Blue Book Volume 1- Sect. 6.3.4 – (f) & Volume 2D – Table 6.1. however, we have elected to adopt the 5-day - 85th percentile rainfall depth for Blacktown of 32.2mm.

7.4 Key Management Strategies

The following list outlines the Key Management Strategies that will be implemented to mitigate potential erosion and sediment impacts;

- Specialist expertise and advice will be sought from an accredited Project Soil Conservationist (CPESC) in regards to the broad spectrum of erosion and sediment control issues, including but not limited to site establishment, temporary access routes, off-site water diversion, on-site drainage, sediment basin construction/operation/decommissioning, soil handling and storage, water management, stabilisation and rehabilitation/revegetation of Project areas.
- Implementation of structured erosion and sediment control training program for all relevant site personnel in the form of inductions, toolbox talks and workshops/training presentations.
- Minimising the extent and duration of construction disturbance.
- Control and diversion of off-site water flows around or across site.
- Control and diversion of on-site flows to installed sediment controls and sediment basins.
- Conservation of topsoils for site rehabilitation and revegetation.
- Implementation of progressive erosion methods & techniques throughout various work stages.

- Construction and management of suitable sediment controls including sediment filters, traps, sumps and basins.
- A thorough inspection and maintenance program to monitor, record and schedule actions for maintenance and upgrades of controls, rectification works, and sediment removal and handling.
- Establishing a procedure to monitor forecast weather events and implementing response plans for significant wind or rainfall events and flooding.
- Timely and progressive stabilisation of disturbed areas prior to final landscaping.
- Monitoring stabilisation measures and promoting prompt & effective revegetation and permanent stabilisation.

7.5 Preparation of Progressive Erosion and Sediment Control Plans (PESCP's)

This ESCP will be supplemented with Progressive Erosion and Sediment Control Plans (PESCP's) prepared as required for the relevant work areas. The PESCP's illustrate the strategy for erosion and sediment control and provides detail on structures and controls to be implemented in concert with construction activities. The PESCP's will outline structural and non-structural measures to;

- Intercept and divert clean water runoff around worksites
- Prevent erosion
- Limit the movement of sediment
- Remove or filter sediment from runoff
- Detain or control the discharge of runoff from site
- Promote timely rehabilitation or stabilisation of disturbed areas.

There are a number of control measure options available for selection and use. The selection of controls will be in accordance with sound management practices to achieve the desired outcomes.

The PESCP's will be revised as necessary to address changes in the site conditions and nature of works. The PESCP's will be formulated in conjunction with construction personnel prior to the commencement of specific onsite activities. The plans will be prepared to manage the various works or construction stages such as:

- Compound, access, stockpile operations, and construction facilities
- Bulk earthworks for road formation, drainage, services, etc.
- Major off-site and on-site water drainage works or structures such as diversions, drains and treatment/sediment basins
- Construction activities such as paving, kerbing/guttering, stormwater drainage and outlets, etc.
- Stabilisation of disturbed areas, access and works areas, and perimeter areas
- Decommissioning of temporary erosion and sediment controls.

The formulation of Environmental Work Method Statements (EWMS) will be sub-ordinate to the requirements of the primary ESCP, supplement the PESCP's, and will outline methods and strategies for works in critical areas such as clearing & grubbing, topsoil stripping & earthworks, works around watercourses & culvert works, construction & operation of sediment basins, drainage works and dewatering.

7.6 Erosion and Sediment Control Training for Site Personnel

Prior to the commencement of onsite activities, all site personnel will be instructed to observe site constraints and be made aware of environmental controls, in particular;

- Avoidance of disturbing or damaging 'No-Go' zones
- Effects of erosion and sedimentation and off-site or downstream impacts
- Environmental legislation, responsibilities, and 'due diligence'
- Correct establishment and maintenance of erosion and sediment controls
- 'End-of-day' site maintenance, emergency procedures, and spill response
- Personnel to monitor, review and improve controls as appropriate.

Key construction personnel would undertake additional environmental training including a specific training session for erosion and sediment control addressing:

- Environmental impacts
- Relevant legislation
- Principles and techniques of erosion and sediment control
- Preparation of PESCP's.

The structure and content of the Erosion and Sediment Control training would be developed in conjunction with Project management and construction personnel.

7.7 Inspection and Maintenance

A self-auditing program will be established for erosion and sediment control based on a check sheet developed for the site. A site inspection using the developed check sheet will be undertaken by relevant Project personnel:

- At least weekly
- Immediately before extended site shut down
- At the conclusion of all rainfall events exceeding 10mm and during periods of prolonged rainfall as soon as practicable).

The self-audit will include:

- Noting the condition of installed erosion and sediment controls onsite
- Detailing maintenance requirements (if any) for installed erosion and sediment controls
- Recording the volumes of sediment removed from sediment controls and sediment traps, where applicable
- Recording the location to where extracted sediments are disposed.

8. Erosion Control Measures and Sediment Control Methods

The formulation of the ESCP is based on the assumption that controls will generally be installed in the following progression;

- Installation of preliminary erosion and sediment controls and exclusion fencing to nominated areas of initial works and establishing exclusion zones
- Establishing any temporary roads and machinery access points in addition to those existing
- Installation of stabilised site access, site compound and facilities
- Forming temporary drains or banks to maximise diversion of off-site flows away from works area to watercourses, existing drainage lines or to temporary drainage diversion structures
- Construction of on-site water diversion drains or banks to direct runoff to the installed sediment controls
- Installation of diversion drains/banks upslope and sediment controls down slope of proposed topsoil and spoil stockpile areas

- Bulk earthworks such as cut excavations, filling, trenching, and engineered formation are controlled with a suite of erosion controls such as exclusion bunding, surface stabilisation treatments, trench stops, batter berms/chutes, contour banks, check dams, etc.
- Drainage and run-off from site areas directed to adequately designed and constructed sediment controls with regular maintenance and repair as required
- Completed areas are progressively stabilised as soon as practical with emphasis on critical areas such as drainage outlets, batters, etc.
- Sediment controls are to be maintained until adequate soil surface protection levels (>70% ground cover) are achieved in the catchment.

The erosion and sediment control measures required for Project areas during the various construction areas will be determined by reference to the guidance and measures detailed in Appendix D of the 'Blue Book' Volume 2D: Main Road Construction 2007. Commonly employed methods and techniques that may be likely to be utilised on the Project are detailed in the following table;

Table 8

Erosion Control – Raindrop Impact	
Situation	Control measure or method
Soil surface protection - Vegetation	• Temporary vegetation (cover crop only) • Permanent vegetation – introduced (exotic) pasture species or native (endemic) species
Soil surface protection - Batter protection	• Organic rolled erosion control products (RECP's) such as jute mesh, jute mat, coir fibre blankets • Non-organic RECP's such as non-woven geotextile membrane or heavy grade plastic sheeting. •
Soil surface protection - Mulching	• Hydromulch or hydraulic bonded-fibre matrix • Straw mulching with bitumen tack • Rock or gravel mulch
	•
Soil surface protection - geobinders	• Organic tackifiers • Co-polymer emulsions • Bitumen emulsion •

Erosion control - Concentrated Water Flow	
Situation	Control measure or method
Up-slope diversions	• Excavated channel-type bank • Back push-type bank or windrow • Catch drains •
	•
Soft armour channels	• Trapezoidal or parabolic shape design drain cross sections • Organic rolled erosion control products (RECP's) such as jute mesh, jute mat, coir fibre blankets • Non-organic RECP's such as non-woven geotextile membrane or heavy grade plastic sheeting • Organic tackifiers & co-polymer emulsions • Bitumen emulsion • Hydro mulch • Standard or reinforced turf
Hard armour channels	• Loose rock – hard quarry rock • Rock-filled wire mattresses • Grouted rock • Cast in-situ concrete • Underlays utilising heavy grade plastic lining or geotextile lining
	•
Check dams	• Stacked rock • Sandbags and aggregate filter bags • Geotextile covered straw bales • Coir logs
Batter drainage	• Geotextile lined or heavy grade plastic chutes • Pipes and Half pipes • Loose-rock rip rap • Concrete (pre-cast or on-site) • Rock-filled wire mattresses

Situation	Control measure or method
Grade control structures and flumes	• Geotextile lined or heavy grade plastic chutes • Pipes and Half pipes • Concrete chutes • Loose-rock rip rap • Gully pits and field inlets • Sandbag drop structures • Rock-filled wire gabions and mattress structures
Outlet dissipation structures	• Loose-rock rip-rap apron diffusers • Rock-filled wire mattresses • Pinned geotextile aprons • Level spreaders
Revetments and retaining walls	• Rip rap • Rock-filled wire gabions and mattresses
Sediment control - Sheet Flows	
Vegetative filters	• Turf strips
Sediment barriers/filters	• Sediment fencing • Topsoil berms stabilised with vegetation or geotextile with filter outlets at intervals • Excavated and geotextile lined sediment traps • Geotextile covered rock or gravel windrows • Coir logs
Site exit points	• Shaker grids with paved or rock aprons and sediment sumps • Wheel wash equipment and designated/controlled areas
Sediment control - Concentrated Flows	
	•
Sediment traps	• Sediment basins • Stacked rock with geotextile • Excavated and geotextile lined sediment traps • Straw bale or sand bag structures • Gully pit, field inlet and kerb inlet traps

9 Soil & Water Management Activities & Controls

The following table outlines the environmental management and mitigation measures proposed to be implemented, together with responsibilities and frequency of actions;

Table 9

Planning, permits & personnel		
Environmental Management Controls	**Person Responsible**	**Timing / Frequency**
All necessary licences, permits and approvals required by legislation will be obtained prior to works commencing.	Project Manager / Supervisor / Environmental Site Representative	Duration
Copies of any relevant licences, permits and approvals will be kept on site for inspection upon request or otherwise, as required.	Project Manager / Supervisor / Environmental Site Representative	Site establishment
All works and site activities will comply with the explicit requirements of any relevant licence, permit or approval.	Project Manager / Supervisor / Environmental Site Representative	Duration
Recordings and data from site inspections, testing, audits, and monitoring will be retained, with associated documentation maintained to demonstrate remedial action/s have occurred.	Project Manager / Supervisor / Environmental Site Representative	Duration
Erosion and sediment control planning is required prior to the commencement of works. The approved CEMP & SWMP is supplemented by concept Progressive Erosion & Sediment Control Plans (PESCP's) which have been developed in accordance with the requirements of '*Soils and Construction: Managing Urban Stormwater' 4th Edition.* - Landcom 2006.	Project Manager / Supervisor / Environmental Site Representative	Site establishment & duration
The CEMP & CSWMP & construction PESCP's may be supplemented by site-specific Environmental Management Plans (EMP's) which would be developed in response to a significant environmental issue emerging. The EMP's would outline the relevant environmental risks and issues, mitigation of potential risks, and detail strategies for remediation and/or management.	Project Manager / Supervisor / Environmental Site Representative	Site establishment & duration
The induction of employees and contractors to include a component promoting environmental awareness, legislative requirements & penalties, and basic erosion and sediment control tasks	Project Manager / Supervisor / Environmental Site Representative	Site establishment & duration
Toolbox talks will regularly focus on specific works, associated risks, potential impacts and mitigation measures. Specific erosion and sediment control awareness training and workshops will be undertaken by personnel with direct involvement with erosion and sediment control.	Supervisor / Environmental Site Representative	Site establishment & duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Promote planning for seasonal restrictions for high risk areas and/or activities ((i.e. late summer/autumn rainfall events for culvert works or cold winter temperatures affecting revegetation)	Project Manager / Supervisor / Environmental Site Representative	Site establishment & duration
Clearing, site establishment, topsoil stripping & stockpiling		
Exclusion areas ('No Go' zones) to be identified, delineated where practical, and personnel instructed to avoid disturbance in these areas.	Supervisor / Environmental Site Representative	Site establishment
Temporary fencing or barricading such as parawebbing or perimeter tape is to be utilised on the perimeter with accompanying signage as required.	Supervisor / Environmental Site Representative	Site establishment
Areas of proposed works with identified noxious weed infestations to be treated with appropriate herbicide, in accordance with product directions. The weed treatment will occur in sufficient time prior to disturbance to ensure complete 'die back' prior to topsoil handling.	Supervisor / Environmental Site Representative	Site establishment
In areas requiring weed control, spray drift will be mitigated by conducting spraying activities in calm weather and application by hand sprayer unit where practical.	Supervisor / Environmental Site Representative	Site establishment
The extent of earthworks will be demarcated to the footprint necessary for the proposed works.	Supervisor / Environmental Site Representative	Site establishment & duration
Construct erosion resistant access routes, site access/egress points, and compound roads to be formed and stabilised as early works. Car parking areas and frequently utilised areas should be stabilised (e.g. geotextile with asphaltic millings, rock aggregate overlay, bitumen chip seal or similar) to prevent soil churning, where required. Any rock or aggregate required for vehicle access should be clean and free from soil or other contaminants.	Supervisor / Environmental Site Representative	Site establishment & duration
Temporary drains, banks or diversions are to be formed and stabilised to divert concentrated 'clean' flows around disturbed works areas.	Supervisor / Environmental Site Representative	Site establishment & duration
The installation of preliminary sediment controls such as perimeter sediment fencing, , excavated sediment traps, check dams, coir log/straw bale filters, etc, will be implemented prior to disturbance within the catchment.	Supervisor / Environmental Site Representative	Site establishment
The stockpile locations are to avoid concentrated surface flows or areas subject to inundation during wet weather.	Supervisor / Environmental Site Representative	Site establishment & duration
The long-term soil stockpile locations are to be located 5 metres away from major drainage lines. The stockpiles will not be established in areas subject to concentrated surface flows, waterlogging or prolonged inundation during wet weather.	Supervisor / Environmental Site Representative	Site establishment & duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Stockpiles should be stabilised if they are to remain in place for more than 20 days. Rolled Erosion Control Products (RECP's such as geotextile, jute mesh, coco fibre mat, etc) or soil binders can be used on smaller stockpiles, however, larger stockpiles should be formed into crowned structures to minimise erosion and be subsequently stabilised with cover crop seeding or applied geobinders. Plastic covers should only be utilised for short term cover for wind or storm protection.	Supervisor / Environmental Site Representative	Site establishment & duration
Maintain minor benches or contour berms on fill batter formations until profiling for topsoiling is imminent	Supervisor / Environmental Site Representative	Duration
Temporary scour protection lining for major 'dirty' drains for steep or long drains to sediment basins or other controls.	Supervisor / Environmental Site Representative	Duration
Access to the works area, and movements on the site during construction will be limited to the defined access and project areas, where possible. Minimise vehicle movements & speed on unsealed areas and access tracks.	Supervisor / Environmental Site Representative	Duration
Earthworks and hauling, and vehicular movements to be limited in wet conditions.	Supervisor / Environmental Site Representative	Duration
Appropriate sediment tracking controls such as an aggregate/geotextile apron, shaker grid, etc will be installed at exit points from the site.	Supervisor / Environmental Site Representative	Duration
The adjoining local road network to be regularly monitored for tracked sediments with affected areas cleaned as soon as possible in a safe manner.	Supervisor / Environmental Site Representative	Duration
Vehicles transporting bulk materials such as soils and fill are to correctly cover loads to prevent loss of load and/or dust generation on public roads.	Supervisor / Environmental Site Representative	Duration
Imported quarry product and fill materials required for construction are to be clean, and free of contaminants (ie. weeds, waste, liquids, etc).	Supervisor / Environmental Site Representative	Duration
Water carts are to regularly spray access tracks, works areas, & temporary stockpiles, during dry weather conditions.	Supervisor / Environmental Site Representative	Duration
Bunded or controlled areas for re-fuelling, material stockpiling, (and contaminated soil treatment area if required) are to be formed prior to commencement of those works in the relevant risk areas.	Supervisor / Environmental Site Representative	Site establishment & duration
The progress of earthworks will minimise slope lengths and gradients where practical utilising contour berms, batter berms, diversion banks, etc.	Supervisor / Environmental Site Representative	Duration
Personnel to ensure visual dust monitoring is maintained during works, and dust suppression is undertaken regularly.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Minimise earthworks, soil handling and general disturbance during periods of strong and/or gusty winds.	Supervisor / Environmental Site Representative	Duration
Apply water sprays for dust suppression where works, soil handling and/or potentially contaminated soils are generating dust.	Supervisor / Environmental Site Representative	Duration
Drainage and water management		
Construct diversion drains or banks upslope of proposed works to direct off-site water flows to existing drainage or adequately stable vegetated areas.	Supervisor / Environmental Site Representative	Duration
Immediately line any constructed off-site water diversion with appropriate RECP's, OFM's and/or geobinders. Temporary spillways and associated structures to be suitably stabilised for the volume and turbulence of flows.	Supervisor / Environmental Site Representative	Duration
Sheet flows in work areas have erosion measures such as surface roughening, scribed drains and/or contour banks to reduce slope lengths. Flows from diversions to have velocities controlled and directed to sediment controls.	Supervisor / Environmental Site Representative	Duration
Temporary 'dirty' water drainage will be adjusted progressively to maximise flows to sediment filters and traps.	Supervisor / Environmental Site Representative	Duration
Permanent storm water drains and outlet structures will be stabilised as soon as possible following completion.	Supervisor / Environmental Site Representative	Duration
Check dams are to be constructed from geotextile/aggregate bags, sandbags, staked coir logs/straw bales or loose rock formations to reduce flow velocities in unlined drains and other areas of concentrated flow (i.e. against diversion banks). Check dams are to be installed at the required intervals in drains with the frequency of the dams increasing as the grade increases	Supervisor / Environmental Site Representative	Duration
Trenching works on grade will be controlled with methods detailed in the 'Blue Book' – Volume 2A' - Section 6	Supervisor / Environmental Site Representative	Duration
Flooded excavations, ponded water, etc will be extracted as required and utilised for site purposes or treated to achieve acceptable water quality prior to discharge.	Supervisor / Environmental Site Representative	Duration
Flooded excavations and groundwater encountered in ASS areas or potentially contaminated areas will be tested and assessed prior to being extracted for treatment & subsequent discharge, or conveyed to a licensed liquid waste facility.	Supervisor / Environmental Site Representative	Duration
Site water that is to be discharged directly to a flow line, drain, watercourse, etc, will be tested, treated, and recorded prior to discharge.	Supervisor / Environmental Site Representative	Duration
Water quality should meet the following minimum criteria prior to discharge: • Total suspended solids (TSS) – less than 50 mg/L • pH – 6.5 to 8.5 • oil and grease – not visible and less than 10 mg/L	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Dewatering devices or transfer pumps will be positioned to ensure that settled sediments are not disturbed or extracted. Discharge of concentrated, treated flows to lands will occur in well vegetated areas with diffusers or level spreaders to prevent erosion. Flows transferred from in-stream works to downstream areas be released in a diffused manner.	Supervisor / Environmental Site Representative	Duration
The appearance of water quality at the discharge outlet will be regularly monitored for any increase in turbidity, and dewatering suspended until acceptable water quality levels are regained	Supervisor / Environmental Site Representative	Duration
Adequately designed and constructed concrete washout facilities will be constructed in a suitable location away from drainage lines. Concrete wash down to occur directly into lined receptacles or formed washouts.	Supervisor / Environmental Site Representative	Duration
Sediment Controls		
Commonly used sediment control devices have construction detail described in the Standard Drawings shown at Appendix F. Alternative controls or methods may be employed in certain circumstances for practicality or efficiency purposes. Alternative controls or methods must demonstrate efficacy and be in accordance with the intent and objectives of the 'Blue Book'.	Supervisor / Environmental Site Representative	Duration
Substitute materials may be utilised in the construction of erosion or sediment controls where functionality is not affected.	Supervisor / Environmental Site Representative	Duration
Sediment fencing, non-woven geotextile, , etc, will be installed on down slope work boundaries, down slope of stockpiles, cut/fill batters, access tracks, etc, to filter sheet flows.	Supervisor / Environmental Site Representative	Duration
Sediment filters will be formed from straw bales, aggregate & geotextile filter bags, coir logs, etc, to control concentrated on-site water flows as required	Supervisor / Environmental Site Representative	Duration
Excavated sediment traps may be utilised at critical locations at the toe of the contributing catchment. They will be desilted at 60% capacity and are to be dewatered prior to the onset of further rainfall.	Supervisor / Environmental Site Representative	Duration
The excavated sediment traps should be regarded as a secondary control, relying on retention of coarse sediment in upslope controls within the construction area.	Supervisor / Environmental Site Representative	Duration
Aggregate filter bags or sandbag inlet traps are to be deployed on roadside pit inlets or other inlets to the drainage system.	Supervisor / Environmental Site Representative	Duration
Gully pit inlets will be protected with filter inlet controls formed from sediment fence, filter bags, straw bales & geotextile, coir logs, etc.	Supervisor / Environmental Site Representative	Duration
The sediment captured by control devices is to be removed when 30% of capacity is reached. Regular desilting is also to maintain catchment and settling capacity, and to reduce re-entrainment of settled materials in subsequent rain events.	Supervisor / Environmental Site Representative	Duration

Soil Contamination		
Environmental Management Controls	**Person Responsible**	**Timing / Frequency**
Excavation of sub-soils to be inspected and monitored as works proceeds, to identify potential contamination. Any potentially contaminated soils to be stripped or excavated separately and transported directly to the designated stockpile, treatment area or licensed waste facility.	Supervisor / Environmental Site Representative	Duration
Potentially contaminated soils are to be stored within an appropriately bunded area and covered with heavy grade plastic or other impermeable covers for the duration of rainfall.	Supervisor / Environmental Site Representative	Duration
Potentially contaminated excavated material that are required to be removed from site are to be assessed and classified in accordance with the Protection of the Environment Operations Act 1997 and '*Waste Classification Guidelines: Parts 1 and 2* (DECC 2008)'.	Supervisor / Environmental Site Representative	Duration
Excavated soils and materials (that have been assessed, classified, treated and re-assessed on site) will be re-used as fill material on site where appropriate.	Supervisor / Environmental Site Representative	Duration
Vehicles transporting potentially contaminated soils both on internal access tracks and public roads will correctly cover loads to mitigate dust generation or spillage.	Supervisor / Environmental Site Representative	Duration
The ground disturbance and machinery/vehicle movements in potentially contaminated areas will be minimised to essential works.	Supervisor / Environmental Site Representative	Duration
Earthworks, soil handling and general disturbance in potentially contaminated areas are to be avoided during periods of strong and/or gusty winds.	Supervisor / Environmental Site Representative	Duration
Water sprays are to be utilised to mitigate dust from contaminated soils in works areas, contaminated soil handling or temporary stockpile areas.	Supervisor / Environmental Site Representative	Duration
Soil & Water pollution control		
All waste will be handled, stored and disposed of in accordance with the '*Waste Classification Guidelines: Parts 1 and 2* (DECC 2008)'.	Supervisor / Environmental Site Representative	Duration
Waste construction materials such as steel, concrete, etc will be removed to an appropriate recycling facility, to a suitable location for appropriate re-use, or to a licensed waste disposal facility.	Supervisor / Environmental Site Representative	Duration
All putrescible, construction, and food wastes are to be immediately captured and stored correctly, prior to removal to a licensed waste facility. Putrescibles and food wastes will be removed from site on a least a weekly basis.	Supervisor / Environmental Site Representative	Duration
The effluent from concrete wash down is to be captured by an excavated wash out pit lined with an impervious membrane at least 5 metres away from any waterway or major drainage lines. The pit is to be protected by a diversion bund to prevent entry of site run-off that may subsequently displace alkaline water/slurry. Concrete washouts to be covered for the duration of significant or prolonged rainfall.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
The water levels in concrete washout pits will be monitored and dewatered regularly. The water pH will be tested and treated where it is outside the parameters of pH 6.5-8.5. Where suitable pH is attained, the water can then be used site purposes.	Supervisor / Environmental Site Representative	Duration
The site machinery 'lay-up' area, re-fuelling areas and chemical storage areas are to be located at least 5 meters away from major drainage line.	Supervisor / Environmental Site Representative	Duration
The re-fuelling and servicing of machinery is to be undertaken at approved premises off-site where possible. Onsite refuelling and servicing only to occur with appropriate spill control measures at hand, or where established or temporary bunded areas are available.	Supervisor / Environmental Site Representative	Duration
Mobile plant, machinery and vehicles are to be regularly inspected and maintained to manufacturer's specifications.	Supervisor / Environmental Site Representative	Duration
Appropriate spill kits are to be kept on site at all times and any spillage is to be immediately cleaned up. In the event of a large or hazardous spill, contact will be made with emergency and relevant authorities, where required.	Supervisor / Environmental Site Representative	Duration
All site personnel will be instructed about emergency spill procedures, spill kit locations and requirements. The location of spill response kits will be established close to works or operations areas.	Supervisor / Environmental Site Representative	Duration
Storage of liquid construction materials (chemicals, fuels, oils, etc) will be provided in appropriately bunded areas on site to prevent leaching into soils, leaking or other transfer of material into waterways.	Supervisor / Environmental Site Representative	Duration
Containment bunds are to be monitored regularly and captured materials removed as required to ensure bund capacity is maintained.	Supervisor / Environmental Site Representative	Duration
Bunded areas will satisfy requirements of the relevant Australian Standards and 'Bunding and Spill Management (DEC, 1997)'	Supervisor / Environmental Site Representative	Duration
The requirements of the Australian Dangerous Goods Code will be observed for storage and transport of any hazardous materials. The compatibility of all chemicals, pesticides and fuels transported and stored will be assessed to avoid potential risk from reactions, explosion, etc.	Supervisor / Environmental Site Representative	Duration
All chemicals, pesticides and fuel will be stored and transported in approved containers. Chemicals, pesticides and fuels are to be labelled correctly and clearly; including using approved warning symbols etc.	Supervisor / Environmental Site Representative	Duration
A MSDS register and will be maintained and be readily accessible on site for all hazardous chemicals transported, handled or applied.	Supervisor / Environmental Site Representative	Duration
An adequate record or log of all environmentally hazardous chemicals received, used and/or disposed of will be maintained.	Supervisor / Environmental Site Representative	Duration
Substitution of less hazardous materials or chemicals, or modifying methods of use/storage etc. will be implemented where possible.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
The quantities of hazardous materials and chemicals stored or used will be minimised as far as practical.	Supervisor / Environmental Site Representative	Duration
Sensitive areas (ie. drainage lines) will be identified before utilising or applying chemicals. Where sensitive areas are identified, appropriate guidance and relevant restrictions will be formulated for chemical use or applications.	Supervisor / Environmental Site Representative	Duration
The application methods and dilution ratios specified in manufacturer's directions and/or associated MSDS will be observed by personnel.	Supervisor / Environmental Site Representative	Duration
Stabilisation		
Promote efficient staging planning for early stabilisation of perimeter or completed areas. (i.e. stabilisation of permanent drains, batters, Sealing & paving, and decommissioning of temporary controls)	Supervisor / Environmental Site Representative	Duration
Stabilisation of areas is to occur progressively in conjunction with the completion of earthworks.	Supervisor / Environmental Site Representative	Duration
Suitable design and construction techniques are to be selected for stabilisation of relevant areas such as drain linings, batter treatments, etc.	Supervisor / Environmental Site Representative	Duration
Completed earthworks areas will be backfilled and compacted in a staged manner as soon as possible. Adjacent disturbed areas will be suitably trimmed and stabilised as required.	Supervisor / Environmental Site Representative	Duration
Erosion and sediment controls are to be maintained until the relevant catchments are stabilised, re-vegetated, or sealed adequately to achieve soil surface protection factors as per the 'Blue Book', SWMP & ESCP requirements.	Supervisor / Environmental Site Representative	Duration
Any aggregate placed for vehicle access or as a work platform should be removed to a suitable location for recycling, appropriate re-use, or to a licensed waste disposal facility.	Supervisor / Environmental Site Representative	Duration
Cover crop seeding to occur dependent on the seasonal conditions and timing of final landscaping.	Supervisor / Environmental Site Representative	Duration

Appendix A

Site Characteristics & Revised Universal Soil Loss Equation Assessment

Site Characteristics Table & Revised Universal Soil Loss Equation (Rusle) Data

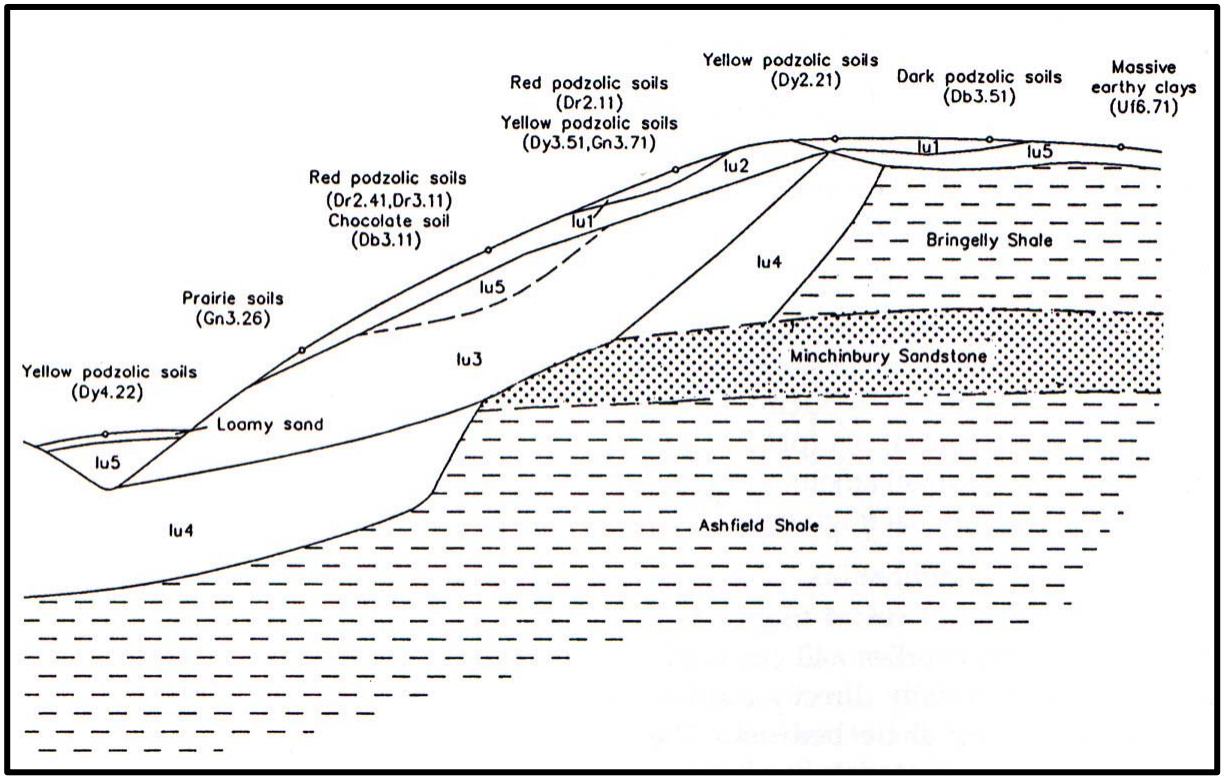
Location	Oakdale West Estate -Building 1A
Construction duration	<12 months earthworks – 85th%ile adopted (Sect. 6.3.4 – (f). Blue Book)
Erosion Hazard	High (On slopes >11%) (Sect 4.4.1 & Figure 4.6 – Blue Book)
Soil Loss Class	Class 1-2 (Very Low on slopes <6% ranging to Moderate on slopes <15%) (Sect 4.4.2. & Table 4.2 – Blue Book)
Batter Restrictions	Yes Generally, >20m batter length @ 2H:1V ranging to >30m @ 3H:1V (Sect 4.4.2 – (a) & Figure 4.7 – Blue Book)
Seasonal erosion hazard	No (Sect 4.4.2 – (c), Figure 4.9 & Table 4.3 – Blue Book)
Soil texture groups	
Blacktown (bt) Soil Landscape: Moderate to High Erosion Hazard landscape	bt1—Friable brownish black loam.
	bt2—Hard setting brown clay loam.
	bt3—Strongly pedal, mottled brown light clay.
	bt4—Light grey plastic mottled clay.
Luddenham (lu) Soil Landscape: High to Very High Hazard landscape	lu1—Friable dark brown loam.
	lu2—Hard setting brown clay loam.
	lu3—Whole coloured, strongly pedal clay.
	lu4—Mottled grey plastic clay.
	lu5—Apedal brown sandy clay.
USCS Class	Blacktown: ML (Low Plasticity Silts) to CL (Low Plasticity Clays) Luddenham: CL (Low Plasticity Clays)
Soil erodibility factor – K factor	Blacktown (bt) Soil Landscape: 0.038 Luddenham (lu) Soil Landscape: 0.038 (0.038 Adopted) (Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book)

Site Characteristics Table & Revised Universal Soil Loss Equation (Rusle) Data

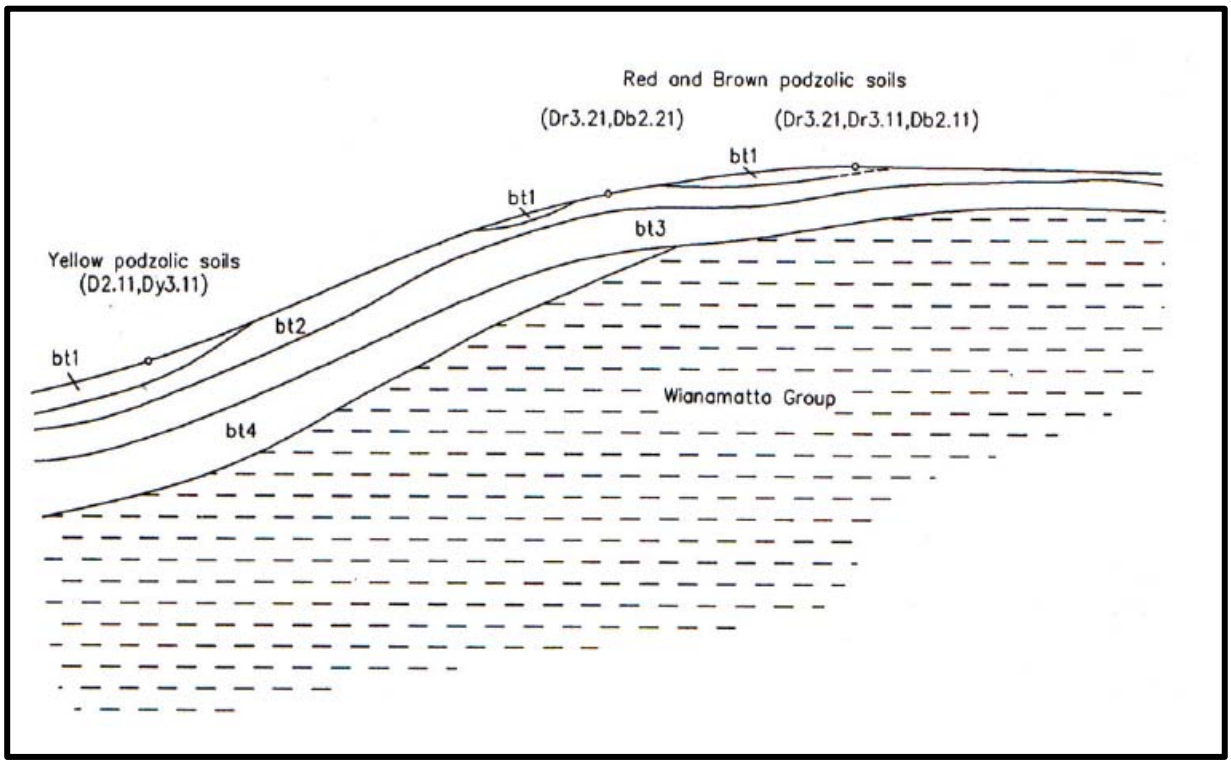
Location	Oakdale West Estate – Building 1A
Sediment Type	Luddenham (lu) Soil Landscape: Type F & D Blacktown (bt) Soil Landscape: Type F & D (Type D Adopted) (Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book))
Soil hydrologic group	Luddenham (lu) Soil Landscape: Group C Blacktown (bt) Soil Landscape: Group C (Group C Adopted) (Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book))
85th %ile, 5-day rainfall event	32.2 mm - Blacktown (Sect 6.3.4 – Table 6.3a - Blue Book)
Rainfall Intensity - millimetres per hour	10.0mm/hour (2 Year, 6 Hour storm – BOM IFD Table)
Rainfall Erosivity – R factor	2210 (Calculated from 2-year ARI, 6 Hour storm, where S=10.0mm/hour and where $R = 164.74(1.1177)^{s}S^{0.6444}$ Blue Book - Appendix A2 & B)
Volumetric runoff coefficient - Cv	0.65 (Blue Book – Appendix F: Table F2
Grade	Luddenham (lu) Soil Landscape – 5-20% (commonly 10 -15%) Blacktown (bt) Soil Landscape - commonly 5% occasionally ranging to 10%)
Slope Length	80 metres adopted
LS Factor	Variable
Erosion control practice factor – P factor	1.3
Ground cover – C Factor	1.0
Sediment Storage Zone Volume design	2 months soil loss (Sect 6.3.4.- I (ii) - Blue Book)

Typical Soil Profile diagrams

Luddenham (lu) Soil Landscape



Blacktown (bt) Soil Landscape



Appendix B

RUSLE Catchment Assessment & Sediment Basin Calculations

SWMP Commentary, Detailed Calculations

Note: These "Detailed Calculation" spreadsheets relate only to high erosion hazard lands as identified in figure 4.6 or where the designer chooses to use the RUSLE to size sediment basins. The "Standard Calculation" spreadsheets should be used on low erosion hazard lands as identified by figure 4.6 and where the designer chooses not to run the RUSLE in calculations.

1. Site Data Sheet

Site Name: Oakdale West Estate - Building 1A

Site Location:

Precinct: 2

Description of Site: Building 1A Construction Area

Site area	Sub-catchments						Remarks
	1%/80	2%/80	1%/85	2%/85			
Total catchment area (ha)	18.72	18.72	18.72	18.72			
Disturbed catchment area (ha)	18.72	18.72	18.72	18.72			

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	D	D	D	D			From Appendix C
% sand (fraction 0.02 to 2.00 mm)							Soil texture should be assessed through mechanical dispersion only. Dispersing agents (e.g. Calgon) should not be used
% 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							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	D	D	D	D			Automatic calculation from above

Rainfall data

Design rainfall depth (days)	5	5	5	5			See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	80	80	85	85			See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	24.6	24.6	32.2	32.2			See Section 6.3.4 (h)
Rainfall R-factor (if known)	2210	2210	2210	2210			See Appendix B
IFD: 2-year, 6-hour storm (if known)	10	10	10	10			See IFD chart for the site

RUSLE Factors

Rainfall erosivity (*R*-factor)	2210	2210	2210	2210			Auto-filled from above
Soil erodibility (*K*-factor)	0.038	0.038	0.038	0.038			RUSLE LS factor calculated for a high rill/interrill ratio.
Slope length (m)	80	80	80	80			
Slope gradient (%)	1	2	1	2			
Length/gradient (*LS*-factor)	0.19	0.41	0.19	0.41			
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

Soil loss (t/ha/yr)	21	44	21	44			
Soil Loss Class	1	1	1	1			See Section 4.4.2(b)
Soil loss (m^3/ha/yr)	16	34	16	34			
Sediment basin storage volume, m^3	52	109	52	109			See Sections 6.3.4(i) and 6.3.5 (e)

4. Volume of Sediment Basins, *Type D* and *Type F* Soils

Basin volume = settling zone volume + sediment storage zone volume

Settling Zone Volume

The settling zone volume for *Type F* and *Type D* soils is calculated to provide capacity to contain all runoff expected from up to the y-percentile rainfall event. The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle and can be determined by the following equation:

$$V = 10 \times C_v \times A \times R_{x\text{-day, y-\%ile}} \ (m^3)$$

where:

10 = a unit conversion factor

C_v = the volumetric runoff coefficient defined as that portion of rainfall that runs off as stormwater over the x-day period

$R_{x\text{-day, y-\%ile}}$ = is the x-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. (See Sections 6.3.4(d), (e), (f), (g) and (h)).

A = total catchment area (ha)

Sediment Storage Zone Volume

In the detailed calculation on Soil Loss Classes 1 to 4 lands, the sediment storage zone can be taken as 50 percent of the settling zone capacity. Alternately designers can design the zone to store the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(ii)). However, on Soil Loss Classes 5, 6 and 7 lands, the zone must contain the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(iii).

Place an "X" in the box below to show the sediment storage zone design parameters used here:

	50% of settling zone capacity,
X	2 months soil loss calculated by RUSLE

Total Basin Volume

Site	C_v	$R_{x\text{-day, y-\%ile}}$	Total catchment area (ha)	Settling zone volume (m^3)	Sediment storage volume (m^3)	Total basin volume (m^3)
1%/80	0.65	24.6	18.72	2993.328	52	3045.328
2%/80	0.65	24.6	18.72	2993.328	109	3102.328
1%/85	0.65	32.2	18.72	3918.096	52	3970.096
2%/85	0.65	32.2	18.72	3918.096	109	4027.096

Note that designers should achieve a minimum 3:1 length:width ratio in Type D or F basins

Appendix C

Sediment Basin Management & Dewatering Procedure

1.1 Purpose

The purpose of the Sediment Basin Management & Dewatering Procedure (the Procedure) is to detail the actions to be taken in regard to site dewatering in general and specific measures for the construction and maintenance of sediment basins including steps to be taken prior to any discharge.

Adherence to the methodology outlined in procedure will ensure that works are carried out in accordance with industry standard and environmental conditions.

1.2. Scope

The Procedure applies to the following works:

- Sediment basin management and maintenance; and
- Dewatering of excavations and construction water generally, and
- Acid sulfate leachate ponds in the event that acid sulfate soils or rock is encountered.

1.3. Objectives

The objectives of this Procedure are to:

- Ensure all Project personnel are aware of the requirements of this procedure
- Detail personnel responsible for undertaking actions relating to sediment basin, construction dewatering and acid sulfate leachate management on the site;
- Providing a uniform, controlled methodology and clear criteria for water releases from the site;
- Implement industry standard methods for managing sediment basins and dewatering in accordance with best practice guidelines such as Managing Urban Stormwater Soils and Construction (Landcom 2004) and Acid Sulfate Soil Manual (ASSMAC 1998);
- Ensure water discharges from site are compliant with:
    - the NSW EPA Water Quality Criteria;
    - Soil and Water Management Plan; and
- Comply with environmental requirements of the Project, including all legal requirements and contractual obligations.

The procedure shall ensure appropriate environmental protection measures are in place relating to sediment basins, construction water management (dewatering of excavations, culverts, etc) and management of leachate collected in ponds from acid sulfate material stockpiles.

2. Sediment Basin Construction and Management

Environmental Management Controls	Person Responsible	Timing / Frequency
Planning		
A copy of this Sediment Basin Management and Discharge Procedure will be kept on site and be made available to all relevant project personnel	Supervisor / Environmental Site Representative	Site Establishment / Duration
All relevant project personnel will be made aware of this document during the site induction and again in Toolbox Talks and targeted training sessions.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Training and Awareness		
Training, instruction and equipment familiarisation for environmental personnel undertaking water quality monitoring, equipment calibration and maintenance will be the responsibility of the Environment Manager/ Environmental Site Representative. This will be completed prior to the initial use of equipment or as new equipment arrives on site.	Environmental Site Representative	Site Establishment / Duration
Training sessions will be conducted with Supervisors, Foreman, and Environmental Work Crew and relevant personnel. The training will address • Construction of Sediment Basins • Preliminary post-rainfall inspections • Testing and recording • Treatment methods and recording • Details of the Water Discharge Permit • Dewatering requirements, methods and recording • Maintenance requirements, methods and recording • Storage, Handling and Application of Flocculants	Supervisor / Environmental Site Representative	Site Establishment / Duration
Any personnel that are responsible for monitoring pumps during dewatering activities, and that have not undertaken training described above, will undertake a specific toolbox talk to ensure awareness of requirements.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Construction of Sediment Basins		
Refer to the relevant PESCPs for the location of the sediment basin/s.	Supervisor / Environmental Site Representative	Site Establishment / Duration
The location and design criteria (volume – length, width & depth) for the sediment basin/s will be outlined in the relevant PESCP. The following criteria are to be met: • All requirements of Landcom's - Managing Urban Stormwater: Soils and Construction Volume 1 (the Blue Book). Refer to Section 6.3.3 volume 1 of the Blue Book for detailed design of the sediment basin. • Impervious clay to be used where required in construction of the internal basin invert and embankments. • Inlet and outlet structures will be appropriately designed to cater for the nominated rainfall event. • Markers will be present to indicate sediment storage volume and to ensure adequate capacity levels are available.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Sediment basins will be constructed in a way that predominantly only site run-off is collected, and clean water is diverted around them. Earthworks will be conducted in a way so as to avoid ponding of water.	Supervisor / Environmental Site Representative	Site Establishment / Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Sediment basins will be constructed in a way that predominantly only site run-off is collected, and clean water is diverted around them. Earthworks will be conducted in a way so as to avoid ponding of water.	Supervisor / Environmental Site Representative	Site Establishment / Duration
The sediment basin/s to be constructed prior to any earthworks or topsoil stripping in the catchment being undertaken. Necessary clearing to access the basin location and associated earthworks will occur with appropriate erosion and sediment controls installed.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Where applicable, the formation of operational sediment basins will be partially or fully constructed in early stages of works and managed as a temporary sediment basin to capture construction runoff.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Effective diversions such as drains and berms will be implemented to ensure that the diversion of site runoff is maximised to basins during all stages of construction.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Water Quality Testing, Treatment & Criteria for Discharge		
Captured water to be discharged from sediment basins must meet the following criteria: • pH between 6.5 – 8.5 • TSS < 50mg/L ; and • Oil and grease < 10mg/L (and no visible trace).	Supervisor / Environmental Site Representative	Duration
<u>Correlation between TSS and Turbidity</u> A correlation between TSS and turbidity may be developed for the basin/s to allow discharge based on turbidity levels. This correlation will be submitted to the Principal's Environmental Manager for approval prior to implementation. Once approved, a TSS sample will be taken from every tenth discharge and tested to confirm compliance with required criteria. These results will be used to check and revise the correlation. If these tests indicate an exceedance of TSS criteria, discharges on the basis of turbidity measurements will be suspended until the correlation can be re-established and approved.	Environmental Manager/ Environmental Site Representative	Duration
Potential contamination of any basin or ponded waters will be considered prior to discharge. Where the main source is from storm water, TSS and oil and grease are considered to be the likely pollutants. Where groundwater is a significant contributing source, influence from ASS/PASS or other contaminants will be considered as potential pollutants and additional testing in the form of pH and metals will be undertaken.	Supervisor / Environmental Site Representative	Duration
Water Treatment		
The sediment basin inlets will be pre-loaded with gypsum to pre-treat run-off before it enters the basin during rainfall	Supervisor / Environmental Site Representative	Duration
Onsite reuse of ponded stormwater or infiltrated groundwater should always be the first dewatering option considered. Onsite reuse may include application for dust suppression, earthworks compaction and vegetation establishment.	Supervisor / Environmental Site Representative	Duration
Tannins from timber and mulch stockpiles also pose a risk to water quality however a pollutant limit is not specified for tannins. Dewatering of sediment basins that contain tannins must be demonstrated to occur in a manner that does not result in pollution of waters (e.g. reuse on site or irrigation to land).	Supervisor / Environmental Site Representative	Duration
If water is to be used for construction purposes (e.g. compaction, dust control) no treatment is required. However, the water should be removed to re-secure design capacity of sediment basins within 5 days.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
All sediment basins to be inspected for capacity and water quality immediately following cessation of a rain period.	Supervisor / Environmental Site Representative	Duration
Before any de-watering of site areas, excavations, etc, the parameters of pH, T.S.S. and oil and grease are to be tested and meet . the following criteria: • pH between 6.5 – 8.5 • TSS < 50mg/L ; and • Oil and grease < 10mg/L (and no visible trace). Treatment should commence as soon as practical following cessation of a rain to allow enough time for settlement of flocculants.	Supervisor / Environmental Site Representative	Duration
Records of water quality management must be maintained and the required records include: • The date(s) on which the sample was taken; • The time(s) at which the sample was collected; • The point at which the sample was taken; and • The name of the person who collected the sample.	Supervisor / Environmental Site Representative	Duration
pH Treatment should be undertaken as follows: • Test basin water with a suitable pH meter. No action is required if the pH reading is between 6.5 and 8.5 • Lime to be added if pH below 6.5 or Hydrochloric Acid (32% Muriatic) or Sulfuric Acid to be added if pH above 8.5 • Determine volume of water to be treated in the sediment basin. • Determine the percentage of lime or acid required by taking a 10 litre sample of basin water and adding a known amount of lime or acid (initially 0.004%). If the pH is still not acceptable, vary the amount of lime or acid until within the limits. • Once the required percentage has been determined, calculate the actual amount of lime or acid to be added by multiplying the volume of water in the basin by the determined percentage. • Add the required amount of lime or acid to the basin and mix the water in the sediment basin well • Treat for pH prior to T.S.S.	Supervisor / Environmental Site Representative	Duration
Total Suspended Solids • Test the sediment basin water initially for NTU using a turbidity tube, nephelometer (Turbidity tester) or by comparing with water samples contained in jars with representative readings up to 100mg/l. • When the comparative NTU readings indicate T.S.S. levels are <50mg/l obtain a grab sample in accordance with approved sampling methods. The water sample to be promptly analysed by a laboratory that is NATA certified in T.S.S. testing. • No further treatment action is required if T.S.S. results are <50mg/l.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Total Suspended Solids • Test the sediment basin water initially for NTU using a turbidity tube, nephelometer (Turbidity tester) or by comparing with water samples contained in jars with representative readings up to 100mg/l. • When the comparative NTU readings indicate T.S.S. levels are <50mg/l obtain a grab sample in accordance with approved sampling methods. The water sample to be promptly analysed by a laboratory that is NATA certified in T.S.S. testing. • No further treatment action is required if T.S.S. results are <50mg/l. • If basins require flocculation (e.g. T.S.S. >50mg/l), gypsum is to be utilised at the manufacturers recommended dosage initially, then at an acceptable rate should more flocculant be required. • Basins should be monitored daily after flocculation until desired TSS is achieved and to assist in determination of optimal dosage levels. Methods of application to include: • broadcast by shovels on small sumps and excavations is acceptable. The general recommended dosage is 30kg/100 cubic meters. This method requires spreading gypsum evenly and thinly (i.e. “dusting”) over as much of the water surface as possible. • For sediment basins or areas with a large water surface area. The gypsum should be pre-mixed thoroughly in a drum with clean water and sprayed over the maximum surface area of water as possible. • When spraying flocculants, the mixture should hit the water at between 10 to 20 degrees to increase surface areas exposure to the water column. • When using liquid gypsum, the general recommended dosage is 40L/megalitre • When using liquid gypsum, the solution must be mixed before use to ensure gypsum is evenly suspended throughout mixture. This is best achieved using an aeration device at 3 bars of pressure for approximately 15 minutes. The process outlined may need to be repeated if acceptable water quality is not achieved initially. **Oil and Grease** • Examine surface of water for evidence (e.g. sheen, discoloration). • No action if no visual contamination. • Oil absorbent material to be spread if there is contamination (e.g. cell-u-sorb). Leave basins to compensate for 24 to 48 hours.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Oil and Grease • Examine surface of water for evidence (e.g. sheen, discoloration). • No action if no visual contamination. • Oil absorbent material to be spread if there is contamination (e.g. cell-u-sorb). Leave basins to compensate for 24 to 48 hours.	Supervisor / Environmental Site Representative	Duration
After retesting, and once the above field tests indicate, the water quality is acceptable, pumping or siphoning can commence with the water extraction inlet protected to prevent extraction of sediment.	Supervisor / Environmental Site Representative	Duration
Records to be kept of the rainfall events, inspections undertaken, field tests undertaken, dosage rates and when basin water is released etc.	Supervisor / Environmental Site Representative	Duration
The whole process of water quality management in sediment basins must be completed within 5 days of cessation of a rain period.	Supervisor / Environmental Site Representative	Duration
Discharging Water		
Existing farm dams that may require dewatering are likely to have variable water quality. The impact of water quality parameters or pollutants in existing farms dams to the receiving environment must be considered when planning a discharge from these storages.	Supervisor / Environmental Site Representative	Duration
Where possible ponded water and sediment basin water will be reused on site for compaction, dust suppression, and irrigation.	Supervisor / Environmental Site Representative	Duration
Water may be discharged from site where the tested water quality meets NSW EPA criteria and the Environment Manager/Site Representative gives approval. The discharge outlet will be constructed to prevent erosion and scour.	Supervisor / Environmental Site Representative	Duration
The Supervisor is to ensure that treated water has been re-tested for pH and turbidity (NTU) in-situ immediately prior to discharge.	Supervisor / Environmental Site Representative	Duration
Where sediment basins are to be dewatered by pump, suitable inlet protection devices (i.e. float & housing or extraction tube) will be provided to prevent the extraction of settled sediments within the basin. The flows from the pump outlet and basin is to be constantly monitored during discharge.	Supervisor / Environmental Site Representative	Duration
Only personnel who have undertaken the relevant training and been approved by the Environment Manager may operate pumps and discharge sediment basins. During dewatering pumps must be monitored at all times to ensure that settled sediment is not disturbed or extracted, and that water is discharged in a diffused manner to prevent erosion.	Supervisor / Environmental Site Representative	Duration
A Sediment Basin Management Register will be maintained for each basin that details discharge volumes, dates, water treatment. The Sediment Basin Management Register will be updated when treated water is discharged from the basin.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Maintenance		
Maintenance of the sediment basins will be ongoing for the duration of the Project and will comprise the following: • The sediment storage capacity limit will be defined through the installation of a marker inside the basin. Sediment will be removed from the basin in accordance with the maintenance schedule, or when the accumulated sediment exceeds 60% of the sediment storage zone. • Sediment removed from basins may be reused on site by incorporating into spoil. • All sediment that will not be reused on site will be disposed of in locations that it will not be conveyed back into the construction areas or watercourses. • Maintenance inspections will be undertaken and the results incorporated into the Weekly Environmental Inspection Checklist.	Supervisor / Environmental Site Representative	Duration
The stormwater capacity of sediment basins will be reinstated within 5 days of the cessation of a rainfall event that causes runoff to occur	Supervisor / Environmental Site Representative	Duration
Storage and Handling of Flocculants		
Gypsum and agricultural lime will be stored on site as either bagged or bulk product. Storage of bulk gypsum and agricultural lime will be covered, within erosion and sediment controls in a position where run on water will not erode the stockpiles.	Supervisor / Environmental Site Representative	Duration
All treatment chemicals particularly acids and basics will be stored in appropriately bunded and covered locations that are locked to prevent unauthorised access.	Supervisor / Environmental Site Representative	Duration
All chemicals on site will be stored with MSDSs for ease of reference in the event of a spill or irritation/injury to handlers.	Supervisor / Environmental Site Representative	Duration
Requirements of the Material Safety Data Sheets (MSDSs) will be met to ensure compatible storage with other chemicals to ensure safety.	Supervisor / Environmental Site Representative	Duration
Monitoring and Record Keeping		
All sediment basins will be inspected on a weekly basis as a minimum, with any defects or maintenance requirements reported immediately. Sediment basins will be inspected immediately after rainfall events to assess: • Water Storage capacity and water quality treatment requirements prior to discharge • Following treatment and discharge from the sediment basin the sediment storage capacity and requirement for clean out will be assessed.	Supervisor / Environmental Site Representative	Duration
The results of all inspections, including inspection reports will be retained in the site environmental inspection register	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
All discharges will be recorded on a discharge permit which will include: • Volume to be discharged • Treatment details (e.g. Coagulant/ flocculant used, dosage, duration and treatment date) • Water quality monitoring results (including date and time of testing) • Discharge water quality results • Date and time of discharge	Supervisor / Environmental Site Representative	Duration
Pumped discharge of any water off site will be monitored regularly to ensure that tested water quality meets all applicable criteria.	Supervisor / Environmental Site Representative	Duration
Decommissioning Construction Sediment Basins		
Construction sediment basins will remain in place until all upstream areas have been stabilised to achieve a 'C' Factor of 0.05 which equates to 70% groundcover as per Blue Book 7.1	Supervisor / Environmental Site Representative	Duration
All operational sediment basins will be desilted and reformed as per design requirements prior to completion of major works within the catchment.	Supervisor / Environmental Site Representative	Duration
Construction Sediment basins will be removed by restoring the ground disturbed by the construction of the basin similar to pre-existing conditions. This will be achieved by: • Removing all redundant basin equipment such as basin markers, siphons, spillway linings, etc. • Spreading and compacting the embankment material in the basin area • Disturbed ground will be compacted to at least the relative density of the material in the ground adjacent to it.	Supervisor / Environmental Site Representative	Duration

3. Procedure Review

The procedure will be regularly reviewed as part of the CEMP audit requirements. This document will be updated when needed in response to audit findings or changes to site conditions. The Environmental Site Representative will modify the procedure where improvements are identified.

Sediment Basin Management and Discharge Record

Water Discharge Register

Appendix D

Wet weather contingency procedure

1.1 Purpose

The purpose of the Wet Weather Contingency Procedure (the Procedure) is to detail the actions to be taken by construction personnel in response to an imminent severe rainfall event as forecast by the Australian Government - Bureau of Meteorology (BOM). The procedure provides guidance for monitoring BOM rainfall & storm event forecasts and other resources, to assist with Project preparations to minimise adverse site impacts where practical.

Adherence to the methodology outlined in procedure will ensure that works for wet weather contingency planning & implementation will be carried out in accordance with contract specifications and to maximise adherence to environmental obligations.

The purpose of the Wet Weather Contingency Procedure is to;

- Identify rainfall events which may cause significant precipitation over the site areas which would result in flash flooding and/or exacerbate erosion and sediment impacts;
- Include monitoring procedures of the Bureau of Meteorology (BOM) weather forecasts to predict severe rainfall events;
- Ensure emergency procedures are developed for the management of work areas, facilities and materials in a severe rainfall event that has the potential to impact areas of the Site;
- Ensure hazardous chemical & fuel/oil storage and stockpile areas are positioned in locations to limit the potential for adverse impacts from major runoff flows and/or flash flooding;
- Outline control measures for the protection of water quality in the event of a flood over the site;
- Ensure progressive stabilising methods for areas that may be potentially affected by flash flooding and/or significant scouring & erosion are implemented.

1.2. Scope

The Procedure applies to the following:

- Weather forecast monitoring and works planning,
- Implementation, monitoring and maintenance of erosion and sediment controls,
- Stockpile and hazardous materials storage,
- Sediment basin management, dewatering and maintenance.

1.3. Objectives

The objectives of this Procedure are to:

- Ensure all Project personnel are aware of the requirements of this procedure
- Detail personnel responsible for undertaking actions relating to works planning, erosion and sediment control management, sediment basin management & construction dewatering on the site;
- Comply with environmental requirements of the Project, including all legal requirements and contractual obligations.

2. Wet Weather Contingency & Management

Environmental Management Controls	Person Responsible	Timing / Frequency
Planning		
A copy of this Wet Weather Contingency Procedure will be kept on site and be made available to all relevant project personnel	Supervisor / Environmental Site Representative	Site Establishment / Duration
All relevant project personnel will be made aware of this document during the site induction and again in Toolbox Talks and targeted training sessions.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Training and Awareness		
Training & instruction of site personnel will be the responsibility of the Environment Manager/ Environmental Site Representative.	Environmental Site Representative	Site Establishment / Duration
Training sessions will be conducted with Supervisors, Foreman, Environmental Work Crew and relevant personnel. The training will address • Weather forecast monitoring procedures and interpretation of forecasting by BOM and other sources • Site erosion and sediment control status and high-risk areas • Roles and responsibilities for wet weather preparation • Temporary measure selection for augmentation or additional ERSED measures • Pre & post-rainfall inspections and recording • Dewatering requirements, methods and recording • Identification of stabilisation and rectification works required.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Identification of significant rainfall events		
The daily BOM forecasts for the Penrith area are issued each morning and late afternoon. The forecasts will be monitored daily, at the start of the shift and prior to shut down. The BOM three-day forecast outlook will be reviewed daily.	Supervisor / Environmental Site Representative	Duration
BOM forecasts indicating a high likelihood of storm fronts or rainfall events of >10mm with an occurrence probability of more than 50% will be regarded as a potential rainfall event.	Supervisor / Environmental Site Representative	Duration
In periods of forecast storm weather or likely rainfall events, the tracking and intensity of approaching weather fronts is to be monitored regularly (where possible) to anticipate the time of the onset of wet weather.	Supervisor / Environmental Site Representative	Duration
Wet Weather Management Procedures		
Where a potential rainfall event is deemed likely in the BOM three-day outlook, Project personnel are to review the scope and progress of existing and imminent site works to determine high risk areas and prioritise works to stabilise the nominated areas. High risk works include culvert works, scour protection installation, permanent drainage installation, trenching on grade, and sediment basin construction or maintenance.	Project Manager / Senior Engineer / Supervisors / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Wet Weather Management Procedures		
The high-risk work areas that are identified will be managed by; • Completion and temporary/permanent stabilisation of the high-risk work areas where time & resource constraints allow, prior to the onset of the potential rainfall event. • Re-allocating resources from low risk activities to assist with completion of high risk works prior to the onset of a rainfall event. • Implementation of erosion controls in high risk areas to minimise sediment control requirements. Erosion controls will be employed such as; o temporary geotextile linings or soil binders will be installed around culverts, scour protection works and drain junctions, o sandbag check dams, rock baffles, trench stops, etc will be utilised in open trenching on grade, temporary diversion drains, or concentrated flow paths over unstabilised areas.	Project Manager / Senior Engineer / Supervisors / Environmental Site Representative	Duration
The site sediment controls and sediment basins are to be inspected and any necessary rectification works undertaken such as; • Sediment basins are to be managed in accordance with Sediment Basin Management Procedure to regain the maximum runoff capacity parameters, where possible, • Sediment traps and filters to be desilted where more than 60% storage capacity is exceeded, • Spillways and discharge points from sediment traps to be inspected and reinstated as required. • Sediment fences, mulch bunds, earth berms to be inspected and repairs or reinstatement implemented as required.	Supervisor / Environmental Site Representative	Duration
The chemical, fuel and other hazardous material storage areas to be inspected to ensure their location is protected from the ingress of rainfall or concentrated overland flows. Bund controls to be inspected and accumulated liquids or other residues removed to a controlled waste location on site or for offsite disposal at licensed premises.	Supervisor / Environmental Site Representative	Duration
Following the onset of a significant storm event or rainfall event, the site controls to be inspected as soon as site conditions and safety requirements allow. The inspection to focus on high risk areas to review the function and status of the installed erosion and sediment controls.	Supervisor / Environmental Site Representative	Duration
Post-Rainfall/Storm Procedure		
The Post Rainfall Inspection will be conducted in accordance with Section 7.7 of this ESCP. The identified high-risk areas will be prioritised for any rectification or maintenance works, followed by areas with lower risk.	Supervisor / Environmental Site Representative	Duration
Records detailing the necessary works to reinstate the controls will be conducted in accordance with Section 7.7 of this ESCP.	Supervisor / Environmental Site Representative	Duration
Sediment basins are to be managed in accordance with Sediment Basin Management Procedure. Flocculation of the sediment basins may occur soon after the cessation of a rainfall event to improve the water quality parameters in circumstances where further significant rainfall is anticipated.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
High risk work areas that are inundated will be prioritised for dewatering by; • Dewatering to a sediment basin where sufficient capacity is available, • Flocculated in-situ and discharged at a licensed discharge point when EPL water quality parameters are attained, • Dewatered by water cart and utilised for construction purposes.	Supervisor / Environmental Site Representative	Duration
Repair and reinstatement of erosion and sediment controls to be implemented as site conditions allow, proceeding from high risk areas to lower risk areas on site.	Supervisor / Environmental Site Representative	Duration

3. Procedure Review

The procedure will be regularly reviewed as part of the CEMP audit requirements. This document will be updated when needed in response to audit findings or changes to site conditions. The Project Environmental Representative in consultation with the Client will modify the procedure where improvements are identified.

Appendix E

Progressive Erosion and Sediment Control Plan

NOTES - Administration & General

1. This progressive plan is to be read in conjunction with the SWMP, CEMP, relevant specifications, and procedures.
2. Works programming to maximise the mitigation of erosion by the early implementation of permanent drainage measures, temporary and permanent soil surface stabilisation measures, and minimising the area and duration of soil disturbance.
3. Bureau of Meteorology weather forecasting to be monitored daily for the local 7-Day weather outlook. Site management measures to be planned for imminent storm/rainfall/flood/wind events include, but are not limited to;
   - avoiding additional soil disturbance immediately prior to an event,
   - provision of additional erosion and sediment controls in critical locations,
   - installing, repairing, and/or adjusting 'clean' (off site water) and 'dirty' (on site) water drainage measures,
   - desilting and re-instating sediment controls as required,
   - implementing stockpile protection measures,
   - stabilising and sealing disturbed soil surfaces,
   - minimising dry soil handling in windy conditions,
   - evacuating or protecting erodible materials in lower lying area.
4. The plan is to be revised as necessary (i.e. progression of works, altered site conditions or weather). **The controls depicted are subject to staging and the controls may be progressively implemented or removed according to progression of works. The symbols depicting controls are not to scale and are only indicative of the general location and type of control selected.**
5. All erosion and sediment controls generally to be constructed in accordance with `Blue Book' specifications and standard drawings & RMS Specifications being
   - MANAGING URBAN STORM WATER: SOILS AND CONSTRUCTION - 4th EDITION, LANDCOM, MARCH 2004;
   - MANAGING URBAN STORM WATER: SOILS AND CONSTRUCTION – VOLUME 2D MAIN ROAD CONSTRUCTION, DEC, 2008;
6. Substitute materials may be utilised in the construction of erosion or sediment controls where functionality is not affected, i.e. compacted mulch bunds in place of sediment fences, stabilised earth Berms in place of excavated drains near underground services or timber pegs in place of star pickets where electrical or gas.
7. Personnel constructing controls to have demonstrated competence and experience. Specific awareness training and workshops to be undertaken by personnel with direct involvement with erosion and sediment control. Toolbox talks to regularly focus on erosion and sediment control for specific works, associated risks, potential impacts and mitigation measures.
8. All existing vegetated or undisturbed areas outside of the works area to be regarded as "No Go" zones and to be delineated with fencing, tape or other markers, as required. All site personnel to be instructed to avoid "No Go" zones or damaging installed controls.

Erosion Control

9. Prior to commencement of significant works, install surface drains, sediment traps, sumps & filters, and other surface runoff control measures to control runoff onto, across, and from the works zones to prevent the loss of sediment from the site.
10. Construction zones in constrained areas to be managed in smaller, defined sub-catchments to reduce slope lengths and minimise sediment loads to boundary controls.
11. Stripped topsoil to be stripped and stockpiled generally as per SD 4-1. Any viable stripped topsoil to be stored in stockpiles, preferably less than two metres in height.
12. Short term on-site stockpiles to be located away from drains and flow lines and be controlled with sediment fence or storm covers.
13. Any significant (long & steep) cut/fill batters should be progressively overlaid with Rolled Erosion Control Products (RECP's such as jute mesh, coir fibre mesh, etc), mulching, Organic Fibre Mulches (OFM's) or geobinders to reduce erosion and rilling, prior to permanent stabilisation with cover crops, mulching or other long-term surface protection
14. Vehicles transporting bulk materials on public roads are to correctly cover loads to prevent loss of load and/or dust generation.
15. Temporary controls in addition to those shown may be required at strategic locations as required by the progression of works or weather conditions

Water Management (Cont'd)

16. Maximise the interception and diversion of 'clean' (off site water) away from works areas. The 'clean' flows to be conveyed in stabilised drainage lines to suitable discharge points. The flows to be discharged to off-site areas at non-erosive velocities with adequate diffusers, level spreaders, etc. Ensure drainage paths and controls are adjusted as required to maximise the separation of 'clean' (off site) and 'dirty' (on site) water flows through/off site.
17. Flows paths with high velocity flows over unstabilised areas to be controlled with
    - applied soil surface stabilisers i.e. geotextile lining, applied soil binders, coarse rock lining, etc
    - suitably constructed check dams placed at intervals to maximise flow suppression and settling of coarse sediment.
18. Where possible, provide sand bag or other bunding controls at on-site collection points & pit inlets to prevent flows bypassing controls to downslope areas.
19. Protect all existing and constructed inlets to pits & culverts from sediment ingress.
20. Where practical, maintain and/or improve existing stabilised drains to assist in the diversion of 'clean' (off site) flows.
21. Flooded excavations, ponded water, etc. to be extracted where required and utilised for site purposes, or treated to achieve acceptable water quality prior to discharge.

Sediment Control

22. The installation of preliminary sediment controls such as perimeter sediment fencing, excavated sediment traps, check dams, coir log filters, etc, will be implemented prior to soil disturbance within the catchment.
23. Accumulated water in sediment traps/sumps cannot be pumped, discharged or released from site without completing a dewatering checklist or approval by an authorised Site Manager.
24. Appropriate sediment tracking controls such as an aggregate/geotextile apron, shaker grid, etc. will be installed at exit points from the site. Personnel to monitor roadways & tracked sediments to be removed as required.
25. Personnel to ensure visual dust monitoring is maintained during works, and dust suppression is undertaken regularly. Dust control to be regularly conducted with water carts and soil stockpiles to suitably covered. Additional dust suppression measures to be utilised to minimise dust pollution during periods of high winds.
26. Temporary 'dirty' water drainage will be adjusted progressively to maximise flows to sediment control devices.

Contamination

29. Excavation of sub-soils to be inspected and monitored as works proceeds, to identify potential contamination. Any potentially contaminated soils to be stripped or excavated separately and transported directly to the designated stockpile, treatment area or licensed waste facility.
30. Potentially contaminated soils are to be stored within an appropriately bunded area and covered with heavy grade plastic or other impermeable covers for the duration of rainfall.
31. Ground disturbance and machinery/vehicle movements in potentially contaminated areas will be minimised to essential works.

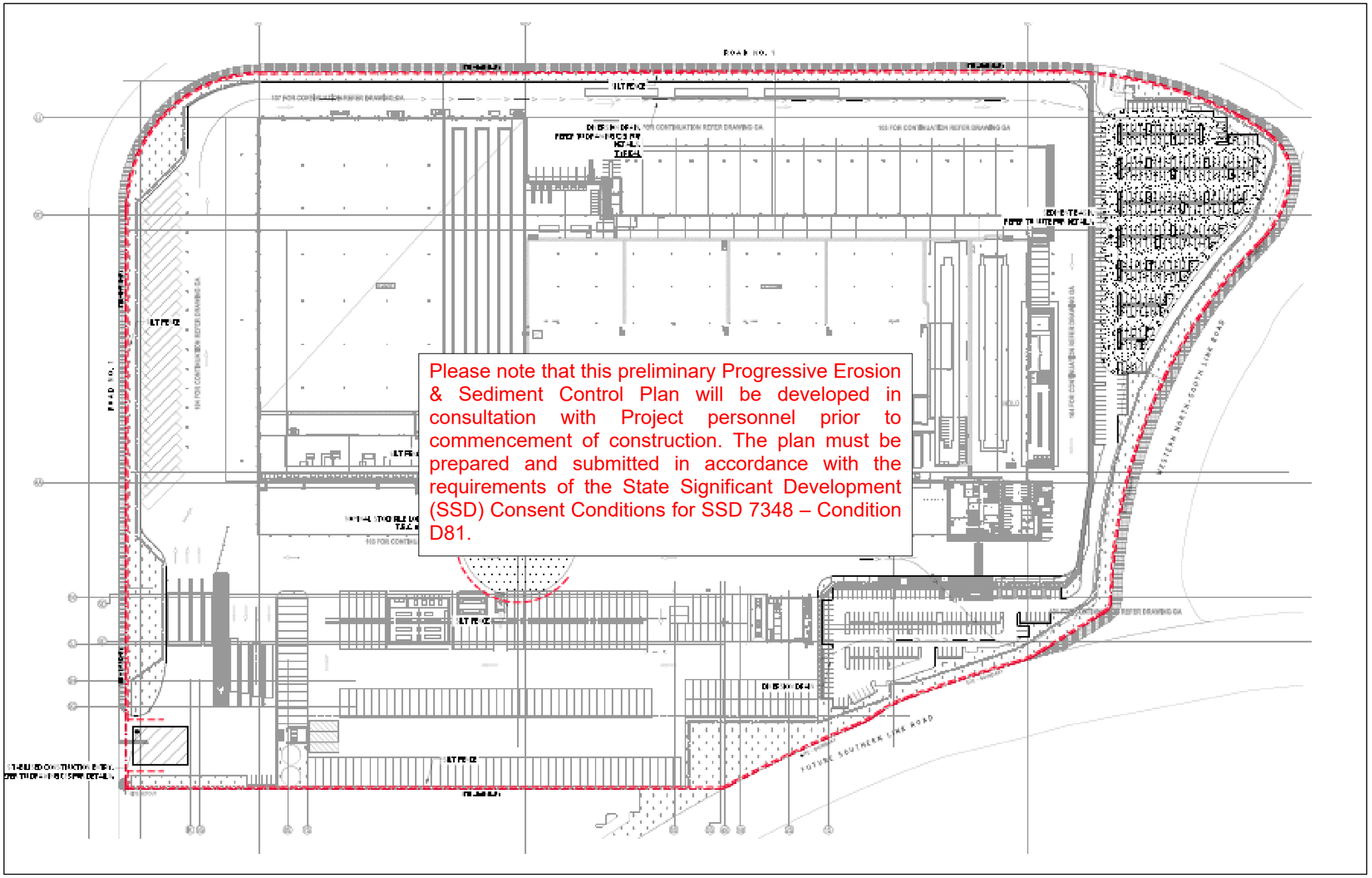
Monitoring & Reporting and Inspection & Maintenance

32. Inspections of erosion and sediment controls will occur following rainfall events >10mm (daily on work days or as soon as practical during site shutdown periods), with any necessary repairs implemented as soon as possible.
33. Relevant checklists and records to be maintained noting details such as rainfall received, repairs to controls and amounts of sediments cleaned from controls.
34. Sediment traps, sumps and filters are to be desilted when 60% of storage capacity is reached.
35. All site personnel to report any spill, leaks, or other failure to relevant response staff as soon as possible.

Stabilisation

36. Erosion and sediment controls are to be maintained until the relevant catchments are stabilised, re-vegetated, or sealed adequately to achieve soil surface protection factors as per the 'Blue Book' and SWMP requirements.
37. Completed earthworks areas will be backfilled and compacted in a staged manner as soon as possible. Adjacent disturbed areas will be suitably trimmed and stabilised as required.
38. Stabilisation of areas is to occur progressively in conjunction with the completion of earthworks.
39. Areas subject to heavy compaction and disturbance from vehicle movements and machinery to be scarified to a depth >100mm prior to topsoiling and seeding.

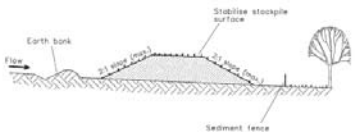
Version	Drawn by	Date	Signed	Reviewed by	Date
01	A. Littlewood	15/05/2020			



Legend											
Off Site Water – Sheet Flows		Piped Drainage		Stabilised Topsoil Berm (geo/jute/seed)		Sediment basin / large sump		Sediment Fence Geotextile Apron		Vegetated filter	
Off Site Water – Concentrated Flow/Drain		Off-site & onsite water cross-over		Geo-lined drain		Filter bag sediment trap		Mulch bund		Stabilised site access / Shaker / Wheelwash	
On Site Water - Concentrated Flow/Drain		‘Off site’ water exclusion bank		Rock lined drain		Compacted Mulch / Rock & Geotextile / topsoil sediment trap		Coir Log / Straw bale filter		Stabilised Haul Road/Access Track/ Piling pad/Piped crossing	
On Site Water – Sheet Flows		Level Spreader / Diffuser/ Geo spillway		Coarse rock / sandbag check dam		Excavated sediment trap with spill weir		Filter bag or sediment fence inlet filter		Temporary Traffic Barriers	

Appendix F
Standard drawings

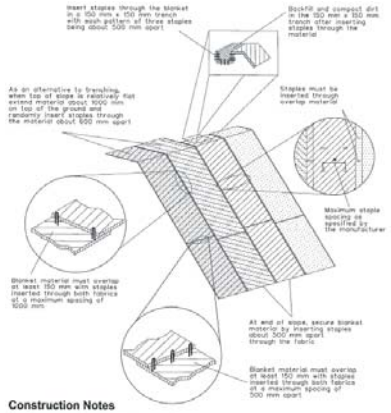
Standard Drawings



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.

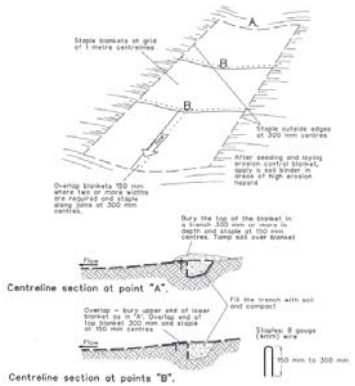
STOCKPILES SD 4-1



Construction Notes

1. Remove any rocks, clods, sticks or grass from the ground surface before laying the matting.
2. Spread topsoil to at least 75 mm depth.
3. Where appropriate, complete fertilising and seeding on a properly prepared seedbed (Standard Drawing 7-1) before laying the matting.
4. Ensure the fabric can be continuously in contact with the soil by grading the surface carefully first.
5. Lay the matting in "shingle-fashion" with the ends of each upstream roll overlapping the next roll downslope.
6. Ensure sufficient staples are used to maintain a good contact between the soil and the matting.

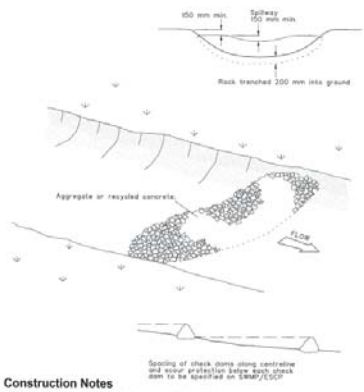
RECP : SHEET FLOW SD 5-2



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 5-7h).
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.

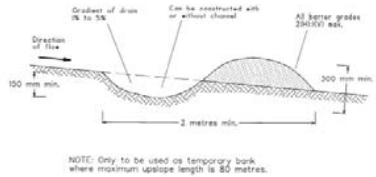
RECP : CONCENTRATED FLOW SD 5-7



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.

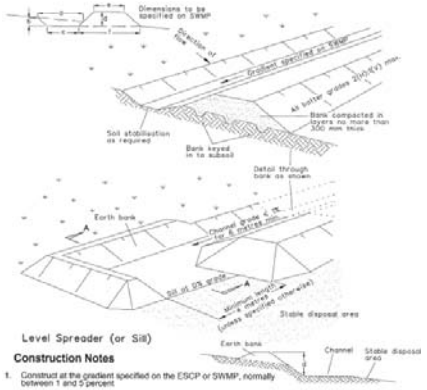
ROCK CHECK DAM SD 5-4



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

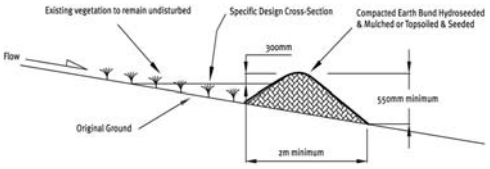


Construction Notes

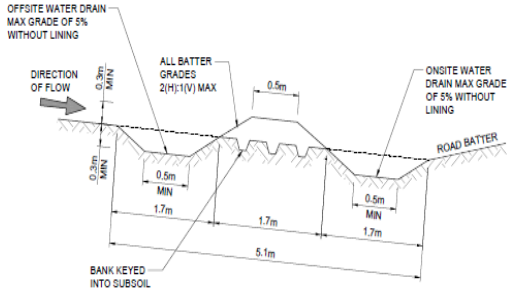
1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic 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

Stabilised topsoil diversion bank



Cross Section

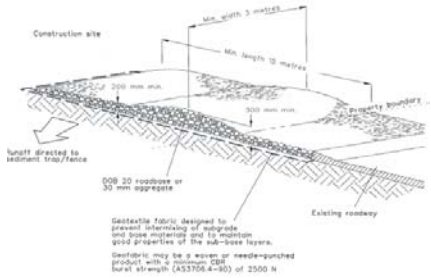


EARTH BANK (ONSITE & OFFSITE COMBINED)
N.T.S.

GENERAL CONSTRUCTION NOTES

1. CONSTRUCT WITH GRADIENT OF 1% TO 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM
3. DRAINS TO BE CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED.
4. EARTH BANK TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
5. PERMANENT OR TEMPORARY STABILISATION OF THE EARTH BANK TO BE COMPLETED WITHIN 10 DAYS OF CONSTRUCTION.
6. ALL OUTLETS FROM DISTURBED LANDS ARE TO BE FED INTO A SEDIMENT BASIN OR SIMILAR.
7. DISCHARGE RUNOFF COLLECTION FROM UNDISTURBED LANDS ONTO EITHER A STABILISED OR AN UNDISTURBED DISPOSAL SITE WITHIN THE SAME SUBCATCHMENT AREA FROM WHICH THE WATER ORIGINATED.
8. COMPACT BANK WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN FIVE DAYS.
9. EARTH BANK TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.

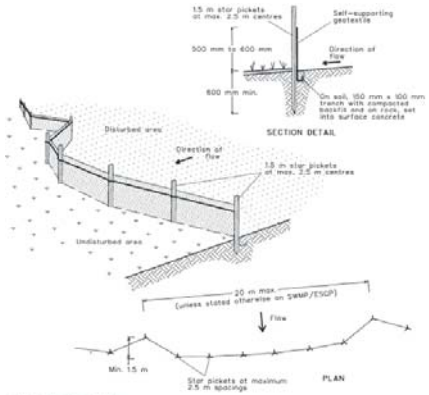
Standard Drawings



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.

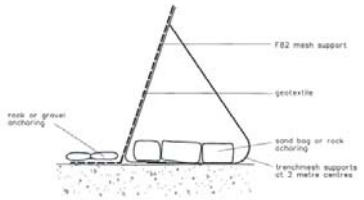
STABILISED SITE ACCESS **SD 6-14**



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.

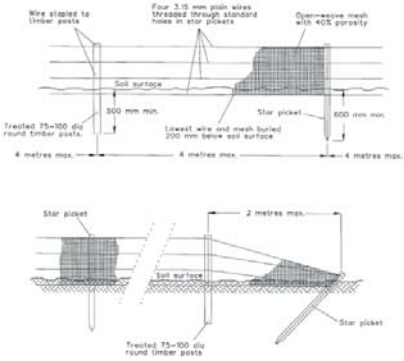
SEDIMENT FENCE **SD 6-8**



Construction Notes

1. Install this type of sediment fence when use of support posts is not desirable or not possible. Such conditions might apply, for example, where approval is granted from the appropriate authorities to place these fences in highly sensitive estuarine areas.
2. Use bent trench mesh to support the F82 welded mesh facing as shown on the drawing above. Attach the geotextile to the welded mesh facing using UV resistant cable ties.
3. Stabilise the whole structure with sandbag or rock anchoring over the trench mesh and the leading edge of the geotextile. The anchoring should be sufficiently large to ensure stability of the structure in the design storm event, usually the 10 year event.

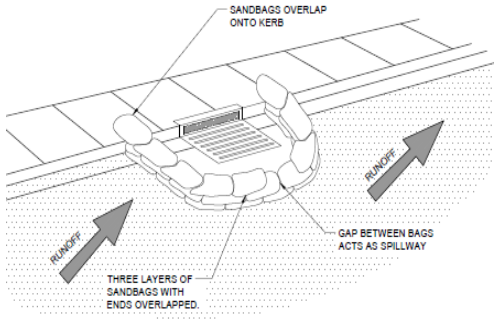
ALTERNATIVE SEDIMENT FENCE **SD 6-9**



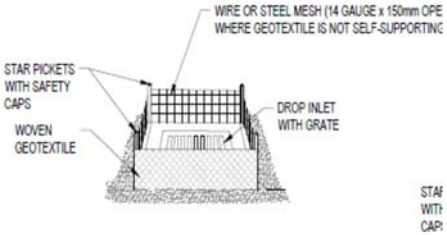
Construction Notes

1. Install the fence to the height specified in the ESCP/SWMP.
2. Cut a channel 200 mm deep along the fence line.
3. Place wire and light resistant, open-weave polymer mesh with 40 percent porosity on the prevailing wind side of fence.
4. Fasten the mesh to all wires using ring fasteners at 100 mm to 150 mm intervals on top wire and 300 mm intervals on other wires.
5. Use one 75-mm to100-mm diameter treated round timber post every 20 metres.
6. Where star pickets are used, ensure they are fitted with safety caps.

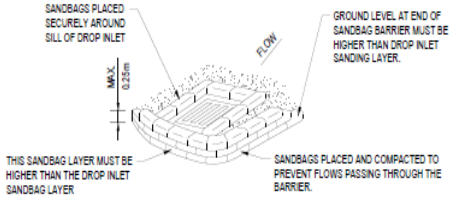
CONTROL OF WIND EROSION **SD 6-15**



SANDBAG SEDIMENT TRAP FOR KERB INLET
N.T.S.

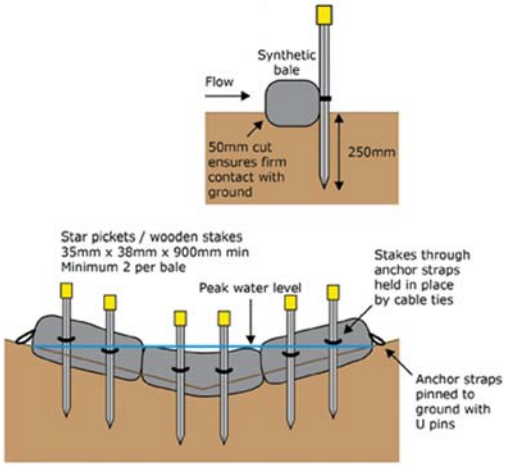


GEOTEXTILE INLET FILTER (SD 6-12) - PERSPECTIVE
NTS

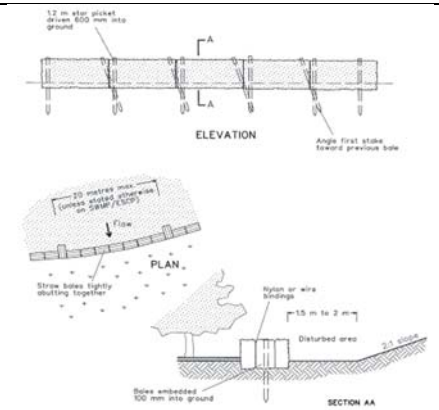


SEDIMENT BARRIER (SD 5-4) DETAIL

Coir Log Filter



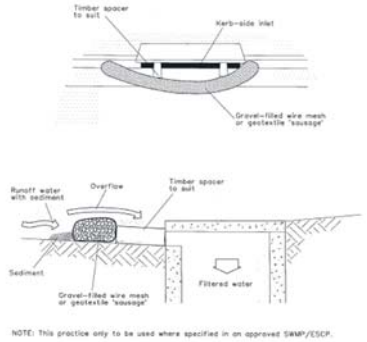
Standard Drawings



Construction Notes

1. Construct the straw bale filter as close as possible to being parallel to the contours of the site.
2. Place bales lengthwise in a row with ends tightly abutting. Use straw to fill any gaps between bales. Straws are to be placed parallel to ground.
3. Ensure that the maximum height of the filter is one bale.
4. Embed each bale in the ground 75 mm to 100 mm and anchor with two 1.2 metre star pickets or stakes. Angle the first star picket or stake in each bale towards the previously laid bale. Drive them 600 mm into the ground and, if possible, flush with the top of the bales. Where star pickets are used and they protrude above the bales, ensure they are fitted with safety caps.
5. Where a straw bale filter is constructed downslope from a disturbed batter, ensure the bales are placed 1 to 2 metres downslope from the toe.
6. Establish a maintenance program that ensures the integrity of the bales is retained - they could require replacement each two to four months.

STRAW BALE FILTER **SD 6-7**

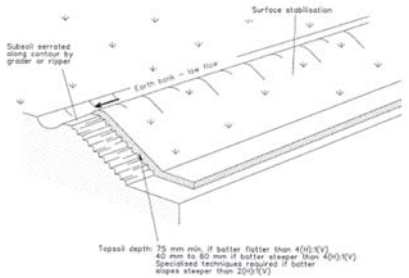


NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

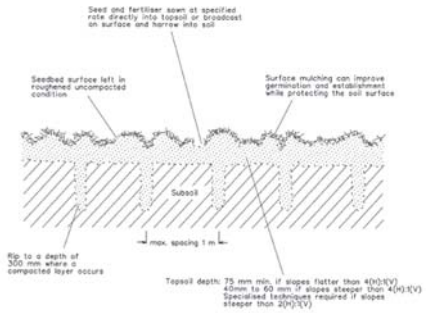
MESH AND GRAVEL INLET FILTER **SD 6-11**



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.

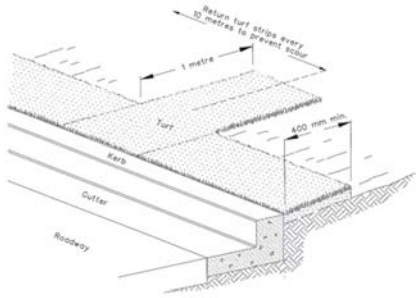
REPLACING TOPSOIL **SD 4-2**



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**



Construction Notes

1. Install a 400-mm minimum wide roll of turf on the footpath next to the kerb and at the same level as the top of the kerb.
2. Lay 1.4 metre long turf strips normal to the kerb every 10 metres.
3. Rehabilitate disturbed soil behind the

KERBSIDE TURF STRIP **SD 6-13**

APPENDIX J

Salinity Management Plan

Pells Sullivan Meynink
Engineering Consultants
Rock-Soil-Water

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Our Ref: PSM1541-125L

18 November 2015

Goodman Property Services (Aust) Pty Ltd
Level 17, 60 Castlereagh Street
SYDNEY NSW 2000

ATTENTION: KYM DRACOPOULOS
kym.dracopoulos@goodman.com

Dear Kym

RE: OAKDALE WEST PRECINCT – SALINITY MANAGEMENT PLAN

1 INTRODUCTION

This letter presents a Salinity Management Plan (SMP) prepared by Pells Sullivan Meynink (PSM) for Oakdale West Precinct. This was prepared to accompany our salinity investigation in accordance with our proposal (ref. PSM1541-116L Rev1 dated 9 October 2015).

The aim of the SMP is to provide controls for the potential impacts of the proposed development on site salinity and has been prepared in accordance with WSROC Salinity Code of Practice (2004) salinity management guidelines.

2 DOCUMENTS RELIED UPON

In preparing the SMP, we have taken into consideration:

1. The results of the salinity assessment completed by PSM and presented in our letter (Ref. PSM 1541-125L).
2. Details of the proposed developments as presented in the "*Oakdale West Optimised Masterplan Cut/Fill Plan"* by AT&L (ref. SKC051 15-272 issue P1 dated 2 June 2015).
3. WSROC Salinity Code of Practice (2004) salinity management guidelines.

3 OBJECTIVE OF SMP

The objective of this SMP is to effectively manage site salinity, to minimise the effect of the proposed development on the salinity processes and to protect the proposed development from salinity damage.

4 SALINITY ASSESSMENT

The PSM salinity assessment noted that:

1. The soils present on site are sodic to highly sodic.
2. The soils present on site are non-saline to slightly saline.

5 RECOMMENDATIONS

5.1 Development components

This SMP addresses the components of the proposed development at both the construction stage and for the permanent works. Recommendations regarding the following development components are provided in the following sections:

1. Earthworks
2. Gardens and landscaped areas
3. Roads, footpaths and hardstand areas
4. Surface water, stormwater and drainage
5. Detention basins
6. Durability of concrete structures in contact with the ground
7. Masonry structures
8. Groundwater management.

5.2 Earthworks

We understand that the development will be sympathetic to the site topography and the environment and thus aim to minimise the cut and fill. The design and construction of the earthworks should consider the following recommendations:

1. Vegetation cover should be established and maintained on permanent batters as soon as practical upon completion to control erosion.
2. The final surface of all areas of the development should be graded to prevent the ponding of surface water.
3. Subsoil drainage should be considered for areas where the designer considers accumulation of groundwater may occur. We do not consider that any significant such areas are likely at this site.
4. Erosion control of temporary batters, stockpiles and disturbed areas should be planned prior to undertaking the earthworks and implemented during the earthworks. Consideration should be given to:
    a. Grading and sealing partially completed surfaces.
    b. Installation of clearly visible fencing and traffic control measures to prevent unnecessary trafficking of areas and ensuing site disturbance.
    c. Establishing set vehicular access points and roads.
    d. Protecting stockpiles (temporary vegetation or mulching) where these are to be left in place for long durations.
5. Sediment control shall be implemented by means of sediment traps and silt fencing where considered necessary.
6. Where for landscaping purposes or erosion control the designer requires gypsum or lime stabilisation, these should be planned to be undertaken as part of the initial earthworks.

5.3 Gardens and landscaped areas

The proposed development will result in the majority of the site comprising roads, footpaths, and hardstand areas. Garden and landscaped areas are likely to be of limited extent. The design and construction of the gardens and landscaped areas should consider the following recommendations:

1. Where possible areas of established vegetation, particularly large trees, should be retained.
2. Selection of plant species should consider the soil conditions, including moderate salinity, relatively poor fertility and clayey low permeability soil profiles. Promotion of successful revegetation is likely to require use of nutrient rich topsoil. Saline topsoils should not be imported to site.

3. Recharge of groundwater and potential for water logging should be minimised by:
    a. Adopting plant species with minimal watering requirements.
    b. Adopting ‘waterwise’ gardening principles.
    c. Minimising use of potable water in landscaped areas.
    d. Properly designed and implemented irrigation systems.
    e. Establishment of perennial species and deep rooted trees.

5.4 Roads, footpaths and hardstand areas

As stated, the proposed development will result in the majority of the site comprising roads, footpaths, and hardstand areas. The design and construction of roads, footpaths and hardstand areas should consider the following recommendations:

1. Roads, footpath and hardstand surfaces should be graded and the grades maintained at all times to prevent ponding of surface water at locations where this can result in infiltration into the underlying soils (e.g. pavement joints).
2. Connections between the roads, footpath and hardstand surfaces and the surface water and stormwater drainage infrastructure should be designed, constructed and maintained to restrict infiltration into underlying soils.
3. Services that are to be located below the roads, footpath and hardstand surfaces should be installed, where practical, at the time of construction.

5.5 Surface water, stormwater and drainage

Surface water, stormwater and drainage design should aim at restricting infiltration into the ground resulting in groundwater recharge. The design and construction of surface water, stormwater and drainage measures should thus consider the following recommendations:

1. Disturbance of natural drainage patterns should be reduced. Where these are disturbed or altered appropriate artificial drainage should be installed.
2. Stormwater and surface water should be managed to restrict infiltration.
3. Temporary water retaining structures used during construction should be managed to restrict infiltration.
4. Stormwater and surface water infrastructure should be designed and constructed to minimise the likelihood of leakage.
5. Guttering and down pipes should be connected and maintained.
6. Surface water runoff should be directed around all exposed surfaces, temporary stockpiles and landscaped areas.

5.6 Detention basins

Detention basins should be designed such that recharge into the groundwater system is controlled. On this basis, the design of temporary and permanent on site detention will need to consider the requirement to line the basin with an impermeable liner (clay layer or synthetic liner) or simply vegetate the exposed base.

In assessing the above requirement the design will need to consider the proposed basin location, the subsurface conditions at the basin, the proximity of the basin to other structures, the proposed storage volume and storage depth and the likely duration of water storage.

In saline environments reducing the water infiltration into the soil and groundwater recharge is considered desirable. On this site, the majority of the site is to be developed with roads and paved areas thus significantly reducing surface water infiltration. The amount of infiltration that can be tolerated at the detention basins will need to be assessed in terms of the overall water balance on site.

Where ponds intended to be permanently full are proposed, such as recreational or aesthetic ponds or fountains, it is recommended that the base of the permanent pond be lined with an impermeable liner. The liner to be adopted (clay or synthetic) shall be a matter of design.

5.7 Durability of concrete structures in contact with the ground

In designing structural concrete elements in contact with the ground the design should consider the results of the salinity, sulphate, chloride and pH testing on the soil and groundwater and the durability requirements in AS2159:2009 and AS3600:2009.

Both these standards provide guidance on minimum concrete grade/strength and minimum cover requirements.

Based on the results of the salinity assessments it is recommended that:

1. The design of structural concrete members in contact with the ground (excluding piles) adopt an A2 exposure classification as defined in AS3600:2009.
2. The design of concrete cast in situ piles adopt a mild classification as defined in AS2159:2009.

5.8 Masonry structures

Having given consideration to the very low to moderate soil salinity on site, the relatively deep water table, and the low permeability soils present on site it is considered that the design and construction of masonry structures including damp proof courses, moisture barriers and selection of brick and construction materials should be undertaken in accordance with the relevant building industry standard. We do not expect special attention to salinity will be required.

5.9 Groundwater management

The intention of groundwater maintenance at this site is to reduce the likelihood of recharge of the groundwater resulting in rising of the groundwater table to near the ground surface.

The very low to moderate soil salinity on site, the relatively deep water table, and the low permeability soils combine to reduce the likelihood of a rising groundwater table. Further, the development involves a very significant reduction in infiltration over the site.

Furthermore, the recommendations is Section 5.3 to 5.6 regarding gardens and landscaped areas, roads, footpaths and hardstand areas, surface water, stormwater and drainage and detention basins are aimed at reducing the potential for groundwater recharge.

In addition to these recommendations, use of infiltration pits to disperse surface water should be avoided.

5.10 Importation of soil

It may be required to import topsoil or other soil onto site. Materials to be imported to site should be assessed for suitability for the intended use. Saline or contaminated soils should not be imported to site.

6 SIGN OFF

We recommend the following:

The designer and contractor responsible for construction of the various development components be required to sign-off their design and the as built, certifying that:

> "*The works have been designed/constructed having given appropriate consideration to the recommendations in the SMP (Ref. PSM1541-125L dated xxx)*".

The designer and contractors should contact PSM during the works if they have any queries with regards to the requirements in the SMP or if conditions significantly differ from those described in this SMP.

Please do not hesitate to contact the undersigned if you have any queries.

For and on behalf of
PELLS SULLIVAN MEYNINK





CHRISTOPHER FERNANDEZ
Geotechnical Engineer

GARRY MOSTYN
Chief Engineer

APPENDIX K

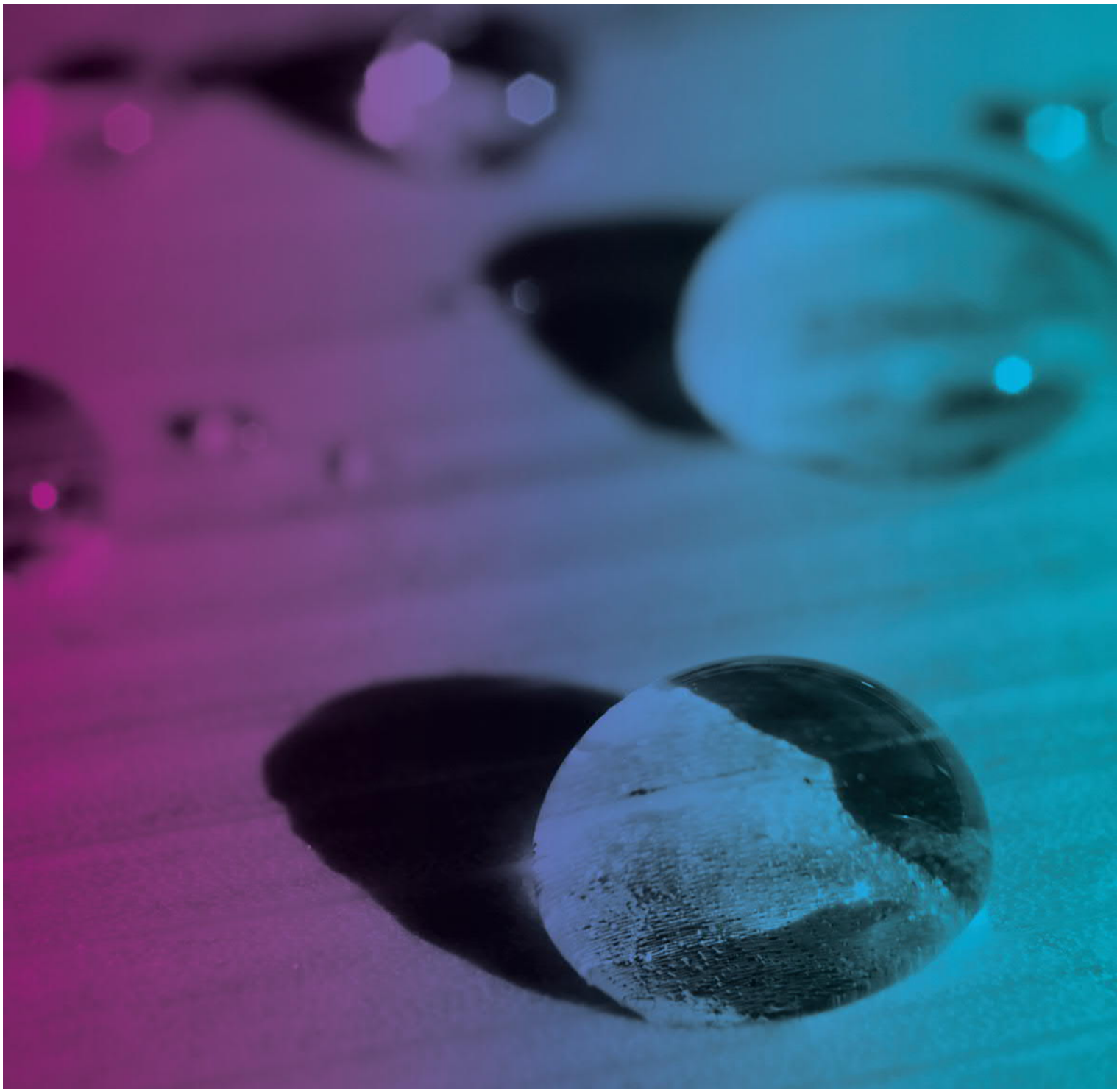
Fill Importation Protocol

AECOM Imagine it. Delivered.

Goodman Property Services (Aust) Pty Ltd
22-May-2020
Doc No. 60599325-OWE-Lot 1A-FIP-20200522_0

Lot 1A Fill Importation Protocol

Oakdale West Estate



Lot 1A Fill Importation Protocol

Oakdale West Estate

Client: Goodman Property Services (Aust) Pty Ltd

ABN: 40 088 981 793

Prepared by

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22-May-2020

Job No.: 60599325

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Quality Information

Document Lot 1A Fill Importation Protocol

Ref 60599325

Date 22-May-2020

Prepared by Alex Latham

Reviewed by Brad Eismen

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	13-May-2020	draft for comment	Alex Latham Associate Director	
0	22-May-2020	Final	Alex Latham Associate Director	

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Glossary

General Terms	
ACM	Asbestos Containing Material
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure (2013)
ASS	Acid Sulfate Soil
BTEXN	Benzene, toluene, ethylbenzene, xylenes and naphthalene
CC	Construction Contractor
CoPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DQI	Data Quality Indicators
DQO	Data Quality Objectives
ENM	Excavated Natural Material
EPA	Environment Protection Authority
FIP	Fill Importation Protocol
HIL	Health Investigation Level
HSL	Health Screening Level
LOR	Limit of Reporting
LNAPL	Light Non-Aqueous Phase Liquid
m bgs	Metres below ground surface
mg/kg	milligrams/kilogram
NATA	National Association of Testing Authorities
NEPM	National Environment Protection Measure
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soil
PCB	Polychlorinated Biphenyls
PID	Photoionisation detector
POEO	Protection of the Environment Operations (Regulation)
Priority metals	Arsenic, cadmium, copper, chromium, lead, mercury, nickel, zinc
QA/QC	Quality Assurance/Quality Control
RRO	Resource Recovery Order
TPH/TRH	Total Petroleum Hydrocarbons / Total Recoverable Hydrocarbons
VENM	Virgin Excavated Natural Material
VHC	Volatile Halogenated Compound (or Chlorinated Hydrocarbons [CHC])
VOC	Volatile Organic Compound

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by Goodman Property Services (Aust) Pty Ltd (Goodman) to prepare this Fill Importation Protocol (FIP) for Lot 1A at the Oakdale West Estate (OWE), Kemps Creek, NSW.

Lot 1A is 18.73 hectares (ha) and will be constructed by bulk cut to fill earthworks. The earthworks plan for Lot 1A indicates that approximately 10 m of cut and up to 12 m of filling will occur.

A FIP was prepared by AECOM in October 2019[1] for the OWE development and formed a condition of consent for State Significant Development 7348 (SSD 7348). The October 2019 FIP related to the bulk earthworks at OWE, including Lot 1A. It is understood that no importation of fill material from non-OWE sources will be required for construction of Lot 1A, except for the possible use of materials for construction of in-ground services and a retaining wall. As required by the October 2019 FIP, fill materials that are imported to Lot 1A will undergo compliance sampling and analysis to confirm their suitability for commercial/industrial land use.

Goodman requires a FIP for the development of Lot 1A, effective after the completion of bulk earthworks and implemented during construction activities. This FIP has therefore been prepared for the development phase of Lot 1A (i.e. construction of above ground assets). It is understood that the development of Lot 1A will be undertaken under conditions of consent for SSD 7348 Mod 2, when issued.

This FIP only relates to the contamination status of fill materials to be imported to Lot 1A.

1.1 SSD 7348 Mod 2 Conditions of Consent

The Conditions of Development Consent have been issued. Goodman will require the implementation of this FIP to comply with the Conditions of Development Consent to ensure that materials imported to the Site are suitable for commercial/industrial land use. Based on the SSD 7348 conditions of consent, the materials imported to Lot 1A must meet any of the following:

- Excavated Natural Material (ENM).
- Virgin Excavated Natural Material (VENM).
- Other material approved in writing by the New South Wales Environment Protection Authority (EPA). AECOM notes that this may include but not be limited to the following:
    - Recycled concrete aggregate that meet the requirements of the NSW EPA Resource Recovery Order under part 9, clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Recovered Aggregate Order 2014.
    - Basalt fines (maximum particle size of 9.5 mm) that meet the requirements of the NSW EPA Resource Recovery Order under part 9, clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Basalt Fines Order 2014.
    - Recycled glass sands that meet the requirements of the NSW EPA Resource Recovery Order under part 9, clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Recovered Glass Sand Order 2014.

1.2 ENM

ENM is defined in the Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – The excavated natural material order 2014 - as naturally occurring rock and soil that has:

- Been excavated from the ground.
- Contains at least 98% (by weight) natural material.

[1] Fill Importation Protocol, Oakdale West Estate. 31-October-2019 (60599325-OWE-FIP(CEMP)-20191031_2).

- Does not meet the definition of Virgin Excavated Natural Material in the Act.

ENM **does not include**:

- Material located in a hotspot.
- Material that has been processed.
- Material that contains asbestos, acid sulfate soil (ASS), potential acid sulfate soil (PASS) or sulfidic ores.

The ENM Order is provided in **Appendix A**.

1.3 VENM

The Protection of the Environment Operations Act 1997 (POEO Act) defines VENM as natural material that:

- Has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities.
- Does not contain any sulfidic ores or soils or any other waste.
- Includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved for the time being pursuant to an EPA Gazettal notice.

To be classified as VENM, materials must satisfy all aspects of the above definition.

1.4 Recovered Aggregate Order

The requirements of the Recovered Aggregate Order 2014 apply to the supply of recovered aggregate (i.e. recycled) for application to land as road making material, or in building, landscaping or construction works.

In the Recovered Aggregate Order 2014, recovered aggregate means material comprising of concrete, brick, ceramics, natural rock and asphalt processed into an engineered material. This does not include refractory materials, or asphalt that contains coal tar.

The Recovered Aggregate Order 2014 is provided in **Appendix A**.

1.5 Basalt Fines Order

The requirements of the Basalt Fines Order 2014 apply to the supply of basalt fines for application to land for building or maintaining railway infrastructure, for road making activities, or as a soil amendment.

In the Basalt Fines Order 2014, basalt fines means a material comprising of naturally excavated basalt with a maximum particle size of 9.5 mm, that is derived from the processing of basalt or the recycling of railway ballast.

The Basalt Fines Order 2014 is provided in **Appendix A**.

1.6 Recovered Glass Sand Order

The requirements of the Recovered Glass Sand Order 2014 apply to the supply of recovered glass sand for application to land for the purpose of pipe bedding, drainage or for road making activities.

In the Recovered Glass Sand Order 2014, recovered glass sand means recovered glass that has been processed to produce a ‘sand-like’ glass material with a particle size diameter generally less than 5 mm and that contains at least 98% recovered glass.

The Recovered Glass Sand Order 2014 is provided in **Appendix A**.

2.0 Assessment Requirements

The assessment requirements relate to the Goodman appointed construction contractor (CC) and the environmental consultant.

This FIP recognises that the CC may:

- Appoint their own environmental consultant(s) to pre-assess the suitability of ENM and/or VENM materials proposed for importation to Lot 1A, and/or
- Be provided with ENM and/or VENM assessment reports prepared by other consultants for potential source sites.

Where ENM and/or VENM assessment reports have been prepared by other consultants, the CC must supply the reports to Goodman and the environmental consultant for review, prior to materials being imported to Site. These reports shall include but not be limited to the following information:

- Location of source site, proposed quantity and type of material(s).
- Clear statement(s) on what materials are excluded from the assessment and why, as applicable.
- Clear conclusion on classification as either ENM, VENM or other EPA approved material (refer to following sections).
- Collection and analysis of field quality control (QC) samples. Field QC samples should be collected and analysed, including rinsates (where sampling tools have been utilised), inter and intra-laboratory duplicates and trip blanks.
- Assessment of data useability and reliability.

Any materials imported to Lot 1A will require compliance sampling by the environmental consultant, to confirm suitability for use. The minimum sampling rates (refer following sections) exclude field QC samples. Field QC samples, as noted above, will be collected and analysed.

2.1 ENM

To assess that materials meet the ENM classification, the requirements presented in **Appendix A** shall apply. In summary, the following are applicable.

Table 1 Chemicals and Concentrations

Attributes	Maximum Average Concentration (mg/kg)	Absolute Maximum Concentration (mg/kg)
1. Mercury	0.5	1
2. Cadmium	0.5	1
3. Lead	50	100
4. Arsenic	20	40
5. Chromium (total)	75	150
6. Copper	100	200
7. Nickel	30	60
8. Zinc	150	300
9. Electrical conductivity	1.5 dS/m	3 dS/m
10. pH	5 to 9	4.5 to 10
11. Total Polycyclic aromatic hydrocarbons (PAH)	20	40
12. Benzo(a)pyrene	0.5	1
13. Benzene	NA	0.5

Attributes	Maximum Average Concentration (mg/kg)	Absolute Maximum Concentration (mg/kg)
14. Toluene	NA	65
15. Ethylbenzene	NA	25
16. Xylene	NA	15
17. Total petroleum hydrocarbons (TPH) C10-C36	250	500
18. Rubber, plastic, bitumen, paper, cloth, paint and wood	0.05 %	0.1 %
19. Asbestos	Not detected	Not detected

Notes:
Items 1 to 18 sourced from **Table 4** in the **ENM Order** (refer **Appendix A**).
Item 19 added by AECOM.
Tests must be undertaken by NATA accredited methods and as specified in Table 4 in the ENM Order.
An assessment for ASS/PASS is also required, refer to **Table 5** (second line item).

2.1.1 Sampling Requirements

The following sections relate to the assessment of ENM by other consultants at the source site(s). If the ENM is contemplated for use at Lot 1A, these requirements must be met.

Stockpiled excavated natural materials must be sampled as per the requirements in Table 2. The following also applies:

- Composite sampling must be undertaken for analysis of Attributes 1 to 10 and 18 in Table 1 above. Discrete sampling must be undertaken for analysis of Attributes 11 to 17 and 19.
- One composite sample comprises 5 sub-samples of equal size.
- Sampling must be undertaken in a manner that ensures representative materials of the whole stockpile are assessed.
- For stockpiles greater than 4000 tons, the number of samples in Table 2 (below) must be repeated.

Table 2 Sampling Stockpiled Soils

Quantity (tons)	Number samples	Validation
<500	3	Required (test results comply with the conditions of the ENM exemption prior to the material being supplied to Site)
500-1000	4	
1000-2000	5	
2000-3000	7	
3000-4000	10	

In-situ material must be sampled by collecting discrete samples as per Table 3 and Table 4 below. For source sites larger than 50 000 m^2, these should be subdivided into smaller areas and sampled as per Table 3 (below).

Table 3 In-Situ Sampling at Surface

Size of In-Situ area (m^2)	Number of Systematic sampling points	Validation
500	5	Required (test results comply with the conditions of the ENM exemption prior to the material being supplied to Site)
1000	6	
2000	7	
3000	9	

Size of In-Situ area (m^2)	Number of Systematic sampling points	Validation
4000	11	
5000	13	
6000	15	
7000	17	
8000	19	
9000	20	
10 000	21	
15 000	25	
20 000	30	
25 000	35	
30 000	40	
35 000	45	
40 000	50	
45 000	52	
50 000	55	

Table 4 In-Situ Sampling at Depth

Sampling Requirements	Validation
1 soil sample at 1 m below ground level from each surface sampling point followed by 1 soil sample for every metre thereafter. From 1 m below ground level, sample at 1 m intervals until the proposed depth of excavation of the material is reached (refer Appendix A for further detail).	Required if the depth of excavation is equal to or greater than 1 m below ground level.

2.1.2 Compliance Sampling Assessment Requirements

To confirm suitability for use at Lot 1A, compliance sampling will be undertaken, as summarised below:

- A minimum of 3 samples per source site will be required.
- Source site volumes are less than 1000 m^3: 1 sample per 200 m^3.
- Source site volumes between 1000 m^3 and 10 000 m^3: 1 sample per 1000 m^3 including the first 1000 m^3 sampled as above.
- Source site volume greater than 10 000 m^3: 1 sample per 2000 m^3 including the first 10 000 m^3 sampled as above.
- Samples are to be analysed for Items 1 to 8, 11 to 17 and 19 in **Table 1** plus PAH, TRH C6-C40, OCP, OPP and PCB.
- Analysis results must meet the ENM absolute maximum concentrations shown in **Table 1** and the Health Investigation Level (HIL) and Health Screening Level (HSL) for commercial/industrial land use (HIL D and HSL D) for PAH, TRH C6-C40, OCP, OPP and PCB.

2.2 VENM

The definition of VENM is provided in **Section 1.3**. The following must be undertaken:

Table 5 VENM Assessment

Item/ Consideration	VENM	Course of Action
Are manufactured chemicals or process residues present	A material can only be VENM if it has been excavated from an area that is not contaminated with manufactured chemicals or process residues as a result of industrial, commercial, mining or agricultural activities	Undertake land-use history appraisal of proposed source site. This must include at a minimum: • Review of current and historical aerial photographs, to confirm no previous industrial land uses. • Review of historical certificates of title, to assess previous owners and potential land use. • Review NSW EPA website to assess if the source site and/or nearby properties have been notified under section 58 of the Contaminated land Management Act 1997. • Review the NSW EPA website to assess if the source site and/or nearby properties are listed on the NSW Government PFAS [per- and poly-fluoroalkyl substances] Investigation Program. • Review the Department of Defence website for Unexploded Ordnance records. • Review geological and soil maps to evaluate anticipated subsurface conditions. • Inspection of the source site to ascertain current conditions, with photographic records to be provided as a line of evidence.
Are sulfidic ores or soils present	VENM cannot contain sulfidic ores or soils	• Review acid sulfate soil risk maps. • Material cannot be classified as VENM if the acid sulfate soil risk maps identify a high probability of occurrence of ASS or PASS. • If the acid sulfate soil risk maps identify a high probability of ASS or PASS, chemical assessment will be required as per the Acid Sulfate Soils Assessment Guidelines and up-dated ASS laboratory method Guidelines Version 2.1 (June 2004).
Are naturally occurring asbestos soils present	VENM cannot contain naturally occurring asbestos	• Review the naturally occurring asbestos risk maps available on SafeWork NSW website. • If the maps indicate a medium/high probability of naturally occurring asbestos, sampling and analysis would be required to demonstrate that the material does not contain asbestos[2].
Is there any other waste present	VENM cannot contain any waste	• Inspection of source site. • Interviews with personnel at source site. • Supplier to provide VENM certificate (refer **Appendix A**).

[2] It is recommended that these potential source sites are not considered further. If assessment and analysis is contemplated, the requirements of the ASC NEPM 2013 and Guidelines for the Assessment, Remediation and Management of Asbestos-contaminated Sites in Western Australia (May 2009) would apply.

Item/ Consideration	VENM	Course of Action
Is chemical assessment necessary	Yes, if material is potentially contaminated with manufactured chemicals or process residues and/or if ASS/PASS may be present	• Analysis for chemicals or process residues will depend on the potential contaminant sources. If uncertainty exists, all samples should be analysed for the contaminants noted in **Table 1 and** TRH C6-C40, OCP, OPP, PCB and VHC (refer to Glossary for definitions). • Analysis for PFAS if background data (**refer Section 2.7**) indicate it is a contaminant of concern. • Analysis for ASS/PASS.

2.2.1 VENM Sampling Rates

To confirm suitability for use at Site, compliance sampling will be undertaken, as summarised below:

- A minimum of 3 samples per source site will be required.
- Source site volumes are less than 1000 m^3: 1 sample per 100 m^3.
- Source site volumes between 1000 m^3 and 10 000 m^3: 1 sample per 1000 m^3 including the first 1000 m^3 sampled as above.
- Source site volumes exceed 10 000 m^3: 1 sample per 2500 m^3 including the first 10 000 m^3 sampled as above.

2.2.2 VENM Assessment Criteria

The results must be compared to:

- The HIL and HSL presented in the ASC NEPM 2013. Exposure scenario A applicable to residential with garden accessible soil land use should be utilised.
- Analysis results for organics (i.e. TRH, BTEX, PAH, OCP, OPP, PCB) should be below the laboratory limit of reporting (LOR). Any results above LOR should be assessed on a case by case basis before allowing material on Site.
- Analysis results for metals should indicate background concentrations.

If asbestos is identified, materials will not be acceptable for use at the Site.

2.2.3 Residential Source Sites

Material can only be classified VENM if it has been excavated from an area that is not contaminated with manufactured chemicals or process residues as a result of industrial, commercial, mining or agricultural activities. AECOM notes that residential properties may have potential contamination sources (e.g. demolition spoil, application of pesticides beneath buildings, fuel storage, workshops/garages) or be affected by contaminants derived from off-site sources.

Residential source sites will therefore require the level of assessment noted in **Table 5**.

Where residential redevelopment sites have been assessed to be an ENM or VENM source site and the consultant's report identifies that waste materials (i.e. overburden) will be stripped and disposed to landfill separately, the subject site must be inspected by a Goodman representative or appointed representative. The inspection must prove that waste material (or overburden) has been completely removed prior to importation of underlying materials to the subject Site.

2.3 Recovered Aggregates

To assess that materials meet the Recovered Aggregate classification, the requirements presented in **Appendix A** shall apply, plus sampling and analysis, as noted below. In summary, Recovered Aggregates must meet the following.

Table 6 Recovered Aggregates, Chemicals & Concentrations

Column 1	Column 2	Column 3	Column 4
Chemicals/Attributes	Max' Average Concentration for Characterisation(1)	Max' Average Concentration for Routine Testing(1)	Absolute Maximum Concentration(1)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	75	75	150
4. Arsenic	20	Not required	40
5. Chromium (total)	60	60	120
6. Copper	60	60	150
7. Nickel	40	Not required	80
8. Zinc	200	200	350
9. Electrical conductivity	1.5 dS/m	1.5 dS/m	3 dS/m
10. Metal	1 %	1 %	2 %
11. Plaster	0.25 %	0.25 %	0.5 %
12. Rubber, plastic, paper, cloth, paint, wood and other vegetable matter	0.2 %	0.2 %	0.3 %
13. Asbestos(2)	Not detected	Not detected	Not detected

Notes:
(1) = mg/kg 'dry weight'. (2) = added by AECOM. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4.

Assessment Requirements

Assessment of the suitability of Recovered Aggregates for commercial/industrial land use will include:

- CC to source documentation from the commercial supplier (refer **Section 2.8**).
- CC to advise the environmental consultant of the total expected net import quantity (in m^3).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
  - Collection of representative samples of each type of recovered aggregate imported to Lot 1A
  - Samples to be collected and analysed at a rate of 1 per 500 m^3
  - Each sample to be analysed for TRH, BTEXN, PAH, OCP, OPP, PCB, M8 and asbestos
  - Comparison of results to the ASC NEPM HIL D and HSL D. Analysis results must be below these criteria. Asbestos must not be present.

2.4 Basalt Fines

To assess that materials meet the Basalt Fines classification, the requirements presented in **Appendix A** shall apply, plus sampling and analysis, as noted below. In summary, Basalt Fines must meet the following:

Table 7 Basalt Fines, Chemicals & Concentrations

Column 1	Column 2	Column 3	Column 4
Chemicals/Attributes	Max' Average Concentration for Characterisation(1)	Max' Average Concentration for Routine Testing(1)	Absolute Maximum Concentration(1)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1
3. Lead	50	50	100
4. Arsenic	15	15	30
5. Chromium (total)	25	Not required	50
6. Copper	25	Not required	50
7. Nickel	25	Not required	50
8. Zinc	75	75	150
9. Electrical conductivity	1 dS/m	1 dS/m	2 dS/m
10. Metal, glass, asphalt, ceramics and slag	2.5 %	Not required	5 %
11. Plaster, clay lumps and other friable materials	0.25 %	Not required	0.5 %
12. Rubber, plastic, bitumen, paper, cloth, paint, wood and other vegetable matter	0.05 %	Not required	0.1 %
13. Asbestos(2)	Not detected	Not detected	Not detected

Notes:
(1) = mg/kg 'dry weight'. (2) = added by AECOM. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4.

Assessment Requirements

Assessment of the suitability of Basalt Fines for commercial/industrial land use will include:

- CC to source documentation from the commercial supplier (refer **Section 2.8**).
- CC to advise environmental consultant of the total expected net import quantity (in m^3).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
  - Collection of representative samples of the material(s) imported to Lot 1A
  - Samples to be collected at a rate of 1 per 1000 m^3
  - Each sample to be analysed for TRH, BTEXN, PAH, OCP, OPP, PCB, M8 and asbestos
  - Comparison of results to the ASC NEPM HIL D and HSL D. Analysis results must be below these criteria. Asbestos must not be present.

2.5 Glass Sand

To assess that materials meet the Recovered Glass Sand classification, the requirements presented in **Appendix A** shall apply, plus sampling and analysis, as noted below. In summary, Glass Sand must meet the following:

Table 8 Recovered Glass Sand, Contaminants and Concentrations

Column 1	Column 2	Column 3	Column 4
Chemicals/Attributes	Max' Average Concentration for Characterisation(1)	Max' Average Concentration for Routine Testing(1)	Absolute Maximum Concentration(1)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	50	50	100
4. Arsenic	10	Not required	20
5. Chromium (total)	20	Not required	40
6. Copper	40	Not required	120
7. Molybdenum	5	Not required	10
8. Nickel	10	Not required	20
9. Zinc	100	100	300
10. Total Organic Carbon	1 %	Not required	2 %
11. Electrical conductivity	1 dS/m	1 dS/m	2 dS/m
12. Metals	0.25 %	0.25 %	0.5 %
13. Plaster, clay lumps and other friable materials	0.25 %	0.25 %	0.5 %
14. Rubber, plastic, bitumen, paper, cloth, paint, wood and other vegetable matter	0.3 %	0.3 %	0.5 %
15. Asbestos(2)	Not detected	Not detected	Not detected

Notes:
(1) = mg/kg 'dry weight'. (2) = added by AECOM. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4.

Assessment Requirements

Assessment of the suitability of Glass Sand for commercial/industrial land use will include:

- CC to source documentation from the commercial supplier (refer **Section 2.9**).
- CC to advise the environmental consultant of the total expected net import quantity (in m^3).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
  - Collection of representative samples of the material(s) imported to Lot 1A
  - Samples to be collected at a rate of 1 per 500 m^3
  - Each sample to be analysed for TRH, BTEXN, PAH, OCP, OPP, PCB, M8 and asbestos
  - Comparison of results to the ASC NEPM HIL D and HSL D. Analysis results must be below these criteria. Asbestos must not be present.

2.6 Consultants' Assessment Reports

A report will be required for each potential VENM or ENM source site. Each report must be prepared by an appropriately qualified consultant and include:

- All applicable ENM and/or VENM assessment requirements noted in this document.
- Identifiers for the source site (i.e. street address and suburb and Lot and Deposited Plan numbers).
- A Figure showing the location of the source site.
- The anticipated volume of material to be imported to the subject site.
- A description of the material to be imported to the subject site.
- Site inspection observations, including neighbouring properties.
- Photographs showing site conditions.
- Consideration of the likelihood of PFAS to be present (refer **Section 2.7**).
- Analysis for PFAS if it is identified as a contaminant of concern.
- Copies of NATA stamped laboratory analysis certificates, including chain of custody documentation, sample receipt acknowledgement forms, quality assurance/quality control (QA/QC) data.
- Analysis results for field QA/QC samples (e.g. equipment rinsate blanks, field duplicates etc). AECOM recommends that split field duplicate samples are analysed by a secondary laboratory, so that an assessment of the precision of the primary laboratory data can be made. QA/QC evaluation should be undertaken with reference to the ASC NEPM 2013.
- Evaluation of the analysis data reliability and useability.
- A conclusion (i.e. does the material meet the classification of either ENM or VENM).

2.7 PFAS

PFAS means per- and poly-fluoroalkyl substances, which can be associated with aqueous film forming foams (AFFF, used in firefighting), Teflon coatings, fabric protectors, electroplating, a range of industrial processes and landfills.

Soil and/or bedrock materials (i.e. VENM or ENM) proposed to be imported to Lot 1A must be assessed for PFAS if background/history data for the source site indicates that it is a potential source of PFAS, or located near a potential PFAS source site. The indicators would include but not be limited to:

- Listing on the NSW EPA website.
- Previous or current use of the source site as a fire station or fire training ground.
- Department of Defence properties, including adjacent lands.
- Electroplating facilities.
- Industrial facilities or other lands that have had fires attended to by the NSW Fire Brigade.

No soil and/or bedrock materials will be imported to Lot 1A if:

- Background data for the source site indicates a potential for PFAS and no PFAS analyses have been undertaken.
- PFAS concentrations in soil and/or bedrock materials exceed the 'residential and garden accessible soil' land use criteria (i.e. HIL A) provided in the PFAS National Environmental Management Plan Version 2.0 January 2020 (PFAS NEMP 2.0).

The PFAS NEMP 2.0 'residential and garden accessible soil' land use criteria are:

- PFOS + PFHxS: 0.01 mg/kg
- PFOA: 0.1 mg/kg.

2.8 Review of Consultants' Assessment Reports

The environmental consultant should be provided a copy of each Assessment Report of ENM and/or VENM for review purposes. An appropriate report, addressing all items in **Section 2.6**, must be sighted prior to the importation of material to Lot 1A.

In the event that the review indicates insufficient assessment data, no materials shall be imported to Lot 1A until the Consultant has satisfactorily addressed the identified data gaps.

Goodman or Goodman's' appointed representative(s) should retain a copy of each Assessment Report. This includes source sites not deemed to be an acceptable source of ENM or VENM or reports lacking sufficient data, so that an "Exclusion Register" can be maintained and tracked.

Any materials that are considered acceptable for import, based on review of the Consultants' report, will require compliance sampling and analysis to ensure suitability for use (per this FIP).

2.9 POEO (Waste) Regulation 2014 Documentation

For any materials imported to Lot 1A under the applicable Resource Recovery Order (RRO), the following shall apply:

- The commercial supplier of the material must provide a letter stating that the material was generated under the applicable RRO. At least one letter per material type will be required.
- The commercial supplier must provide copies of test results, confirming contaminant concentrations meet the applicable '*Absolute maximum concentration*'.

The environmental consultant will undertake compliance sampling and analysis to ensure suitability of the materials for use at the Site.

2.10 On-Site Inspections

During importation of materials, the Construction Contractor (CC) will undertake inspections of vehicles entering Lot 1A. The following information should be noted and recorded:

- Vehicle registration (license plate) number.
- Location of source site.
- Contact name at source site.
- Time left source site and time of arrival at Lot 1A.
- Contents of truck and are they similar to the expected contents.
- Inspection of materials when deposited from truck.
- GPS truck-tracking data (if applicable).

Where suspicious loads and/or evasive answers and/or incomplete vehicle tracking data are apparent, permission to unload should not be granted.

Where contaminants or suspected contaminants are observed in imported material during tipping, the truck will be reloaded and be sent back to the source site. Cartage from the source site shall cease and will only recommence when the CC is satisfied that the issue has been addressed.

3.0 Materials Tracking Register

A Materials Tracking Register (MTR) must be implemented by the CC, to document that only 'approved' material is imported to Lot 1A. At a minimum, the MTR should include the following:

- Location of source site, expected volume of material and description and reference to a Consultant's Assessment Report.
- Log of vehicles leaving source site, to be provided by the source site each morning, including license plate details. The source site should also provide an indication of the number of truck loads expected each day.
- All trucks arriving at Lot 1A must possess a loading docket from the source site. If a truck does not possess a loading docket, it will not be allowed to unload. The loading docket must identify the source site and time the truck left the source site.
- A Spotter (or Spotters) will be at Lot 1A, to meet all trucks. The Spotter(s) will:
    - Log all vehicles entering Lot 1A, including license plate details and 'time in'.
    - Check the loading docket, including time left source site and time-in at Lot 1A. Any discrepancies in times will be discussed. Trucks with significant time discrepancies may be refused entry.
    - Description of materials imported (e.g. clay, shale, sandstone etc.).
    - Location materials deposited at Lot 1A.
    - When tipping, the Spotter will check material for unexpected contaminants (odours, staining, waste materials etc.).

When the Spotter(s) is/are satisfied, they will sign the loading docket and keep a copy for records.

An example pro-forma is included in **Appendix B**.

Appendix A

POEO (Waste) Regulation, Orders & Exemptions

Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The excavated natural material order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of excavated natural material to which 'the excavated natural material exemption 2014' applies. The requirements in this order apply in relation to the supply of excavated natural material for application to land as engineering fill or for use in earthworks.

1. Waste to which this order applies

1.1. This order applies to excavated natural material. In this order, excavated natural material means naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:

a) been excavated from the ground, and
b) contains at least 98% (by weight) natural material, and
c) does not meet the definition of Virgin Excavated Natural Material in the Act.

Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores.

2. Persons to whom this order applies

2.1. The requirements in this order apply, as relevant, to any person who supplies excavated natural material, that has been generated, processed or recovered by the person.

2.2. This order does not apply to the supply of excavated natural material to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

3. Duration

3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Generator requirements

The EPA imposes the following requirements on any generator who supplies excavated natural material.

Sampling requirements

4.1. On or before supplying excavated natural material, the generator must:

4.1.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the excavated natural material.

4.1.2. Undertake sampling and testing of the excavated natural material as required under clauses 4.2, 4.3, and 4.4 below. The sampling must be carried out in accordance with the written sampling plan.

4.2. The generator must undertake sampling and analysis of the material for ASS and PASS, in accordance with the NSW Acid Sulfate Soil Manual, Acid Sulfate Soils Management Advisory Council, 1998 and the updated Laboratory Methods Guidelines version 2.1 – June 2004 where:

4.2.1. the pH measured in the material is below 5, and/or

4.2.2. the review of the applicable Acid Sulfate Soil Risk Maps (published by the former Department of Land and Water Conservation and available at http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm) indicates the potential presence of ASS.

4.3. For stockpiled material, the generator must:

4.3.1. undertake sampling in accordance with Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent);

4.3.2. undertake characterisation sampling by collecting the number of samples listed in Column 2 of Table 1 with respect to the quantity of the waste listed in Column 1 of Table 1 and testing each sample for the chemicals and other attributes listed in Column 1 of Table 4. For the purposes of characterisation sampling the generator must collect:

4.3.2.1. composite samples for attributes 1 to 10 and 18 in Column 1 of Table 4.

4.3.2.2. discrete samples for attributes 11 to 17 in Column 1 of Table 4.

4.3.2.3. The generator must carry out sampling in a way that ensures that the samples taken are representative of the material from the entire stockpile. All parts of the stockpile must be equally accessible for sampling.

4.3.2.4. for stockpiles greater than 4,000 tonnes the number of samples described in Table 1 must be repeated.

4.3.3. store the excavated natural material appropriately until the characterisation test results are validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 4 and the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 1

Sampling of Stockpiled Material		
Column 1	**Column 2**	**Column 3**
Quantity (tonnes)	**Number of samples**	**Validation**
<500	3	Required
500 – 1,000	4	
1,000 – 2,000	5	
2,000 – 3,000	7	
3,000 – 4,000	10	

4.4. For in situ material, the generator must:

4.4.1. undertake sampling by collecting discrete samples. Compositing of samples is not permitted for in-situ materials.

4.4.2. undertake characterisation sampling for the range of chemicals and other attributes listed in Column 1 of Table 4 according to the requirements listed in Columns 1, 2 and 3 of Table 2. When the ground surface is not comprised of soil (e.g. concrete slab), samples must be taken at the depth at which the soil commences.

4.4.3. undertake sampling at depth according to Column 1 of Table 3.

4.4.4. collect additional soil samples (and analyse them for the range of chemicals and other attributes listed in Column 1 of Table 4), at any depth exhibiting discolouration, staining, odour or other indicators of contamination inconsistent with soil samples collected at the depth intervals indicated in Table 3.

4.4.5. segregate and exclude hotspots identified in accordance with Table 2, from material excavated for reuse.

4.4.6. subdivide sites larger than 50,000 m² into smaller areas and sample each area as per Table 2.

4.4.7. store the excavated natural material appropriately until the characterisation test results are validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 4 and the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 2

***In Situ* Sampling at surface**				
Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**
Size of *in situ* area (m^2)	**Number of systematic sampling points recommended**	**Distance between two sampling points** (m)	**Diameter of the hot spot that can be detected with 95% confidence** (m)	**Validation**
500	5	10.0	11.8	Required
1000	6	12.9	15.2	
2000	7	16.9	19.9	
3000	9	18.2	21.5	
4000	11	19.1	22.5	
5000	13	19.6	23.1	
6000	15	20.0	23.6	
7000	17	20.3	23.9	
8000	19	20.5	24.2	
9000	20	21.2	25.0	
10,000	21	21.8	25.7	
15,000	25	25.0	28.9	
20,000	30	25.8	30.5	
25,000	35	26.7	31.5	
30,000	40	27.5	32.4	
35,000	45	27.9	32.9	
40,000	50	28.3	33.4	
45,000	52	29.3	34.6	
50,000	55	30.2	35.6	

Table 2 has been taken from NSW EPA 1995, *Contaminated Sites Sampling Design Guidelines*, NSW Environment Protection Authority.

Table 3

***In Situ* Sampling at Depth**	
Column 1	**Column 2**
Sampling Requirements *	**Validation**
1 soil sample at 1.0 m bgl from each surface sampling point followed by 1 soil sample for every metre thereafter. From 1.0 m bgl, sample at the next metre interval until the proposed depth of excavation of the material is reached. If the proposed depth of excavation is between 0.5 to 0.9 m after the last metre interval, sample at the base of the proposed depth of excavation.	Required if the depth of excavation is equal to or greater than 1.0 m bgl

* Refer to Notes for examples

Chemical and other material requirements

4.5. The generator must not supply excavated natural material waste to any person if, in relation to any of the chemical and other attributes of the excavated natural material:

4.5.1. The chemical concentration or other attribute of any sample collected and tested as part of the characterisation of the excavated natural material exceeds the absolute maximum concentration or other value listed in Column 3 of Table 4:

4.5.2. The average concentration or other value of that attribute from the characterisation of the excavated natural material (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 4.

4.6. The absolute maximum concentration or other value of that attribute in any excavated natural material supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 4

Column 1	Column 2	Column 3
Chemicals and other attributes	**Maximum average concentration for characterisation** (mg/kg 'dry weight' unless otherwise specified)	**Absolute maximum concentration** (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	1
2. Cadmium	0.5	1
3. Lead	50	100
4. Arsenic	20	40
5. Chromium (total)	75	150
6. Copper	100	200
7. Nickel	30	60
8. Zinc	150	300
9. Electrical Conductivity	1.5 dS/m	3 dS/m
10. pH *	5 to 9	4.5 to 10
11. Total Polycyclic Aromatic Hydrocarbons (PAHs)	20	40
12. Benzo(a)pyrene	0.5	1
13. Benzene	NA	0.5
14. Toluene	NA	65
15. Ethyl-benzene	NA	25
16. Xylene	NA	15
17. Total Petroleum Hydrocarbons C_{10}-C_{36}	250	500
18. Rubber, plastic, bitumen, paper, cloth, paint and wood	0.05%	0.10%

* The ranges given for pH are for the minimum and maximum acceptable pH values in the excavated natural material.

Test methods

4.7. The generator must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.

4.8. The generator must ensure that the chemicals and other attributes (listed in Column 1 of Table 4) in the excavated natural material it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.

4.8.1. Test methods for measuring the mercury concentration.

4.8.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated absolute maximum concentration in Column 3 of Table 2 (i.e. < 0.20 mg/kg dry weight).

4.8.1.2. Report as mg/kg dry weight.

4.8.2. Test methods for measuring chemicals 2 to 8.

4.8.2.1. Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils (or an equivalent analytical method).

4.8.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of the stated absolute maximum concentration in Column 3 of Table 2, (e.g. 10 mg/kg dry weight for lead).

4.8.2.3. Report as mg/kg dry weight.

4.8.3. Test methods for measuring electrical conductivity and pH.

4.8.3.1. Sample preparation by mixing 1 part excavated natural material with 5 parts distilled water.

4.8.3.2. Analysis using Method 103 (pH) and 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.8.3.3. Report electrical conductivity in deciSiemens per metre (dS/m).

4.8.4. Test method for measuring Polynuclear Aromatic Hydrocarbons (PAHs) and benzo(a)pyrene.

4.8.4.1. Analysis using USEPA SW-846 Method 8100 Polynuclear Aromatic Hydrocarbons (or an equivalent analytical method).

4.8.4.2. Calculate the sum of all 16 PAHs for total PAHs.

4.8.4.3. Report total PAHs as mg/kg dry weight.

4.8.4.4. Report benzo(a)pyrene as mg/kg.

4.8.5. Test method for measuring benzene, toluene, ethylbenzene and xylenes (BTEX).

4.8.5.1. Method 501 (Volatile Alkanes and Monocyclic Aromatic Hydrocarbons) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.8.5.2. Report BTEX as mg/kg.

4.8.6. Test method for measuring Total Petroleum Hydrocarbons (TPH).

4.8.6.1. Method 506 (Petroleum Hydrocarbons) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.8.6.2. Report as mg/kg dry weight.

4.8.7. Test method for measuring rubber, plastic, bitumen, paper, cloth, paint and wood.

4.8.7.1. NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Concrete (or an equivalent method).

4.8.7.2. Report as percent.

Notification

4.9. On or before each transaction, the generator must provide the following to each person to whom the generator supplies the excavated natural material:

- a written statement of compliance certifying that all the requirements set out in this order have been met;
- a copy of the excavated natural material exemption, or a link to the EPA website where the excavated natural material exemption can be found; and
- a copy of the excavated natural material order, or a link to the EPA website where the excavated natural material order can be found.

Record keeping and reporting

4.10. The generator must keep a written record of the following for a period of six years:

- the sampling plan required to be prepared under clause 4.1.1;
- all characterisation sampling results in relation to the excavated natural material supplied;
- the volume of detected hotspot material and the location;
- the quantity of the excavated natural material supplied; and
- the name and address of each person to whom the generator supplied the excavated natural material.

4.11. The generator must provide, on request, the characterisation and sampling results for that excavated natural material supplied to the consumer of the excavated natural material.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

Bgl means below ground level, referring to soil at depth beneath the ground surface.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply excavated natural material to land.

discrete sample means a sample collected and analysed individually that will not be composited.

generator means a person who generates excavated natural material for supply to a consumer.

hotspot means a cylindrical volume which extends through the soil profile from the ground surface to the proposed depth of excavation, where the level of any contaminant listed in Column 1 of Table 2 is greater than the absolute maximum concentration in Column 3 of Table 2.

***in situ* material** means material that exists on or below the ground level. It does not include stockpiled material.

***in situ* sampling** means sampling undertaken on *in situ* material.

N/A means not applicable.

stockpiled material means material that has been excavated from the ground and temporarily stored on the ground prior to use.

systematic sampling means sampling at points that are selected at even intervals and are statistically unbiased.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of excavated natural material that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of excavated natural material, the first supply of excavated natural material as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on ' www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies excavated natural material should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of excavated natural material remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet. Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Examples

In situ sampling at depth

Example 1.

If the proposed depth of ENM excavation is between 1 m bgl and 1.4 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- No further depth sampling after 1 m bgl, unless required under section 4.4.4.

Example 2.

If the proposed depth of ENM excavation is at 1.75 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- 1 sample at 1.75 m bgl.
- No further depth sampling after 1.75 m bgl, unless required under section 4.4.4.

Example 3.

If the proposed depth of ENM excavation is at 2.25 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- 1 sample at 2 m bgl.
- No further depth sampling after 2 m bgl, unless required under section 4.4.4.

Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014

The excavated natural material exemption 2014

Introduction

This exemption:

- is issued by the Environment Protection Authority (EPA) under clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation); and
- exempts a consumer of excavated natural material from certain requirements under the *Protection of the Environment Operations Act 1997* (POEO Act) and the Waste Regulation in relation to the application of that waste to land, provided the consumer complies with the conditions of this exemption.

This exemption should be read in conjunction with 'the excavated natural material order 2014'.

1. Waste to which this exemption applies

1.1. This exemption applies to excavated natural material that is, or is intended to be, applied to land as engineering fill or for use in earthworks.

1.2. Excavated natural material is naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:

a) been excavated from the ground, and
b) contains at least 98% (by weight) natural material, and
c) does not meet the definition of Virgin Excavated Natural Material in the Act.

Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores.

2. Persons to whom this exemption applies

2.1. This exemption applies to any person who applies or intends to apply excavated natural material to land as set out in 1.1.

3. Duration

3.1. This exemption commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Premises to which this exemption applies

4.1. This exemption applies to the premises at which the consumer's actual or intended application of excavated natural material is carried out.

5. Revocation

5.1. 'The excavated natural material exemption 2012' which commenced 19 October 2012 is revoked from 24 November 2014.

6. Exemption

6.1. Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of excavated natural material to land as engineering fill or for use in earthworks at the premises:

- section 48 of the POEO Act in respect of the scheduled activities described in clauses 39 of Schedule 1 of the POEO Act;
- Part 4 of the Waste Regulation;
- section 88 of the POEO Act; and
- clause 109 and 110 of the Waste Regulation.

6.2. The exemption does not apply in circumstances where excavated natural material is received at the premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land) or clause 40 'waste disposal' (thermal treatment) of Schedule 1 of the POEO Act.

7. Conditions of exemption

The exemption is subject to the following conditions:

7.1. At the time the excavated natural material is received at the premises, the material must meet all chemical and other material requirements for excavated natural material which are required on or before the supply of excavated natural material under 'the excavated natural material order 2014'.

7.2. The excavated natural material can only be applied to land as engineering fill or for use in earthworks.

7.3. The consumer must keep a written record of the following for a period of six years:

- the quantity of any excavated natural material received; and
- the name and address of the supplier of the excavated natural material received.

7.4. The consumer must make any records required to be kept under this exemption available to authorised officers of the EPA on request.

7.5. The consumer must ensure that any application of excavated natural material to land must occur within a reasonable period of time after its receipt.

8. Definitions

In this exemption:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

consumer means a person who applies, or intends to apply excavated natural material to land.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this exemption at any time. It is the responsibility of the consumer to ensure they comply with all relevant requirements of the most current exemption The current version of this exemption will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this exemption, the EPA is not in any way endorsing the use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this exemption are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this exemption nor the accompanying order guarantee that the environment, human health or agriculture will not be harmed.

The consumer should assess whether or not the excavated natural material is fit for the purpose the material is proposed to be used for, and whether this use will cause harm. The consumer may need to seek expert engineering or technical advice.

Regardless of any exemption provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The receipt of excavated natural material remains subject to other relevant environmental regulations in the POEO Act and the Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of having an exemption, is guilty of an offence and subject to prosecution.

This exemption does not alter the requirements of any other relevant legislation that must be met in utilising this material, including for example, the need to prepare a Safety Data Sheet (SDS).

Failure to comply with the conditions of this exemption constitutes an offence under clause 91 of the Waste Regulation.

Certification:
Virgin excavated natural material

1. I *[full name]*

   of *[organisation and address]*

   certify that the waste as set out in section 2 of this notice is Virgin Excavated Natural Material (VENM) as defined in Schedule 1 of the *Protection of the Environment Operations Act 1997*.

   This certification is made on behalf of the waste generator *[fill out if applicable]*

   being *[full name]*

   of *[organisation and address]*

2. The waste was generated at:

   Street address:

   Title reference (Lot/DP, etc.):

   The amount of waste (by volume or weight) is:

3. I have made the determination that the waste is VENM because:

   - ☐ I have assessed the historical and current land use of the site at which the waste was generated.
   - ☐ The waste is not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities.
   - ☐ The waste does not contain any sulfidic ores or soils.
   - ☐ The waste does not contain any other waste.
   - ☐ The waste does not contain asbestos in any form.

Note: that all sections of this form must be completed including all boxes checked in Section 3 above and signed below for any material to be certified as VENM.

Signature(s) . . . . . .

Name(s) (printed)

Date

Warning: There are significant penalties under s.144AA of the *Protection of the Environment Operations Act 1997* for a person who supplies (whether knowingly or not) information that is false or misleading in a material respect about waste.

This certificate is intended to assist waste generators, contractors and/or receivers of VENM to have confidence that a range of relevant factors have been considered in the classification of a waste material as VENM.

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Ph: 131 555. TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@environment.nsw.gov.au; Web: www.epa.nsw.gov.au
Report pollution and environmental incidents: Environment Line: 131 555 (NSW only)
EPA 2013/0693; September 2013

Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The recovered aggregate order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of recovered aggregate to which 'the recovered aggregate exemption 2014' applies. The requirements in this order apply in relation to the supply of recovered aggregate for application to land as a road making material, or in building, landscaping or construction works.

1. Waste to which this order applies

1.1. This order applies to recovered aggregate. In this order, recovered aggregate means material comprising of concrete, brick, ceramics, natural rock and asphalt processed into an engineered material. This does not include refractory bricks or associated refractory materials, or asphalt that contains coal tar.

2. Persons to whom this order applies

2.1. The requirements in this order apply, as relevant, to any person who supplies recovered aggregate that has been generated, processed or recovered by the person.

2.2. This order does not apply to the supply of recovered aggregate to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

3. Duration

3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Processor requirements

The EPA imposes the following requirements on any processor who supplies recovered aggregate.

Sampling requirements

4.1. On or before supplying recovered aggregate, the processor must:

4.1.1. Prepare a written sampling plan which includes a description of sample

preparation and storage procedures for the recovered aggregate.

4.1.2. Undertake sampling and testing of the recovered aggregate as required under clauses 4.2 and 4.3 below. The sampling must be carried out in accordance with the written sampling plan and Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent).

4.2. Where the recovered aggregate is generated as part of a continuous process, the processor must undertake the following sampling:

4.2.1. Characterisation of the recovered aggregate by collecting 20 composite samples of the waste and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of characterisation. Characterisation must be conducted for recovered aggregate generated and processed every year following the commencement of the continuous process; and

4.2.2. Routine sampling of the recovered aggregate by collecting either 5 composite samples from every 4,000 tonnes (or part thereof) processed or 5 composite samples every 3 months (whichever is the lesser); and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1 other than those listed as 'not required' in Column 3. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of routine sampling. However, if characterisation sampling occurs at the same frequency as routine sampling, any sample collected and tested for the purposes of characterisation under clause 4.2.1 may be treated as a sample collected and tested for the purposes of routine sampling under clause 4.2.2.

4.3. Where the recovered aggregate is not generated as part of a continuous process, the processor must undertake one-off sampling of a batch, truckload or stockpile of the recovered aggregate, by collecting 10 composite samples from every 4,000 tonnes (or part thereof) processed and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. The test results for each composite sample must be validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 1 and the absolute maximum concentration or other value listed in Column 4 of Table 1 prior to the supply of the recovered aggregate.

Chemical and other material requirements

4.4. The processor must not supply recovered aggregate to any person if, in relation to any of the chemical and other attributes of the recovered aggregate:

4.4.1. The concentration or other value of that attribute of any sample collected and tested as part of the characterisation, or the routine or one-off sampling, of the recovered aggregate exceeds the absolute maximum concentration or other value listed in Column 4 of Table 1, or

4.4.2. The average concentration or other value of that attribute from the characterisation or one-off sampling of the recovered aggregate (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 1, or

4.4.3. The average concentration or other value of that attribute from the routine sampling of the recovered aggregate (based on the arithmetic mean) exceeds the maximum average concentration or other value

listed in Column 3 of Table 1.

4.5. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4 of Table 1.

Table 1

Column 1	Column 2	Column 3	Column 4
Chemicals and other attributes	**Maximum average concentration for characterisation** (mg/kg 'dry weight' unless otherwise specified)	**Maximum average concentration for routine testing** (mg/kg 'dry weight' unless otherwise specified)	**Absolute maximum concentration** (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	75	75	150
4. Arsenic	20	Not required	40
5. Chromium (total)	60	60	120
6. Copper	60	60	150
7. Nickel	40	Not required	80
8. Zinc	200	200	350
9. Electrical Conductivity	1.5 dS/m	1.5dS/m	3 dS/m
10. Metal	1%	1%	2%
11. Plaster	0.25%	0.25%	0.5%
12. Rubber, plastic, paper, cloth, paint, wood and other vegetable matter	0.2%	0.2%	0.3%

Test methods

4.6. The processor must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.

4.7. The processor must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the recovered aggregate it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.

4.7.1. Test method for measuring the mercury concentration:

4.7.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated maximum average concentration in Table 1, Column 2 (i.e. < 0.1 mg/kg dry weight).

4.7.1.2. Report as mg/kg dry weight.

4.7.2. Test methods for measuring chemicals 2 - 8:

4.7.2.1. Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils.

4.7.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of stated maximum concentration in Table 1, Column 2 (i.e. 1 mg/kg dry weight for lead).

4.7.2.3. Report as mg/kg dry weight.

4.7.3. Test methods for measuring the electrical conductivity:

4.7.3.1. Sample preparation by mixing 1 part recovered aggregate with 5 parts distilled water.

4.7.3.2. Analysis using Method 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.7.3.3. Report deciSiemens per metre (dS/m).

4.7.4. Test method for measuring the attributes 10 - 12:

4.7.4.1. NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Aggregate (or an equivalent method), for the materials listed in 10 - 12 of Column 1, Table 1.

4.7.4.2. Report as %

Notification

4.8. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the recovered aggregate:

- a written statement of compliance certifying that all the requirements set out in this order have been met;
- a copy of the recovered aggregate exemption, or a link to the EPA website where the recovered aggregate exemption can be found; and
- a copy of the recovered aggregate order, or a link to the EPA website where the recovered aggregate order can be found.

Record keeping and reporting

4.9. The processor must keep a written record of the following for a period of six years:

- the sampling plan required to be prepared under clause 4.1.1;
- all characterisation, routine and/or one-off sampling results in relation to the recovered aggregate supplied;
- the quantity of the recovered aggregate supplied; and
- the name and address of each person to whom the processor supplied the recovered aggregate.

4.10. The processor must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for recovered aggregate supplied to any consumer of the recovered aggregate.

4.11. The processor must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.7.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply, recovered aggregate to land.

continuous process means a process that produces recovered aggregate on an ongoing basis.

processor means a person who processes, mixes, blends, or otherwise incorporates recovered aggregate into a material in its final form for supply to a consumer.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of recovered aggregate that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of recovered aggregate the first supply of recovered aggregate as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies recovered aggregate should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of recovered aggregate remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet. Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The basalt fines order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of basalt fines to which 'the basalt fines exemption 2014' applies. The requirements in this order apply in relation to the supply of basalt fines for application to land for building or maintaining railway infrastructure, for road making activities, or as a soil amendment.

1. Waste to which this order applies

1.1. This order applies to basalt fines. In this order, basalt fines means a material comprising of naturally excavated basalt with a maximum particle size of 9.5 mm, that is derived from the processing of basalt or the recycling of railway ballast.

2. Persons to whom this order applies

2.1. The requirements in this order apply, as relevant, to any person who supplies basalt fines that has been generated, processed or recovered by the person.

2.2. This order does not apply to the supply of basalt fines to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

3. Duration

3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Processor requirements

The EPA imposes the following requirements on any processor who supplies basalt fines.

Sampling requirements

4.1. On or before supplying basalt fines the processor must:

4.1.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the basalt fines.

4.1.2 Undertake sampling and testing of the basalt fines as required under

clauses 4.2 and 4.3 below. The sampling must be carried out in accordance with the written sampling plan and Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent).

4.2. Where the basalt fines are generated as part of a continuous process, the processor must undertake the following sampling:

4.2.1. Characterisation of the basalt fines by collecting 20 composite samples of the waste and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of characterisation. Characterisation must be conducted for basalt fines generated and processed during each 2-year period following the commencement of the continuous process; and

4.2.2. Routine sampling of basalt fines by collecting either 5 composite samples from every 10,000 tonnes (or part thereof) processed or 5 composite samples every 3 months (whichever is the lesser); and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1 other than those listed as 'not required' in Column 3. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of routine sampling. However, if characterisation sampling occurs at the same frequency as routine sampling, any sample collected and tested for the purposes of characterisation under clause 4.2.1 may be treated as a sample collected and tested for the purposes of routine sampling under clause 4.2.2.

4.3. Where the basalt fines are not generated as part of a continuous process, the processor must undertake one-off sampling of a batch, truckload or stockpile of the basalt fines, by collecting 10 composite samples from every 4,000 tonnes (or part thereof) processed and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. The test results for each composite sample must be validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 1 and the absolute maximum concentration or other value listed in Column 4 of Table 1 prior to the supply of the basalt fines.

Chemical and other material requirements

4.4. The processor must not supply basalt fines to any person if, in relation to any of the chemical and other attributes of the basalt fines:

4.4.1. The concentration or other value of that attribute of any sample collected and tested as part of the characterisation or the routine or one-off sampling of the basalt fines exceeds the absolute maximum concentration or other value listed in Column 4 of Table 1, or

4.4.2. The average concentration or other value of that attribute from the characterisation or one-off sampling of the basalt fines (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 1, or

4.4.3. The average concentration or other value of that attribute from the routine sampling of the basalt fines (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 3 of Table 1.

4.5. The absolute maximum concentration or other value of that attribute in any basalt fines supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4 of Table 1.

Table 1

Column 1	Column 2	Column 3	Column 4
Chemicals and other attributes	**Maximum average concentration for characterisation** (mg/kg 'dry weight' unless otherwise specified)	**Maximum average concentration for routine testing** (mg/kg 'dry weight' unless otherwise specified)	**Absolute maximum concentration** (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1
3. Lead	50	50	100
4. Arsenic	15	15	30
5. Chromium (total)	25	Not required	50
6. Copper	25	Not required	50
7. Nickel	25	Not required	50
8. Zinc	75	75	150
9. Electrical Conductivity	1 dS/m	1 dS/m	2 dS/m
10. Metal, glass, asphalt, ceramics and slag	2.5%	Not required	5%
11. Plaster, clay lumps and other friable materials	0.25%	Not required	0.5%
12. Rubber, plastic, bitumen, paper, cloth, paint, wood and other vegetable matter	0.05%	Not required	0.1%

Test methods

4.6. The processor must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.

4.7. The processor must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the basalt fines it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.

4.6.1 Test methods for measuring the mercury concentration:

4.6.1.1 Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated absolute maximum average concentration in Table 1, Column 4 (i.e. <0.2mg/kg dry weight of mercury).

4.6.1.2 Report as mg/kg dry weight.

4.6.2 Test methods for measuring chemicals 2 - 8:

4.6.2.1 Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils.

4.6.2.2 Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of the stated absolute maximum concentration in Table 1, Column 4 (i.e. <10 mg/kg dry weight for lead).

4.6.2.3 Report as mg/kg dry weight.

4.6.3 Test methods for measuring the electrical conductivity:

4.6.3.1 Sample preparation by mixing 1 part basalt fines with 5 parts distilled water.

4.6.3.2 Analysis using Method 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.6.3.3 Report in deciSiemens per metre (dS/m).

4.6.4 Test method for measuring the attributes 10 - 12:

4.6.4.1 NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Concrete (or an equivalent method) and modified to use a 2.36mm sieve.

4.6.4.2 Report as %.

Notification

4.8. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the basalt fines:

- a written statement of compliance certifying that all the requirements set out in this order have been met;
- a copy of the basalt fines exemption, or a link to the EPA website where the basalt fines exemption can be found; and
- a copy of the basalt fines order, or a link to the EPA website where the basalt fines order can be found.

Record keeping and reporting

4.9. The processor must keep a written record of the following for a period of six years:

- the sampling plan required to be prepared under clause 4.1.1;
- all characterisation, routine and/or one-off sampling results in relation to the basalt fines supplied;
- the quantity of the basalt fines supplied; and
- the name and address of each person to whom the processor supplied the basalt fines.

4.10. The processor must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for basalt fines supplied to any consumer of the basalt fines.

4.11. The processor must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.7.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply, basalt fines to land.

continuous process means a process that produces basalt fines on an ongoing basis.

processor means a person who processes, mixes, blends, or otherwise incorporates basalt fines into a material in its final form for supply to a consumer.

transaction means:

- in the case of a one-off supply, the supply of basalt fines, the supply of a batch, truckload or stockpile of basalt fine that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of basalt fines, the first supply of basalt fines as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor and to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies basalt fines should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of basalt fines remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet. Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The recovered glass sand order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of recovered glass sand to which 'the recovered glass sand exemption 2014' applies. The requirements in this order apply in relation to the supply of recovered glass sand for application to land for the purpose of pipe bedding, drainage or for road making activities.

1. Waste to which this order applies

1.1. This order applies to recovered glass sand. In this order, recovered glass sand means recovered glass that has been processed to produce a 'sand-like' glass material with a particle size diameter generally less than 5 mm, and that contains at least 98% recovered glass.

2. Persons to whom this order applies

2.1. The requirements in this order apply, as relevant, to any person who supplies recovered glass sand that has been generated, processed or recovered by the person.

2.2. This order does not apply to the supply of recovered glass sand to a consumer for land application at the premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land) or clause 40 'waste disposal' (thermal treatment) of Schedule 1 of the POEO Act.

3. Duration

3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Processor requirements

The EPA imposes the following requirements on any processor who supplies recovered glass sand.

Sampling requirements

4.1. On or before supplying recovered glass sand the processor must:

4.1.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the recovered glass sand.

4.1.2. Undertake sampling and testing of the recovered glass sand as required under clauses 4.2 and 4.3 below. The sampling must be carried out in accordance with Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent).

4.2. Where the recovered glass sand is generated as part of a continuous process, the processor must undertake the following sampling:

4.2.1. Characterisation sampling of recovered glass sand by collecting 20 composite samples of the waste and testing each sample for the chemical and other attributes listed in Column 1 of Table 1. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of characterisation. Where there is a change in inputs that is likely to affect the properties of the recovered glass sand, characterisation must be repeated. Characterisation samples can be used for routine testing and subsequent calculations. Characterisation must be conducted for recovered glass sand generated and processed during each 2-year period following the commencement of the continuous process; and

4.2.2. Routine sampling of the recovered glass sand by collecting either 5 composite samples from every 4,000 tonnes (or part thereof) processed or 5 composite samples every 3 months (whichever is the lesser); and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1 other than those listed as 'not required' in Column 3. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of routine sampling. However, if characterisation sampling occurs at the same frequency as routine sampling, any sample collected and tested for the purposes of characterisation under clause 4.2.1 may be treated as a sample collected and tested for the purposes of routine sampling under clause 4.2.2.

4.3. Where the recovered glass sand is not generated as part of a continuous process, the processor must undertake one-off sampling of a batch, truckload or stockpile of the recovered glass sand, by collecting 10 composite samples from every 4,000 tonnes (or part thereof) processed and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. The test results for each composite sample must be validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 1 and the absolute maximum concentration or other value listed in Column 4 of Table 1 prior to the supply of the recovered glass sand.

Chemical and other material requirements

4.4. The processor must not supply recovered glass sand to any person if, in relation to any of the chemical and other attributes of the recovered glass sand:

4.4.1. The concentration or other value of that attribute of any sample collected and tested as part of the characterisation, or the routine or one-off sampling, of the recovered glass sand exceeds the absolute maximum concentration or other value listed in Column 4 of Table 1, or

4.4.2. The average concentration or other value of that attribute from the characterisation or one-off sampling of the recovered glass sand (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 1, or

4.4.3. The average concentration or other value of that attribute from the routine sampling of the recovered glass sand (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 3 of Table 1.

4.5. The absolute maximum concentration or other value of that attribute in any recovered glass sand supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4 of Table 1.

Table 1

Column 1	**Column 2**	**Column 3**	**Column 4**
Chemicals and other attributes	**Maximum average concentration for characterisation** (mg/kg 'dry weight' unless otherwise specified)	**Maximum average concentration for routine testing** (mg/kg 'dry weight' unless otherwise specified)	**Absolute maximum concentration** (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	50	50	100
4. Arsenic	10	Not required	20
5. Chromium (total)	20	Not required	40
6. Copper	40	Not required	120
7. Molybdenum	5	Not required	10
8. Nickel	10	Not required	20
9. Zinc	100	100	300
10. Total Organic Carbon	1.0%	Not required	2.0%
11. Electrical Conductivity	1 dS/m	1 dS/m	2 dS/m
12. Metals	0.25%	0.25%	0.50%
13. Plaster, clay lumps and other friable materials	0.25%	0.25%	0.50%
14. Rubber, plastic, bitumen, paper, cloth, paint, wood and other vegetable matter	0.3%	0.3%	0.5 %

Test methods

4.6. The processor must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.

4.7. The processor must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the recovered glass sand it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.

4.7.1. Test methods for measuring the mercury concentration:

4.7.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated absolute maximum concentration in Table 1, Column 4 (i.e. 0.2 mg/kg dry weight).

4.7.1.2. Report as mg/kg dry weight.

4.7.2. Test methods for measuring chemicals 2 - 9:

4.7.2.1. Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils.

4.7.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of the stated absolute maximum concentration in Table 1, Column 4, (i.e. 0.15 mg/kg dry weight for cadmium).

4.7.2.3. Report as mg/kg dry weight.

4.7.3. Test methods for measuring the total organic carbon content:

4.7.3.1. Method 105 (Organic Carbon) and using a 2 gram sample in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.7.3.2. Reporting as % total organic carbon.

4.7.4. Test methods for measuring the electrical conductivity:

4.7.4.1. Sample preparation by mixing 1 part recovered aggregate ‘as received’ with 5 parts distilled water.

4.7.4.2. Analysis using Method 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.7.4.3. Report in deciSiemens per metre (dS/m).

4.7.5. Test method for measuring the attributes 12 - 14:

4.7.5.1. NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Aggregate (or an equivalent method), for the materials listed in 12 - 14 of Column 1, Table 1.

4.7.5.2. Report as %.

Notification

4.8. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the recovered glass sand:

- a written statement of compliance certifying that all the requirements set out in this order have been met;
- a copy of the recovered glass sand exemption, or a link to the EPA website where the recovered glass sand exemption can be found; and
- a copy of the recovered glass sand order, or a link to the EPA website where the recovered glass sand order can be found.

Record keeping and reporting

4.9. The processor must keep a written record of the following for a period of six years:

- the sampling plan required to be prepared under clause 4.1.1;
- all characterisation, routine and/or one-off sampling results in relation to the recovered glass sand supplied;
- the quantity of the recovered glass sand supplied; and
- the name and address of each person to whom the processor supplied the recovered glass sand.

4.10. The processor must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for recovered glass sand supplied to any consumer of the recovered glass sand.

4.11. The processor must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.7.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply, recovered glass sand to land.

continuous process means a process that produces recovered glass sand on an ongoing basis.

processor means a person who processes, mixes, blends, or otherwise incorporates recovered glass sand into a material in its final form for supply to a consumer.

recovered glass is glass sourced from the collection of domestic or commercial waste. This includes glass collected from domestic commingled recycling collections. This does not include glass recovered from the sorting or processing of:

- mixed municipal waste, or
- mixed commercial and industrial waste, or
- construction and demolition waste, or
- Cathode Ray Tubes, or
- other glass recovered from electrical equipment, or
- fluorescent or incandescent lights.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of recovered glass sand that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of recovered glass sand the first supply of recovered glass sand as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies recovered glass sand should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of recovered glass sand remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet.

Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014

The recovered glass sand exemption 2014

Introduction

This exemption:

- is issued by the Environment Protection Authority (EPA) under clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation); and
- exempts a consumer of recovered glass sand from certain requirements under the *Protection of the Environment Operations Act 1997* (POEO Act) and the Waste Regulation in relation to the application of that waste to land, provided the consumer complies with the conditions of this exemption.

This exemption should be read in conjunction with 'the recovered glass sand order 2014'.

1. Waste to which this exemption applies

1.1. This exemption applies to recovered glass sand that is, or is intended to be, applied to land for the purpose of pipe bedding, drainage or for road making activities**.**

1.2. Recovered glass sand means recovered glass that has been processed to produce a 'sand-like' glass material with a particle size diameter generally less than 5 mm, and that contains at least 98% recovered glass.

2. Persons to whom this exemption applies

2.1. This exemption applies any person who applies, or intends to apply, the recovered glass sand to land as set out in 1.1.

3. Duration

3.1. This exemption commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Premises to which this exemption applies

4.1. This exemption only applies to the premises at which the consumer's actual or intended application of recovered glass sand is carried out.

5. Revocation

5.1. 'The recovered glass sand exemption 2010' which commenced on 14 June 2010 is revoked from 24 November 2014.

6. Exemption

6.1. Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of recovered glass sand to land as pipe bedding, drainage or for road making activities at the premises:

- section 48 of the POEO Act in respect of the scheduled activities described in clauses 39 and 42 of Schedule 1 of the POEO Act;
- Part 4 of the Waste Regulation;
- section 88 of the POEO Act; and
- clause 109 and 110 of the Waste Regulation.

6.2. The exemption does not apply in circumstances where recovered glass sand is received at the premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

7. Conditions of exemption

The exemption is subject to the following conditions:

7.1. At the time the recovered glass sand is received at the premises, the material must meet all chemical and other material requirements for recovered glass sand which are required on or before the supply of recovered glass sand under 'the recovered glass sand order 2014'.

7.2. The recovered glass sand can only be applied to land for the purpose of pipe bedding, drainage or for road making activities.

7.3. The consumer must keep a written record of the following for a period of six years:

- the quantity of any recovered glass sand received; and
- the name and address of the supplier of the recovered glass sand received.

7.4. The consumer must make any records required to be kept under this exemption available to authorised officers of the EPA on request.

7.5. The consumer must ensure that any application of recovered glass sand to land must occur within a reasonable period of time after its receipt.

8. Definitions

In this exemption:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

consumer means a person who applies, or intends to apply, recovered glass sand to land.

recovered glass is glass sourced from the collection of domestic or commercial waste. This includes glass collected from domestic commingled recycling collections. This does not include glass recovered from the sorting or processing of:

- mixed municipal waste, or
- mixed commercial and industrial waste, or
- construction and demolition waste, or
- Cathode Ray Tubes or other glass recovered from electrical equipment, or fluorescent or incandescent lights.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this exemption at any time. It is the responsibility of the consumer to ensure they comply with all relevant requirements of the most current exemption. The current version of this exemption will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this exemption, the EPA is not in any way endorsing the use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this exemption are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this exemption nor the accompanying order guarantee that the environment, human health or agriculture will not be harmed.

The consumer should assess whether or not the recovered glass sand is fit for the purpose the material is proposed to be used for, and whether this use will cause harm. The consumer may need to seek expert engineering or technical advice.

Regardless of any exemption provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The receipt of recovered glass sand remains subject to other relevant environmental regulations in the POEO Act and the Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of having an exemption, is guilty of an offence and subject to prosecution.

This exemption does not alter the requirements of any other relevant legislation that must be met in utilising this material, including for example, the need to prepare a Safety Data Sheet (SDS).

Failure to comply with the conditions of this exemption constitutes an offence under clause 91 of the Waste Regulation.

Appendix B

Materials Tracking Register Proforma

Materials Tracking Record

Source Site (address)	Consultant's Report	Expected Material (description)	Date	Truck License Plate	Loading Docket (Yes/No)	Estimated Volume of Load	Time-in	Actual Material (description)	Material Accepted at Site (Yes/No)	Location Material Placed at Site

APPENDIX L

Waste Management Plan

OAKDALE WEST ESTATE

Waste Management Plan

Prepared for:

Goodman Property Services (Aust) Pty Ltd
GPO Box 4703
Sydney NSW 2001



SLR Ref: 610.15612-R02
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June 2020

PREPARED BY

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.15612-R02-v5.0	22 June 2020	Celine El-Khouri	Andrew Quinn	Andrew Quinn
610.15612-R02-v4.0	20 November 2019	Celine El-Khouri	Sean Sciberras	Sean Sciberras
610.15612-R02-v3.0	29 October 2019	Celine El-Khouri	Sean Sciberras	Sean Sciberras
610.15612-R02-v2.0	1 October 2019	Celine El-Khouri	Sean Sciberras	Sean Sciberras

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1 Introduction

SLR Consulting Australia Pty Ltd (SLR Consulting) was commissioned by Goodman Property Services (Aust) Pty Ltd (the Client) to prepare a Waste Management Plan (WMP) for the construction and operation of Precinct 1 consisting of warehouse and distribution facilities located at Oakdale West, Horsley Park (the Development), as part of the Modification (MOD) Application to the NSW Department of Planning and Environment (DPE).

The Development was previously approved under a previous Development Application (DA) submission in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development (SSD 15_7348) application.

SLR previously prepared the waste management plan for the DA submission (Waste Management Plan, 9 September 2016), however this needs to be revised due to amendments made to the original design of the Development and to be included in the MOD Application.

Further details on the Development are provided in **Section 2**. The following WMP has been prepared based on architectural drawings provided by the Client (Refer **Appendix A**). The attached architectural drawings, which are referred to throughout this WMP, have since been updated and do not reflect the final approved drawings.

The relevant conditions of the SEARs for SSD 7348 MOD 2 are addressed in this report as shown in **Table 1**.

Table 1 SSD 7348 MOD 2 Conditions for Waste Management

SSD 7348 MOD 2 Conditions	Relevant Sections in this WMP
An updated description of the quantities and classification of waste streams to be generated during construction and operation.	Sections 5.2,5.3 Sections 6.2, 6.3
Details of proposed waste storage, handling, transport and disposal.	Sections 5.5, 5.6 Section 6.4
Details of the measures that would be implemented to ensure the modification is consistent with the aims, objectives and guidelines in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21.*	Section 3 Section 5 Section 6

1.1 Scope

This WMP applies to the construction and on-going operation of the Development. The provisions contained in the WMP must be implemented at all stages of the Development.

- See **Section 5** for the Construction WMP.
- See **Section 6** for the Operational WMP.

1.2 Objective

The principal objective of this WMP is to identify all potential wastes likely to be generated at the development site during construction and operational phases of the Development, including a description of how waste would be handled, processed and disposed of, or re-used or recycled, in accordance with Penrith City Council's (Council) requirements.

The specific objectives of this WMP are as follows:

- To encourage the minimisation of waste production and maximisation of resource recovery.
- To ensure the appropriate management of contaminated and hazardous waste.
- To identify procedures and chain of custody records for waste management.
- To assist in ensuring that any environmental impacts during the operational life of the Development comply with Council's development consent conditions and other relevant regulatory authorities.

1.3 Review of WMP

This WMP is not a static document. It is a working document that requires review and updating to ensure ongoing suitability for the proposed on-going operations at the site.

This WMP should be reviewed and updated:

- to remain consistent with waste and/or landfill regulations and guidelines
- should changes be made to site waste and recycling management, or
- to take advantage of new technologies, innovations and methodologies for waste or recycling management.

Changes made to the WMP, as well as the reasons for the changes made, should be documented by the site operator as part of the review process.

Copies of the original waste management plan (SLR, 2016), as well as all future versions of the WMP, should be retained by the site operator.

2 Project Description

The Client is developing the Oakdale West site (Lot 11 in DP 1178389) at Erskine Park for the purposes of providing a warehouse and distribution complex. The Oakdale West site is a precinct in the wider Oakdale Estate development and forms part of a progressive development designed to make Oakdale a regional distribution park of warehouses, distribution centres and freight logistics facilities.

The Oakdale West project is a staged development which includes bulk earthworks, civil works and the construction of infrastructure and stormwater management.

2.1 Overview of Proposed Development

A WMP was developed for this Development in 2016. This WMP is an updated version of that plan.

The Oakdale West site is a 154 ha site located in the Oakdale Estate, a 421 ha area of land in the Western Sydney Employment Area. The size of the site remains unchanged since the previous WMP was prepared. Oakdale West Estate is the third of four stages of the broader Oakdale Estate under the management of Goodman Limited.

Oakdale West remains a greenfield site previously used for stock grazing. The surrounding areas are primarily rural in nature, but, the area to the north is becoming more industrial. Land uses in the surrounding area include:

- Rural, including grazing and market gardens, and rural residential to the south-east, south and west.
- Sydney Water Pipeline and industrial land to the north, including industrial zones at Eastern Creek to the north and Erskine Park to the north-west.
- To the west, land uses include a number of sensitive uses such as an aged care facility (Catholic Health Care) and three schools named Mamre Anglican School, Emmanual Catholic College and Trinity Primary School. Other land uses include recreational and sporting facilities.

According to the Oakdale West Estate Masterplan, the site will be developed in five stages, where each stage corresponds to the development of a precinct. SLR notes the size of each precinct and the layout of Precinct 1 have undergone changes from the previous waste plan. The updated areas and measurements for Precinct 1 will be discussed as part of Stage 1 of the DA.

2.1.1 Overview of proposed construction work

The development of Precinct 1 is anticipated to include the following tasks:

- Staged bulk earthworks across the whole site;
- Stage trunk infrastructure for the site;
- Staged subdivision;
- Landscaping and public domain works; and
- Development comprising the construction of the warehouse and distribution facilities in Precinct 1.

2.1.2 Overview of proposed operations

The Precinct 1 development area comprises 21.41 ha. It contains two warehouse lots known as Lot 1A and Lot 1B, each containing warehouse space with adjoining offices. Information on Lot 1A is based on architectural drawings dated 9 September 2019[1]. Lot 1A is expected to consist of the below:

- A warehouse with six mezzanine levels used as storage areas;
- An adjoining three storey office with a skybridge walkway;
- A gatehouse and weighbridges;
- A computer room;
- A heavy vehicle workshop;
- A heavy vehicle wash;
- A diesel refuelling area;
- A battery charge area;
- Hardstands areas;
- Two energy complex; and
- Small vehicle, heavy vehicle and bicycle parking areas.

Information on Lot 1B is based on architectural drawings dated 1 May 2019[2]. Lot 1B is expected to consist of the below:

- Three smaller warehouses 1B1, 1B2 and 1B3;
- Adjoining offices for each warehouse;
- A hardstand area; and
- Adjoining carpark spaces for each warehouse.

An updated plan for Lot 1A is provided in **Figure 1**.

[1] SBA Architects Pty Ltd, Oakdale West Estate, Proposed Industrial Facility – Building 1A, Job No 15117, drawing number OAK-1A-DA-10 (S) to OAK-1A-DA-29 (F), dated 9 September 2019

[2] SBA Architects Pty Ltd, Oakdale West Estate, Precinct 1 Plan, Job No 15117, drawing number OAK MP05 (AF), dated 1 May 2019

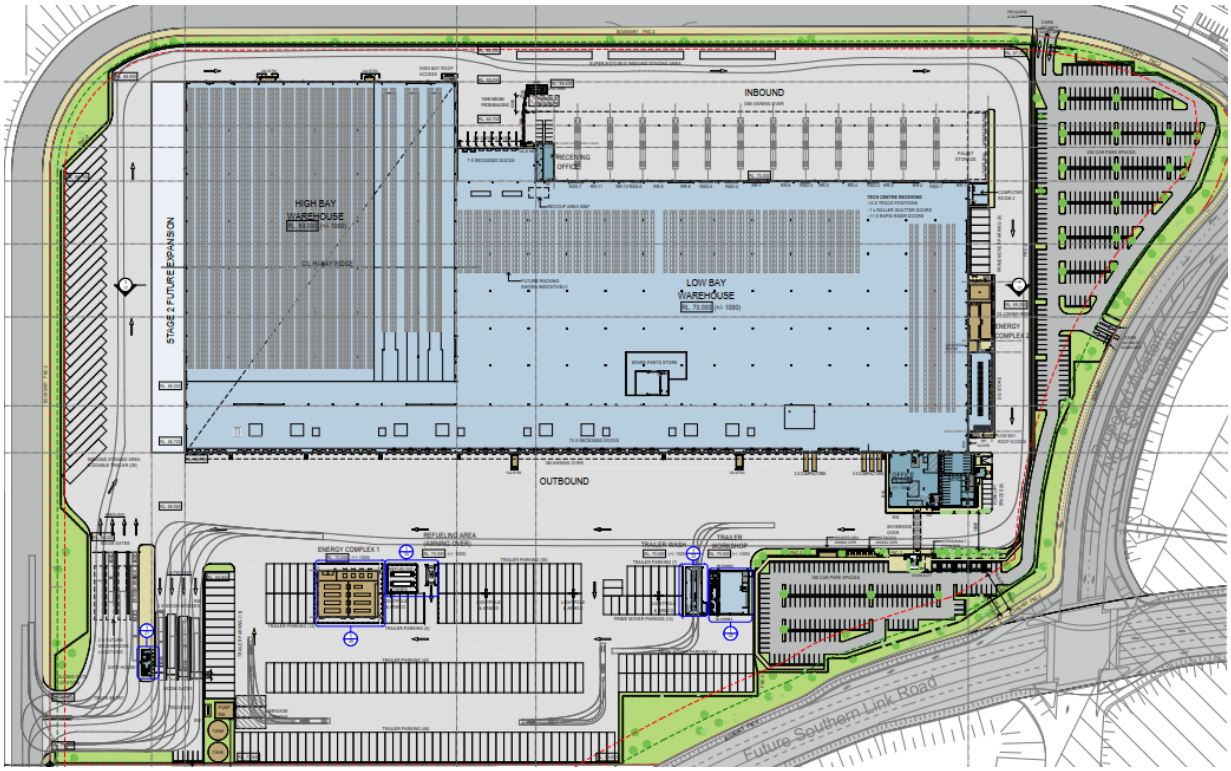


Figure 1 Precinct 1 - Warehouse Lot 1A

The updated building areas for Lot 1A and Lot 1B are outlined in **Table 2**. The building areas are based on areas provided in the architectural drawings dated 9 September 2019 and 1 May 2019. The area for the outbuildings in **Table 2** includes the buildings facilities incorporated in Lot1A other than the warehouse and office. These are mentioned in **Section 2.1.2** above.

Table 2 Building Areas for Precinct 1

Site component	Site Area (m^2)				
	Lot 1A	Lot 1B1	Lot 1B2	Lot 1B3	Total Areas
Warehouse	68,160	4,380	4,691	3,846	81,077
Offices	2,646	500	500	400	4,046
Mezzanines	32,402	N/A	N/A	N/A	32,402
Outbuildings	4,004	N/A	N/A	N/A	4,004
Total Building Area	107,212	14,317			121,529
Hardstand Area	88,610	7,440			96,050
Light Duty Area	13,295	3,755			17,050

3 Better Practice Waste Management and Recycling

3.1 Waste Management Hierarchy

This WMP has been prepared in line with the waste management hierarchy (**Figure 2**), which summarises the objectives of the *Waste Avoidance and Resource Recovery Act 2001.*

The waste management hierarchy comprises the following principles, from most to least preferable:

- Waste **avoidance**, prevention or reduction of waste generation. Achievable through better design and purchasing choices.
- Waste **reuse**, reuse without substantially changing the form of the waste.
- Waste **recycling**, treatment of waste that is no longer usable in its current form to produce new products.
- Energy **recovery**, processing of residual waste materials to recover energy.
- Waste **treatment**, reduce potential environmental, health and safety risks.
- Waste **disposal**, in a manner that causes the least harm to the natural environment.

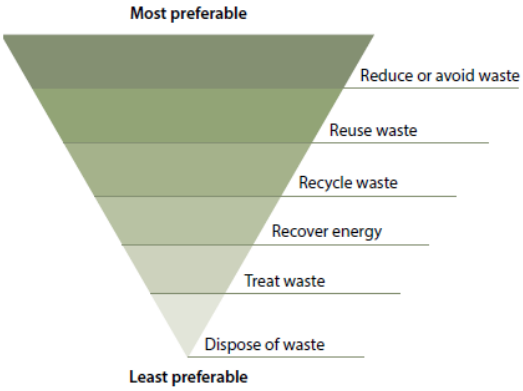


Image from NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

Figure 2 Waste management hierarchy

3.2 Benefits of Adopting Better Practice

Adopting better practice principles in waste minimisation offers significant benefits for organisations, stakeholders and the wider community. Benefits from better practice waste minimisation include:

- Improved reputation of an organisation due to social and environmental responsibility.
- Lowered consumption of non-renewable resources.
- Reduced environmental impact, for example, pollution, from materials manufacturing and waste treatment.
- Reduced expenses from lower waste disposal.
- Providing opportunities for additional revenue streams through beneficial reuse.

4 Waste Legislation and Guidance

The legislation and guidance outlined in **Table 3** below should be referred to during the demolition, construction and operational phases of the Development.

Table 3 Legislation and guidance

Legislation and Guidance	Objectives
Council legislation and guidelines	
Secretary Environmental Assessment Requirements (SEARs)	SEARs provide the addition requirements that must be completed when a critical state significant infrastructure project is submitted in a DA in NSW. The objective of SEARs submissions is to achieve better environmental outcomes by focusing on environmentally sensitive areas and areas of the greatest community concern. The provisions of the SEARs must be met for DA approval including the provision of a construction and operational waste management plan. This Development was previously approved under the SEARS for SSD 15_7348.
Penrith Local Environmental Plan (LEP) 2010[3]	The Penrith LEP came into force for the entire Penrith local government area on 25 February 2015 and provides the legal framework of the Penrith Development Control Plan, including land use and development permitted in a set zone. The LEP also contains provisions to conserve local heritage and protect sensitive land.
Penrith Development Control Plan (DCP) 2014[4]	The Penrith DCP came into effect on 17 April 2015 and supports provision of the LEP planning controls by providing detailed planning and design guidelines. The DCP has been prepared in accordance with the *Waste Avoidance and Resource Recovery Act 2001*. One of the objectives of the DCP is to assist in reducing Penrith's ecological footprint by encouraging the diversion of waste from landfill. This WMP specifically addresses Part C5 – Waste Management of the DCP.
Waste Strategy 2017-2026, Penrith City Council	Council's waste strategy sets out the waste management targets for the Penrith local government area including working towards reduced waste generation and increased landfill diversion. The strategy was prepared in consultation with the community and informed by waste audit results. The strategy defines the actions required to reach the targets, including actions for waste diversion from landfill, resource recovery, technology innovation, community education and resource recovery facilities.
State and National legislation and guidelines	
Building Code of Australia (BCA) and relevant Australian Standards	The BCA has the aim of achieving nationally consistent, minimum necessary standards of relevant health and safety, amenity and sustainability objectives efficiently.
Council of Australian Governments National Construction Code 2016	The National Construction Code 2016 sets the minimum requirements for the design, construction and performance of buildings throughout Australia.
NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012	These better practice guidelines present information on waste minimisation and resource recovery as well as information on commonly used waste management provisions. The guidelines also provide benchmarks for assessing waste production rates in Australia.
NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21	The *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* is aimed at ultimately "improving environment and community well-being by reducing the environmental impact of waste and using resources more efficiently" by presenting a framework intended to avoid and reduce waste generation, increase recycling, divert more waste from landfill, manage problem wastes better, reduce litter and reduce illegal dumping.

[3] https://legislation.nsw.gov.au/#/view/EPI/2010/540

[4] https://www.penrithcity.nsw.gov.au/building-development/planning-zoning/planning-controls/development-control-plans

Legislation and Guidance	Objectives
NSW EPA Resource Recovery Orders and Resource Recovery Exemptions	The NSW EPA has issued a number of resource recovery orders and resource recovery exemptions under the POEO (Waste) Regulation 2014 for a range of wastes that may be recovered for beneficial re-use. These wastes typically include those from demolition and construction works, as well as operational wastes such as food waste. • Resource recovery orders present conditions which generators and processors of waste must meet to supply the waste material for beneficial re-use. • Resource recovery exemptions contain the conditions which consumers must meet to use waste for beneficial re-use.
NSW EPA's Waste Classification Guidelines 2014	The NSW EPA *Waste Classification Guidelines* assists waste generators to effectively manage, treat and dispose of waste to ensure the environmental and human health risks associated with waste are managed appropriately and in accordance with the *POEO Act 1997* and is associated regulations.
Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011	The *POEO Act 1997* and *POEO Amendment Act 2011* are administered by the NSW Environment Protection Authority (NSW EPA) to enable the NSW Government to establish instruments for setting environmental standards, goals, protocols and guidelines. They outline the regulatory requirements for lawful disposal of wastes generated during the demolition, construction and operational phases of a development, as well as the system for licencing waste transport and disposal.
Waste Avoidance and Resource Recovery Act 2001	The *Waste Avoidance and Resource Recovery Act 2001* aims to promote waste avoidance and resource recovery and repeals the *Waste Minimisation and Management Act 1995*. Specific objectives of the *Waste Avoidance and Resource Recovery Act 2001* include: • encouraging efficient use of resources • minimising the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste • ensuring industry and the community share responsibility in reducing/dealing with waste, and • efficiently funding of waste/resource management planning, programs and service delivery. As of 2016, the addition to the Act of Part 5 defines the legislative framework for the "Return and Earn Container Deposit Scheme" whereby selected beverage containers can be returned to State Government authorities for a monetary refund.

5 Construction Waste Management

Construction stages of developments have the greatest potential for waste minimisation.

Key construction activities will include construction of warehouse buildings, offices and other associated buildings and infrastructure as specified in **Section 2.1.2**.

5.1 Targets for Resource Recovery

The performance of each new development should contribute to the following target from the NSW EPA (2014) *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*:

- 75 % of total construction and demolition waste recycled, increasing to 80 % by 2021.

Additionally, in the interests of Council's additional commitments to waste management controls, the construction and excavation procedures should endeavour to reach the following outlined target from the DCP:

- Reduce the volume of demolition, construction and fit out waste, including excavation, going to landfill by 76%.

It is anticipated that the waste minimisation measures in the following sections will assist the Project to meet these targets. Waste reporting and audits can be used to determine the actual percentage of wastes that are being, or have been, recycled during the demolition and site preparation stage of the Project.

5.2 Waste Streams and Classifications

The Development is likely to generate the following broad waste streams:

- excavation material;
- construction wastes;
- plant maintenance waste;
- packaging waste;
- green waste from site clearing activities; and
- work compound waste from on-site employees.

A summary of likely waste types generated from site preparation and construction activities, along with their waste classifications and proposed management methods, is provided in **Table 4**.

For further information on how to classify a waste type refer to the NSW EPA (2014) *Waste Classification Guidelines*[5]. Further information on managing site preparation and construction wastes is available from the NSW EPA website[6].

[5] Available online from https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines

[6] http://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition

Table 4 Potential waste types, classifications and management methods

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Construction		
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Off-site recycling; Cleaned for reuse, rendered over or crushed for landscaping or driveway use
Gyprock or plasterboard	General solid waste (non-putrescible)	Off-site recycling or returned to supplier
Sand or soil	General solid waste (non-putrescible)	Off-site recycling
Metals such as fittings, appliances and bulk electrical cabling	General solid waste (non-putrescible)	Off-site recycling
Conduits and pipes	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling; *Treated*: reused for formwork, bridging, blocking, propping or second hand supplier; *Untreated*: reused for floorboards, fencing, furniture, mulched second hand supplier
Doors, Windows, Fittings	General solid waste (non-putrescible)	Off-site recycling at second hand supplier
Insulation material	General solid waste (non-putrescible)	Off-site disposal
Glass	General solid waste (non-putrescible)	Off-site recycling; glazing or aggregate for concrete production
Asbestos	Hazardous waste	Off-site disposal
Fluorescent light fittings and bulbs	Hazardous waste	Off-site recycling or disposal; contact *FluoroCycle* for more information[7]
Paint	Hazardous waste	Off-site recycling, Paintback collection[8] or disposal
Synthetic Rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling; reprocessed and used in safety devices and speed humps
Carpet	General solid waste (non-putrescible)	Off-site recycling or disposal; reused for landscaping, insulation or equestrian uses
Plant Maintenance		

7 http://www.fluorocycle.org.au/ or http://www.environment.gov.au/settlements/waste/lamp-mercury.html
8 https://www.paintback.com.au/

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups	Hazardous waste: Containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid waste (non-putrescible): Containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Oil filters	Hazardous waste	Off-site recycling
Batteries	Hazardous waste	Off-site recycling; Contact the Australian Battery Recycling Initiative[9] for more information
Packaging		
Packaging materials, including wood, plastic, including stretch wrap or LLPE, cardboard and metals	General solid waste (non-putrescible)	Off-site recycling
Wooden or plastic crates and pallets	General solid waste (non-putrescible)	Reused for similar projects, returned to suppliers, or off-site recycling. Contact *Business Recycling* for more information[10]
Work Compound and Associated Offices		
Food Waste	General solid (putrescible) waste	Compost on site. Alternatively dispose to landfill with general garbage
Recyclable beverage containers, including glass and plastic bottles, aluminium cans and steel cans	General solid waste (non-putrescible)	Co-mingled recycling at off-site licensed facility or at a local NSW container deposit scheme 'Return and Earn' off-site licensed facility[11]
Clean paper and cardboard	General solid waste (non-putrescible)	Paper and cardboard recycling at off-site licensed facility
General domestic waste generated by workers including soiled paper and cardboard, food stuffs and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

5.3 Waste Generation Rates

The Construction Site Manager will need to specify the types and quantities of wastes produced during construction and on this basis, the numbers and capacity of skip bins can be determined.

9 http://www.batteryrecycling.org.au/home
10 http://businessrecycling.com.au/search/
11 http://returnandearn.org.au/

In the absence of readily available construction waste generation rates from Council, SLR has adopted the 'Factory' and 'Office' waste generation rates from Appendix A of The Hills Development Control Plan (DCP) 2012 for estimating the type and quantities of waste generated from construction of the Development.

In the absence of readily available published information for 'Carpark' construction waste generation rates, SLR has developed 'Carpark' (**Table 5**) construction rates based on the 'Office' rates by:

- Removing timber, bricks and gyprock as these materials are unlikely to be present in significant quantities in a modern carpark structure; and
- Increasing the rates for concrete, sand or soil, metal and 'other', in proportion, to maintain the total assumed tonnage per 1000 m^2 of construction.

Table 5 Waste generation rates applied to the Development's construction

Rate Type	Floor Area (m^2)	Waste types and quantities (m^3)						
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Factory	1,000	0.25	2.10	1.65	0.45	4.80	0.60	0.50
Office	1,000	5.1	18.8	8.5	8.6	8.8	2.75	5
Carpark	1,000	--	30.6	--	--	14.3	4.5	8.1

These waste generation rates are used to estimate the waste generated from the construction of the Development. These estimates are provided in **Table 6.**

5.3.1 Estimation of Waste Quantities

Using the estimated areas of the offices, warehouses and other infrastructure mentioned in **Section 2.1.2** and the construction waste generation rates shown in **Table 5,** SLR has calculated the estimated waste quantities for the Development components. The generation rates for 'Factory' are applied to calculate the waste quantities from the construction of the warehouse, mezzanine and outbuilding areas, the rates for 'Office' are applied to calculate the waste quantities from the construction of the offices, and the 'Carpark' waste generation rates are applied to calculate the waste quantities from the construction of the hardstand and light duty areas. These are presented below in **Table 6**.

Actual waste tonnage and composition will vary, however this estimate is provided so that the Construction Site Manager can make provision for on-site or off-site re-use and recycling opportunities.

Table 6 Anticipated types and estimated quantities of construction waste.

	Development Component	Area (m^2)	Waste types and quantities (m^3)						
			Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Lot 1A	Warehouse	68,160	20	145	115	35	330	45	35
	Offices	2,646	15	50	25	25	25	10	15
	Mezzanines	32,402	10	70	55	15	160	20	20
	Outbuildings	4,004	5	10	10	5	20	5	5
	Hardstand	88,610	0	2715	0	0	1270	400	720
	Light Duty	13,295	0	410	0	0	195	60	110
Lot 1B1	Warehouse	4,380	5	10	10	5	25	5	5
	Offices	500	5	10	5	5	5	5	5

	Development Component	Area (m^2)	Waste types and quantities (m^3)						
			Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Lot 1B2	Warehouse	4,691	5	10	10	5	25	5	5
	Offices	500	5	10	5	5	5	5	5
Lot 1B3	Warehouse	3,846	5	10	10	5	20	5	5
	Offices	400	5	10	5	5	5	5	5
Lot 1B	Hardstand	7,440	0	230	0	0	110	35	65
	Light Duty	3,755	0	115	0	0	55	20	35
Totals		**234,629**	**80**	**3,805**	**250**	**110**	**2,250**	**625**	**1,035**

Waste estimates have been rounded up to the nearest 5 m^3.

Excavated spoil, if any, is to be classified by an appropriately experienced environmental consultant and separated into contaminated materials, if any, uncontaminated fill or ENM. Refer to **Section 5.6** for management of stockpiles. Uncontaminated fill or ENM should be retained on site and managed appropriately for beneficial re-use for filling earthworks. As a last resort, remaining uncontaminated fill of ENM is to be sent off-site to a licenced facility in accordance with the Protection of the Environment Operations (Waste) Regulation 2014.

For contaminated material management, refer **Section 5.6.4** of this WMP.

SLR recommends that a demolition quantities survey be conducted by a qualified professional on the existing site should further information on types and quantities of demolition waste be required.

A waste management plan form provided by Council is attached in **Appendix B**. The form is also available on Council's website[12]. This is to be updated by the Site Manager once waste streams, estimated quantities, and final disposal locations and recycling services have been identified.

5.4 Waste Avoidance Measures

In accordance with Council's DCP and better practice waste management, the Building Designer should:

- Select materials with low embodied energy properties that suit the Project, such as:
  - prefabricated components and recycled materials, such as recycled steel and glass-wool insulation;
  - concrete with slag and fly ash content; and
  - fittings and furnishings that incorporate recycled materials and have been certified as sustainable or environmentally friendly by a recognised third-party certification scheme.
- Reduce the use of PVC.
- Choose construction materials with a longer lifespan and/or high potential for re-use.
- Use low formaldehyde wood products, post-consumer reused timber, Forest Stewardship Council-certified timber, wood plastic composite or recycled plastic timber substitute.
- Select pre-finished materials and prefabricated frames, trusses and cladding.
- Design for the use of modular components and standard material sizes.
- Integrate existing trees and shrubs in the landscape plan and design for the new Development.

12 https://www.penrithcity.nsw.gov.au/images/documents/forms/Waste_Management_Plan_Application_Form.pdf

- Design for deconstruction, rather than demolition.

The Building Contractor should:

- Estimate required quantities of materials to reduce over-purchasing and excess materials.
- Include approximate quantities of materials in a purchasing policy to ensure correct quantities are purchased.
- Arrange delivery of materials on an 'as needed' basis to mitigate material degradation by weathering or moisture damage.
- Arrange to return excess materials to suppliers where possible and practicable.
- Reduce packaging waste by:
    - returning packaging to suppliers where possible and practicable;
    - purchasing in bulk;
    - requesting cardboard or metal drums rather than plastics;
    - requesting metal straps rather than shrink wrap; and
    - using returnable packaging such as pallets and reels.
- Reduce unnecessary excavation and site disturbance.
- Ensure subcontractors are informed of and implement site waste management procedures.

5.5 Re-use, Recycling and Disposal

The Building Contractor should:

- Sort and segregate demolition and site preparation wastes to ensure efficient recycling of wastes.
- Store wastes on site appropriately to prevent cross-contamination and/or mixing of different waste types.
- Re-use formwork where appropriate.
- Recycle or dispose of waste oil in an appropriate manner.
- Retain roofing material cut-offs for re-use.
- Retain used crates for storage purposes unless damaged.
- Recycle cardboard, glass and metal wastes.
- Return packaging to suppliers where possible and practicable.
- Recycle or dispose of solid waste timber, brick, concrete, asphalt and rock, where such waste cannot be re-used on site, to an appropriately licenced construction and demolition waste recycling facility or an appropriately licenced landfill.
- Dispose of all asbestos and/or hazardous wastes in accordance with SafeWork NSW and NSW EPA requirements.
- Deliver batteries and florescent lights to drop off-site recycling facility.

5.5.1 Site Specific Procedures

The Construction Site Manager will also consider implementation of the following procedures:

- all used crates will be stored for reuse unless damaged;
- all cardboard waste is to be recycled via on-site recycling compactors which shall be collected by an appropriate recycling contractor;
- all glass and metals that can be economically recycled will be;
- colour bond roof material off cuts to be stockpiled on site for reuse or recycling;
- waste concrete will be disposed of at a crushing/recycling plant where practicable;
- waste bricks will be crushed and utilised on site. All half or damaged bricks will be stored on site to be removed for offsite crushing and recycling;
- excavation material will be reused on-site where possible with all excess reused on other projects or sold;
- All other solid waste including bitumen paving, tile, timber, rock and soil will be taken to an appropriate materials recycling facility and/or landfill site and processed in an approved manner; and
- All garbage will be disposed of via a council approved system.

5.6 Waste Storage and Servicing

5.6.1 Waste Segregation

Waste materials produced from site preparation activities are to be segregated and stored separately on site, with clear signage identifying the purpose of different storage areas. It is anticipated that the site will have available space provided by the Building Contractor for separate storage in separate skip bins and/or appropriately managed stockpiles, of the following waste types:

- Bricks, concrete and scrap metal;
- Metal and steel, if any, in a condition suitable for recycling at metal recycling facilities;
- Timber;
- Glass;
- Hardstand rubble;
- Excavation spoil, uncontaminated, if present;
- Contaminated excavation spoil, if present;
- Hazardous waste, if present;
- Paper and cardboard;
- Recyclable general waste; and
- Non-recyclable general waste.

If there is insufficient space onsite for full segregation of waste types, the Building Contractor is to consult with waste or recycling collection facilities to confirm which waste types may be co-mingled prior to removal from the site.

Areas designated for waste storage should:

- allow unimpeded access by site personnel and waste disposal contractors;
- not be located on footpaths, public reserves and street gutters without Council approval;
- employ adequate environmental management controls, for example, consideration of slope, drainage and proximity relative to waterways, stormwater outlets and vegetation, to prevent off-site migration of waste materials and/or contamination from the waste; and
- not present hazards to human health or the environment.

In accordance with Council's DCP, the WMP should identify the areas that will be used on site for the storage of materials, including areas designated for the separation of recyclables and disposal. It is recommended that the drawings for the Project are revised to indicate stockpiling and waste storage areas, with consideration of the recommendations noted above. This WMP should be revised to reflect these drawing updates.

5.6.2 Servicing and Record Keeping

The frequency of the waste removal will, in most cases, be dictated by the volume of material being deposited into each of the dedicated skips. Skips and bins are to be checked on a daily basis by the Site Manager to ensure that no overflow occurs. If skips and bins are reaching capacity, removal and replacement should be organised for the next 24 hours. All skips and bins leaving the site will be covered with a suitable tarpaulin to ensure that the spillage of wastes from the skips whilst in transit is eliminated.

The Building Contractor should:

- arrange for suitable waste collection contractors to remove the site preparation waste from site;
- ensure waste bins are not filled beyond recommended filling levels;
- ensure that all bins and loads of waste materials leaving site are covered;
- 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 contractor(s) and facilities receiving the waste or recyclables.
    - Records of waste and recycling collection vehicle movements, for example date and time of loads removed, licence plate of collection vehicles, disposal dockets from receiving facility.
    - Waste classification documentation for materials disposed to off-site recycling or landfill facilities.
- ensure lawful waste disposal records are available for inspection by regulatory authorities such as Council, SafeWork NSW or NSW EPA if required; and
- remove waste during hours approved by Council.

In accordance with Council's DCP Section C5, Part 5.3.1, Council officers may ask to be presented with weighbridge dockets and invoices for waste disposal and recycling services for the Project. Weighbridge dockets and invoices are to be kept on site at all times.

5.6.3 Space and Amenity

Waste storage areas will be accessible, present at all times and allow sufficient space for storage and servicing requirements. The storage areas will also be flexible in order to cater for change of use throughout the Project.

Where space is restricted, dedicated stockpile areas are to be delineated on the site, with regular transfers to dedicated skip bins for sorting. The positions of the designated waste holding areas on site will change according to building works and the progression of the Development, but must consider visual amenity, OH&S and accessibility in their selection.

All waste placed in stockpile areas and/or skips for disposal or recycling shall be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. Appropriate siting of waste stockpile locations will take into account slope and drainage factors to avoid contamination of stormwater drains during rain events and allow manoeuvring space to facilitate ease of collection and safety.

Waste containers are to be kept clean and in a good state of repair.

5.6.4 Contaminated or Hazardous Waste Management

During the site preparation and construction phases, SLR recommends that a qualified and certified contractor is engaged to remove all contaminated or hazardous materials, for example, asbestos, and dispose of all contaminated or hazardous waste at an appropriately licenced facility.

All asbestos and other hazardous waste must be handled according to appropriate legislation and regulation including the Work Health and Safety Regulation 2011.

In accordance with Council's DCP, 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.

5.7 Signage

Standard signage is to be posted in all waste storage and collection areas. All waste containers should be labelled correctly and clearly to identify stored materials.

Signs approved by the NSW EPA for labelling of waste materials are available online[13] and should be used where applicable. A selection of signs prepared by NSW EPA is provided in **Figure 3**.



Figure 3 Examples of NSW EPA labels for waste skips and bins

[13] NSW EPA approved waste materials signage http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm

5.8 Training and Awareness

All staff, including sub-contractors and labourers, employed during the demolition and construction phases of the Development must undergo induction training regarding waste management for the Development.

Induction training is to cover, as a minimum, an outline of the WMP including:

- legal obligations;
- emergency response procedures on site;
- waste storage locations and separation of waste;
- litter management in transit and on site;
- the implications of poor waste management practices;
- correct use of general purpose spill kit; and
- responsibility and reporting, including identification of personnel responsible for waste management and individual responsibilities.

It is the responsibility of the Contractor or site operator to notify Council of the appointment of waste removal, transport or disposal contractors.

5.9 Monitoring and Reporting

The following measures are to be undertaken to improve demolition and construction waste management and to provide reliable waste generation figures:

1. Conduct waste audits of current projects where feasible.
2. Note waste generated and disposal methods.
3. Look at past waste disposal receipts.
4. Record this information to track waste avoidance, reuse and recycling performance and to help in waste estimations for future waste management plans.

Records of quantities of waste re-used, recycled or disposed to landfill are to be maintained by the Building Contractor. Council's DCP Section C5, Part 5.3.1 states that evidence, such as weighbridge dockets or receipts, verifying recycling and/or disposal must be available for presentation to Council if requested.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists and logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Building Contractor to gauge the effectiveness and efficiency of waste segregation procedures and recycling and reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.

5.10 Roles and Responsibilities

All personnel have a responsibility for their own environmental performance and compliance with all legislation. It will be the responsibility of the Building Contractor to implement the WMP, and an employee and subcontractor responsibility to ensure that they comply with the WMP at all times.

Where possible, an Environmental Management Representative should be appointed for the Development. Suggested roles and responsibilities are provided in **Table 7**.

Table 7 Construction waste management responsibility allocation

Responsible Person	General Tasks
Construction Site Manager	Ensuring plant and equipment are well maintained.
	Ordering only the required amount of materials.
	Keeping materials segregated to maximise reuse and recycling.
	Ultimately responsible for routinely checking waste sorting and storage areas for cleanliness, hygiene and safety issues, contaminated waste materials, and also ensuring that all monitoring and audit results are well documented and carried out as specified in the WMP.
Environmental Management Representative or equivalent role	Approaching and establishing the local commercial reuse of materials where reuse on-site is not practical.
	Establishing separate skips and recycling bins for effective waste segregation and recycling purposes.
	Ensuring staff and contractors are aware of site requirements.
	Provision of training of the requirements of the WMP and specific waste management strategies adopted for the Development.
	Contaminated waste management and approval of off-site waste transport, disposal locations and checking licensing requirements.
	Approval of off-site waste disposal locations and checking licensing requirements.
	Assessment of suspicious potentially contaminated materials, hazardous materials and liquid wastes.
	Monitoring, inspection and reporting requirements.

Daily visual inspections of waste storage areas may be delegated to other on-site staff. All subcontractors will be responsible for ensuring that their work complies with the WMP through the project induction and contract engagement process.

6 Operational waste management

Ineffective waste management for commercial premises can lead to environmental pollution, offensive odours, litter, attraction of vermin and occupational safety and hygiene problems.

Effective waste management reduces costs through the reuse of resources and minimisation of fees associated with removal, transportation and disposal of waste, and improves environmental outcomes locally, regionally and globally.

Effective waste management is achieved through the implementation of a WMP for the operational life of the Development.

6.1 Targets for Resource Recovery

The waste management performance of each new development should contribute to the overall NSW State targets for recycling outlined in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*. The targets include increasing waste diverted from landfill to 75% and recycling 70% of commercial, industrial and municipal solid waste[14]. Each commercial and industrial development has the ability to contribute to this NSW State target through an effective waste management plan.

It is anticipated that the waste minimisation measures in the following sections will assist the Development to meet the state's targets. Waste reporting and audits can be used to determine the actual percentage of waste that are being, or have been, recycled during operation.

6.2 Waste Streams and Classifications

The operation of the Project will generate the following broad waste streams:

- domestic wastes generated by employees, including food wastes;
- bulk packaging wastes, including polystyrene, plastic wrapping and cardboard boxes;
- office waste;
- garden organic waste from landscaped areas;
- bulky waste items such as furniture and e-waste; and
- stores, plant and general maintenance wastes.

From the site inception meeting, SLR understands the Development's waste will primarily be general wastes, paper and cardboard and plastic wrapping.

Potential operational waste types, their associated waste classifications, and management methods are provided in **Table 8.** For further information on how to determine a waste's classification, refer to the NSW EPA (2014) *Waste Classification Guidelines*.[15] Suggestions for recycling drop off locations and contacts can be found on https://businessrecycling.com.au/ for each waste type.

[14] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/wastestrategy/140876-warr-strategy-14-21.pdf?la=en&hash=EC6685E6624995242B0538B18C2E80C0CA2E51B3

[15] Available online from https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines

Table 8 Potential operational waste types, classifications and management methods

Waste Types	NSW EPA Classification	Proposed Management Method
General Operations		
Clean paper	General solid (non-putrescible) waste	Paper recycling at off-site licensed facility
Cardboard and bulky cardboard boxes	General solid (non-putrescible) waste	Cardboard recycling at off-site licensed facility
Recyclable containers including glass and plastic bottles, aluminium cans and steel cans	General solid (non-putrescible) waste	Recycling at off-site licensed facility Some containers that attract a deposit under the NSW Government's *Return and Earn Scheme*, may be separated by staff or contactors for redemtion.
Food waste	General solid (putrescible) waste	Donate, if suitable; alternatively compost on or off-site or dispose to landfill with general garbage
Batteries	Hazardous waste	Off-site recycling. Contact the Australian Battery Recycling Initiative for more information
Mobile Phones	Hazardous waste	Off-site recycling. Contact Mobile Muster for more information
Clothes	General solid (non-putrescible) waste	Off-site reuse or recycling such as donations to St Vincent's De Paul
Bulky polystyrene	General solid (non-putrescible) waste	Off-site recycling or disposal at landfill
Furniture	General solid (non-putrescible) waste	Off-site reuse or disposal to landfill
E-waste	Hazardous waste	Off-site recycling
Printer toners and ink cartridges	Hazardous waste	Storage on-site, off-site recycling; free disposal box or bags and pickup service exists for printer toners and ink cartridges
General garbage, including non-recyclable plastics	General solid (putrescible and non-putrescible) waste	Disposal at landfill
Maintenance		
Glass other than containers	General solid (non-putrescible) waste	Off-site recycling
Light bulbs and fluorescent tubes	Hazardous waste	Storage on-site; off-site recycling or disposal. Contact FluoroCycle[16] or Lamp Recyclers[17] for more information
Empty oil, paint drums and chemical containers	Hazardous waste if containers used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if containers cleaned by washing or vacuuming.	Storage on-site or transported to off-site recycling or disposal at licensed facility. Transport to comply with the transport of Dangerous Goods Code.
Garden organics including lawn mowing, tree branches, hedge cuttings, leaves	General solid (non-putrescible) waste	Reuse on-site or contractor removal for recycling at licenced facility

16 https://www.fluorocycle.org.au/

17 https://www.lamprecyclers.com.au/

6.3 Waste Generation Rates

Published average waste generation rates from the NSW EPA have been used to calculate the anticipated waste amounts for the proposed Development. The estimated waste generation rates are based on EPA guidance for waste generation in commercial and retail premises and are presented below in **Table 9**. These have been retained for the purposes of the Development's operation from the previous WMP.

Table 9 Guideline Waste Generation Rates

Type of Premises	Facility Area	General Waste Generation (L/100 m²/day)	Recycling Generation[1] (L/100 m²/day)
Warehouse	Warehouse and mezzanine levels	30	30
Offices	Offices	10	10

Source: NSW EPA's Better Practice Guidelines for Waste Management and Recycling in C&I Facilities (2012)

Note 1. Recyclable waste generation includes paper and cardboard waste, as well as mixed recyclables (bottles, cans etc.)

Using the above standard industry waste generation rates in **Table 9** above, the approximate weekly waste quantities for each lot have been calculated and are presented in **Table 10**.

Table 10 Estimated Annual Waste and Recycling Generation for Precinct 1

Complex	Area Type	General Waste (L/week)	Recycling (L/week)
Lot 1A	Warehouse	143,150	143,150
	Office	1,855	1,855
	Mezzanine	68,075	68,075
Lot 1B1	Warehouse	9,205	9,205
	Office	350	350
Lot 1B2	Warehouse	9,870	9,870
	Office	350	350
Lot 1B3	Warehouse	8,085	8,085
	Office	280	280
Total		**173,145**	**173,145**

Note: Waste generation rates assume warehousing facilities are operational 7 days per week.

From the site inception meeting, SLR understands that large quantities of the recycling stream will include pallets and plastic and cardboard packaging waste. To minimise packaging waste generated in the recyclables stream, it is recommended that packing waste is returned to the suppliers where possible. Standard pallets are recommended to be returned to their owners and non-standard and broken pallets are to be stockpiled and collected as required by a private waste contractor.

Additionally, it is anticipated that a substantial amount of the general was stream will consist of food waste. To minimise food waste in the general waste stream, it is recommended that the food is donated, composted on site or sent off-site to a composting facility.

If additional collection services are required, such as secured document destruction, these can be organised with a private waste contractor who can provide additional bins and take collected waste to an off-site licenced facility.

6.3.1 Outbuildings waste generation

In addition to the warehouse and office areas, Lot 1A consists of additional infrastructure and buildings as specified in **Section 2.1.2**, including a gatehouse, weighbridges, a heavy vehicle workshop, a heavy vehicle wash, a diesel refuelling area, a computer room, a battery charge area, hardstand areas, energy complexed and parking areas. The additional building equate to 4,004 m^2.

These have not been included in **Table 10** as they are not considered as areas that regularly generate substantial quantities of operational waste and recycling quantities. Even though large quantities of waste are not anticipated, better practice waste management should still be practice.

The Development is anticipated to produce minimal quantities of garden organics. Less than 100 L of garden organics are estimated to be generated per week. This waste will be taken by a landscaping contractor who will dispose of it at an off-site licenced facility.

The major waste streams of the heavy vehicle workshop are anticipated to include tyres, air and oil filters, rags, brake pads, metals, engines, batteries and pads. These are not considered to be regularly generated waste streams and include damaged heavy vehicle parts that become unsuitable for reuse by the site's heavy vehicles.

Tyres that cannot be reused are to be stockpiled off-site. The tyres are to be collected from the heavy vehicle workshop by a private waste contractor who will transport them to a licenced recycling facility where they will be stored until they are recycled.

A 7 m^3 skip bin is recommended to be stored on-site and used for the collection of metals. A private waste contractor is to be engaged for collections that can occur on an as need basis. The metals will be transported to a licenced metal recycling facility.

All heavy vehicle parts that are unsuitable for reuse or recycling will be stockpiled and collected by a private waste contractor for disposal at a licenced recycling facility or licenced landfill site.

The frequency of the waste removal will, in most cases, be dictated by the quantities of material being deposited into each of the dedicated skips. Bulk bins are to be checked as required by the Site Manager to ensure that no overflow occurs. If skip bins are reaching capacity, removal and replacement should be arranged. All bulk bins leaving the site will be covered with a suitable tarpaulin to ensure no spillage of waste during transport.

6.4 Waste Storage and Servicing Requirements

6.4.1 Waste and Recycling Procedure and Location

The waste produced by this precinct will be stored in waste compactors. Estimates have been made assuming compactors will have 35 m^3 capacity and compact to 3:1. The compactors will be stored externally to the warehouse at Lot 1A and in Lot 1B. Waste is to be taken directly to the compactors. As such, no designated waste storage area will be required.

The Development may choose to have general landfill waste and comingled recycling bins present and positioned in easily accessible areas throughout the offices for effective recycling results. Waste and recyclables from each holding area in the premises must be transferred to the centralised compaction area.

The waste and recycling compaction location should also incorporate measures to ensure best practice waste management and compliance with Council requirements, including:

- Screening from public view for visual amenity, noise control and odour control.
- Positioning away from public view, where possible.
- Flexibility in design to allow future uses, operational changes and tenancy changes.
- Positioning and design with the consideration for both the potential traffic hazards caused by the waste collection and the ease of access for tenants and contractors.
- Food scraps are to be placed in specialised containment bins.
- The construction of additional garbage areas, rooms and equipment are to comply with Building Code of Australia (BCA) requirements and Australian Standards.
- All waste areas are to be kept clean and odour and vermin free. It is the responsibility of the Operations Manager or equivalent personnel to check each area for cleanliness, hygiene and health and safety issues.

Sufficient space will be provided for the segregation and storage of hazardous wastes on site. These wastes include fluorescent tubes, smoke detectors, e-wastes and other recyclable resources. Sufficient space will also be provided for reuse items such as crates and pallets for occupational safety purposes.

6.4.2 Compactor Operations and Collection

Five compactors at Lot 1A will be divided to service the Development's primary waste streams. One compactor will process the general waste, two compactors will process paper and cardboard packaging waste and two compactors will process the plastic wrapping waste. The operations of the compactors are summarised in **Table 11**.

Table 11 Compaction operations at Lot 1A

Waste Type	Number of Compactors	Collections per Week
General Waste	1	3
Paper and Cardboard	2	2
Plastic Film	2	2

Lot 1B will be attended by bins serviced by a private contractor. These will similarly be divided into the waste streams outlined in **Table 11** and located in an external space which meets the criteria detailed in **Section 6.4.1**. The recommended bin sizes and storage space for Lot 1B are outlined in **Table 12**. The below is based on a collection frequency of three times per week for general waste and twice per week for recyclables.

To allow for ready movement of bins in and out of the bin storage area, the bin storage area outlined in **Table 12** provides a floor area of at least 150% of the total minimum bin floor area. This can also act as a contingency in the event of spikes in waste generation.

Table 12 Summary of bin servicing at Lot 1B

Complex	Area Type	General Waste Bin Size (L)	Recycling Bin Size (L)	Total Number of Bins	Space Required (m2)
Lot 1B1	Warehouse	1 x 4,500	2 x 3,000	3	20
	Office	1 x 240	1 x 240	2	5
Lot 1B2	Warehouse	1x 4,500	2 x 3,000	3	20
	Office	1 x 240	1 x 240	2	5
Lot 1B3	Warehouse	1 x 3,000	1 x 4,500	2	15

Complex	Area Type	General Waste Bin Size (L)	Recycling Bin Size (L)	Total Number of Bins	Space Required (m2)
	Office	1 x 240	1 x 240	2	5

The compactors and bins will be positioned in locations accessible to waste collection vehicles and be serviced directly. When servicing the Development, all vehicles are to service the site in a clockwise circulation.

6.4.3 Bulky and Hazardous Waste Management

Sufficient space will be provided in the Development for the storage of large and bulky items. This includes broken pallets, broken storage units, e-waste and other materials that cannot be disposed of in the general or recyclable waste stream.

Space will also be allocated to store reusable items such as crates so that storage in a public place is avoided.

Management may consider organising a skip on a monthly basis or as required to remove bulky waste items, or engage a contractor to collect and transport these items for reuse, recycling or disposal at an EPA licensed facility.

A suitably licensed e-waste recycling contractor should be engaged to collect and recycle all e-waste items generated at the facility.

6.5 Waste Avoidance, Reuse and Recycling Measures

Some examples of how the reduction, re-use and recycling of waste can be achieved are listed below.

6.5.1 Waste Avoidance

Waste avoidance measures that could be used at the Development include:

- Participating in take-back services to suppliers to reduce waste further along the supply chain;
- Avoiding printing where possible;
- Review of packaging design to reduce waste but maintain ‘fit for purpose’;
- Providing ceramic cups, mugs, crockery and cutlery rather than disposable items;
- Purchasing consumables in bulk to avoid unnecessary packaging;
- Presenting all waste reduction initiatives to staff as part of their induction program; and
- Investigating leased office equipment and machinery rather than purchase and disposal.

6.5.2 Reuse

Possible re-use opportunities that could be used at the Development include establishing systems with in-house and supply chain stakeholders to transport products in re-useable packaging where possible.

6.5.3 Recycling

Possible recycling opportunities that could be used at the Development include:

- Collecting and recycling e-waste;

- Flatten or bale cardboard to reduce number of bins required;
- Paper recycling trays provided in office areas for scrap paper collection and recycling;
- Collecting printer toners and ink cartridges in allocated bins for appropriate contractor recycling; and
- Development of 'buy recycled' purchasing policy.

6.6 Signage

Signs which clearly identify waste management procedures and provisions to staff and visitors should be distributed around the Development. Key signage considerations are:

- Clear and correct labelling on all waste and recycling bins, indicating the correct type or types of waste that can be placed into a given bin, as shown in **Figure 4;**
- Signposts and directions to location of waste storage areas;
- Clear signage in all waste storage areas to instruct users how to correctly separate waste and recycling;
- Maintaining a consistent style colour scheme and system for signs throughout the Development; and
- Emergency contact information for reporting issues associated with waste or recycling management.

Colour-coded and labelled bin lids are necessary for identifying bins. All signage should conform to the relevant Australian Standard and use labels approved by the NSW EPA[18]. The design and use of safety signs for waste rooms and enclosures should comply with Australian Standard AS 1319 Safety Signs for the Occupational Environment and clearly describes the types of materials designated for each bin.



Figure 4 Example of bin labels for operational waste

6.7 Communication strategies

Waste management initiatives and management measures should be clearly communicated to building managers, owners, employees, customers and cleaners. Benefits of providing this communication include:

- improved satisfaction with services;
- increased ability and willingness to participate in recycling;
- improved amenity and safety;

[18] NSW EPA waste signage and label designs http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm

- improved knowledge and awareness through standardisation of services;
- increased awareness or achievement of environmental goals and targets;
- reduced contamination of recyclables stream;
- increased recovery of recyclables and organics material, if implemented; and
- greater contribution to targets for waste reduction and resource recovery, the environment and heritage conservation.

To realise the above benefits, the following communication strategies should be considered:

- Use consistent signage and colour coding throughout the Development. Examples of signage are provided in **Section 6.6**;
- Ensure all staff are trained in correct waste separation and management procedures;
- Provide directional signage to show location of and routes to waste storage areas;
- General waste and co-mingled recycling bins should be clearly labelled and colour-coded to ensure no cross contamination, where applicable;
- Employees and cleaners should adhere to the WMP for compliance, in consultation with Management; and
- Repair signs and labels promptly to avoid breakdown of communications.

6.8 Monitoring and Reporting

Audit and visual assessment of bins prior to collection should be undertaken by Management in the first few months of being operational to ensure the waste management system is sufficient for the Development's needs, and also on a half-yearly basis to ensure WMP provisions are being maintained.

Where audits show that recycling is not carried out effectively, additional staff training should be undertaken by Management and signage re-examined.

6.9 Roles and Responsibilities

All contractors that are made with cleaners, tenants and building managers are to clearly explain the Development's waste management system and identify roles and responsibilities.

It should be the responsibility of Management to implement the WMP and a responsibility of the employees and cleaners to ensure that they comply with the WMP at all times. Management should routinely check waste sorting and storage areas for cleanliness, hygiene and safety, and also ensure all monitoring and audit results are well documented and carried out as specified in the WMP. An outline of waste management responsibilities is presented in **Table 13**.

Table 13 Operational waste management responsibility allocation

Responsible Person	General Tasks
Management	Ensure the WMP is implemented throughout the life of the operation.
	Update the WMP on a regular basis (e.g. annually) to ensure the Plan remains applicable.
	Undertake liaison and management of contracted waste collections.
	Organise internal waste audits on a regular basis.

Responsible Person	General Tasks
	Manage any complaints and non-compliances reported through waste audits etc.
	Perform inspections of all waste storage areas and waste management equipment on a regular basis.
	Organise cleaning and maintenance requirements for waste management equipment.
	Monitor bins to ensure no overfilling occurs.
	Ensure effective signage, communication and education is provided to alert visitors, employees and cleaners about the provisions of this WMP and waste management equipment use requirements.
	Monitor and maintain signage to ensure it remains clean, clear and applicable.
	Ensure waste and recycling storage rooms are kept tidy.
	Ensure that regular cleaning and daily transfer of bins is being undertaken by the cleaners
	Ultimately responsible for the management of all waste management equipment, cleaning requirements, waste transfer and collection arrangements.
Cleaners and Staff	Removal of general waste, recyclables, cardboard waste and hazardous waste from floor areas for transfer to centralised waste and recycling collection rooms on a daily basis or as required.
	Cleaning of all bins and waste and recycling rooms on a weekly basis or as required.
	Compliance with the provisions of this WMP.
Gardening Contractor, as applicable	Removal of all garden organics waste generated during gardening maintenance activities for recycling at an off-site location or reuse as organic mulch on landscaped areas.

APPENDIX A

Architectural Drawings

PROPOSED INDUSTRIAL FACILITIES
PRECINCT 1
OAKDALE WEST
Estate Road HORSLEY PARK, NSW 2175
Drawing List

Masterplans

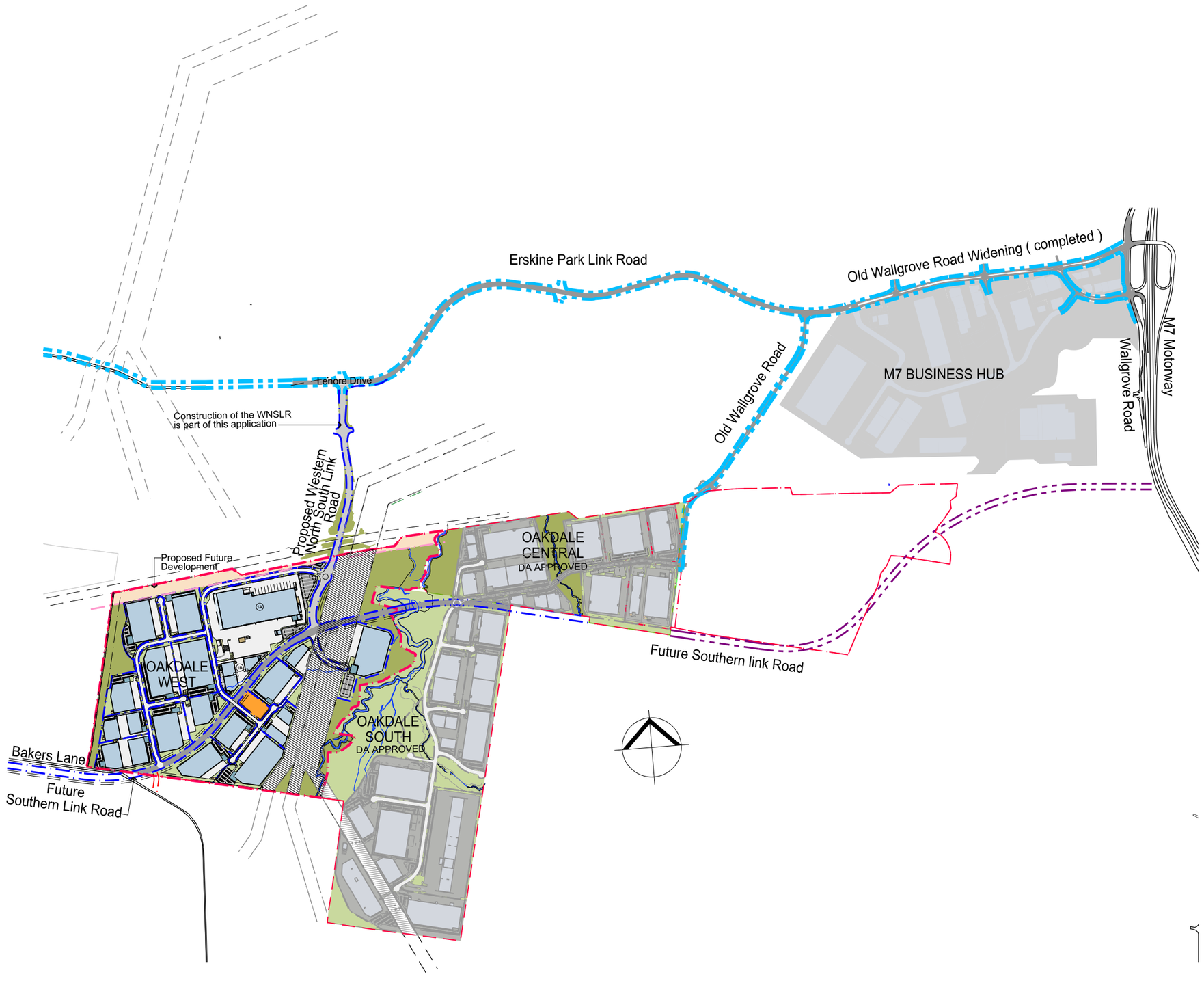
OAK MP01	Cover Sheet & Location
OAK MP02	SSDA Masterplan
OAK MP03	Western North South Link Road
OAK MP04	SSDA Stage 1 Development
OAK MP05	Precinct 1 Masterplan
OAK MP06	Precinct Plan
OAK MP07	Indicative Ultimate Lot Layout
OAK MP08	Site Ananlysis Plan
OAK MP09	Existing Zoning
OAK MP10	Not Used
OAK MP11	Building Staging Plan (Indicative)
OAK MP12	Signage Precinct 1 Plan
OAK MP13	Fire Protection Plan
OAK MP14	Biodiversity Management Plan

Lot 1A

OAK 1A DA10	Site Plan
OAK 1A DA11	Roof Plan
OAK 1A DA12	Office Plan Ground Floor
OAK 1A DA13	Office Plan First Floor
OAK 1A DA13A	Office Plan Second Floor
OAK 1A DA14	Elevations Office
OAK 1A DA15	Elevations Warehouse
OAK 1A DA16	Section 1
OAK 1A DA17	Section 2
OAK 1A DA18	Warehouse Plan
OAK 1A DA18A	Mezzanine 1 Plan
OAK 1A DA18B	Mezzanine 2 Plan
OAK 1A DA18C	Mezzanine 3 Plan
OAK 1A DA18D	Mezzanine 4 Plan
OAK 1A DA18E	Mezzanine 5 Plan
OAK 1A DA18F	Mezzanine 6 Plan
OAK 1A DA19	Skybridge Sections & Elevations
OAK 1A DA20	Receiving Office Plans
OAK 1A DA21	Gatehouse Plans
OAK 1A DA22	Trailer Workshop Plans
OAK 1A DA23	Trailer Wash
OAK 1A DA24	Diesel Refueling Area
OAK 1A DA25	Energy Complex 1
OAK 1A DA25A	Energy Complex 2
OAK 1A DA28	Stage 2 Site Plan
OAK 1A DA29	Stage 2 Elevations

Lot 1B

OAK 1C DA30	Site Plan / Floor Plan
OAK 1C DA31	Roof Plan
OAK 1C DA32	Office Floor Plans 1B1
OAK 1C DA33	Office Floor Plans 1B2
OAK 1C DA33A	Office Floor Plans 1C
OAK 1C DA34	Elevations Office
OAK 1C DA34A	Elevations Office
OAK 1C DA35	Elevations Sheet 1
OAK 1C DA36	Elevations Sheet 2
OAK 1C DA37	Sections



SBA ARCHITECTS

Oakdale West Estate
Horsley Park

Cover Sheet / Location Plan

Not To Scale
23 Oct 2019

OAK MP01 (AM)
Job No 15117

SEE DRAWING OAK MP03 FOR CONTINUATION

Goodman

BRICKWORKS LIMITED

Proposed Bridge

Proposed Western North South Link Road Subject to Just Terms Land Acquisition.

AMENITIES LOT

Substation

Kiosk

New Driveway Access track

Proposed Western North South Link Rd

Goodman Signage

30m Wide Road Reserve

Main Site Identification Signage

Goodman Signage Wall

WNS/R Up To SLR Subject to Subdivision

'Possible future Link Road by others, as depicted on SEPP Transport Infrastructure Map, subject to Just Terms land acquisition'.

SLR Road Reserve

Aecom Concept Alignment (Ref 60301100-00-FIG-PL0001 TO PL0003)

Future Southern Link Road

Proposed Future Development

Estate Road 01

Estate Road 02

Estate Road 03

Estate Road 04

Estate Road 05

Estate Road 06

Estate Road 07

Estate Road 08

1A RL 70.00 (+/- 1000mm)

RL 69.00 (+/- 1000mm)

2A RL 66.50 (+/- 1000mm)

2B RL 66.50 (+/- 1000mm)

3A RL 75.00 (+/- 1000mm)

3B RL 75.00 (+/- 1000mm)

3C RL 75.00 (+/- 1000mm)

3D RL 75.00 (+/- 1000mm)

1B1 RL 74.80 (+/- 1000mm)

1B2 RL 74.80 (+/- 1000mm)

1C RL 74.80 (+/- 1000mm)

4A RL 83.00 (+/- 1000mm)

4B RL 79.80 (+/- 1000mm)

4C RL 72.80 (+/- 1000mm)

4D RL 72.80 (+/- 1000mm)

4E RL 75.55 (+/- 1000mm)

4F RL 73.05 (+/- 1000mm)

4G RL 72.30 (+/- 1000mm)

5A RL 60.55 (+/- 1000mm)

2E RL 67.30 (+/- 1000mm)

2F RL 69.80 (+/- 1000mm)

2G RL 69.80 (+/- 1000mm)

2H RL 72.05 (+/- 1000mm)

2J RL 72.05 (+/- 1000mm)

Services Lot (Substation)

Transmission Easement

60000

6000 ELECTRICAL EASEMENT

40000 SETBACK

98000 SETBACK

20000 SETBACK

7500 SETBACK

Emmaus Residential Aged Care Average RL 56.00

Emmaus Catholic College Average RL 64.00

OAKDALE SOUTH
Lot 12 DP1178389

Site Area Schedule

Total Site Area	**154.12 ha**
Less:	
Non Developable Land	20.70 ha
Easements	22.45 ha
Regional Roads	6.74 ha
Services Lot	1.26 ha
Estate Roads	8.09 ha
E2 Zone non developable	1.43 ha
	60.67 ha
Development Areas	
Precinct 1	21.92 ha
Precinct 2	19.51 ha
Precinct 3	18.50 ha
Precinct 4	22.39 ha
Precinct 5	6.02 ha
Proposed Future Development	4.85 ha
Amenities Lot	.258 ha
Total Developable	**93.45 ha**
Total Warehouse	423,592 sqm
Total Office	20,994 sqm
Others (for Site 1A)	4,004 sqm
Mezzanines (for Site 1A)	32,402 sqm
Total GFA	480,992 sqm
Total GLA	448,590 sqm

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

SSDA Estate Masterplan

0 60 300

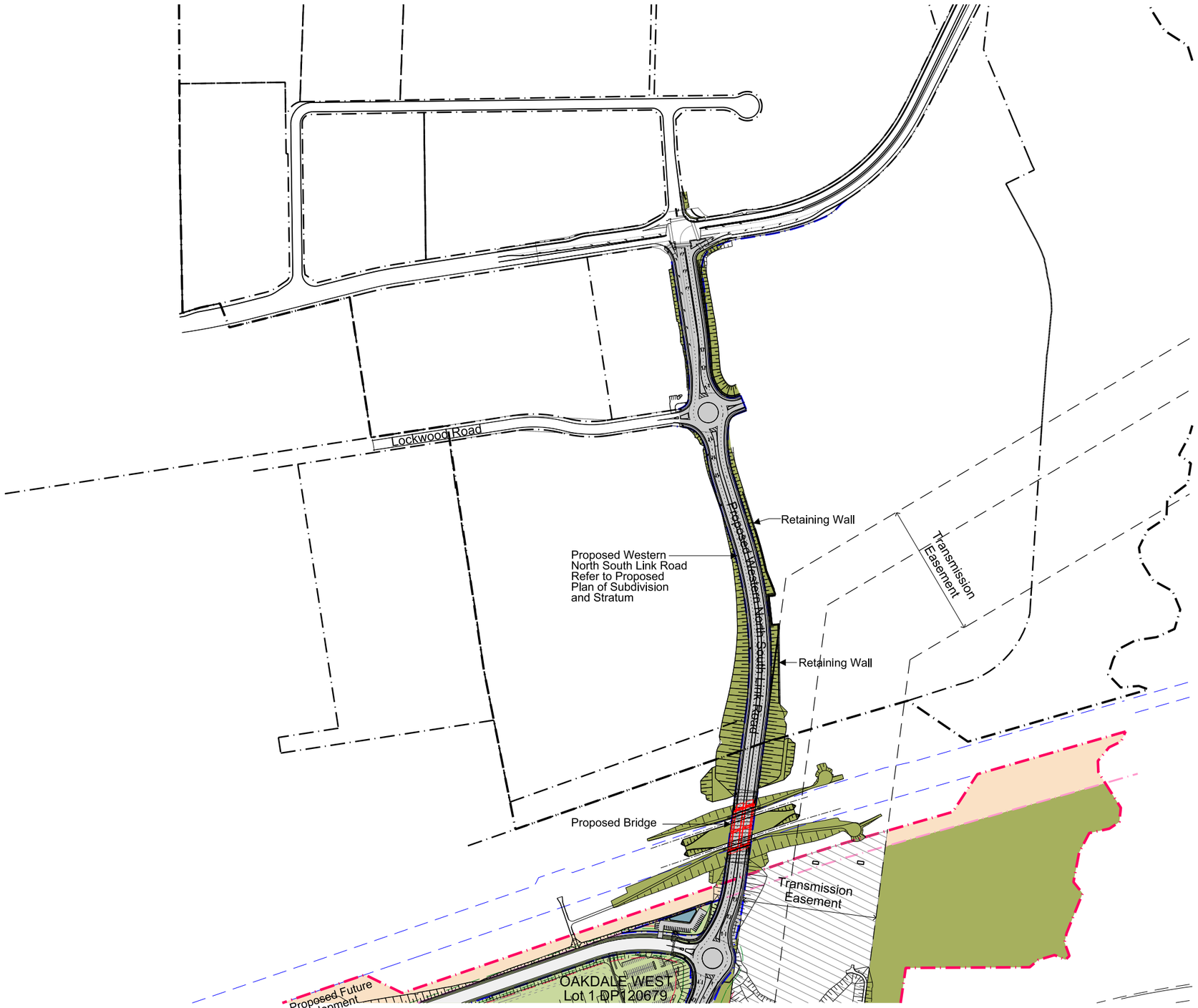
1:3000 @ A1
1:6000 @ A3

23 Oct 2019

OAK MP02 (BQ)
Job No 15117

Goodman

BRICKWORKS LIMITED



SEE DRAWING OAK MP02 FOR CONTINUATION

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Western North South Link Road

0 60 300

1:3000 @ A1
1:6000 @ A3

23 Oct 2019

OAK MP03 (AH)
Job No 15117

Goodman

BRICKWORKS LIMITED



Site Area Schedule

Total Site Area	**154.12 ha**
Less:	
Non Developable Land	20.70 ha
Easements	22.45 ha
Regional Roads	6.74 ha
Services Lot	1.26 ha
Estate Roads	8.09 ha
E2 Zone non delopable	1.43 ha
	60.67 ha
Development Areas	
Precinct 1	21.9242 ha
Total Developable (Precinct 1)	**21.9242 ha**
Total Warehouse (includes Stage 2)	81,773 sqm
Total Office	3,903 sqm
Total Others	4,004 sqm
Total Mezzanines (includes Stage 2)	32,402 sqm
Total GFA	122,082 sqm
Total GLA	89,680 sqm

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

SSDA Stage 1 Development - Precinct 1

0 100 500

1:5000 @ A1
1:10000 @ A3

23 Oct 2019

OAK MP04 (AM)
Job No 15117

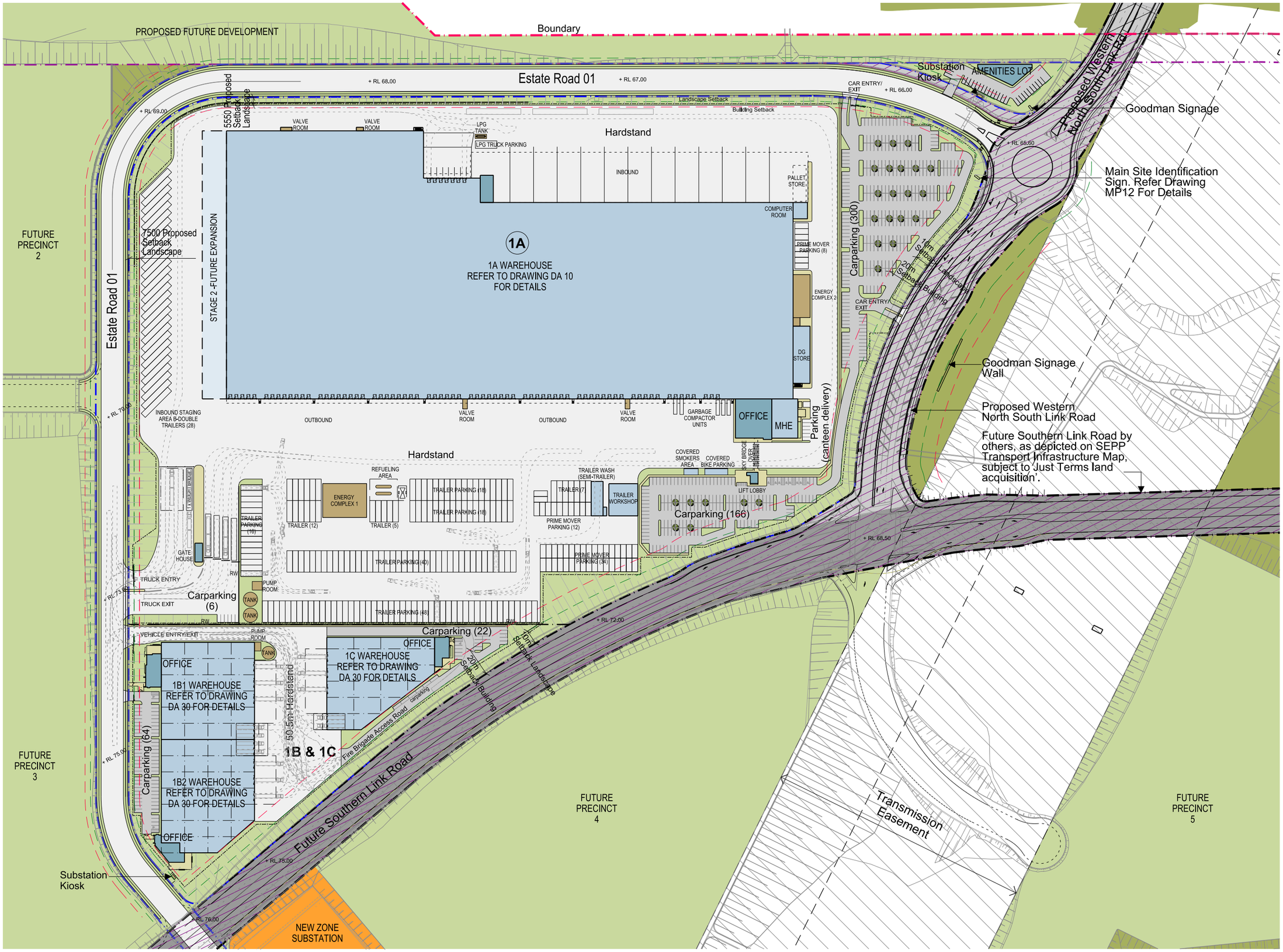
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Development Area Schedule	
Total Site Area	219,242 sqm
Total Warehouse	81,773 sqm
Total Office	3,903 sqm
Others (for Lot 1A)	4,004 sqm
Mezzanines (for Lot 1A)	32,402 sqm
Total Gross Floor Area (includes all Mezzanines)	**122,082 sqm**
Total Gross Leasable Area (excludes all Mezzanines)	**89,680 sqm**
Carparking (total)	558

Lot 1A	
Site Area	187,270 sqm
Warehouse (includes Stage 2 future expansion 3,318 sqm)	68,160 sqm
Office (3 level)	2,646 sqm
Others (includes dock office, trailer workshop, trailer wash, dangerous goods store, computer room, gate house, energy complex 1 & 2, refuelling area, battery charge, skybridge & lobby)	4,004 sqm
Mezzanines (includes Stage 2 mezzanine 3,101 sqm)	32,402 sqm
Total Building Area	107,212 sqm
Awning	8,620 sqm
Site Cover (exc. awning)	57 %
Floor Space Ratio	0.57 : 1
Hardstand Area	88,610 sqm
Light Duty Area	14,030 sqm
Prime Mover Parking	54
Trailer Parking	164
Carparking (inclusive of 6 for Gatehouse)	472
Carparking (motorcycles)	6

Lot 1B & 1C	
Site Area	31,972 sqm
Warehouse 1B1	4,625 sqm
Warehouse 1B2	4,998 sqm
Warehouse 1C	3,990 sqm
Office 1B1 (2 level)	500 sqm
Office 1B2 (2 level)	415 sqm
Office 1C (2 level)	342 sqm
Total Building Area	14,870 sqm
Awning	2,095 sqm
Site Cover (exc. awning)	47 %
Floor Space Ratio	0.47 : 1
Hardstand Area	7,440 sqm
Light Duty Area	3,755 sqm
Carparking	86



SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Precinct 1 Plan

0 25 125

1:1250 @ A1
1:2500 @ A3

23 Oct 2019

OAK MP 05 (AZ)
Job No 15117

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Precinct 1

Precinct 2

Precinct 3

Precinct 4

Precinct 5

Substation
Zone
Lot (1.26 ha)

Precinct Area Schedule

Precinct 1	28.97 ha
Net Developable area	21.92 ha
Precinct 2	30.52 ha
Net Developable area	19.56 ha
Precinct 3	19.00 ha
Net Developable area	18.50 ha
Precinct 4	23.75 ha
Net Developable area	22.39 ha
Precinct 5	13.51 ha
Net Developable area	6.02 ha

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Precinct Plan

0 60 300

1:3000 @ A1
1:6000 @ A3

23 Oct 2019

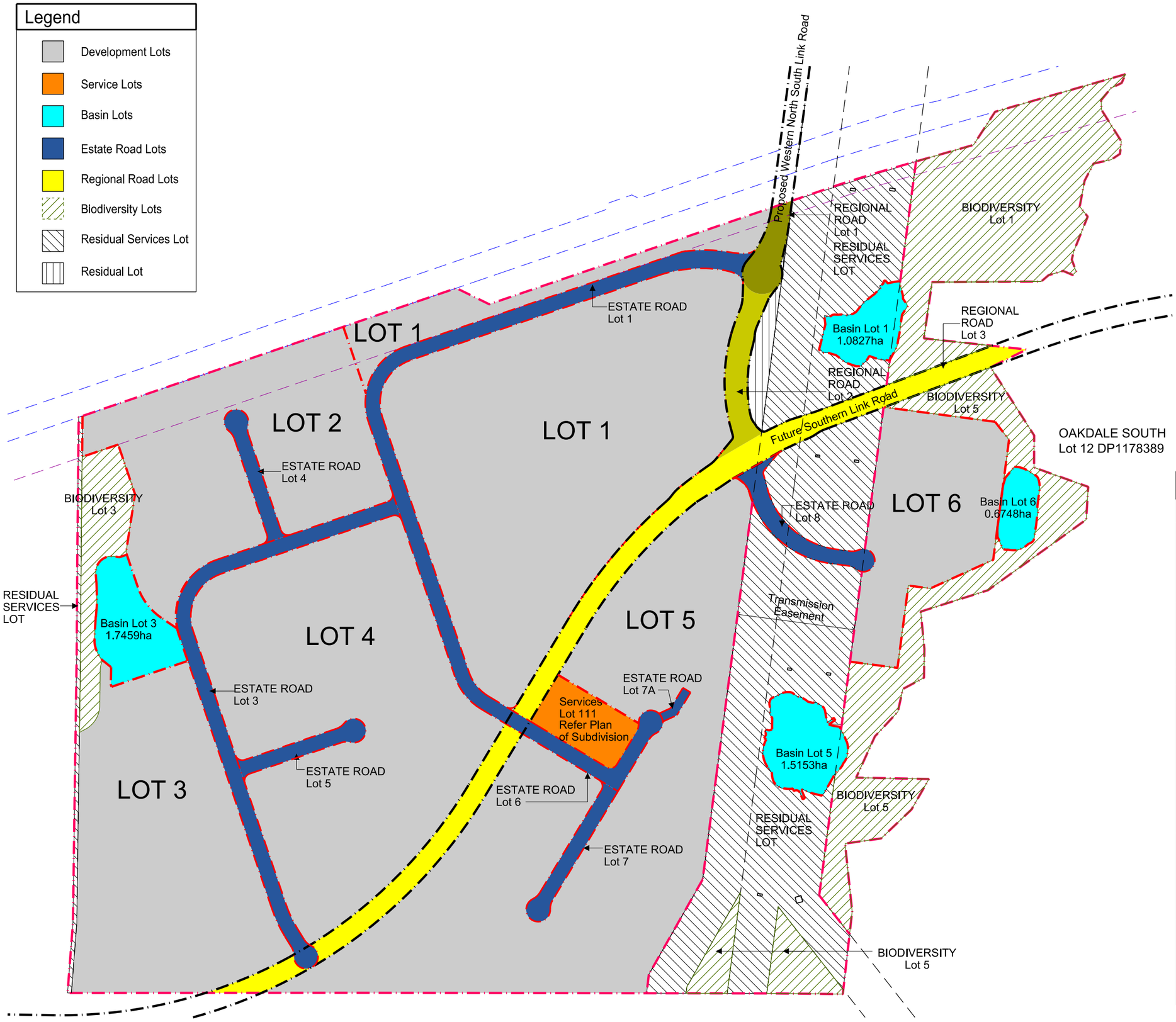
OAK MP06 (AH)
Job No 15117

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Legend

- Development Lots
- Service Lots
- Basin Lots
- Estate Road Lots
- Regional Road Lots
- Biodiversity Lots
- Residual Services Lot
- Residual Lot



Lot 1 DP120679		Sub Total
Total Land Area	WEST	154.12 ha
Biodiversity Lot 1	8.0710 ha	
Biodiversity Lot 2	Not Used	
Biodiversity Lot 3	1.9238 ha	
Biodiversity Lot 4	Not Used	
Biodiversity Lot 5	7.242 ha	17.2368 ha
Regional Road Lot 1	.6057 ha	
Regional Road Lot 2	.915 ha	
Regional Road Lot 3	4.9813 ha	6.502 ha
Services Lot	1.2614ha	1.2614 ha
Residiual Lot	.5918 ha	.5918 ha
Residual Services Lot	20.0564 ha	20.0564 ha
Estate Road Lot 1	2.8266 ha	
Estate Road Lot 2	Deleted	
Estate Road Lot 3	2.2808 ha	
Estate Road Lot 4	.5228 ha	
Estate Road Lot 5	.5064 ha	
Estate Road Lot 6	.763 ha	
Estate Road Lot 7	.5843 ha	
Estate Road Lot 7A	.0845 ha	
Estate Road Lot 8	.747 ha	8.3153 ha
Basin Lot 1	1.0828 ha	
Basin Lot 2	Not Used	
Basin Lot 3	1.7459 ha	
Basin Lot 4	Not Used	
Basin Lot 5	1.5153 ha	
Basin Lot 6	0.6748	5.0188 ha
Development Lot 1	24.4825 ha	
Development Lot 2	11.2859 ha	
Development Lot 3	12.4588 ha	
Development Lot 4	18.5031ha	
Development Lot 5	22.3902 ha	
Development Lot 6	6.0196 ha	95.1402 ha

*All areas subject to survey.

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Indicative Ultimate Lot Layout

0 60 300

1:3000 @ A1
1:6000 @ A3

23 Oct 2019

OAK MP07 (AE)
Job No 15117

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Site Constraints

- Aboriginal Sensitivity Zone
- HeritageTesting Zone
- Existing Native Vegetation

Proposed Western North South Link Road

Future Southern Link Road

Estate Road 01

Estate Road 01

Transmission Easement

New Zone Substation Lot

1A

1B

1C

PRECINCT 1

PRECINCT 2

PRECINCT 3

PRECINCT 4

PRECINCT 5

+RL.67.00

+RL.54.50

+RL.55.00

+RL.55.50

+RL.61.50

+RL.56.00

+RL.51.75

+RL.51.00

+RL.66.50

+RL.56.00

+RL.87.00

+RL.59.00

+RL.87.00

+RL.57.00

+RL.70.00

+RL.57.50

+RL.58.00

+RL.93.00

+RL.78.50

+RL.64.50

+RL.59.50

OAKDALE SOUTH
Lot 12 DP1178389

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Site Analysis Plan

0 60 300

1:3000 @ A1
1:6000 @ A3

23 Oct 2019

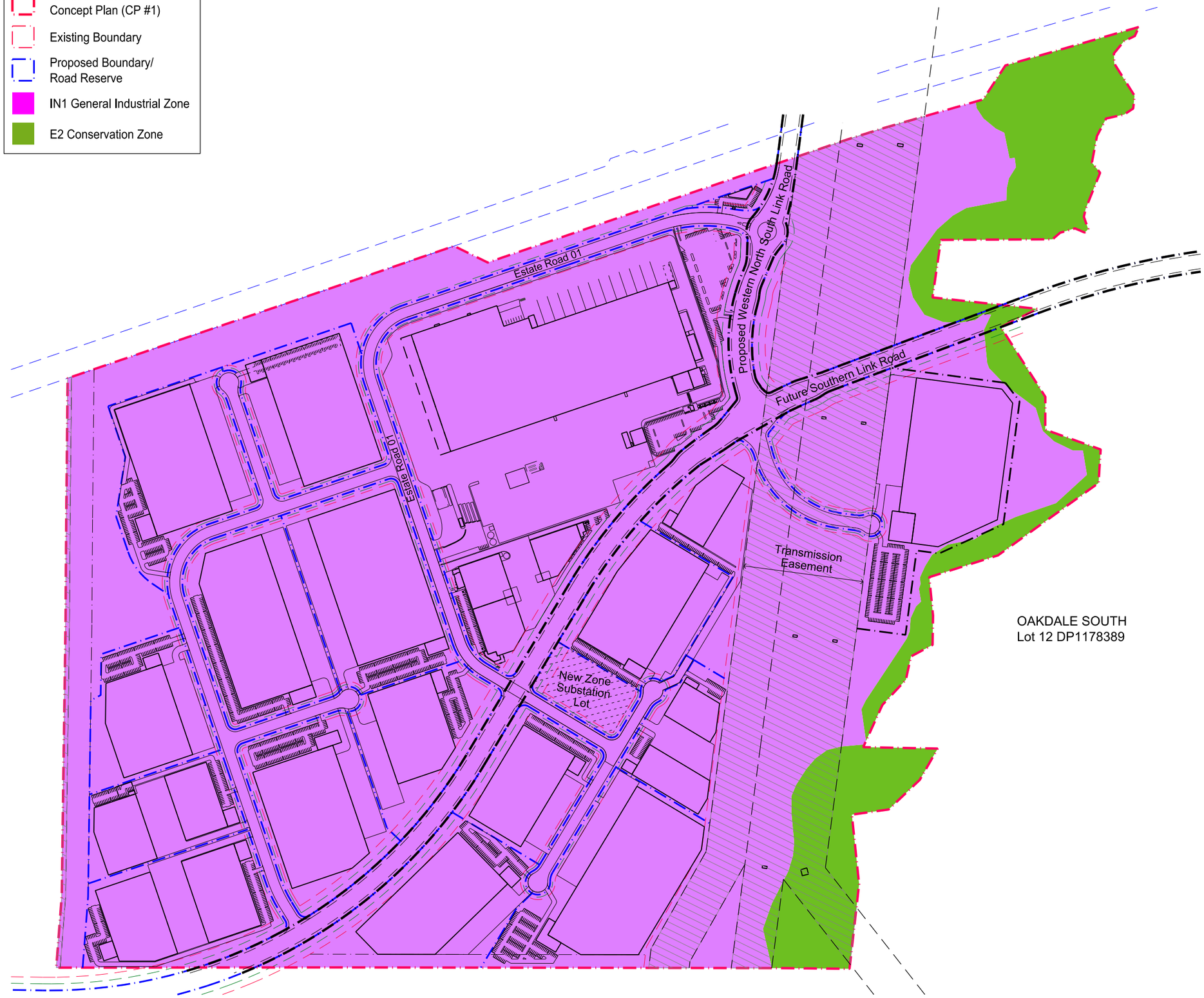
OAK MP08 (AG)
Job No 15117

Goodman

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Legend

- Oakdale WEST Concept Plan (CP #1)
- Existing Boundary
- Proposed Boundary/ Road Reserve
- IN1 General Industrial Zone
- E2 Conservation Zone



SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Existing Zoning

0 60 300

1:3000 @ A1
1:6000 @ A3

23 Oct 2019

OAK MP09 (AC)
Job No 15117

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BRICKWORKS LIMITED



OAKDALE SOUTH
Lot 12 DP1178389

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Building Staging plan (Indicative)

0 60 300

1:3000 @ A1
1:6000 @ A3

23 Oct 2019

OAK MP11 (AE)
Job No 15117

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Signage Legend

- S1 Identification - Site
- S2 Identification - Building
- S3 Wayfinding - Truck
- S4 Wayfinding - Car
- S5 Wayfinding - Pedestrian
- S6 Goodman Light Box (Type 1) on Warehouse
- S7 Goodman Signage
- S8 Goodman Signage Wall
- S9 Goodman Light Box (Type 2) on Warehouse
- C Customer Signage (Type 1)
- D Customer Signage (Type 2)
- E Customer Signage (Type 3)
- F Sculpture Artwork



F 3.8m High Sculpture Artwork



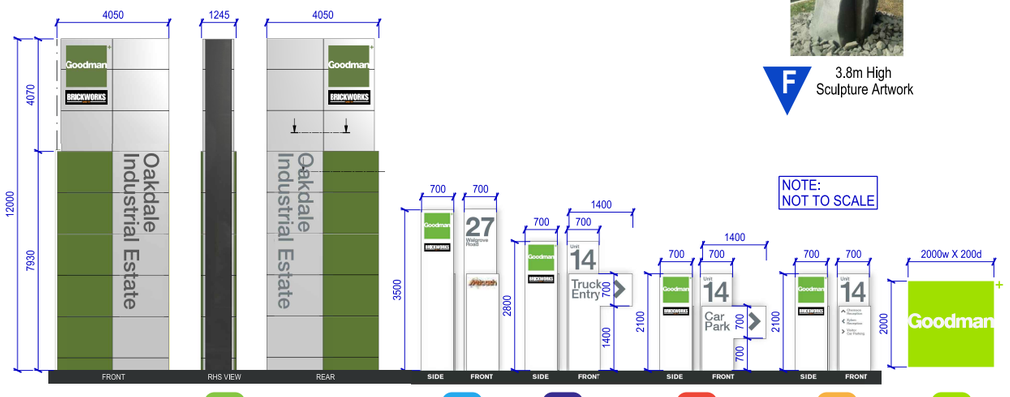
S9 Illuminated Sign fixed to Building



S8



S7



S1 Illuminated Site Identification Pylon Sign

S2 Illuminated Building Identification Pylon Sign

S3 Illuminated Truck Wayfinding Pylon Sign

S4 Illuminated Car Wayfinding Pylon Sign

S5 Illuminated Wayfinding Pylon Sign

S6 Illuminated Sign fixed to Building

Note:
Not To Scale

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Signage Precinct 1 Plan

0 25 125

1:1250 @ A1
1:2500 @ A3

23 Oct 2019

OAK MP12 (AC)
Job No 15117

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Legend

Defendable Space

Proposed Bridge

Proposed Western North South Link Road, Subject to Just Terms Land Acquisition.

Proposed Western North South Link Rd

Biodiversity Lot 1

'Possible future Link Road by others, as depicted on SEPP Transport Infrastructure Map, subject to Just Terms land acquisition'.

30m Wide Road Reserve

30.9m Wide Road Reserve

Aecom Concept Alignment (Ref 60301100-00-FIG-PL0001 TO PL0003)

Proposed Future Development

Estate Road 01

Future Southern Link Road

Minimum 7.5m wide Defendable Space from Boundary

6000

Biodiversity Lot 3

PRECINCT 2

PRECINCT 1

PRECINCT 5

PRECINCT 3

PRECINCT 4

1A

2A

2B

2E

2F

2G

3A

3B

3C

3D

4A

4B

4C

4D

4E

4F

4G

1B & 1C

Services Lot (Substation)

Transmission Easement

OAKDALE SOUTH Lot 12 DP1178389

Minimum 7.5m wide Defendable Space from Boundary

Biodiversity Lot 5

Minimum 50m wide Defendable Space by width of road & building set back.

Minimum 7.5m wide Defendable Space from Boundary

Minimum 12m wide Defendable Space from Boundary

Minimum 20m wide Defendable Space from Estate Boundary

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Fire Protection Plan

0 60 300

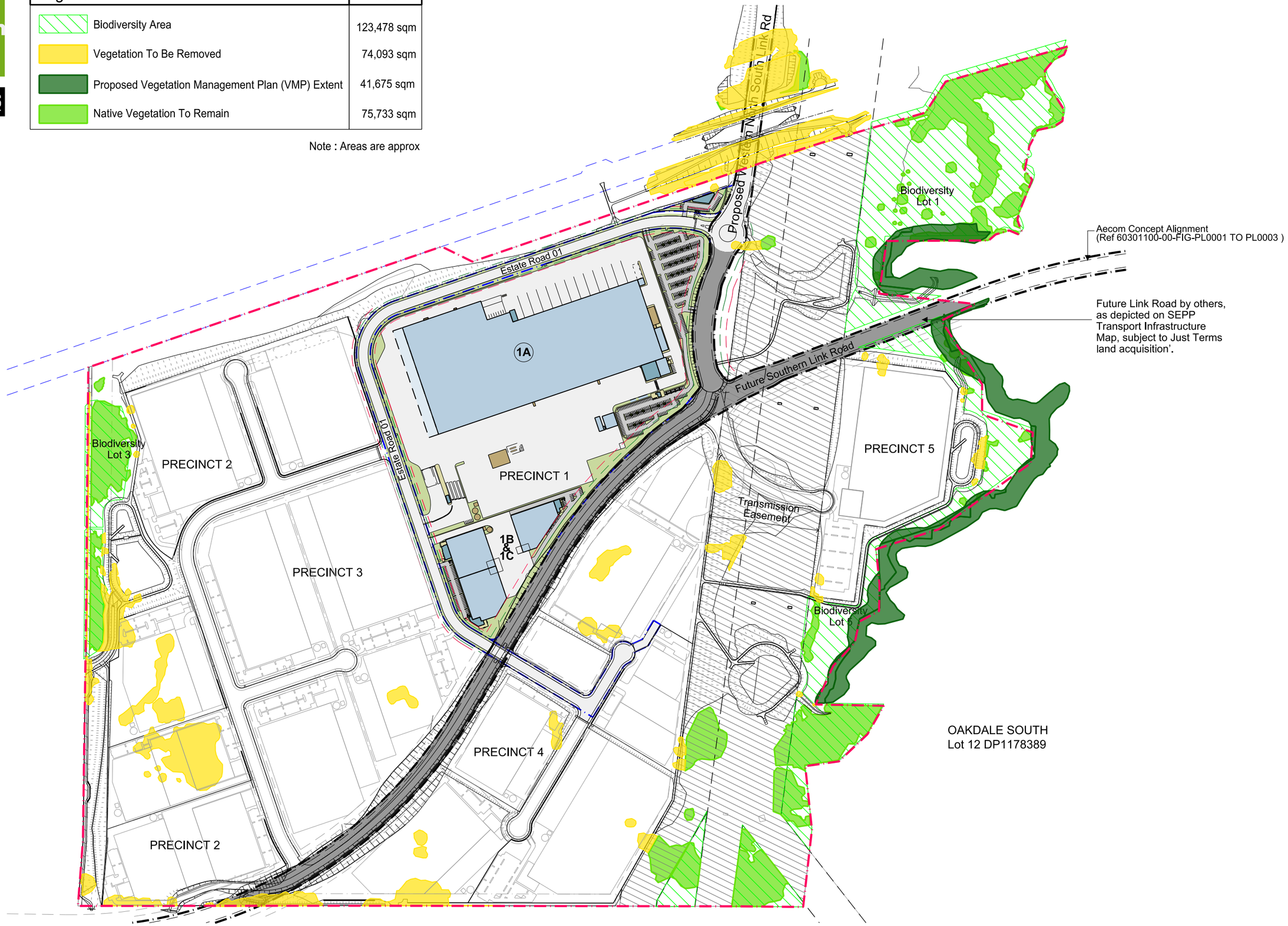
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1:6000 @ A3

23 Oct 2019

OAK MP13 (AE)
Job No 15117

Legend	Area
Biodiversity Area	123,478 sqm
Vegetation To Be Removed	74,093 sqm
Proposed Vegetation Management Plan (VMP) Extent	41,675 sqm
Native Vegetation To Remain	75,733 sqm

Note : Areas are approx



Oakdale West Estate

Horsley Park

Biodiversity Management Plan

1:3000 @ A1
1:6000 @ A3

0 60 300

23 Oct 2019

OAK MP14 (AM)
Job No 15117

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HIGH BAY WAREHOUSE
RL. 69.000 (+/- 1000)

C/L HI-BAY RIDGE

LOW BAY WAREHOUSE
RL. 70.000 (+/- 1000)

STAGE 2 FUTURE EXPANSION

INBOUND
35M AWNING OVER

OUTBOUND

SUPER B-DOUBLE INBOUND STAGING AREA

RECEIVING OFFICE

7 X RECESSED DOCKS

72 X RECESSED DOCKS

3M AWNING OVER

RECOUP AREA 50M²

FUTURE RACKING SHOWN INDICATIVELY

SPARE PARTS STORE

TECH CENTRE RECEIVING
- 12 X TRUCK POSITIONS
- 7 x ROLLER SHUTTER DOORS
- 11 X RAPID RISER DOORS

PALLET STORAGE

COMPUTER ROOM 2

PRIME MOVER PARKING (8)

ENERGY COMPLEX 2

C/L LOW BAY RIDGE

VALVE ROOM 6M X 6M

DG STORE

LOW BAY ROOF ACCESS

HIGH BAY ROOF ACCESS

TANK MIN 8M FROM BUILDING

LPG TANK

PARKING & AWNING

LOUVRE WALL

AWNING END WALL

LANDSCAPE PROPOSED SETBACK

BOUNDARY FNC-2

PED ACCESS & GATE

CARS AUTOMATIC SLIDING GATE

300 CAR PARK SPACES

Proposed Western North South Link Rd

Future Southern Link Road

OFFICE
RL. 70.000
(+/- 1000)

MHE

CANTEEN DELIVERIES

SKYBRIDGE OVER

166 CAR PARK SPACES

SMOKERS AREA AWNING OVER

BIKE RACKS & AWNING OVER

WITRON BASALT PYLON SIGN

MENS

STAIRS & LIFT

BUILDING SETBACK

ENERGY COMPLEX 1
RL. 70.000 (+/- 1000)

REFUELING AREA (AWNING OVER)
RL. 70.000 (+/- 1000)

REFUELING

TANKS

LIGHTPOLE & ARMCO

TRAILER PARKING (36)

TRAILER PARKING (12)

TRAILER PARKING (5)

TRAILER PARKING (7)

PRIME MOVER PARKING (14)

TRAILER WASH
RL. 70.000 (+/- 1000)

TRAILER WORKSHOP
RL. 70.000 (+/- 1000)

3M AWNING

PAINT

TRAILER PARKING (40)

PRIME MOVER PARKING (34)

TRAILER PARKING (48)

TRAILER PARKING (16)

BRIGADE PARKING

PUMP RM.

TANK

TANK

4 X WEIGH BRIDGES

WEIGH BRIDGE

1 X WEIGHBRIDGE LOCATION

GATE HOUSE

SLIDING GATE LOCATION

BOOM GATES

TRUCK ENTRY

TRUCK EXIT

INBOUND STAGING AREA B-DOUBLE TRAILER (28)

INBOUND BOOM GATES

SDP
PROJECT BASE POINT

(6) CAR SPACES FOR SECURITY GATEHOUSE STAFF

PUMP ROOM AND TANKS PAINTED TO MATCH COLORBOND MONUMENT

7500 LANDSCAPE PROPOSED SETBACK

RL. 68.600 · RL. 68.700 · RL. 69.000 · RL. 68.400 · RL. 67.700 · RL. 69.400 · RL. 68.700 · RL. 70.000 · RL. 69.200 · RL. 68.550 · RL. 89.200 · RL. 69.800 · RL. 72.900 · RL. 73.200 · RL. 73.600

RW · FNC-1 · FNC-2 · VALVE RM · RSD-7 · RR-11 · RR-10 · RSD-6 · RR-9 · RR-8 · RSD-5 · RSD-4 · RR-7 · RR-6 · RSD-3 · RR-5 · RR-4 · RSD-2 · RR-3 · RR-2 · RSD-1 · RR-1

33000 · 17000 · 93540 · 31720 · 187360 · 38820 · 93540 · 44680 · 2360 · TO BDY 15140

68190 TO BDY · 16860 · 137210 · 39912 · 218298 · 395420

Development Area Schedule

Lot 1A

Site Area	187,270 sqm
Warehouse (inc stage 2 expansion)	68,160 sqm
Office (3 Level)	2,646 sqm
Mezzanines (inc stage 2 expansion)	32,402 sqm
Outbuildings	4,004 sqm
(inc Dock office, Trailer Workshop, Trailer wash, D.G. Store, Computer Room, Gatehouse, Energy Complex, Refueling area, Battery charge, Skybridge & Lobby)	
Total Building Area	107,212 sqm
Awning	8,620 sqm
Site Cover (exc. awning)	57 %
Floor Space Ratio	0.57 : 1
Hardstand Area	88,610 sqm
Light Duty Area	14,030 sqm
Prime Mover Parking	54
Trailer Parking	164
Carparking	472
Motorcycle Parking	6

LEGEND

- Site Boundary
- Lot Boundary
- Building 7.5m Setback
- Landscape 3.75m Setback
- FNC-1 Chainwire Fencing
- FNC-2 Palisade Fencing
- RW Retaining Wall

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

Site Plan

1 : 750 @ B1

23rd Oct 2019

OAK-1A-DA- 10 (V)

Job No 15117

Goodman

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VALVE ROOM

VALVE ROOM

3/16

HIGH BAY STAIR ACCEES

2/16

1/16

LPG CANOPY

TRUCK POSITIONS BELOW

3M AWNING

AWNING ROOF

MAINTENANCE WALKWAY

STEP IN ROOF

STEP IN ROOF

COMPUTER ROOM 2

HIGH BAY ROOF

C/L HI-BAY RIDGE

FUTURE SOLAR PANEL LOCATION

STEP IN ROOF

LOW BAY ROOF

ENERGY COMPLEX 2 ROOF

C/L LOW BAY RIDGE

VALVE ROOM

DG STORE ROOF

LOW BAY STAIR ACCESS

2/17

1/17

ROOF MOUNTED A/C UNITS SHOWN INDICATIVELY TO MECH.ENG DETAIL DESIGN WITH ACOUSTIC SCREENING IN ACCORDANCE WITH NOISE ASSESSMENT REPORT

HIGH BAY 137525

VALVE ROOM

3M AWNING

LOW BAY 257895

VALVE ROOM

OFFICE ROOF

SKYBRIDGE

LIFT & STAIRS

REFUELING AREA

ENERGY COMPLEX 1

TRAILER WORKSHOP

TRAILER WASH

GATEHOUSE

LEGEND

BG	Box Gutter
EG	Eaves Gutter
MR	Metal Roof Sheeting
TR	Translucent Sheeting
EJ	Expansion Joint

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

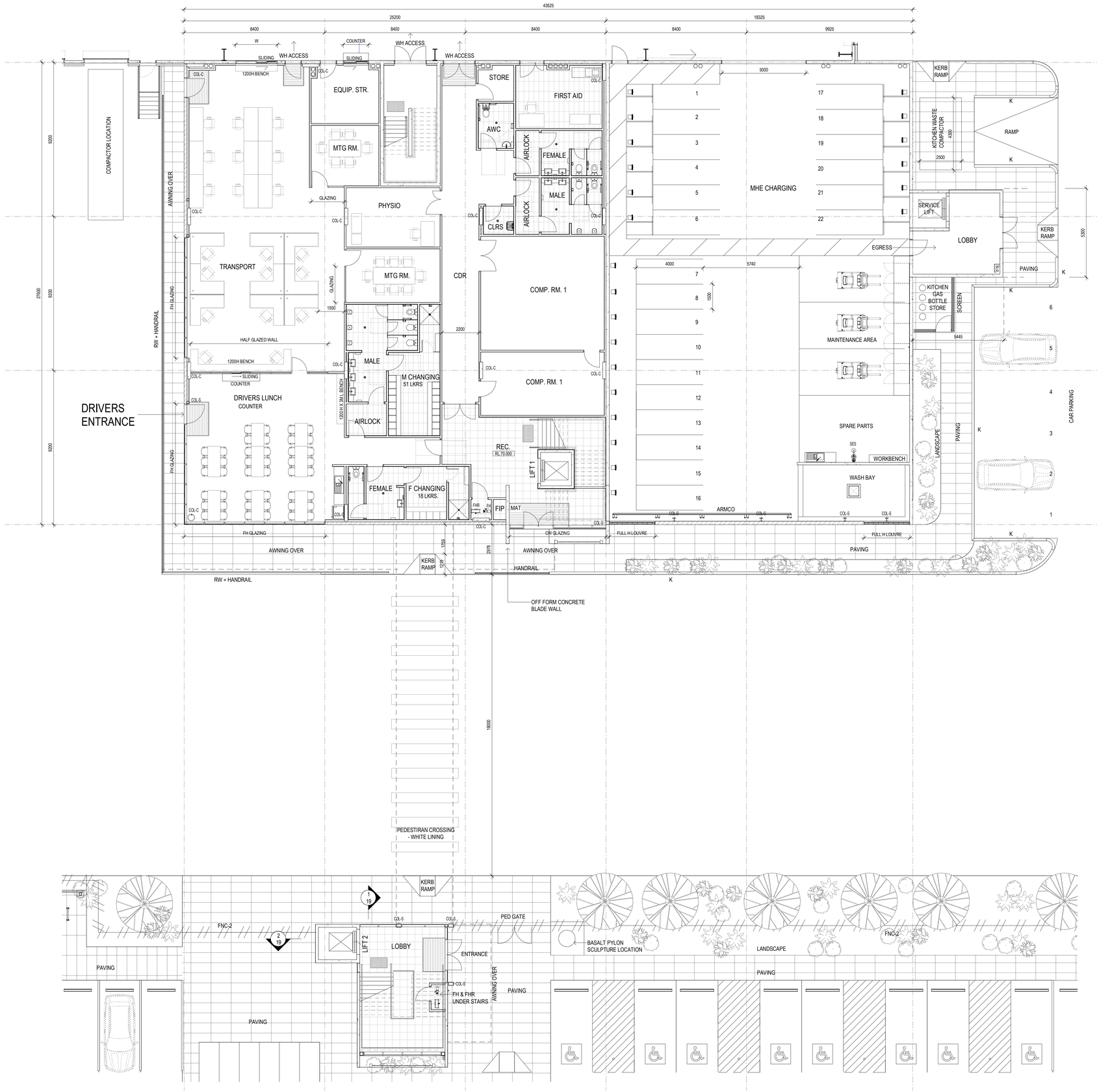
Roof Plan

1 : 500 @ B1

23rd Oct 2019

OAK-1A-DA- 11 (N)

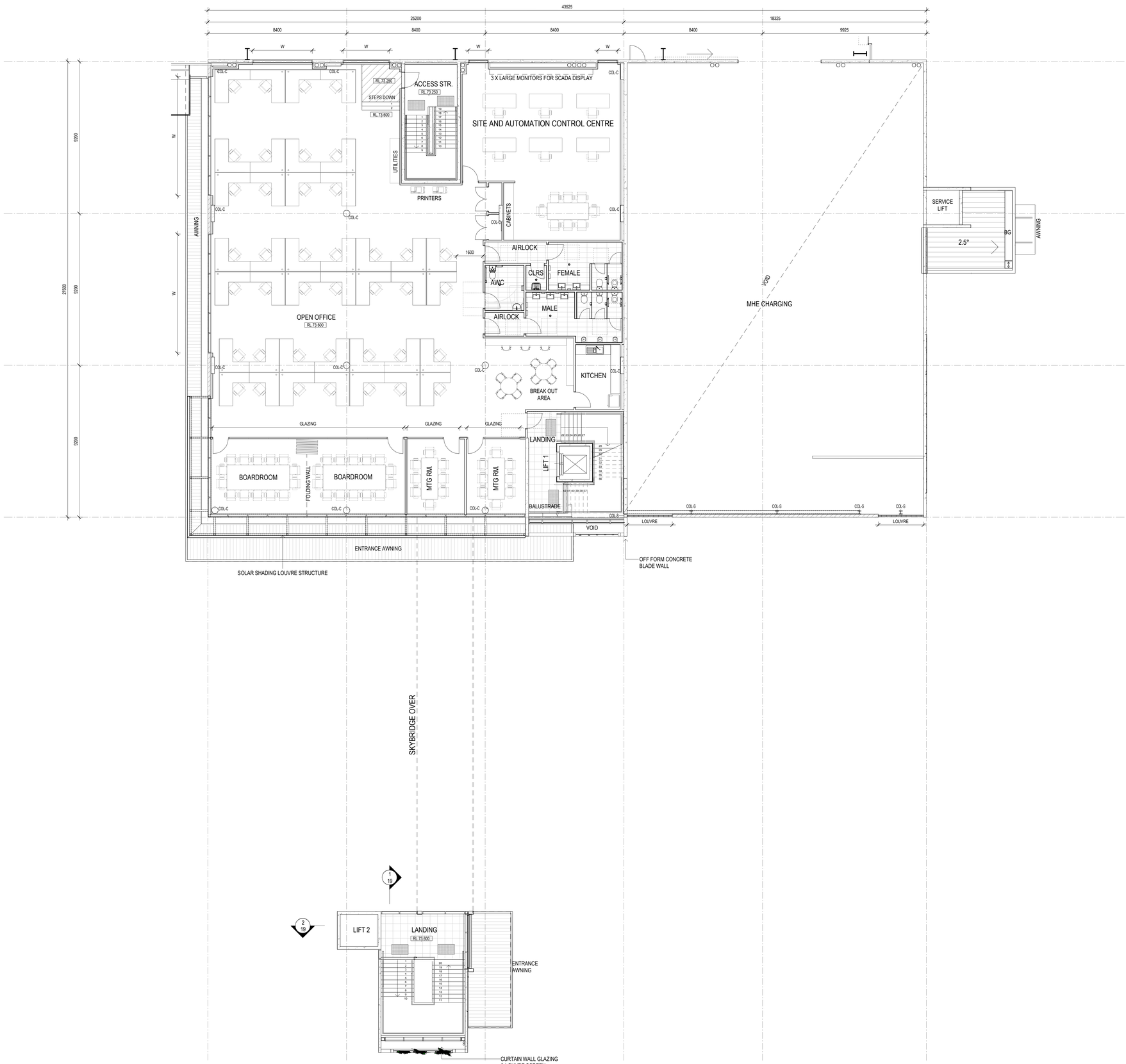
Job No 15117



SBA ARCHITECTS	Oakdale West Estate Horsley Park	Proposed Industrial Facility - Building 1A	**Office - Ground Floor Plan**	1 : 100 @ B1 23rd Oct 2019	OAK-1A-DA-12 (M) Job No 15117

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SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

Office - First Floor Plan

1 : 100 @ B1

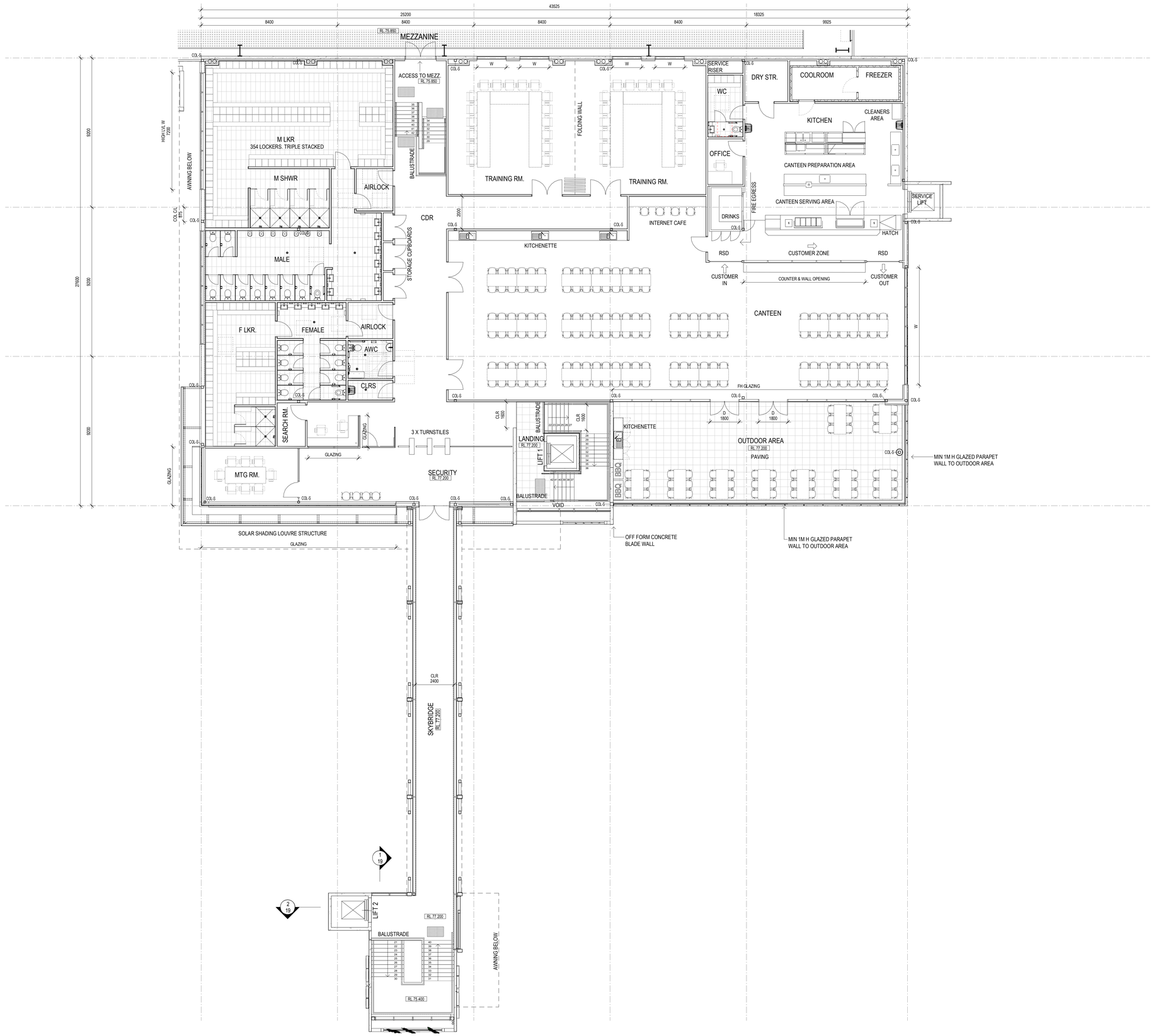
23rd Oct 2019

OAK-1A-DA-13 (M)

Job No 15117

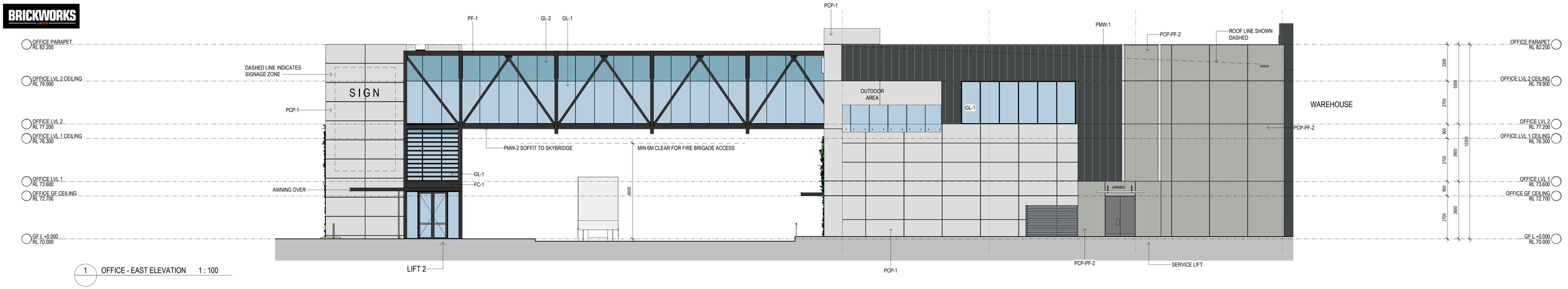
Goodman

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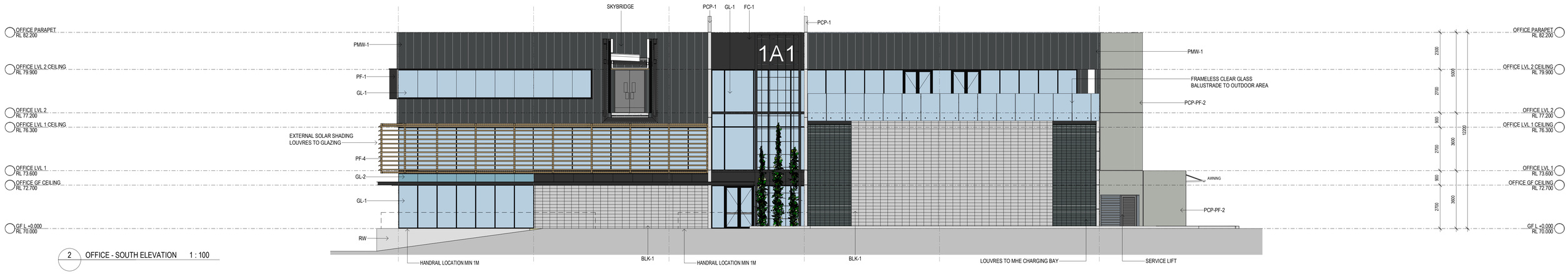


Goodman

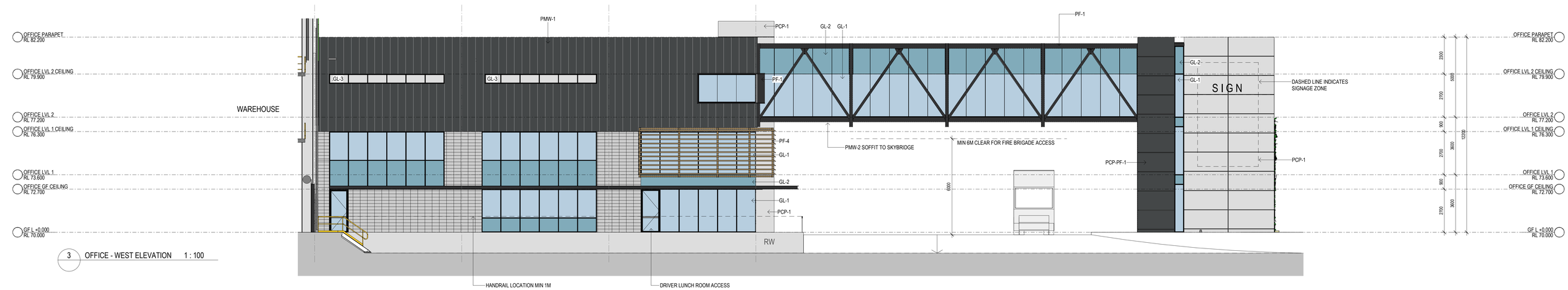
BRICKWORKS LIMITED



1 OFFICE - EAST ELEVATION 1 : 100



2 OFFICE - SOUTH ELEVATION 1 : 100



3 OFFICE - WEST ELEVATION 1 : 100

INDICATIVE EXTERNAL FINISHES LEGEND

- **BLK-1** STACKED BOND BLOCK LIGHT GREY
- **FC-1** PREFINISHED FIBRE CEMENT WALL SHEETING
- **GL-1** GLAZING DARK GREY TINT
- **GL-2** SPANDREL GLAZING DARK GREY (OPAQUE)
- **GL-3** PRIVACY GLAZING - TRANSLUSCENT
- **GL-4** CLEAR GLASS
- **IWP-1** INSULATED WALL PANEL COLORBOND - MONUMENT
- **IWP-2** INSULATED WALL PANEL COLORBOND - SHALE GREY
- **IWP-3** INSULATED WALL PANEL COLORBOND - WHITE
- **MDR-1** METAL DECK ROOFING COLORBOND - SURFMIST
- **MDR-2** METAL DECK ROOFING COLORBOND - COOLMAX
- **PCP-1** PRECAST CONCRETE PANELS OFF FORM CONCRETE
- **PCP-PF-1** PRECAST CONCRETE PANELS PAINT FINISH - MONUMENT
- **PCP-PF-2** PRECAST CONCRETE PANELS PAINT FINISH - MID GREY
- **PF-1** PAINT FINISH - 1 MONUMENT
- **PF-2** PAINT FINISH - 2 MID GREY
- **PF-3** PAINT FINISH - 3 SHALE GREY
- **PF-4** ANODISED BRONZE FINISH
- **PMW-1** PREFINISHED METAL WALL SHEETING MONUMENT (OR SIMILAR)
- **PMW-2** PREFINISHED METAL WALL SHEETING DARK GREY (OR SIMILAR)
- **PMW-3** PREFINISHED METAL WALL SHEETING WHITE (OR SIMILAR)
- **PMW-4** PREFINISHED METAL WALL SHEETING "GOODMAN GREEN"
- **TRS-1** TRANSLUCENT ROOF SHEET - OPAL COLOUR (OR SIMILAR)
- **TRS-2** DANPALON TRANSULCENT WALL CLADDING - OPAL COLOUR

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

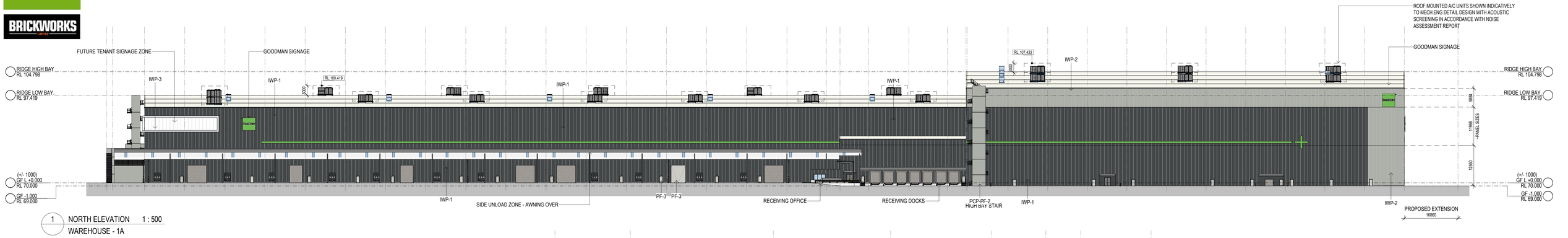
Office Elevations

As indicated @ B1

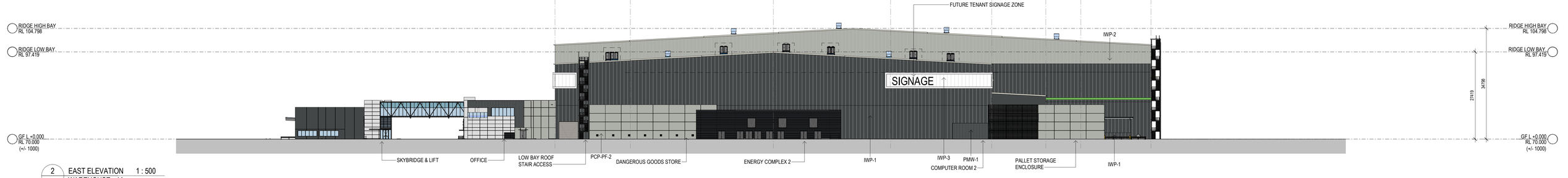
23rd Oct 2019

OAK-1A-DA-14 (M)

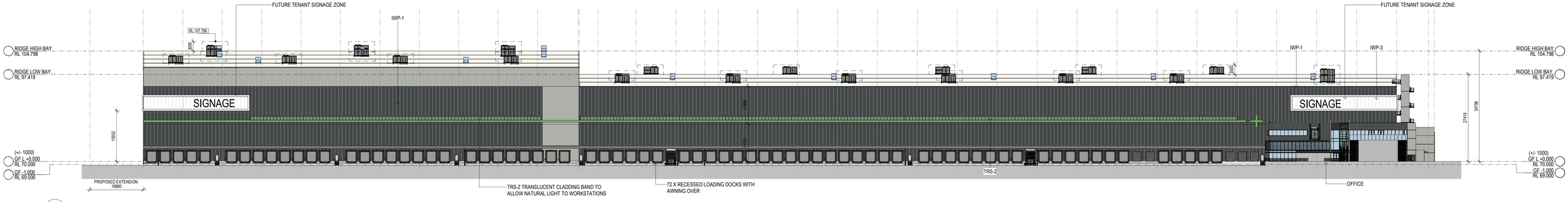
Job No 15117



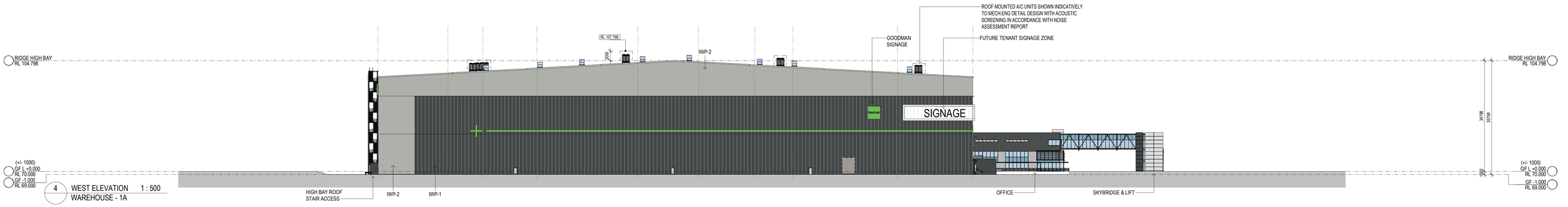
1 NORTH ELEVATION 1 : 500
WAREHOUSE - 1A



2 EAST ELEVATION 1 : 500
WAREHOUSE - 1A



3 SOUTH ELEVATION 1 : 500
WAREHOUSE - 1A



4 WEST ELEVATION 1 : 500
WAREHOUSE - 1A

INDICATIVE EXTERNAL FINISHES LEGEND

- **BLK-1** STACKED BOND BLOCK LIGHT GREY
- **FC-1** PREFINISHED FIBRE CEMENT WALL SHEETING
- **GL-1** GLAZING DARK GREY TINT
- **GL-2** SPANDREL GLAZING DARK GREY (OPAQUE)
- **GL-3** PRIVACY GLAZING - TRANSLUSCENT
- **GL-4** CLEAR GLASS
- **IWP-1** INSULATED WALL PANEL COLORBOND - MONUMENT
- **IWP-2** INSULATED WALL PANEL COLORBOND - SHALE GREY
- **IWP-3** INSULATED WALL PANEL COLORBOND - WHITE
- **MDR-1** METAL DECK ROOFING COLORBOND - SURFMIST
- **MDR-2** METAL DECK ROOFING COLORBOND - COOLMAX
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- **PF-1** PAINT FINISH - 1 MONUMENT
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- **PF-4** ANODISED BRONZE FINISH
- **PMW-1** PREFINISHED METAL WALL SHEETING MONUMENT (OR SIMILAR)
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- **PMW-3** PREFINISHED METAL WALL SHEETING WHITE (OR SIMILAR)
- **PMW-4** PREFINISHED METAL WALL SHEETING "GOODMAN GREEN"
- **TRS-1** TRANSLUCENT ROOF SHEET - OPAL COLOUR (OR SIMILAR)
- **TRS-2** DANPALON TRANSLUCENT WALL CLADDING - OPAL COLOUR

SBA ARCHITECTS

Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

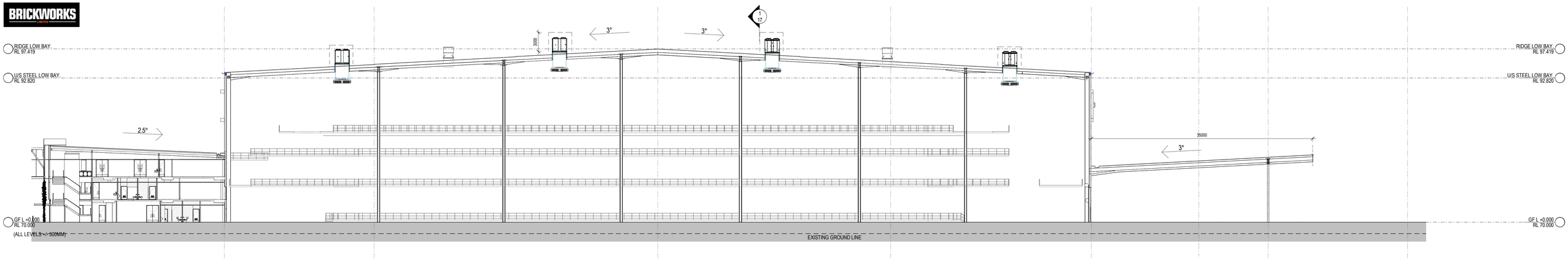
Warehouse Elevations

As indicated @ B1
23rd Oct 2019

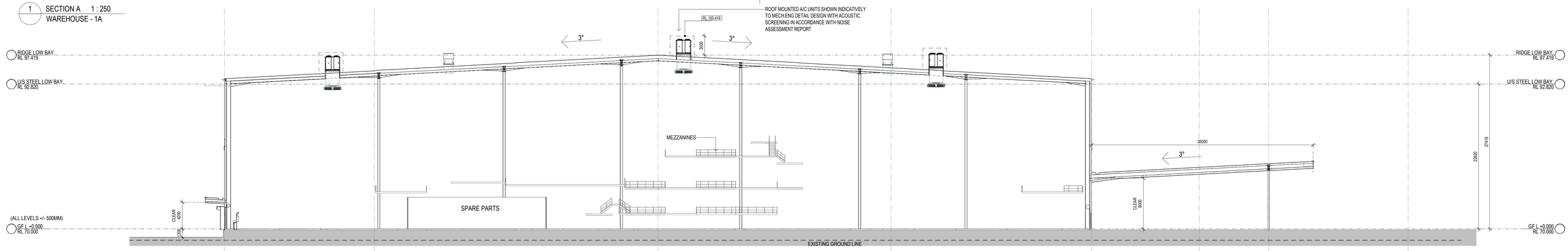
OAK-1A-DA- 15 (N)
Job No 15117

Goodman

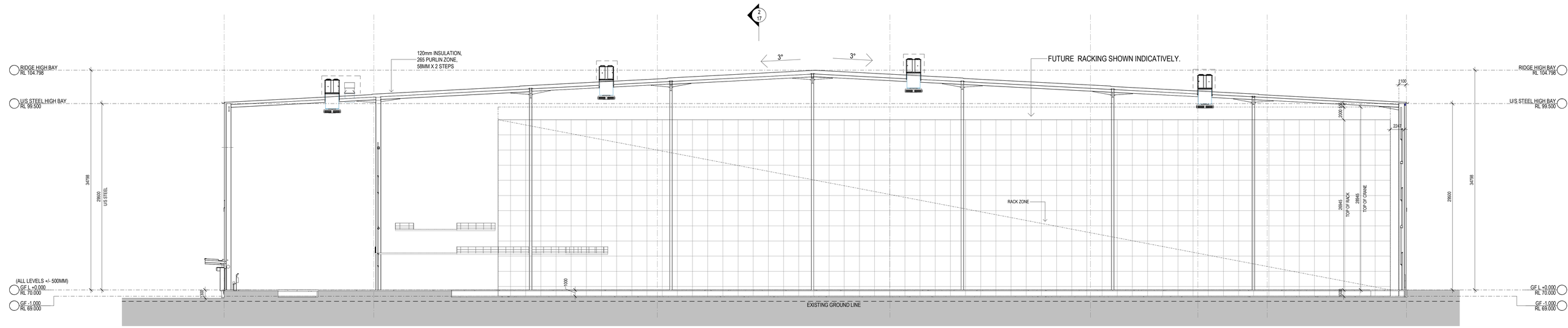
BRICKWORKS LIMITED



1 SECTION A 1 : 250
WAREHOUSE - 1A



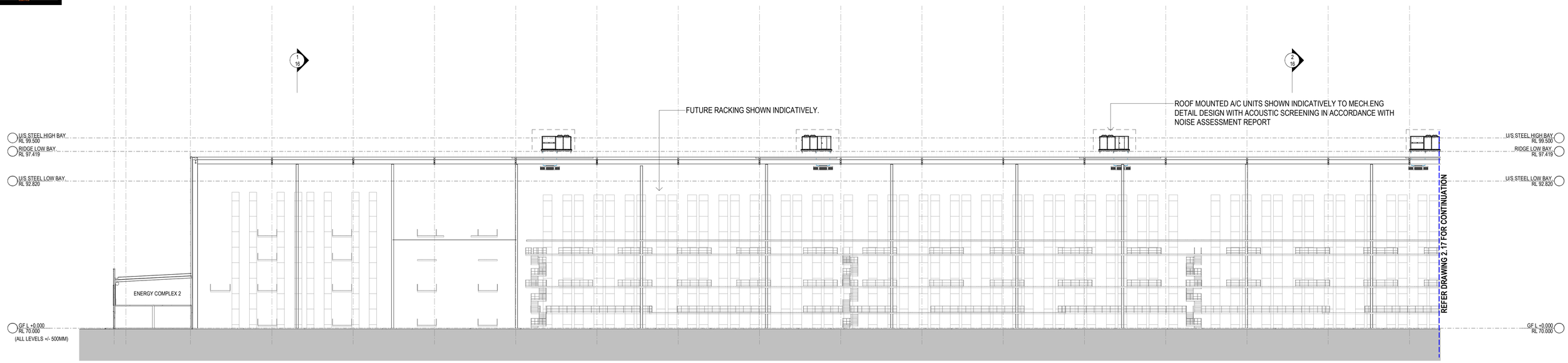
2 SECTION B. 1 : 250
WAREHOUSE - 1A



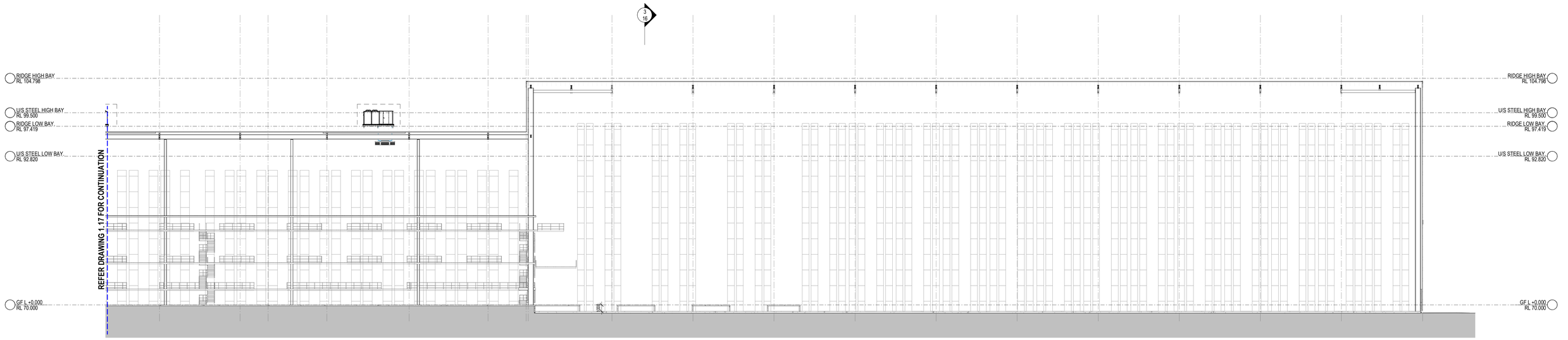
3 SECTION C 1 : 250
WAREHOUSE - 1A

SBA ARCHITECTS

Oakdale West Estate	Proposed Industrial Facility - Building 1A	**Warehouse Sections - 1**	1 : 250 @ B1	OAK-1A-DA- 16 (N)
Horsley Park			23rd Oct 2019	Job No 15117



1 SECTION D - PART 1 1 : 250
WAREHOUSE - 1A



2 SECTION D - PART 2 1 : 250
WAREHOUSE - 1A

SBA ARCHITECTS	Oakdale West Estate Horsley Park	Proposed Industrial Facility - Building 1A	**Warehouse Sections - 2**	1 : 250 @ B1 23rd Oct 2019	OAK-1A-DA- 17 (H) Job No 15117

Goodman

BRICKWORKS LIMITED

FUTURE EXPANSION 16950

137525

395420

257895

12473 12433 12433 12433 12433 12433 12433 12433 12433 12433 12838 315 5855 12105 12600 13315 12380 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12640

34 33 32 31 30 29 28 27 26 25 24 23 22B 22 21 20 19 18A 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01

JJ FF EE DD CC BB GG AA

STAGE 2 FUTURE EXPANSION

CENTELINE HI-BAY RIDGE

HIGH BAY WAREHOUSE
RL 69.000 (+/- 500)
RECESSED SLAB

LOW BAY WAREHOUSE
RL 70.000 (+/- 500)

VALVE ROOM 8M X 2.5M

VALVE ROOM 5M X 2.5M

HIGH BAY ROOF ACCESS STAIR

TANK

INBOUND

AWNING OVER

3M AWNING OVER

VALVE ROOM 4M X 2M

7 X RECESSED DOCKS

RECEIVING OFFICE

LINE OF ROOF BOX GUTTER ABOVE

PALLET STORAGE

COMPUTER ROOM 2

RSD-7 RR-11 RR-10 RSD-6 RR-9 RR-8 RSD-5 RSD-4 RR-7 RR-6 RSD-3 RR-5 RR-4 RSD-2 RR-3 RR-2 RSD-1 RR-1

TECH CENTRE RECEIVING
-12 X TRUCK POSITIONS
- 7 x ROLLER SHUTTER DOORS
- 11 X RAPID RISER DOORS

RL 69.000 PIT

RECOUP AREA 50M²

STAIR 0 TO +5850

STAIR 0 TO +14350

STAIR 7 0 TO +6500

STAIR 0 TO +6500

STAIR 0 TO +2450 TO +6500

STAIR 3 0 TO +6500

STAIR 2 0 TO +5850

STEP PLATFORMS +630

RL -1000
TYPICAL RECESSED SLAB PITS

RL 69.000

72 X RECESSED DOCKS

AWNING ABOVE SHOWN DASHED

3M AWNING ABOVE SHOWN DASHED

VALVE ROOM

2 X COMPACTORS

3 X COMPACTORS

RSD ACCESS TO COMPACTORS

OFFICE ACCESS

RSD

OUTBOUND

FUTURE MEZZANINE PLATFORM +460

MEZZANINE PLATFORM +460

UPS

ENERGY COMPLEX 2

LV MAIN SWITCHBOARD

HV TRANS. & SWITCHGEAR

CENTRELINE LOW-BAY RIDGE

VALVE ROOM 5M X 5M

DG STORAGE

SLIDING DOOR

LOW BAY ROOF ACCESS STAIR

SLIDING DOOR

33000 17000 11300 10010 8540 13780 8540 3950 5000 14835 4420 1130

SBA ARCHITECTS

Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

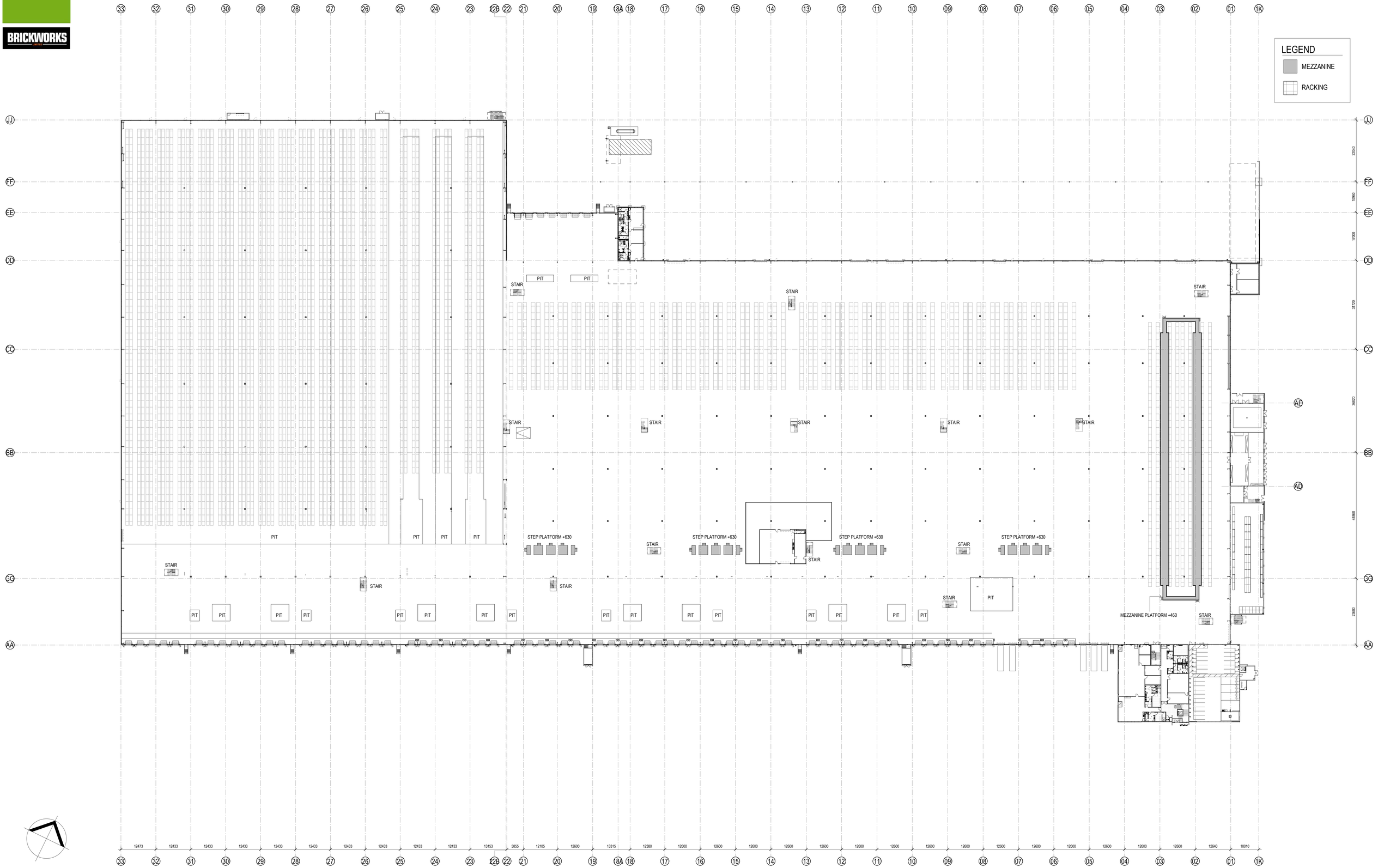
Warehouse Plan

1 : 500 @ B1
23rd Oct 2019

OAK-1A-DA- 18 (H)
Job No 15117

Goodman

BRICKWORKS LIMITED



SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

Mezzanine Plan - 1

1 : 500 @ B1

23rd Oct 2019

OAK-1A-DA18A (F)

Job No 15117

Goodman

BRICKWORKS LIMITED

LEGEND

- MEZZANINE
- RACKING

MEZZANINE PLATFORM +2450

MEZZANINE PLATFORM +2370

GANTRY ACCESS +3900

SERVICE PLATFORM +2370

PIT

STAIR

33	32	31	30	29	28	27	26	25	24	23	22B	22	21	20	19	18A	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	1K
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JJ	FF	EE	DD	CC	BB	GG	AA	AE	AD
22940	1980	17000	31720	39600	44560	23680			

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

Mezzanine Plan - 2

1 : 500 @ B1

23rd Oct 2019

OAK-1A-DA18B (F)

Job No 15117

Goodman

BRICKWORKS LIMITED

LEGEND

MEZZANINE

RACKING

EQUIPMENT PLATFORM +5350

EQUIPMENT PLATFORM +5350

EQUIPMENT PLATFORM +5350

EQUIPMENT PLATFORM +5350

MEZZANINE +5850

STAIR

STAIR

HBW

OPM2

STAIR

STAIR

STAIR

STAIR

STAIR

STAIR

MEZZANINE +6500

AIO 2

STAIR

STAIR

STAIR

STAIR

STAIR

STAIR

STAIR

MEZZANINE +5850

STAIR

STAIR

STAIR

SHIPPING

MEZZANINE +5850

STAIR

MEZZANINE +5850

33 32 31 30 29 28 27 26 25 24 23 22B 22 21 20 19 18A 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01 1K

JJ FF EE DD CC BB GG AA AE AD

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22940 10960 17000 31720 39820 44660 23680

Goodman

BRICKWORKS LIMITED

LEGEND

MEZZANINE

RACKING

HBW

OPM2

AIO 2

SHIPPING

STAIR

SERVICE MEZZANINE +8700

MEZZANINE +7000

MEZZANINE +7400

12473 12433 12433 12433 12433 12433 12433 12433 12433 12433 12433 12838 6170 12105 12600 13315 12380 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12640 10010

22940 10960 11700 31720 38820 44860 29360

Goodman

BRICKWORKS LIMITED

LEGEND

MEZZANINE

RACKING

HBW

OPM2

SERVICE MEZZANINE +10400

MEZZANINE +11500

STAIR

AIO 2

MEZZANINE +9600

MEZZANINE +10000

MEZZANINE +8400

MEZZANINE +10660

SERVICE MEZZANINE +9600

SHIPPING

12473 12433 12433 12433 12433 12433 12433 12433 12433 12433 12433 12838 6170 12105 12600 13315 12380 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12600 12640 10010

22940 10960 17000 31720 38820 44860 23830

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

Mezzanine Plan - 5

1 : 500 @ B1

23rd Oct 2019

OAK-1A-DA18E (F)

Job No 15117

Goodman

BRICKWORKS LIMITED

LEGEND

MEZZANINE

RACKING

OPM2

SERVICE MEZZANINE +13700

HBW

AIO 2

MEZZANINE +14350

SHIPPING

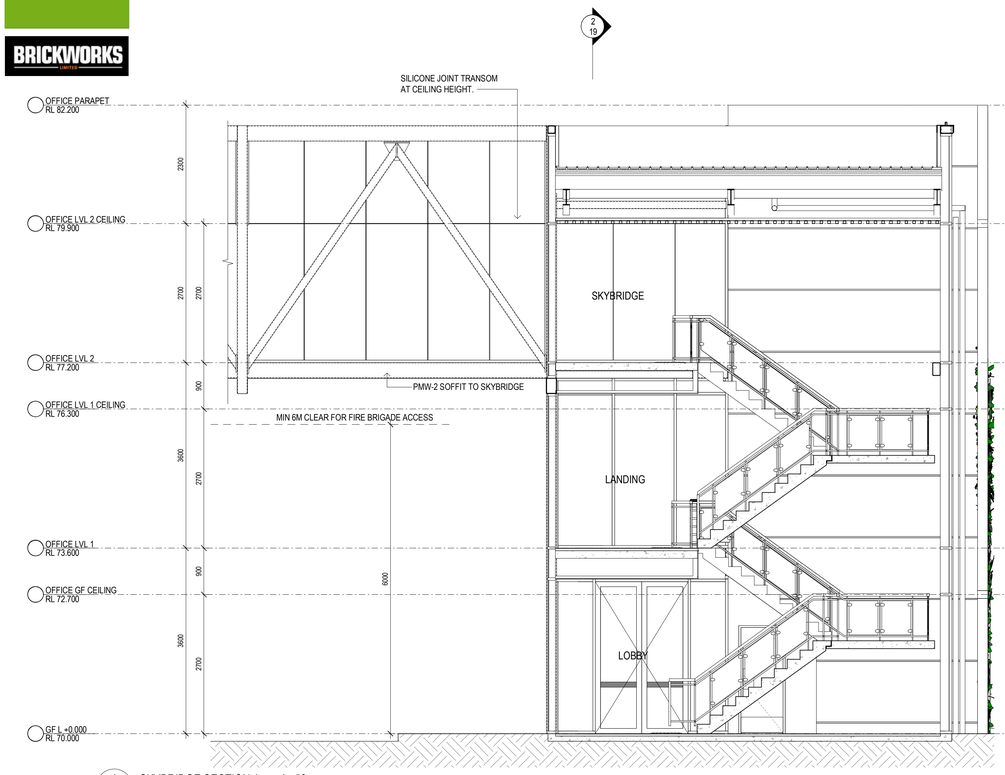
MEZZANINE +14350

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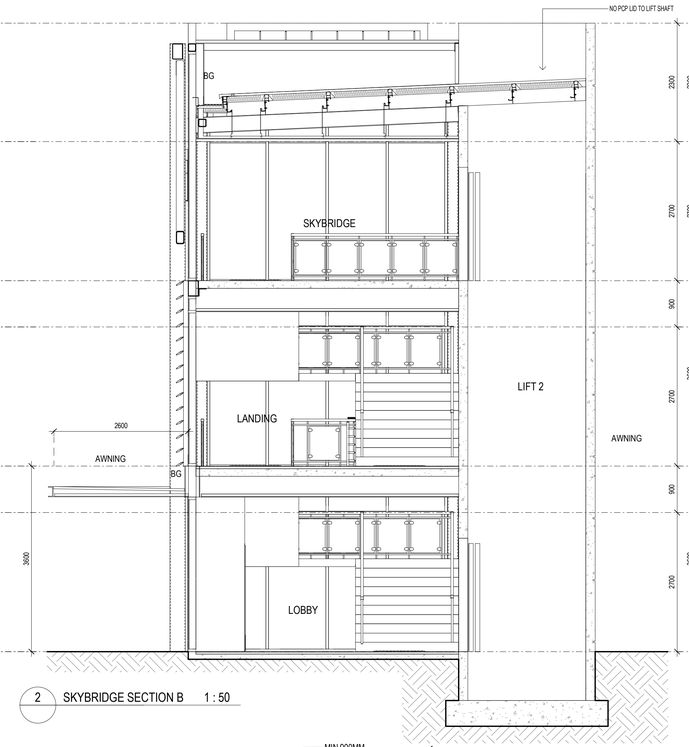
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Goodman

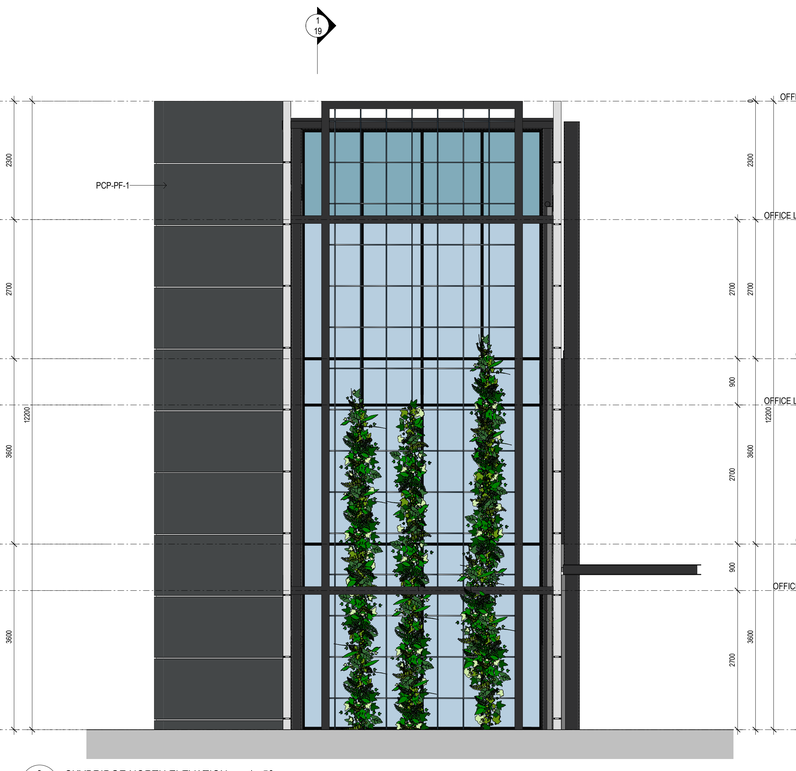
BRICKWORKS LIMITED



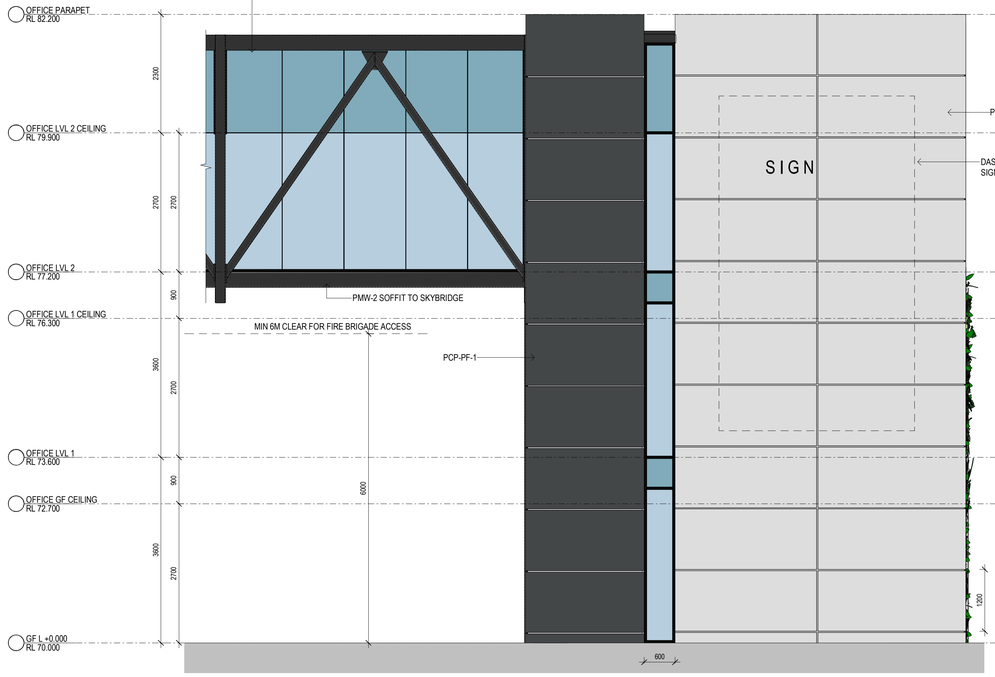
1 SKYBRIDGE SECTION A 1 : 50



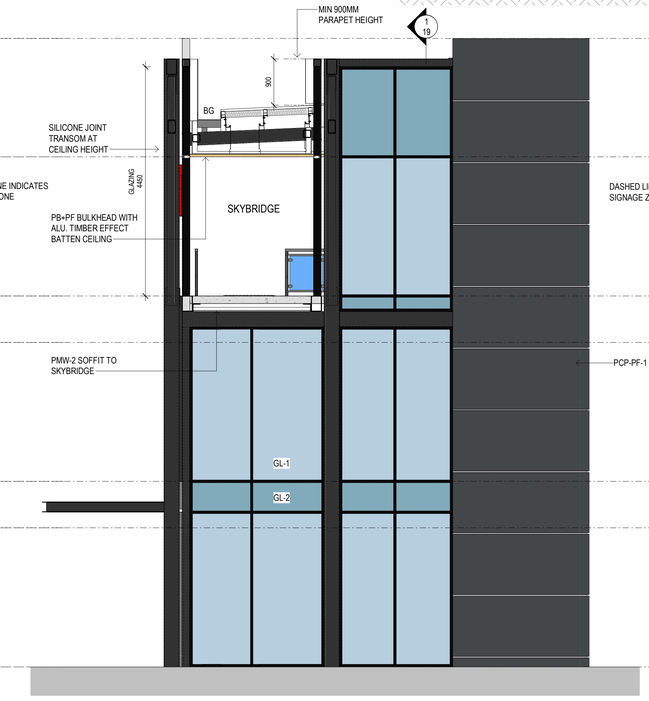
2 SKYBRIDGE SECTION B 1 : 50



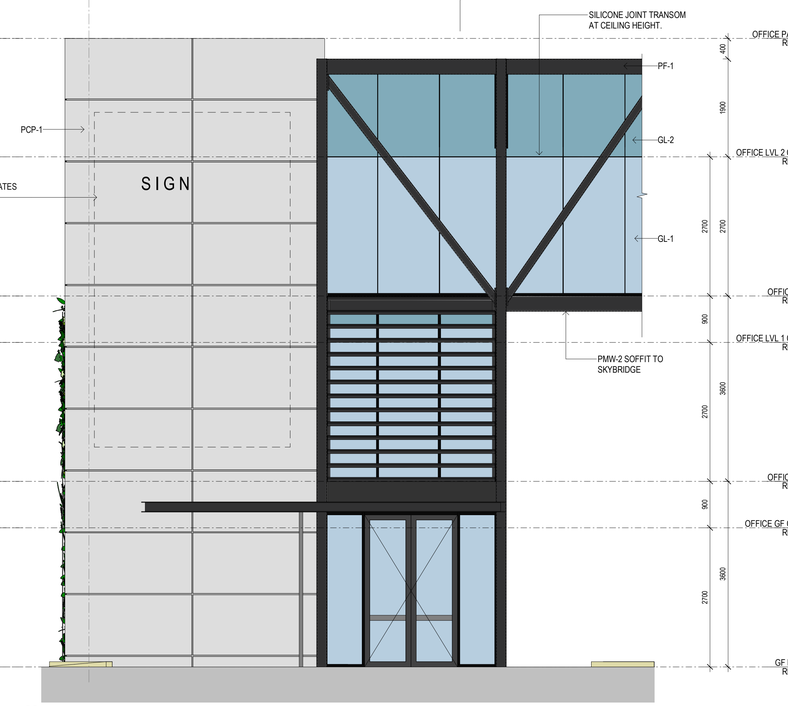
3 SKYBRIDGE NORTH ELEVATION 1 : 50



4 SKYBRIDGE EAST ELEVATION 1 : 50



5 SKYBRIDGE SOUTH ELEVATION 1 : 50



6 SKYBRIDGE WEST ELEVATION 1 : 50

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

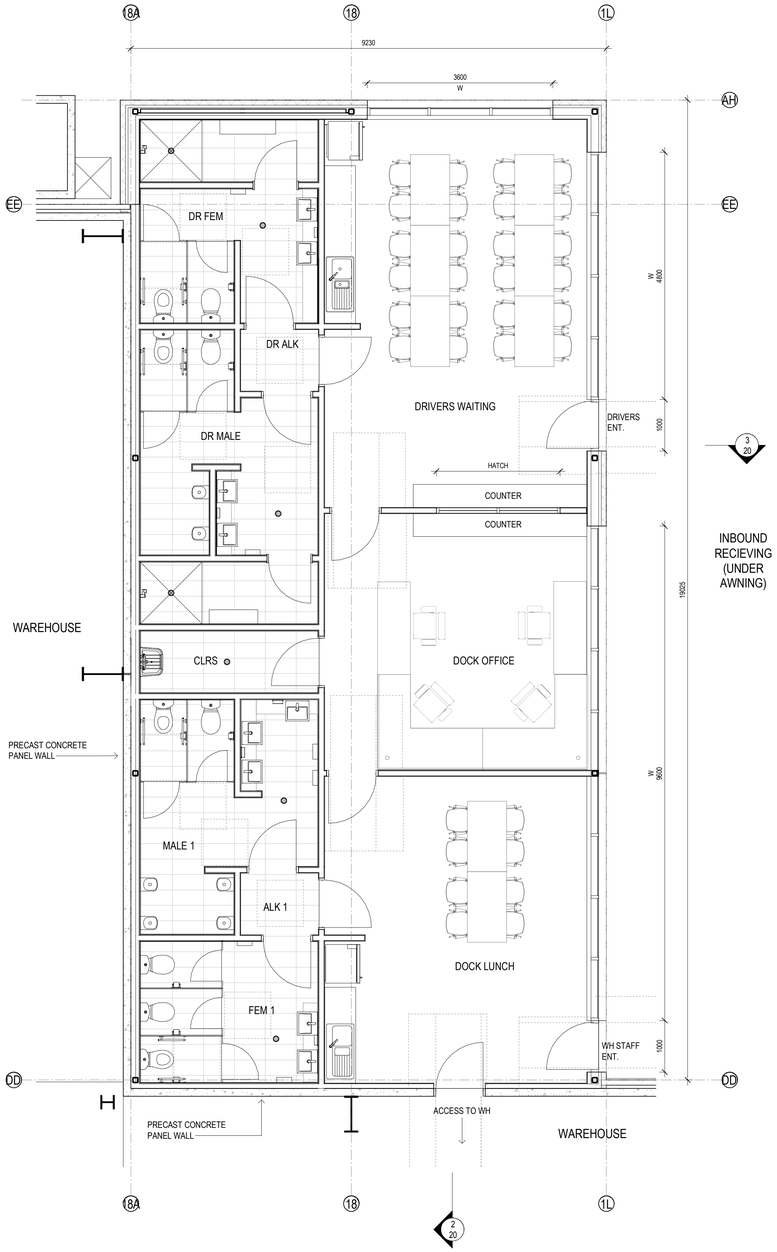
Skybridge Sections & Elevations

1 : 50 @ B1

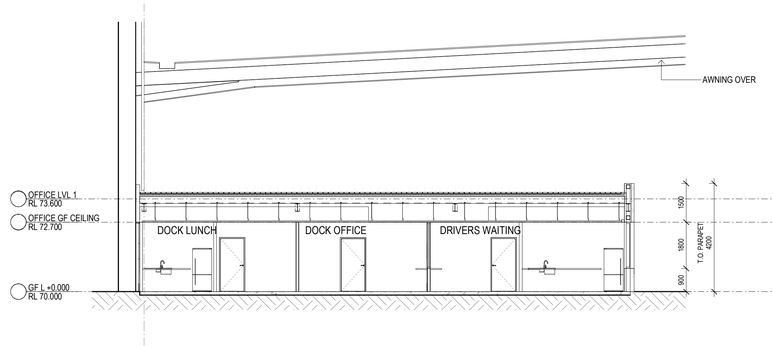
23rd Oct 2019

OAK-1A-DA- 19 (H)

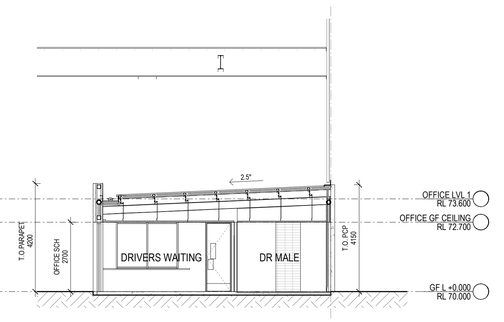
Job No 15117



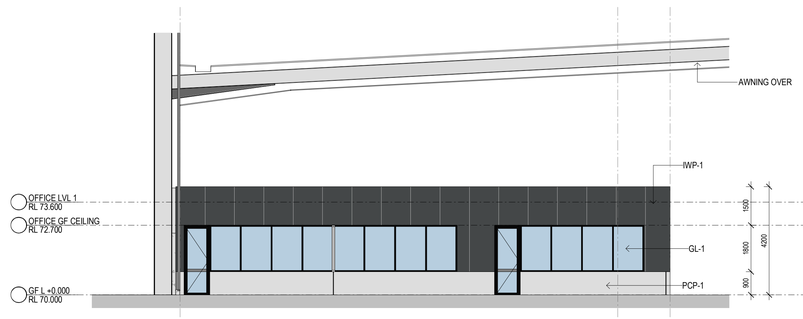
1 DOCK OFFICE - PLAN 1 : 50
WAREHOUSE 1A



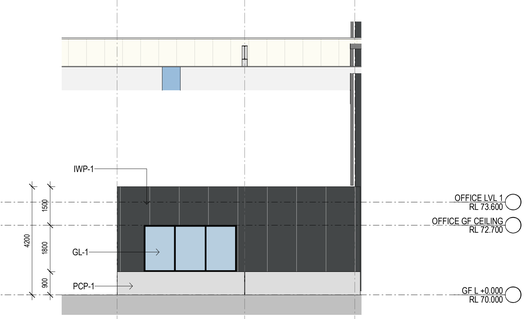
2 SECTION A 1 : 100
WAREHOUSE 1A



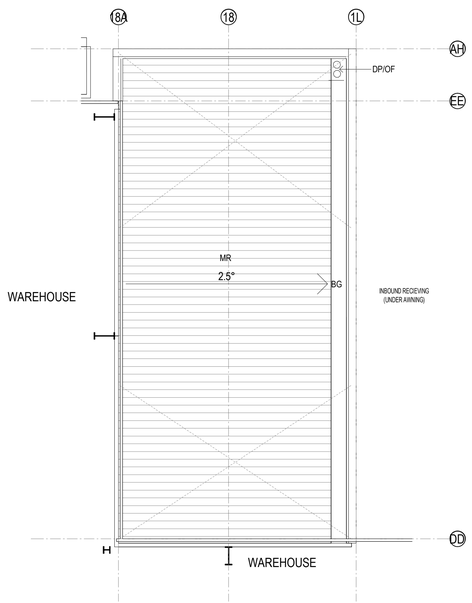
3 SECTION B 1 : 100
WAREHOUSE 1A



4 EAST ELEVATION 1 : 100
WAREHOUSE 1A



5 NORTH ELEVATION 1 : 100
WAREHOUSE 1A



6 ROOF PLAN 1 : 100
WAREHOUSE 1A

LEGEND	
BG	Box Gutter
EG	Eaves Gutter
MR	Metal Roof Sheeting
TR	Translucent Sheeting
EJ	Expansion Joint

INDICATIVE EXTERNAL FINISHES LEGEND

BLK-1 STACKED BOND BLOCK LIGHT GREY
FC-1 PREFINISHED FIBRE CEMENT WALL SHEETING
GL-1 GLAZING DARK GREY TINT
GL-2 SPANDREL GLAZING DARK GREY (OPAQUE)
GL-3 PRIVACY GLAZING - TRANSLUSCENT
GL-4 CLEAR GLASS
IWP-1 INSULATED WALL PANEL COLORBOND - MONUMENT
IWP-2 INSULATED WALL PANEL COLORBOND - SHALE GREY
IWP-3 INSULATED WALL PANEL COLORBOND - WHITE
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PCP-PF-1 PRECAST CONCRETE PANELS PAINT FINISH - MONUMENT
PCP-PF-2 PRECAST CONCRETE PANELS PAINT FINISH - MID GREY
PF-1 PAINT FINISH - 1 MONUMENT
PF-2 PAINT FINISH - 2 MID GREY
PF-3 PAINT FINISH - 3 SHALE GREY
PF-4 ANODISED BRONZE FINISH
PMW-1 PREFINISHED METAL WALL SHEETING MONUMENT (OR SIMILAR)
PMW-2 PREFINISHED METAL WALL SHEETING DARK GREY (OR SIMILAR)
PMW-3 PREFINISHED METAL WALL SHEETING WHITE (OR SIMILAR)
PMW-4 PREFINISHED METAL WALL SHEETING "GOODMAN GREEN"
TRS-1 TRANSLUCENT ROOF SHEET - OPAL COLOUR (OR SIMILAR)
TRS-2 DANPALON TRANSLUCENT WALL CLADDING - OPAL COLOUR

SBA ARCHITECTS

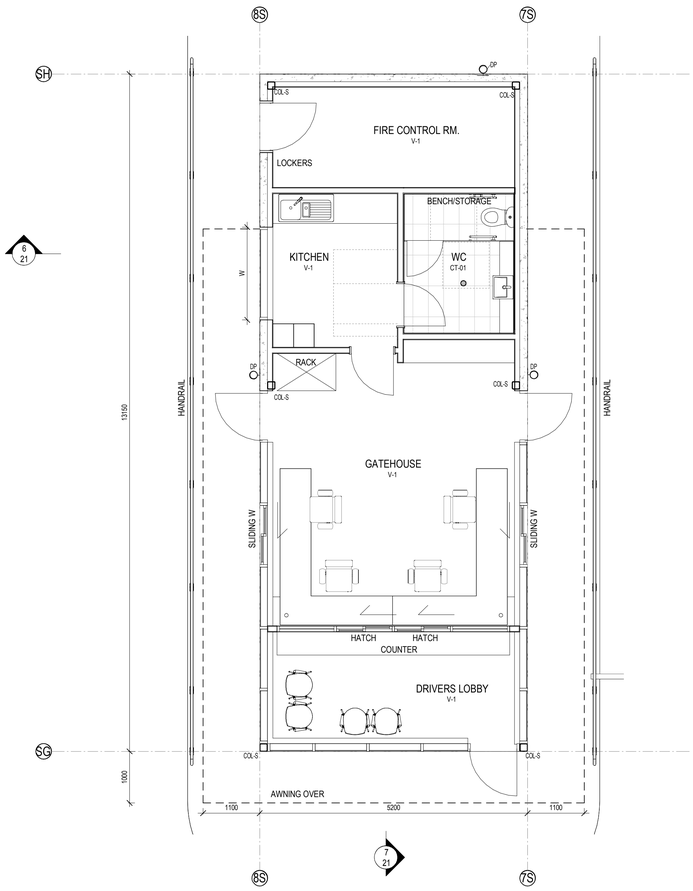
Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

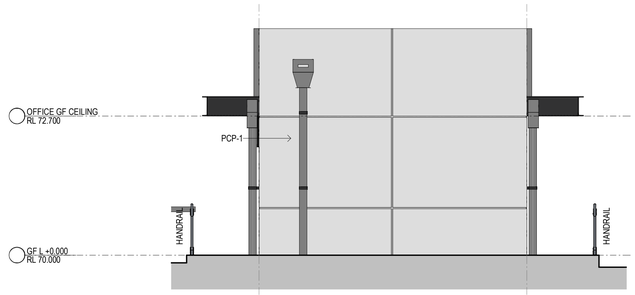
Dock Office Plans

As indicated @ B1
23rd Oct 2019

OAK-1A-DA-20 (G)
Job No 15117



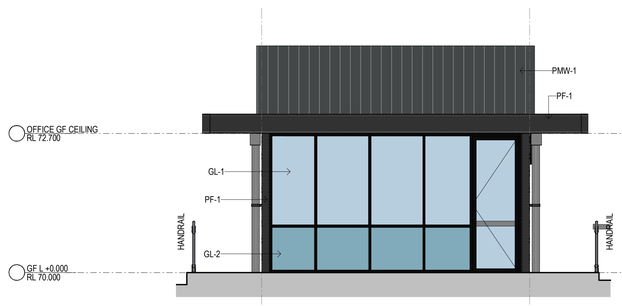
1 GATEHOUSE FLOOR PLAN 1 : 50
WAREHOUSE 1A



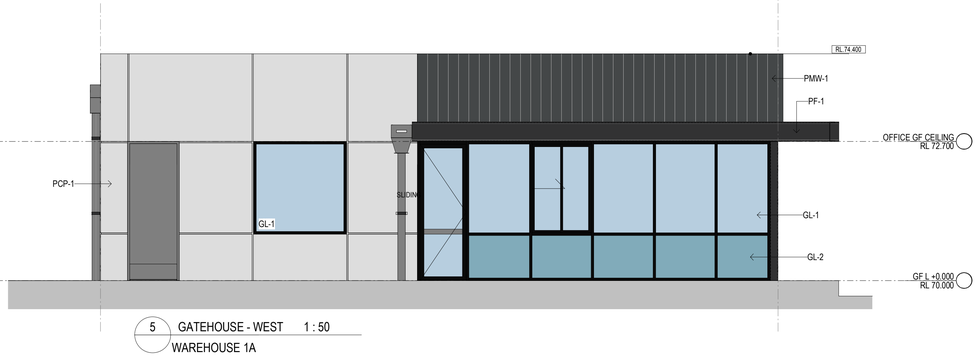
2 GATEHOUSE - NORTH 1 : 50
WAREHOUSE 1A



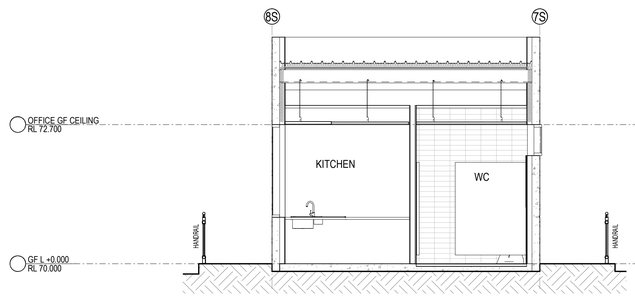
3 GATEHOUSE - EAST 1 : 50
WAREHOUSE 1A



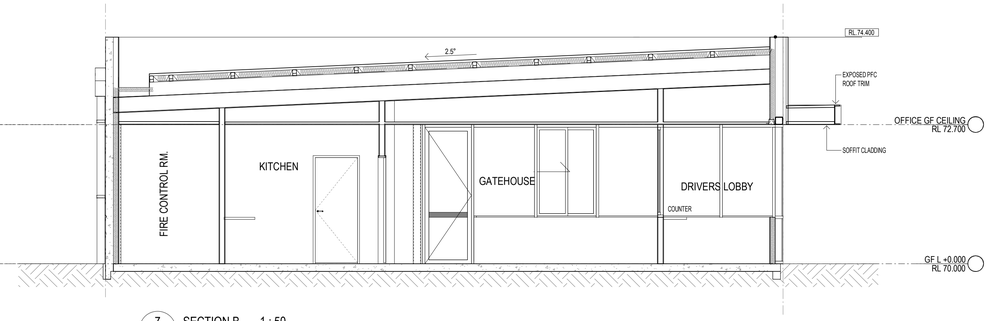
4 GATEHOUSE - SOUTH 1 : 50
WAREHOUSE 1A



5 GATEHOUSE - WEST 1 : 50
WAREHOUSE 1A



6 SECTION A 1 : 50
WAREHOUSE 1A



7 SECTION B 1 : 50
WAREHOUSE 1A

INDICATIVE EXTERNAL FINISHES LEGEND

- **BLK-1** STACKED BOND BLOCK LIGHT GREY
- **FC-1** PREFINISHED FIBRE CEMENT WALL SHEETING
- **GL-1** GLAZING DARK GREY TINT
- **GL-2** SPANDREL GLAZING DARK GREY (OPAQUE)
- **GL-3** PRIVACY GLAZING - TRANSLUSCENT
- **GL-4** CLEAR GLASS
- **IWP-1** INSULATED WALL PANEL COLORBOND - MONUMENT
- **IWP-2** INSULATED WALL PANEL COLORBOND - SHALE GREY
- **IWP-3** INSULATED WALL PANEL COLORBOND - WHITE
- **MDR-1** METAL DECK ROOFING COLORBOND - SURFMIST
- **MDR-2** METAL DECK ROOFING COLORBOND - COOLMAX
- **PCP-1** PRECAST CONCRETE PANELS OFF FORM CONCRETE
- **PCP-PF-1** PRECAST CONCRETE PANELS PAINT FINISH - MONUMENT
- **PCP-PF-2** PRECAST CONCRETE PANELS PAINT FINISH - MID GREY
- **PF-1** PAINT FINISH - 1 MONUMENT
- **PF-2** PAINT FINISH - 2 MID GREY
- **PF-3** PAINT FINISH - 3 SHALE GREY
- **PF-4** ANODISED BRONZE FINISH
- **PMW-1** PREFINISHED METAL WALL SHEETING MONUMENT (OR SIMILAR)
- **PMW-2** PREFINISHED METAL WALL SHEETING DARK GREY (OR SIMILAR)
- **PMW-3** PREFINISHED METAL WALL SHEETING WHITE (OR SIMILAR)
- **PMW-4** PREFINISHED METAL WALL SHEETING "GOODMAN GREEN"
- **TRS-1** TRANSLUCENT ROOF SHEET - OPAL COLOUR (OR SIMILAR)
- **TRS-2** DANPALON TRANSILUCENT WALL CLADDING - OPAL COLOUR

SBA ARCHITECTS

Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

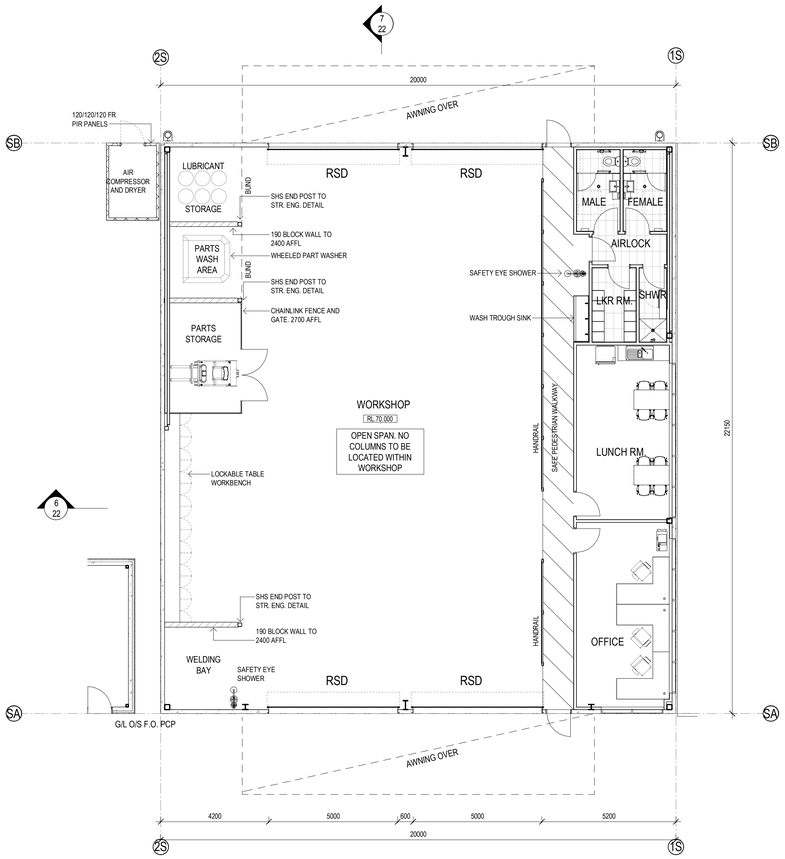
Gatehouse Plans

As indicated @ B1
23rd Oct 2019

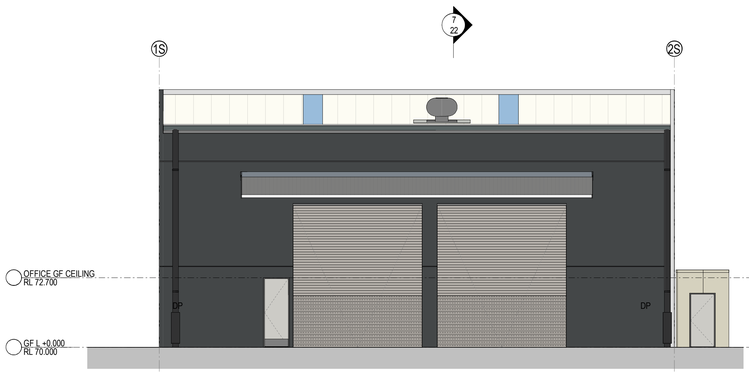
OAK-1A-DA- 21 (H)
Job No 15117

Goodman

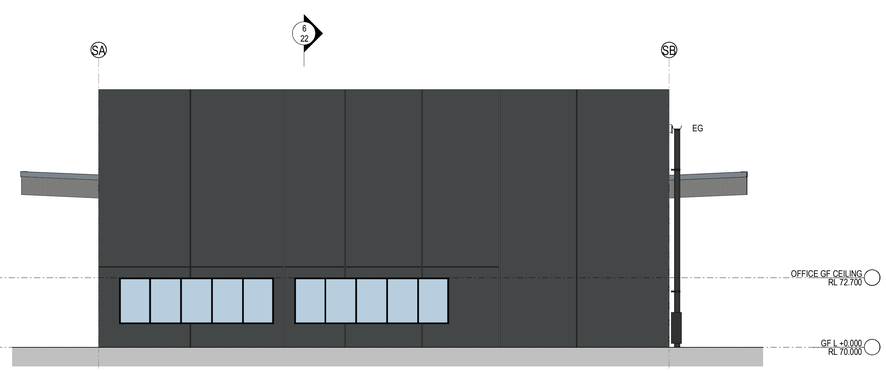
BRICKWORKS LIMITED



1 WORKSHOP FLOOR PLAN - DA 1 : 100
WAREHOUSE 1A



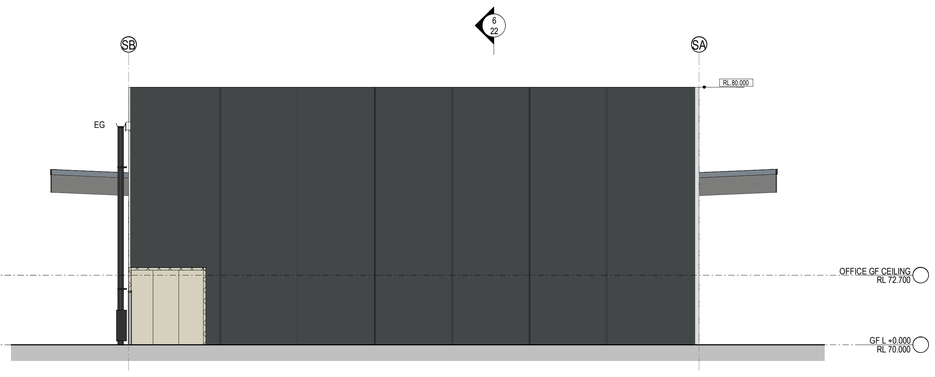
2 WORKSHOP - NORTH ELEVATION 1 : 100
WAREHOUSE 1A



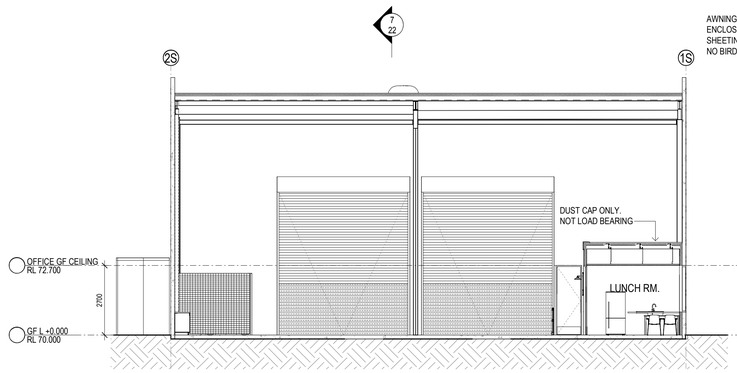
3 WORKSHOP - EAST ELEVATION 1 : 100
WAREHOUSE 1A



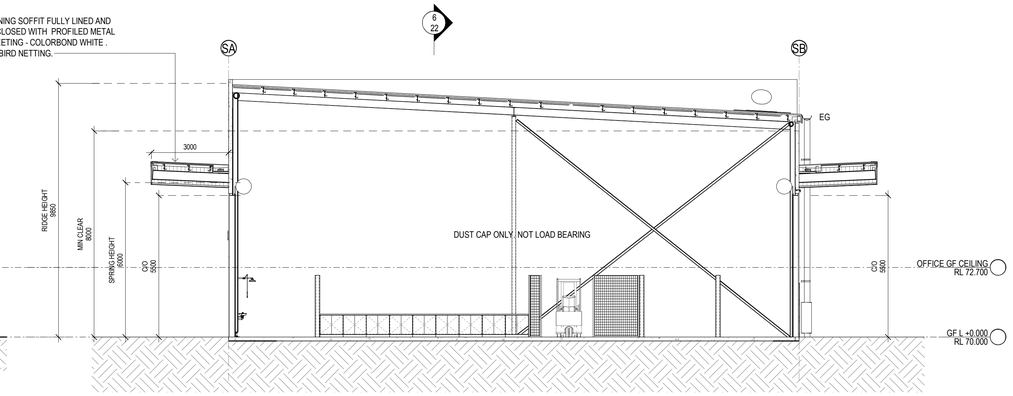
4 WORKSHOP - SOUTH ELEVATION 1 : 100
WAREHOUSE 1A



5 WORKSHOP - WEST ELEVATION 1 : 100
WAREHOUSE 1A



6 TRAILER WORKSHOP - SECTION A 1 : 100
WAREHOUSE 1A



7 TRAILER WORKSHOP - SECTION B 1 : 100
WAREHOUSE 1A

INDICATIVE EXTERNAL FINISHES LEGEND

- **BLK-1** STACKED BOND BLOCK LIGHT GREY
- **FC-1** PREFINISHED FIBRE CEMENT WALL SHEETING
- **GL-1** GLAZING DARK GREY TINT
- **GL-2** SPANDREL GLAZING DARK GREY (OPAQUE)
- **GL-3** PRIVACY GLAZING - TRANSLUSCENT
- **GL-4** CLEAR GLASS
- **IWP-1** INSULATED WALL PANEL COLORBOND - MONUMENT
- **IWP-2** INSULATED WALL PANEL COLORBOND - SHALE GREY
- **IWP-3** INSULATED WALL PANEL COLORBOND - WHITE
- **MDR-1** METAL DECK ROOFING COLORBOND - SURFMIST
- **MDR-2** METAL DECK ROOFING COLORBOND - COOLMAX
- **PCP-1** PRECAST CONCRETE PANELS OFF FORM CONCRETE
- **PCP-PF-1** PRECAST CONCRETE PANELS PAINT FINISH - MONUMENT
- **PCP-PF-2** PRECAST CONCRETE PANELS PAINT FINISH - MID GREY
- **PF-1** PAINT FINISH - 1 MONUMENT
- **PF-2** PAINT FINISH - 2 MID GREY
- **PF-3** PAINT FINISH - 3 SHALE GREY
- **PF-4** ANODISED BRONZE FINISH
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- **PMW-2** PREFINISHED METAL WALL SHEETING DARK GREY (OR SIMILAR)
- **PMW-3** PREFINISHED METAL WALL SHEETING WHITE (OR SIMILAR)
- **PMW-4** PREFINISHED METAL WALL SHEETING "GOODMAN GREEN"
- **TRS-1** TRANSLUCENT ROOF SHEET - OPAL COLOUR (OR SIMILAR)
- **TRS-2** DANPALON TRANSLUCENT WALL CLADDING - OPAL COLOUR

SBA ARCHITECTS

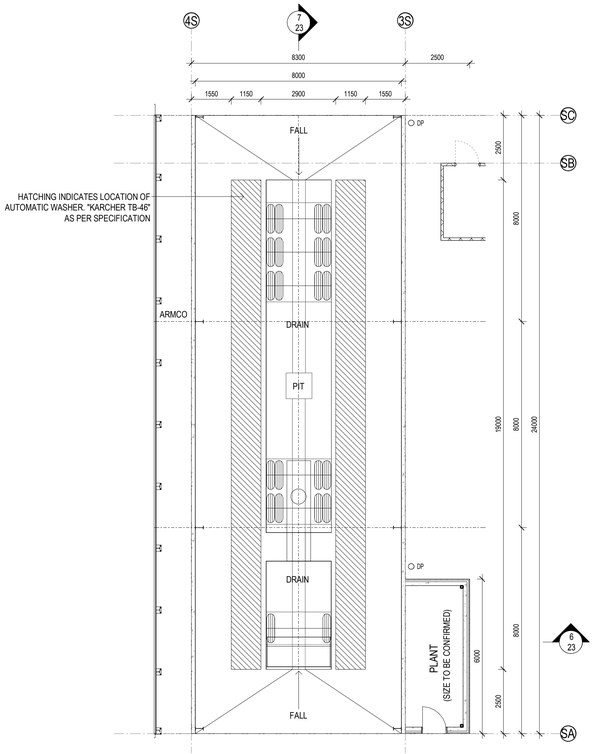
Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

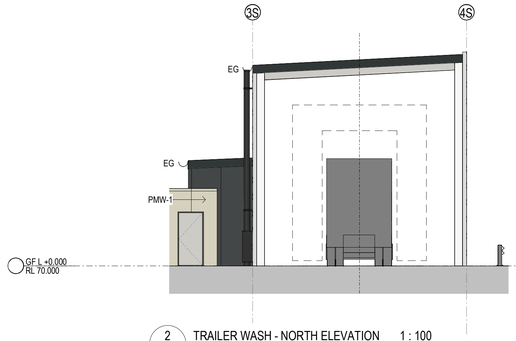
Trailer Workshop Plans

As indicated @ B1
23rd Oct 2019

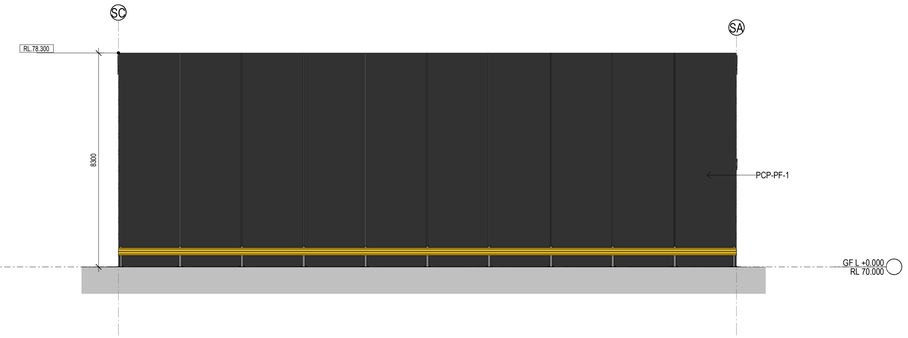
OAK-1A-DA- 22 (H)
Job No 15117



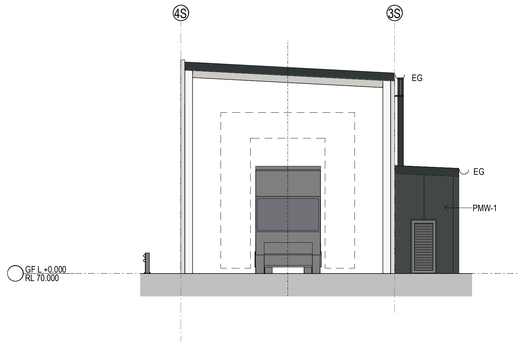
1 TRAILER WASH PLAN 1 : 100
WAREHOUSE 1A



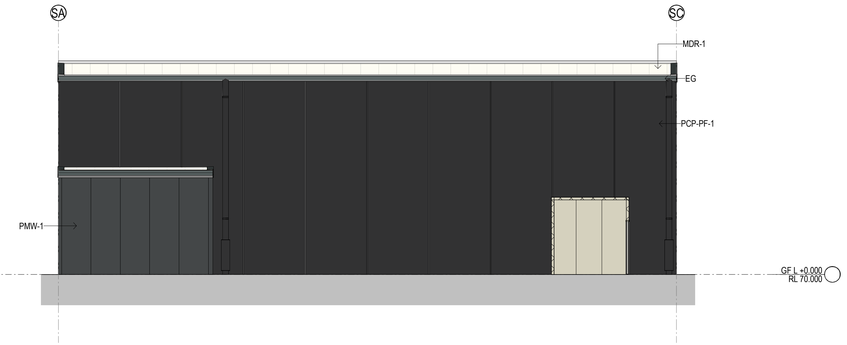
2 TRAILER WASH - NORTH ELEVATION 1 : 100
WAREHOUSE 1A



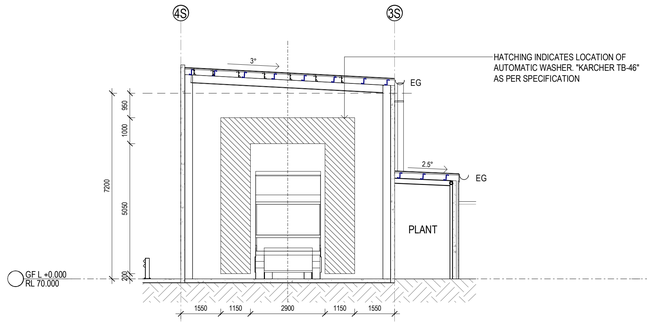
3 TRAILER WASH - WEST ELEVATION 1 : 100
WAREHOUSE 1A



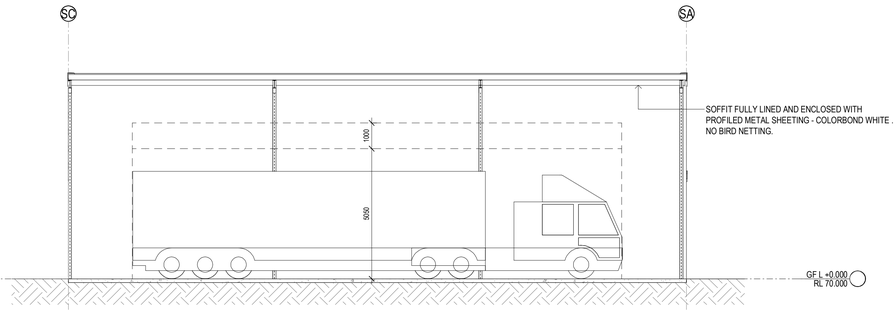
4 TRAILER WASH - SOUTH ELEVATION 1 : 100
WAREHOUSE 1A



5 TRAILER WASH - EAST ELEVATION 1 : 100
WAREHOUSE 1A



6 TRAILER WASH - SECTION A 1 : 100
WAREHOUSE 1A



7 TRAILER WASH - SECTION B 1 : 100
WAREHOUSE 1A

INDICATIVE EXTERNAL FINISHES LEGEND

BLK-1 STACKED BOND BLOCK LIGHT GREY
FC-1 PREFINISHED FIBRE CEMENT WALL SHEETING
GL-1 GLAZING DARK GREY TINT
GL-2 SPANDREL GLAZING DARK GREY (OPAQUE)
GL-3 PRIVACY GLAZING - TRANSLUSCENT
GL-4 CLEAR GLASS
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IWP-2 INSULATED WALL PANEL COLORBOND - SHALE GREY
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PMW-3 PREFINISHED METAL WALL SHEETING WHITE (OR SIMILAR)
PMW-4 PREFINISHED METAL WALL SHEETING "GOODMAN GREEN"
TRS-1 TRANSLUCENT ROOF SHEET - OPAL COLOUR (OR SIMILAR)
TRS-2 DANPALON TRANSULCENT WALL CLADDING - OPAL COLOUR

SBA ARCHITECTS

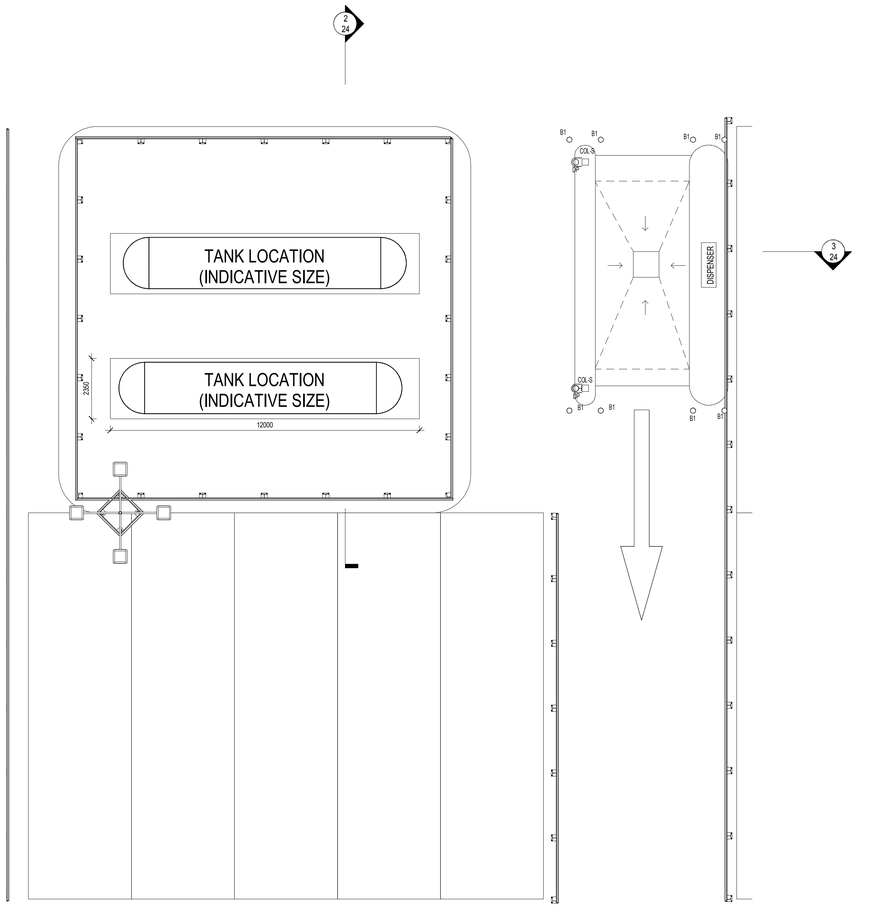
Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

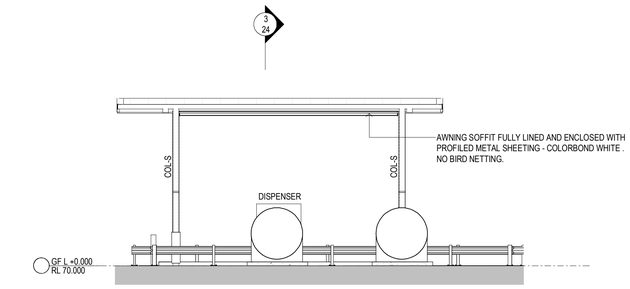
Trailer Wash Plans

As indicated @ B1
23rd Oct 2019

OAK-1A-DA- 23 (J)
Job No 15117



1 DIESEL REFUELING AREA - GA PLAN 1 : 100
WAREHOUSE 1A



2 DIESEL REFUELING AREA - SECTION A 1 : 100
WAREHOUSE 1A

3 DIESEL REFUELING AREA - SECTION B 1 : 100
WAREHOUSE 1A

4 DISESEL REFUELING AREA 3D (INDICATIVE)
WAREHOUSE 1A

SBA ARCHITECTS

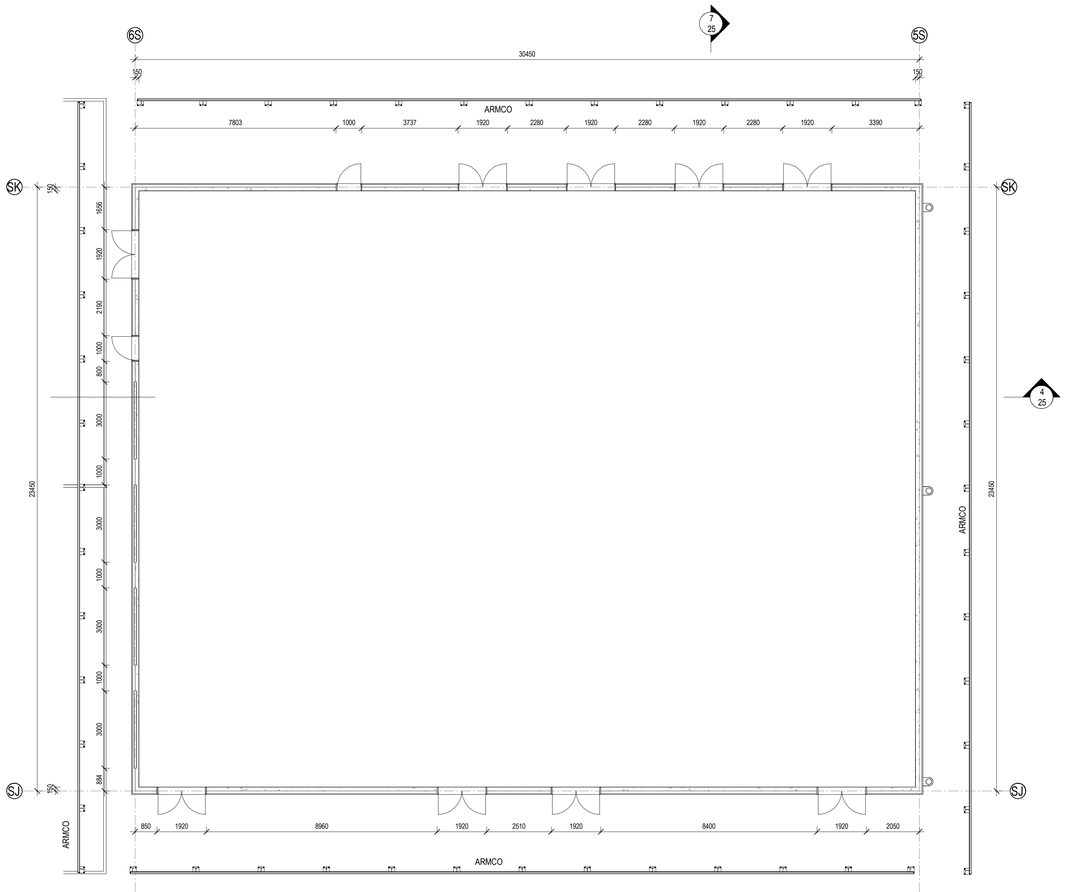
Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

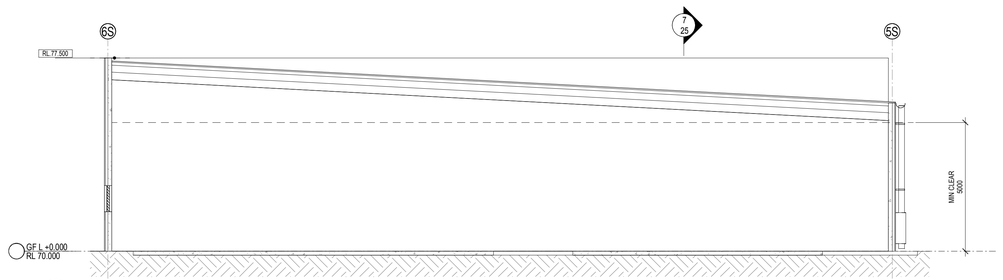
Diesel Refueling Area Plans

1 : 100 @ B1
23rd Oct 2019

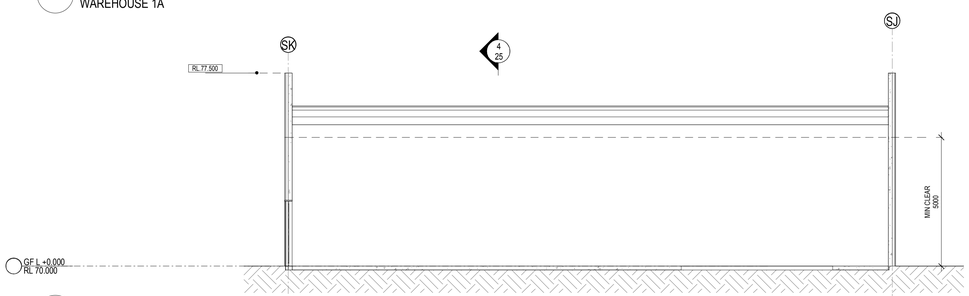
OAK-1A-DA- 24 (G)
Job No 15117



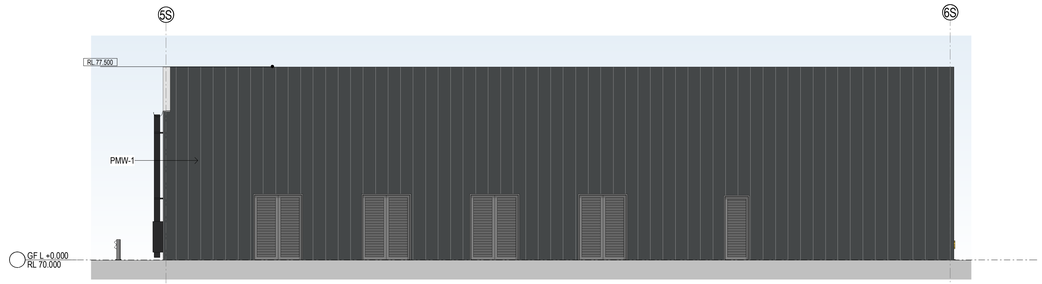
1 ENERGY COMPLEX 1 - FLOOR PLAN 1 : 100
WAREHOUSE 1A



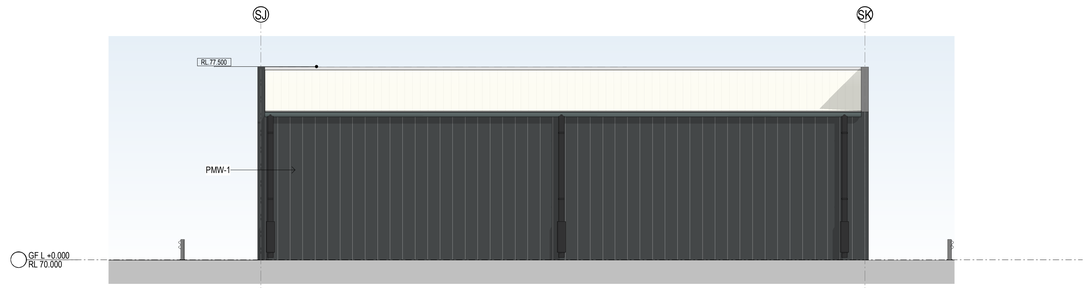
4 SECTION A 1 : 100
WAREHOUSE 1A



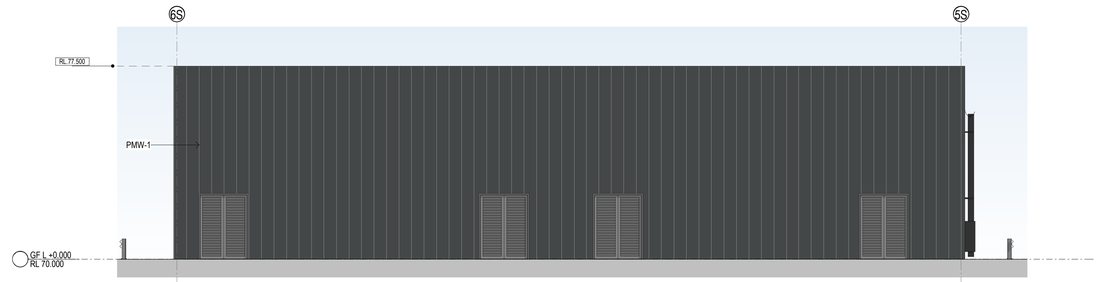
7 SECTION B 1 : 100
WAREHOUSE 1A



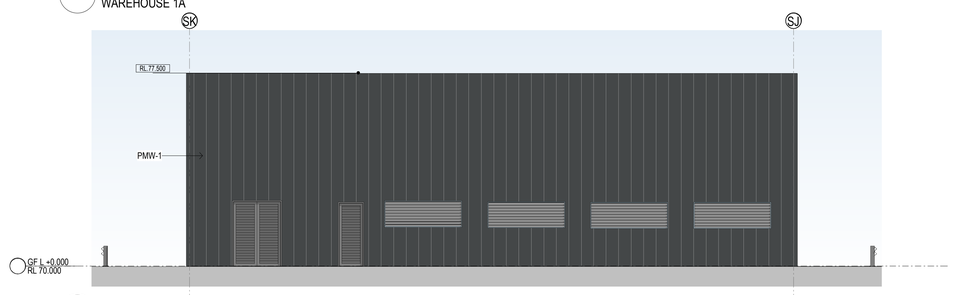
2 NORTH ELEVATION 1 : 100
WAREHOUSE 1A



3 EAST ELEVATION 1 : 100
WAREHOUSE 1A



5 SOUTH ELEVATION 1 : 100
WAREHOUSE 1A



6 WEST ELEVATION 1 : 100
WAREHOUSE 1A

INDICATIVE EXTERNAL FINISHES LEGEND

- BLK-1 STACKED BOND BLOCK LIGHT GREY
- FC-1 PREFINISHED FIBRE CEMENT WALL SHEETING
- GL-1 GLAZING DARK GREY TINT
- GL-2 SPANDREL GLAZING DARK GREY (OPAQUE)
- GL-3 PRIVACY GLAZING - TRANSLUSCENT
- GL-4 CLEAR GLASS
- IWP-1 INSULATED WALL PANEL COLORBOND - MONUMENT
- IWP-2 INSULATED WALL PANEL COLORBOND - SHALE GREY
- IWP-3 INSULATED WALL PANEL COLORBOND - WHITE
- MDR-1 METAL DECK ROOFING COLORBOND - SURFMIST
- MDR-2 METAL DECK ROOFING COLORBOND - COOLMAX
- PCP-1 PRECAST CONCRETE PANELS OFF FORM CONCRETE
- PCP-PF-1 PRECAST CONCRETE PANELS PAINT FINISH - MONUMENT
- PCP-PF-2 PRECAST CONCRETE PANELS PAINT FINISH - MID GREY
- PF-1 PAINT FINISH - 1 MONUMENT
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- PMW-3 PREFINISHED METAL WALL SHEETING WHITE (OR SIMILAR)
- PMW-4 PREFINISHED METAL WALL SHEETING "GOODMAN GREEN"
- TRS-1 TRANSLUCENT ROOF SHEET - OPAL COLOUR (OR SIMILAR)
- TRS-2 DANPALON TRANSULCENT WALL CLADDING - OPAL COLOUR

SBA ARCHITECTS

Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

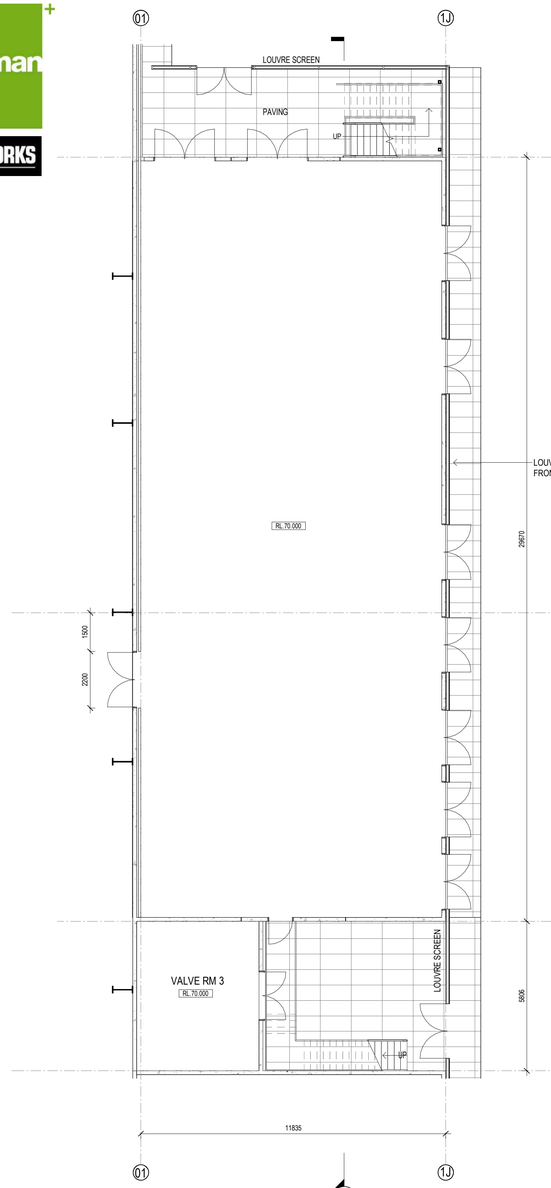
Energy Complex - 1

As indicated @ B1
23rd Oct 2019

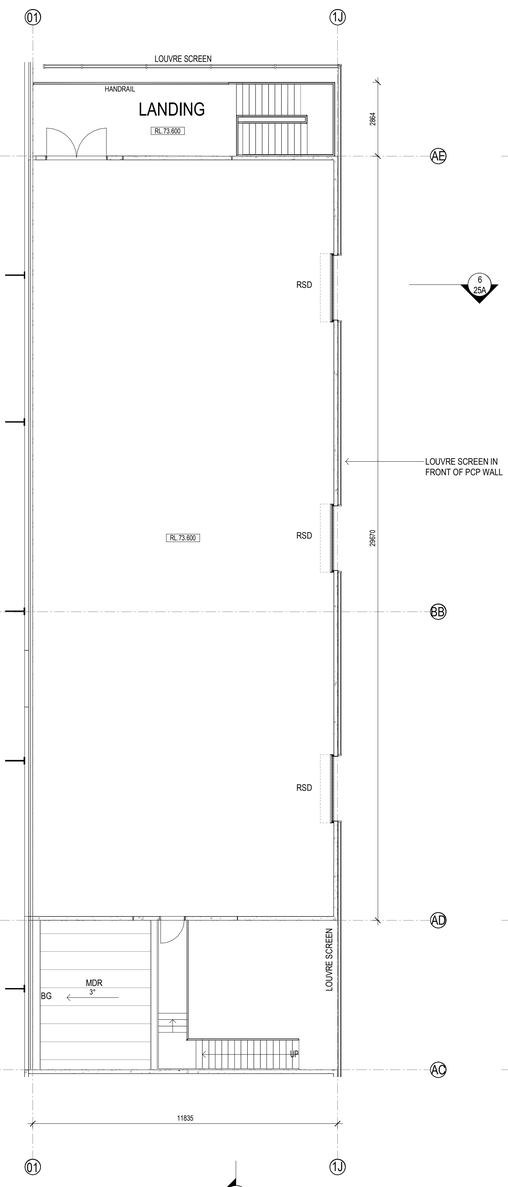
OAK-1A-DA-25 (G)
Job No 15117

Goodman

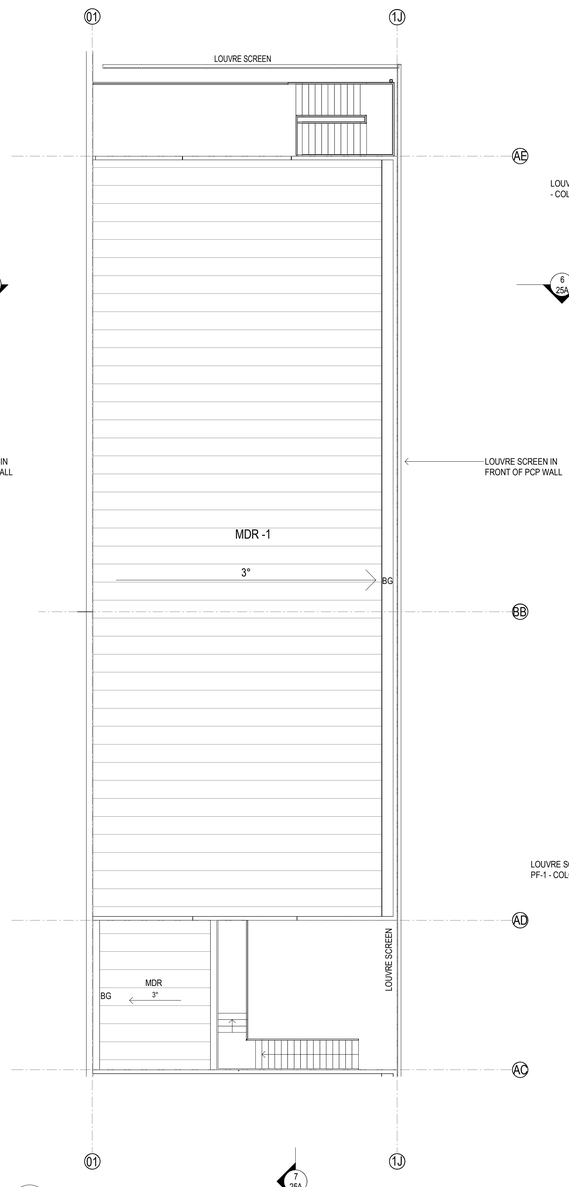
BRICKWORKS LIMITED



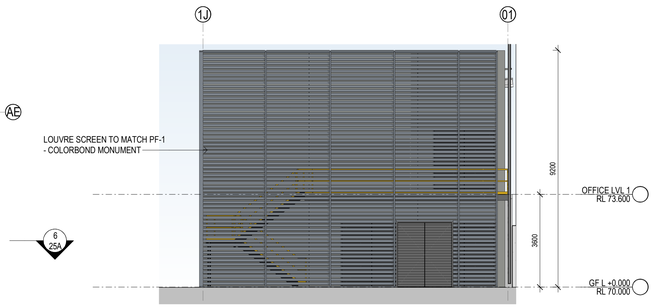
1 GROUND FLOOR PLAN 1 : 100
WAREHOUSE 1A



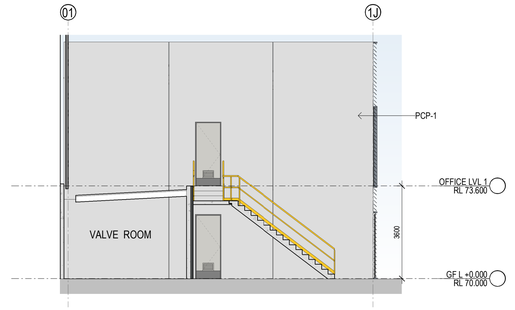
2 LEVEL 1 1 : 100
WAREHOUSE 1A



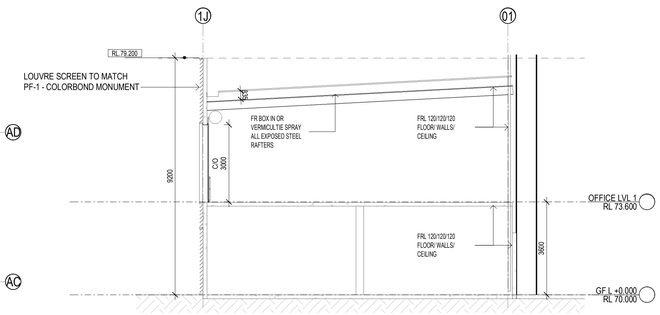
8 ROOF PLAN 1 : 100
WAREHOUSE 1A



4 NORTH ELEVATION 1 : 100
WAREHOUSE 1A



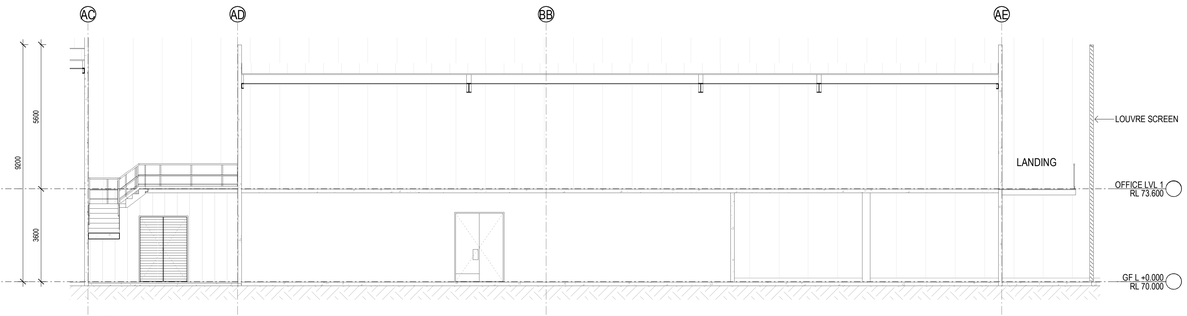
5 SOUTH ELEVATION 1 : 100
WAREHOUSE 1A



6 ENERGY COMPLEX 2 - SECTION B 1 : 100
WAREHOUSE 1A



3 EAST ELEVATION 1 : 100
WAREHOUSE 1A



7 SECTION A 1 : 100
WAREHOUSE 1A

INDICATIVE EXTERNAL FINISHES LEGEND

- **BLK-1** STACKED BOND BLOCK LIGHT GREY
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- **PF-1** PAINT FINISH - 1 MONUMENT
- **PF-2** PAINT FINISH - 2 MID GREY
- **PF-3** PAINT FINISH - 3 SHALE GREY
- **PF-4** ANODISED BRONZE FINISH
- **PMW-1** PREFINISHED METAL WALL SHEETING MONUMENT (OR SIMILAR)
- **PMW-2** PREFINISHED METAL WALL SHEETING DARK GREY (OR SIMILAR)
- **PMW-3** PREFINISHED METAL WALL SHEETING WHITE (OR SIMILAR)
- **PMW-4** PREFINISHED METAL WALL SHEETING "GOODMAN GREEN"
- **TRS-1** TRANSLUCENT ROOF SHEET - OPAL COLOUR (OR SIMILAR)
- **TRS-2** DANPALON TRANSLUCENT WALL CLADDING - OPAL COLOUR

SBA ARCHITECTS

Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

Energy Complex - 2

As indicated @ B1
23rd Oct 2019

OAK-1A-DA25A (F)
Job No 15117

Goodman

BRICKWORKS LIMITED

Estate Road 01

AMENITIES LOT

Proposed Western North South Link Rd

Future Southern Link Road

BOUNDARY FNC-1

BOUNDARY FNC-2

PED ACCESS & GATE

CARS AUTOMATIC SLIDING GATE

SUPER B-DOUBLE INBOUND STAGING AREA

HIGH BAY ROOF ACCESS

VALVE RM

RW

LPG REFUEL

INBOUND

35M AWNING OVER

3M AWNING OVER

7 X RECESSED DOCKS

RECEIVING OFFICE

RL. 70.000

TECH CENTRE RECEIVING - 12 X TRUCK POSITIONS

PALLET STORAGE

AWNING END WALL

RSD-7 RSD-6 RSD-5 RSD-4 RSD-3 RSD-2 RSD-1

RECOUP AREA 50M²

COMPUTER ROOM 2

PRIME MOVER PARKING

STAGE 2 EXPANSION

HIGH BAY WAREHOUSE

RL. 69.000 (+/- 1000)

LOW BAY WAREHOUSE

RL. 70.000 (+/- 1000)

VALVE ROOM 5M X 5M

D.G STORE

LOW BAY ROOF ACCESS

72 X RECESSED DOCKS

3M AWNING OVER

OUTBOUND

OFFICE

MHE

GARBAGE COMPACTOR UNITS

SKYBRIDGE OVER

SMOKERS AREA CANOPY OVER

BIKE RACKS

STAIRS & LIFT

CAR PARK

CAR PARK

EXCLUSION ZONE

AWNING OVER

LPG TANK

LPG PARKING SPACE

INBOUND STAGING AREA 25 B-DOUBLE TRAILER

BOOM & SWING GATES

WEIGH BRIDGE

GATE HOUSE

WEIGH BRIDGE

POTENTIAL SLIDING GATE LOCATION

TRUCK ENTRY

TRUCK EXIT

BOOM & SWING GATES

RL. 69.800

PUMP RM

BRIGADE PARKING

TANK

TANK

SOP

PROJECT BASE POINT

2 x CAR SPACES FOR SECURITY GATEHOUSE STAFF

PUMP ROOM AND TANKS PAINTED TO MATCH COLORBOND MONUMENT

ENERGY COMPLEX 1

REFUELING AREA (AWNING OVER)

REFUELING

TANKS

LIGHTPOLE & ARMCO

TRAILER PARKING

PRIME MOVER PARKING

TRAILER WASH

TRAILER WORKSHOP

3M AWNING

TRAILER PARKING

PRIME MOVER PARKING

TRAILER PARKING

BOUNDARY FNC-2

TO BDY 10440

187990 33000 17000 31720 36820 44860 23990

68190 TO BDY 16860 137210 39912 218298 395420

Development Area Schedule

Lot 1A

Site Area	187,270 sqm
Warehouse (inc stage 2 expansion)	68,160 sqm
Office (3 Level)	2,646 sqm
Mezzanines (inc stage 2 expansion)	32,402 sqm
Outbuildings (inc Dock office, Trailer Workshop, Trailer wash, D.G. Store, Computer Room, Gatehouse, Energy Complex, Refueling area, Battery charge, Skybridge & Lobby)	4,004 sqm
Total Building Area	107,212 sqm
Awning	8,620 sqm
Site Cover (exc. awning)	57 %
Floor Space Ratio	0.57 : 1
Hardstand Area	88,610 sqm
Light Duty Area	14,030 sqm
Prime Mover Parking	54
Trailer Parking	164
Carparking	472
Motorcycle Parking	6

LEGEND

- Site Boundary
- Lot Boundary
- Building 7.5m Setback
- Landscape 3.75m Setback
- FNC-1 Chainwire Fencing
- FNC-2 Palisade Fencing
- RW Retaining Wall

SBA ARCHITECTS

Oakdale West Estate

Horsley Park

Proposed Industrial Facility - Building 1A

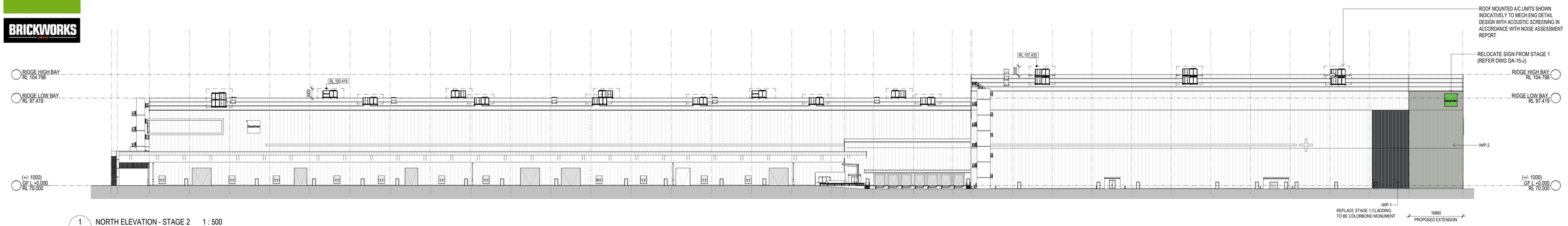
Stage 2 - Site Plan

1 : 750 @ B1

23rd Oct 2019

OAK-1A-DA- 28 (J)

Job No 15117



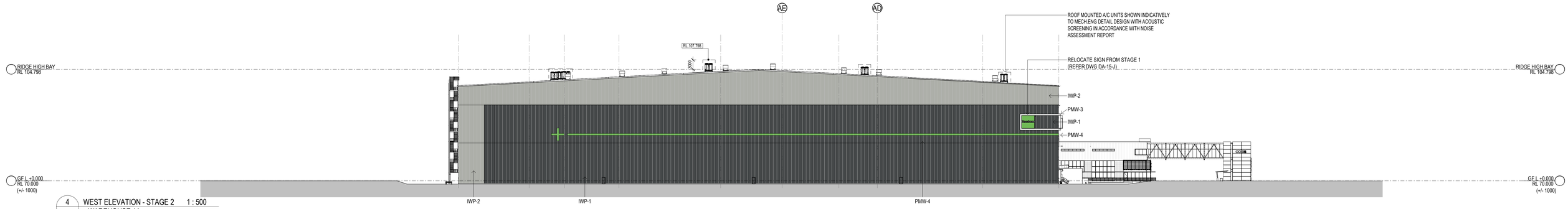
1 NORTH ELEVATION - STAGE 2 1 : 500
WAREHOUSE 1A



2 EAST ELEVATION - STAGE 2 1 : 500
WAREHOUSE 1A



3 SOUTH ELEVATION - STAGE 2 1 : 500
WAREHOUSE 1A



4 WEST ELEVATION - STAGE 2 1 : 500
WAREHOUSE 1A

INDICATIVE EXTERNAL FINISHES LEGEND

- **BLK-1** STACKED BOND BLOCK LIGHT GREY
- **FC-1** PREFINISHED FIBRE CEMENT WALL SHEETING
- **GL-1** GLAZING DARK GREY TINT
- **GL-2** SPANDREL GLAZING DARK GREY (OPAQUE)
- **GL-3** PRIVACY GLAZING - TRANSLUSCENT
- **GL-4** CLEAR GLASS
- **IWP-1** INSULATED WALL PANEL COLORBOND - MONUMENT
- **IWP-2** INSULATED WALL PANEL COLORBOND - SHALE GREY
- **IWP-3** INSULATED WALL PANEL COLORBOND - WHITE
- **MDR-1** METAL DECK ROOFING COLORBOND - SURFMIST
- **MDR-2** METAL DECK ROOFING COLORBOND - COOLMAX
- **PCP-1** PRECAST CONCRETE PANELS OFF FORM CONCRETE
- **PCP-PF-1** PRECAST CONCRETE PANELS PAINT FINISH - MONUMENT
- **PCP-PF-2** PRECAST CONCRETE PANELS PAINT FINISH - MID GREY
- **PF-1** PAINT FINISH - 1 MONUMENT
- **PF-2** PAINT FINISH - 2 MID GREY
- **PF-3** PAINT FINISH - 3 SHALE GREY
- **PF-4** ANODISED BRONZE FINISH
- **PMW-1** PREFINISHED METAL WALL SHEETING MONUMENT (OR SIMILAR)
- **PMW-2** PREFINISHED METAL WALL SHEETING DARK GREY (OR SIMILAR)
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SBA ARCHITECTS

Oakdale West Estate
Horsley Park

Proposed Industrial Facility - Building 1A

Stage 2 - Elevations

As indicated @ B1
23rd Oct 2019

OAK-1A-DA- 29 (H)
Job No 15117

APPENDIX B

Council Waste Management Plan Form

OUTLINE OF THE PROPOSAL			
Site Address:	2 Aldington Road, Kemps Creek		
Name of Applicant:	Goodman Property Services (Aust) Pty Ltd		
Address of Applicant	GPO Box 4703, Sydney NSW 2001		
Phone:	02 9230 7400	Fax:	
Buildings and other structures currently on the site:			
No structures present			
Description of Proposal:			
An industrial precinct with two warehouse lots, hardstand and car parking built with hard material, timber and plasterboard			
Applicant's Signature:		Date:	

Table 1 Table of Demolition Waste

Materials	Destination			
	Re-use and recycling		Disposal	
Material	Estimated Volume (m^2 or m^3)	ON SITE Specify proposed reuse or on-site recycling	OFF-SITE Specify contractor or recycling outlet	Specify Contractor and Landfill Site
Excavation Material	2,250	NIL	Off-site recycling at a centre lawfully able to accept it. This is to be advised.	NIL
Green Waste		NIL	Reuse at other sites where possible or disposal to a landfill centre (such as Penrith landfill depot) lawfully able to accept it. This is to be advised.	NIL

Table 2 Table of Construction Waste

Materials	Destination			
	Re-use and recycling		Disposal	
Material	Estimated Volume (m^2 or m^3)	ON SITE Specify proposed reuse or on-site recycling	OFF-SITE Specify contractor or recycling outlet	Specify Contractor and Landfill Site
Hard Material		NIL	Disposed at an off-site centre lawfully able to accept it. This is to be advised.	NIL
Concrete	3,805	NIL	Off-site recycling for filling, levelling or road base at a centre lawfully able to accept it. This is to be advised.	NIL
Timber to be specified by Construction Manager	80	*Treated*: reused for formwork, bridging, blocking, propping or second hand supplier; *Untreated*: reused for floorboards, fencing, furniture, mulched second hand supplier	NIL	NIL
Plasterboard	110	NIL	Returned to supplier or recycled off-site at a centre lawfully able to accept it. This is to be advised.	NIL
Metals to be specified by Construction Manager	625	NIL	Off-site recycling centre at a lawfully able to accept it. This is to be advised.	NIL
Plastics		NIL	Off-site recycling centre at a lawfully able to accept it. This is to be advised.	NIL
Cardboard		NIL	Off-site recycling centre at a lawfully able to accept it. This is to be advised.	NIL

Table 3 Table of Ongoing Use wastes for the premises

Type of Waste to be Generated	Volume (m^3 or litres per week)	Proposed On Site Storage and Treatment Facilities	Destination
General wastes • Non-recyclable packaging wastes • Domestic wastes • Plant and general maintenance wastes	173,145	Wastes will be collected and deposited in the external compactor facility or in external bins if selected. These will hold the wastes until time of collection.	General waste will be collected four times per week and deposited at Penrith landfill depot
Recyclables • Office wastes • Packaging wastes	173,145	Wastes will be collected and deposited in the external compactor facility or in external bins if selected. These will hold the wastes until time of collection.	Recyclables will be collected twice weekly and deposited at Penrith Community Recycling Centre
Bulky wastes	Variable	Wastes will be stored in an area of sufficient size to accommodate the wastes in an interim phase until the Development contacts a contractor for reuse, recycling or disposal at an EPA licensed facility.	Disposal will occur at a facility lawfully able to accept the material. This is to be advised.
Hazardous wastes	Variable	Wastes will be stored in an area of sufficient size to accommodate the wastes in an interim phase until the Development contacts a contractor for reuse, recycling or disposal at an EPA licensed facility.	Disposal will occur at a facility lawfully able to accept the material. This is to be advised.

Table 4 Summary of the Ongoing Management of the premises

Describe how you intend to ensure the ongoing management of waste on site
1) Waste storage areas are to be signposted to ensure correct operation and use
2) Audits and visual assessments of bins will occur after initial construction and on a half-yearly basis to ensure waste capacity is sufficient to meet the development's needs
3) Management will employ cleaners and garden contractors, as applicable, to undertake the roles outlined in **Section 6.9** of the waste management plan, including transport of wastes from any interim storage to the designated compactor
4) Management will ensure the staff are aware of waste management procedures, update the waste management plan as required and undertake the monitoring and maintenance as outlined in **Section 6.9**.

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APPENDIX M

Flora and Fauna Management Plan

Oakdale West Estate
SSD 7348 MOD 2

Flora and Fauna Management Plan

Prepared for

Goodman Property Services (Aust.) Pty Ltd

écologique | environmental consulting

Oakdale West Estate SSD 7348 MOD 2– Flora and Fauna Management Plan

prepared for

Goodman Property Services (Aust.) Pty Ltd.

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Document control

Prepared by		
Kat Duchatel BSc. Env. CEnvP EIANZ #691 BAM Accreditation no.BAAS17054		22/05/2020

Document status

Revision	Date	Description	Issued to
01	07/05/2020	Draft Flora and Fauna Management Plan	Goodman
02	20/05/2020	Final Flora and Fauna Management Plan	Goodman
03	20/05/2020	Final Flora and Fauna Management Plan amended following CPER review	Goodman

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12 Wanganella Street, Balgowlah NSW 2093
0437 821 110 | kat@ecologique.com.au

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2.3.1 Terrestrial fauna 4
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1 Introduction

1.1 Context

Goodman Property Services (Aust) Pty Ltd (Goodman) obtained Development Consent SSD 7348 for the staged development of Oakdale West Industrial Estate (the estate) comprising a warehousing and a distribution hub in Western Sydney. SSD 7348 incorporates the approval of a 'Concept Proposal' to guide the future development of the estate and consent for the 'Stage 1 Development'.

Works for the Stage 1 Development commenced in late 2019 and includes the construction of the proposed Western North South Link Road (WNSLR), site-wide bulk earthworks, estate wide basins, and lead-in services. It also includes infrastructure and associated services, landscaping, and construction and use approval for Precinct 1.

More recently approval has been granted for a modification application prepared by Goodman titled 'Section 4.55(2) Modification Applicant (SSD 7348 MOD 2) Oakdale West Estate – Amendments to Concept Plan and Stage 1 Development', dated 12 December 2019.

This Flora and Fauna Management Plan (FFMP) has been prepared as a sub-plan to the Construction Environmental Management Plans (CEMPs) that will deal with construction works within Precinct 1 of the estate. Specifically the the construction and operation of Building 1A within Lot 1A and future construction and operation of buildings in and associated wors within Lot 1B.

It should be noted that an approved FFMP is in place for the wider estate (écologique, 11/03/2020), which addresses procedures to manage the impacts on biodiversity values during the construction activities associated with the SSD 7348 Concept Plan and Stage 1 of the development. A large proportion of the approved FFMP (écologique, 11/03/2020) has already been compliantly implemented and are not relevant to SSD 7348 MOD 2. However this FFMP MOD 2 must be read in conjunction with the approved FFMP in place for the wider estate (écologique, 11/03/2020).

The following Section (Section 1.2 Consent Conditions) provides a summary of activities already completed and management actions and procedures that are relevant to Precinct 1.

1.2 Consent Conditions

Consent condition D119 requires the preparation of the CEMP for Stage 1, which is to address all relevant consent requirements, including this FFMP (see Condition D88 in Table 1-1).

Table 1-1.Consent conditions relevant to this FFMP and biodiversity mitigation measures

Condition	Mitigation and management measures	Reference/Details
D88	The Applicant must prepare a Terrestrial and Aquatic Flora and Fauna Management Plan (FFMP) for Stage 1, to the satisfaction of the Planning Secretary. The Plan must form part of a CEMP in accordance with Condition D119 and must: (a) Be prepared by a suitably qualified and experienced person(s); (b) Describe procedures to manage impacts on biodiversity values during earthworks, clearing and dam decommissioning; (c) Include procedures for clearing marking and protecting the areas of vegetation to be retained on the Site, including the mature vegetation in the north-western corner and the Riparian Corridor adjacent to Ropes	Purpose of this FFMP Refer also: • Oakdale West FFMP v7 (écologique, 11/03/2020)

Condition	Mitigation and management measures	Reference/Details
	Creek in accordance with the Vegetation Management Plan (VMP) prepared under Condition D91; (d) Detail the specific erosion and sediment controls to protect the retained vegetation.	
D89	The Applicant must: (a) Not commence bulk earthworks until the FFMP required by Condition D88 is approved by the Planning Secretary; and (b) Implement the most recent version of the FFMP approved by the Planning Secretary for the duration of bulk earthworks and construction.	The Oakdale West FFMP v7 (écologique, 11/03/2020) was approved by the Planning Secretary and is being implemented compliantly.
D90. Offsets for Stage 1	Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must retire 173 ecosystem credits to offset the removal of up to 4.41 hectares of native vegetation on the Site.	An administrative condition that is no relevant to this FFMP
D91. Vegetation Management Plan	Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must prepare and implement a Vegetation Management Plan (VMP) for the restoration and rehabilitation of 4.2 ha of Riparian Corridor adjacent to Ropes Creek to meet the objectives of the *Water Management Act 2000*.	Not relevant to this FFMP Addressed in the Oakdale West Vegetation Management Plan prepared for SSD 7348 MOD 1 (écologique, 02/10/2019).
D93. Offsets for the WNSLR	Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must: (a) Offset 0.42 ha of vegetation lost in the Erskine Park Biodiversity Corridor as a result of the WNSLR by carrying out planting within the area shown in green edging on Figure 9 in Appendix 6; and (b) Plant the area shown in green edging on Figure 9 of Appendix 6 with species similar to those identified for zone 4a, on the south-eastern side of Ropes Creek, in the Biodiversity Management Plan Erskine Park Employment Area (HLA-Envirosciences, 2 May 2006).	Not relevant to this FFMP Currently being addressed in consultation with the Department.
D94	The Applicant shall monitor and maintain the planting for a period of six months to ensure a minimum 85% survival rate of the planting.	As above
D95	The Applicant must notify the Planning Ministerial Corporation at least one month before the completion of planting to enable the Planning Ministerial Corporation to arrange ongoing maintenance.	As above

Condition	Mitigation and management measures	Reference/Details
D96. Snake Management Measures	Prior to construction of Stage 1, the Applicant must implement snake management measures to limit, to the extent practicable, movement of snakes from the Site into the adjacent school and retirement village on the western boundary of the Site. The measures shall be detailed in the CEMP required by Condition D119 and shall include, but not be limited to, provision of alternative snake habitat on Site, fencing along the western boundary and installation of snake deterrents.	Refer Section 2.3.2

D118. Management plans required under this development consent must be prepared in accordance with relevant guidelines, and include:	
Details of: • The relevant statutory requirements (including any relevant approval, licence or lease conditions); • Any relevant limits or performance measures and criteria; and • The specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 1 or any management measures;	Addressed in Sections 2 and 7 of the Oakdale West FFMP v7 (écologique, 11/03/2020)
A description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Refer Section 3, Table 3.1 and Sections 2 and 7 of the Oakdale West FFMP v7 (écologique, 11/03/2020)
A program to monitor and report on the: • Impacts and environmental performance of Stage 1; and • Effectiveness of the management measures set out pursuant to paragraph (b) above;	Refer Section 7 of the Oakdale West FFMP v7 (écologique, 11/03/2020)
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;	Refer Section 8 of the Oakdale West FFMP v7 (écologique, 11/03/2020)
A program to investigate and implement ways to improve the environmental performance of Stage 1 over time;	External to this FFMP. Completed in CEMP
A protocol for managing and reporting any: • Incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); • Complaint; • Failure to comply with statutory requirements; and • A protocol for periodic review of the plan	External to this FFMP. Completed in CEMP

2 Existing Environment

2.1 Precinct 1

Within the context of Oakdale West, Precinct 1 is bounded by Estate Road 1 to the west and the north, the WNSLR to the east and the future Southern Link road to the south.

Figure 2-1 shows the location of Precinct 1 in the context of the progressive bulk earthworks underway across the estate.

Precinct 1 has been subject to substantial cut and fill earthworks. Clearing of native vegetation from the wider estate area was undertaken in compliance with the Oakdale West FFMP v7 (écologique, 11/03/2020). No native vegetation or fauna habitat features have been retained in Precinct 1 (see Figure 2-2).

Precinct 1 is not located proximal to any native vegetation being retained. Vegetation being retained is located in biodiversity management areas in the north-western corner, the south-eastern corner and along the eastern boundary of the estate.

Stormwater runoff from Precinct 1 will eventually discharge to a construction basins, which are located within the transmission easement to the west of the riparian corridor adjacent to Ropes Creek, and ultimately contribute to flows into Ropes Creek.

A large farm dam is located approximately 160 m east-south east of Precinct 1. This dam is schedule to be decommissioned in June 2020 weather permitting.

Figure 2-2 shows the location of Precinct 1 in the context of the estate's biodiversity management areas, construction basins and remaining farm dam.

2.2 Construction Basins

The construction detention basins will collect construction site surface flows, which at times of high rainfall are discharged to Ropes Creek.

These basins will be reconstructed as a bio-retention basin at a time when 90% of development within contributing catchment areas are completed.

2.3 Wildlife

2.3.1 Terrestrial fauna

Terrestrial fauna (predominantly kangaroos and reptiles) are typically found within the Biodiversity Management Area (BMA) located along the western boundary of the estate. However a resident population of kangaroos commonly traverse the estate from the western BMA area across to the transmission easement and the eastern BMA area adjacent Ropes Creek.

While kangaroos are more commonly seen around the periphery of the estates works areas, they can still be observed within the estate's work zones, particularly at dusk at dawn.

2.3.2 Snake habitat

The BMA has a number of habitat features installed, inclusive of snake refuge rock piles and placement of large woody debris, in accordance with the Oakdale West FFMP v7 (écologique, 11/03/2020) and which are not a requirement of the construction works within Precinct 1.

The placement of snake refuge was in response to concerns raised by the adjacent Emmaus Catholic College due to a high level of snake sightings in and around the college. Snake refuge habitat (rock piles and large woody debris) was installed within the western BMA area along with snake deterrent fencing (along the estate's western boundary) to minimise the risk of any resident snakes moving from Oakdale West into the adjacent land.

2.3.3 Aquatic fauna

The remaining farm dam shown in Figure 2-2 supports a range of aquatic fauna, including turtles, eels, amphibians and small native fish. Consequently, this dam is unable to flocced to manage suspended particulate matter (e.g. applying gypsum or other agents used to reduce turbidity in construction basins prior to discharge of basin waters to downstream aquatic receivers).

Decommissioning of this dam will be staged in a manner to decrease the volume of water so that eventual capture and relocation of aquatic fauna can be faciiitated.

2.4 Potential Impacts

2.4.1 Potential direct impacts

While considered unlikely to occur,other potential direct impacts on wildife include:

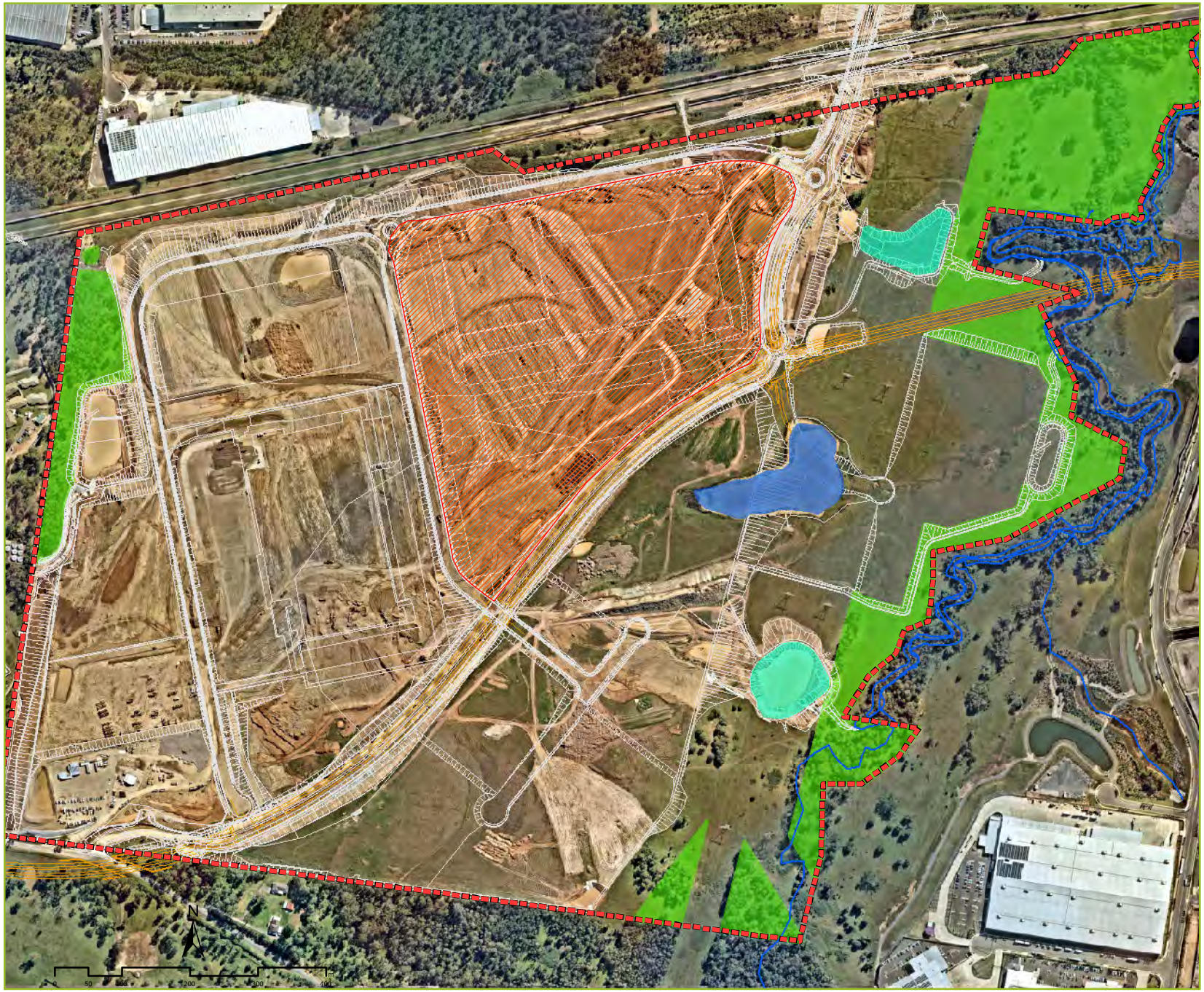
- Vehicle / mobile plant strike resulting in injury or death of terrestrial fauna; and
- Injury or death of terrestrial fauna that inadvertently become stranded within the construction area.

2.4.2 Potential indirect impacts

Indirect impacts occur when activities relating to the construction or operation of a development affect native vegetation, fauna and fauna habitat beyond the subject site.

Potential indirect impacts may include the following:

- Site stormwater runoff resulting in discharge of particulate matter into downstream aquatic environments; and
- Accidential spills resulting in discharge of contaminants into downstream aquatic environments.
- Transport of weeds and pathogens into the site and spread into the wider estate area;
- Introduction or increase in pest animal populations (such as vermin); and
- Rubbish / litter from the site entering the wider estate area, through either accident drift or deliberate dumping.



Oakdale West Estate
SSD 7348 MOD 2

Flora and Fauna Management Plan

- Oakdale West boundary
- SSD7348 MOD 2 boundary
- Future Southern Link Road
- Biodiversity management areas
- Basins
- Dam - aquatic habitat
- Ropes Creek

Figure 2-2. Site context

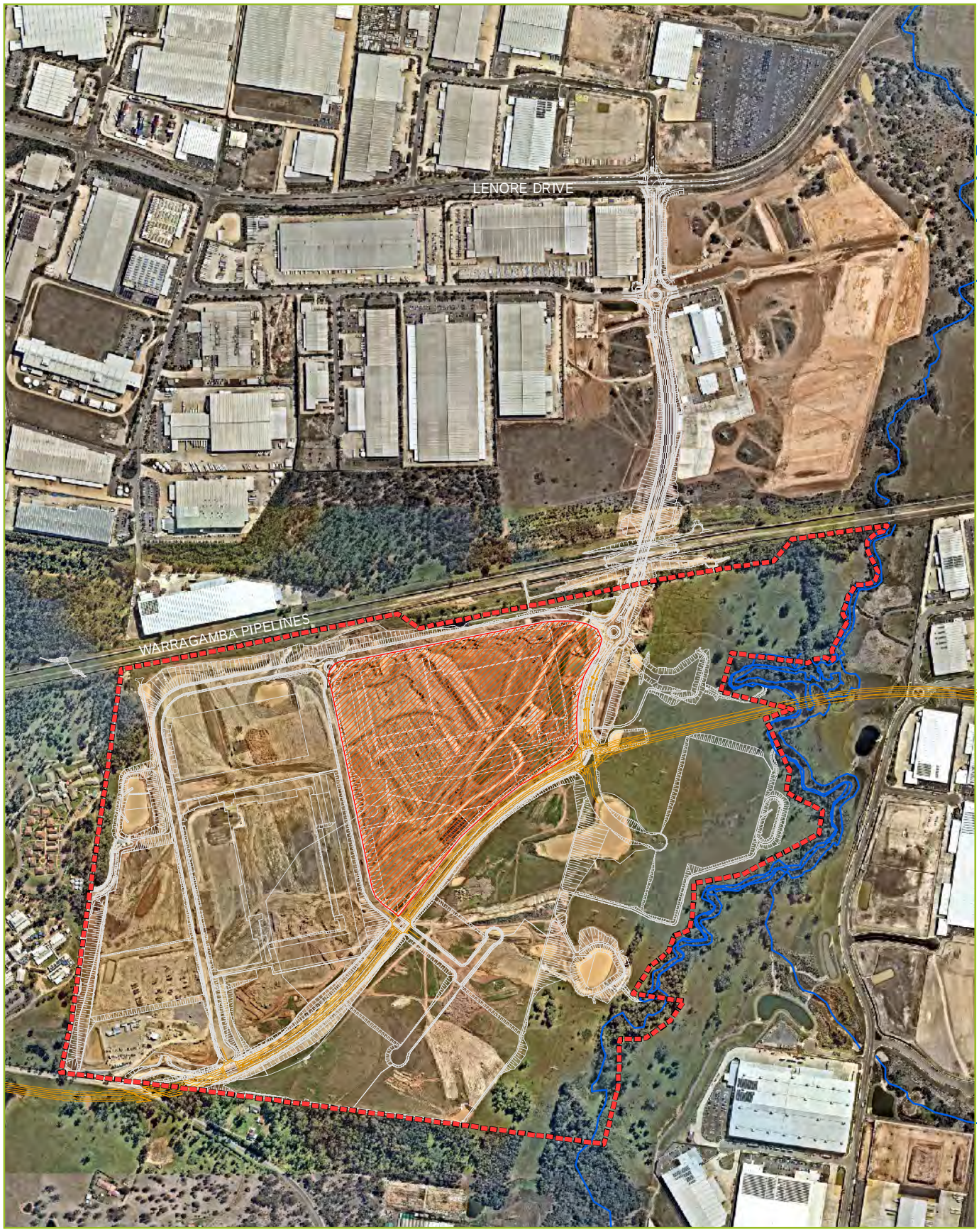
Coordinate System: MGA Zone 56 (GDA 94)

Image source: Nearmap 13 April 2020

Data sources:

AT&L Design Dwgs 20 May 2020

écologique Oakdale West FFMP v7 11 March 2020



Oakdale West Estate SSD 7348 MOD 2

Flora & Fauna Management Plan

Oakdale West boundary
SSD7348 MOD 2 boundary
Future Southern Link Road
RopesCreek

N

0 75 150 300 450 600 m

Figure 2-1. Location plan

Coordinate System: MGA Zone 56 (GDA 94)
Image sources: Nearmap 13 April 2020

3 Mitigation Measures

While Precinct 1 and the wider estate area have been substantially modified (through vegetation clearance and bulk earthworks), the potential to encounter wildlife must still be considered in accordance with the overarching SSD 7348 – Administrative Conditions that require:

- An obligation to minimise harm to the environment; and
- Compliance with biodiversity management and mitigation measures.

Table 3-1 details mitigation measures that will need to be implemented to ensure consent compliance.

Table 3-1: Flora and fauna management and mitigation measures

ID	Measure/Requirement	Responsibility	Timing / Frequency
[WILDLIFE PROTECTION]			
FF1	All personnel including contractors are to be made aware of the possibility of encountering fauna, through the site works induction process.	Management / Contractors / Employees	Pre-construction
FF2	Vehicle and mobile plant operators shall remain vigilant when entering and exiting the works area, particularly at dusk and dawn. Specifically: • Should kangaroos be observed transiting across the entrance/exit to the works area, vehicle/mobile plant is to stop until animals have moved to a safe distance to ensure vehicle/mobile plant strike is prevented. • All on site personnel shall alert vehicle/mobile plant entering or existing the works area if kangaroo movement is observed (via two way radio).	Management / Contractors / Employees	Ongoing throughout construction
FF3	Should unexpected fauna be encountered within the works site, the stop works procedure provided in Section 4 must be followed.	Management / Contractors / Employees	Ongoing throughout construction
[EROSION & SEDIMENT CONTROL]			
FF4	Offsite discharge shall be managed in strict accordance with the soil and water management plans and progressive erosion and sediment plans prepared specifically for all construction works in Precinct 1. The performance criteria that are relevant to this FFMP include but may not be limited to the following:	Management / Contractors	Throughout construction

ID	Measure/Requirement	Responsibility	Timing / Frequency
FF4	• Limit potential for adverse environmental impacts on downstream waterways, riparian zones, and other identified sensitive areas. • Minimise the risk and subsequent occurrence of erosion and sedimentation, to mitigate the impacts on project areas, sensitive areas, and downstream environments. • Maintain existing downstream waterway attributes and water quality parameters.	Management / Contractors	Throughout construction
FF5	• Prevent the occurrence of pollution incidents causing environmental harm. • Temporary construction and permanent operational spill kits are to be installed. • Maintain existing downstream waterway attributes and water quality parameters.	Management / Contractors / Future tenants	Ongoing throughout construction and post construction, operation
[WEED, PEST SPECIES AND PATHOGEN MANAGEMENT]			
FF6	The following hygiene procedures are to be implemented to avoid the introduction and/or spread of soil borne pathogens and weeds: • Minimise work during wet/rainy periods. • Vehicles, plant and machinery are to be clean and free of soil on arrival to the works area. • Truck wash down, rumble grids to be installed and operated to ensure mud, weeds or pathogens are not transported around the region or onto roads. • Mud spilt on roads to be immediately removed by a road sweeper.	Management / Contractors / Employees	Ongoing throughout construction
FF7	Future tenants are to install rodent (electronic or sonar) repellents to minimise prey for snakes.	Management / Future tenants	Post construction, operation
[WASTE MANAGEMENT]			
FF8	Waste mitigation and management measures for Precinct 1 shall be undertaken in accordance with the Oakdale West Estate Waste Management Plan (SLR, 2019), which takes into consideration Penrith City Council's DCP requirements and best practice waste management procedures. The following specific measures are relevant to minimising indirect impacts on biodiversity: • Ensure the site's project management of the site includes minimising waste generation, requiring the appropriate storage and timely collection of waste materials, and maximising re-use or recycling of materials.	Management / Contractors / Future tenants	Ongoing throughout construction and post construction, operation

ID	Measure/Requirement	Responsibility	Timing / Frequency
FF8	• Employ adequate environmental management controls to prevent off-site migration of waste materials and contamination from the waste. For example, consideration of slope, drainage, proximity relative to waterways, stormwater outlets and vegetation. • All waste placed in skips or bins for disposal or recycling will be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. • Waste management areas are to be graded to a central drainage point which is connected to the sewer so that water discharge from washing flow to a sewer approved by the relevant authority. • Adequate vermin prevention measures are implemented.	Management / Contractors / Future tenants	Ongoing throughout construction and post construction, operation

4 Stop Works Procedure

All personnel working on the Project will need to be inducted on the potential to encounter wildlife within the wider estate area but also within the works area. The stop work procedure in the event any fauna unexpectedly occurs is shown in the following flow diagram.

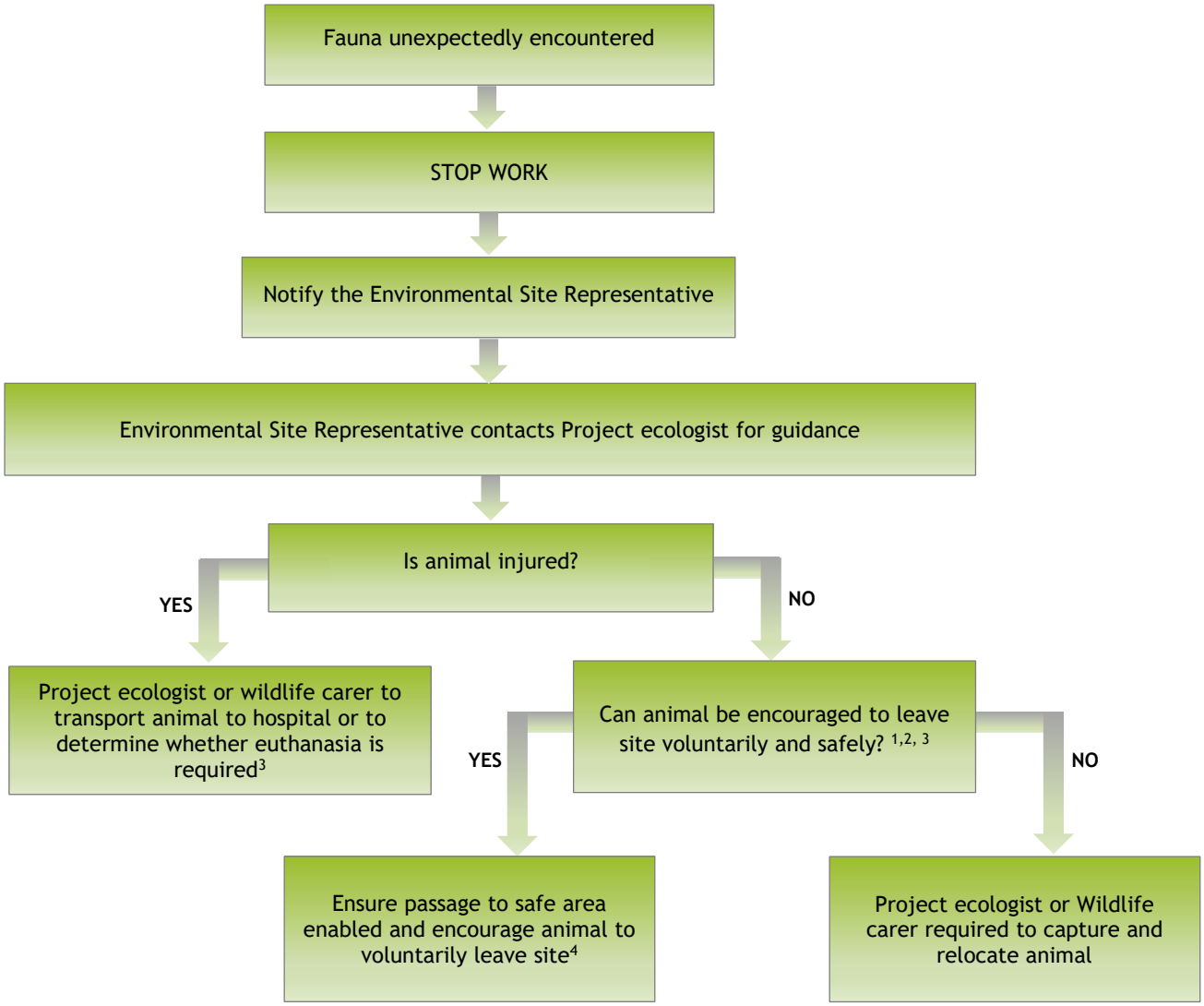


Figure 4-1. Stop work procedure

FOOTNOTES

[1] Snakes are to be left alone and not disturbed. A specialist reptile handler should be engaged for capture and relocation.

[2] Nocturnal species (e.g. any small marsupials such as possums) should be left alone until the Project ecologist or wildlife carer is able to capture and relocate animal at dusk.

[3] Nocturnal and injured animals shall be protected from disturbance (through temporary flagging tape or signage and communication to all personnel that the area is a temporary no go zone). If animal is stranded in direct sunlight some form of shading is to be erected to protect the animal until the Project ecologist or wildlife carer arrives at the site.

[4] Should safe passage be obstructed by fencing or other immovable impedances, Footnote 3 should be implemented.



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APPENDIX N

Landscape Management Plan

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Oakdale West, Precinct 1 - Lot 1A

Landscape Management Plan

Prepared by: Scape Design Pty Ltd
Prepared for: Goodman Property Services

Revision Schedule

Revision	Date	Issued by
01	05/05/20	MF & CH
02	22/05/20	MF & CH

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2 CONDITIONS

2.1 TABLE OF CONDITIONS

Visual Amenity			
Condition No.		Condition	Action
D35. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Landscape Management Plan (LMP), to the satisfaction of the Planning Secretary. The plan must form part of the CEMP in accordance with Condition D119 and the OEMP in accordance with Condition D130 and must:	(a)	*be prepared in consultation with Council*	Refer to **Section 3.1.4 of this LMP** for Council Consultation
	(b)	*detail procedures for the retention of existing native vegetation in the north-western corner of the Site and protection of this vegetation from construction impacts*	Refer to the *Oakdale West Estate - Flora and Fauna Management Plan and Erosion and Erosion and Sediment Control Plan* Refer to **Section 4.3.1 of this LMP** for species specific vegetation management.
	(c)	*include visual impact mitigation measures for construction including but not limited to:* *(i) the location of site sheds, compounds and machinery parking areas, avoiding the western and southern side boundaries, or other locations highly visible from adjacent residential properties.* *(ii) procedures for progressive grassing of exposed soil, as soon as reasonably practical after disturbance, focusing on the areas where building construction will occur at a later stage*	(i) Refer to the Construction Environmental Management Plan and the Oakdale West Estate LMP for location of construction facilities operations. (ii) Refer to the Oakdale West Estate LMP for procedures of progressive grassing techniques.
	(d)	*detail the works required to construct the landscape bund along the western boundary of the Site, as shown on Figure 5 in Appendix 2, including provision for the landscaping to incorporate mature tree (no less than 75 litre pot size)*	Refer to the Oakdale West Estate LMP for further information.

	(e)	*include a schedule of works which prioritises the construction of the landscape bund along the western boundary of the Site, as shown on Figure 5 in Appendix 2.*	Refer to the Oakdale West Estate LMP for further information.
	(f)	*include a program for implementing the landscape bund as soon as reasonably practicable and no later than prior to operation of Stage 1.*	Refer to the Oakdale West Estate LMP for further information.
	(g)	*describe the integration of landscaping with fixed elements, including retaining walls and noise walls*	Refer to **Section 4.3.1 of this LMP**
	(h)	*describe the monitoring and maintenance procedures to ensure the success of the landscaping work over the life of the Development.*	Refer to **Section 5 of this LMP**
	(i)	*update the LMP to include modifications to the western bund, bio-retention basin 2/3 and the noise wall approved under MOD 3.*	Refer to the Oakdale West Estate LMP for further information.
D36. The applicant must:	(a)	*not commence construction of Stage 1 until the LMP is approved by the Planning Secretary*	N/A
	(b)	*must implement the most recent version of the LMP approved by the Planning Secretary*	Noted
	(c)	*Include the monitoring and maintenance procedures contained in the LMP within the OEMP required in accordance with Condition D130*	N/A
Landscaping			
D37. The Applicant must complete the landscape bund along the western boundary of the Site as shown on Figure 5 in Appendix 2 within six months of commencing any construction including bulk earthworks.	-	-	Refer to the Oakdale West Estate LMP for further information.

D38. The Applicant must maintain all landscaping implemented as part of Stage 1, as shown on Figure 5 in Appendix 2, for the duration of the Development. If the monitoring carried out as part of Condition D35 indicates that any aspect of the landscaping has not been successful, the Applicant must undertake re-planting and rehabilitation works, as soon as reasonably practicable.	-	-	Refer to **Section 5 of this LMP** for maintenance requirements. Refer to **Section 5.3.1 of this LMP** for requirements of unsuccessful planting
Management Plan Requirements			
D118. Management plans required under this must be prepared in accordance with relevant guidelines, and include:	(a)	*details of:* *(i) the relevant statutory requirements (including any relevant approval, license or lease conditions)* *(ii) any relevant limits or performance measures and criteria* *(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 1 or any management measures*	*(i, ii)* In relation to landscape softworks, the following Australian Standards are applicable and have guided all landscape works: **AS 4419-1998** Soils for landscaping and garden use, **AS 4970-2009** Protection of existing trees on development sites (where not covered by council requirements) and **AS 2303-2015** Tree stock for landscape use. *(iii)* Refer to this **LMP** for more information.
	(b)	*a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria*	All landscape works have been designed using relevant Australian Standards as a guiding point. Refer to this **LMP** for more information.
	(c)	*a program to monitor and report on the:* *(i) impacts and environmental performance of Stage 1*	(i) Refer to **Section 6 of this LMP** for maintenance and monitoring schedule

		(ii) effectiveness of the management measures set out pursuant to paragraph (b) above	*(ii)* Refer to **Section 6 of this LMP** for maintenance and monitoring schedule
	(d)	*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*	Refer to **Section 6.5 of this LMP** for the contingency management plan
	(e)	*a program to investigate and implement ways to improve the environmental performance of Stage 1 over time*	Refer to **Section 5.3 and Section 6 of this LMP** for maintenance and monitoring requirements and schedules
	(f)	*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*	Completed in the Infrastructure CEMP
	(g)	*a protocol for periodic review of the plan*	Completed in the Infrastructure CEMP

3 INTRODUCTION

3.1 GENERAL

3.1.1 GENERAL CONDITIONS

Contract: Oakdale West Estate (OWE) SSD 7348 MOD 2. Refer Oakdale West LMP for further information.

Local Council(s): Penrith City Council

3.1.2 DRAWING REFERENCE

All landscape plans, details and specifications included in the project documents should be read in conjunction with this Landscape Management Plan, as well as the Oakdale West Estate LMP. All structural and civil works components of the landscape design should be referenced to engineers' details and specifications. Read the Landscape Management Plan in conjunction with these packages. If in doubt about any details or if conflicts are found in the documents, seek advice.

This Landscape Management Plan should be read in conjunction with the Oakdale West Estate LMP as it is intended to support and provide further information and detail regarding the on-lot works for Lot 1A.

3.1.3 WORKMANSHIP AND MATERIALS

All landscape works must be carried out by a competent, trained and qualified landscape contractor who is experienced in horticultural practices, landscape construction and planting techniques.

The landscape contractor must hold a current Building Contractors License and/or be a financial member of LNA Landscape Association NSW & ACT or equivalent organisations in other states.

3.1.4 COUNCIL CONSULATION

Penrith City Council (PCC) were engaged to provide input and comments on the Landscape Drawing set. Any Queries and consultation as a result of this review have been resolved as per the table below:

PCC Query	PCC Advice	Action
Comments Received 28/01/2020		
1. The landscape plans and architectural drawings provide landscape beds within the car parking areas which are not considered to achieve the intention and objectives of the DCP. It is agreed that canopy tree planting is required to ameliorate the massing of built form and hard stand car parking areas, however the landscape beds are too narrow.	*It is recommended that landscape beds be consolidated to provide dimensions of no less than 2m wide and the length of a parking space is necessary with greater planting capability at the end of aisles and tree planting in dedicated beds (not diamonds between 4x spaces).*	Car parking planting layout has been consolidated to larger beds, supporting grass/groundcover planting and canopy trees. Refer to **Appendix 7.1 of this LMP** for amended Landscape Plans.

2. Islands are proposed as resin bonded aggregate. There is opportunity for Water Sensitive Urban Design measures	*It is recommended that Water Sensitive Urban Design measures are implemented, with engineered planting pits to ensure optimal healthy root volume and other growing conditions for trees.*	Resin bonded aggregate has been removed and replaced with planting and canopy trees. Refer to **Appendix 7.1 of this LMP** for amended Landscape Plans.
3. There is inadequate quantity of trees to produce necessary cooling in relation to the expanse of building and pavement footprints. The quantity of perimeter (setback) trees is not adequate as spacings are shown at between 18 and 30m. For street trees, Council typically requires 8-10m spacings, within supplementary planting in landscape setbacks to maximise canopy area.	*It is recommended that tree quantities are increased within landscape setbacks, this can be achieved by decreasing spacing between individual trees.*	Landscape setback zones have been updated to provide additional tree and planting areas, aiding in the screening of large hardstand and building surfaces. Refer to **Appendix 7.1 of this LMP** for amended Landscape Plans.
4. Council has consistently raised issue with the streetscape language of street tree plantings (being small groups with ballast mulch at verge large centres planted at 3 trees per 100 linear meters). This does not deliver adequate streetscape outcomes nor best practice for cooling the streets.	*It is recommended that street trees are planted at 8-10m centres.*	Street tree layouts are located within the Stage 1 infrastructure works. Refer to the CEMP relating to the infrastructure works for further information.
5. There is opportunity for greater variety in tree species adding to climate and biodiversity resilience. Some species suggested are not considered sufficiently resilient to climate change and their longevity and health are potentially compromised.	*Small trees are inappropriate for the scale of the built form ie. Crepe Myrtle, Tuckeroo. Tree species diversity is to be increased.*	Tree species have been updated to reflect a greater diversity of native canopy trees, providing greater resilience and amenity to the area. Refer to **Appendix 7.1 of this LMP** for amended Landscape Plans.
6. Council through other project and road approvals has established a Southern Link Road streetscape	*It is recommended that the Southern Link Road streetscape character is maintained and reflected in the*	Refer to the Oakdale West Estate LMP for further information.

character (road verge and front setback) of informal yet massed planting with native trees providing full canopy cover.	*landscape design, creating a consistent landscape design for the precinct.*	
7. Surrounding public road intersections are considered to require additional landscaping.	*It is recommended that additional landscaping be added to public road intersections to reinforce spatial definition of the intersection and reduce large scale grey infrastructure.*	Landscape in public areas are located in the Stage 1 infrastructure works. Refer to the CEMP of the Oakdale West Infrastructure Project for further information.
8. Ballast as a groundcover is not supported due to its heat attracting properties thus compromising healthy growing conditions for trees.	*An alternative product must be provided and established for the precinct.*	Ballast has been removed and replaced with groundcovers. Refer to **Appendix 7.1 of this LMP** for amended Landscape Plans.
9. Tensile wire rope for green wall effect	*This feature should be designed to be visually effective and attractive without climbers as the climate conditions often results in failure of green walls to achieve their intended forms.*	Green walls have been designed to incorporate steel button that fasten to the tensile wire rope. This can be arranged to create an artistic effect if failure of planting occurs. Refer to **L.SK.202 in Appendix 7.1** for further information.
10. Irrigation details should be required as security of ongoing maintenance and viability is critical.	*Irrigation details required.*	Refer to **Section 5.2 and Appendix 7.3 of this LMP** for further information.

3.2 DESCRIPTION

3.2.1 SITE LOCATION

The Oakdale West Estate is located in the Penrith Local Government Area (LGA) at the far south-western extent of the WSEA. The site is bound to the north by the Water NSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with TransGrid infrastructure.

Other boundaries interface with adjoining rural lands used for a mix of rural-residential, agricultural. Emmaus Catholic College and Emmaus Retirement Village is located to the west of the site. To the east of the site is Goodman's Oakdale South estate.

Building 1A of Precinct 1 is located in the North East of the Oakdale West Estate, with the only access points being off Estate Road 1. Building 1A is surrounded by the Water NSW Pipeline to the North, Western North South Link Road to the East, Lots 1B1, 1B2 and 1B3 directly South, and Lots 2A, 3A and 3C to the West.

3.2.2 PURPOSE OF LANDSCAPE MANAGEMENT PLAN

This Landscape Management Plan has been developed as per the Development Consent for the Oakdale West Estate works specifically.

The intended purpose of this Landscape Management Plan is to support the Oakdale West Estate LMP by providing greater detail on site management, visual and landscape treatments, and maintenance works specially for Lot 1A. Further information on each of these can be found below within this Landscape Management Plan.

4 SITE MANAGEMENT

4.1 ENVIRONMENTAL ASPECTS

4.1.1 DESCRIPTION

The Landscape Management plan seeks to manage potential visual impacts as a result of operational activities that may affect local and regional visual receptors. These impacts need to be managed to minimise impacts to sensitive visual receptors, and satisfy the conditions of the DA.

4.2 OBJECTIVES & PERFORMANCE CRITERIA

4.2.1 OBJECTIVES

The objectives of this LMP include:

- *ensuring that the conditions of the DA and Goodman Landscape standards are met*
- *managing the visual impacts of the project to comply with the landscape performance criteria*
- *ensuring the visual and landscape treatments are consistent with the ecological revegetation works described in the Oakdale West Estate – Flora & Fauna Management Plan*

4.3 MANAGEMENT ACTIONS

4.3.1 PERMANENT LANDSCAPE MANAGEMENT

Landscape Bund
The major screening element to be constructed will be the environmental bund along the western boundary of the site which is to be completed in Q3 2020. Further information is located in the Oakdale West Estate LMP.

On-Lot Landscape Treatment
The major on-lot screening technique used to provide a visual barrier to the large expanses of built form, parking and utility spaces is mass planting and the utilisation of native canopy trees.

Plant typologies implemented are to be low maintenance and drought resistant, ensuring all new landscaped areas are water sensitive and tolerant of the harsh Western Sydney Climate. Tree planting typologies have utilised the PCC Native Tree Guide, ensuring that locally endemic trees are used and returned back into the Western Sydney environment, whilst simultaneously increasing the percentage of canopy cover across the site. Landscape setbacks are to foster a clustered, yet dense approach to tree planting with native species, with a layered series of shrubs and groundcovers below.

Car-parking areas are to incorporate Water Sensitive Urban Design (WSUD) where possible. Tree pits are to utilise heavy duty smart soaker pits and structural soil to ensure the best possible conditions for tree growth and maturity. **Refer to L.SK.204 in Appendix 7.1** for further information.

Integration of landscaping with fixed elements

The Integration of fixed elements and the landscape within Oakdale West Estate Precinct 2 include elements such as:

Entry Signage
Entry signage is typically to be installed within TF1 – Turf Rolls. Monitor Maintenance requirements of lawn care with interface elements (Section 5 of this LMP).

Fencing& Gates
All fencing and gates are to be finished as per the CIVIL ENG. and ARCHITECT Drawings. Monitor Maintenance requirements with lawn care at fence and gate interfaces (Section 5 of this LMP).

Planted Verges (Excluding Turfing)
Where road medians and verges are to be planted, **250mm of mulch only** is to be used next to kerbing. **Refer to the Oakdale West Estate LMP** for further details.

Retaining Walls
Retaining walls and balustrading are to be finished as per CIVIL ENG. Drawings. Planting at the top of RW09 is inclusive of spill over species (PM4B) these are to be planted at the front of the top of the wall. PM4B is also to be planted at the base of the wall as a buffer between the outlet swale and RW09. **Refer to the Oakdale West Estate LMP** for further details.

Street Trees and Verge Planting
Street trees and verge planting are to be finished per CIVIL ENG. Drawings and Landscape Infrastructure Stage 1 Drawings. **Refer to the Oakdale West Estate LMP** for further details.

5 VISUAL AND LANDSCAPE TREATMENTS

5.1 GENERAL

5.1.1 QUALITY

This section of the Landscape Management Plan describes the procedures to ensure the success of the landscaping work over the life of the development.

All landscaped areas must be maintained to the approval of the principal and landscape architect.

5.1.2 APPROACH

A proactive approach to all landscape tasks must be adopted to ensure that the appearance of the landscape as a whole is highly presentable at all times.

5.1.3 REQUIREMENTS

Contractors must submit annual routine landscape maintenance program to the Project Superintendent, Landscape Manager and/or the Landscape Architect within two weeks of the contract commencement date.

It is the contractor's responsibility to ensure the success of the landscaping work over the establishment period of the development.

5.2 MAINTENANCE PROGRAMS

5.2.1 GENERAL CONDITIONS

The Contractor shall rectify all defects during installation that become apparent in the works during the defect's liability period **(18 months).**

The Contractor shall maintain the contract areas by the implementation of industry accepted horticultural practices between the date of practical completion and the date of final completion **(18 months).**

The landscape maintenance works shall include, but not be limited to the following:

- *Replacing failed plants*
- *Pruning*
- *Herbicides/Insect and pest control*
- *Fertilizing*
- *Maintaining mulch*
- *Mowing*
- *Watering/Irrigation*
- *Weeding*
- *Rubbish removal; and Cleaning of the surrounding areas.*
- *Timber stakes and ties*

Ongoing maintenance: Ongoing maintenance facilitated by the Owner's corporation. Goodman is to contract the management of all landscape areas. The standard specification and reporting requirements of this contract are located in Goodman's Landscape Guidelines. **Refer to Appendix 7.3** for further detail.

Safety: Safety procedures/ plans are to be documented for review by Principal prior to commencement of work.

Failure to maintain the landscape planting in a healthy condition may result in the Principal arranging for the maintenance work to be carried out by others at your expense.

5.2.2 AREAS DEFINED IN LANDSCAPE MAINTENANCE PLAN

Hard and Soft Landscape works to be maintained throughout the maintenance program includes all landscape areas including the landscape bund and street trees.

5.2.3 PROTECTION OF PERSONS AND PROPERTY

Temporary works: Provide and maintain required barricades, guards, fencing, shoring, temporary roadways, footpaths, signs, lighting, watching and traffic flagging.

Accessways, services: Do not obstruct or damage roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Determine the location of such services.

Property: Do not interfere with or damage property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

5.2.4 RECTIFICATION

Accessways, services: Rectify immediately any obstruction or damage to roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Provide temporary services whilst repairs are carried out.

Property: Rectify immediately any interference or damage to property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

5.2.5 EXISTING SERVICES

General: Attend to existing services as follows:

- *If the service is to be continued, repair, divert or relocate. Submit proposals.*
- *If the service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service. Submit proposals.*
- *If the service is to be abandoned, remove redundant parts, and make safe.*

Proposals: Submit proposals for action to be taken with respect to existing services before starting this work. Minimise the number and duration of interruptions.

5.2.6 ACCESS FOR MAINTENANCE

Requirement: Provide access for maintenance of plants and equipment.

Standards: Conform to the relevant requirements of AS 1470, AS 1657, AS/NZS 1892.1, AS 2865 and AS/NZS 3666.1.

Work Health and Safety: Conform to the requirements of the applicable Work Health and Safety regulations for all temporary and permanent works.

Protection from injury: Protect personnel from injury caused by contact with objects including those that are sharp or protrude at low level.

5.2.7 LOGBOOK

Ensure a Maintenance Logbook is recorded to demonstrate that maintenance work has been undertaken and what materials, including chemical materials, have been used throughout the maintenance and establishment period.

The logbook must include the date of visit, maintenance works completed, maintenance works in progress and maintenance works required. The logbook must give details of damaged, dead or missing plants and show their locations on the relevant sheets of the Drawings.

Use the logbook to identify chemicals used as well as the reason for their use. Submit the initial logbook for inspection prior to Practical Completion and again at the end of the Defects Liability Period as a prerequisite for granting Practical and Final Completion Certificates.
Record all major events and activities in the logbook. Ensure the logbook is available for inspection on request.

5.3 MAINTENANCE WORKS

5.3.1 PLANT CARE

Planting: Ensure the general appearance and presentation of the landscape and the quality of plant material at date of practical completion is maintained for the full planting establishment period. Trees, shrubs and groundcovers shall at all times display healthy growth. Spent flower heads or stalks shall be removed immediately following flowering.

All shrubs, hedges, ground covers and trees must be trimmed into shape as required to an acceptable presentation standard.

Excessive foliage impacting onto roads, paths, fencing and lighting must be pruned during all site visits. Leaf litter and or all cuttings should be removed from all gardens and site each visit and disposed of at contractor's cost. Any dead or dying plants/shrubs should be removed and replaced with same or comparable species. The Landscape Manager must be consulted when large trees need to be removed and or replaced. The contractor will maintain each plant in a healthy condition to increase the visual appeal of the gardens.

Replacements: Replace failed, dead and/or damaged plants at maximum 3-week intervals as necessary throughout the full plant establishment period. Replacement plants shall be in a similar size and quality and identical species or variety to the plant that has failed. Replacement of plants shall be at the cost of the Contractor unless advised otherwise. If the cause of the failure is due to a controllable situation then correct the situation prior to replacing plants.
Keep all planting areas as specified and free of grass and weed.
Carry out grass and weed removal at intervals of not more than four (4) weeks and ensure that weeds do not flower to form seed heads.

For those species listed by the relevant local government authority as noxious under the Biosecurity Act 2015 take action as required by that local Government Authority (Penrith City Council). Refer to the Flora and Fauna Management Plan (FFMP) for further information regarding Weed Management and Mitigation Measures.

5.3.2 PRUNING

General: Prune to the Pruning schedule and AS 4373.

Any pruning requested by the Landscape Architect shall be performed, including any pruning of damaged growth or miscellaneous pruning considered as beneficial to the condition of the plants. All pruning works shall be undertaken in a manner equal to acceptable horticultural practice.

Pruning to ensure pathways, roads, lighting and services such as fire hydrants, overhead services and signs are kept clear from encroaching growth of plant material at all times.

- *Remove all damaged, dead or diseased wood by pruning to the nearest lateral shoot or active bud with a neat clean cut*
- *No more than 40mm - 50mm of new growth present on hedges at any time*
- *Remove all spent or dead flower heads from plants following flowering*
- *Prune young shrubs for shape by pinching out the growing tips to encourage lateral bushy growth*
- *Hedging shall be carried out to appropriate plants within garden beds. This should be carried out on a regular basis so as to avoid cutting back into 'old wood' in order to achieve the desired form.*
- *All existing hedges on site to be maintained*
- *Removal of suckers from base of trunks*
- *Formative pruning of trees to allow effective canopy development and retain natural or desired shape of the tree*
- *Pruning cuts shall be made and close to the bud at a 45° angle to ensure that any water is shed away from the bud*

5.3.3 SPRAYING

Responsibility for insect and disease control: Contractor

Period of treatment: Until the problem has been eliminated.

Chemical spray: Apply outside of normal working hours.

Avoid spraying:

- *whenever possible*
- *in the case of wet weather*
- *if wet weather is imminent*
- *if target plants are still wet after rain*
- *during windy weather*
- *if adjacent desirable species are too close to the target plants to be avoided.*

Do not spray where herbicide could fall into a watercourse or when wind conditions could cause drift outside the area to be treated or onto desirable plants.

After spraying, lop any dead weeds flush with the ground surface and dispose of the cuttings.

Remove by hand any weeds which cannot be controlled by herbicide. Ensure that the entire weed including all roots is removed. Dispose of the weeds off site.

Immediately report to the Project superintendent/landscape manager any evidence of intensive weed infestation, insect attack or disease amongst plant material. Submit all proposals to apply chemicals and obtain approval before starting this work.

When approved, spray with herbicide, insecticide, fungicide as appropriate in accordance with the manufacturers' recommendations. Record in the logbook all relevant details of spraying activities including:

- *Product brand / manufacturer's name*
- *Chemical / product name*
- *Chemical contents*
- *Application quantity and rate*
- *Date of application and location*
- *Results of application*

5.3.4 FERTILISING

Soil tests: Take samples from planting beds areas and conduct tests.

Fertilising: Base the fertilisation program on the soil testing results. Fertilise trees once every two years. Generally, apply an all-purpose fertiliser of N:P: K (nitrogen: phosphorus: potassium) 10:4:6 at recommended rates. Alternatively apply 12-month slow release fertiliser (such as Nutricote) at the manufacturer's recommended rate. Apply all-purpose fertiliser to shrubs annually in two bands and cultivated into the soil 100 mm deep.

Record in the logbook all relevant details of fertilizing including:

- *Product brand / manufacturer's name*
- *Fertilizer / product name*
- *Application quantity and rate*
- *Date of Application and Location*

5.3.5 STAKES, TIES, TREEGUARDS AND ROOT BARRIERS

Stakes

Generally: If plants are unable to be self-supported or if stakes are damaged, stake or restake the plants

Material: Hardwood, straight, free from knots or twists, pointed at one end.

Installation: Drive stakes into the ground at least one third of their length, avoiding damage to the root system.

Stake sizes and quantities:

- *For plants ≥ 2.5 m high: Three 50 x 50 x 2400 mm stakes per plant.*
- *For plants 1 to 2.5 m high: Two 50 x 50 x 1800 mm stakes per plant.*
- *For plants < 1 m high: One 38 x 38 x 1200 mm stake per plant.*

Ties

General: Provide ties fixed securely to the stakes, one tie at half the height of the main stem, others as necessary to stabilise the plant. Attach ties loosely so as not to restrict plant growth.

Tie types:
- *For plants ≥ 2.5 m high: Two strands of 2.5 mm galvanized wire neatly twisted together, passed through reinforced rubber or plastic hose, and installed around stake and stem in a figure eight pattern.*
- *For plants < 2.5 m high: 50 mm hessian webbing stapled to the stake.*

Marker stakes
Material: Timber offcuts 25 x 25 x 1200 mm. Dip the top 200 mm in white paint.
Installation: Drive firmly into the ground at least 300 mm from the plant. Do not tie to the plant.

Location of marker stakes:
- *Trees in grass: Mark each tree.*
- *Rip line planting areas: Mark each rip line at every fifth plant along the line.*

Trunk protection/Tree guards
Collar guards: 200 mm length of 100 mm diameter agricultural pipe split lengthways.
Removal: If plants are robust with well-developed systems and are strong enough to no longer require support, remove stakes and ties at the end of the planting establishment period (Defects Liability Period).

- Adjust and replace as required to ensure plants remain correctly staked.

- Repair any tree ties that have been broken and replace any missing stakes.

- Maintain the tree guards around each plant so that the natural plant growth is not impeded or restricted. Replace damaged and missing tree guards as soon as practicable after being identified.

- Remove tree guards progressively as plants mature and where it is deemed that the tree guard provides no further benefit to the establishment of the plant.

Root Barriers
Type/ location: Street Trees. **Refer to the Oakdale West Estate LMP** for further details. City Green 'ReRoot' 600mm Depth

Supplier: City Green. Ph: +61 1300 066 949

https://citygreen.com/products/reroot/

5.3.6 MULCHED SURFACES

The contractor is required to maintain all areas of mulch cover within garden beds. Displaced mulch should be returned to the garden beds wherever possible. All areas of mulch cover must be packed to a depth of 75mm. If replacement of mulch is required, the contractor must notify the Landscape Manager and provide quotation for approval. Specific mulch must be approved prior to installation.

5.3.7 HYDROMULCHING

General: Maintain temporary and permanent grassing areas.

Weeding: Remove weeds that emerge in newly established hydroseeded/hydromulched areas.

Reseeding: Repair topsoil, supplementing if necessary, to achieve design surface levels. Reseed over the course of the contract to maintain required densities and repair bare patches.

Watering: Until germination, keep the surface damp and the topsoil moist but not waterlogged.

After germination: Water to maintain a healthy condition, progressively hardened off to the ambient climatic conditions

5.3.8 MOWING AND TOPDRESSING

Mow and edge all turf areas and remove all grass clippings. Do not mow if there is litter, roadside rubbish and debris left on the turf as the litter may be transformed into confetti-like pieces after mowing.

Unless directed otherwise, the cut grass height must not be less than 35 mm or greater than 75 mm. Do not remove more than 50% of the height of the uncut grass at any one time. The upper limit may be varied to account for terrain, species of grass and presence of debris.
Clippings may remain where they fall, except for those that fall on road surfaces, line drains, footways or paved areas where they must be swept clear.

Lawn care
Lawn areas, including nature strips must be neatly mown and edged weekly in the high season (summer months), fortnightly in the low season (winter months), or weekly if required due to abnormal weather condition. All clippings must be removed from the site. All lawns must be fertilized once a year with an approved lawn fertilizer.

Interface Issues
Where landscape treatments requiring lawn care interface fixed elements such as signage, fencing and walling ensure optimal care to avoid damaging the fixed element.

5.3.9 IRRIGATION & WATERING

Maintain the irrigation system to sure that each individual plant receives the required amount of water to maintain healthy growth, adjust and rectify as required.

Provide additional hand watering, if irrigation system fails or is yet to be installed.
Undertake watering at two-day intervals for four weeks after completion of each planting area.

The irrigation system must be fully functional at all times to ensure that all plants, trees and lawns receive adequate water at optimal frequency. The system should be tested during each site visit to ensure proper operation timing is set correctly. Adjustments must be made where necessary.

It is the contractor's responsibility to submit a bi-monthly report throughout the defect's liability period. This report should include a comprehensive report on the operational function of the system.

Notification as to when the system is in need of major repair must be done so immediately as the cost of major repairs to the system can be claimed as variation to the contract price and should be invoiced separately.

When water restrictions prevent the use of the irrigation system, arrangements must be made by the contractor to provide an alternative system of watering. Under no circumstances should plant stock be allowed to perish through lack of water.

Locations of water supply points have been marked indicatively on Landscape Drawings; all irrigation supply conduits are subject to Sydney Water Approval.

5.3.10 EROSION CONTROL MEASURES

Where necessary, maintain the erosion control devices in a tidy and weed free condition and reinstate as necessary to ensure control measures are effective where deemed necessary. Refer to the **Erosion and Sediment Control Plan** for erosion control measures.

5.3.11 FINAL CLEANING

Lamp and filter replacement and the like are dealt with in the various SERVICES worksections.

General: Before practical completion, clean throughout, including interior and exterior surfaces exposed to view. Clean debris from the site, roofs, gutters, downpipes and drainage systems. Remove waste and surplus materials.

The contractor shall target weeds that are capable of producing a major infestation of unwanted plants by seed distribution. Whenever possible, time weed removal to precede flowering and seed set.

Samples: Remove non-incorporated samples, prototypes and sample panels.

5.3.12 REINSTATEMENT

General: Before practical completion, clean and repair damage caused by installation or use of temporary work and restore existing facilities used during construction to original condition.

5.3.13 ADJOINING PROPERTY

Evaluation: At practical completion, for properties described in the Adjoining properties to be Recorded schedule inspect the properties with the project superintendent, recording any damage that has occurred since the pre-commencement inspection.

5.3.14 REMOVAL OF PLANT

General: Within 10 working days after practical completion, remove temporary works and construction plant no longer required. Remove the balance before the end of the defect's liability period.

5.3.15 URGENT WORKS

Not with standing anything to the contrary in the Contract, the Project Superintendent may instruct the Contractor to perform urgent maintenance works that place the completed contract works at risk.

If the Contractor fails to carry out the work within seven (7) days of such notice, the Project Superintendent (or representative) reserves the right without further notice to employ others to carry out such urgent and specified work and charge the cost to the Contractor.
Such work shall include but not limited to the inspection and clearing of drains in the pavement and gardens.

5.4 COMPLETION

A final inspection shall be made by the Project Superintendent, Contractor and Landscape Architect before the completion of the Plant Establishment Maintenance Period (Defects Liability Period).

Any items requiring rectification shall be repaired before completion of the relevant works and finally approved prior to certification.

Maintenance requirements should extend for a minimum of 18 months after the completion of works (i.e. Practical Completion or PC). Prior to handover, the contractor(s) is/are required to submit all maintenance records, progress reports and a final monitoring report. The final monitoring report shall provide a summary of all works undertaken during the plant establishment period.

6 MAINTENANCE SCHEDULES

The following Maintenance Schedule is only applicable to the 'Defects Liability Period' and/or 'Establishment Period'.

6.1 MAINTENANCE REPORT SCHEDULE

General
Landscape Maintenance Schedule, Landscape Maintenance Procedure Schedule and Landscape Specification are to be read in conjunction with one another

* Key: D – Daily, W – Weekly, F – Fortnightly, M – Monthly, 3-6M – Quarterly or Half Yearly, Y – Yearly

Task	Activity	Frequency						Action
		D	W	F	M	3-6M	Y	
1	Logbook				x		x	Complete a logbook entry when at site and at a minimum every two weeks. Upon request, make the logbook available for inspection. Submit copies of new entries in the logbook to the Contract Administrator on a monthly basis. Maintenance requirements should extend for a minimum of 1 year after the completion of works or until such time as a minimum 80% survival rate for all plantings and a maximum five percent (5%) weed cover for the treated riparian corridors, basins and verge/median planting is achieved.
2	Planting and Replacement			x	x			Inspect planting every 2 weeks and remove spent flowers and dead stalks as they become apparent. Inspect and replace failed plants within 2 weeks of observation of failure. Match species with original planted sizes and location of new with old.
3	Pruning			x				Inspect every 2 weeks and prune as necessary to remove dead wood.

								Pruning should Improve plant shape and promote healthy new growth.
4	Spraying			x				Inspect every 2 weeks and action as necessary. Do not spray if other nonchemical methods will satisfy the need to remove pests. Spray for disease control only when absolutely necessary.
5	Fertilising					x		Fertilise gardens every 3 months or in accordance with fertiliser manufacturer's directions.
6	Stakes and Ties			x			x	Inspect every 2 weeks, adjust and/or replace as necessary but remove as plants mature and are able to support themselves.
7	Mulching			x			x	Inspect and replace mulch deficiencies within 2 weeks of observation. Prior to placing new mulch aerate the soil by fork turning to a depth of at least 100mm, roughly level the soil and then place mulch. Do not disturb major plant roots while aerating soil. It can be expected that mulch will have significantly broken-down after an estimated 12-month period following initial application. It is therefore, recommended that all mulch beds are topped-up with a 50mm layer of woodchip/leaf mulch (Compliant with AS 4454) at this stage. This should be accompanied by a topdressing application of a 9-month, slow release, low phosphorous fertilizer to ensure that semi-established plantings do not suffer as a result of potential nitrogen draw-down that may be associated with the application of the 50mm mulch layer at yearly period.
8	Hydroseeding		x		x		x	Remove weeds monthly that emerge in newly established hydroseeded/hydromulched areas. Reseed monthly over the course of the contract to maintain required densities.

								Water until germination, keep the surface damp and the topsoil moist but not waterlogged. After germination: Water to maintain a healthy condition, progressively hardened off to the ambient climatic conditions
9	Mowing and Topdressing			x	x	x		Summer fortnightly. Winter monthly. Top-dress 6 monthly.
10	Irrigation and Watering	x		x				Water when and where necessary every day at site and at least every 2 weeks generally. Do not allow soil and plants to dehydrate. Allow for prolonged rain, windy and dry periods. Water in the early morning or late afternoon to avoid excessive evaporation during the heat of the day.
11	Erosion Control Measures							Refer to the **Erosion and Sediment Control Plan** for erosion control measures.
12	Final Cleaning		x				x	Inspect and remove litter immediately upon observation. Leave no waste on site. Dispose of waste material at a designated waste disposal site. All herbaceous weeds should be managed to be at very-low percentage cover levels, (as a minimum), or better. Pasture grasses should be prevented from spreading into any bushland zones by applying a spot glyphosate herbicide spray application on the 1-metre wide buffer zone, on a monthly basis or as required. Maintenance weeding for a period of 12 months after the completion of primary works with an increase in maintenance hours occurring throughout the warmer growing months.
13	Urgent Works		x					Complete within 1 week (7 days) of notification. Inspect and clear drains as required.

6.2 MAINTENANCE PROCEDURE SCHEDULE

Maintenance Scope of Works

The Maintenance procedure schedule should be used as a check list of tasks when in attendance

Week	Spring (Sep, Oct, Nov)	Summer (Dec, Jan, Feb)	Autumn (Mar, April, May)	Winter (June, July, Aug)
1	Mow and trim lawns	Mow lawns, weed	Mow Lawns	Weed
2	Weed; trim and adjust trees and shrubs	Weed; mow lawns, trim and adjust trees and shrubs	Weed; mow lawns, trim and adjust trees and shrubs	Mow and trim lawns Trim and adjust trees and shrubs
3	Mow and fertilise lawns; treat plant material for insects and disease	Mow lawns; weed; treat plant material for insects and disease	Mow and trim lawn	Weed
4	Weed; topdress, condition lawns and oversow bare patches; issue logbook	Weed; mow and trim lawns; issue logbook	Weed; mow lawns; issue logbook	Mow lawns; issue logbook
5	Fertilise all trees and shrubs in garden beds; mow and trim lawns	Mow lawns; weed	Mow lawns	Mow lawns
6	Weed; inspect mulch for deficiencies in cover; check and adjust irrigation	Mow lawns; check and adjust irrigation	Weed; inspect mulch for deficiencies in cover; check and adjust irrigation	Mow and trim lawns; treat for insects and disease; check and adjust irrigation
7	Reinstate mulch as required; treat plant material for insects and disease; mow lawns	Mow lawns; weed	Reinstate mulch as required; mow, trim and fertilise lawns	Weed
8	Weed; inspect condition of paving and furniture; issue logbook	Mow and trim lawns; inspect condition of paving & furniture; issue logbook	Weed; inspect condition of paving and furniture; issue logbook	Mow lawns; Inspect condition of paving and furniture; issue logbook
9	Mow and trim lawns	Mow lawns; treat plant material for insects and disease	Mow lawns	Weed

10	Weed; mow lawns	Mow and topdress lawns	Weed; treat plant material for insects and disease	Mow and trim lawns
11	Mow and fertilise lawns; trim and adjust trees and shrubs	Mow lawns; trim and adjust lawns; weed	Weed	Mow lawns; treat plant material for insects and disease
12	Weed; mow lawns; treat plant material for insects and disease	Mow, trim & fertilise lawns	Weed	Mow lawns; treat plant material for insects and disease
13	Check and adjust irrigation; mow lawns; issue logbook	Check and adjust irrigation; mow lawns; weed; issue logbook	Check and adjust irrigation; mow lawns; weed; issue logbook	Check and adjust irrigation; weed; issue logbook

6.3 IRRIGATION SCHEDULE

The following Irrigation Schedule is only applicable to the 'Defects Liability Period' and/or 'Establishment Period'.

Irrigation Maintenance Schedule

The Irrigation Maintenance Schedule should be used as a check list of minimum attendance

Task	Timeframe
Filters – Mainline	Monthly
Electrical Source Output (auto system)	Monthly
Controller (automatic system)	Monthly
Operation – Progression	Monthly
Activation of Valves	Monthly
Timing of Stations	Bi-Annually
Time and Day Readings	As Required
Exterior Appearance	Bi-Annually
Valve Operation	Bi-Annually
Open/Close Weeping	As Required
Sprinkler Operation	As Required
Rotaries – Clogged Nozzles	Bi-Monthly
Plant Obstructed Pattern	Bi-Monthly
Arc Coverage	Bi-Monthly
Radius Adjustment	Bi-Monthly
Pop-up Action	Bi-Monthly
Riser Seal Leaks	Bi-Monthly
Set to Grade	Bi-Monthly
Coverage Pressure	Bi-Monthly
Rotational Speed	Bi-Monthly
Clogged Screens	Bi-Monthly
Head Damage	Bi-Monthly

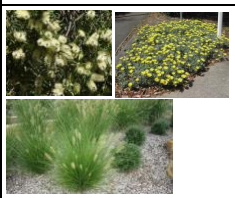
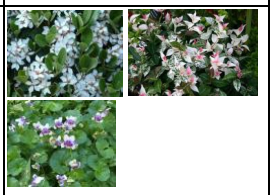
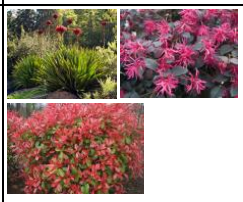
Piping	Bi-Monthly
Leaks – Broken of Cracked	As Needed
Poor Welding or Threading	As Needed
Connection	As Needed
Clogged Piping	As Needed
Irrigation Report	Bi-Monthly

6.4 PRUNING SCHEDULE

The contractor is to prune all plants or shrubs species as required to satisfy Goodman's presentation standard. Pruning should be carried out on a 'needs-basis' specific to each plant. Pruning should be carried out to encourage new growth that will result in a dense canopy density. No more than 30mm of new growth should be seen before pruning takes place. All plant pruning should be carried out using best horticultural techniques. No hedging of native grasses permitted at any time.

6.4.1 PRUNING SCHEDULE – OAKDALE WEST ESTATE, PRECINCT 1

Plant Mix	Shape/description	Critical issues	Pruning Frequency	Planting Palette
PM1A	Car Park Edge Mix - Sun *Callistemon viminalis 'Little John'* *Pennisetum alopecurioides 'Nafray'* *Trachelospermum jasminoides*	**Shrubs/Grasses/ Groundcovers** Drought tolerant, low water and fertiliser requirements.	**Shrubs/Grasses/ Groundcovers** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM1B	Car Park Edge Mix - Shade *Hibbertia scandens* *Pennisetum alopecurioides 'Nafray'* *Viola hederacea*	**Grasses/Groundcovers** Drought and shade tolerant, low water and fertiliser requirements.	**Grasses/Groundcovers** Remove spent flowers and any dieback. Only prune to maintain safe access.	
PM2A	Car Park Island Mix - Sun *Carex appressa* *Gazania tomentosa* *Lomandra longifolia* *Pennisetum alopecuriodes 'Nafray'*	**Grasses/Groundcovers** Drought tolerant, low water and fertiliser requirements.	**Grasses/Groundcovers** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	

Plant Mix	Shape/description	Critical issues	Pruning Frequency	Planting Palette
PM3A	Side Edge Mix Low - Sun *Callistemon 'White Anzac'* *Gazania tomentosa* *Pennisetum alopecurioides 'Nafray'*	**Shrubs/Grasses/ Groundcovers** Drought tolerant, low water and fertiliser requirements.	**Shrubs/Grasses/ Groundcovers** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM3B	Site Edge Mix Low – Shade *Rhaphiolepsis indica 'Oriental Pearl'* *Trachelospermum jasminoides 'Tricolor'* *Viola hederacea*	**Shrubs/Grasses/ Groundcovers** Drought tolerant, low water and fertiliser requirements.	**Shrubs/Grasses/ Groundcovers** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM4	Site Markers Mix *Nandina domestica 'Gulf Stream'* *Pennisetum alopecurioides 'Nafray'*	**Shrubs/Grasses** Drought tolerant, low water and fertiliser requirements.	**Shrubs/Grasses** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM5A	Feature Planting Mix *Doryanthes excelsa* *Lorapetalum chinense rubrun 'China Pink'* *Photinia x fraseri 'Red Robin'*	**Shrubs/Grasses** Drought tolerant, low water and fertiliser requirements.	**Shrubs/Grasses** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM6A	Site Hedge Mix – Sun *Acmena smithii 'Hot Flush'* *Metrosideros thomasii* *Rhapiolepsis indica 'Oriental Pearl'* *Rhapiolepsis indica 'Snow Maiden'*	**Shrubs** Drought tolerant, low water and fertiliser requirements.	**Shrubs** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM7A	Groundcovers Mix A *Gazania tomentosa*	**Groundcovers** Drought tolerant, low water and fertiliser requirements.	**Groundcovers** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	

Plant Mix	Shape/description	Critical issues	Pruning Frequency	Planting Palette
PM7B	Groundcovers Mix B *Trachelopsermum jasminoides 'Tricolor'*	**Groundcovers** Drought tolerant, low water and fertiliser requirements.	**Groundcovers** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM9A	Climbers Mix – Sun *Hibbertia scandens*	**Climbers** Drought tolerant, low water and fertiliser requirements.	**Climbers** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM9B	Climbers Mix – Shade *Trachelopsermum jasminoides*	**Climbers** Drought tolerant, low water and fertiliser requirements.	**Climbers** Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	

Tree Mix	Shape/description	Critical issues	Pruning Frequency	Planting Palette
Trees	General Trees *Angophora bakeri* *Angophora floribunda* *Corymbia eximia* *Corymbia maculata* *Cupaniopsis anacardioides* *Eucalyptus amplifolia* *Eucalyptus crebra* *Eucalyptus moluccana* *Glochidion ferdinandi* *Lagerstroemia indica 'Tuscarora'* *Melaleuca linarifolia* *Pyrus calleryana 'Capital'* *Tristaniopsis laurina 'Luscious'* *Waterhousea floribunda*	**Street Trees** Plant in moist but well drained soils with full or partial sun.	**Trees** Prune during flower dormancy, to encourage dense canopy and maintain safe access.	

6.5 CONTINGENCY MANAGEMENT PLAN

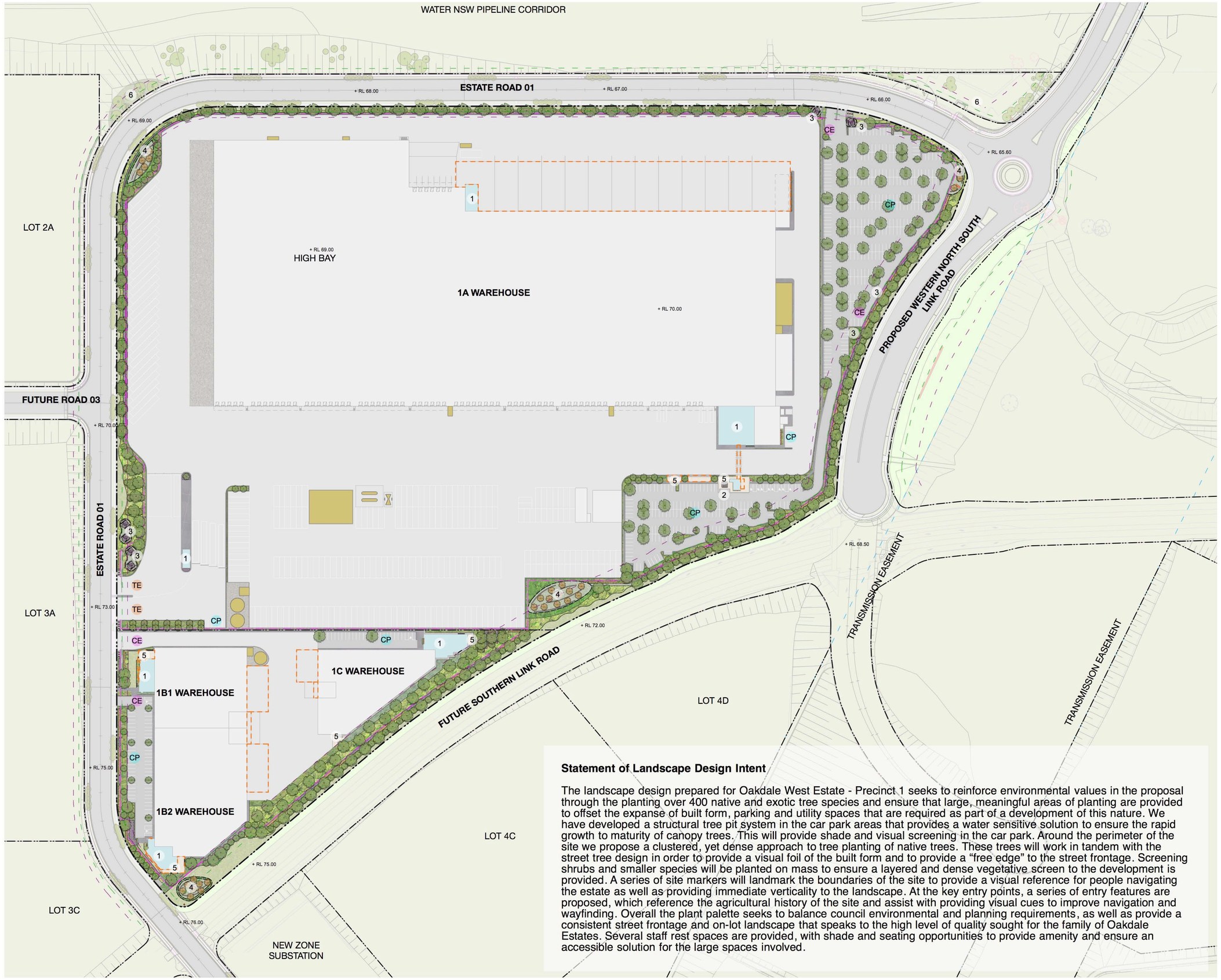
Contingency Management Plan – Oakdale West Estate

Key Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Irrigation	**Trigger**	Irrigation system operating at optimum frequency.	Irrigation system yet to be installed.	Irrigation system fails.
	Response	No response required. Continue to monitor.	Provide additional hand watering until system is installed.	Provide additional hand watering until system is repaired. The irrigation system must be fully functional at all times to ensure that all plants, trees and lawns receive adequate water at optimal frequency.
Plant Failure	**Trigger**	No significant plant failure is present. Monitoring verifies that there is <5% of plants failing.	Monitoring verifies there is plant failure at a rate between 5% -10%.	Monitoring verifies there is plant failure at a rate greater than 10%.
	Response	No response required. Continue to monitor.	If the cause of failure is due to a controllable situation then correct situation prior to replacing plants. All planting areas are to be free of grass and weed. Replace plants with one of similar size and quality and identical species. of variety of the ones failed.	If the cause of failure is due to a controllable situation then correct situation prior to replacing plants. All planting areas are to be free of grass and weed. Replace plants with one of similar size and quality and identical species. of variety of the ones failed.
Revegetation Failure	**Trigger**	Revegetation is growing to desired design surface levels	Monitoring verifies that weed emergence has occurred.	Monitoring verifies that weed emergence and plant failure has occurred.

Key Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
	Response	No response required. Continue to monitor.	Refer to LMP for monitoring requirements once problem has been identified. Possible solutions include the removal of weeds as per **Section 5.3.7 of this LMP.**	Refer to LMP for monitoring requirements once problem has been identified. Possible solutions include removal of weeds and re-seeding of revegetation cover crop as per **Section 5.3.7 of this LMP.**
Slope Failure	**Trigger**	No significant erosion is present that would constitute a safety hazard or compromise the capability of supporting the end land use. Monitoring verifies there are no gully or tunnel erosion features, or rill erosion >200mm deep.	Monitoring verifies there is gully or tunnel erosion features, or rill erosion 200mm deep.	Monitoring verifies there is gully or tunnel erosion features, or rill erosion > 200mm deep.
	Response	No response required. Continue to monitor.	A suitably trained person to inspect the site. Investigate opportunities to install water management infrastructure to address erosion. Remediate as appropriate.	Undertake a review of the drainage of the area and provide recommendations to appropriately remediate the erosion. Remediate as soon as practicable.

7 APPENDICES

7.1 REFERENCED LANDSCAPE DRAWINGS



Statement of Landscape Design Intent

The landscape design prepared for Oakdale West Estate - Precinct 1 seeks to reinforce environmental values in the proposal through the planting over 400 native and exotic tree species and ensure that large, meaningful areas of planting are provided to offset the expanse of built form, parking and utility spaces that are required as part of a development of this nature. We have developed a structural tree pit system in the car park areas that provides a water sensitive solution to ensure the rapid growth to maturity of canopy trees. This will provide shade and visual screening in the car park. Around the perimeter of the site we propose a clustered, yet dense approach to tree planting of native trees. These trees will work in tandem with the street tree design in order to provide a visual foil of the built form and to provide a “free edge” to the street frontage. Screening shrubs and smaller species will be planted on mass to ensure a layered and dense vegetative screen to the development is provided. A series of site markers will landmark the boundaries of the site to provide a visual reference for people navigating the estate as well as providing immediate verticality to the landscape. At the key entry points, a series of entry features are proposed, which reference the agricultural history of the site and assist with providing visual cues to improve navigation and wayfinding. Overall the plant palette seeks to balance council environmental and planning requirements, as well as provide a consistent street frontage and on-lot landscape that speaks to the high level of quality sought for the family of Oakdale Estates. Several staff rest spaces are provided, with shade and seating opportunities to provide amenity and ensure an accessible solution for the large spaces involved.

Note: All finished levels subject to change +/- 1000mm.

0 10 20 30 40 50 M

LEGEND

PROGRAMME
- 1 Office
- 2 Motorcycle Parking
- 3 Entry Marker
- 4 Site Marker
- 5 Staff Rest Area
- 6 OWE Stage 1 Pocket Parks
- CE Car entry/exit
- CP Carparking
- TE Truck entry/exit

GENERAL
- Site Boundary
- Lot Boundary
- Proposed Contour Line
- Existing Contour Line
- + FL 562.00 Finished Level
- + FFL 562.00 Finished Floor Level
- + RL 562.00 Reduced Level
- Fence
- 20m Setback Building
- 10m Setback Landscape
- Transmission Easement
- Demolition
- Architecture Above
- Architecture Below
- Proposed Ramp
- Proposed Stairs
- Building
- Office

PREPERATION & GROUNDWORKS
- Services
- Drainage - Grated Sump

WALLS & EDGES
- Steel Edge
- Flush Concrete Kerb
- Raised Concrete Kerb
- Retaining Gabion Wall
- Retaining Insitu Wall
- Steel Wall

PAVEMENTS
- Coarse Aggregate
- Asphaltic Concrete
- Insitu Concrete
- Precast Concrete
- Stone Tiles
- Feature paving

FURNITURE & FITTINGS
- Proposed Seating
- Proposed Pergola
- Proposed Bollards
- Proposed Street Lighting
- Proposed Sleeper Mullion
- Proposed Sandstone Block
- Bicycle rack
- Gate
- Sculpture
- Signage

PLANTING
- TF1-General Turf
- TF2-Feature Turf
- PM1A-Car park edge mix-sun
- PM1B-Car park edge mix-shade
- PM2A-Car park island mix-sun
- PM2B-Car park island mix-shade
- PM3A-Site edge mix - sun
- PM3B-Site edge mix - shade
- PM4-Site markers mix
- PM5A-Feature planting mix-sun
- PM6A-Site hedge mix-sun
- PM7A-Groundcover mix A
- PM7B-Groundcover mix B
- PM9A-Climbers mix - sun
- PM9B-Climbers mix - shade
- Existing Vegetation

TREES
- Existing Tree to be Removed Refer ARBORISTS REPORT
- Existing Tree to be Transplanted/ original location
- Existing Tree to be Transplanted/ new location
- Existing Tree to be Retained
- Proposed Tree - General
- Proposed Tree - Entry Marker
- Proposed Tree - Site Marker

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Oakdale West, NSW

CLIENT
Goodman Property Services

revision	revision description	by	date
M	DEVELOPMENT APPLICATION	MF	25/2/20
L	DEVELOPMENT APPLICATION	MF	21/2/20
K	DEVELOPMENT APPLICATION	MF	14/2/20
J	DEVELOPMENT APPLICATION	ZZ	25/10/19
I	CLIENT REVIEW	MF	18/10/19

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Landscape Master Plan

scale	1:1250@A1
drawn	MF/ZZ
checked	CH
project no.	163-18
project phase	Development Application

L.SK.01 M

WATER NSW PIPELINE CORRIDOR

ESTATE ROAD 01

10-Angophora bakeri
5-Eucalyptus amplifolia
10-Angophora bakeri
5-Eucalyptus amplifolia
10-Angophora bakeri
5-Eucalyptus amplifolia
3-Lagerstroemia indica 'Tuscarora'
1-Angophora bakeri
3-Lagerstroemia indica 'Tuscarora'
1-Eucalyptus moluccana
3-Angophora bakeri
2-Eucalyptus moluccana
1-Angophora bakeri

5-Eucalyptus amplifolia
10-Angophora bakeri
5-Lagerstroemia indica 'Tuscarora'
8-Cupaniopsis anacardioides
5-Eucalyptus amplifolia
10-Angophora bakeri
5-Eucalyptus amplifolia
10-Angophora bakeri
7-Corymbia maculata
15-Angophora floribunda
3-Lagerstroemia indica 'Tuscarora'
24-Corymbia maculata
2-Eucalyptus moluccana
3-Melaleuca linariifolia

LOT 2A

HIGH BAY

1A WAREHOUSE

PROPOSED WESTERN NORTH SOUTH LINK ROAD

9-Cupaniopsis anacardioides
5-Angophora floribunda
5-Eucalyptus moluccana
5-Melaleuca linariifolia
1-Angophora bakeri
14-Cupaniopsis anacardioides
7-Angophora floribunda
2-Corymbia maculata
5-Eucalyptus moluccana
5-Melaleuca linariifolia
FUTURE ROAD 03
9-Corymbia maculata
3-Corymbia maculata
8-Pyrus calleryana 'Capital'
1-Cupaniopsis anacardioides
1-Cupaniopsis anacardioides
1-Corymbia maculata
3-Angophora bakeri
5-Eucalyptus moluccana
1-Tristaniopsis laurina 'Luscious'
2-Cupaniopsis anacardioides
4-Angophora floribunda
9-Pyrus calleryana 'Capital'
4-Cupaniopsis anacardioides
2-Tristaniopsis laurina 'Luscious'
5-Melaleuca linariifolia
6-Angophora floribunda
3-Angophora bakeri
6-Angophora floribunda
4-Angophora bakeri
4-Eucalyptus crebra
4-Corymbia eximia
3-Corymbia eximia
ESTATE ROAD 01
12-Lagerstroemia indica 'Tuscarora'
3-Melaleuca linariifolia
4-Corymbia maculata
2-Melaleuca linariifolia
6-Eucalyptus crebra
5-Corymbia eximia
6-Eucalyptus crebra
2-Corymbia eximia
TRANSMISSION EASEMENT
LOT 3A
2-Corymbia maculata
14-Pyrus calleryana 'Capital'
12-Lagerstroemia indica 'Tuscarora'
1C WAREHOUSE
5-Corymbia eximia
6-Eucalyptus crebra
2-Corymbia maculata
1B1 WAREHOUSE
4-Eucalyptus crebra
8-Angophora bakeri
FUTURE SOUTHERN LINK ROAD
4-Corymbia eximia
LOT 4D
4-Eucalyptus crebra
18-Corymbia maculata
6-Waterhousea floribunda
4-Corymbia eximia
4-Eucalyptus crebra
4-Corymbia eximia
1B2 WAREHOUSE
2-Corymbia maculata
5-Corymbia eximia
2-Eucalyptus crebra
LOT 4C
4-Tristaniopsis laurina 'Luscious'
2-Glochidion ferdinandi
6-Corymbia eximia
1-Tristaniopsis laurina 'Luscious'
LOT 3C
8-Lagerstroemia indica 'Tuscarora'
2-Glochidion ferdinandi
NEW ZONE SUBSTATION

TRANSMISSION EASEMENT

0 10 20 30 40 50 M

Note: All finished levels subject to change +/- 1000mm.

LEGEND

PLANTING

- TF1-General Turf
- TF2-Feature Turf
- PM1A-Car park edge mix-sun
- PM1B-Car park edge mix-shade
- PM2A-Car park island mix-sun
- PM3A-Site edge mix low - sun
- PM3B-Site edge mix low - shade
- PM4-Site markers mix
- PM5A-Feature planting mix
- PM6A-Site hedge mix - sun
- PM7A-Groundcover planting mix A
- PM7B-Groundcover planting mix B
- PM9A-Climbers mix - sun
- PM9B-Climbers mix - shade
- Existing Vegetation
- Proposed tree/specimen plant

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Goodman Property Services

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Planting Plan

scale	1:1250@A1
drawn	MF/ZZ
checked	CH
project no.	163-18
project phase	Development Application

L.SK.02 K

PLANTING SCHEDULE

Botanical Name	Common Name	Height (m)	Spread (m)	Pot Size	Rate (m2)	
Trees & Specimen Shrubs						
Angophora bakeri	Narrow-leaved Apple	12.0	6.0	75L	As Shown	
Angophora floribunda	Rough-barked Apple	20.0	10.0	100L	As Shown	
Corymbia eximia	Yellow Bloodwood	12.0	8.0	75L	As Shown	
Corymbia maculata	Spotted Gum	30.0	10.0	75L	As Shown	
Cupaniopsis anacardioides	Tuckeroo	12.0	6.0	75L	As Shown	
Eucalyptus amplifolia	Cabbage Gum	25.0	8.0	75L	As Shown	
Eucalyptus crebra	Narrow leaved Ironbark	30.0	10.0	75L	As Shown	
Eucalyptus moluccana	Grey Box	25.0	10.0	75L	As Shown	
Glochidion ferdinandi	Cheese Tree	20.0	10.0	75L	As Shown	
Lagerstroemia indica 'Tuscarora'	Tuscarora Crepe Myrtle	6.0	4.5	200L	As Shown	
Melaleuca linariifolia	Snow-in-Summer	10.0	4.0	75L	As Shown	
Pyrus calleryana 'Capital'	Capital Flowering Pear	10.0	3.0	200L	As Shown	
Tristaniopsis laurina 'Luscious'	Water Gum	12.0	5.0	75L	As Shown	
Waterhousea floribunda	Weeping Lilly Pilly	12.0	8.0	75L	As Shown	
PM1A - Car Park Edge Mix - Sun					**Area =**	**5878 sq.m**
Callistemon viminalis 'Little John'	Little John Bottlebrush	0.6	0.8	140mm	2	
Pennisetum alopecuroides 'Nafray'	Pennisetum Nafray	0.5	0.5	140mm	1	
Trachelospermum jasminoides	Star Jasmine	0.9	0.3	140mm	2	
PM1B - Car Park Edge Mix - Shade					**Area =**	**668 sq.m**
Hibbertia scandens	Climbing Guinea-Flower	2.0	2.0	140mm	2	
Pennisetum alopecuroides 'Nafray'	Pennisetum Nafray	0.5	0.5	140mm	1	
Viola hederacea	Native Violet	0.1	0.2	140mm	2	
PM2A - Car Park Island Mix - Sun					**Area =**	**528 sq.m**
Carex appressa	Tall Sedge	0.7	0.5	140mm	2	
Gazania tomentosa	Silver Gazania	0.3	1.5	140mm	2	
Lomandra longifolia	Spiny-headed Mat-Rush	0.8	1.0	140mm	1	
Pennisetum alopecuroides 'Nafray'	Pennisetum Nafray	0.5	0.5	140mm	1	
PM3A - Site Edge Mix Low - Sun					**Area =**	**7292 sq.m**
Callistemon 'White Anzac'	Bottlebrush	1.0	2.0	140mm	1	
Gazania tomentosa	Silver Gazania	0.3	1.5	140mm	2	
Pennisetum alopecuroides 'Nafray'	Pennisetum Nafray	0.5	0.5	140mm	1	
PM3B - Site Edge Mix Low - Shade					**Area =**	**250 sq.m**
Rhaphiolepis indica 'Oriental Pearl'	Oriental Pearl Indian Hawthorn	1.0	1.0	140mm	2	
Trachelospermum jasminoides 'tricolor'	Tricolor Star Jasmine	0.5	1.0	140mm	2	
Viola hederacea	Native Violet	0.1	0.2	140mm	2	
PM4 - Site Markers Mix					**Area =**	**711 sq.m**
Nandina domestica 'Gulf Stream'	Dwarf Sacred Bamboo	0.8	0.8	140mm	2	
Pennisetum alopecuroides 'Nafray'	Pennisetum Nafray	0.5	0.5	140mm	1	
PM5A - Feature Planting Mix					**Area =**	**1016 sq.m**
Doryanthes excelsa	Gymea Lily	2.0	1.5	200mm	2	
Lorapetalum chinense rubrum 'China Pink'	Chinese Fringe Flower	1.5	1.5	200mm	2	
Photinia x fraseri 'Red Robin'	Red Robin	3.0	2.0	200mm	1	
PM6A - Site Hedge Mix - Sun					**Area =**	**1087 sq.m**
Acmena smithii 'Hot Flush'	Lilly Pilly	4.0	2.0	300mm	1	
Metrosideros thomasii	New Zealand Christmas Bush	4.0	4.0	300mm	1	
Rhaphiolepis indica 'Oriental Pearl'	Oriental Pearl Indian Hawthorn	1.0	1.0	300mm	2	
Rhaphiolepis indica 'Snow Maiden'	Snow Maiden Indian Hawthorn	0.5	1.0	300mm	2	
PM7A - Groundcover Planting Mix A					**Area =**	**812 sq.m**
Gazania tomentosa	Silver Gazania	0.3	1.5	140mm	2	
PM7B - Groundcover Planting Mix B					**Area =**	**698 sq.m**
Trachelospermum jasminoides 'tricolor'	Tricolor Star Jasmine	0.5	1.0	140mm	2	
PM9A - Climbers Mix - Sun					**Area =**	**38 sq.m**
Hibbertia scandens	Climbing Guinea-Flower	2.0	2.0	300mm	2	
PM9B - Climbers Mix - Shade					**Area =**	**6 sq.m**
Trachelospermum jasminoides	Star Jasmine	0.9	0.3	300mm	2	
TF1 - General Turf					**Area =**	**4134 sq.m**
Stenotaphrum secundatum 'Sir Walter'	Sir Walter Buffalo			Turf Roll		
TF2 - Feature Turf (Planted)					**Area =**	**1512 sq.m**
Zoysia tenuifolia	No-Mow Grass/Velvet Grass			200mm		

NOTE:
1. Mass planting to be undertaken in large groupings of the same species to approval of landscape architect.
2. Hedging species are to be set out in linear arrangements of same speceies to approval of landscape architect.

PLANTING PALETTE

Trees & Specimen Shrubs


Angophora floribunda


Corymbia maculata


Eucalyptus moluccana


Lagerstroemia indica 'Tuscarora'


Melaleuca linariifolia


Pyrus calleryana 'Captial'


Tristaniopsis laurina 'Luscious'

PM1A - Car Park Edge Mix - Sun


Callistemon viminalis 'Little John'


Pennisetum alopecuroides 'Nafray'

PM1B - Car Park Edge Mix - Shade


Hibbertia scandens


Viola hederacea

PM2A - Car Park Island Mix - Sun

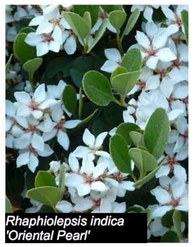

Carex appressa


Gazania tomentosa

PM3A - Site Edge Mix Low - Sun


Callistemon 'White Anzac'

PM3B - Site Edge Mix Low - Shade

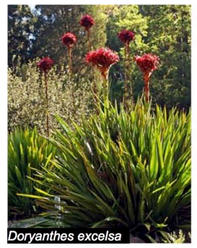

Rhaphiolepsis indica 'Oriental Pearl'


Trachelospermum jasminoides 'Tricolour'

PM4-Site Markers Mix


Nandina 'Gulf Stream'

PM5A - Feature Planting Mix


Doryanthes excelsa


Loropetalum rubrum chinense 'China Pink'


Photinia x fraseri 'Red Robin'

PM6A - Site Hedge Mix - Sun


Acmena smithii 'Hot Flush'


Metrosideros thomsanii

PM7A - Groundcovers


Gazania tomentosa

PM7B - Groundcovers


Trachelospermum jasminoides 'Tricolour'

PM9 - Climbers Mix

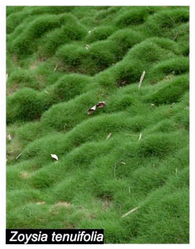

Hibbertia scandens


Trachelospermum jasminoides

TF1 - General Turf


Stenotaphrum secundatum 'Sir Walter'

TF2 - Feature Turf


Zoysia tenuifolia

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Planting Schedule

scale	NTS
drawn	MF/ZZ
checked	CH
project no.	163-18
project phase	Development Application

L.SK.03 **L**



Note: All finished levels subject to change +/- 1000mm.

LEGEND

PROGRAMME

1 Office
2 Motorcycle Parking
3 Entry Marker
4 Site Marker
5 Staff Rest Area
6 OWE Stage 1 Pocket Parks
CE Car entry/exit
CP Carparking
TE Truck entry/exit

GENERAL

Site Boundary
Lot Boundary
Proposed Contour Line
Existing Contour Line
+ FL 562.00 Finished Level
+ FFL 562.00 Finished Floor Level
+ RL 562.00 Reduced Level
Fence
20m Setback Building
10m Setback Landscape
Transmission Easement
Demolition
Architecture Above
Architecture Below
Proposed Ramp
Proposed Stairs
Building
Office

PREPERATION & GROUNDWORKS

Services
Drainage - Grated Sump

WALLS & EDGES

Steel Edge
Flush Concrete Kerb
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Retaining Gabion Wall
Retaining Insitu Wall
Steel Wall

PAVEMENTS

Coarse Aggregate
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Insitu Concrete
Precast Concrete
Stone Tiles
Feature paving

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Proposed Seating
Proposed Pergola
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Proposed Sandstone Block
Bicycle rack
Gate
Sculpture
Signage

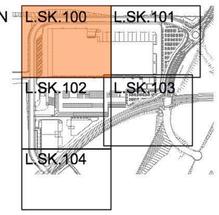
PLANTING

TF1-General Turf
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PM1A-Car park edge mix-sun
PM1B-Car park edge mix-shade
PM2A-Car park island mix-sun
PM2B-Car park island mix-shade
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PM3B-Site edge mix - shade
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PM6A-Site hedge mix-sun
PM7A-Groundcover mix A
PM7B-Groundcover mix B
PM9A-Climbers mix - sun
PM9B-Climbers mix - shade
Existing Vegetation

TREES

Existing Tree to be Removed Refer ARBORISTS REPORT
Existing Tree to be Transplanted/ original location
Existing Tree to be Transplanted/ new location
Existing Tree to be Retained
Proposed Tree - General
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KEY PLAN



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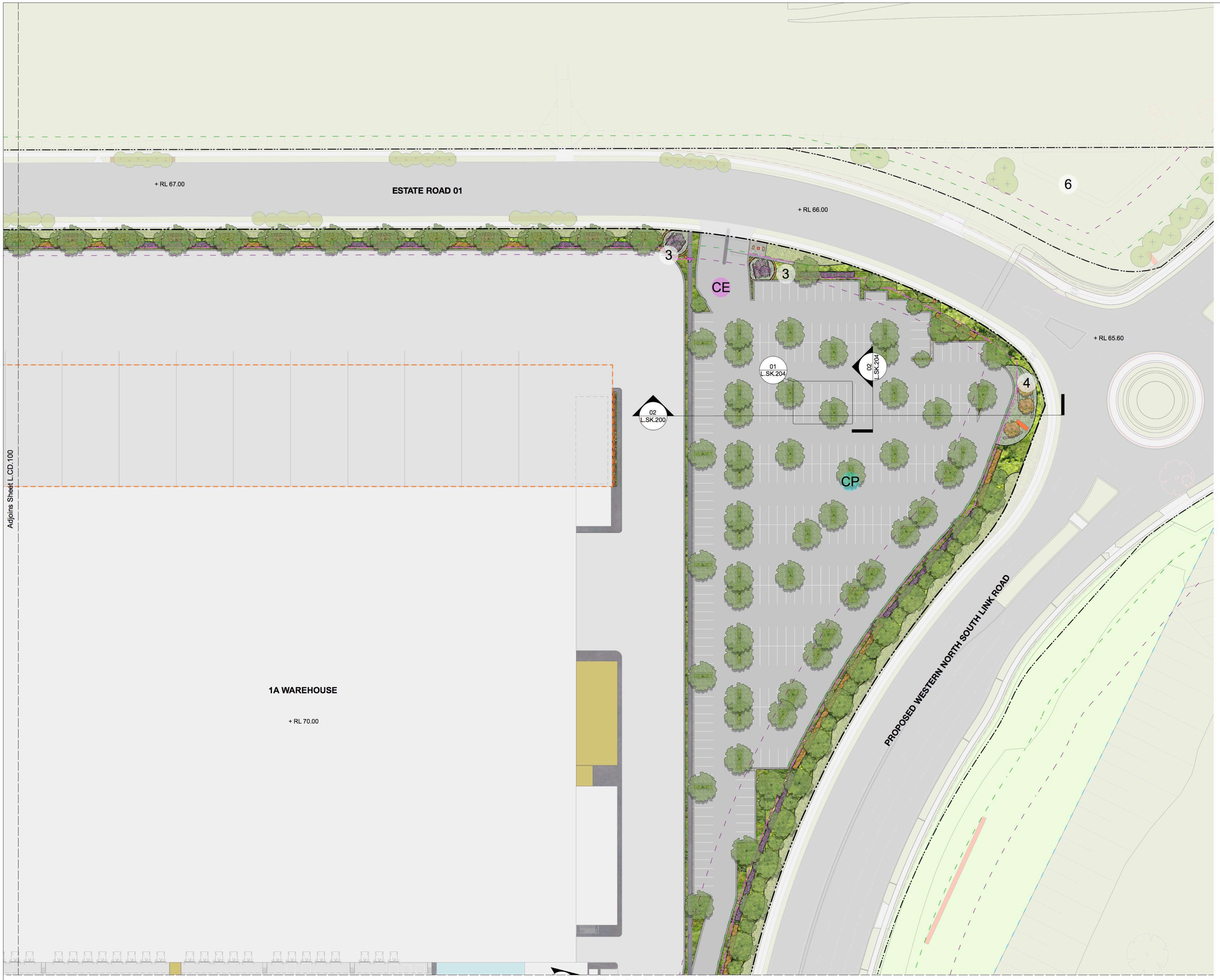
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Landscape Plan Sheet 1

scale	1:500@A1
drawn	MF/ZZ
checked	CH
project no.	163-18
project phase	Development Application

L.SK.100 K



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LEGEND

PROGRAMME

- 1 Office
- 2 Motorcycle Parking
- 3 Entry Marker
- 4 Site Marker
- 5 Staff Rest Area
- 6 OWE Stage 1 Pocket Parks
- CE Car entry/exit
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GENERAL

- Site Boundary
- Lot Boundary
- Proposed Contour Line
- 88.60 Existing Contour Line
- + FL 562.00 Finished Level
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- Retaining Insitu Wall
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Landscape Plan Sheet 2

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checked	CH
project no.	163-18
project phase	Development Application

L.SK.101 **K**

Adjoins Sheet L.CD.100

+ RL 70.00

+ RL 73.00

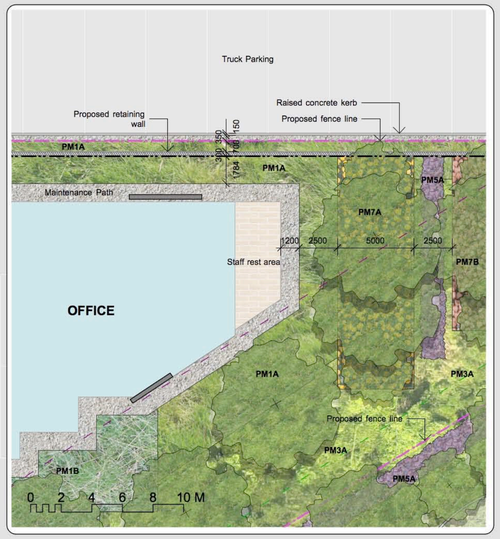
+ RL 75.00

LOT 3A

ESTATE ROAD 01

03
L.SK.201

INSET PLAN A: SCALE 1:200



TE

TE

CP

TE CE

CP

CP

1

5

A

5

1

1B1 WAREHOUSE

1C WAREHOUSE

CE

CP

5

FUTURE SOUTHERN LINK ROAD

1B2 WAREHOUSE

Note: All finished levels subject to change +/- 1000mm.

Adjoins Sheet L.CD.104

0 5 10 15 20 25 M

Adjoins Sheet L.CD.103

LEGEND

PROGRAMME

1 Office
2 Motorcycle Parking
3 Entry Marker
4 Site Marker
5 Staff Rest Area
6 OWE Stage 1 Pocket Parks
CE Car entry/exit
CP Carparking
TE Truck entry/exit

GENERAL

Site Boundary
Lot Boundary
Proposed Contour Line
Existing Contour Line
+ FL 562.00 Finished Level
+ FFL 562.00 Finished Floor Level
+ RL 562.00 Reduced Level
Fence
20m Setback Building
10m Setback Landscape
Transmission Easement
Demolition
Architecture Above
Architecture Below
Proposed Ramp
Proposed Stairs
Building
Office

PREPERATION & GROUNDWORKS

Services
Drainage - Grated Sump

WALLS & EDGES

Steel Edge
Flush Concrete Kerb
Raised Concrete Kerb
Retaining Gabion Wall
Retaining Insitu Wall
Steel Wall

PAVEMENTS

Coarse Aggregate
Asphaltic Concrete
Insitu Concrete
Precast Concrete
Stone Tiles
Feature paving

FURNITURE & FITTINGS

Proposed Seating
Proposed Pergola
Proposed Bollards
Proposed Street Lighting
Proposed Sleeper Mullion
Proposed Sandstone Block
Bicycle rack
Gate
Sculpture
Signage

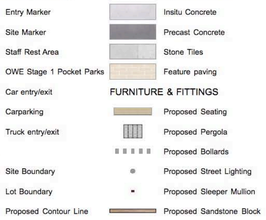
PLANTING

TF1-General Turf
TF2-Feature Turf
PM1A-Car park edge mix-sun
PM1B-Car park edge mix-shade
PM2A-Car park island mix-sun
PM2B-Car park island mix-shade
PM3A-Site edge mix - sun
PM3B-Site edge mix - shade
PM4-Site markers mix
PM5A-Feature planting mix-sun
PM6A-Site hedge mix-sun
PM7A-Groundcover mix A
PM7B-Groundcover mix B
PM9A-Climbers mix - sun
PM9B-Climbers mix - shade
Existing Vegetation

TREES

Existing Tree to be Removed Refer ARBORISTS REPORT
Existing Tree to be Transplanted/ original location
Existing Tree to be Transplanted/ new location
Existing Tree to be Retained
Proposed Tree - General
Proposed Tree - Entry Marker
Proposed Tree - Site Marker

KEY PLAN



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Web www.scapedesign .com.au

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Oakdale West, NSW

CLIENT
Goodman Property Services

revision	revision description	by	date
L	DEVELOPMENT APPLICATION	MF	25/2/20
K	DEVELOPMENT APPLICATION	MF	21/2/20
J	DEVELOPMENT APPLICATION	MF	14/2/20
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Landscape Plan Sheet 3

scale	1:500@A1
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checked	CH
project no.	163-18
project phase	Development Application

L.SK.102 **L**

Adjoins Sheet L.CD.101

Adjoins Sheet L.CD.102

LOT 4D

TRANSMISSION EASEMENT

TRANSMISSION EASEMENT

+ RL 68.50

+ RL 72.00

04 L.SK.201

1

2

4

5

5

B

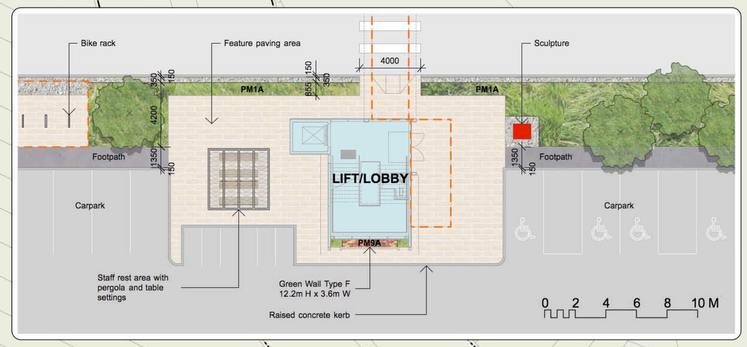
CP

CP

CE

TE

INSET PLAN B: SCALE 1:200



Note: All finished levels subject to change +/- 1000mm.

0 5 10 15 20 25 M

LEGEND

PROGRAMME

1 Office
2 Motorcycle Parking
3 Entry Marker
4 Site Marker
5 Staff Rest Area
6 OWE Stage 1 Pocket Parks
CE Car entry/exit
CP Carparking
TE Truck entry/exit

GENERAL

Site Boundary
Lot Boundary
Proposed Contour Line
Existing Contour Line
+ FL 562.00 Finished Level
+ FFL 562.00 Finished Floor Level
+ RL 562.00 Reduced Level
Fence
20m Setback Building
10m Setback Landscape
Transmission Easement
Demolition
Architecture Above
Architecture Below
Proposed Ramp
Proposed Stairs
Building
Office

PREPERATION & GROUNDWORKS

Services
Drainage - Grated Sump

WALLS & EDGES

Steel Edge
Flush Concrete Kerb
Raised Concrete Kerb
Retaining Gabion Wall
Retaining Insitu Wall
Steel Wall

PAVEMENTS

Coarse Aggregate
Asphaltic Concrete
Insitu Concrete
Precast Concrete
Stone Tiles
Feature paving

FURNITURE & FITTINGS

Proposed Seating
Proposed Pergola
Proposed Bollards
Proposed Street Lighting
Proposed Sleeper Mullion
Proposed Sandstone Block
Bicycle rack
Gate
Sculpture
Signage

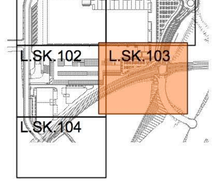
PLANTING

TF1-General Turf
TF2-Feature Turf
PM1A-Car park edge mix-sun
PM1B-Car park edge mix-shade
PM2A-Car park island mix-sun
PM2B-Car park island mix-shade
PM3A-Site edge mix - sun
PM3B-Site edge mix - shade
PM4-Site markers mix
PM5A-Feature planting mix-sun
PM6A-Site hedge mix-sun
PM7A-Groundcover mix A
PM7B-Groundcover mix B
PM9A-Climbers mix - sun
PM9B-Climbers mix - shade
Existing Vegetation

TREES

Existing Tree to be Removed Refer ARBORISTS REPORT
Existing Tree to be Transplanted/ original location
Existing Tree to be Transplanted/ new location
Existing Tree to be Retained
Proposed Tree - General
Proposed Tree - Entry Marker
Proposed Tree - Site Marker

KEY PLAN



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Landscape Plan Sheet 4

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project no.	163-18
project phase	Development Application

L.SK.103 L

Adjoins Sheet L.CD.102

1B2 WAREHOUSE

ESTATE ROAD 01

LOT 3C

+ RL 76.00

+ RL 75.00

NEW ZONE SUBSTATION

LOT 4B

ESTATE ROAD 06

ESTATE ROAD 07

INSET PLAN C: SCALE 1:200

LOT 4C

WAREHOUSE 1B2

OFFICE

Office entrance

Green Wall Type C
7.2m H x 2.2m W

Indoor climbers to grow on Tensile wire rope net fixed to wall

Gabion retaining wall

Steel edge

Steel edge

Staff rest area

Raised concrete kerb

Existing footpath

Existing turfed verge

Proposed fence line

Flush concrete kerb

Feature trees

Signage - Building identification

0 2 4 6 8 10 M

Note: All finished levels subject to change +/- 1000mm.

0 5 10 15 20 25 M

LEGEND

PROGRAMME
1 Office
2 Motorcycle Parking
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4 Site Marker
5 Staff Rest Area
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CE Car entry/exit
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TE Truck entry/exit

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Site Boundary
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20m Setback Building
10m Setback Landscape
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Architecture Below
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Proposed Stairs
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Office

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Services
Drainage - Grated Sump

WALLS & EDGES
Steel Edge
Flush Concrete Kerb
Raised Concrete Kerb
Retaining Gabion Wall
Retaining Insitu Wall
Steel Wall

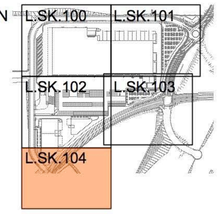
PAVEMENTS
Coarse Aggregate
Asphaltic Concrete
Insitu Concrete
Precast Concrete
Stone Tiles
Feature paving

FURNITURE & FITTINGS
Proposed Seating
Proposed Pergola
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Bicycle rack
Gate
Sculpture
Signage

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PM3B-Site edge mix - shade
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PM5A-Feature planting mix-sun
PM6A-Site hedge mix-sun
PM7A-Groundcover mix A
PM7B-Groundcover mix B
PM9A-Climbers mix - sun
PM9B-Climbers mix - shade
Existing Vegetation

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Existing Tree to be Removed Refer ARBORISTS REPORT
Existing Tree to be Transplanted/ original location
Existing Tree to be Transplanted/ new location
Existing Tree to be Retained
Proposed Tree - General
Proposed Tree - Entry Marker
Proposed Tree - Site Marker

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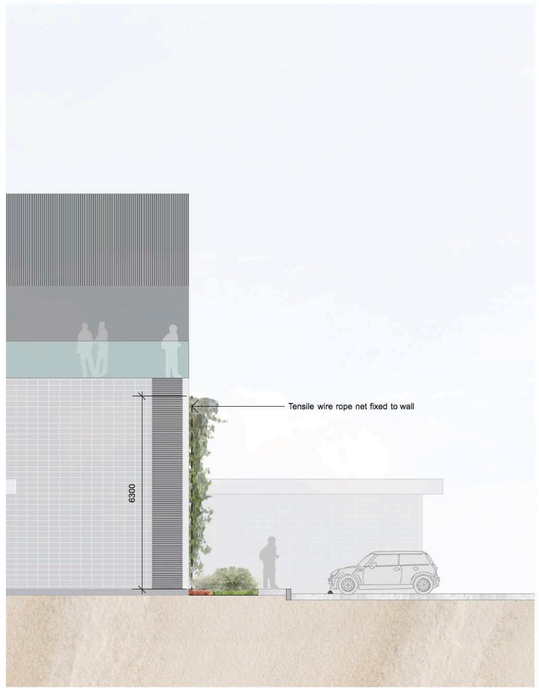
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K	DEVELOPMENT APPLICATION	MF	21/2/20
J	DEVELOPMENT APPLICATION	MF	14/2/20
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H	CLIENT REVIEW	MF	18/10/19

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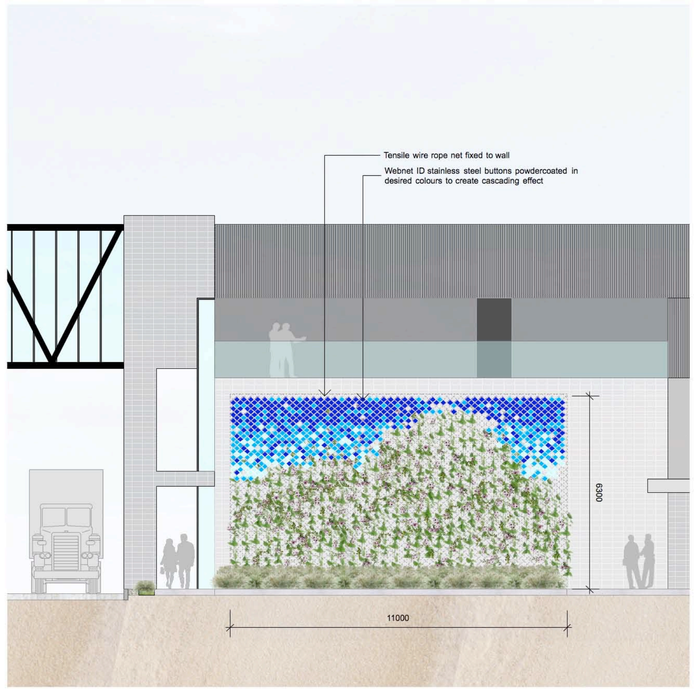
Landscape Plan
Sheet 5

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drawn	MF/ZZ
checked	CH
project no.	163-18
project phase	Development Application

L.SK.104 L



01 Green Wall Type A - Office 1A Wall - Profile
Typical Elevaton - Scale 1:100 @ A1



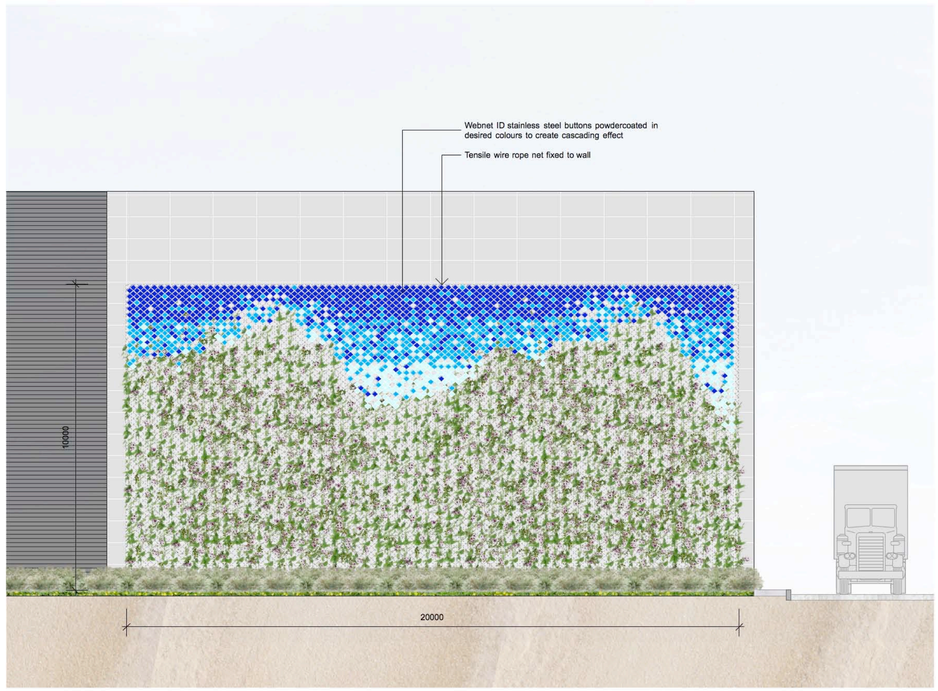
02 Green Wall Type A - Office 1A Wall
Typical Elevaton - Scale 1:100 @ A1



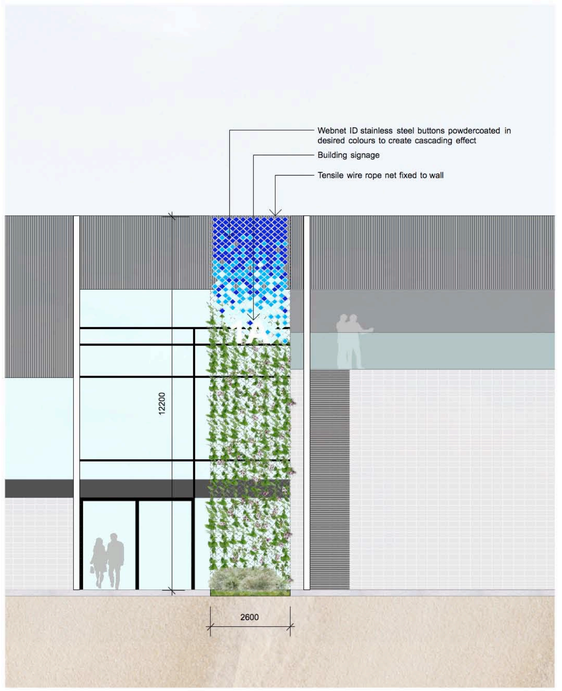
03 Green Wall Type B - Office Entrance
Typical Elevaton - Scale 1:100 @ A1



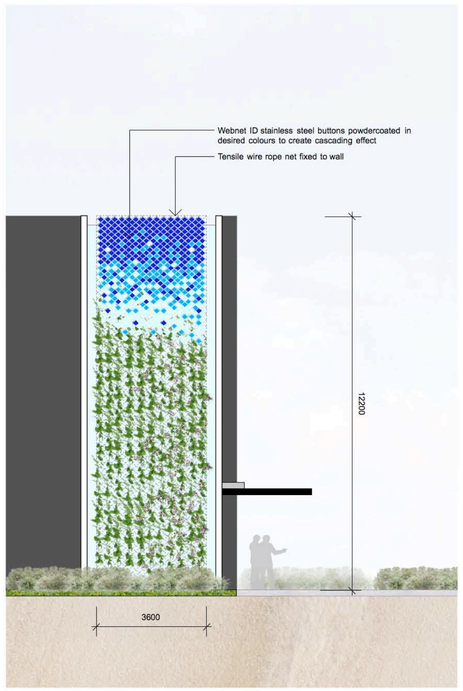
04 Green Wall Type C - Office Entrance
Typical Elevaton - Scale 1:100 @ A1



05 Green Wall Type D - Warehouse Wall
Typical Elevaton - Scale 1:100 @ A1



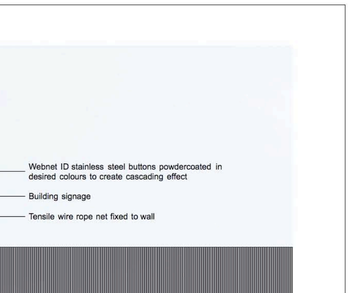
06 Green Wall Type E - Office Entrance
Typical Elevaton - Scale 1:100 @ A1



07 Green Wall Type F - Sky Bridge Lift
Typical Elevaton - Scale 1:100 @ A1

Note: All finished levels subject to change +/- 1000mm.

KEY PLAN



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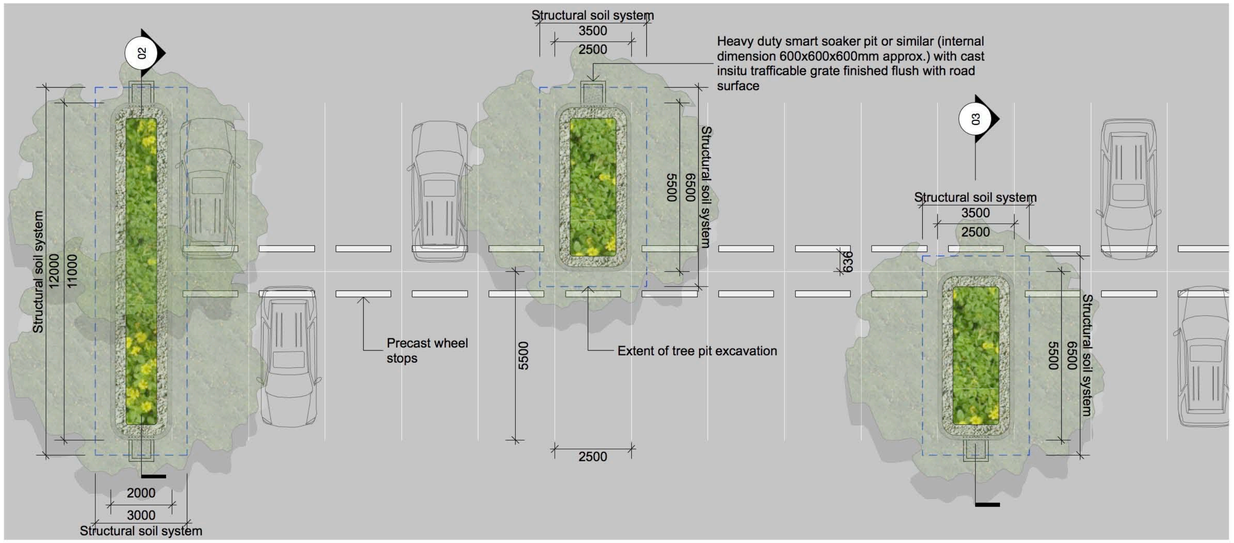
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I	DEVELOPMENT APPLICATION	MF	14/2/20
H	DEVELOPMENT APPLICATION	ZZ	25/10/19
G	CLIENT REVIEW	MF	18/10/19
F	CLIENT REVIEW	MF	26/9/19
E	CLIENT REVIEW	MF	20/9/19

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Landscape Sections Sheet 3

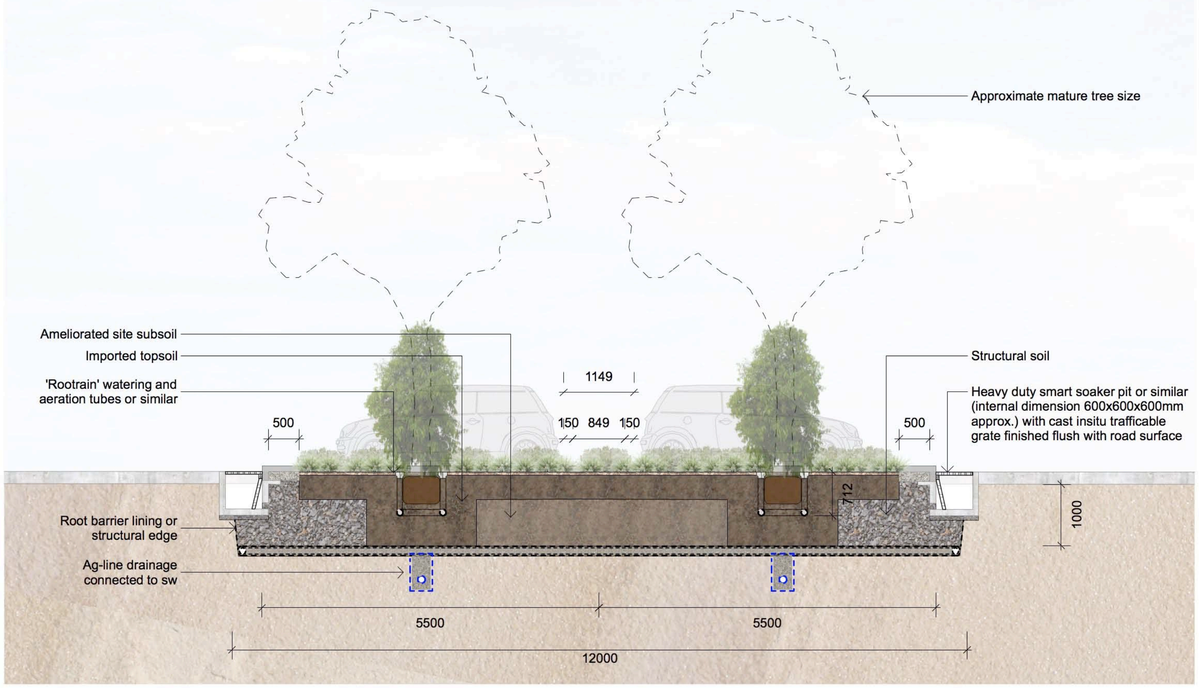
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checked	CH
project no.	163-18
project phase	Development Application

L.SK.202 I



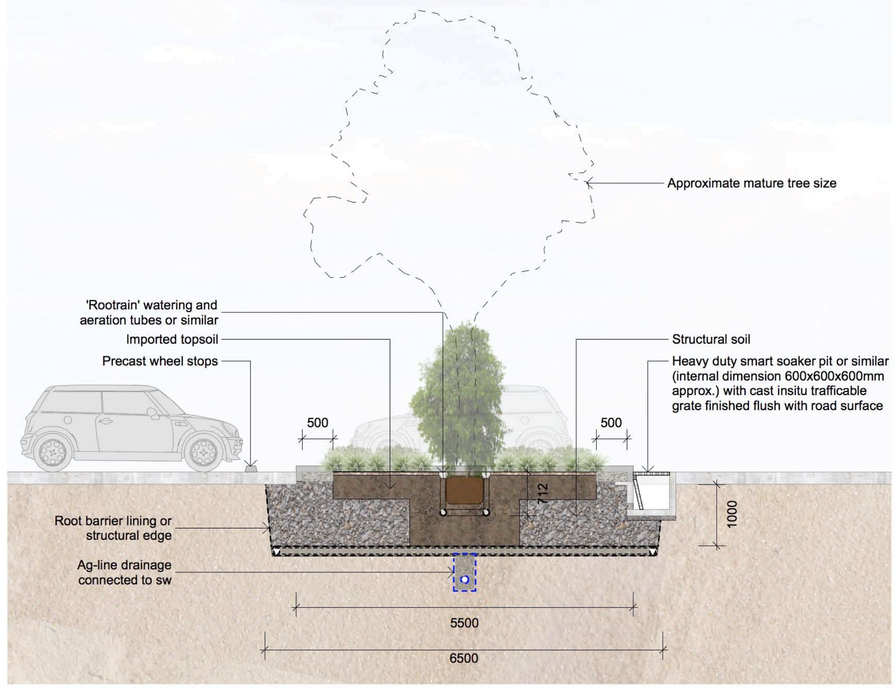
01 Carpark Tree Pit System
Detailed Plan - Scale 1:50 @ A1

0 1 2 3 M



02 Carpark Tree Pit System
Detailed Section - Scale 1:50 @ A1

0 1 2 3 M



03 Carpark Tree Pit System
Detailed Section - Scale 1:50 @ A1

0 1 2 3 M

Note: All finished levels subject to change +/- 1000mm.

LEGEND

GENERAL
- Architecture Below

PAVEMENTS
- Concrete Insitu Vehicular
- Coarse Aggregate

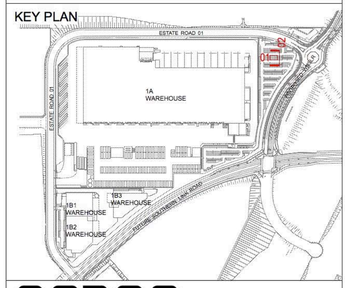
WALLS & EDGES
- Raised Concrete Kerb

PLANTING
- PM2A-Car park island mix-sun

FURNITURE & FITTINGS
- Precast Wheel Stop
- Soaker Pit

TREES
- Proposed Tree - General

KEY PLAN



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Oakdale West, NSW

CLIENT
Goodman Property Services

F	DEVELOPMENT APPLICATION	MF	9/3/20
E	DEVELOPMENT APPLICATION	MF	2/3/20
D	DEVELOPMENT APPLICATION	MF	25/2/20
C	DEVELOPMENT APPLICATION	MF	14/2/20
B	DEVELOPMENT APPLICATION	MF	12/2/20
revision	revision description	by	date

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Carpark Details

scale	1:50@A1
drawn	MF/ZZ
checked	CH
project no.	163-18
project phase	Development Application

L.SK.204 **F**

7.2 REFERENCED LANDSCAPE SPECIFICATION

Quantity of Soil Additive

Plant Size	Quantity
"Viro-Tube"	Nil
"Forestry Tube"	20 grams
"Semi Advanced"	40 grams
"Advanced"	80 grams
"Super Advanced"	400 grams
"Semi Mature"	One kilogram

3.8 STAKES AND TIES

Stakes

Material: Hardwood, straight, free from knots or twists, pointed at one end.

Installation: Drive stakes into the ground at least one third of their length, avoiding damage to the root system.

Stake sizes:

- For plants ≥ 2.5 m high: Three 50 x 50 x 2400 mm stakes per plant.
- For plants 1 to 2.5 m high: Two 50 x 50 x 1800 mm stakes per plant.
- For plants < 1 m high: One 38 x 38 x 1200 mm stake per plant.

Ties

General: Provide ties fixed securely to the stakes, one tie at half the height of the main stem, others as necessary to stabilise the plant. Attach ties loosely so as not to restrict plant growth.

Tie types:

- For plants ≥ 2.5 m high: Two strands of 2.5 mm galvanized wire neatly twisted together, passed through reinforced rubber or plastic hose, and installed around stake and stem in a figure of eight pattern.
- For plants < 2.5 m high: 50 mm hessian webbing stapled to the stake.

Trunk protection

Collar guards: 200 mm length of 100 mm diameter agricultural pipe split lengthways.

3.9 SEED PREPARATION

Where site conditions are not suitable for the pre-treatment and mixing of native and grass seed, this work may be done off site in conditions conducive for this purpose.

HOLD POINT	
Process Held:	Use of seed pre-treated off site.
Submission Details:	At least 3 working days prior to delivery, submit the accompanying certificate showing the species, variety, weight and place of pre-treatment.
Release of Hold Point:	The Principal will consider the submitted documents and may inspect the seed prior to authorising the release of the Hold Point.

Pre-treatment to Assist Germination

Where hot water is the specified pre-treatment, place the seed in a calico bag together with camphor granules as an insect repellent at the rate of 50 g per 10 litres of water. Immerse the bag in hot water

with temperature of around 90ºC for a minimum period of 60 minutes and then remove from the water, drain and allow to dry. When dry, mix the treated seed with the remaining seed and broadcast when conditions are suitable.

Seed that has been pre-treated must be used within five days of pre-treatment.

Where proprietary products are used to assist germination, use as recommended by the manufacturer.

Preparation for Hydromulching, Hydroseeding and Straw Mulching

Storage tanks, containers and equipment to be used in hydromulching, hydroseeding and straw mulching must be clean and free of contamination from previous operations.

Table– Application Rates for Materials

Material	Rate per Hectare
Hydromulching	
Water	35,000 litres
Organic fertiliser: pelletised poultry manure	250 kg
Seed	See Planting Schedule
Cellulose fibre mulch: – Sugar cane mulch, mixed with 20% (by weight) of shredded paper – Wood fibre mulch	 3,500 kg 2,500 kg
Binder: granulated 'Guar gum'	60 kg
Biodegradable green dye	As recommended
Hydroseeding	
Water	20,000 litres
Organic fertiliser: pelletised poultry manure	250 kg
Seed	See Planting Schedule
Biodegradable green dye	As recommended
Straw mulching	
Straw	5,000 kg
Binder – Undiluted residual bitumen emulsion – Granulated 'Guar gum'	 2,500 litres 100 kg

Produce hydromulch / hydroseed slurry mixtures by adding the specified materials into the tank and agitate until a homogenous blend is obtained.

Sowing Methods

Unless otherwise shown on the Drawings, sow areas with slopes of 5 to 1 or flatter, using one of the following methods:

- dry sowing
- for small areas only, by hand.

Unless otherwise shown on the Drawings, sow areas with slopes steeper than 5 to 1 in any direction, using one of the following methods:

- hydroseeding and straw mulching
- hydromulching
- for rock face batters, hydroseeding
- for small areas only, by hand.

Stepped batters must be topsoiled as described and hydroseeded or hydromulched.

WITNESS POINT	
Process Witnessed:	Sowing
Submission Details:	Notify the Principal, not less than 5 clear working days prior to the intended time of sowing, giving details of the area to be sown.

3.10 DRY SOWING

Undertake dry sowing using either:

- a tractor drawn seed drill to place seed at a depth of 5 mm
- a spreader followed immediately by a single pass with an unweighted diamond harrow.

Where practicable, tractor passes with the seed drill or harrow must follow finished surface contours. Distribute seed and fertiliser evenly over the areas to be sown at the rates specified. Apply fertiliser concurrently with the seeding operation.

Gauge the application rate of the seed mix to ensure an even distribution over the areas sown, in accordance with the nominated rates. Maintain records of measurements and calculations to determine actual distribution rates for each lot.

Hydromulching and Hydroseeding

Carry out hydromulching / hydroseeding within 2 days of completion of soil preparation or, if delayed by weather conditions, as soon as weather conditions permit.

Agitate continuously the slurry to maintain a uniform consistency during application.

The sprayed hydromulch layer within 48 hours of application must have a minimum thickness at any location of 5 mm when using sugar cane mulch (mixed with shredded paper), or 2 mm when using wood fibre.

Straw Mulching

The straw mulch must comprise the materials and application rates set out in Table R178.1.

Apply the straw mulch uniformly using a purpose-made blower unit. Incorporate the emulsion as a spray into the air stream of the mulch blower or apply it in a separate operation within 12 hours from the application of straw mulch.

The straw mulch layer within 48 hours of application must have a minimum thickness at any location of 25 mm.

Weather Conditions for Hydroseeding, Hydromulching and Straw Mulching

Do not apply hydroseeding, hydromulching and straw mulching:

- when winds exceed 15 km/hr
- when temperatures exceed 37°C
- where the surface is too wet
- during rain periods or when rain appears imminent.

Signposting

Supply and install information signs approximately 1,500 x 600 mm stating, "NATIVE PLANT REGENERATION AREA—PLEASE KEEP OFF", including the requisite posts, brackets and fittings, where shown on the Drawings or as directed by the Principal. Support each sign at a height of 1.5 metres on two 75 mm dia steel posts set in concrete 500 mm deep into the ground at a distance of 900 mm apart.

7.3 GOODMAN MAINTENANCE GUIDELINES

Appendix 2 | Specification

system again to re-flush if blockages are apparent and re-seal tube ends

Commissioning

The entire system should be tuned and tested to deliver an adequate amount of water to all plants and turf. Test the system in the presence of the Landscape Architect and/or irrigation designer to facilitate the issue of a Certificate of Practical Completion.

Maintain the system for the duration of the establishment maintenance period as detailed elsewhere in the specification. Replace any faulty, broken or stolen components. Leave the system operating as if it was newly installed upon acceptance of the completed work.

Maintenance

General

Gardens, lawns and landscaped areas must be maintained to Goodman's presentation standard and condition at all times. Goodman places a heavy emphasis on a high standard of landscaping to support their market image.

Plants and shrubs should be cultivated to maintain optimal growth while individual plants that don't thrive should be replaced with healthy specimens. Plants and shrubs should be pruned appropriately to promote growth. Where necessary, all plants should be dead headed to maintain optimal appearance.

Weeds should be removed at all visits while measures should be taken to discourage weed growth. Weeds must be removed from all garden beds, fence lines and surrounding areas, all paved areas and walkways, construction joints and any entrance areas. All large weeds should be removed by hand, small weeds are to be sprayed with appropriate industrial strength weed killer with blue dye additive.

A prophylactic chemical weeding program should be implemented. Goodman Building Manager must be notified and approve any application of chemical weed treatment. The contractor must specify the type of chemical weed treatment product used, where it was used and quantity used. The contractor must submit a certificate or signed documentation received from chemical weed treatment supplier confirming application of chemical treatment to Goodman Landscape Manager. Spraying is to occur during non-office hours to reduce any health hazard for occupants of the commercial offices or industrial estates.

Every effort must be made to ensure that all plants are adequately watered at all times. When irrigation is not permitted, alternative methods of watering should be discussed with the Building Manager.

A proactive approach must be adopted to ensure that appearance of the landscape as a whole is highly presentable at all times. Recommendations on new plant or shrub specimen, landscape design, modifications etc should be made to Goodman Landscape Manager where opportunities exist to enhance the appearance of the landscape generally or in specific areas.

Contractors must submit annual routine landscape maintenance program to Goodman Landscape Manager within two weeks of contract commencement date.

Lawn care

Lawn areas, including nature strips must be neatly mown and edged weekly in the high season (summer months), fortnightly in the low season (winter months), or weekly if required due to abnormal weather condition. All clippings must be removed from the site.

All lawns must be fertilized once a year with an approved lawn fertilizer.

Tree shrub and plant care

All shrubs, hedges, ground covers and trees must be trimmed into shape as required to an acceptable Goodman presentation standard. Flowering plants/ shrubs should be pruned to promote optimal flowering at the appropriate times.

Excessive foliage impacting onto roads, paths, fencing and lighting must be pruned during all site visits.

Leaf litter and or all cuttings should be removed from all gardens and site each visit and disposed of at contractor's cost.

Any dead or dying plants/shrubs should be removed and replaced with same or comparable species. Goodman Landscape Manager must be consulted when large trees need to be removed and or replaced.

The contractor will maintain each plant in a healthy condition to increase the visual appeal of the gardens.

Appendix 2 | Specification

Remove faded leaves, fronds and flowers to encourage new growth.

The contractor will prune all plants or shrubs species as required and satisfy Goodman's presentation standard. Pruning should be carried out on a 'needs-basis' specific to each plant. Pruning should be carried out to encourage new growth that will result in a dense canopy density. No more than 30mm of new growth should be seen before pruning takes place. All plant pruning should be carried out using best horticultural techniques. No hedging of native grasses permitted at any time.

Replacement of any plant or shrub which may die, fail to thrive, or are damaged due to contractors negligence must be replaced by the contractor without cost to Goodman. The replacement plant or shrub must be of a similar size, quality and identical species or variety to the plant or shrub which has failed, unless otherwise directed by Goodman Landscape Manager

Where plants fail due to vandalism, or where plants are stolen, the cost of replacement of the plants will be met by Goodman.

Mulch

The contractor is required to maintain all areas of mulch cover within garden beds. Displaced mulch should be returned to the garden beds wherever possible. All area of mulch cover must be packed to a depth of 75mm. If replacement of mulch is required, the contractor must notify Goodman Landscape Manager and provide quotation for approval. Specific mulch must be approved by Goodman representative prior to installation.

Irrigation

The irrigation system must be fully functional at all times to ensure that all plants, trees and lawns receive adequate water at optimal frequency. The system should be tested during each site visit to ensure proper operation timing is set correctly. Adjustments must be made where necessary.

It is the contractors responsibility to submit a monthly report to Goodman which includes a comprehensive report on the operational function of the system.

Goodman Landscape Manager must be notified when the system is in need of major repair. The cost of major repairs to the system can be claimed as variation to the contract price and should be invoiced separately.

When water restrictions prevent the use of the irrigation system, arrangements must be made by the contractor to provide an alternative system of watering. Under no circumstances should plant stock be allowed to perish through lack of water.

Herbicide / pesticide application

Apply pesticide treatment to lawn areas to eliminate weeds/pests and diseases as soon as any attack is noticed. At any given time no more than 2% may be effected by weeds/pests and diseases. Spraying must occur during non-office hours to reduce any health hazard for occupants of the commercial offices or industrial estates. Do not use pesticides near streams, ditches, wetlands, or shorelines.

Rubbish

All rubbish generated by landscaping maintenance activities and from garden beds must be removed from the site at each visit and deposited at an approved waste collection depot at contractor's cost.

General rubbish accumulating within the driveways, car parks etc. will be removed by the landscape contractor on each weekly visit.

Fertilizing

Apply slow-release fertiliser in liquid form or in pellet form to all plants as required to maintain healthy growth conditions.

Fertilising of individual trees, individual palms, garden beds containing shrubs and groundcovers, and lawns should occur as required by individual species to maintain healthy growth conditions. All garden plants are to be fertilised in March and September of every year.

Seasol or other seaweed extract type fertilises and/or Dynamic Lifter or other organic fertiliser in pelletised form should be used. Do not use soluble fertilizers near streams, ditches, wetlands, or shorelines. Do not use blood and bone. All fertiliser is to be odourless.

Turf topdressing

The contractor is to review the condition of lawn areas to assess the need to provide topdressing. If topdressing is required, the contractor must report to Goodman Landscape Manager for approval. Premium topdressing mix must be 80% sand and 20% soil.

Appendix 2 | Specification

Repairs

Any repairs required to lawn areas should occur immediately following notification of the extent of works and approval to proceed by Goodman Landscape Manager.

Restaking

Where trees, palms, or shrubs require staking during plant establishment, the contractor will ensure that staking remains intact and rigid for its intended purpose. Staking that has failed must be repaired immediately to ensure no plant stress from winds.

Garden edging

The contractor is to review the condition of garden bed edging and ensure that no damage, sinking, or lifting has occurred. If any repair is required, contractor must notify Goodman Landscape Manager for approval. Contractor is to ensure that all garden edging is maintained in original condition.

Planters

The maintenance of any planter box (especially on-slab) requires careful attention to ensure that the waterproofing element is not affected. Any work done within planter box must be by hand. Neither machinery nor tools are to be used within any planter box that may cut and damage the waterproofing elements. The contractor will replenish soil nutrients and fertilisers in each planter box on a regular basis to ensure healthy continual growth of any plant species.

Letterboxes / directory boards

The contractor is to clean and wipe down directory boards and letter boxes at the entrance to the property and remove unwanted material (this is limited to a height accessible by ladder).

All hedges or shrubbery near directory boards must be kept trimmed, so that clear visual recognition by any emergency services can be ascertain the clear address of the site or direction to any part of the site.

Drains

All grated stormwater drains or strip drains in all car park levels and driveways zones must be inspected monthly and cleared of accumulation of debris, leaves and soil, so that there is no hindrance or impediment of their correct operation as stormwater drains.

All grated stormwater drains or strip drains in all gardens, lawn zones and pavement areas must be inspected weekly or after storms and maintained free of and accumulation of debris, leaves and soil, so that there is no hindrance or impediment of their correct operation as stormwater drains.

Any drains grate or section of strip drains that is rusted, faulty or may constitute a hazard to the site's tenants or visitors must be reported to Goodman Landscape Manager. Recommendation and replacement cost is to be submitted to Goodman Landscape Manager for approval.

Equipment

The contractor will supply all necessary equipment required to conduct landscape maintenance in the most efficient manner and with minimal interruption to tenants. All necessary equipment will be tested and tagged to comply with all relevant OH&S legislation and regulations.

Supervision / communication

Contractor is to appoint one point of contact (Supervisor/Operation Manager) to represent the contractor for the term of the agreement. The nominated point of contact should provide regular supervision to the on-site staff undertaking the works. Goodman anticipates that this supervisor should attend all sites as a minimum weekly to ensure presentation standards and workmanship is within required KPI's. The supervisor will also to attend site meetings with the relevant Goodman Landscape Manager to inspect the site and review any landscape maintenance issues and or variations each month.

A works report will be required to be filled out by the contractor and sent to Goodman, including relevant information regarding the following (Photos, Summary of works for period, works to be completed next month, safety issues, enhancement ideas, general issues). This report should be forwarded to Goodman on a monthly basis.

APPENDIX O

Unexpected Finds Protocol – Archaeological Items

artefact

Unexpected Finds Protocol – Archaeological Items

Project: Oakdale West Estate	**Date:** Wednesday, 13 November 2019
Client: Goodman Group	**Author:** Sandra Wallace (Senior Heritage Consultant)

Project Background

On 13 September 2019 consent for the proposed Stage 1 works was granted by the Secretary of the NSW Department of Planning and Environment. The development consent is for a State Significance Development (SSD), reference number is 15_7348, referred to as SSD 15_7348.

Artefact Heritage has prepared this Unexpected Finds Protocol (UFP) to satisfy the conditions of approval for the project, as below:

Table 1: Table of conditions

Archaeology			
Condition No.		Condition	Action
D106. 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;	Refer to Unexpected Finds Protocol
	(b)	A 10 m wide buffer area around the suspected item of object must be cordoned off; and	
	(c)	The Biodiversity and Conservation Division of the Department must be contacted immediately.	
D107. 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.			Refer to the Office of Environment and Heritage 2011 *Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW: Part 6 National Parks and Wildlife Act 1974*

D108. If any archaeological relics are uncovered during construction of Stage 1, then all works in the immediate vicinity of the relic must cease immediately. Unexpected finds must be evaluated and recorded in accordance the requirements of Department of Premier and Cabinet, Heritage (former NSW OEH Heritage Division).	The significance of unexpected finds will be assessed against the seven heritage criteria as outlined in the NSW Heritage Manual, including historical, associative, aesthetic or technical, social, research potential, rarity, and representativeness criterion. The aim of assessing significance is to identify if an unexpected find is of local or state significance. The assessment will guide recommendations for further management, approvals, and mitigations measures that may be required prior to recommencement of works

This UFP should be implemented if any potentially significant Aboriginal object or Non-Aboriginal archaeological remains are identified during proposed groundworks.

Examples of types of unexpected archaeological finds include:

- Potential Aboriginal flaked items
- Concentrations of artefacts – this may take the form of a number of artefacts concentrated in a single location, typically associated with a dark silty soil deposit. Artefacts may include complete or broken glass bottles and ceramic items, animal bone and other domestic items.
- Structural remains i.e. brick or stone footings, areas of buried paving.

NSW Heritage Legislation and Protection

Three Acts afford protection to cultural heritage and archaeology in NSW:

- *National Parks and Wildlife Act 1974* (NPW Act)
- *Heritage Act 1977* (Heritage Act)
- *Environmental Planning and Assessment Act 1979* (EP&A Act).

Aboriginal sites are protected by all three acts. It is an offence to knowingly or unknowingly damage or disturb an Aboriginal site without the appropriate approval. Fines and prison sentences may apply.

Historical archaeological sites in NSW are protected by the NSW *Heritage Act 1977*. Sections 139-145 of the *Heritage Act 1977* prevent the excavation or disturbance of land known or likely to contain **historic Archaeological Relics**, unless in accordance with an excavation permit or with the conditions of approval for a State Significant Development. If an archaeological site or object is damaged or disturbed prosecution may result.

Unexpected Finds Protocol

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 material in place and protect it from harm
- Erect a 10 m exclusion zone (temporary fencing/signage)
- Take note of the details of the material and its location, take a photograph of the find *in situ*
- Inform the site manager/area supervisor, who would then inform the superintendent / principal

The superintendent / principal must:

- Notify the Biodiversity and Conservation Division: **(02) 6274 1111**
- Notify OEH on the Environment Line: **131 555**
- Call the archaeologist to identify whether additional investigation is required in accordance with the conditions of approval and OEH guidelines
- Notify OEH if confirmed as an Aboriginal object or relic
- Await further advice before proceeding with work in the area.

Artefact archaeologist contact

Artefact Heritage, Pyrmont Office **02 9518 8411,** office@artefact.net.au

Examples of Aboriginal heritage and historical archaeological remains









APPENDIX P

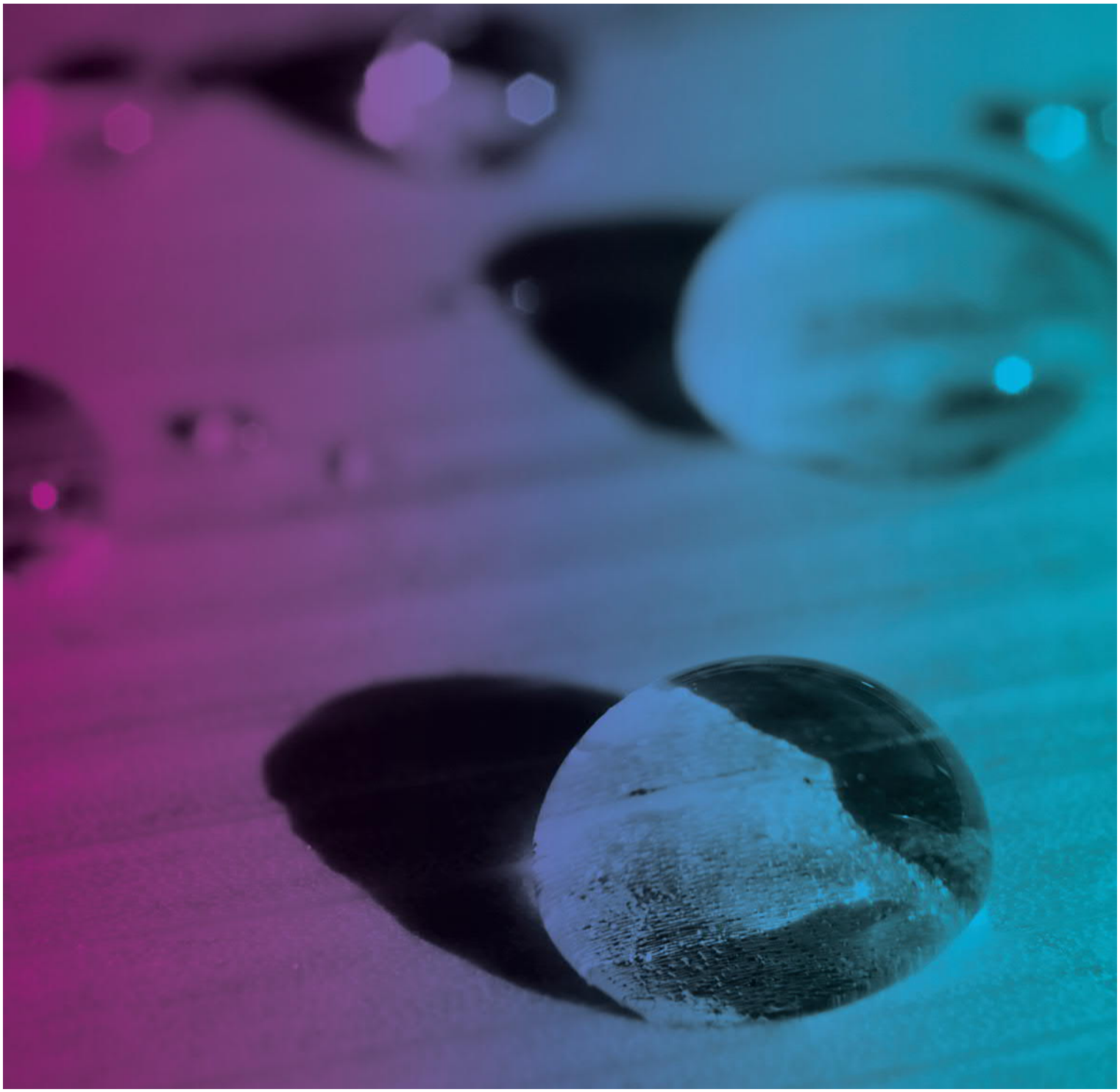
Unexpected Finds Protocol – Contamination

AECOM Imagine it. Delivered.

Goodman Property Services (Aust) Pty Ltd
22-May-2020

Lot 1A Unexpected Finds Protocol

Oakdale West Estate



Lot 1A Unexpected Finds Protocol

Oakdale West Estate

Client: Goodman Property Services (Aust) Pty Ltd

ABN: 40 088 981 793

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Quality Information

Document Lot 1A Unexpected Finds Protocol

Ref 60599325

Date 22-May-2020

Prepared by Alex Latham

Reviewed by Brad Eismen

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Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	13-May-2020	Draft	Alex Latham Associate Director	
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Glossary

General Terms	
ACM	Asbestos Containing Material
AEC	Area of Environmental Concern
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure (2013)
BTEXN	Benzene, toluene, ethylbenzene, xylenes and naphthalene
CEMP	Construction Environmental Management Plan
CoPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DQI	Data Quality Indicators
DQO	Data Quality Objectives
EPA	Environment Protection Authority
FIP	Fill Importation Protocol
Ha	Hectare
HIL	Health Investigation Level
HSL	Health Screening Level
LOR	Limit of Reporting
m	Metre
m bgs	Metres below ground surface
mg/kg	milligrams/kilogram
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PID	Photoionisation detector
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percent Difference
TPH/TRH	Total Petroleum Hydrocarbons/Total Recoverable Hydrocarbons
UFP	Unexpected Finds Protocol
UST/UPSS	Underground Storage Tank/Underground Petroleum Storage System
VOC	Volatile Organic Compound

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by Goodman Property Services (Aust) Pty Ltd (Goodman) to prepare an Unexpected Finds Protocol (UFP) for Lot 1A at Oakdale West Estate (OWE), Kemps Creek, NSW.

Lot 1A is approximately 18.73 hectares (ha) and will be developed for commercial/industrial land use. A UFP was completed by AECOM in October 2019[1] and applied to the bulk earthworks at OWE. Lot 1A will be constructed by bulk cut to fill earthworks. The earthworks plan for Lot 1A indicates that approximately 10 m of cut and up to 12 m of filling will occur.

The October 2019 UFP was a condition of consent for State Significant Development 7348. The October 2019 UFP was reviewed and approved by the Goodman appointed New South Wales Environment Protection Authority (NSW EPA) accredited (land contamination) Auditor.

A Fill Importation Protocol (FIP) was prepared by AECOM in October 2019[2]. The FIP stipulates the soil and aggregates that will be imported to the OWE for construction of the building pads, retaining walls, stormwater and sewer pipe trench backfill etc and the associated (contamination-related) testing requirements. At the completion of bulk earthworks at Lot 1A and assuming that the requirements of the October 2019 FIP and UFP have been met, it is expected that a Site Audit Statement and Site Audit Report will be issued, confirming that Lot 1A is suitable for commercial/industrial land use.

This UFP applies to Lot 1A after the completion of bulk earthworks. At the completion of bulk earthworks, the surface of Lot 1A is expected to comprise engineered shale, siltstone and clay.

Given the cut to fill of the bulk earthworks and requirement to adhere to the October 2019 UFP and FIP, at the completion of bulk earthworks, the potential for the presence of unexpected contamination at Lot 1A is considered to be low to negligible.

This UFP relates to soil contamination and applies to the construction of above-ground assets at Lot 1A (i.e. after the completion of bulk earthworks). It is understood that the development of above ground assets at Lot 1A will be undertaken under conditions of consent for SSD 7348 Mod 2.

1.1 Objectives

The objectives of this UFP are to:

- Provide a summary of the expected ground conditions.
- Provide a summary of unexpected finds that may be present, based on historical data.
- Provide management and assessment recommendations for any identified unexpected finds encountered during construction of above ground assets at Lot 1A.

1.2 Guidelines

AECOM completed this UFP with reference to the following guidelines:

- National Environment Protection Measure (NEPM), Assessment of Site Contamination (ASC) (National Environment Protection Council [NEPC], 1999 as amended (2013) (the ASC NEPM).
- NSW EPA (2017). Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition).
- NSW EPA. 2020. Consultants Reporting on Contaminated Land, Contaminated Land Guidelines.
- SafeWork NSW (2016a). How to manage and control asbestos in the workplace Code of Practice.
- SafeWork NSW (2016b). How to safely remove asbestos Code of Practice.
- WorkCover (2014). Managing asbestos in or on soil. March.

[1] Unexpected Finds Protocol, Oakdale West Estate. 31 October 2019 (60599325-OWE-UFP-20191031_3).
[2] Fill Importation Protocol, Oakdale West Estate. 31 October 2019 (60599325-OWE-FIP(CEMP)-20191031_2).

1.3 SSD 7348 Mod 2 Conditions of Consent

The SSD 7348 Mod 2 Conditions of Development Consent have been issued.

2.0 Background Information

This section provides a summary of the expected conditions at Lot 1A, based on previously prepared reports. Lot 1A and previous sampling locations are shown on **Figure 1** and **2** in **Appendix A**.

2.1 Features

Lot 1A comprised undulating grasslands, with a ridge running from the northeast to the south west. Other features included:

- Unpaved internal access roads.
- Farm dam.
- Cattle yard.
- Former area of 'envirosoil' (recycled sewage waste) application.

At the completion of bulk earthworks, Lot 1A will comprise a 'pad' of engineered shale, siltstone and clay sourced from OWE.

2.2 Current Land Use

Lot 1A is not currently used for any purpose. Bulk earthworks have commenced.

2.3 Surrounding Land Use

Land use surrounding Lot 1A includes:

- North: water supply pipelines followed by undeveloped land (bushland and former agricultural land).
- East, south and west: the future OWE, comprising former agricultural (grazing) land and a Transgrid easement.

2.4 Phase I ESA (2007)

The Phase I ESA included the (then) proposed Oakdale development, representing approximately 420 hectares. Lot 1A is situated within the Phase I ESA study area. Background data relevant to Lot 1A are summarised below:

- Lot 1A comprised rural (pastoral lands) since the early to mid1800s. This was based on historical certificates of title, aerial photographs, internet searches and anecdotal data collected in 2007.
- Soils were expected to comprise clay of the Blacktown and/or Luddenham Soil Landscape Groups, overlying Shale bedrock.
- Regional groundwater was likely to occur within sedimentary rock at depths greater than 20 metres below ground surface (m bgs), although seasonal shallow perched groundwater may exist at the soil-bedrock interface and shallow groundwater would likely be present in fluvial soils along drainage lines.
- There were no licensed dangerous goods stores at Lot 1A.
- No burial pits for animal carcasses or cattle dips were known to be present.
- The Department of Defence advised there were no records for OWE being used for military purposes of a nature that may have resulted in ordnance related contamination.
- There was no record of OWE (or nearby properties) being listed by the NSW EPA as a contaminated site under the provisions of the Contaminated Land Management Act 1997.

2.5 Targeted Phase II Assessment (2012)

The Phase I ESA (2007) identified a low potential for the presence of soil contamination across the majority of OWE however, an area of potential environmental concern (AEC) was identified at Lot 1A. The AEC was investigated in the targeted Phase II Assessment, as summarised in **Table 2**:

Table 1 AEC and Targeted Assessment

AEC	Investigation	Results
Envirosoil application	9 test pits within former envirosoil application area (TP29 to TP37). Note: 2 test pits (TP30 and TP31) located within Lot 1A. Remaining test pits located in close proximity to Lot 1A.	Concentrations of Contaminants of Potential Concern (CoPC) less than criteria or laboratory limit of reporting (LOR).

Other information from the targeted Phase II assessment included:

- Test pits were excavated to at least 0.5 m into natural soils. These were logged to comprise dark brown sandy clayey silt topsoil overlying orange to grey clays. Shale bedrock was encountered.
- Where fill materials were logged, it appeared to comprise re-worked natural soils.
- Groundwater was not observed in the test pits completed.
- No unusual odours or colouration in soil were observed at the test pits completed.
- Soil samples were collected from each test pit and samples submitted for laboratory analysis to evaluate concentrations of the inferred CoPC, which included:
    - Suite of eight metals, including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc (M8)
    - Benzene, toluene, ethylbenzene, xylenes (BTEX)
    - Total Recoverable Hydrocarbons (TRH)
    - Polycyclic aromatic hydrocarbons (PAH)
    - Organochlorine and organophosphorus pesticides (OCP, OPP)
    - Polychlorinated biphenyls (PCB).
    - Asbestos.
- Concentrations of the chemical CoPC investigated at all test pits were below the ASC NEPM 2013 Health Investigation Level for commercial/industrial land use.

Groundwater was not investigated. Based on the Phase II data, the potential for groundwater contamination to be present was considered to be low.

2.6 Surface Water and Sediment Sampling

AECOM was engaged by Goodman to undertake surface water and sediment sampling at OWE, to assess:

- The suitability of dam sediments for use in bulk earthworks (i.e. re-use at OWE).
- The suitability of dam water for use in bulk earthworks.
- The suitability of dam water for discharge to Ropes Creek.

Nine sediment samples were collected from the Dams, seven surface water samples were collected from the Dams and three surface water samples were collected from Ropes Creek. Samples were analysed by laboratories utilising NATA certified methods, to evaluate concentrations of CoPC. Laboratory results were compared to assessment criteria endorsed by the NSW EPA.

Concentrations of the CoPC investigated were below the adopted assessment criteria in the sediment samples analysed. The assessment criteria were for residential with garden accessible soil land use. These results were below the commercial/industrial land use criteria.

Concentrations of the CoPC investigated were below the adopted assessment criteria in the surface water samples analysed.

Based on the available data, AECOM considered that:

- Sediment in the Dams would be suitable for re-use at the OWE.
- Water in the Dams would be suitable for use in the bulk earthworks.

One sediment sample was collected in Lot 1A and two sediment samples were collected in close proximity to Lot 1A (refer **Figure 2**).

2.7 Unexpected Finds

During the preliminary stage of bulk earthworks, unexpected finds were identified at 13 areas at OWE. Goodman engaged Burton Contractors Pty Ltd (BC) to complete bulk earthworks and BC engaged ADE Consulting Group Pty Ltd (ADE) to investigate the unexpected finds. All unexpected finds were related to the presence or potential presence of asbestos containing material (ACM).

BC and ADE completed unexpected finds related works with reference to the AECOM *Unexpected Finds Protocol, Oakdale West Estate* (UFP) 31 October 2019. ADE classified each unexpected find as a "UFP". Some of the UFPs comprised multiple areas and consequently, 13 areas (Area 1 to Area 13) were investigated.

In relation to Lot 1A, the unexpected finds included:

- Area 2 (UFP 2): fragments of ACM on main dirt paved access track. Whilst the access track ran across Lot 1A, the fragments were not identified in Lot 1A. Soil affected with ACM was excavated and buried in the north western portion of OWE, well removed from Lot 1A.
- Area 10 (non-assigned UFP): concrete slab in cattle yard. No ACM identified by ADE. The slab was removed and approximately 40 m^3 of soil from beneath and the vicinity of the slab was excavated and stockpiled. Three stockpile samples were collected and analysed for TRH, BTEX, PAH, OCP, OPP, M8, asbestos and PCB. Asbestos was not identified by laboratory analysis and concentrations of TRH, BTEX, PAH, OCP, OPP, M8, and PCB were below ASC NEPM assessment criteria for commercial/industrial land use. The stockpile was buried in the north western portion of OWE, well removed from Lot 1A.
- Area 13 (UFP 7): bricks and concrete rubble on the ground surface in the vicinity of the cattle yard. ADE estimated Area 13 to be approximately 1600 m^2 and seven test pits were completed. No ACM was observed by ADE during inspection of the Area and sampling. Asbestos was not identified in the samples analysed. Surface soil with bricks and concrete rubble were excavated to natural material and the excavated materials placed in the topsoil mound/western bund, well removed from Lot 1A.

The location of the unexpected finds are shown on **Figure 3** in **Appendix A**.

2.8 Summary

Based on the reviewed background data:

- The potential for 'legacy' contamination to be present at Lot 1A at the completion of bulk earthworks is low.
- The potential for current activities to contaminate soil and/or groundwater are considered to be low.

In the event that contamination is identified during bulk earthworks at Lot 1A, assessment and remediation mechanisms would be implemented as per the October 2019 UFP.

3.0 Unexpected Finds

3.1 Roles and Responsibilities

Roles and responsibilities for the Lot 1A above ground asset construction works are expected to include:

Table 2 Roles & Responsibilities

Company	Role/Responsibility
Goodman	Owner/Development Manager
TBA	Project Manager/Superintendent
TBA	Construction Contractor
TBA	Environmental Consultant (contamination)

In the event that unexpected finds are encountered:

- The Construction Contractor (CC) will immediately inform the Superintendent.
- The Superintendent will inform Goodman and the Environmental Consultant.
- The Environmental Consultant will inspect the unexpected find (if required).

In the event that any identified unexpected find requires remediation, the following is noted:

- A Remedial Action Plan (RAP) should be prepared by the Environmental Consultant prior to undertaking the remediation works. The RAP will be prepared with reference to applicable NSW EPA approved guideline documents. The RAP will include disposal locations and results of testing of materials identified as contaminated and is to be submitted to the DPIE Planning Secretary, prior to removal from Lot 1A.
- Following any remediation work, a validation report will be prepared, confirming that all requirements of the RAP have been met, including documentary evidence confirming off-Site disposal of contaminated soils (refer **Section 5.0** of this document).
- The validation report will be made available to the DPIE Planning Secretary upon request.

3.2 Asbestos Containing Materials

In the unlikely event that fragments of ACM are identified during above ground asset construction, works will cease in that area and the Environmental Consultant, Goodman and/or the Site Superintendent will be contacted immediately. An exclusion zone will be established around the ACM and an appropriate occupational health and safety (OHS) protocol for entry into the exclusion zone will be implemented.

The CC should collect fragments and store in an appropriate location (e.g. plastic lined skip bin). The ACM will be disposed to an appropriately licensed landfill facility. This disposal process will be tracked via the Material Tracking Plan (refer to **Section 5.0**) and the landfill documentation included in the Validation Report. All work must be conducted in accordance with SafeWork NSW (formerly WorkCover) policy and licensing requirements.

If large quantities of ACM are identified, excavation and stockpiling is recommended. Excavation should continue until there is no visible ACM. Stockpiles should be placed on impervious material (e.g. hardstand, HDPE sheeting etc), kept moist and covered until disposed off-Site.

Validation sampling of the stockpiles to assess suitability for potential re-use is not recommended. In the event that stockpiles are not placed on impervious material, asbestos validation sampling of the stockpile footprint will be required.

Areas that are excavated will require validation sampling, to confirm removal of the ACM. Validation sampling should be done with reference to the Western Australian Department of Health (DoH) *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia* (May 2009) and ASC NEPM 2013.

With reference to WorkCover NSW (2014) *Managing Asbestos in or on Soil* and Safework NSW (2016b) *How to Safely Remove Asbestos*, implementation of the following management measures are recommended if asbestos is identified:

- Less than 10 m^2 of bonded asbestos (e.g. fragments of fibro in good condition):
  - Handpick the fragments and double wrap in plastic sheeting. Inspection/handpicking should be completed on a grid basis for a systematic approach
  - Appropriate personnel protective equipment should be worn
  - Appropriately trained personnel should be utilised
  - The area should be inspected by an appropriately qualified hygienist to confirm removal of the asbestos fragments
  - A Licensed asbestos removal contractor (Class A or B) should not be required
  - Air monitoring for asbestos fibres should not be required.
- More than 10 m^2 of bonded asbestos:
  - A Class B licensed asbestos removal contractor will be required to collect and dispose of the materials
  - Handpick the fragments and double wrap in plastic sheeting. Inspection/handpicking should be completed on a grid basis for a systematic approach
  - Appropriate personnel protective equipment should be worn
  - Appropriately trained personnel should be utilised
  - Air monitoring for asbestos fibres may not be required but should be considered if there are reasonable grounds to expect that exposure standards have been or could be exceeded
  - The area should be inspected by an appropriately qualified hygienist to confirm removal of the asbestos fragments.
- Friable asbestos is identified:
  - Isolate and secure the area by installing warning signs and barriers
  - Keep the soil damp but not flooded and if safe, cover the area with plastic sheeting
  - Class A licensed asbestos removal contractors will be required
  - Air monitoring will be required
  - The area should be inspected by an appropriately qualified hygienist to confirm removal of the asbestos
  - Friable asbestos must be stored in sealed containers
  - Asbestos waste must be transported in a covered, leak proof vehicle.

3.3 Burial Pits

In the unlikely event that burial pits relating to the former grazing activities are exposed, works will cease in that area and the Environmental Consultant, Goodman and/or the Site Superintendent will be contacted immediately. An exclusion zone will be established around the burial pit and an appropriate occupational health and safety (OHS) protocol for entry into the exclusion zone will be implemented. All carcass' and impacted soils will be removed appropriately and disposed off-Site at a registered facility. Soils remaining in the burial pit will be validated for total phosphorus (TP), filterable reactive phosphorus (FRP), total nitrogen (TN), nitrate (NO3), nitrite (NO2), total Kjeldahl nitrogen (TKN) and ammonia (NH4+). Investigation for other CoPC may be required (e.g. hydrocarbons, asbestos, M8 etc), depending on the buried materials encountered.

3.4 Other Unexpected Finds

If materials are encountered during the above ground asset construction which are significantly different to those described herein, works will cease in that area and the Environmental Consultant, Goodman and the Site Superintendent will be contacted immediately. An exclusion zone will be established around the unexpected find area and an appropriate OHS protocol for entry into the exclusion zone will be implemented. The Environmental Consultant will inspect the unexpected find and assess if it is the source or has the potential to contaminate the surrounding area. In the case that there is potential for contamination or it has occurred, all materials and impacted soil will be removed appropriately and disposed off-Site at a registered facility. Remaining soils will be validated for CoPC and any additional analytes specific to the unexpected find.

4.0 Materials Tracking Plan

A Materials Tracking Plan (MTP) will be developed and implemented by the CC. All materials handled during the above ground asset construction will be tracked in order to allow verification of the correct movement and handling. The system will track materials from 'cradle-to-grave' and will provide information on the location and quantity of all material movements both on and off-Site, so that the material being handled can be identified and accounted for.

The MTP will include confirmation of stockpile locations and contamination status by regular communication between the Environmental Consultant, the CC and the Site Superintendent. Where necessary, stockpiles and/or pit locations will be recorded by surveying, to reduce the risk of cross-contamination between stockpiles.

As part of the MTP, records shall be kept to document that backfilling of excavations and beneficial reuse of material only occurs following the successful validation of the subject materials.

The CC must implement a MTP, to appropriately control and manage the excavation of material at Lot 1A. The purpose of the MTP is to confirm that material movements are controlled at all times and placed in their correct locations.

The MTP should be based on the proformas provided in **Appendix B,** as summarised below:

- **Material Excavation Form:** a record of excavated materials on Lot 1A which includes the date, material type/description, excavated quantity, origin and intended destination.
- **Stockpile Register**: a record of all materials placed in stockpiles which includes the date, material type/description, stockpiled quantity, origin and intended end use (which will be "for characterisation", "for backfilling" or "for off-Site disposal"). Material excavated and stockpiled will be identified with a marker flag or stake clearly labelled with the stockpile source information and a stockpile ID.
- **Material Placement Form:** a record of all materials placed at Lot 1A during above ground asset construction, which includes the date, material type, quantity backfilled and origin.

Any soil and other waste materials that require off-Site disposal, must be classified in accordance with the NSW EPA (2014) *Waste Classification Guidelines*.

5.0 Validation Reporting

At the completion of the above ground asset construction, the Environmental Consultant will prepare a Validation Report (or reports) in accordance with the requirements of the NSW EPA (2020) *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines* and NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme* (3rd Edition). The Validation Report(s) will include the following information:

- An overview of the above ground asset construction carried out.
- Survey plans outlining the extent and elevations of the relevant works.
- The location of validation samples (if validation sampling is required).
- Descriptions of sampled materials (including visual and olfactory observations, if required).
- Summary tables for soil analytical results.
- NATA registered laboratory analytical certificates.
- Summary of the tracking and fate of all excavated materials (detailed in a Stockpile Register).
- Demonstration that the MTP has been implemented appropriately including copies of the CC's documentation.
- Landfill weighbridge dockets (if required).
- A summary of data reviewed and collected under the Lot 1A FIP.
- Conclusion as to the suitability of Lot 1A for the proposed land use.

6.0 References

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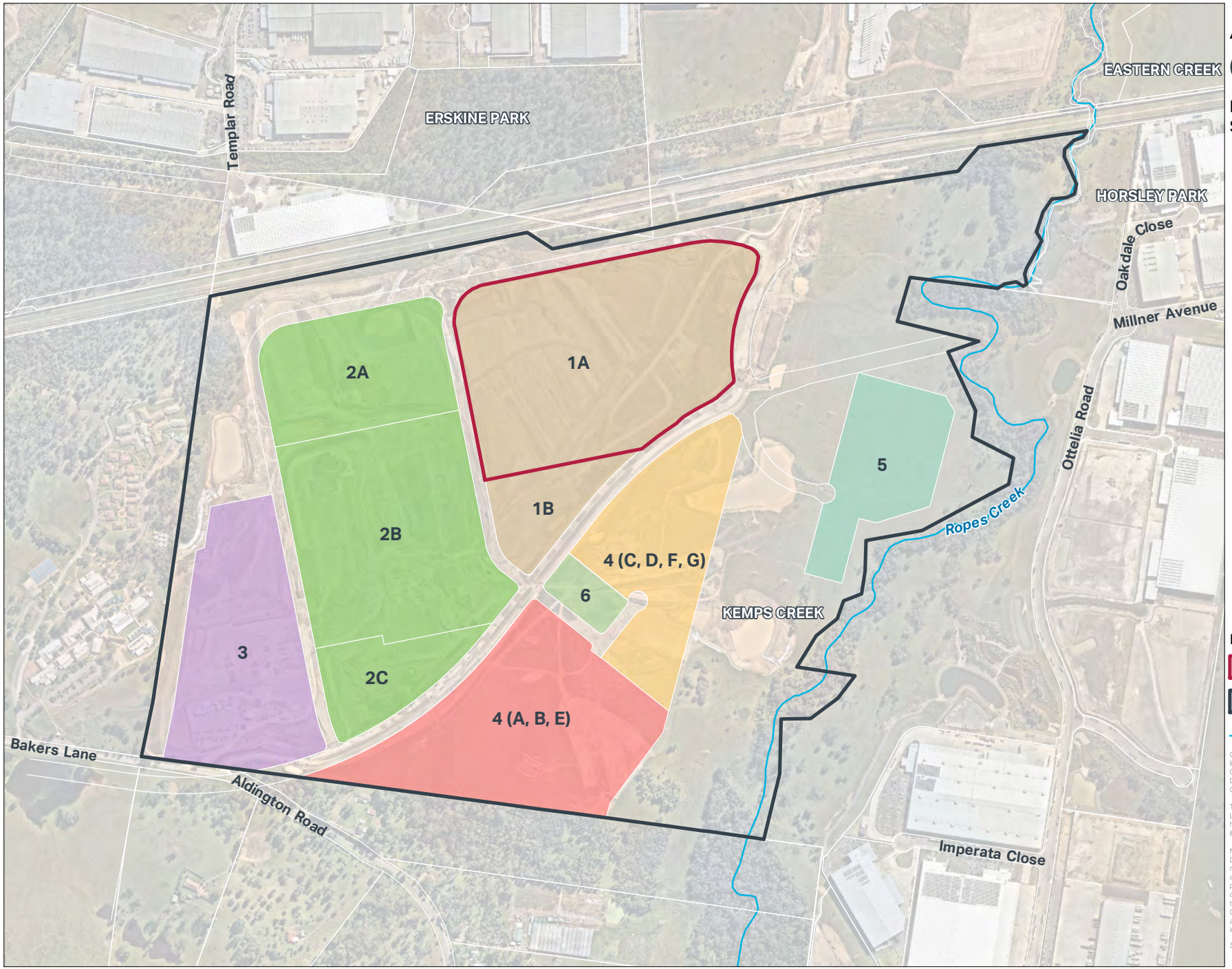
SafeWork NSW. 2016b. Code of Practice: *How to Safely Remove Asbestos*.

WA DOH. 2009. *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. May 2009.

WorkCover NSW. 2014. Managing asbestos in or on soil. March.

Appendix A

Figures



AECOM

N

0 100 200 m

FIGURE 1:
SITE LOCATION

Legend

- The Site
- Oakdale West Estate development
- Watercourse

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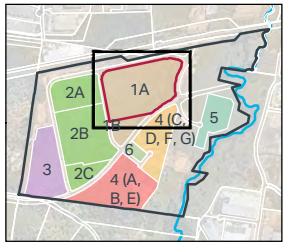


AECOM

N

0 40 80 m

FIGURE 2:
TARGETED PHASE II ESA LOCATIONS



Legend

- The Site
- Oakdale West Estate development

Sampling Locations

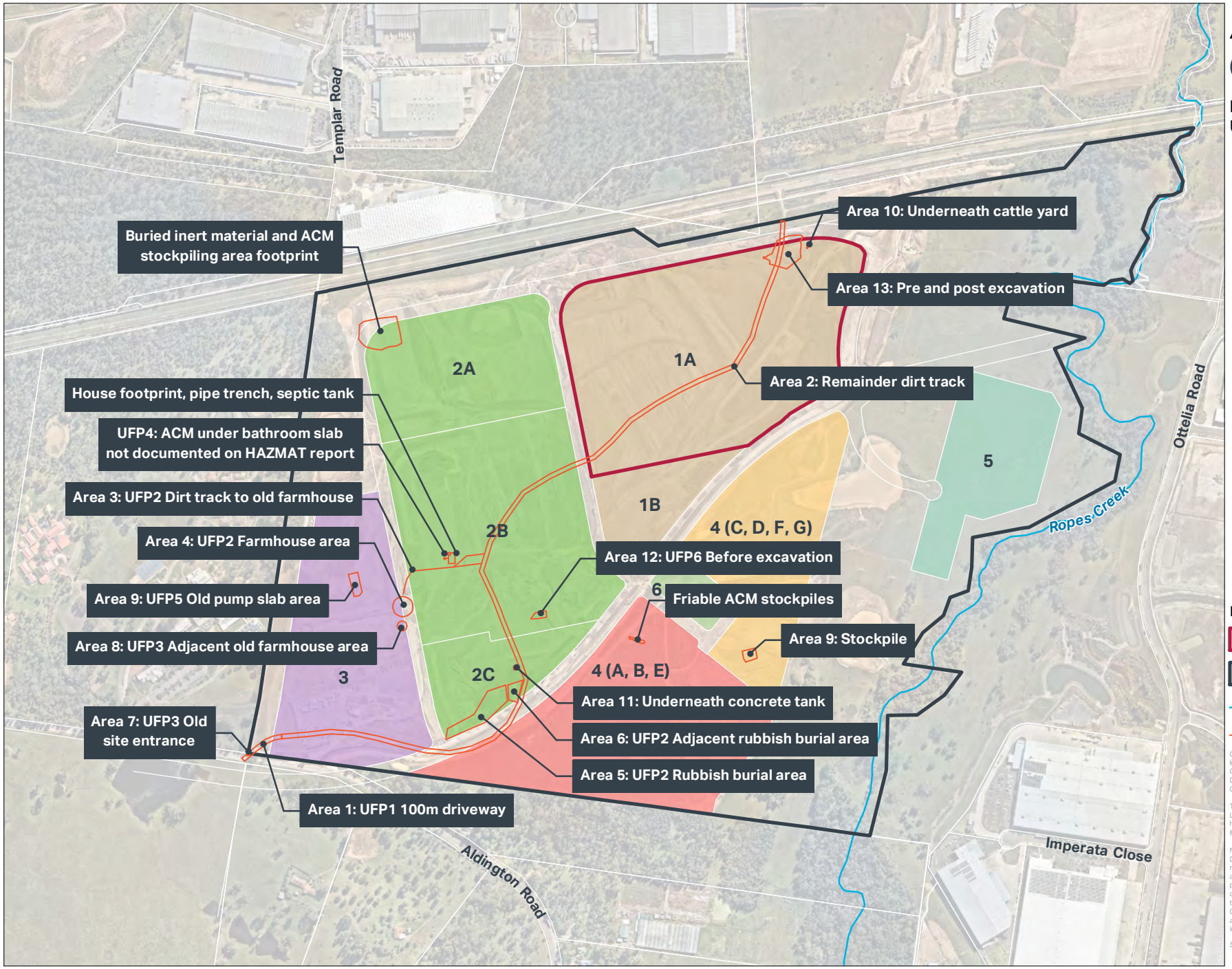
- Test pit location (AECOM, 2012)
- Surface water sample location (AECOM, 2019)
- Sediment sample location (AECOM, 2019)

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N

0 100 200 m

FIGURE 3:
UNEXPECTED FINDS

Legend

- The Site
- Oakdale West Estate development
- Watercourse
- Unexpected find

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Appendix B

Materials Tracking Register (proformas)

MATERIALS EXCAVATION FORM

DATE……

Material Type	Material Description	Source Location	Volume m^3	Intended Destination

Make notes on: Where and when the material is excavated, how long and where it is stockpiled. Take photos and sketch.

Stockpile Materials Tracking System Form

Location of Stockpile (tick one below)

Within bunded work area, designated area (stockpile grid number or excavation number…)	

The stockpile status/classification: (tick one below)

Import	
Closed – quarantined	
Export	

The material type:

The origin (excavation or another stockpile) of material in the stockpile:

The stockpile volume:

The destination (including intended end use) of material in the stockpile:

For characterization	
Backfill	
Another stockpile (describe)	
Off-site landfill	

Validation samples collected from the stockpile (as appropriate).

MATERIALS PLACEMENT FORM

Material type	Backfill quantity	Source location	Validated

MATERIALS OFF-SITE TRANSFER FORM

Source Location/ Stockpile No.	**Material Description**	**Volume (m^3) or Tons**	**Waste Classification received (date)**	**Landfill Disposal Dockets**

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