

# PROJECT WARATAH

## Construction Environmental Management Plan SSD 10397

### Prepared for:

Goodman Property Services (Aust) Pty Ltd  
Level 17  
60 Castlereagh Street  
Sydney NSW 2000

SLR Ref: 610.19215-R01  
Version No: -v3.0  
May 2020



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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.

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

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Reference	Date	Prepared	Checked	Authorised
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610.19215-R01-v2.0	28 April 2020	Megan Crowhurst	Chris Jones	Chris Jones
610.19215-R01-v1.0	7 April 2020	Samantha Hayes/ Megan Crowhurst	Renae Gifford	Carl Vincent (OWE ER)

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# 1 Introduction

## 1.1 Development Overview

Goodman Property Services (Aust) Pty Ltd (Goodman) obtained Development Consent SSD 7348 for the staged development of Oakdale West Industrial Estate (Oakdale West) comprising a warehousing and a distribution hub at Kemps Creek 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'. The Stage 1 Development includes 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 (**Figure 1**).

This Construction Environmental Management Plan (CEMP) has been prepared to cover the Stage 2 works at Lot 2B at Precinct 2 (**Figure 2**). Stage 2 was approved in April 2020 under SSD 10397 and involves establishing a warehouse and distribution facility at Lot 2B. Stage 2 Development is the next stage of development to occur at Oakdale West following the approval of Stage 1 under SSD 7348.

Stage 2 has a site area of 149,266 m<sup>2</sup> and will comprise four key components:

- Single warehouse and office building with a footprint of 51,310 m<sup>2</sup> and warehouse space over four levels to a height of 26 metres, providing a Gross Floor Area (GFA) of 192,930 m<sup>2</sup> and Gross Lettable Area (GLA) of 189,130 m<sup>2</sup>;
- Parking (truck and car); and
- Fit-out and use approval including racking and automated distribution hub infrastructure and loading bays.

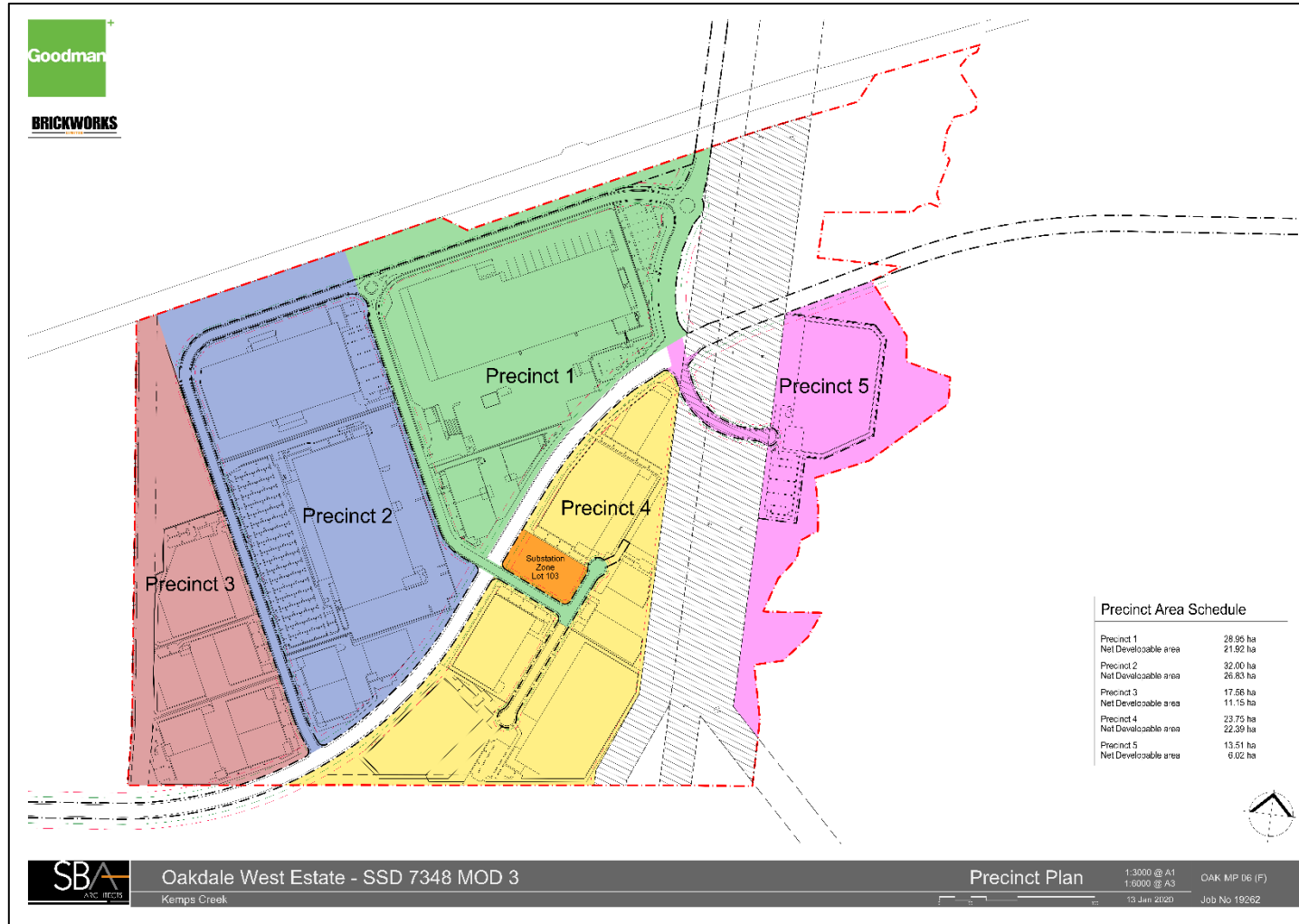
A copy of Development Consent SSD 10397 is attached as **Appendix A**.

The construction works associated with Stage 2 will be completed by Qanstruct (**Figure 3**). Where Goodman is nominated as having responsibility as the Applicant, this may be delegated to their specialist consultants and their contractors.

For the purposes of this document, the development is described in *Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (MOD 3 SSD 7348) and Stage 2 Development Application (SSD 10397) Environmental Impact Statement (EIS)* prepared by GHD (2020), including all specialist assessments and other appendices.

The CEMP has been prepared in consideration of the *Guideline for the Preparation of Environmental Management Plans* (Department of Infrastructure, Planning and Natural Resources 2004).

Figure 1 Oakdale West Precinct Plan



**SBA** ASSOCIATES  
 Oakdale West Estate - SSD 7348 MOD 3  
 Kemps Creek

Precinct Plan  
 1:3000 @ A1  
 1:6000 @ A3  
 13 Jun 2020  
 OAK\_MP\_06 (F)  
 Job No: 19262

Figure 2 Oakdale West Staging Plan

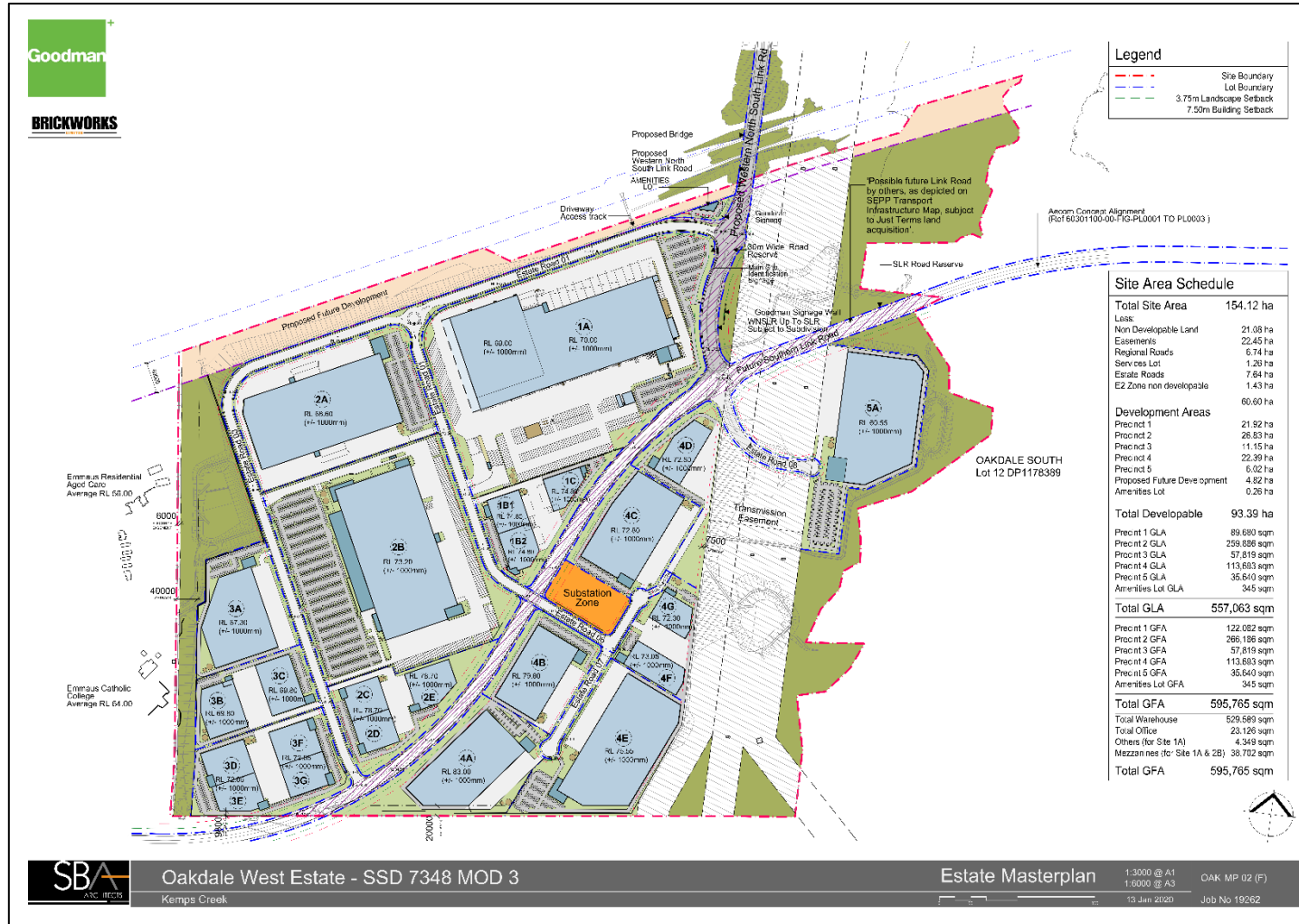
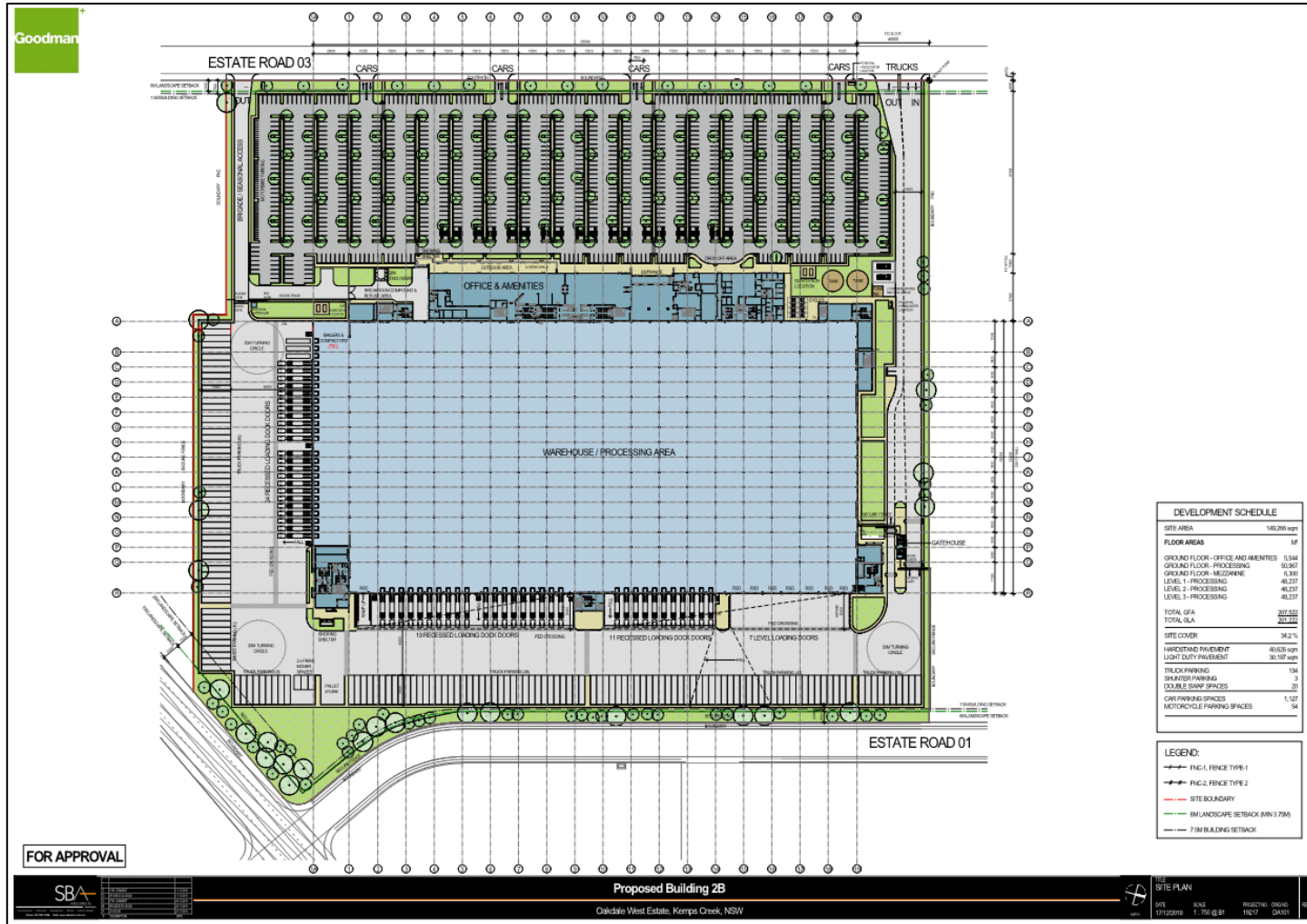




Figure 3 Stage 2 Layout





## 1.2 Construction Environmental Management Plan

The CEMP has been prepared to address the specific requirements of SSD 10397 and in consideration of the *Guideline for the Preparation of Environmental Management Plans* (Department of Infrastructure, Planning and Natural Resources 2004) and SSD 10397. As required by SSD 10397, the following specialist management plans have been prepared to support this CEMP:

- Construction Noise and Vibration Management Plan (CNVMP) (SLR) – Condition B30;
- Construction Air Quality Management Plan (CAQMP) (SLR) – Condition B40;
- Community Consultation Strategy (CCS) (SLR) – Condition B52;
- Construction Traffic Management Plan (CTMP) (Ason) – Condition B15;
- Erosion and Sediment Control Plan (ESCP), appended within the Soil and Water Management Plan (SWMP) (Rubicon Enviro) – Condition B33;
- Sustainability Management Plan (SMP) (SLR);
- Fill Importation Protocol (FIP) (AECOM); and
- Waste Management Plan (WMP) (SLR) – Condition B43.

### 1.2.1 Scope

This CEMP has been prepared to satisfy Conditions C1 – C4 of SSD 10397. The specific requirements of these consent conditions, along with where these requirements have been addressed within this CEMP, are listed in **Table 1**.

**Table 1 CEMP Context**

SSD 10397 Consent Condition	CEMP Section
C1. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
a) details of: <ul style="list-style-type: none"> <li>(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);</li> <li>(ii) any relevant limits or performance measures and criteria; and</li> <li>(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;</li> </ul>	<ul style="list-style-type: none"> <li>(i) Section 3.3</li> <li>(ii) Section 4</li> <li>(iii) Refer to specialist management plans</li> </ul>
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: <ul style="list-style-type: none"> <li>(i) impacts and environmental performance of the development; and</li> <li>(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;</li> </ul>	Section 5

SSD 10397 Consent Condition	CEMP Section
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 the development over time;	Section 6
f) a protocol for managing and reporting any: <ul style="list-style-type: none"> <li>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);</li> <li>(ii) complaint;</li> <li>(iii) failure to comply with statutory requirements; and</li> </ul>	(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. <b>Note:</b> <i>The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans</i>	Section 6
C2. The Applicant must prepare a Construction Environmental Management Plan (CEMP) in accordance with the requirements of Condition C1 and to the satisfaction of the Planning Secretary. The CEMP must be reviewed by the Environmental Representative for the OWE to ensure it is consistent with the requirements of this consent and the relevant requirements of the OWE consent.	This Plan Reviewed by OWE ER on 9 <sup>th</sup> April 2020
C3. As part of the CEMP required under Condition C2 of this consent, the Applicant must include the following:	
a) Construction Traffic Management Plan (CTMP) (see Condition B15);	Section 4.5
b) Construction Noise Management Plan (CNMP) (see Condition B30);	Sections 4.2 and 4.3
c) Erosion and Sediment Control Plan (see Condition B33);	Section 4.6
d) Construction Air Quality Management Plan (CAQMP) (see Condition B40); and	Section 4.4
e) Community Consultation and Complaints Handling.	Section 4.13
C4. The Applicant must: <ul style="list-style-type: none"> <li>a) not commence construction of the development until the CEMP is approved by the Planning Secretary; and</li> <li>b) carry out the construction of the development in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time.</li> </ul>	Noted

## 1.2.2 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 the development;
- Clearly and concisely document the commitments made in the EIS (GHD 2020) 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;
- Outlines the controls to be implemented by the contractor in order to meet those obligations;

- Clearly and concisely document the conditions imposed by SSD 10397 that are required to be implemented and/or complied with during the construction phase; and
- Assist to establish Stage 2 at Oakdale West in a manner that avoids (where possible) or minimises impact to the surrounding environment and populace.

### 1.2.3 Consultation

In accordance with SSD 10397, consultation has been undertaken with the applicable stakeholders which is summarised in **Table 2** and attached as **Appendix B**.

**Table 2 Consultation**

Condition	Comment
<p>A12. Where conditions of this consent require consultation with an identified party, the Applicant must:</p> <ul style="list-style-type: none"> <li>a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and</li> <li>b) provide details of the consultation undertaken including:                             <ul style="list-style-type: none"> <li>(i) the outcome of that consultation, matters resolved and unresolved; and</li> <li>(ii) details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.</li> </ul> </li> </ul>	<p>Evidence of consultation will be provided separately to the DPIE.</p>
<p><b>Protection of Public Infrastructure</b></p> <p>A16. Before the commencement of construction, the Applicant must;</p> <ul style="list-style-type: none"> <li>a) consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure;</li> <li>b) Prepare a dilapidation report identifying the condition of Aldington Road and Abbotts Road (between the sit and Mamre Road), including roads, gutters and footpaths; and</li> <li>c) submit a copy of the dilapidation report the Planning Secretary and Council.</li> </ul>	<p>Consultation is attached as <b>Appendix B</b>.</p>
<p><b>Landscape Management Plan</b></p> <p>B2. Prior to the commencement of construction of the development, the Applicant must prepare a detailed Landscape Plan in consultation with Council and to the satisfaction of the Planning Secretary. The plan must:</p> <ul style="list-style-type: none"> <li>a) detail the plant species and layouts for all areas of the development;</li> <li>b) include a diverse mix of species to provide canopy trees and understorey planting, to assist in achieving the objectives of Council’s Cooling the City Strategy;</li> <li>c) detail monitoring and maintenance procedures, including irrigation requirements.</li> </ul>	<p>This was undertaken as part of the CEMP for Oakdale West</p>
<p><b>Construction Traffic Management Plan</b></p> <p>B15. Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by Condition C2 and must:</p> <ul style="list-style-type: none"> <li>b) be prepared in consultation with Council, TfNSW, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School;</li> </ul>	<p>This was undertaken as part of the Construction Traffic Management Plan (see <b>Appendix J</b>).</p>

Condition	Comment
<p><b>Construction Noise Management Plan</b></p> <p>B30. The Applicant must prepare a Construction Noise Management Plan (CNMP) for the development to the satisfaction of the Planning Secretary. The CNMP must form part of a CEMP in accordance with Condition C2 and must:</p> <p>d) describe the measures to be implemented to manage noise generating activities during sensitive periods, including evenings, night-time and on Sundays, including but not limited to:</p> <p>(vii) consultation with adjacent sensitive receivers prior to and during construction</p>	<p>This was undertaken as part of the Construction Noise and Vibration Management Plan (see <b>Appendix C</b>).</p>
<p><b>Community Engagement</b></p> <p>B52. The Applicant must consult with the community regularly throughout the development, including consultation with the nearby sensitive receivers identified in Appendix 2, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy for the OWE.</p>	<p><b>Appendix G</b> and Sections 3.6, 3.7 and 4.13</p>

## 2 Development Description

### 2.1 Location

Oakdale West is legally described as Lot 11 DP 1178389 at the far south-western extent of the Western Sydney Employment Area (WSEA) within the Penrith Local Government Area (LGA).

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. 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 and agricultural.

As shown in **Figure 2**, the Stage 2 works are bordered by the future Southern Link Road to the south, Estate Road No. 1 to the east, and Estate Road No. 3 to the north and west.

### 2.2 Construction Activities

Stage 2 works will include the works to be undertaken on Lot 2B at Precinct 2 (**Figure 2**). Site works are proposed to commence in April 2020 until around September 2021.

Construction activities include:

- Installation of in-ground services;
- Pouring of concrete slabs;
- Construction of the warehouses including wall and roof cladding;
- Internal office fit outs;
- Fire services; and
- Estate roads and infrastructure.

### 2.3 Construction Hours

Construction hours will be in accordance with Conditions B21 and B22 of Development Consent SSD 10397, which are reproduced below:

*B21. The Applicant must comply with the hours detailed in Table 2, unless otherwise agreed in writing by the Planning Secretary.*

**Table 2:** Hours of Work

Activity	Day	Time
Construction	Monday – Sunday	6 am to 10 pm
Concrete works (internal to building only)	Monday – Sunday	3 am to 10 pm

*Note: Concrete works (internal to building only) include concrete pours inside Building 2B, following the installation of all building walls and the building roof.*

*B22. Works outside of the hours identified in Condition B21 may be undertaken in the following circumstances:*

- a) works that are inaudible at the nearest sensitive receivers;*
- b) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or*
- c) 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.

Noisy works to be undertaken out of hours is discussed in the Construction Noise and Vibration Management Plan (CNVMP) attached as **Appendix C**.

## 2.4 Construction Site Access

Access to Lot 2B will be through Oakdale West and will initially occur via Bakers Lane. Upon completion of the WNSLR, providing access to the work area from the north becomes available, all vehicular access will be restricted to the northern access routes, via Lenore Drive and WNSLR.

Bakers Lane is the initial primary access point for these works with workers arriving from Mamre Road to the west. All construction vehicles are to use the primary access from Bakers Lane during this period. A secondary access route is proposed from Aldington Road (to the south-west of the access gate), however the proposed alternative route will be restricted for use only when Bakers Lane is unavailable. Every effort will be made to plan deliveries outside of school zone hours along Bakers Lane. The traffic monitoring strategies outlined in the CTMP will ensure that deliveries via Bakers Lane are scheduled outside of the school zone hours in order to avoid additional conflicts between construction vehicles and the school. During school zone hours, Aldington Road shall be used for deliveries to and from the site.

Section 4.2.7 of the CTMP stipulates the following works are to be undertaken and completed prior to Aldington Road and Abbots Road being utilised as part of the construction route;

- Ensure there is a minimum seal width of 6.0m along the length of Abbots Road and Aldington Road to be utilised by construction vehicles;
- Ensure a minimum unsealed shoulder width of 1.0m on either side of Abbots Road and Bakers Road (providing for an 8m road formation);
- Provide a 1m seal to driveways only;
- Modify any sections of road within Abbots Road and/or Aldington Road where pooling water was identified within the RSA (where possible);
- Ensure a safe space on the shoulder of Aldington Road / Bakers Lane for vehicles that may attempt to overtake a vehicle slowing down / or stopped to turn into the sites access;
- Change the posted speed limits to a 60 km/h Works Zone for the entire length of Aldington Road and Abbots Road; and
- Install line marking (as noted within Appendix B) to achieve a 6.0m sealed carriageway.

## 2.5 Construction Contact Details

**Table 3** lists the key contacts during the construction of Stage 2.

**Table 3 Construction Contact List**

Role	Name	Company	Contact Details
Project Principal	Ben Milner	Goodman	0410 557 543 ben.milner@goodman.com
Site Superintendent	Dane Segail	AT&L	0405 715 306 Dane.S@atl.net.au
Contractor's Project Manager	Tim Nimmo	Qanstruct	0438 034 920 tnimmo@qanstruct.com.au
Contractor's National OHSE Manager	Michael Harvey	Qanstruct	0417 470 678 mharvey@qanstruct.com.au
Contractor's NSW OHSE Manager	Jason Baker	Qanstruct	0410 444 333 jbaker@qanstruct.com.au
Site Lead Environmental Consultant (Environmental Consultant)	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

## 3 Environmental Management Framework

### 3.1 Qanstruct's Environmental Policy

Qanstruct is committed to conducting business in an environmentally responsible way, aimed at prevention of pollution to air, ground and water. As a result, Qanstruct have developed and implemented an Environmental Policy. This Environmental Policy will be implemented throughout the duration of the construction of Stage 2.

Qanstruct's Environmental Policy is certified to ISO 14001. 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 Stage 2 are listed in **Table 4**.

**Table 4 Personnel Responsible for Environmental Management**

Role	Responsibilities
Project Principal	Environmental reporting responsibility associated with the development.
Contract Superintendent	Environmental reporting responsibility associated with the development.
Project Manager	Environmental reporting responsibility associated with the development.

Role	Responsibilities
Contractor's Project Manager	<ul style="list-style-type: none"> <li>• Overall responsibility for environmental management and compliance with SSD 10397 and relevant legislation;</li> <li>• Oversee the implementation of this CEMP and request adequate resources to enable implementation of this CEMP;</li> <li>• Report on the performance of the CEMP to the Project Manager for review and as a basis for system improvement;</li> <li>• Liaise with Goodman to keep them informed of the project's progress;</li> <li>• Coordinate environmental inspections and reporting and authority liaisons;</li> <li>• Record, notify, investigate and respond to any environmental incidents and, where necessary, develop and implement corrective actions;</li> <li>• Consult and engage with Qanstruct (preferred contractor for the construction of the WNSLR) regarding the environmental management of the Site;</li> <li>• 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.</li> <li>• Attend the Environmental Review Group (ERG) meetings if ERG meetings are deemed necessary by the Environmental Consultant; and</li> <li>• Provide adequate environmental inductions/training to employees and contractors regarding their requirements under this CEMP.</li> </ul>
Contractor's National OHSE Manager	<ul style="list-style-type: none"> <li>• Ensure the legislative and corporate safety, health and environment management measures and controls are implemented and maintained;</li> <li>• Participate in risk and hazard identification and control;</li> <li>• Participate in incident investigations and management; and</li> <li>• Participate in health and safety inspections.</li> </ul>



Role	Responsibilities
<p>Communications and Community Liaison Representative</p>	<ul style="list-style-type: none"> <li>• Lead and manage the community involvement activities, including liaison with property owners and key stakeholders;</li> <li>• Attend the ERG meetings if ERG meetings are deemed necessary by the Environmental Consultant;</li> <li>• Be the primary daily contact to the public handling of enquiries / complaints management / interface issues;</li> <li>• Be available for contact by local residents and the community at all reasonable times to answer any questions;</li> <li>• Liaise with property owners to co-ordinate access and to deal with specific property related issues arising from the upgrade works;</li> <li>• Lead the delivery of communication and community engagement strategies and plans;</li> <li>• Facilitate meetings, forums and arranging interviews to address concerns from community;</li> <li>• Provide advice and participate with the project teams to improve and enhance the delivery of communication services to the community;</li> <li>• Build, maintain collaborative and consultative working relationships with internal and external stakeholders; and</li> <li>• Be available for contact by local residents, key stakeholders and community representatives to answer queries and provide more information or feedback.</li> </ul>
<p>All employees, contractors and subcontractors</p>	<ul style="list-style-type: none"> <li>• Ensure familiarity, implementation and compliance with this CEMP and appended management plans;</li> <li>• Support Qanstruct's, AT&amp;L's and Goodman's commitment to sustainability, environmental management and compliance;</li> <li>• Work in a manner that will not harm the environment or impact on surrounding receptors;</li> <li>• Report all environmental incidents and complaints to the Project Manager without delay; and</li> <li>• Report any inappropriate construction practices and/or environmental management practices to the Project Manager without delay.</li> </ul>

### 3.3 Statutory Requirements

The Development will be constructed in accordance with SSD 10397 and also in accordance with the documents referenced under Condition A2 of the Consent:

- The EIS (GHD 2020) and RTS;
- The development layout plans and drawings attached to the Development Consent as Appendix 1, which have been sourced from the EIS (GHD 2020); and
- The management plans and mitigation measures (attached to the Development Consent as Appendix 4).

If there is any inconsistency between the plans and documentation referred to in Condition A2, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of SSD 10397 prevail to the extent of any inconsistency. The Project Manager will be notified if any inconsistencies are identified.

SSD 10397 imposes a number of environmental performance and management requirements applicable to the construction of Stage 2 at Oakdale West. The consent conditions applicable to Stage 2 works are listed in **Appendix E (N.B. The administrative conditions and conditions relating to the operational phase have not been included in Appendix E, only those conditions specific to site construction have been included).**

### 3.4 Inductions and Environmental Training

The Contractor's Project Manager will ensure that all employees and contractors involved in the construction of Stage 2 at Oakdale West 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, and 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;
- 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**);
- 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 10397 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 10397 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 the Stage 2 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 Stage 2 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 Environmental Consultant 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 will 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 5** 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 5 Regulatory Authority Contact List**

Regulatory Authority / Stakeholder	Key Contact	Contact Details	
<b>Department of Planning, Industry and Environment (DPIE)</b>	Compliance Unit	1300 305 695 or 02 9228 6111 compliance@planning.nsw.gov.au	
<b>Environment Protection Authority (EPA)</b>	Environment Line	131 555 info@environment.nsw.gov.au	
	Head office (Sydney)	02 9995 5000	
<b>Penrith City Council</b>	Main switchboard	02 4732 777 council@penrith.city	
<b>Water NSW</b>	Main switchboard	1300 662 077 Customer.Helpdesk@waternsw.com.au	
	Incident Notification Number – 24 hours	1800 061 069	
<b>NSW Public Health Unit</b>	Sydney Local Health District	Business hours: 1300 066 055 After hours: 02 9515 6111	
<b>SafeWork NSW</b>	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.	
<b>Emergency Services</b>	NSW Police NSW Fire and Rescue NSW Ambulance Service	131 444 1300 729 579 -	In case of emergency – 000

In accordance with Condition C10 of Development Consent SSD 10397, 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 C11 of SSD 10397, the DPIE will be notified in writing to [compliance@planning.nsw.gov.au](mailto:compliance@planning.nsw.gov.au) within seven days of becoming aware of any non-compliance.

C12 and C13 of SSD 10397 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 C10 and Appendix 4 of Development Consent SSD 10397 requires that the DPIE and other relevant authorities be provided with a written incident notification via email within seven day of 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 Qanstruct's Incident Report Form (**Appendix F**). A copy of the completed report will be maintained for at least five years by Qanstruct.

Condition C10 and Appendix 5 of Development Consent SSD 10397 requires that a detailed incident report be provided to the DPIE within 30 days of the incident occurring.

The Incident Report 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 C12 of SSD 10397.

#### 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 3** and the contact details for the regulatory authorities listed in **Table 5**;
- Blank hard copies of Qanstruct's Incident Report Form; and
- Copies of all completed Incident Report Forms, 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 (RMS 2018).

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 G**).

### 3.6.1 Performance Objective

To ensure that all environmental complaints in relation to the construction of the Stage 2 at Oakdale West 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 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 3**.

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 Qanstruct's Complaint Form (**Appendix H**). 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 Community Correspondence 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 3**;
- Blank hard copies of the Qanstruct's Complaint Form (see **Appendix H**); and
- Copies of all completed Complaint Forms 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 the Stage 2 at Oakdale West, 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.

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

## 4 Environmental Management Commitments

Environmental aspects with the potential to be impacted through the construction of Stage 2 at Oakdale West are addressed in the following sub-sections. These issues have specific regulatory requirements imposed by SSD 10397 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 6** lists the general environmental controls that will be implemented throughout the construction of Stage 2 to minimise the potential for adverse impacts on the local environmental and surrounding receptors.

**Table 6 General Construction Environmental Management Controls**

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
All reasonable and feasible measures will be implemented to prevent and minimise, any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.	Qanstruct	Ongoing	SSD 10397 Condition A1
All plant and equipment will be maintained and operated in a proper and efficient manner.			SSD 10397 Condition A20
All signage and fencing will be erected in accordance with the plans in the EIS and RTS.		Prior to commencing construction and ongoing	SSD 10397 Condition B7
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 10397 Condition B8
Stage 2 will be constructed within the hours outlined in <b>Section 2.3</b> .			SSD 10397 Condition B21
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: <ul style="list-style-type: none"> <li>• Site environmental inspection reports</li> <li>• Environmental monitoring data</li> <li>• Internal and external audit reports</li> <li>• Reports of environmental incidents, environmental, associated actions taken, and follow-up actions</li> <li>• Minutes of management review meetings</li> <li>• Induction and training records</li> </ul>		For 5 years after completion date	

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
The incidents and complaints management strategies contained within <b>Sections 3.5 and 3.6</b> will be implemented to ensure that any incidents and/or complaints relating to the construction activities are promptly and effectively addressed.	Qanstruct	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 relating to the Stage 2 works will be managed in accordance with the CNVMP (SLR 2020c) prepared to fulfil Condition B30 of SSD 10397, attached as **Appendix C**.

**Table 7** outlines the project specific Noise Management Levels (NMLs) to be adhered to during construction as outlined in the CNVMP (SLR 2020c).

**Table 7 Project Specific Construction Noise Management Levels**

Location	Receiver Type	Rating Background Level (RBL) <sup>1</sup>			Construction Noise Management Levels (NML) LAeq(15minute) (dBA)					
		Day	Evening	Night	Standard Construction Hours <sup>2</sup>	Day Out of Hours <sup>2</sup>	Evening Out of Hours <sup>2</sup>	Night Out of Hours <sup>2</sup>	Highly Noise Affected	
Erskine Park Residential <sup>3</sup>	Residential	37	40	39	47	42	42 <sup>5</sup>	42 <sup>5</sup>	75	
Emmaus Village Residential	Residential	39	38	36 (34 to 39 for concrete works – see discussion below) <sup>6</sup>	49	44	43	41 (39 to 44 for concrete works) <sup>6</sup>		
Kemps Creek Residential	Residential	34	35	32	44	39	39 <sup>5</sup>	37		
Any	Industrial	n/a			External 75 when in use					n/a
Any	Commercial	n/a			External 70 when in use					
Any	School <sup>4</sup>	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 NPfl.

Note 6: RBL at Emmaus Village Residential for concrete works between 2 am and 7 am taken from Wilkinson Murray Report OWE\_MOD3\_19440\_240320: *OWE - SSD 10397 Stage 2 DA – Lot 2B Out of Hours Concrete Pour Works – Assessment of Noise Impacts*, dated 24 March 2020, as detailed below.

Detailed investigation of hourly night-time RBLs at Emmaus Village Residential was undertaken for one month in February 2020 (refer to Wilkinson Murray Report OWE\_MOD3\_19440\_240320: *OWE - SSD 10397 Stage 2 DA – Lot 2B Out of Hours Concrete Pour Works – Assessment of Noise Impacts*, dated 24 March 2020) (Lot 2B OOHW Report). The Lot 2B OOHW Report detailed hourly RBLs during the period 3 am to 7 am for the purpose of determining construction NMLs for out of hours concrete pour works at Lot 2B. The measured hourly RBLs were 34 dBA from 2 am to 5 am, 35 dBA from 5 am to 6 am, and 39 dBA from 6 am to 7 am.

As such, out of hours concrete pour works between 3 am and 7 am will use the RBLs detailed above, and all other out of hours works during the night-time period (10 pm to 7 am) will use the RBL detailed in the NIA, as shown in **Table 7**.

The noise criteria outlined in Condition B23 is applicable to the operation of Precinct 2 and will form part of the Operation Environmental Management Plan (OEMP).

The environmental management controls in **Table 8** will be implemented to minimise the potential for adverse noise emissions from the construction of Stage 2.

Note: **Table 8** and **Table 11** are replicated as Table 12 in the CNVMP.

**Table 8 Environmental Management Controls for Noise**

Measure	Person Responsible	Timing / Frequency	Reference / Notes
<b>Project Planning</b>			
Less noise and vibration intensive construction techniques for rock breaking and concrete sawing will be used.	Qanstruct	Ongoing	Best practice and CNMP Section 6
Works will be completed during standard daytime construction hours outlined in <b>Section 2.3</b> .			
Truck routes to site will be in accordance with the approved Construction Traffic Management Plan.			
<b>Scheduling</b>			
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 10397 Condition B30
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 approved construction hours 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.			
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
<b>Site Layout</b>			
Compounds and worksites will be designed to promote one-way traffic and minimise the need for vehicle reversing.	Qanstruct	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			
<b>Training</b>			
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.	Qanstruct	Ongoing	Best practice and CNVMP Section 6
<b>Plant and Equipment Source Mitigation</b>			
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.	Qanstruct	Ongoing	SSD 10397 Conditions A20 & B30(d)
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).			
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.			
Minimise the simultaneous use of multiple items of high noise generating equipment.			

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.			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.			Best practice
Truck movements will be kept to a minimum i.e. trucks are fully loaded on each trip.	Qanstruct	Ongoing	
Truck driver induction training will be undertaken detailing requirements to minimise road traffic noise both onsite and on the public road network including understanding the Drivers Code of Conduct (refer to Section CNVMP 6.1).			SSD 10397 Condition B30(e)
<b>Screening</b>			
Purpose-built acoustic screening or enclosures will be installed around long-term fixed plant such as generators in site compounds.			Best practice and CNVMP Section 6
A temporary noise curtain must be installed and maintained adjacent to Emmaus Catholic Care Village for the duration of construction, unless otherwise agreed with the Planning Secretary, or until construction of the permanent noise walls are completed.	Qanstruct	Ongoing	SSD 10397 Conditions B28 & B30(d)
Concrete trucks for internal concreting works must be located to the east of Building 2B to maximise noise shielding for the Emmaus Village receivers.			SSD 10397 Condition B30(d)
<b>Community Consultation</b>			
Notifications will be provided to the affected community where high impacts are anticipated or where works outside approved construction hours are required. Notification will be a minimum of seven working days. 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. See <b>Section 3.6</b> .			



Measure	Person Responsible	Timing / Frequency	Reference / Notes
<b>Monitoring</b>			
Noise and/or vibration monitoring will be conducted (as appropriate) when noise/vibration intensive works are being undertaken in close proximity to sensitive receivers.	Qanstruct	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 of CNVMP for full details of monitoring requirements.			
Attended noise monitoring will be conducted at least quarterly to determine compliance with the construction NMLs.	Qanstruct	Ongoing	SSD 10397 Condition B30(f)
A real-time noise monitor must be maintained at the western boundary of the site for the duration of construction. Where monitoring identifies any exceedance of the NMLs, further feasible and reasonable mitigation measures must be implemented to reduce construction noise levels.	Qanstruct / Goodman		SSD 10397 Condition B29

## 4.3 Vibration

Vibration during the construction of the Stage 2 will be managed in accordance with the CNVMP (SLR 2020c) prepared to adhere to best practice standards, and attached as **Appendix C**.

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 9**.

**Table 9 Acceptable Vibration Dose Values for Intermittent Vibration**

Location	Daytime <sup>1</sup>		Night-time <sup>1</sup>	
	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 10**. 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 10 Recommended Safe Working Distances for Vibration Intensive Plant**

Plant Item	Rating / Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline) <sup>1</sup>
		Residential and Light Commercial (BS 7385) <sup>1</sup>	Heritage Items (DIN 4150 Group 3) <sup>2</sup>	
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 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 11** will be implemented to minimise the potential for adverse vibration impacts from the construction of Stage 2.

Note: **Table 8** and **Table 11** are replicated as Table 12 in the CNVMP.

**Table 11 Environmental Management Controls for Vibration**

Measure	Person Responsible	Timing / Frequency	Reference / Notes
<b>Vibration</b>			
Where works are required within the minimum working distances, vibration monitoring will be undertaken to confirm that vibration is within acceptable levels.	Qanstruct	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.			
A vibration limit of 15 mm/s PPV will be applied to the Water NSW pipelines located adjacent to the northern site boundary.			PSM Vibration Assessment PSM1541-381L (and/or requested by Water NSW)
Dilapidation surveys of the Water NSW pipelines will be carried out prior to the commencement and after completion of any vibration intensive work within 50 m of the pipelines, at a minimum. This will include as a minimum, collecting photos of the conditions of the site and existing pipeline and foundations, and mapping/identifying any existing issues or cracks, etc., prior to, during, and after the works.			
During vibration intensive construction works within 50 m of the Water NSW pipelines, vibration will be monitored in accordance with the procedures outlined in Section 8.2.2 of CNVMP.			
Water NSW will be immediately notified in the event of any impact to the pipeline so that they can inspect the pipes prior to confirming whether any remedial work is required.			
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

Measure	Person Responsible	Timing / Frequency	Reference / Notes
<p>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&amp;L and Goodman before the commencement of any vibration intensive activities.</p>	<p>Qanstruct</p>	<p>Before and after any vibration activities within minimum distances</p>	<p>Best practice and CNVMP Section 6</p>
<p>A copy of the Building Condition Inspection Reports and CNVMP will be submitted to AT&amp;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.</p>			

## 4.4 Air Quality

In accordance with Condition B40 of SSD 10397, a Construction Air Quality Management Plan (CAQMP) has been prepared by SLR (2020b) and is attached as **Appendix I**.

The CAQMP will be implemented during the construction of Stage 2 at Oakdale West 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 12** will be implemented to minimise the potential for adverse dust emissions and impacts during the construction.

Note: **Table 12** is replicated as Table 7 in the CAQMP.

**Table 12 Environmental Management Controls for Air Quality**

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
<b>Communications</b>			
The CCS 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.	Qanstruct		
The head or regional office contact information will be displayed on site signage.			
<b>Site Management</b>			
All dust and air quality incidents will be undertaken as per <b>Section 3.5</b> .	Qanstruct	Ongoing	Section 9 AQMP
All dust and air quality complaints will be undertaken as per <b>Section 3.6</b> .			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.			
<b>Preparing and Maintaining the Site</b>			
All reasonable steps to minimise dust generated will be undertaken during construction.	Qanstruct	Ongoing	SSD 10397 Condition B38
Exposed surfaces and stockpiles will be suppressed by regular watering or use of approved dust suppressants.			SSD 10397 Condition B39(a)

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Land stabilisation works will be carried out in such a way on site to minimise exposed surfaces.	Qanstruct	Ongoing	Best practice
Construction of Oakdale West will not cause or permit the emission of any offensive odour, as defined in the POEO Act.			
Dust generating activities in areas close to receptors will be closely monitored and additional mitigation applied as required to best manage potential dust emissions.			
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.			
<b>Operating Vehicle/Machinery and Sustainable Travel</b>			
Trucks associated with Stage 2 will not track dirt off site and onto Bakers Lane.	Qanstruct	Ongoing	SSD 10397 Condition B39(c)
Project access roads used by delivery trucks will be kept clean.			SSD 10397 Condition B39(d)
All on-road vehicles will comply with relevant vehicle emission standards (prescribed by the TfNSW), where applicable, and will be maintained in good condition, in accordance with manufacturer's specifications and POEO Act. This can be achieved by maintaining the vehicles and staying up to date with vehicle service requirements.			Best practice
Delivery trucks will switch off engines whilst undertaking a delivery on-site, if idling time is likely to exceed 5 minutes.			
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 and Bakers Lane.			
<b>Operations</b>			
Only cutting, grinding or sawing equipment fitted with suitable dust suppression systems, such as water sprays will be used.	Qanstruct	Ongoing	Best practice

Environmental Management Control	Person Responsible	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. It is possible that there will be shared demand for harvested water for dust suppression, within the contractors at the estate (i.e. construction contractors for Oakdale West and WNSLR). This will be managed by maintaining communication with other contractors on a weekly basis.	Qanstruct	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	
<b>Waste Management</b>			
All trucks that are carrying loads, entering or leaving the Site, will have their loads covered.	Qanstruct	Ongoing	SSD 10397 Condition B39(b)
No waste materials, timbers or any other combustible materials will be burnt on site.			Best practice
<b>Earthworks</b>			
Scopes of work will be planned in such a way to assist in minimising the duration that surfaces are left denuded.	Qanstruct	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 Qanstruct's Project Manager to identify the scope of work or source of the emission prior to undertaking and applying any additional mitigation measures.		Ongoing	
<b>Construction</b>			
Sand and other aggregates will not be allowed to dry out, unless this is required for a particular process, in which case appropriate additional control measures are put in place.	Qanstruct	Ongoing	Best practice

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
<b>Trackout</b>			
Water-assisted road sweeper(s) will be used on an as required basis on Bakers Lane should any material be tracked out of the site.	Qanstruct	Ongoing	Best practice
Record all regular inspections and maintenance undertaken of site haul routes and project related access roads (Bakers Lane) 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.			
<b>Demolition</b>			
Ensure effective water suppression of dust is used during demolition operations.	Qanstruct	Ongoing	Best practice
Bag and remove any biological debris or damp down such material before demolition.			



## 4.5 Traffic

Construction traffic will be managed in accordance with the Construction Traffic Management Plan (CTMP) (Ason 2020) prepared to fulfil Condition B15 of SSD 10397 and is attached as **Appendix J**.

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 and light vehicle movements. Projected traffic movements will be undertaken during the following periods:

- Pre-School Zone (3:00 – 8:00 am);
- Morning School Zone (8:00 – 9:30 am);
- Between School Zone (9:30 pm – 2:30 pm);
- Afternoon School Zone (2:30 – 4:00 pm);
- Post-School Zone (4:00 – 6:00 pm); and
- Evening (6:00 – 11:00 pm).

**Table 13** provides a summary of the estimated daily construction vehicle movements, as listed in the CTMP (Ason 2020). As per Condition A7, construction of the development is not anticipated to generate more than 935 vehicle trips (1,870 total vehicle movements) during the day, evening and night, on the public road network, excluding construction vehicles using the West-North-South Link Road.

**Table 13 Daily Construction Vehicle Movements**

Vehicle Type	Pre-School Zone (/hr)	Morning School Zone (/hr)	Between School Zones (/hr)	Afternoon School Zone (/hr)	Post-School Zone (/hr)	Evening (/hr)	Daily Totals
<b>Phase 1 – via Bakers Lane</b>							
Light Vehicles	134	5	14	5	105	35	<b>1,140</b>
Light Rigid	19	0	2	0	1	0	<b>107</b>
Rigid Heavy	1	0	1	0	0	0	<b>10</b>
Articulated Heavy	19	0	3	0	0	0	<b>112</b>
<b>Total</b>	<b>173</b>	<b>5</b>	<b>20</b>	<b>5</b>	<b>106</b>	<b>35</b>	<b>1,369</b>
<b>Phase 1 – via Aldington Road</b>							
Light Vehicles	0	107	0	107	0	0	<b>321</b>
Light Rigid	0	45	0	1	0	0	<b>69</b>
Rigid Heavy	0	0	0	0	0	0	<b>0</b>
Articulated Heavy	0	0	0	0	0	0	<b>0</b>
<b>Total</b>	<b>0</b>	<b>152</b>	<b>0</b>	<b>108</b>	<b>0</b>	<b>0</b>	<b>390</b>
<b>Combined Phase 1</b>							

Vehicle Type	Pre-School Zone (/hr)	Morning School Zone (/hr)	Between School Zones (/hr)	Afternoon School Zone (/hr)	Post-School Zone (/hr)	Evening (/hr)	Daily Totals
<b>Total</b>	<b>173</b>	<b>157</b>	<b>20</b>	<b>113</b>	<b>106</b>	<b>35</b>	<b>1,759</b>
<b>Phase 2 – via WNSLR to Lenore Drive</b>							
Light Vehicles	190	5	62	76	57	36	<b>1,676</b>
Heavy Vehicles	28	54	25	16	15	0	<b>400</b>
<b>Total</b>	<b>218</b>	<b>59</b>	<b>87</b>	<b>92</b>	<b>72</b>	<b>36</b>	<b>2,076</b>

The environmental management controls in **Table 14** will be implemented to ensure road safety and network efficiency during construction.

**Table 14 Environmental Management Controls for Traffic**

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Construction will not result in any vehicles queuing on the public road network.	Qanstruct	Ongoing	CTMP Section 4.3.2
All loading and unloading of materials will be carried out on Site.			CTMP Section 4.2.3
All trucks entering or leaving the Site will have their loads covered and will not track dirt onto the public road network.			CTMP Section 5.2
All endeavours will be undertaken to limit vehicular movements with the easement areas, wherever practicable.			CTMP Section 4.1.3
No vehicle circulation will be undertaken within 5 m of any transmission structure or guy-wires.			
All suppliers/haulage contractors will have Vehicle Movement Plans issued at supply agreement stage.		During the supply agreement stage	CTMP Section 4.1.4
When placing all orders, access restrictions will be notified to dispatch and included on delivery docket.		Ongoing	
Deliveries will be scheduled for outside restricted times.			
Signage will be installed as required by the CTMP.		Prior to commencing construction and ongoing	
During bulk importation periods, there will be a gate person tracking loads in/out and communicating and monitoring access/egress routes accordingly.		As required	
Any vehicles found to be in breach will undergo a driver induction on the spot and their manager/dispatch advised. Repeat offenders will be prevented from returning to site.			
All drivers will adhere to the Driver Code of Conduct outlined in Section 5 of the CTMP.	Ongoing	CTMP Section 4.2.1	

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes	
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 4.2.2	
All deliveries and materials handling/loading will occur on site at all times.	Qanstruct	Ongoing	CTMP Section 4.2.3	
Temporary exclusion fencing will be erected along the entire boundary of the site and will be maintained for the duration of the construction program. The fencing is to ensure unauthorised persons are kept out of the Site.		Prior to commencing construction and ongoing	CTMP Section 4.2.4	
Man-proof fencing will be provided along all site frontages accessible by the public to prevent unwanted cyclist access.			CTMP Section 4.2.5	
Access to the Site will be separate from the construction access associated with the WNSLR works which itself is to be constructed along the future Southern Link Road alignment.		Ongoing	CTMP Section 4.2.6	
Any Traffic Control Plans (TCPs) will be prepared by an accredited person, in accordance with the <i>Traffic Control at Work Sites Manual</i> (RMS 2018) and AS 1742.3.		As required	CTMP Section 4.2.7	
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 / Qanstruct			
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 / Qanstruct			
All drivers will drive within the legal speed limits, including driving to the conditions.	Drivers			
All drivers will not drive outside of the approved Heavy Vehicle routes. Heavy Vehicles will adhere to the routes outlined in Section 3 of the CTMP.	Drivers / Qanstruct			
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			

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes	
Drivers will not queue on roads unless a prior approval has been sought.				
No tracked vehicles will be driven on a paved road.	Drivers	Ongoing	CTMP Section 5.3	
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 / Qanstruct			
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.	Drivers			
All near-hits, crashes and scrapes will be reported to management.	Drivers / Qanstruct			
All infringements will be reported to management at the earliest opportunity.				
Vehicle defects will be reported to management.				
The authorised site access and egress route will be followed.	Qanstruct			Prior to the next vehicle use
The speed limits within the construction site will be adhered to.				Ongoing
Pre-commencement checks will be undertaken for all new traffic related plant arriving on site.				Prior to first use
Prestart inspections will be completed for all traffic related plant and equipment currently on-site.	Drivers / Qanstruct	Daily		
All construction plant will be fitted with a flashing light, fire extinguisher and reverse alarms.	Qanstruct	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.				
All maintenance requirements will be completed.				
Appropriate driver training or re-training will be arranged (where required), including: <ul style="list-style-type: none"> <li>Operator assessment as part of all inductions;</li> <li>Regular Toolbox talks on safety features, managing fatigue, approved heavy routes, driver responsibility and drink-driving (see <b>Section 3.4</b>).</li> </ul>		Ongoing		
Management will not cover or reimburse staff speeding or other infringement notices.				
Only legal use of mobile phones in vehicles while driving will be undertaken.				

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Improved fuel efficiency will be encouraged by: <ul style="list-style-type: none"> <li>• Use of other transport modes or remote conferencing, whenever practical;</li> <li>• Providing training on, and circulating information about, travel planning and efficient driving habits.</li> </ul>	Qanstruct	Ongoing	CTMP Section 5.4
If a vehicle crash occurs, the vehicle will be stopped as close as possible to the scene without hindering traffic.	Drivers / Qanstruct	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 6.1 of the CTMP.	Qanstruct	Monthly, at minimum	CTMP Section 7.1

## 4.6 Water and Soil

The following documents have been prepared to ensure appropriate soil and water management during the construction of Stage 2 at Oakdale West:

- Erosion and Sediment Control Plan (ESCP) – prepared to address Conditions D33 and D34 of SSD 10397 and is attached as Appendix A within a Soil and Water Management Plan (**Appendix K**) (Rubicon Enviro 2020). The ESCP aims to reduce the potential for risk of environmental impacts caused by erosion and sedimentation associated with project activities.
- Soil and Water Management Plan (SWMP) (Rubicon Enviro 2020) – attached as **Appendix K**. The SWMP aims to 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.
- Fill Importation Protocol (FIP) (AECOM 2019a) – attached as **Appendix L**. 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 15**.

**Table 15 Environmental Management Controls for Water and Soil**

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
<b>General</b>			
Construction will comply with section 120 of the POEO Act, which prohibits the pollution of waters.	Qanstruct	Ongoing	SSD 10397 Condition B32
All works on or adjacent to waterfront land will be carried out in accordance with the Department of Industry's (2012) <i>Guidelines for Controlled Activities on Waterfront Lands</i> .			Best practice
<b>Water</b>			
The stormwater system will be constructed in accordance with Condition B35 of SSD 10397.	Qanstruct	Ongoing	SSD 10397 Condition B36
If groundwater is intersected during construction the following will be undertaken: <ul style="list-style-type: none"> <li>• Obtain the necessary water licences or approvals from Natural Resource Access Regulator (NRAR);</li> <li>• Develop a Groundwater Management Plan (GMP) for the testing, dewatering, storage, movement and treatment of groundwater, to the satisfaction of NRAR.</li> </ul>	Goodman / Qanstruct	If required	SWMP Section 4.5
Irrigation and toilet flushing will be plumbed to rainwater tanks.	Qanstruct	Ongoing	SWMP Section 2
Consideration will be given to other possible rainwater reuse opportunities such as for truck washing.			SSD 10397 Condition B36

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes	
Gross Pollutant Trap (GPT) will be installed within each development site on the final downstream stormwater pit prior to discharge.	Qanstruct	Ongoing	SWMP Section 3.2	
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	
<b>Erosion and Sediment Control</b>				
The ESCP will be implemented to ensure stormwater flows do not increase in any downstream areas.	Qanstruct	Prior to commencing construction and ongoing	SSD 10397 Condition B33	
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.		As required	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.		Ongoing		Section 3.4 and 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.				
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.				

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
A procedure will be established to monitor forecast weather events and implementing response plans for significant wind or rainfall events and flooding.	Qanstruct	Ongoing	ESCP Section 7.4
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
<b>Fill Importation</b>			
Only Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM) or other material approved in writing by EPA will be brought onto the site.	Qanstruct	Ongoing	FIP Section 1.3
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 ( <b>Appendix L</b> ) 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.			
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 will cease and will only recommence when the Contractor is satisfied that the issue has been addressed.			
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 ( <b>Appendix L</b> ).		Weekly	FIP Section 3



## 4.7 Waste

Construction waste will be managed in accordance with the Waste Management Plan (WMP) (SLR 2020e) prepared to fulfil Condition B42 of Development Consent SSD 10397 and attached as **Appendix M**. The WMP developed for the EIS has been used in this CEMP.

The environmental management controls in **Table 16** will be implemented to minimise the potential for adverse waste impacts from the construction of Stage 2.

**Table 16 Environmental Management Controls for Waste**

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes	
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.	Qanstruct	Ongoing	SSD 10397 Condition B42	
The WMP will be implemented for the duration of construction and operation of Stage 2.			SSD 10397 Condition B43	
All liquid and non-liquid wastes to be taken off Site will be assessed and classified in accordance with the latest version of EPA's <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (EPA 2014) and dispose of all wastes to a facility that may lawfully accept the waste.			SSD 10397 Condition B44	
Waste generated outside the Site will not be received at the Site for storage, treatment, processing, reprocessing, or disposal.			SSD 10397 Condition B45	
Suitable measures will be implemented to manage pests, vermin and declared noxious weeds on the Site.			Best Practice	
The Site will be inspected on a regular basis to ensure that the pest/weed/vermin measures are working effectively, and that they are not present on Site in sufficient numbers to pose an environmental hazard or cause the loss of amenity in the surrounding area.				
<b>Waste Avoidance</b> In accordance with Council's Development Control Plan (DCP) and better practice waste management waste avoidance measures listed in the WMP should be followed.				WMP Section 5.5
<b>Reuse, Recycling and Disposal</b> In accordance with Council's DCP and better practice waste management waste reuse, recycling and disposal measures listed in the WMP should be followed.				WMP Section 5.6
<b>Waste Storage and Servicing</b> In accordance with Council's DCP and better practice waste management waste reuse, recycling and disposal measures listed in the WMP should be followed.			WMP Section 5.7	

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
All staff, including sub-contractors and labourers, employed during the site preparation and construction phases of the Project must undergo induction training regarding waste management for the Site.	Qanstruct	Ongoing	WMP Section 5.8
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.			WMP Section 5.9

## 4.8 Sustainability

A Sustainability Management Plan (SMP) has been prepared by SLR (2020d) to accompany the EIS and is attached as **Appendix N**. The SMP outlines the sustainability mitigation measures to ensure the long term sustainability of resource use through more efficient and cost effective energy use practices.

The sustainability controls in **Table 17** will be implemented during the construction of Stage 2.

**Table 17 Environmental Management Controls for Sustainability**

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
The SMP will be progressively improved and updated on an annual basis, or as required, to reflect changes to the Energy Management System and to promote continual improvement of energy management.	Qanstruct	Annually	SMP Section 8.1.1
To enable effective review of energy usage, sub-metering will be implemented for all major energy consuming processes or items of equipment including sub-metering for all loads greater than 100 kVA.		Ongoing	SMP Section 8.1.2

## 4.9 Visual Amenity

**Table 18** outlines the mitigation measures to be implemented during construction to manage the impacts to visual amenity.

**Table 18 Environmental Management Controls for Visual Amenity**

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
Lighting will comply with the latest version of AS 4282.	Qanstruct	Prior to commencing construction and ongoing	SSD 10397 Condition B5
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 / Qanstruct		SSD 10397 Condition B6
All signage and fencing will be erected in accordance with the plans included in the EIS and RTS.	Qanstruct		SSD 10397 Condition B7
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 10397 Condition B8
Suitable measures will be implemented to manage pests, vermin and declared noxious weeds on the Site.		Ongoing	
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.	Qanstruct / ER	During Environmental Consultant inspections	Best practice

## 4.10 Flora and Fauna

A Flora and Fauna Management Plan (FFMP) has been prepared by Ecologique (2020) and is attached as **Appendix O**. The FFMP outlines mitigation measures relevant to manage potential impacts to biodiversity during both construction and operation.

**Table 19** outlines the mitigation measures to be implemented during construction to manage the impacts to flora and fauna.

**Table 19 Environmental Management Controls for Flora and Fauna**

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
<b>Wildlife Protection</b>			
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	FFMP Table 3.1 (FF1)
Vehicle and mobile plant operators shall remain vigilant when entering and exiting the works area, particularly at dusk and dawn. Specifically: <ul style="list-style-type: none"> <li>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.</li> <li>All on site personnel shall alert vehicle/mobile plant entering or exiting the works area if kangaroo movement is observed (via two way radio).</li> </ul>	Management / Contractors / Employees	Ongoing throughout construction	FFMP Table 3.1 (FF2)
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	FFMP Table 3.1 (FF3)
<b>Weed, Pests and Pathogen Management</b>			
The following hygiene procedures are to be implemented to avoid the introduction and/or spread of soil borne pathogens and weeds: <ul style="list-style-type: none"> <li>Minimise work during wet/rainy periods;</li> <li>Vehicles, plant and machinery are to be clean and free of soil on arrival to the works area;</li> <li>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;</li> <li>Mud spilt on roads to be immediately removed by a road sweeper.</li> </ul>	Management / Contractors / Employees	Ongoing throughout construction	FFMP Table 3.1 (FF5)

## 4.11 Hazardous Goods and Contamination

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 20**.

**Table 20 Environmental Management Controls for Dangerous Goods**

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
The quantities of dangerous goods stored and handled at the Site will be below the threshold quantities listed in <i>Hazardous and Offensive Development Application Guidelines - Applying SEPP 33</i> at all times.	Qanstruct	Ongoing	SSD 10397 Condition B47
Chemicals, fuels and oils will be stored in bunded areas in accordance with relevant Australian Standards and/or the <i>Storing and Handling of Liquids: Environmental Protection – Participants Manual</i> (Department of Environment and Climate Change 2007).			SSD 10397 Condition B48
An unexpected contamination protocol (UCP)(AECOM 2019b) has been prepared to ensure that potentially contaminated material is appropriately managed.		Prior to commencing construction	Best practice
Any material identified as contaminated will be disposed off site, with the disposal location and results recorded prior to its removal from the site.	Qanstruct / Environmental Representative	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.	Qanstruct	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.			

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
All employees and contractors required to use potentially dangerous goods will be appropriately trained in the proper storage, use and handling.	Qanstruct	Ongoing	Best practice
Any liquid wastes or dangerous goods waste 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.			
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 applicable EPA guidelines and the UFP – Contamination.	Qanstruct / Project Manager / AECOM	As required	UFP – Contamination Section 3.1
In the event that unexpected contamination finds are encountered: <ul style="list-style-type: none"> <li>• Qanstruct will immediately inform the Project Manager.</li> <li>• The Project Manager will inform Goodman and AECOM.</li> <li>• AECOM will inspect the unexpected find (if required).</li> </ul>			
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 UCP will be implemented.			
In the unlikely 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 UCP will be implemented.			
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 UCP 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 UCP.	Qanstruct	Ongoing	UFP – Contamination Section 4
AECOM will prepare a Validation Report in accordance with the requirements of the NSW OEH (2011) <i>Guidelines for Consultants Reporting on Contaminated Sites</i> and EPA (2017) <i>Guidelines for the NSW Site Auditor Scheme (3rd Edition)</i> .	Qanstruct / AECOM	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

A Bushfire Protection Assessment has been prepared by Australian Bushfire Protection Planners Pty Limited (2020) and is attached as **Appendix Q**.

The environmental controls that will be implemented to minimise the potential for environmental incidents relating to fire are presented in **Table 21**.

**Table 21 Environmental Management Controls for Fire Safety and Emergency**

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes	
The construction will comply with the relevant provisions of <i>Planning for Bushfire Protection</i> (NSW Rural Fire Service 2006).	Qanstruct	Ongoing	SSD 10397 Condition B46	
Stage 2 will be constructed in accordance with <b>Appendix Q</b> Bushfire Protection Assessment.				
Stage 2 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 <b>Table 5</b> will be contacted.			In the event of an emergency	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	
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	Best practice
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.				
Waste material will not be burnt on site and no fires of any kind will be lit on site.				



## 4.13 Community

In accordance with Condition C3 and B52 of SSD 10397, a CCS has been prepared by SLR (2020a) and is attached as **Appendix G**.

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. Any CEMP prepared for works that are part of a future Development Application will be prepared in consultation with the relevant Government agencies, infrastructure and utility providers, including but not limited to, TransGrid, Endeavour Energy, Water NSW and TfNSW, where relevant for each stage in accordance with C18(b) SSD 10397.

The community management controls in **Table 22** will be implemented during the construction of Stage 2.

**Table 22 Environmental Management Controls for the Community**

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
Sensitive receptors will be consulted prior to actions likely to generate noise, vibration, air quality of traffic impacts.	Communications and Community Liaison Representative	No less than 48 hours prior	CCS Section 3.2
Up to date information on current and proposed works will be accessible to stakeholders and the wider public on the project web page.		Ongoing	
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, workshops and/or forums 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
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 if deemed necessary by the Environmental Consultant.	Environmental Consultant	As required at the discretion of the Environmental Consultant	

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
Individual Community Meetings will be held with stakeholders as required to discuss a specific item.	Community Consultation Team	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.		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 <b>Section 3.4</b> .	Qanstruct		
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 8 of the CCS.		Ongoing	

## 5 Monitoring and Reporting

### 5.1 Environmental Monitoring and Inspections

**Table 23** summarises the monitoring requirements for the construction of Stage 2 at Oakdale West as set out in SSD 10397 and relevant management plans.

**Table 23 Monitoring and Inspection Requirements**

Monitoring / Inspection Requirement	Person Responsible	Timing / Frequency	References / Notes
<b>General</b>			
Inspection and maintenance of all plant and equipment items to ensure optimal operating condition.	Qanstruct	As specified by the manufacturer / supplier	SSD 10397 Condition A20
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 10397.	Environmental Consultant	Weekly	SSD 10397 Condition C1(a)(iii)
Compliance monitoring and reporting will be undertaken in accordance with the Compliance Monitoring and Reporting Program.		Ongoing	SSD 10397 Condition C14
All monitoring will be undertaken in accordance with Division 9.4 of Part 9 of the EP&A Act.	Environmental Consultant / Qanstruct		SSD 10397 Condition C17
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.	Qanstruct	Weekly	Best practice
<b>Noise and Vibration</b>			
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.	Qanstruct	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	Person Responsible	Timing / Frequency	References / Notes
Vibration will be monitored continuously within the minimum working distances (see <b>Table 11</b> ) where vibration intensive works are proposed to be undertaken within the minimum working distances of sensitive receivers or structures.	Qanstruct	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	
Geophones will be installed by an acoustic consultant on top of each pipeline at the centre point between two saddles closest to the works.		Prior to commencing construction and 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	
<b>Air Quality</b>			
Visual inspections will be undertaken to assess 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	Qanstruct	Daily	CAQMP Section 8
Meteorological data recorded at Horsley Park AWS will be monitored and reviewed on a daily basis.			
The air quality monitoring program currently in place at Oakdale West will continue to be implemented throughout the construction of Stage 2.	Goodman	Ongoing	CAQMP Section 10
<b>Traffic</b>			
Deliveries volumes will be monitored against the volumes outlined within report.	Qanstruct	Ongoing	CTMP Section 7.1
<b>Soil and Water</b>			
Any material transported onto road surfaces to be removed.	Qanstruct	Daily and before rainfall	Best practice
Stabilisation measures will be monitored, and prompt and effective revegetation and permanent stabilisation promoted.	Qanstruct	Ongoing	ESCP Section 7.4

Monitoring / Inspection Requirement	Person Responsible	Timing / Frequency	References / Notes
<b>Waste</b>			
As per Council's DCP, records of waste volumes recycled, reused or contractor removed are to be maintained.	Qanstruct	Daily	WMP Section 5.10
Visual inspections of waste storage areas will be undertaken.			
<b>Visual Amenity</b>			
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.	Qanstruct / ER	During Environmental Consultant inspections	Best practice
<b>Community</b>			
The following will be monitored: <ul style="list-style-type: none"> <li>• Total number of complaints</li> <li>• Number of complaints relating to lack of consultation / misinformation / confusion</li> <li>• Number of enquiries relating to information previously disseminated</li> <li>• Number of complaints / enquiries within defined categories based on theme or subject</li> <li>• Response timeframes</li> </ul>	Communications and Community Liaison Representative	Monthly	CCS Section 6.1

## 5.2 Reporting

**Table 24** summarises the reporting requirements for the construction of the Stage 2 at Oakdale West as set out in SSD 10397 and relevant management plans.

**Table 24 Reporting Requirements**

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
<b>General Environmental Performance</b>			
Compliance monitoring and reporting will be undertaken in accordance with the Compliance Monitoring and Reporting Program.	Goodman	Ongoing	SSD 10397 Condition C14
Compliance Reports of the Development will be carried out in accordance with the <i>Compliance Reporting Post Approval Requirements</i> (DPE 2018).		As set out in the DPE guidelines	SSD 10397 Condition C15
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 10397 Condition C16
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 10397.		48 hours prior to commencing construction and ongoing	SSD 10397 Condition C18
Qanstruct will report environmental performance during regular management meetings and/or 'toolbox talks'. Items to be discussed include: <ul style="list-style-type: none"> <li>Results of any monitoring activities undertaken</li> <li>Any environmental incidents that have occurred during the previous period, including the management / corrective actions taken</li> <li>Any complaints that have been received during the previous period, including any management / corrective actions taken</li> </ul>	Qanstruct	Weekly	Section 3.4

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
A copy of all environmental records will be maintained, including: <ul style="list-style-type: none"> <li>Site environmental inspection reports</li> <li>Environmental monitoring data</li> <li>Internal and external audit reports</li> <li>Reports of environmental incidents, environmental, associated actions taken, and follow-up actions</li> <li>Minutes of management review meetings</li> <li>Induction and training records</li> </ul>	Qanstruct	For at least 5 years after completion	Best practice
Meteorological data including rainfall will be recorded.		Daily	
<b>Incident / Non-Compliance Reporting</b>			
A written incident notification will be emailed to the DPIE at compliance@planning.nsw.gov.au and include the requirements outlined in Appendix 5 of SSD 10397.	Goodman / Qanstruct	Within 7 days after Goodman becomes aware of the incident	SSD 10397 Condition C10 and Appendix 4
A detailed incident report will be provided to the Planning Secretary and include the requirements outlined in Appendix 5 of SSD 10397.		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 10397 Condition C11
A register of all complaints and non-compliances will be kept.		For at least 5 years after completion	Best practice
<b>Noise</b>			
Monitoring reports will be produced following each monitoring survey.	Qanstruct	Following each monitoring survey	CNVMP Section 8.1
<b>Vibration</b>			
Vibration monitoring reports will be prepared at the following stages: <ul style="list-style-type: none"> <li>Prior to commencement of works (baseline report)</li> <li>Monthly during works (at a minimum)</li> <li>Within one week of an exceedance of the vibration limit alarm level (15 mm/s PPV)</li> <li>Upon completion of construction</li> </ul>	Qanstruct	Monthly at minimum	CNVMP Section 8.2
<b>Water and Soil</b>			
The Environmental Consultant will make a written statement to the Planning Secretary confirming the erosion and sediment controls are implemented and operational.	Environmental Consultant	Prior to commencing bulk earthworks	SSD 10397 Condition B35

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
Prepare and submit a Materials Tracking Register in accordance with the FIP.	Qanstruct	Weekly	FIP Section 3
<b>Waste</b>			
Results of the daily inspections will be reported to the Project Manager.	Qanstruct	Weekly	WMP Section 5.10
Waste records are to be provided to Goodman.		Quarterly	
<b>Hazardous Goods and Contamination</b>			
Any material identified as contaminated will be disposed off site, with the disposal location and results of testing recorded prior to its removal from the site.	Qanstruct / Environmental Consultant	As required	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 applicable EPA guidelines and the UFP – Contamination.	Qanstruct		UCP Section 3.1
<b>Community</b>			
A summary of all community results will be reported to the Environmental Consultant and during project team meetings. The information will also be reported on the webpage.	Communications and Community Liaison Representative	Monthly	CCS Section 6.2



## 5.3 Auditing

**Table 25** summarises the auditing requirements for the Stage 2 works as set out in SSD 10397 and relevant management plans.

**Table 25 Audit Requirements**

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
All audits will be undertaken in accordance with Division 9.4 of Part 9 of the EP&A Act.	Environmental Consultant / Qanstruct	Ongoing	SSD 10397 Condition C17
A project audit will be undertaken to ensure all aspects of the project are implemented.	Environmental Consultant	Within 6 months of the commencement of construction	Environmental Consultant recommendation
<b>Soil and Water</b>			
An audit program will be developed: <ul style="list-style-type: none"> <li>Noting the condition of installed erosion and sediment controls onsite</li> <li>Detailing maintenance requirements (if any) for installed erosion and sediment controls</li> <li>Recording the volumes of sediment removed from sediment controls and sediment traps, where applicable</li> <li>Recording the location to where extracted sediments are disposed.</li> </ul>	Qanstruct	Weekly, before extended shut-down and after rainfall events over 10 mm	ESCP Section 7.7 and SWMP Section 7.3
<b>Waste</b>			
Waste audits will be undertaken 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.	Qanstruct	Quarterly	WMP Section 5.10

## 5.4 Contingency Management Plan

**Table 26** 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 26 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: <ul style="list-style-type: none"> <li>• Deployment of additional water sprays, water trucks etc.</li> </ul>	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 <sup>2</sup> /month	Trigger	Dust deposition rates are less than 4 g/m <sup>2</sup> /month at all the dust gauges.	Dust deposition rate greater than 4 g/m <sup>2</sup> /month is recorded by any of the dust gauges.	Dust deposition rates greater than 4 g/m <sup>2</sup> /month are recorded by two or more dust gauges for two months in a row.
	Response	Continue monitoring program as normal.	<ul style="list-style-type: none"> <li>Analyse data to try to identify the source(s) of dust.</li> <li>Review operations to reduce dust emissions from the identified key source(s). Implement any additional mitigation measures as required, such as additional watering.</li> </ul>	<ul style="list-style-type: none"> <li>Review and investigate construction activities and respective control measures for the monitoring period.</li> <li>If it is concluded that construction activities 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), submit an incident report to government agencies.</li> </ul> <p>Note: Real time suspended particulate monitoring is also to be undertaken, to assist in managing dust from onsite activities (see <b>Section 5.1</b>).</p>

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.	<ul style="list-style-type: none"> <li>• Report the complaint to the regulator, in line with complaints handling procedure.</li> <li>• Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc.), where appropriate.</li> </ul>	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 <sub>10</sub> )	Trigger	Running 24-hour average PM <sub>10</sub> concentrations < 40 µg/m <sup>3</sup>	Running 24-hour average PM <sub>10</sub> concentrations > 40 µg/m <sup>3</sup> but < 50 µg/m <sup>3</sup>	Running 24-hour average PM <sub>10</sub> concentrations > 50 µg/m <sup>3</sup>
	Response	Continue monitoring program as normal.	<p>Review and investigate construction activities and respective control measures.</p> <p>Where appropriate, implement additional remedial measures, such as:</p> <ul style="list-style-type: none"> <li>• Deployment of additional water sprays, water trucks etc</li> <li>• Relocation or modification of dust-generating sources</li> <li>• Record findings of investigations and actions taken to reduce dust levels</li> <li>• Continue to closely monitor dust levels to ensure they are decreasing</li> </ul> <p>If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the site to minimise cumulative impacts, but also record details of the cause of the elevated background levels.</p>	<ul style="list-style-type: none"> <li>• Review and investigate construction activities and respective control measures for the monitoring period, in an air pollution incident report.</li> <li>• If it is concluded that construction activities 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), submit an incident report to government agencies.</li> </ul>

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Construction movements	Trigger	Construction traffic does not exceed the permissible volume and time constraints.	Construction traffic just exceeds the permissible volume and time constraints.	Construction traffic far exceeds the 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: <ul style="list-style-type: none"> <li>• Temporary halting of activities and resuming when conditions have improved</li> <li>• Review CTMP and update where necessary</li> <li>• Provide additional training</li> </ul>	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: <ul style="list-style-type: none"> <li>• Temporary halting of activities and resuming when conditions have improved</li> <li>• Stop all transportation into and out of the site</li> <li>• Review CTMP and update where necessary</li> <li>• Provide additional training</li> </ul>

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Construction Movements	Trigger	Construction traffic does not utilise Bakers Lane during School Peaks	Construction traffic utilises Bakers Lane close to School Peaks	Construction traffic utilises Bakers Lane during School Peaks
	Response	No response required Continue monitoring program	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: <ul style="list-style-type: none"> <li>• Review vehicles arriving to site and remind them of the strict exclusion time periods</li> <li>• Provide additional training (including toolbox talks and further notification of Driver Code of Conduct)</li> </ul>	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: <ul style="list-style-type: none"> <li>• Stop all transportation into and out of the site.</li> <li>• Review CTMP and update where necessary.</li> <li>• Provide additional training (including toolbox talks and further notification of Driver Code of Conduct).</li> </ul>



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: <ul style="list-style-type: none"> <li>• Temporary halting of activities and resuming when conditions have improved</li> <li>• Stop all transportation into and out of the site</li> <li>• Review CTMP and update where necessary</li> <li>• Provide additional training</li> </ul>
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 on 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 undertaken 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: <ul style="list-style-type: none"> <li>• Deployment of additional water sprays</li> <li>• Relocation or modification of dust-generating sources</li> <li>• Check condition of vibrating grids to ensure they are functioning correctly</li> <li>• Temporary halting of activities and resuming when conditions have improved</li> </ul>	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 Environmental Consultant inspections identified no waste outside of dedicated bins and stockpiles.	Weekly Environmental Consultant inspections identified minimal waste outside of dedicated bins and stockpiles.	Weekly Environmental Consultant 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 <b>Section 3.6</b> and the CCS is implemented.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
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 UCP (AECOM 2019b).	Stop work immediately and a RAP is to be prepared. A validation report is to be prepared following remediation.
Heritage Find	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 follow unexpected finds protocol as outlined in SSD10397 B49.	Stop work and follow unexpected finds protocol as outlined in SSD10397 B51. Heritage item to be salvaged and removed from site by a qualified archaeologist.
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.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
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.

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## 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 C8 of SSD 10397 also states that all strategies, plans and programs required under SSD 10397 will be reviewed within three months of:

- The submission of a Compliance Report under Condition C15;
- The submission of an incident report under Condition C10;
- The approval of any modification of the conditions of the consent; or
- The issue of a direction of the Planning Secretary under Condition A3 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 C9 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

AECOM (2020a) *Fill Importation Protocol*

AECOM (2020b) *Unexpected Finds Protocol – Contamination*

Ason (2020) *Construction Traffic Management Plan*

Australian Bushfire Protection Planners Pty Limited (2020) *Bushfire Protection Assessment for the Oakdale West SSD 7348 Modification 3 and the proposed SSD 10397 Stage 2 Development Application*

Department of Infrastructure, Planning and Natural Resources (2004) *Guideline for the Preparation of Environmental Management Plans*

Ecologique (2020) *Oakdale West Estate Stage 2 SSD 10397 Flora and Fauna Management Plan*

GHD (2020) *Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (MOD 3 SSD 7348) and Stage 2 Development Application (SSD 10397) Environmental Impact Statement*

Rubicon Enviro (2020) *Soil and Water Management Plan*

SLR (2020a) *Community Consultation Strategy*

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

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

SLR (2020d) *Sustainability Management Plan*

SLR (2020e) *Waste Management Plan*

# APPENDIX A

Development Consent SSD 10397



# 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 9 March 2020, I approve the Development Application referred to in Schedule 1, subject to the conditions specified in Schedule 2.

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

9 April 2020

File: EF19/29734

### **SCHEDULE 1**

<b>Application Number:</b>	SSD 10397
<b>Applicant:</b>	Goodman Property Services (Aust) Pty Ltd
<b>Consent Authority:</b>	Minister for Planning and Public Spaces
<b>Site:</b>	Lot 11 DP 1178389 2 Aldington Road, Kemps Creek NSW 2178
<b>Development:</b>	Oakdale West Estate Stage 2 Development including construction, subdivision, fitout, operation and use of a four-level automated warehouse, associated office space, internal roads and parking.

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## DEFINITIONS

<b>Applicant</b>	Goodman Property Services (Aust) Pty Ltd, or any person carrying out any development to which this consent applies
<b>Certifying Authority</b>	A person who is authorised by or under section 6.17 of the EP&A Act to issue Part 6 certificates
<b>CEMP</b>	Construction Environmental Management Plan
<b>CAQMP</b>	Construction Air Quality Management Plan
<b>Conditions of this consent</b>	Conditions contained in Schedule 2 of this document
<b>Consent Authority</b>	The relevant consent authority for development in accordance with the EP&A Act
<b>Construction</b>	The carrying out of works for the purpose of the development, including detailed earthworks, erection of building 2B, internal fit-out and construction of associated infrastructure permitted by this consent
<b>Council</b>	Penrith City Council
<b>CTMP</b>	Construction Traffic Management Plan
<b>Day</b>	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
<b>Demolition</b>	The deconstruction and removal of buildings, sheds and other structures on the site
<b>Department</b>	NSW Department of Planning, Industry and Environment (DPIE)
<b>Development</b>	The development described in the EIS and RtS, referred to as Stage 2 development in the Oakdale West Estate, including construction and operation of a four-storey warehouse and associated office space and infrastructure, as shown on the plans in <b>Appendix 1</b>
<b>DA</b>	Development Application submitted in accordance with the EP&A Act
<b>EIS</b>	The Environmental Impact Statement titled <i>Oakdale West Industrial Estate Concept Plan and Stage 1 Modification and Stage 2 Development Application Environmental Impact Statement</i> , prepared by GHD dated January 2020, including any additional information provided by the Applicant in support of the application
<b>Environment</b>	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
<b>EPA</b>	NSW Environment Protection Authority
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
<b>EP&amp;A Regulation</b>	<i>Environmental Planning and Assessment Regulation 2000</i>
<b>Evening</b>	The period from 6 pm to 10 pm
<b>Feasible</b>	Feasible relates to engineering considerations and what is practical to build
<b>Fibre ready facility</b>	As defined in Section 372W of the <i>Telecommunications Act 1997</i>
<b>GLA</b>	Gross lettable area
<b>GFA</b>	Gross floor area
<b>Heritage</b>	Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement
<b>Heritage item</b>	An item as defined under the <i>Heritage Act 1977</i> (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 <i>National Parks and Wildlife Act 1974</i> (NSW), the World Heritage List, or the National Heritage List or Commonwealth Heritage List under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth), or anything identified as a heritage item under the conditions of this consent
<b>Incident</b>	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  <i>Note: "material harm" is defined in this consent</i>
<b>Land</b>	Has the same meaning as the definition of the term in section 1.4 of the EP&A Act
<b>Material harm</b>	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)

<b>Minister</b>	NSW Minister for Planning and Public Spaces (or delegate)
<b>Mitigation</b>	Activities associated with reducing the impacts of the development prior to or during those impacts occurring
<b>Monitoring</b>	Any monitoring required under this consent must be undertaken in accordance with section 9.40 of the EP&A Act
<b>NCC</b>	National Construction Code
<b>Night</b>	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
<b>Non-compliance</b>	An occurrence, set of circumstances or development that is a breach of this consent
<b>OEMP</b>	Operational Environmental Management Plan
<b>Operation</b>	The use of building 2B for storage and distribution of goods upon completion of construction as described in the EIS
<b>OTMP</b>	Operational Traffic Management Plan
<b>OWE</b>	Oakdale West Estate including the approved Concept Plan for 22 warehouse buildings and associated infrastructure and Stage 1 development including bulk earthworks across the site, construction and operation of 3 warehouses and the West-North-South Link Road, as described in the development consent SSD 7348, approved on 13 September 2019, as modified
<b>PCA</b>	Principal Certifying Authority in accordance with the EP&A Act
<b>Planning Secretary</b>	Planning Secretary under the EP&A Act, or nominee
<b>POEO Act</b>	<i>Protection of the Environment Operations Act 1997</i> (NSW)
<b>Reasonable</b>	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.
<b>Rehabilitation</b>	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting
<b>RMS</b>	(former) NSW Roads and Maritime Services (now TfNSW)
<b>RtS</b>	The Response to Submissions titled <i>Oakdale West Estate SSD 7348 MOD 1, 2, 3 Consolidated Response to Submissions</i> prepared by Goodman dated 25 March 2020
<b>Sensitive receivers</b>	A location where people are likely to work, occupy or reside, including a dwelling, school, hospital, office or public recreational area
<b>Site</b>	The land defined in Schedule 1
<b>SLR</b>	Proposed Southern Link Road as shown in the WSEA SEPP and the document titled <i>Broader WSEA SLRN Options Refinement Report</i> prepared by AECOM, 2014
<b>TfNSW</b>	Transport for New South Wales
<b>Vicinity of the site</b>	Bakers Lane, Kemps Creek
<b>Waste</b>	Has the same meaning as the definition of the term in the Dictionary to the POEO Act
<b>Water Pipelines</b>	Two Sydney drinking water pipelines located on land owned by Water NSW along the northern boundary of the site
<b>WNSLR</b>	Western North-South Link Road as shown in the WSEA SEPP and approved under the OWE development consent SSD 7348
<b>WSEA</b>	Western Sydney Employment Area
<b>WSEA SEPP</b>	State Environmental Planning Policy (Western Sydney Employment Area) 2009
<b>Year</b>	A period of 12 consecutive months

**SCHEDULE 2**  
**PART A ADMINISTRATIVE CONDITIONS**

**OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT**

- A1. In addition to meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.

**TERMS OF CONSENT**

- A2. 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 Development Layout in **Appendix 1**; and
  - (e) in accordance with the management and mitigation measures in **Appendix 3**.
- A3. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to:
- (a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Planning Secretary; and
  - (b) the implementation of any actions or measures contained in any such document referred to in condition A3.
- A4. The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document listed in condition (c). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in condition (c), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

**LIMITS OF CONSENT**

**Lapsing**

- A5. This consent lapses five (5) years after the date from which it operates, unless the development has physically commenced on the land to which the consent applies before that date.
- A6. The total area of warehousing and office space at the development must not exceed a maximum gross lettable area of 200,700 square metres.
- A7. The Applicant must ensure construction of the development does not generate more than 935 vehicle trips (1,870 total vehicle movements) during the day, evening and night, on the public road network.
- Note: This condition does not apply to construction vehicles using the West-North-South Link Road.*
- A8. The Applicant must keep accurate records of the number of vehicles entering or leaving the site, for the duration of construction and provide these records to the Planning Secretary on request.
- A9. The development must be consistent with the development controls in the OWE, as shown in **Table 1**.

**Table 1** 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

<b>Development Aspect</b>	<b>Control</b>
Side boundary setbacks within the estate	0 m, subject to compliance with fire rating requirements
Building height – Building 2B	28 m
Minimum lot size	5,000 m <sup>2</sup>
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)

### **NOTIFICATION OF COMMENCEMENT**

- A10. The date of commencement of each of the following phases of the development must be notified to the Department in writing, at least one month before that date:
- (a) construction, excluding any early pre-construction works, such as installation of erosion and sediment controls or laydown of construction materials; and
  - (b) operation.
- A11. If the construction or operation or decommissioning of the development is to be staged, the Department must be notified in writing at least one month before the commencement of each stage, of the date of commencement and the development to be carried out in that stage.

### **EVIDENCE OF CONSULTATION**

- A12. 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**

- A13. 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).
- A14. 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.
- A15. 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**

- A16. Before the commencement of construction, the Applicant must:
- (a) consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure;
  - (b) prepare a dilapidation report identifying the condition of Aldington Road and Abbots Road (between the site and Mamre Road), including roads, gutters and footpaths; and
  - (c) submit a copy of the dilapidation report the Planning Secretary and Council.

- A17. 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 the development, including but not limited to, Bakers Lane, Aldington Road and Abbotts Road; and
  - (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development, including but not limited to, Bakers Lane, Aldington Road and Abbotts Road.

### **STRUCTURAL ADEQUACY**

- A18. 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).

**Note:**

- 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**

- A19. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

### **OPERATION OF PLANT AND EQUIPMENT**

- A20. All plant and equipment used on site, or to monitor the performance of the development must be:

- (a) maintained in a proper and efficient condition; and
- (b) operated in a proper and efficient manner.

### **EXTERNAL WALLS AND CLADDING**

- A21. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the NCC.
- A22. 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.
- A23. 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**

- A24. Before the construction of any utility works associated with the development, the Applicant must obtain relevant approvals from service providers.
- A25. Before the commencement of operation of the development, the Applicant must obtain a Compliance Certificate for water and sewerage infrastructure servicing of the site under section 73 of the *Sydney Water Act 1994* (NSW).
- A26. Before the issue of a Subdivision or Construction Certificate for the development, 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 the development.
- A27. The Applicant must demonstrate that the carrier has confirmed in writing they are satisfied that the fibre ready facilities are fit for purpose.
- A28. The Applicant must comply with the requirements of Endeavour Energy for the location and design of the pad-mounted substations for the development. The Applicant must submit evidence of compliance prepared by a Level 3 Accredited Service Provider to the satisfaction of Endeavour Energy, prior to the commencement of construction.
- A29. The Applicant must obtain any other relevant approvals from Endeavour Energy, prior to the commencement of construction.

### **SUBDIVISION**

- A30. The Applicant shall subdivide the site generally in accordance with the subdivision plan included in the EIS.

### **WORKS AS EXECUTED PLANS**

- A31. Before the issue of the final Occupation Certificate, 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**

- A32. 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.
- A33. 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 the development. No condition of this consent removes any obligation to obtain, renew or comply with such licences, permits, approvals and consents.



## PART B ENVIRONMENTAL PERFORMANCE CONDITIONS

### VISUAL AMENITY

#### Building Design

- B1. The Applicant must construct Building 2B in accordance with the EIS and RTS and as shown on the figures in **Appendix 1**.

#### Landscape Plan

- B2. Prior to the commencement of construction of Building 2B, the Applicant must prepare a detailed Landscape Plan in consultation with Council and to the satisfaction of the Planning Secretary. The Landscape Plan must:
- (a) detail the plant species and layouts for all areas of the development;
  - (b) include a diverse mix of species to provide canopy trees and understorey planting, to assist in achieving the objectives of Council's Cooling the City Strategy;
  - (c) detail monitoring and maintenance procedures, including irrigation requirements.
- B3. The Applicant must:
- (a) not commence construction of Building 2B until the Landscape Plan is approved by the Planning Secretary.
  - (b) must implement the most recent version of the Landscape Plan approved by the Planning Secretary; and
  - (c) maintain the landscaping and vegetation on the site in accordance with the approved Landscape Plan for the life of the development. If the monitoring carried out as part of condition B2 indicates that any aspect of the landscaping has not been successful, the Applicant must undertake replanting and rehabilitation works, as reasonably practicable.

#### Reflectivity

- B4. The visible light reflectivity from building materials used in the façades and roof of the warehouse building 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 a Construction Certificate.

#### Lighting and Security Cameras

- B5. The Applicant must ensure the lighting associated with the development:
- (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.
- B6. The Applicant must ensure any security cameras or illuminated signage installed as part of the development are directed away from adjacent private properties.

#### Signage and Fencing

- B7. All signage and fencing must be erected in accordance with the development plans included in the EIS and RTS.  
*Note: This condition does not apply to temporary construction and safety related signage and fencing.*
- B8. 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.

### TRAFFIC, ACCESS AND PARKING

#### Roadworks

- B9. Prior to any use of Aldington Road and Abbots Road for construction traffic, the Applicant must submit a Construction Traffic Management Plan (CTMP) to the satisfaction of Council. The CTMP shall be:
- (a) prepared in accordance with Council's Engineering Construction Specification for Civil Works
  - (b) be prepared by a suitably qualified consultant with appropriate training and certification from TfNSW;
  - (c) be approved by Council, prior to any construction traffic using Aldington Road and Abbots Road;
  - (d) include but not be limited to:
    - (i) swept path analysis at critical points (bends and intersections) along the entire Aldington Road / Abbots Road route for the largest proposed vehicle to use this route;
    - (ii) a detailed road safety audit of the Aldington Road / Abbots Road route that factors the increase in traffic volumes (both in light & heavy vehicles), and proposes measures such that the road can safely accommodate this increase (including upgrades to road infrastructure, signage and line marking)

treatments, vehicle length restrictions and temporary traffic control measures during the construction period);

(iii) left-in, left-out restrictions at the intersection with Mamre Road for construction vehicles.

- B10. The CTMP and any proposed measures must be to the satisfaction of Council and will be subject to Local Traffic Committee and Council approval.
- B11. Prior to any works (infrastructure, signage and line marking) that are on or affect a local road, a Section 138 *Roads Act, 1993* application shall be lodged and approved by Council. All works shall be carried out in accordance with the Roads Act approval, and Council's specification, guidelines and best engineering practice.
- B12. The Applicant must provide written evidence to the satisfaction of the Planning Secretary, demonstrating the roadworks required by condition B9 and B10 have been completed to the satisfaction of Council, prior to using Abbots Road and Aldington Road for construction access.

#### **Construction Access**

- B13. The Applicant must ensure:
- (a) no fill material is transported to the site via Bakers Lane or Aldington Road;
  - (b) construction traffic does not use Bakers Lane during the hours of 8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday when schools are in use, to avoid conflict with peak school traffic on Bakers Lane;
  - (c) construction traffic only uses Abbots Road and Aldington Road to access the site during the hours of 8 am – 9.30 am and 2.30 pm – 4pm, Monday to Friday, when schools are in use, subject to Conditions B9 and B12; and
  - (d) all construction traffic associated with the development ceases to use Bakers Lane and Aldington Road when the Western North-South Link Road opens to traffic.

#### **Operational Access**

- B14. The Applicant must ensure all traffic associated with operation of the development accesses the site from the Western North-South Link Road, and the future Southern Link Road, and does not use Bakers Lane or Aldington Road.

#### **Construction Traffic Management Plan**

- B15. Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by condition C2 and must:
- (a) be prepared by a suitably qualified and experienced person(s);
  - (b) be prepared in consultation with Council, TfNSW, 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 (8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday), when the schools are in use, 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;
    - (iii) minimise road traffic noise, particularly during night-time periods; and
    - (iv) ensure truck drivers use specified routes;
  - (g) include a program to monitor the effectiveness of these measures; and
  - (h) detail procedures for early notification for residents and the community (including local schools), of any potential disruptions to routes.
- B16. The Applicant must:
- (a) not commence construction of the development until the CTMP required by condition B15 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.

## Operational Traffic Management Plan

B17. The Applicant must prepare an Operational Traffic Management Plan (OTMP) for the development. The OTMP must form part of the OEMP required by condition C5 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 noise from development related traffic, including, procedures for receiving and addressing complaints from the community about development related traffic and noise;
- (e) include a Driver's Code of Conduct that addresses:
  - (i) designated routes, ensuring no use of Bakers Lane or Aldington Road for operational access;
  - (ii) travelling speeds and adherence to site-specific speed limits;
  - (iii) procedures to ensure drivers adhere to designated heavy vehicle routes; and
  - (iv) procedures to ensure drivers implement safe driving practices.

B18. The Applicant must:

- (a) not commence operation of the development until the OTMP required by condition B17 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.

## Operating Conditions

B19. The Applicant must ensure:

- (a) all access points, internal driveways, turning areas and parking are designed and constructed 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) the swept path of the longest vehicle entering and exiting the site, as well as manoeuvrability through the site, is in accordance with the relevant Austroads guidelines;
- (c) the development does not result in any vehicles queuing on the public road network;
- (d) heavy vehicles and bins associated with the development are not parked on local roads or footpaths in the vicinity of the site;
- (e) all vehicles are wholly contained on site before being required to stop;
- (f) all loading and unloading of materials is carried out on site;
- (g) the proposed turning areas in the car park are kept clear of any obstacles, including parked cars, at all times.

## Parking

B20. The Applicant must provide sufficient parking facilities on site for heavy vehicles and for site personnel, to ensure that traffic associated with the development does not utilise public and residential streets or public parking facilities.

## NOISE

### Hours of Work

B21. The Applicant must comply with the hours detailed in **Table 2**, unless otherwise agreed in writing by the Planning Secretary.

**Table 2** Hours of Work

Activity	Day	Time
Construction	Monday – Sunday	6 am to 10 pm
Concrete works (internal to building only)	Monday – Sunday	3 am to 10 pm
Operation	Monday – Sunday (including public holidays)	24 hours

*Note: Concrete works (internal to building only) include concrete pours inside Building 2B, following the installation of all building walls and the building roof.*

- B22. Works outside of the hours identified in condition B21 may be undertaken in the following circumstances:
- 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 to prevent environmental harm.

### Operational Noise Limits

- B23. The Applicant must ensure that noise generated by operation of the development does not exceed the noise limits for the OWE, as shown in **Table 3**.

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

Location	Day L <sub>Aeq</sub> (15 minute)	Evening L <sub>Aeq</sub> (15 minute)	Night L <sub>Aeq</sub> (15 minute)	Night L <sub>A</sub> Max
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 <sup>2</sup>	35 <sup>2</sup>	35 <sup>2</sup>	52
N2 Emmaus Catholic College (school)	<b>When in use:</b> 45 L <sub>eq</sub> (1h)			

#### Notes:

- 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.
- or background + 5 dB, whichever is higher.

- B24. The noise limits in **Table 3** do not apply to receivers N3, N4 & N5 if the Applicant has Noise Agreement/s with the relevant landowner/s to exceed the noise limits, and the Applicant has provided written evidence to the Planning Secretary that agreement/s are in place.

### Design and Validation

- B25. The Applicant shall design and install all rooftop mechanical plant and services to ensure cumulative noise levels do not exceed 37 dB(A) at the western site boundary or 41 dB(A) at the southern site boundary. The Applicant shall provide written evidence to the satisfaction of the Planning Secretary, prior to the commencement of operation, confirming that rooftop mechanical plant and services have been installed to achieve these noise levels.
- B26. Within 6 months of the commencement of operation, the Applicant must undertake noise validation monitoring to confirm the rooftop mechanical plant and services comply with the predictions in the EIS, to the satisfaction of the Planning Secretary. If the results of monitoring show that noise from the development is exceeding the noise limits in Condition B23, the Applicant must investigate and implement all reasonable and feasible noise mitigation measures to achieve compliance.

### Construction Noise

- B27. The Applicant must implement all feasible and reasonable noise mitigation measures to minimise construction noise from the development. Any activities that could exceed the construction noise management levels detailed in the *Interim Construction Noise Guideline* (DECC, 2009), must be identified and managed in accordance with the Construction Noise Management Plan required by condition B30.
- B28. The Applicant must maintain the temporary noise curtain installed adjacent to Emmaus Catholic Care Village for the duration of construction, unless otherwise agreed with the Planning Secretary, or until such time as the permanent noise wall shown in **Appendix 2** is completed.
- B29. The Applicant must maintain a real-time noise monitor at the western boundary of the site for the duration of construction. Where monitoring identifies any exceedance of the construction noise management levels, the Applicant must implement further feasible and reasonable mitigation measures to reduce construction noise levels. The environmental representative for the OWE must review and provide the results of noise monitoring to the Planning Secretary on request, including details of the measures taken to minimise noise to ensure compliance with the noise goals.

## Construction Noise Management Plan

- B30. The Applicant must prepare a Construction Noise Management Plan (CNMP) for the development to the satisfaction of the Planning Secretary. The CNMP must form part of the CEMP in accordance with condition C2 and must:
- (a) be prepared by a suitably qualified and experienced noise expert;
  - (b) be approved by the Planning Secretary prior to the commencement of construction;
  - (c) describe procedures for achieving the noise management levels in EPA's *Interim Construction Noise Guideline* (DECC, 2009), as may be updated or replaced from time to time;
  - (d) describe the measures to be implemented to manage noise generating activities during sensitive periods, including evenings, night-time and on Sundays, including but not limited to:
    - (i) maintenance of the temporary noise curtain along the western boundary of the Emmaus Catholic Care Village for the duration of construction;
    - (ii) minimising coinciding use of multiple high noise generating equipment;
    - (iii) orienting noisy equipment away from the sensitive receivers on the western boundary;
    - (iv) ensuring concrete trucks for internal concreting works (between 3 am and 6 am) are located to the east of Building 2B to maximise noise shielding for the Emmaus Catholic Care Village;
    - (v) ensuring all equipment has non-tonal reversing alarms;
    - (vi) regular maintenance and compliance checks of plant and equipment;
    - (vii) consultation with adjacent sensitive receivers prior to and during construction;
  - (e) include measures to minimise noise from construction vehicles on the public road network and on site, including but not limited to, a Driver Code of Conduct and induction training for drivers to minimise road traffic noise;
  - (f) include a monitoring program that:
    - (i) includes quarterly attended noise monitoring at the nearest sensitive receivers to determine compliance with the construction noise management levels in the *Interim Construction Noise Guideline*;
    - (ii) evaluates and reports on the effectiveness of the noise management measures;
    - (iii) includes procedures to relocate, modify, mitigate or stop work to ensure compliance with the construction noise management levels; and
  - (g) include procedures for recording and responding to complaints.
- B31. The Applicant must:
- (a) not commence construction of the development until the CNMP required by condition B30 is approved by the Planning Secretary; and
  - (b) implement the most recent version of the CNMP approved by the Planning Secretary for the duration of construction.

## SOILS AND WATER

### Discharge Limits

- B32. The development must comply with section 120 of the POEO Act, which prohibits the pollution of waters.

### Erosion and Sediment Control

- B33. The Applicant must prepare an Erosion and Sediment Control Plan (ESCP) for the development to the satisfaction of the Planning Secretary. The ESCP must form part of the CEMP required by condition C2 and must:
- (a) be prepared by a suitably qualified and experienced person(s);
  - (b) be generally consistent with the Erosion and Sediment Control Plan(s) for the OWE;
  - (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, 2014) guideline; and
  - (d) include procedures for maintaining erosion and sediment controls in efficient working order for the duration of construction, to ensure the development complies with condition B32.
- B34. The Applicant must:
- (a) not commence construction of the development until the ESCP required by condition B33 is approved by the Planning Secretary; and
  - (b) implement the most recent version of the ESCP approved by the Planning Secretary for the duration of construction.

B35. The Applicant must install the erosion and sediment control measures approved in accordance with Condition B34, prior to the commencement of construction.

#### **Stormwater Management System**

B36. The Applicant must install and operate a stormwater management system for the development, to the satisfaction of the Planning Secretary. The system must:

- (a) be designed by a suitably qualified and experienced person(s);
- (b) be generally consistent with the *Civil, Stormwater and Infrastructure Services Report*, prepared by AT&L, dated January 2020;
- (c) be in accordance with applicable Australian Standards and Penrith City Council's *Design Guidelines for Engineering Works, Water Sensitive Urban Design Policy December 2013* and *Water Management Development Control Plan*;
- (d) ensure 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;
- (e) ensure peak stormwater flows from the site do not exceed existing flows in the Water NSW drainage lines and water pipelines corridor; and
- (f) incorporate rainwater harvesting measures to supplement non-potable water demand for the development.

B37. 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.

#### **AIR QUALITY**

##### **Dust Minimisation**

B38. The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.

B39. During construction, the Applicant must ensure that:

- (a) exposed surfaces and stockpiles are suppressed by regular watering;
- (b) all trucks entering or leaving the site with loads have their loads covered;
- (c) trucks associated with the development do not track dirt onto the public road network; and
- (d) public roads used by these trucks are kept clean.

##### **Construction Air Quality Management Plan**

B40. Prior to the commencement of construction, the Applicant must update the Construction Air Quality Management Plan (CAQMP) for the OWE, to include the development. The updated CAQMP must:

- (a) be prepared by a suitably qualified and experienced person(s);
- (b) identify the control measures to be implemented to minimise emissions from all construction sources;
- (c) detail procedures for measuring the performance of the control measures and triggers for implementing additional reasonable and feasible measures, if required, to minimise emissions; and
- (d) include procedures for complaints handling and response.

B41. The Applicant must:

- (a) not commence construction of the development until the updated CAQMP required by condition B40 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.

#### **WASTE MANAGEMENT**

##### **Waste Storage**

B42. 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**

B43. The Applicant must implement the Waste Management Plan (WMP) in the EIS for the duration of construction and operation of the development.

## Statutory Requirements

- B44. 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.
- B45. Waste generated outside the site must not be received at the site for storage, treatment, processing, reprocessing, or disposal.

## BUSHFIRE PROTECTION

- B46. 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.

## HAZARDS AND RISK

### Dangerous Goods

- B47. 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.

### Bunding

- B48. The Applicant must store all chemicals, fuels and oils used on site in appropriately banded 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).

## HERITAGE

### Unexpected Finds Protocol

- B49. 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.
- B50. 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).
- B51. If any archaeological relics are uncovered during construction of the development, 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 Division.

## COMMUNITY ENGAGEMENT

- B52. The Applicant must consult with the community regularly throughout the development, including consultation with the nearby sensitive receivers identified in **Appendix 2**, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy for the OWE.

## PART C ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

### ENVIRONMENTAL MANAGEMENT

#### Management Plan Requirements

- C1. 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, the development 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 the development; and
    - (ii) effectiveness of the management measures set out pursuant to paragraph (c) 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 the development 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

- C2. The Applicant must prepare a Construction Environmental Management Plan (CEMP) in accordance with the requirements of condition C1 and to the satisfaction of the Planning Secretary. The CEMP must be reviewed by the Environmental Representative for the OWE to ensure it is consistent with the requirements of this consent and the relevant requirements of the OWE consent.
- C3. As part of the CEMP required under Condition C2 of this consent, the Applicant must include the following:
- (a) Construction Traffic Management Plan (see Condition B15);
  - (b) Construction Noise Management Plan (see Condition B30);
  - (c) Erosion and Sediment Control Plan (see Condition B33);
  - (d) Construction Air Quality Management Plan (see Condition B40)
  - (e) Community Consultation and Complaints Handling.
- C4. The Applicant must:
- (a) not commence construction of the development until the CEMP is approved by the Planning Secretary; and
  - (b) carry out the construction of the development in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time.

#### OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

- C5. The Applicant must prepare an Operational Environmental Management Plan (OEMP) in accordance with the requirements of condition C1 and to the satisfaction of the Planning Secretary.
- C6. As part of the OEMP required under Condition C5 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 the development;
- (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 the development;
  - (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) Operational Traffic Management Plan (see Condition B17); and
  - (ii) Noise Validation Monitoring (see Condition B26).

C7. The Applicant must:

- (a) not commence operation until the OEMP is approved by the Planning Secretary; and
- (b) operate the development 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**

C8. Within three months of:

- (a) the submission of a Compliance Report under condition C15;
- (b) the submission of an incident report under condition C10;
- (c) the approval of any modification of the conditions of this consent; or
- (d) the issue of a direction of the Planning Secretary under condition (a) which requires a review,

the strategies, plans and programs required under this consent must be reviewed, and the Department must be notified in writing that a review is being carried out.

C9. If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.

**Note:** *This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.*

#### **REPORTING AND AUDITING**

##### **Incident Notification, Reporting and Response**

C10. The Planning Secretary must be notified in writing to [compliance@planning.nsw.gov.au](mailto: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 4.

##### **Non-Compliance Notification**

C11. The Planning Secretary must be notified in writing to [compliance@planning.nsw.gov.au](mailto:compliance@planning.nsw.gov.au) within seven days after the Applicant becomes aware of any non-compliance.

C12. A non-compliance notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

C13. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

##### **Compliance Reporting**

C14. No later than 6 weeks before the date notified for the commencement of operation, a Compliance Monitoring and Reporting Program prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2018) must be submitted to the Planning Secretary.

- C15. Compliance Reports of the development must be carried out in accordance with the Compliance Reporting Post Approval Requirements (Department 2018).
- C16. The Applicant must make each Compliance Report publicly available no later than 60 days after submitting it to the Planning Secretary and notify the Planning Secretary in writing at least 7 days before this is done.

#### **Monitoring and Environmental Audits**

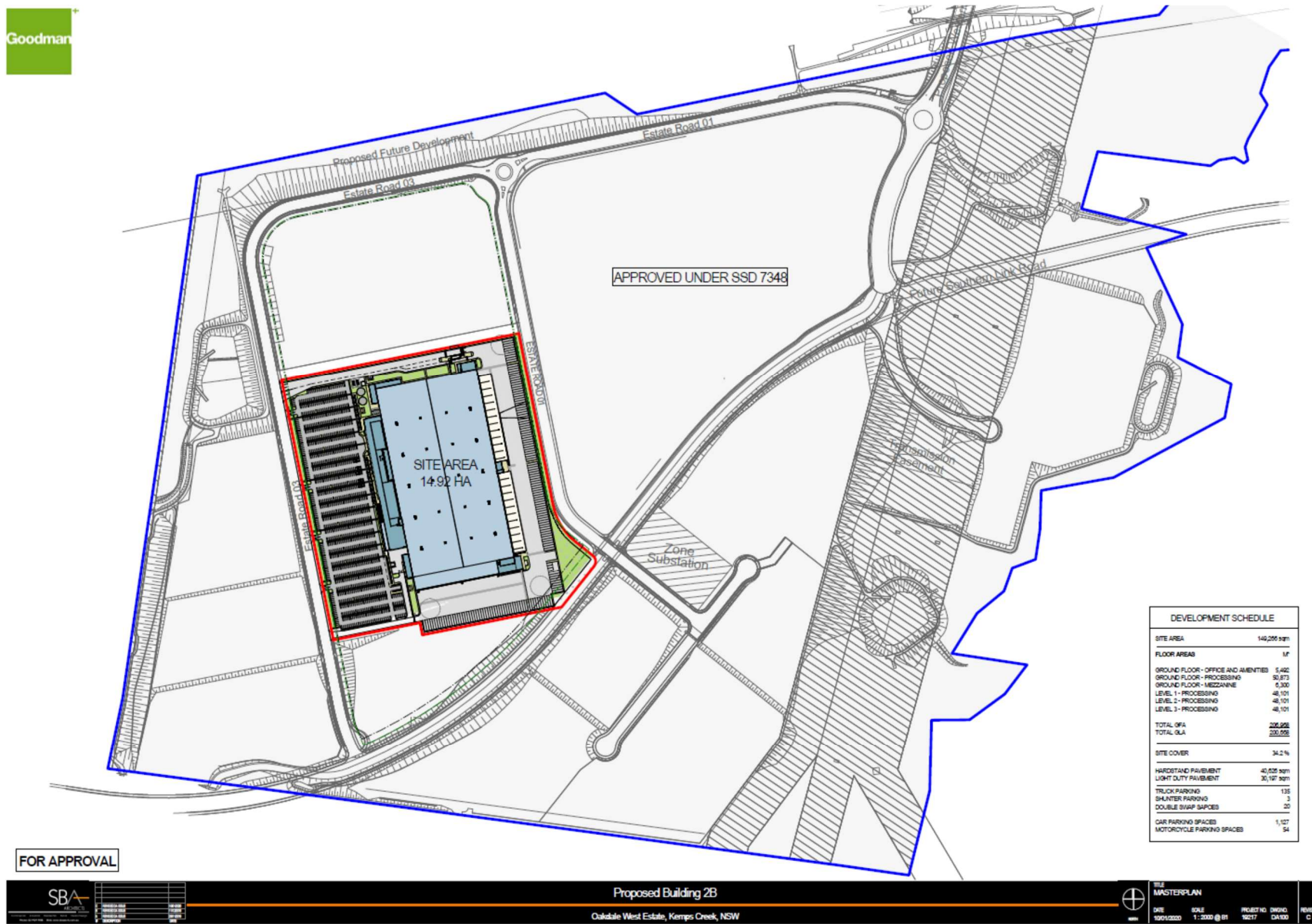
- C17. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes 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**

- C18. At least 48 hours before the commencement of construction until the completion of all works under this consent, including rehabilitation and remediation, 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 A2 of this consent;
  - (ii) all current statutory approvals for the development;
  - (iii) all approved strategies, plans and programs required under the conditions of this consent;
  - (iv) the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;
  - (v) minutes of CCC meetings;
  - (vi) 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;
  - (vii) 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;
  - (viii) a summary of the current stage and progress of the development;
  - (ix) contact details to enquire about the development or to make a complaint;
  - (x) a complaints register, updated monthly;
  - (xi) the Compliance Report of the development;
  - (xii) audit reports prepared as part of any Independent Audit of the development and the Applicant's response to the recommendations in any audit report;
  - (xiii) 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 DEVELOPMENT PLANS



FOR APPROVAL



Proposed Building 2B

Oakdale West Estate, Kempsey Creek, NSW

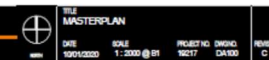
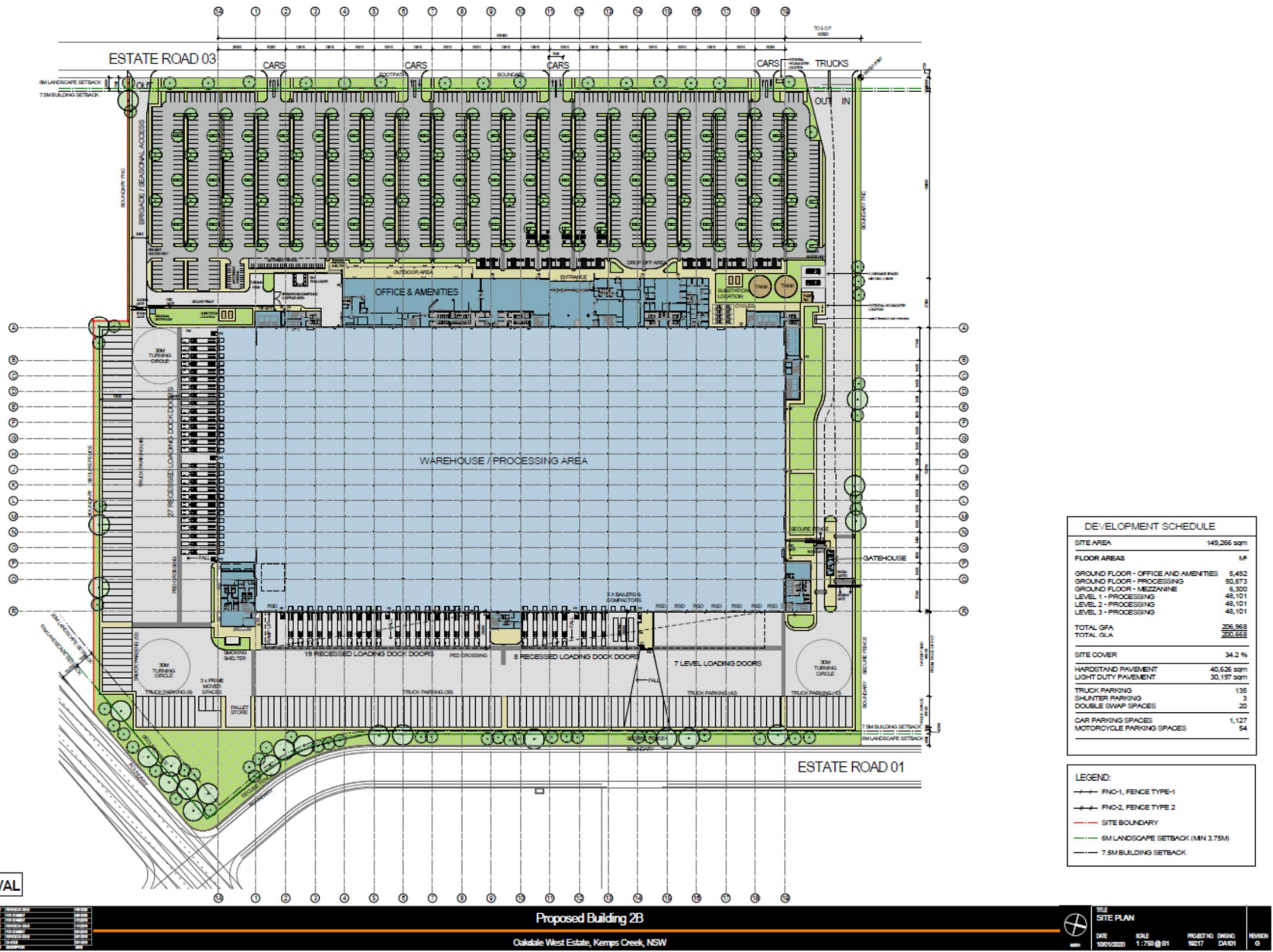


Figure 1: Location Plan



FOR APPROVAL

SB	DATE	DESCRIPTION

Proposed Building 2B

Oakdale West Estate, Kempers Creek, NSW

FILE SITE PLAN			
DATE	SCALE	PROJECT NO. / DRAWING NO.	REVISION
09/03/2020	1:750 @ B1	10317	04/01
			5

Figure 2: Building Layout Plan



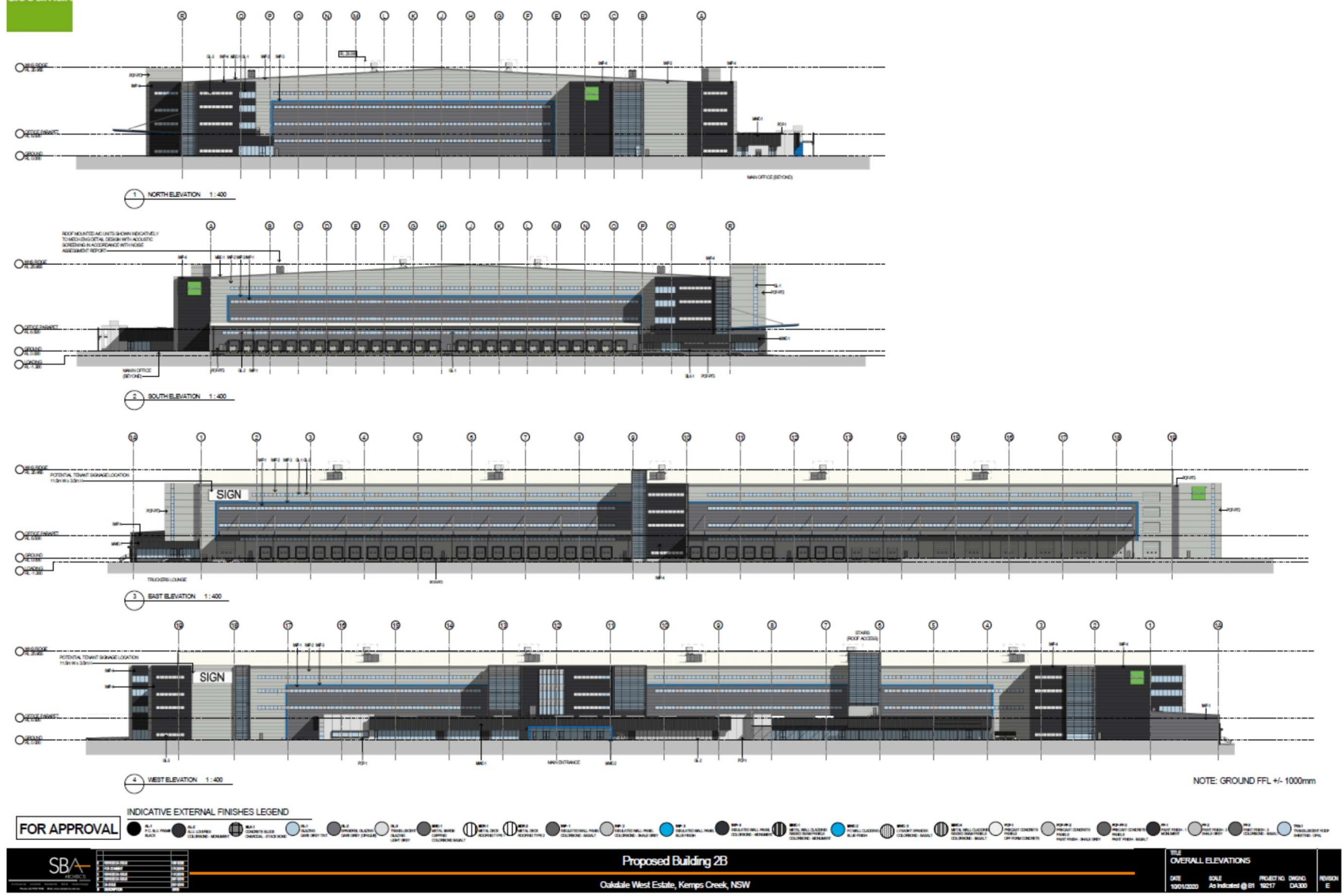


Figure 3: Building Elevations

APPENDIX 2 NOISE RECEIVERS AND NOISE WALL LOCATIONS

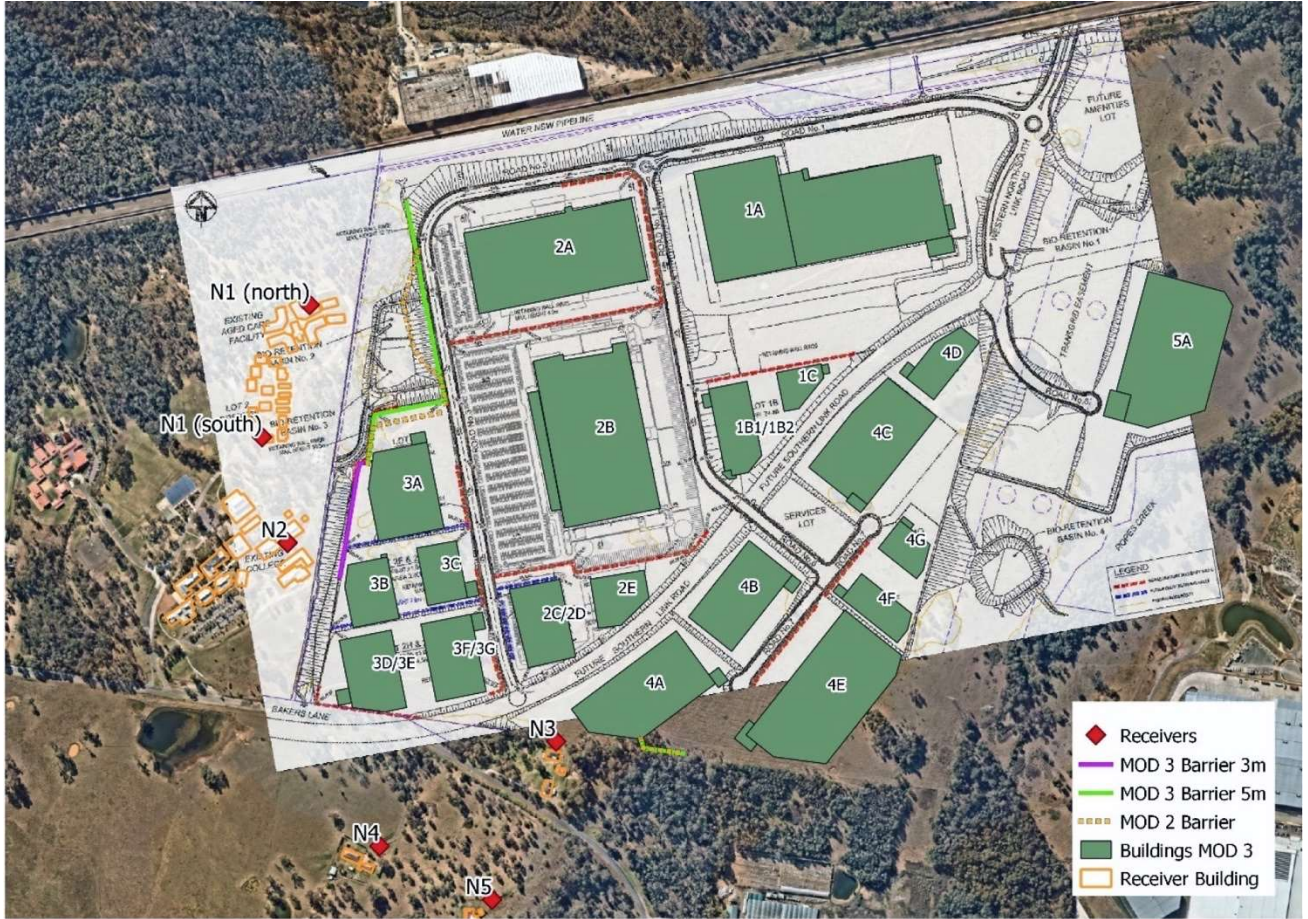


Figure 4: Noise Receivers and Noise Wall Locations

## APPENDIX 3 APPLICANT'S MANAGEMENT AND MITIGATION MEASURES

### 9.2.2 Operational Environmental Management Plan

An overarching OEMP has been prepared for the OWE to guide the ongoing operations of the site once development is completed. This document would capture standard and specific operational management measures addressing issues such as:

- Control of noise and air emissions
- Biodiversity and vegetation management
- Management of water and waste
- Emergency procedures and protocols
- Engagement with adjoining landowners
- Sustainability and energy efficiency
- Compliance and approvals
- Environmental management and reporting.

The OEMP was prepared prior to the commencement of operations at the site and would continue to be reviewed as each stage and Lot of the OWE is completed and becomes operational.

### 9.3 Consolidated mitigation measures

[Table 9-1](#) provides a consolidated summary of the proposed environmental management and mitigation measures for the proposal.

**Table 9-1 Summary of safeguards and mitigation measures**

Issue	Mitigation measures
General	<ul style="list-style-type: none"> <li>• Preparation of updated CEMP for OWE Stage 2 Development and MOD 3 to Concept Proposal</li> <li>• Preparation of updated OEMP for for Stage 2 Development</li> </ul>
Visual amenity	<ul style="list-style-type: none"> <li>• The existing vegetation on the eastern, southern and western boundary be retained where possible to assist filtering views to the proposed buildings, additional landscaping to be included to provide a further buffer</li> <li>• The proposed landscape design provides sufficient visual mitigation of the development by creating a 40 metre vegetated embankment with extensive tree and understorey planting along the western boundary bordering Emmaus Catholic College and Emmaus Village</li> <li>• Landscaped embankment along the western boundary will be completed six months post commencement of the estate infrastructure works</li> </ul>
Traffic and transport	<ul style="list-style-type: none"> <li>• Temporary use of Bakers Lane until WNSLR is operational</li> <li>• Alternate Stage 2 construction vehicle route via Aldington Road/Abbotts Road during school peak hours</li> <li>• Ban Right-Out movements at Abbotts Road/Mamre Road intersection (left-in/left-out only)</li> </ul>



Issue	Mitigation measures
Noise and vibration	<ul style="list-style-type: none"> <li>• Detailed CTMP including minor upgrade works to Aldington Road / Abbotts Road in line with plans provided.</li> <li>• Detailed Construction Noise and Vibration Management Plan</li> <li>• Vibratory rollers and plate compactors have the potential to be operated within 20 m and within the recommended safe working distances of structures in Emmaus Village, Emmaus Catholic School and immediately adjacent to the south boundary in Kemps Creek. Locations for vibration intensive equipment should be reviewed during the preparation of the site specific Construction Noise and Vibration Management Plans (CNVMPs) for construction works adjacent to the most affected receivers.</li> <li>• Noise Agreements in place with N3, N4, and N5.</li> <li>• Construction hours to be 3.00am - 10.00pm (with works to occur between 3am and 7am limited to concrete works internally)</li> <li>• Where construction noise levels are predicted to be above the NMLs, all feasible and reasonable work practices are investigated to minimise noise emissions.</li> <li>• If construction noise levels are still predicted to exceed the NMLs, potential noise impacts would be managed via site specific construction noise management plans, to be prepared during the detailed design phase.</li> <li>• Noise barriers possessing surface mass of no less than 15 kg/m<sup>2</sup> to be installed at the locations and to the heights detailed in Appendix H and shown on Figure 7-19. Construction of noise barriers as shown in Figure 7-19.</li> <li>• On-site speed limits of 25 km/hour for heavy vehicles and 40 km/hr for light vehicles to be imposed.</li> <li>• During detailed design, Lot 2B rooftop mechanical services plant to be reviewed to ensure that cumulatively emissions are controlled to not exceed LAeq,15min 37 dBA at the western site boundary or LAeq,15min 41 dBA at the southern site boundary. The inclusion of silencers/attenuators and/or barrier solutions may be considered to ensure these acoustic design standards are achieved, as confirmed by noise modelling.</li> <li>• Subject to the findings of further detailed design, the provision of mechanical ventilation systems to receivers N4 and N5 to be considered, to enable windows to be closed without compromising internal air quality/amenity.</li> <li>• Cumulative sound power levels of fixed plant for each building within the OWE to be limited to 95dBA</li> <li>• Further assessment of potential operational noise impacts to be undertaken in respect of any specific operations proposed within the OWE with an atypical noise profile.</li> </ul>



Issue	Mitigation measures
Soil and water	<ul style="list-style-type: none"> <li>• All stormwater drainage within the lot 2B will be the responsibility of Goodman.</li> <li>• Finished Floor Levels (FFL) of proposed buildings within the precinct (separate approval) to have minimum 500mm freeboard to 100 year overland flows.</li> <li>• A gross pollutant trap (GPT) will be installed within Lot 2B on the final downstream stormwater pit prior to discharging. As these GPT's will be located on-lot as they will be owned and maintained by Goodman. The GPT will capture 90% of Gross Pollutants from Lot 2B as per water sensitive urban design guidelines.</li> <li>• all design, documentation, installation and maintenance of sediment and erosion controls will be in accordance with the correct requirements</li> <li>• a SWMP will be prepared for the construction phase of the development</li> <li>• site inspection and maintenance specified in Section 5.2 of the report provided in Appendix I</li> <li>• sediment basin maintenance, including drainage within 5 days, implementation of flocculation when the 5 day target cannot be met.</li> </ul>
Waste management	<ul style="list-style-type: none"> <li>• Detailed Construction Waste Management Plan and Waste Management Plan</li> <li>• Installation of a baler and compactor in Lot 2B</li> </ul>
Biodiversity	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Implement a Vegetation Management Plan for the restoration and rehabilitation and ongoing management of 4.2 ha of Riparian Corridor adjacent to Ropes Creek.</li> <li>• Ongoing management of retained native vegetation to be in accordance the Vegetation Management Plan</li> <li>• Ongoing maintenance and management of other areas of planted native vegetation including road batters, embankments and bio-retention basins in accordance with the Landscape Management Plan.</li> </ul>
Air quality	<ul style="list-style-type: none"> <li>• CEMP to include standard air quality control measures, contingency plans and response procedures and suitable reporting and performance monitoring procedures.</li> <li>• CEMP to include standard odour mitigation measures for construction including keeping excavation surfaces moist, covering excavation faces and/or stockpiles, use of soil</li> </ul>

Issue	Mitigation measures
	<p>vapour extraction systems and regular monitoring of discharges as appropriate.</p> <ul style="list-style-type: none"> <li>• Specific operations proposed within the OWE with the potential for generation of odour would be subject to further assessment.</li> <li>• Further assessment of potential air quality impacts to be undertaken in respect of any specific operations proposed within the OWE with an atypical air emissions profile.</li> </ul>
Energy efficiency	<ul style="list-style-type: none"> <li>• all purchased electricity and energy which is consumed by stationary equipment on site</li> <li>• energy consumed by mobile equipment (e.g. forklifts)</li> <li>• sub-metering should be implemented for all major energy consuming processes or items of equipment including sub-metering for all loads greater than 100 kVA</li> <li>• electrical equipment should be maintained to Australian Standards.</li> <li>• Detailed Energy Management Plan - updated regularly</li> </ul> <p>An energy audit and management review on a half-yearly basis to identify:</p> <ul style="list-style-type: none"> <li>• if employees are following energy savings procedures correctly</li> <li>• if additional employee training is needed</li> <li>• if signage and procedures need to be re-examined</li> <li>• to identify opportunities for improvement.</li> </ul>
BCA	<ul style="list-style-type: none"> <li>• Preparation of the Performance Solutions and corresponding fire safety measures during detailed design to ensure compliance with BCA and International Fire Engineering Guidelines</li> </ul>
Flooding	<ul style="list-style-type: none"> <li>• 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</li> <li>• OSD designed to mitigate post-development flows to pre-development flows for peak ARI events</li> <li>• Finished floor levels to have minimum 500mm freeboard to 100 year overland flows</li> <li>• 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 at Appendix J.</li> </ul>
Heritage	<ul style="list-style-type: none"> <li>• Implementation of unexpected finds procedure</li> </ul>

Issue	Mitigation measures
	<ul style="list-style-type: none"> <li>• Archaeological salvage excavation and monitoring to be undertaken in the presence of relevant Aboriginal stakeholders prior to ground disturbance and excavation work in identified areas.</li> <li>• Results of detailed archaeological excavation and any suitable salvaged materials to be managed in accordance with the NPW Act and direction from relevant Aboriginal stakeholders.</li> </ul>
Fire safety	<ul style="list-style-type: none"> <li>• Preparation of Performance Solutions and fire safety measures will be presented in the building design phase</li> </ul>
Bushfire	<ul style="list-style-type: none"> <li>• The downpipe/stormwater system to the internal box gutters shall be sized to provide a self flushing of combustible materials from the roof/gutter. This shall include increased fall in the box gutters to the sumps;</li> <li>• any operable windows shall be fitted with aluminium/stainless steel mesh flyscreens having a maximum mesh aperture size of 2mm;</li> <li>• access doors [PA and Vehicle] to the buildings shall be fitted with seals that seal the bottom, stiles and head of the door against the opening/frame to prevent the entry of embers into the building. Particular attention shall be given to the gap at the head of the curtain of the roller doors, where mohair type seals can be used;</li> <li>• External timber doors shall be fitted with a stainless steel/Colorbond kick plate of 400mm high on the outside of the door;</li> <li>• External glazed doors and windows shall comply with the requirements for glazing less than 400mm above finished ground level; paths / pavement and elevated roofs;</li> <li>• Any external vents, grilles and ventilation louvres shall have stainless steel mesh with a maximum aperture of 2mm square fitted to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.</li> <li>• Roof ventilators shall be fitted with stainless steel flymesh [2mm aperture] to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.</li> </ul>

## APPENDIX 4 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](mailto: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 C10 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

## Oakdale West Estate - Upcoming Traffic Information



Kate McKinnon

To [Robert Nastasi](#); [cathie.graydon@mamre.nsw.edu.au](#); [chey@parra.catholic.edu.au](#); [Rosemary Chapman](#)  
Cc [Stephanie Partridge](#); [Kym Dracopoulos](#); [Luke Ridley](#); [Alasdair Cameron](#); [Dan Thompson](#)

[Reply](#) [Reply All](#) [Forward](#) [...](#)

Fri 27/03/2020 9:17 PM



Good Evening,

Further to your recent discussions with Goodman regarding the upcoming construction traffic at Oakdale West, Goodman provide the attached letter as a summary of the proposed traffic volumes and management measures.

Should you require further detail, Goodman also provides the Construction Traffic Management Plan for the infrastructure works and Building 2B works as well as a technical memo summarising the findings of these reports (refer below link).

Goodman asks for you to review the letters and relevant management plans and advise of any questions, or concerns as soon as reasonably possible.

Link below.

Kind Regards,



Kate McKinnon

Associate - Env & Social Impact Assessment

Please note in response to the COVID-19 Pandemic and physical distancing recommendations from the Australian Government, SLR is encouraging staff to work remotely and implement flexible working hours if necessary. I will endeavour to respond to your email as quickly as possible; however I may not be able to respond immediately. Furthermore you may have received this email outside of regular office hours. It is not expected that you will respond to this email until your own working hours commence.

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SLR Consulting Australia Pty Ltd  
Level 1, The Central Building, Innovation Campus, Squires Way, North Wollongong, NSW, Australia, 2500



WINNERS: RoSPA Gold Award, 2017



WINNERS: International Business Excellence Award, 2016

## Oakdale West Estate - Response to Submission Regarding Upcoming Traffic

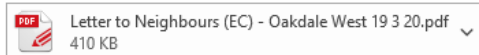


Kate McKinnon

To [chey@parra.catholic.edu.au](#)  
Cc [Dan Thompson](#); [Stephanie Partridge](#)

[Reply](#) [Reply All](#) [Forward](#) [...](#)

Fri 27/03/2020 9:17 PM



Good Evening,

Please see attached a copy of the response letter sent to Emmaus College in response to their submission and petition regarding the use of Bakers Lane during peak school drop off and pick up periods.

This copy is provided for information purposes given these concerns were also raised by yourself during our consultation meeting. Further information regarding future traffic movements will be sent to you shortly following this email.

If you have any questions please let me know.

Kind Regards,



Kate McKinnon

Associate - Env & Social Impact Assessment

Please note in response to the COVID-19 Pandemic and physical distancing recommendations from the Australian Government, SLR is encouraging staff to work remotely and implement flexible working hours if necessary. I will endeavour to respond to your email as quickly as possible; however I may not be able to respond immediately. Furthermore you may have received this email outside of regular office hours. It is not expected that you will respond to this email until your own working hours commence.

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WINNERS: RoSPA Gold Award, 2017



WINNERS: International Business Excellence Award, 2016

# APPENDIX C

## Construction Noise and Vibration Management Plan

# PROJECT WARATAH

## Construction Noise and Vibration Management Plan SSD 10397

### Prepared for:

Goodman Property Services (Aust) Pty Ltd  
Level 17  
60 Castlereagh Street  
Sydney NSW 2000

SLR Ref: 610.19215-R03  
Version No: -v1.3  
May 2020





## PREPARED BY

SLR Consulting Australia Pty Ltd  
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Tenancy 202 Submarine School, Sub Base Platypus, 120 High Street  
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E: sydney@slrconsulting.com www.slrconsulting.com

## 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
610.19215-R03-v1.3	6 May 2020	Joshua Ridgway	Antony Williams	Antony Williams
610.19215-R03-v1.2	27 April 2020	Joshua Ridgway	Antony Williams	Antony Williams
610.19215-R03-v1.1	6 April 2020	Joshua Ridgway	Antony Williams	Antony Williams
610.19215-R03-v1.0	31 March 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 the Oakdale West Industrial Estate (Oakdale West) Stage 2 works at Lot 2B, located in Kemps Creek.

The CNVMP addresses the potential noise and vibration impacts associated with the construction of Stage 2 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). Construction noise and vibration impacts specific to Oakdale West Stage 2 development were previously assessed in the *Oakdale West Estate Noise & Vibration Assessment* prepared by Wilkinson Murray in January 2020 (the Stage 2 NVA).

## 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 Stage 1 Development includes 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 (**Figure 1**).

This CNVMP has been prepared to cover the Stage 2 works at Lot 2B at Precinct 2 (see **Figure 2**). Stage 2 was approved on 9 April 2020 under SSD 10397 and involves establishing a warehouse and distribution facility at Lot 2B. Stage 2 Development is the next stage of development to occur at Oakdale West following the approval of Stage 1 under SSD 7348.

Stage 2 has a site area of 149,266 m<sup>2</sup> and will comprise the following key components:

- Single warehouse and office building with a footprint of 51,310 m<sup>2</sup> and warehouse space over four levels to a height of 26 metres, providing a Gross Floor Area (GFA) of 192,930 m<sup>2</sup> and Gross Lettable Area (GLA) of 189,130 m<sup>2</sup>;
- Parking (truck and car); and
- Fit-out and use approval including racking and automated distribution hub infrastructure and loading bays.

The construction works associated with Stage 2 will be completed by Qanstruct. 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 Stage 2 – State Significant Development Application* (EIS) prepared by GHD (2020), including all specialist assessments and other appendices.

Figure 1 Oakdale West Precinct Plan

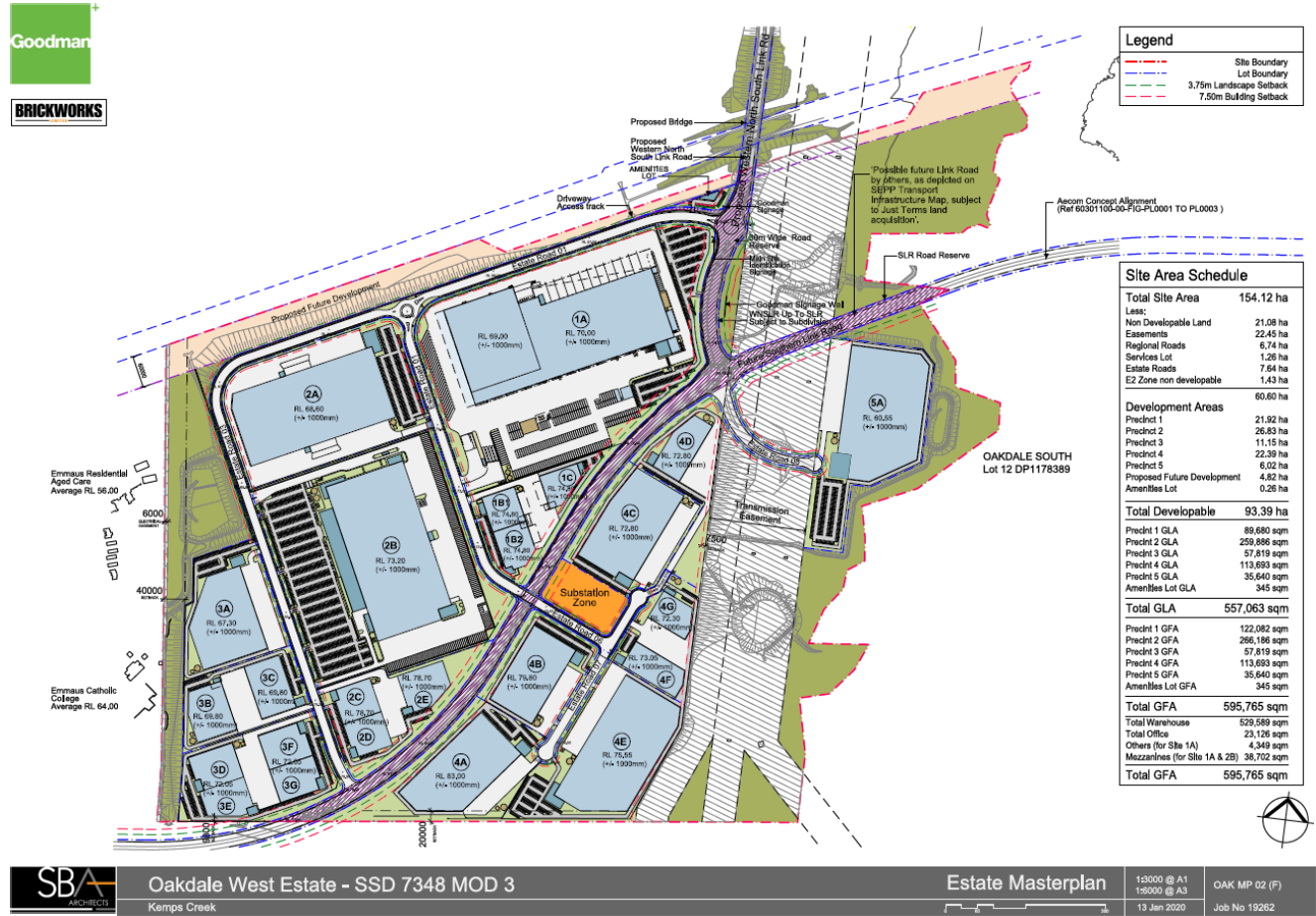
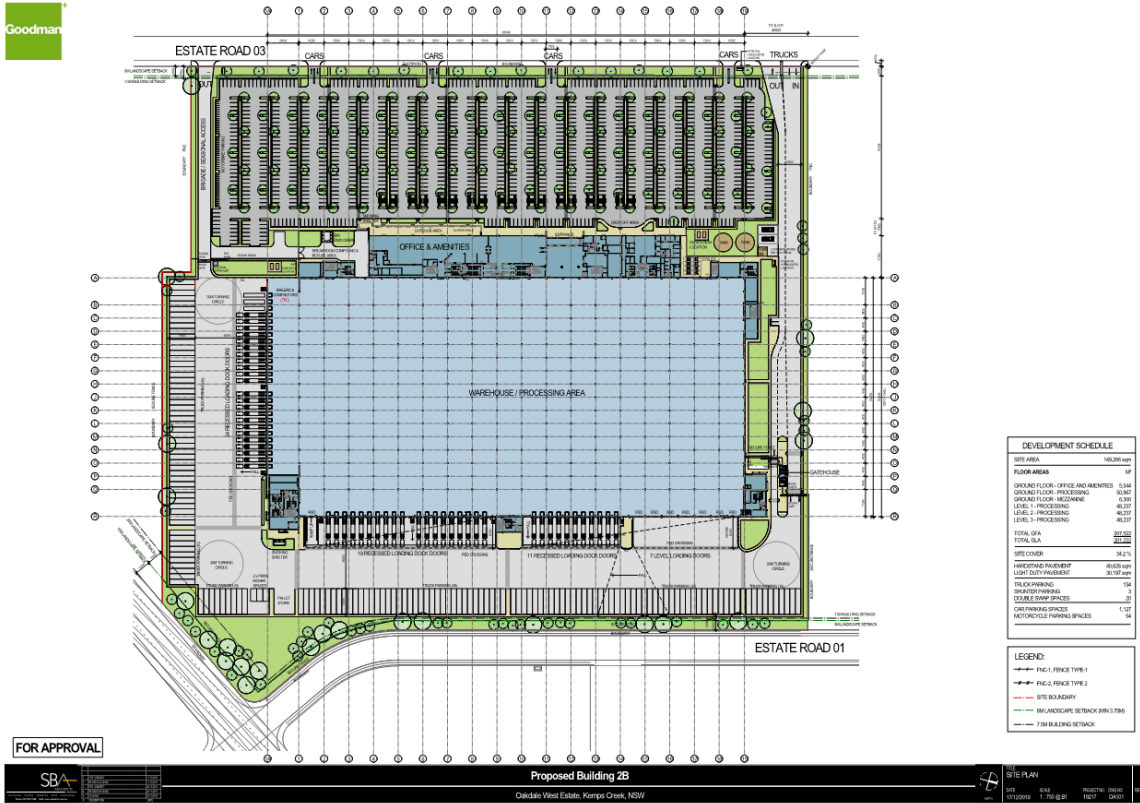


Figure 2 Oakdale West Stage 2 Layout



## 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 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 Oakdale West Stage 2. Construction of Stage 1 and the WNSLR are covered in a separate CNVMP documents.

## 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 Oakdale West Stage 2. The conditions relevant to this CNVMP are outlined in the following sections.

### 2.1 Development Consent

Conditions for Oakdale West and the WNSLR are specified in Department of Planning, Industry and Environment (DPIE) Development Consent SSD 10397, dated 31 March 2020. The conditions relevant to this CNVMP are reproduced in **Table 1**.

**Table 1 Development Consent Conditions**

Development Consent Conditions	Section / Comment												
<b>Operation of Plant and Equipment</b>													
A20. All plant and equipment used on site, or to monitor the performance of the development must be: a) maintained in a proper and efficient condition; and b) operated in a proper and efficient manner.	<b>Section 6 / Table 13</b>												
<b>Hours of Work</b>													
B21. The Applicant must comply with the hours detailed in Table 2, unless otherwise agreed in writing by the Planning Secretary. <b>Table 2: Hours of Works</b>	<b>Section 3.5</b>												
<table border="1"> <thead> <tr> <th>Activity</th> <th>Day</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>Construction</td> <td>Monday – Sunday</td> <td>6 am to 10 pm</td> </tr> <tr> <td>Concrete works (internal to building only)</td> <td>Monday – Sunday</td> <td>3 am to 10 pm</td> </tr> <tr> <td>Operation</td> <td>Monday – Sunday (including public holidays)</td> <td>24 hours</td> </tr> </tbody> </table>	Activity	Day	Time	Construction	Monday – Sunday	6 am to 10 pm	Concrete works (internal to building only)	Monday – Sunday	3 am to 10 pm	Operation	Monday – Sunday (including public holidays)	24 hours	
Activity	Day	Time											
Construction	Monday – Sunday	6 am to 10 pm											
Concrete works (internal to building only)	Monday – Sunday	3 am to 10 pm											
Operation	Monday – Sunday (including public holidays)	24 hours											
Note: Concrete works (internal to building only) include concrete pours inside Building 2B, following the installation of all building walls and the building roof.													
B22. Works outside the hours identified in Condition B21 may be undertaken in the following circumstances: a) works that are inaudible at the nearest sensitive receivers; b) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or c) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.	<b>Section 3.5</b>												
<b>Construction Noise Limits</b>													
B27. The Applicant must implement all feasible and reasonable noise mitigation measures to minimise construction noise from the development. Any activities that could exceed the construction noise management levels detailed in the <i>Interim Construction Noise Guideline</i> (DECC, 2009), must be identified and managed in accordance with the Construction Noise Management Plan required by Condition B30.	<b>Section 4.1, Section 5.1 and Section 6 / Table 13</b>												



Development Consent Conditions	Section / Comment
B28. The Applicant must maintain the temporary noise curtain installed adjacent to Emmaus Catholic Care Village for the duration of construction, unless otherwise agreed with the Planning Secretary, or until such time as the permanent noise wall shown in Appendix 2 is completed.	<b>Section 6 / Table 13</b>
B29. The Applicant must maintain a real-time noise monitor at the western boundary of the site for the duration of construction. Where monitoring identifies any exceedance of the construction noise management levels, the Applicant must implement further feasible and reasonable mitigation measures to reduce construction noise levels. The environmental representative for the OWE must review and provide the results of noise monitoring to the Planning Secretary on request, including details of the measures taken to minimise noise to ensure compliance with the noise goals.	<b>Section 6 / Table 13 and Section 8</b>
<b>Construction Noise Management Plan</b>	
B30. The Applicant must prepare a Construction Noise Management Plan (CNMP) for the development to the satisfaction of the Planning Secretary. The CNMP must form part of a CEMP in accordance with Condition C2 and must:	This document
a) be prepared by a suitably qualified and experienced noise expert;	Prepared by SLR – Author CV in <b>Appendix B</b>
b) be approved by the Planning Secretary prior to commencement of construction;	<b>Section 3.4</b>
c) describe procedures for achieving the noise management levels in the EPA's <i>Interim Construction Noise Guideline</i> (DECC, 2009), as may be updated or replaced from time to time;	<b>Section 4.1, Section 5.1 and Section 6 / Table 13</b>
d) describe the measures to be implemented to manage noise generating activities during sensitive periods, including evenings, night-time and on Sundays, including but not limited to: <ul style="list-style-type: none"> <li>i) maintenance of the temporary noise curtain along the western boundary of the Emmaus Catholic Care Village for the duration of construction;</li> <li>ii) minimising coinciding use of multiple high noise generating equipment;</li> <li>iii) orienting noisy equipment away from sensitive receivers on the western boundary;</li> <li>iv) ensuring concrete trucks for internal concreting works (between 3 am and 6 am) are located to the east of Building 2B to maximise noise shielding for the Emmaus Catholic Care Village;</li> <li>v) ensuring all equipment has non-tonal reversing alarms;</li> <li>vi) regular maintenance and compliance checks of plant and equipment;</li> <li>vii) consultation with adjacent sensitive receivers prior to and during construction;</li> </ul>	<b>Section 6 / Table 13</b>
e) include measures to minimise noise from construction vehicles on the public road network and on site, including but not limited to, a Driver Code of Conduct and induction training for drivers to minimise road traffic noise;	<b>Section 6 / Table 13</b>
f) include a monitoring program that: <ul style="list-style-type: none"> <li>i) includes quarterly attended noise monitoring at the nearest sensitive receivers to determine compliance with the construction noise management levels in the <i>Interim Construction Noise Guideline</i>;</li> <li>ii) evaluates and reports on the effectiveness of the noise management measures;</li> <li>iii) include procedures to relocate, modify, mitigate or stop work to ensure compliance with the noise management levels; and</li> </ul>	<b>Section 6 / Table 13, Section 8, Section 9 and the Compliance Monitoring and Reporting Program (CMRP)</b>
g) include procedures for recording and responding to complaints.	<b>Section 7</b>

Development Consent Conditions	Section / Comment
B31. The Applicant must: a) not commence construction of the development until the CNMP required by Condition B30 is approved by the Planning Secretary; and; b) implement the most recent version of the CNMP approved by the Planning Secretary for the duration of construction.	<p><b>Section 3.4</b></p> <p>This document</p>
<b>Management Plan Requirements</b>	
C1. 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, the development or any management measures;	i) <b>Section 2</b> ii) <b>Section 4</b> iii) <b>Section 4, Section 6 / Table 13 and Section 8</b>
b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	<b>Section 5 and Section 6 / Table 13</b>
c) a program to monitor and report on the: i) impacts and environmental performance of the development; and ii) effectiveness of the management measures set out pursuant to paragraph (b) above;	<b>Section 8</b>
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;	<b>Section 6 and Section 9</b>
e) a program to investigate and implement ways to improve the environmental performance of the development over time;	<b>Section 11, and Section 6 of the CEMP</b>
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) <b>Section 9</b> ii) <b>Section 7</b> iii) <b>Section 9</b>
g) a protocol for periodic review of the plan.	<b>Section 11, and Section 6 of the CEMP</b>

## 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) <i>Interim Construction Noise Guideline</i> (ICNG)	Assessment of noise impacts on sensitive receivers.
Roads and Maritime Services (2016) <i>Construction Noise and Vibration Guideline</i> (CNVG)	Assessment and management protocols for noise and vibration impacts.
Environment Protection Authority (EPA) (2006) <i>Assessing Vibration: a technical guideline</i>	Assessment of vibration impacts on sensitive receivers.
British Standard Institution (BSI) (1993) <i>BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2</i> (BS 7385)	Assessment of vibration impacts (structural damage) to sensitive structures.
German Institute for Standardisation (Deutsches Institut für Normung) (1999) <i>DIN 4150 – Structural vibration - Effects of vibration on structures</i> (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 2B is located within the western area of Oakdale West.

### 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

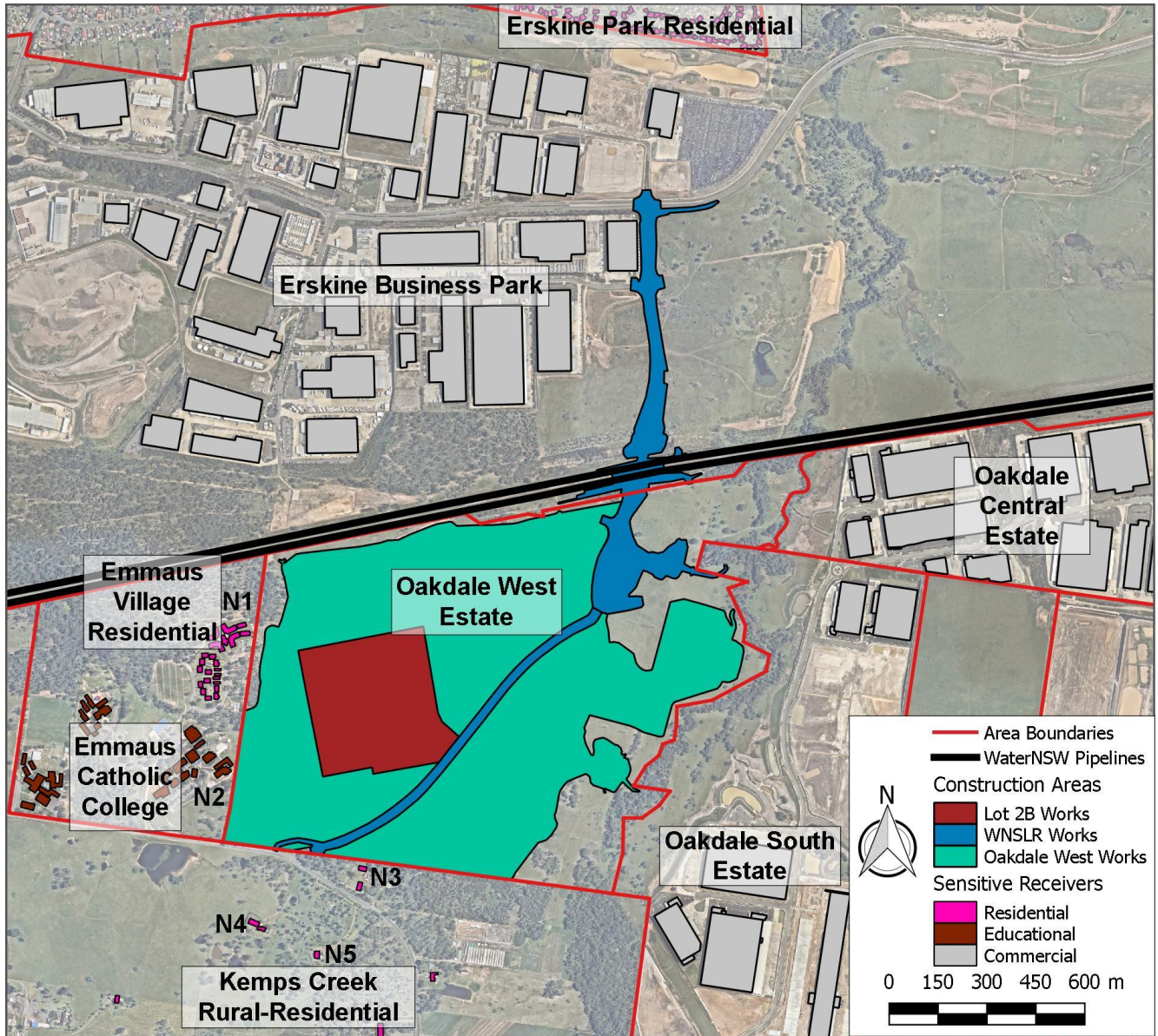
The noise and vibration assessment locations representative of the nearest sensitive receiver areas surrounding Oakdale West were identified in the NIA for the project and are shown in **Figure 3**. Details of the nearest potentially affected sensitive receivers are provided in **Table 3**.

**Table 3** Surrounding Sensitive Receivers

Sensitive Receivers	Receiver Type	Distance & Direction from Nearest Point of Stage 2 Works
Kemps Creek	Residential	280 m south
Emmaus Village	Residential	150 m west
Erskine Park	Residential	1,900 m north
Emmaus Catholic College	Educational	260 m west
Erskine Business Park	Commercial	380 m north
WaterNSW Pipeline	Structure	320 m north



Figure 3 Sensitive Receiver Areas



### 3.4 Construction Staging and Activities

In accordance with Conditions B30(b) and B31 construction of Stage 2 must not commence until this CNVMP has been approved by the Planning Secretary.

Stage 2 development of the Oakdale West Concept Proposal includes the development of a warehouse and distribution facility at Lot 2B and associated estate roads.

Construction of Stage 2 is proposed to commence in April 2020 until around September 2021.

Construction activities include:

- Installation of in-ground services
- Pouring of concrete slabs
- Construction of the warehouses including wall and roof cladding
- Internal office fit outs
- Fire services
- Estate roads and infrastructure.

### 3.5 Construction Hours

Construction hours will be in accordance with Conditions B21 and B22 of Development Consent SSD 10397, which are reproduced below:

*B21. The Applicant must comply with the hours detailed in Table 2, unless otherwise agreed in writing by the Planning Secretary.*

**Table 2:** Hours of Work

<b>Activity</b>	<b>Day</b>	<b>Time</b>
Construction	Monday – Sunday	6 am to 10 pm
Concrete works (internal to building only)	Monday – Sunday	3 am to 10 pm

*Note: Concrete works (internal to building only) includes concrete pours inside Building 2B, following the installation of all building walls and the building roof.*

*B22. Works outside of the hours identified in Condition B21 may be undertaken in the following circumstances:*

- a) works that are inaudible at the nearest sensitive receivers;*
- b) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or*
- c) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.*

Condition B22(a) of Development Consent SSD 10397 notes that works may be undertaken outside of approved 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.

## 3.6 Construction Site Access

Construction site access will be undertaken in accordance with the approved Construction Traffic Management Plan (CTMP).

Access to Lot 2B will be through Oakdale West and will initially occur via Bakers Lane and/or Aldington Road. Upon completion of the WNSLR, providing access to the work area from the north becomes available, all vehicular access will be restricted to the northern access routes, via Lenore Drive and WNSLR.

Bakers Lane is the initial primary access point for these works with works arriving from Mamre Road to the west. All construction vehicles are to use the primary access from Bakers Lane during this period. A secondary access route is proposed from Aldington Road (to the south-west of the access gate), however the proposed alternative route will be restricted for use only when Bakers Lane is unavailable, as detailed in the CTMP. Every effort will be made to plan deliveries outside of school zone hours along Bakers Lane. The traffic monitoring strategies outlined in the CTMP will ensure that deliveries via Bakers Lane are scheduled outside of the school zone hours in order to avoid additional conflicts between construction vehicles and the school. During school zone hours, Aldington Road shall be used for deliveries to and from site.

## 4 Construction Noise and Vibration Criteria and Guidelines

### 4.1 Construction Noise Criteria

In accordance with Condition B27 of the Development Consent SSD 10397, the development 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 4**.

**Table 4 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	<ul style="list-style-type: none"> <li>The noise affected level represents the point above which there may be some community reaction to noise.</li> <li>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.</li> <li>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.</li> </ul>
	Highly Noise Affected 75 dBA	<ul style="list-style-type: none"> <li>The Highly Noise Affected (HNA) level represents the point above which there may be strong community reaction to noise.</li> <li>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:                             <ul style="list-style-type: none"> <li>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.</li> <li>If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.</li> </ul> </li> </ul>



Time of Day	NML LAeq(15minute)	How to Apply
Outside recommended standard construction hours	RBL + 5 dBA	<ul style="list-style-type: none"> <li>• A strong justification would typically be required for works outside the recommended standard hours.</li> <li>• The proponent should apply all feasible and reasonable work practices to meet the noise affected level.</li> <li>• 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.</li> </ul>

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 5**.

**Table 5 Construction Noise Management Levels at Other Sensitive Land Uses**

Land use	NML LAeq(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 LAeq(15minute)
- Offices, retail outlets: external 70 dBA LAeq(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 Stage 2 are outlined in **Table 6**.

**Table 6 Project Specific Noise Management Levels**

Location	Receiver Type	RBL <sup>1</sup>			Construction NMLs LAeq(15minute) (dBA)				
		Day	Evening	Night	Standard Construction Hours <sup>2</sup>	Day Out of Hours <sup>2</sup>	Evening Out of Hours <sup>2</sup>	Night Out of Hours <sup>2</sup>	Highly Noise Affected
Erskine Park Residential <sup>3</sup>	Residential	37	40	39	47	42	42 <sup>5</sup>	42 <sup>5</sup>	75
Emmaus Village Residential	Residential	39	38	36 (34 to 39 for concrete works – see discussion below) <sup>6</sup>	49	44	43	41 (39 to 44 for concrete works) <sup>6</sup>	
Kemps Creek Residential	Residential	34	35	32	44	39	39 <sup>5</sup>	37	
Any	Industrial	n/a			External 75 when in use				n/a
Any	Commercial	n/a			External 70 when in use				
Any	School <sup>4</sup>	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 NPfl.

Note 6: RBL at Emmaus Village Residential for concrete works between 3 am and 7 am taken from Wilkinson Murray Report OWE\_MOD3\_19440\_240320: OWE - SSD 10397 Stage 2 DA – Lot 2B Out of Hours Concrete Pour Works – Assessment of Noise Impacts, dated 24 March 2020, as detailed below.

Detailed investigation of hourly night-time RBLs at Emmaus Village Residential was undertaken for one month in February 2020 (refer to Wilkinson Murray Report OWE\_MOD3\_19440\_240320: OWE - SSD 10397 Stage 2 DA – Lot 2B Out of Hours Concrete Pour Works – Assessment of Noise Impacts, dated 24 March 2020) (Lot 2B OOHW Report). The Lot 2B OOHW Report detailed hourly RBLs during the period 3 am to 7 am for the purpose of determining construction NMLs for out of hours concrete pour works at Lot 2B. The measured hourly RBLs were 34 dBA from 3 am to 5 am, 35 dBA from 5 am to 6 am, and 39 dBA from 6 am to 7 am.

As such, out of hours concrete pour works between 3 am and 7 am will use the RBLs detailed above, and all other out of hours works during the night-time period (10 pm to 7 am) will use the RBL detailed in the NIA, as shown in **Table 6**.

As noted in **Table 4**, where the predicted or measured  $L_{Aeq(15\text{minute})}$  construction noise levels exceed the NMLs in **Table 6**, 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 (ie 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

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 7**. 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 7 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 8**. These are maximum levels measured in any direction at the foundation or in the horizontal axes in the plane of the uppermost floor.

**Table 8 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 <b>and</b> are of great intrinsic value (e.g. listed buildings)	3	3 to 8	8 to 10	8	20 <sup>1</sup>

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 320 m from the closest point of the Lot 2B works. This separation distance is sufficient to mitigate vibration from the Lot 2B site to the pipelines. As such, no further assessment has been undertaken.

### 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 VDV<sub>s</sub> 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 9**.

**Table 9 Acceptable Vibration Dose Values for Intermittent Vibration ( $m/s^{1.75}$ ) (Assessing Vibration: a technical guideline)**

Location	Daytime <sup>1</sup>		Night-time <sup>1</sup>	
	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). These minimum working distances are summarised in **Table 10**.

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 10 Recommended Minimum Working Distances for Vibration Intensive Equipment**

Plant Item	Rating / Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline) <sup>1</sup>
		Residential and Light Commercial (BS 7385) <sup>1</sup>	Heritage Items (DIN 4150 Group 3) <sup>2</sup>	
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

Plant Item	Rating / Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline) <sup>1</sup>
		Residential and Light Commercial (BS 7385) <sup>1</sup>	Heritage Items (DIN 4150 Group 3) <sup>2</sup>	
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, vibratory compactors must not be used closer than 30 metres from residential buildings or Emmaus Catholic College unless vibration monitoring confirms compliance with the vibration criteria detailed in **Section 4.2**.

## 5 Construction Noise and Vibration Impacts

### 5.1 Construction Noise Impacts

The Stage 2 NVA presented construction noise predictions from a number of construction scenarios likely to occur on site. These construction scenarios are representative of a number of activities which will be required during the construction of the site.

The construction scenarios assessed in the Stage 2 NVA are:

- Site Clearing and Earthworks
- Pad and Hardstand Works
- Construction of Warehouse and Office Structures
- Use of Access Road for Deliveries

The Stage 2 NVA predicted construction noise levels to the closest sensitive receivers shown as N1 (Emmaus Village residential), N2 (Emmaus Catholic College), and N3, N4, N5 (Kemps Creek residential) in **Figure 3**. The predicted worst-case noise levels and the exceedances of the NMLs from the various construction works at Oakdale West Stage 2 are presented in **Table 11**.

Construction noise levels at Emmaus Village residential (N1) from out of hours concrete pour works between 3 am and 7 am at Lot 2B were predicted in the Lot 2B OOHW Report. The predicted worst-case noise levels and the exceedances of the NMLs from out of hours concrete pour works at Lot 2B, predicted in the Lot 2B OOHW Report are reproduced in **Table 12**.

**Table 11 Predicted NML Exceedances – General Construction Activities**

Receiver	Period (weather)	LAeq(15minute) Noise Levels (dBA)					
		CNML	Highly Affected NML	Predicted			
				Earthworks	Hardstand	Warehouse	Access Road
N1 – Emmaus Village Residential	Day – Standard Hours	49	75	38	47	47	36
	Day – Out of Hours	44	n/a	38	<b>47</b>	<b>47</b>	36
	Evening	43	n/a	38	<b>47</b>	<b>47</b>	36
	Night	41	n/a	38	<b>47</b>	<b>47</b>	36
	Night (Adverse)	41	n/a	40	<b>49</b>	<b>49</b>	38
N2 – Emmaus Catholic College (School)	Day – Standard Hours	55 <sup>1</sup>	n/a	47	48	48	41
	Day – Out of Hours	n/a	n/a	47	48	48	41
	Evening	n/a	n/a	47	48	48	41
	Night	n/a	n/a	47	48	48	41
	Night (Adverse)	n/a	n/a	49	50	50	43

Receiver	Period (weather)	LAeq(15minute) Noise Levels (dBA)					
		CNML	Highly Affected NML	Predicted			
				Earthworks	Hardstand	Warehouse	Access Road
N3 – Kemps Creek – residence	Day – Standard Hours	44	75	<b>48</b>	<b>49</b>	<b>49</b>	<b>51</b>
	Day – Out of Hours	39	n/a	<b>48</b>	<b>49</b>	<b>49</b>	<b>51</b>
	Evening	39	n/a	<b>48</b>	<b>49</b>	<b>49</b>	<b>51</b>
	Night	37	n/a	<b>48</b>	<b>49</b>	<b>49</b>	<b>51</b>
	Night (Adverse)	37	n/a	<b>50</b>	<b>51</b>	<b>51</b>	<b>53</b>
N4 – Kemps Creek – residence	Day – Standard Hours	44	75	43	42	42	40
	Day – Out of Hours	39	n/a	<b>43</b>	<b>42</b>	<b>42</b>	<b>40</b>
	Evening	39	n/a	<b>43</b>	<b>42</b>	<b>42</b>	<b>40</b>
	Night	37	n/a	<b>43</b>	<b>42</b>	<b>42</b>	<b>40</b>
	Night (Adverse)	37	n/a	<b>45</b>	<b>44</b>	<b>44</b>	<b>42</b>
N5 – Kemps Creek – residence	Day – Standard Hours	44	75	43	40	42	38
	Day – Out of Hours	39	n/a	<b>43</b>	<b>40</b>	<b>42</b>	<b>38</b>
	Evening	39	n/a	<b>43</b>	<b>40</b>	<b>42</b>	<b>38</b>
	Night	37	n/a	<b>43</b>	<b>40</b>	<b>42</b>	<b>38</b>
	Night (Adverse)	37	n/a	<b>45</b>	<b>42</b>	<b>44</b>	<b>40</b>

Note 1: The ICNG criterion for N2 is LAeq 45 dBA which applies internally and is only applicable when the school is in use. For the purpose of this assessment a conservative inside to outside correction of +10 dBA has been applied to the internal limit for N2 to allow for comparison with the external noise predictions. An inside to outside correction of +10 dBA is typical of a building with partially open windows.

Note 2: It is noted that the Stage 2 NVA did not compare the noise level at N3 to the approved noise limits due to Condition C19 of Development Consent SSD 7348. However, as this condition (and its equivalent condition B24 in SSD 10397) apply to operational noise limits not construction NMLs, this has been compared above.

Note 3: Bold text indicates an exceedance of the ICNG CNML.

Note 4: Noise-enhancing weather conditions during the daytime and evening periods have not been included in the assessment as these are not considered prevailing conditions for the site.

Note 5: The predictions assume the western site boundary noise wall, is constructed prior to the commencement of the works approved under this DA.

**Table 12 Predicted NML Exceedances at Emmaus Village N1 – Out of Hours Concrete Pour Works**

Period (weather)	CNML	Predicted LAeq(15minute) Noise Levels (dBA)			
		Concreting Works at Lot 2B	Concrete Trucks on Access Road	Light Vehicles on Access Road	Concreting Works + Access Road
<b>Ground Level Pad Concreting Works</b>					
3 am to 4 am (neutral)	39	30-38	35	<30	<b>40</b>
3 am to 4 am (adverse)	39	34- <b>44</b>	<b>40</b>	<30	<b>45</b>
4 am to 5 am (neutral)	39	30-38	35	<30	<b>40</b>
4 am to 5 am (adverse)	39	34- <b>44</b>	<b>40</b>	<30	<b>45</b>
5 am to 6 am (neutral)	40	30-38	35	<30	40
5 am to 6 am (adverse)	40	34- <b>44</b>	40	<30	<b>45</b>



Period (weather)	CNML	Predicted LAeq(15minute) Noise Levels (dBA)			
		Concreting Works at Lot 2B	Concrete Trucks on Access Road	Light Vehicles on Access Road	Concreting Works + Access Road
6 am to 7 am (neutral)	44	30-38	35	<30	40
6 am to 7 am (adverse)	44	34-44	40	<30	45
<b>Slab Concreting Works on Upper Levels</b>					
3 am to 4 am (neutral)	39	<20	34	<30	34
3 am to 4 am (adverse)	39	<25	39	<30	39
4 am to 5 am (neutral)	39	<20	34	<30	34
4 am to 5 am (adverse)	39	<25	39	<30	39
5 am to 6 am (neutral)	40	<20	34	<30	34
5 am to 6 am (adverse)	40	<25	39	<30	39
6 am to 7 am (neutral)	44	<20	34	<30	34
6 am to 7 am (adverse)	44	<25	39	<30	39

Note 1: Bold text indicates an exceedance of the ICNG CNML.

Note 2: The predictions assume the western site boundary noise wall, is constructed prior to the commencement of the works approved under this DA.

As detailed in the Stage 2 NVA and shown in **Table 11**, the construction noise impacts for general construction activities are predicted to exceed the NMLs at Emmaus Village and Kemps Creek residential receivers for some construction works during approved construction hours.

As detailed in the Lot 2B OOHW Report and shown in **Table 12**, the construction noise impacts for out of hours concrete pour works are predicted to exceed the NMLs at some parts of Emmaus Village residential during the 3 am to 5 am period under neutral and adverse weather conditions, and 5 am to 7 am only under adverse weather conditions.

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 site clearing and earthworks, and pad and hardstand works.

During construction of Oakdale West Lot 2B, vibratory rollers and plate compactors are unlikely to be operated within the recommended minimum working distances of the nearest receivers in Kemps Creek, Emmaus Village, and Emmaus Catholic College, which are located around 280 m, 150 m and 260 m respectively from the nearest point of works.

The separation distance from these buildings 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 has the potential to be perceptible at times during the works when vibration intensive activities are being carried out nearby.

## 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 13**.

Note: **Table 13** is replicated as Table 8 and Table 11 in the CEMP.

**Table 13 Environmental Management Controls for Construction Noise and Vibration**

Measure	Person Responsible	Timing / Frequency	Reference / Notes
<b>Project Planning</b>			
Less noise and vibration intensive construction techniques for rock breaking and concrete sawing will be used.	Qanstruct	Ongoing	Best practice
Works will be completed during approved construction hours outlined in <b>Section 3.5</b> .			
Truck routes to site will be in accordance with the approved Construction Traffic Management Plan.			
<b>Scheduling</b>			
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 10397 Condition B30
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 approved construction hours 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 10397 Condition B30
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.			
<b>Site Layout</b>			
Compounds and worksites will be designed to promote one-way traffic and minimise the need for vehicle reversing.	Qanstruct	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			
<b>Training</b>			
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.	Qanstruct	Ongoing	Best practice
<b>Plant and Equipment Source Mitigation</b>			
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.	Qanstruct	Ongoing	SSD 10397 Conditions A20 & B30(d)
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).			SSD 10397 Condition B30(d)
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.			
Minimise the simultaneous use of multiple items of high noise generating equipment.			

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.	Qanstruct	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.			
Truck driver induction training will be undertaken will be prepared detailing requirements to minimise road traffic noise both onsite and on the public road network including understanding the Drivers Code of Conduct (refer to <b>Section 6.1</b> ).			SSD 10397 Condition B30(e)
<b>Screening</b>			
Purpose-built acoustic screening or enclosures will be installed around long-term fixed plant such as generators in site compounds.	Qanstruct	Ongoing	Best practice
A temporary noise curtain must be installed and maintained adjacent to Emmaus Catholic Care Village for the duration of construction, unless otherwise agreed with the Planning Secretary, or until construction of the permanent noise walls are completed.			SSD 10397 Conditions B28 & B30(d)
Concrete trucks for internal concreting works (between 3 am and 6 am) must be located to the east of Building 2B to maximise noise shielding for the Emmaus Village receivers.			SSD 10397 Condition B30(d)
<b>Community Consultation</b>			
Notifications will be provided to the affected community where high impacts are anticipated or where works outside approved construction hours 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 <b>Section 7</b> .			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
<b>Monitoring</b>			
Noise and/or vibration monitoring will be conducted (as appropriate) when noise/vibration intensive works are being undertaken in close proximity to sensitive receivers.	Qanstruct	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 <b>Section 8</b> for full details of monitoring requirements.			
Attended noise monitoring will be conducted at least quarterly to determine compliance with the construction NMLs.			SSD 10397 Condition B30(f)
A real-time noise monitor must be maintained at the western boundary of the site for the duration of construction. Where monitoring identifies any exceedance of the NMLs, further feasible and reasonable mitigation measures must be implemented to reduce construction noise levels.	Qanstruct / Goodman		SSD 10397 Condition B29
<b>Vibration</b>			
Where works are required within the minimum working distances, vibration monitoring will be undertaken to confirm that vibration is within acceptable levels.	Qanstruct	Ongoing	Best practice
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.			
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	
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.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
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.	Qanstruct	Before and after any vibration activities within minimum distances	Best practice

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 13** 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.

## 6.1 Drivers Code of Conduct

The Drivers Code of Conduct is detailed in Section 5 of the Construction Traffic Management Plan (CTMP). This details the safety requirements that must be undertaken by all drivers of vehicles and plant both onsite and on the public road network. Measures in the CTMP relating to minimising noise from construction vehicles on the public road network and on site along with measures from **Table 13** are detailed below:

- Drivers of heavy vehicles must drive on the truck routes approved in the CTMP.
- Reversing must be minimised as far as practicable.
- Drive in a manner which minimises noise from engines, bodies and suspensions.
- Equipment that is noisy will be started away from sensitive receivers.
- Training will be provided to all drivers 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.
- All construction plant and equipment used on site must be regularly inspected and maintained in an efficient condition and operated in a proper and efficient manner.
- 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.
- Minimise the simultaneous use of multiple items of high noise generating equipment.
- 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.
- Concrete trucks for internal concreting works (between 3 am and 6 am) must be located to the east of Building 2B to maximise noise shielding for the Emmaus Village receivers.
- All vehicle operation must be undertaken in accordance with the measures detailed in this CNVMP.



## 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 the Stage 2 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 3 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 Qanstruct's Complaint Form (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 3 of the CEMP;
- Blank hard copies of the Qanstruct's Complaint Form (see Appendix H of the CEMP); and
- Copies of all completed Complaint Forms 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 noise monitoring will be conducted quarterly at a minimum.

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**.

A real-time noise monitor must be maintained at the western boundary of the site for the duration of construction. Where monitoring identifies any exceedance of the NMLs, further feasible and reasonable mitigation measures must be implemented to reduce construction noise levels. The environmental representative for the OWE must review and provide results of the real-time noise monitoring to the Planning Secretary on request, including details of the measures taken to minimise noise to ensure compliance with the noise goals.

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 may be applicable to Emmaus Catholic College and the nearest residences in Kemps Creek (on Aldington Road) and Emmaus Village.

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 14**, 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 approved construction hours detailed in Condition B21.
- Any works occurring outside the approved construction hours detailed in Condition B21, where those works do not meet the allowable circumstances defined in Condition B22.
- Trigger of Condition Red for vibration impacts (either at sensitive receivers locations or on WaterNSW pipelines).

**Table 14 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);
- Throughout the day, visually assessing the dust levels and the effectiveness of any dust controls implemented, making adjustments accordingly;
- 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)

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)

Wilkinson and Murray (2020) *Oakdale West Estate Noise & Vibration Assessment* (Stage 2 NVA)



# 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  $2 \times 10^{-5}$  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

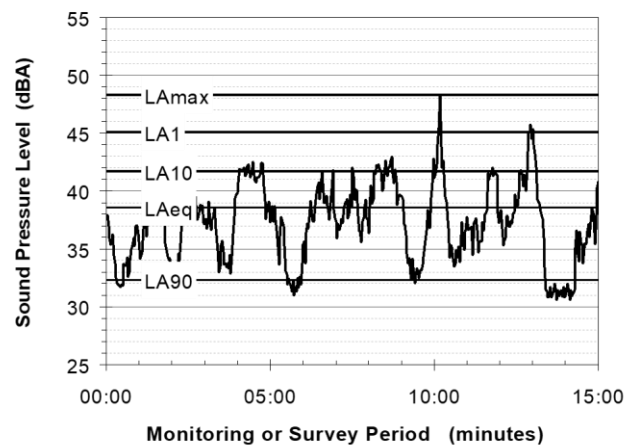
The Sound Power of a source is the rate at which it emits acoustic energy. As with Sound Pressure Levels, Sound Power Levels are expressed in decibel units (dB or dBA), but may be identified by the symbols SWL or LW, or by the reference unit  $10^{-12}$  W.

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 LAN, where LAN is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the LA1 is the noise level exceeded for 1% of the time, LA10 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:

- LA1 The noise level exceeded for 1% of the 15 minute interval.
- LA10 The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.
- LA90 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.
- LAeq 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

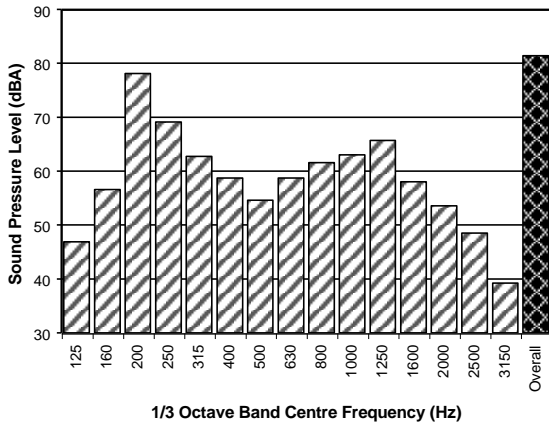
Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal.

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  $20 \log (V/V_0)$ , where  $V_0$  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

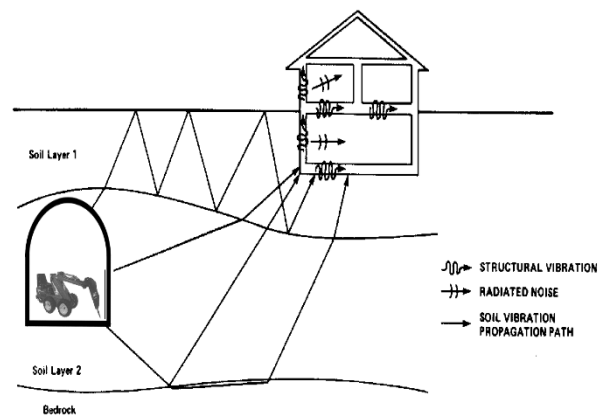
People are able to 'feel' vibration at levels lower than those required to cause even superficial damage to the most susceptible classes of building (even though they may not be disturbed by the motion). An individual's perception of motion or response to vibration depends very strongly on previous experience 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

<b>M12 Motorway EIS, NSW</b>	Ambient noise monitoring, construction noise and vibration assessment, lead modeller for operational noise impacts and assessment.
<b>WestConnex M4-M5 Link EIS, NSW</b>	Ambient noise monitoring, construction noise and vibration assessment, lead modeller for operational noise impacts and assessment.
<b>M4 Smart Motorways EIS, M4 Widening EIS and WestConnex M4 East EIS, NSW</b>	Ambient noise monitoring, operational noise assessment and modelling.
<b>Northern Beaches Hospital Road Network Upgrade EIS, NSW</b>	Ambient noise monitoring, operational noise assessment and modelling.
<b>CBD and South East Light Rail EIS, NSW</b>	Noise and vibration environmental impact assessment.
<b>North West Rail Link EIS, NSW</b>	Ambient noise monitoring, operational and construction noise assessments and modelling.

<b>Northern Sydney Freight Corridor, NSW</b>	Operational noise assessment and modelling.
<b>Sydney Light Rail, NSW</b>	Operational noise and vibration measurements and compliance assessment.
<b>Parramatta Rail Turnback Project, NSW</b>	Ambient noise monitoring, operational and construction noise assessment.
	<b>Industrial/Construction Projects</b>
<b>Oakdale Central, South and West Industrial Developments, NSW</b>	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.
<b>Enfield Intermodal Logistics Centre, NSW</b>	Preparation of construction and operational noise and vibration management plans.
<b>Metropolitan Colliery, NSW</b>	Ambient noise monitoring, operational noise measurements, risk assessment and noise mitigation strategy.
<b>M2 Upgrade Project, NSW</b>	OOHVs construction noise and vibration modelling and assessment.
	<b>Built Environment Projects</b>
<b>Marsden Park North Precinct, NSW</b>	Road traffic and ambient noise monitoring, assessment of noise impacts associated with the Precinct.
<b>The Sheffield, Thornton, NSW</b>	Acoustic assessment and advice for DA stage to CC stage mixed-use development.
<b>Saint Mary Mackillop Catholic Church, Oran Park, NSW</b>	Acoustic assessment and advice for CC to OC stage place of worship development.
<b>Various Residential Developments, Epping, NSW</b>	Acoustic assessment for DA stage residential developments.
<b>MEMBERSHIPS</b>	
<b>Member</b>	Australian Acoustical Society

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# APPENDIX D

## Qanstruct's Environmental Policy



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## 1.4 Environmental Policy

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### To achieve this, Qanstruct will:

- a) Ensure as far as possible that all materials and plant are used and applied in an environmentally friendly manner according to manufacturers' specification.
- b) Provide all employees with appropriate training in sound environmental practices in handling of materials and the application of materials in all areas.
- c) Reduce waste as much as possible, and dispose of all waste according to regulatory laws and regulations, and in a responsible manner.
- d) Induct all new employees to Environmental legislation, applicable standards and Company procedures regarding the use and disposal of waste.
- e) Investigate all environmental accidents and take remedial measures and preventive actions to minimise the risk of occurrence.
- f) Comply with all relevant Environmental legislation and applicable standards; and other requirements.
- g) Conduct an environmental monitoring program to ensure adherence to Company and regulatory requirements.
- h) Involve and consult employees and contractors on all Environmental matters with the view to continuously improving Qanstruct's performance.
- i) Maintain an effective Environmental Management System certified to ISO 14001:2015.

### Qanstruct's Commitment

Qanstruct is committed to conducting business in an environmentally responsible way, aimed at prevention of pollution to air, ground and water.

**Mark Ruff / DIRECTOR**

Date July 2019



# APPENDIX E

## Relevant Consent Conditions

**Table A Development Consent SSD 10397**

Condition	Where Addressed in CEMP
<b>PART A – ADMINISTRATIVE CONDITIONS</b>	
<b>Obligation to Minimise Harm to the Environment</b>	
<p>A1. In addition to meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.</p>	Section 4.1
<b>Terms of Consent</b>	
<p>A2. The development may only be carried out:</p> <ul style="list-style-type: none"> <li>a) in compliance with the conditions of this consent;</li> <li>b) in accordance with all written directions of the Planning Secretary;</li> <li>c) in accordance with the EIS and RTS;</li> <li>d) in accordance with the development layout in Appendix 1; and</li> <li>e) in accordance with the management and mitigation measures in Appendix 3.</li> </ul>	Noted
<p>A3. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to:</p> <ul style="list-style-type: none"> <li>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</li> <li>b) the implementation of any actions or measures contained in any such document referred to in condition A3.</li> </ul>	Noted
<p>A4. The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document listed in Condition (c). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in Condition (c), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.</p>	Noted
<b>Limit of Consent</b>	
<p>A5. This consent lapses five (5) years after the date from which it operates, unless Stage 2 has physically commenced on the land to which the consent applies before that date.</p>	Noted
<p>A7. The Applicant must ensure construction of the development does not generate more than 935 vehicle trips (1,870 total vehicle movements) during the day, evening and night, on the public road network.</p> <p><i>Note: This condition does not apply to construction vehicles using the West-North-South Link Road.</i></p>	Noted
<p>A8. The Applicant must keep accurate records of the number of vehicles entering or leaving the site, for the duration of construction and provide these records to the Planning Secretary on request.</p>	Noted
<b>Notification of Commencement</b>	
<p>A10. The date of commencement of each of the following phases of the development must be notified to the Department in writing, at least one month before that date:</p> <ul style="list-style-type: none"> <li>a) construction, excluding any early pre-construction works, such as installation of erosion and sediment controls or laydown of construction materials; and</li> <li>b) operation.</li> </ul>	Noted

Condition	Where Addressed in CEMP
A11. If the construction or operation of the development is to be staged, the Department must be notified in writing at least one month before the commencement of each stage, of the date of commencement and the works to be carried out in that stage.	Noted
<b>Evidence of Consultation</b>	
<p>A12. Where conditions of this consent require consultation with an identified party, the Applicant must:</p> <p>a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and</p> <p>b) provide details of the consultation undertaken including:</p> <p>(i) the outcome of that consultation, matters resolved and unresolved; and</p> <p>(ii) details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.</p>	Section 1.2.3
<b>Protection of Public Infrastructure</b>	
<p>A16. Before the commencement of construction, the Applicant must:</p> <p>a) consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure;</p> <p>b) prepare a dilapidation report identifying the condition of Aldington Road and Abbots Road (between the site and Mamre Road), including roads, gutters and footpaths; and</p> <p>c) submit a copy of the dilapidation report the Planning Secretary and Council.</p>	Noted. This will be completed by Goodman.
<p>A17. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:</p> <p>a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by carrying out the development, including but not limited to, Bakers Lane, Aldington Road and Abbots Road; and</p> <p>b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development, including but not limited to, Bakers Lane, Aldington Road and Abbots Road.</p>	Noted
<b>Structural Adequacy</b>	
<p>A18. All new buildings and structures, and any alterations or additional to existing buildings and structures are constructed in accordance with the relevant requirements of the National Construction Code (NCC).</p> <p><b>Notes</b></p> <ul style="list-style-type: none"> <li>Under Part 6 of the EP&amp;A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.</li> <li>Part 8 of the EP&amp;A Regulation sets out the requirements for the certification of the development.</li> </ul>	Noted Engineering design and construction certification will ensure this
<b>Compliance</b>	
A19. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.	Section 3.4
<b>Operation Of Plant And Equipment</b>	
<p>A20. All plant and equipment used on site, or to monitor the performance of Stage 2 must be:</p> <p>a) maintained in a proper and efficient condition; and</p> <p>b) operated in a proper and efficient manner.</p>	Section 4.1

Condition	Where Addressed in CEMP
<b>Utilities And Services</b>	
A24. Before the construction of any utility works associated with the development, the Applicant must obtain relevant approvals from service providers.	Section 4.1
A25. Before the commencement of operation of the development, the Applicant must obtain a Compliance Certificate for water and sewerage infrastructure servicing of the site under section 73 of the <i>Sydney Water Act 1994</i> (NSW).	Section 4.1
A26. Before the issue of a Subdivision or Construction Certificate for the development, 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 the development.	Section 4.1
A27. The Applicant must demonstrate that the carrier has confirmed in writing they are satisfied that the fibre ready facilities are fit for purpose.	Section 4.1
A28. The Applicant must comply with the requirements of Endeavour Energy for the location and design of the pad-mounted substations for the development. The Applicant must submit evidence of compliance prepared by a Level 3 Accredited Service Provider to the satisfaction of Endeavour Energy, prior to the commencement of construction.	Section 4.1
A29. The Applicant must obtain any other relevant approvals from Endeavour Energy, prior to the commencement of construction.	Section 4.1
<b>Advisory Notes</b>	
<b>AN1.</b> All licences, permits, approvals and consents as required by law must be obtained and maintained as required for the development. No condition of this consent removes any obligation to obtain, renew or comply with such licences, permits, approvals and consents.	Noted
<b>SCHEDULE B: ENVIRONMENTAL PERFORMANCE CONDITIONS</b>	
<b>VISUAL AMENITY</b>	
<b>Building Design</b>	
B1. The Applicant must construct Building 2B in accordance with the EIS and RTS and as shown on the figures in Appendix 1.	Noted
<b>Landscape Plan</b>	
B2. Prior to the commencement of construction of the development, the Applicant must prepare a detailed Landscape Plan in consultation with Council and to the satisfaction of the Planning Secretary. The Landscape Plan must: <ul style="list-style-type: none"> <li>a) detail the plant species and layouts for all areas of the development including setbacks to the Southern Link Road, Estate Road 1, Estate Road 3 and within the development parking areas;</li> <li>b) include a diverse mix of species to provide canopy trees and understorey planting, to assist in achieving the objectives of Council's Cooling the City Strategy;</li> <li>c) detail monitoring and maintenance procedures, including irrigation requirements.</li> </ul>	Oakdale West Estate Landscape Plan

Condition	Where Addressed in CEMP
<p>B3. The Applicant must:</p> <ul style="list-style-type: none"> <li>a) not commence construction of Building 2B until the Landscape Plan is approved by the Planning Secretary.</li> <li>b) must implement the most recent version of the Landscape Plan approved by the Planning Secretary; and</li> <li>c) maintain the landscaping and vegetation on the site in accordance with the approved Landscape Plan for the life of the development. If the monitoring carried out as part of condition B1 indicates that any aspect of the landscaping has not been successful, the Applicant must undertake replanting and rehabilitation works, as reasonably practicable.</li> </ul>	Oakdale West Estate Landscape Plan
<b>Reflectivity</b>	
<p>B4. The visible light reflectivity from building materials used in the façades and roof of the warehouse building 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 a Construction Certificate.</p>	Noted
<b>Lighting and Security Cameras</b>	
<p>B5. The Applicant must ensure the lighting associated with the development:</p> <ul style="list-style-type: none"> <li>a) complies with the latest version of AS 4282-1997 – Control of the obtrusive effects of outdoor lighting (Standards Australia, 1997); and</li> <li>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.</li> </ul>	Section 4.9
<p>B6. The Applicant must ensure any security cameras or illuminated signage installed as part of the development are directed away from adjacent private properties.</p>	Section 4.9
<b>Signage and Fencing</b>	
<p>B7. All signage and fencing must be erected in accordance with the development plans included in the EIS and RTS.</p> <p><i>Note: This condition does not apply to temporary construction and safety related signage and fencing.</i></p>	Section 4.1
<p>B8. 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.</p>	Section 4.1
<b>TRAFFIC, ACCESS AND PARKING</b>	
<b>Roadworks</b>	

Condition	Where Addressed in CEMP
<p>B9. Prior to any use of Aldington Road and Abbotts Road for construction traffic, the Applicant must submit a Construction Traffic Management Plan (CTMP) to the satisfaction of Council. The CTMP shall be :</p> <ul style="list-style-type: none"> <li>a) prepared in accordance with Council's Engineering Construction Specification for Civil Works;</li> <li>b) be prepared by a suitably qualified consultant with appropriate training and certification from TfNSW;</li> <li>c) be approved by Council, prior to any construction traffic using Aldington Road and Abbotts Road;</li> <li>d) include but not be limited to: <ul style="list-style-type: none"> <li>(i) swept path analysis at critical points (bends and intersections) along the entire Aldington Road / Abbotts Road route for the largest proposed vehicle to use this route;</li> <li>(ii) a detailed road safety audit of the Aldington Road / Abbotts Road route that factors the increase in traffic volumes (both in light &amp; heavy vehicles), and proposes measures such that the road can safely accommodate this increase (including upgrades to road infrastructure, signage and line marking treatments, vehicle length restrictions and temporary traffic control measures during the construction period);</li> <li>(iii) left-in, left-out restrictions at the intersection with Mamre Road for construction vehicles.</li> </ul> </li> </ul>	Section 4.5
<p>B10. The CTMP and any proposed measures must be to the satisfaction of Council and will be subject to Local Traffic Committee and Council approval.</p>	Section 4.5
<p>B11. Prior to any works (infrastructure, signage and line marking) that are on or affect a local road, a Section 138 Roads Act, 1993 application shall be lodged and approved by Council. All works shall be carried out in accordance with the Roads Act approval, and Council's specification, guidelines and best engineering practice.</p>	Section 4.5
<p>B12. The Applicant must provide written evidence to the satisfaction of the Planning Secretary, demonstrating the roadworks required by condition B9 and B10 have been completed, prior to using Abbotts Road and Aldington Road for construction access.</p>	Section 4.5
<b>Construction Access</b>	
<p>B13. The Applicant must ensure:</p> <ul style="list-style-type: none"> <li>a) no fill material is transported to the site via Bakers Lane or Aldington Road;</li> <li>b) construction traffic does not use Bakers Lane during the hours of 8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday when schools are in use, to avoid conflict with peak school traffic on Bakers Lane;</li> <li>c) construction traffic only uses Abbotts Road and Aldington Road to access the site during the hours of 8 am – 9.30 am and 2.30 pm – 4pm, Monday to Friday, when schools are in use; and</li> <li>d) all construction traffic associated with the development ceases to use Bakers Lane and Aldington Road when the Western North-South Link Road opens to traffic.</li> </ul>	
<b>Construction Traffic Management Plan</b>	

Condition	Where Addressed in CEMP												
<p>B15. Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by condition C2 and must:</p> <ul style="list-style-type: none"> <li>a) be prepared by a suitably qualified and experienced person(s);</li> <li>b) be prepared in consultation with Council, TfNSW, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School;</li> <li>c) detail specific measures to manage construction traffic to avoid school drop-off and pick-up times (8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday), when the schools are in use, and Higher School Certificate exam periods, including any temporary infrastructure arrangements and traffic safety measures;</li> <li>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;</li> <li>e) detail heavy vehicle routes, access and parking arrangements;</li> <li>f) include a Driver Code of Conduct to: <ul style="list-style-type: none"> <li>(i) minimise the impacts of construction on the local and regional road network;</li> <li>(ii) minimise conflicts with other road users;</li> <li>(iii) minimise road traffic noise, particularly during night-time periods; and</li> <li>(iv) ensure truck drivers use specified routes;</li> </ul> </li> <li>g) include a program to monitor the effectiveness of these measures; and</li> <li>h) detail procedures for early notification for residents and the community (including local schools), of any potential disruptions to routes.</li> </ul>	Section 4.5												
<p>B16. The Applicant must:</p> <ul style="list-style-type: none"> <li>a) not commence construction of the development until the CTMP required by condition B15 is approved by the Planning Secretary; and</li> <li>b) implement the most recent version of the CTMP approved by the Planning Secretary for the duration of construction.</li> </ul>	Section 4.5												
<b>Parking</b>													
<p>B20. The Applicant must provide sufficient parking facilities on site for heavy vehicles and for site personnel, to ensure that traffic associated with the development does not utilise public and residential streets or public parking facilities.</p>	Noted												
<b>NOISE</b>													
<b>Hours of Work</b>													
<p>B21. The Applicant must comply with the hours detailed in Table 2, unless otherwise agreed in writing by the Planning Secretary.</p> <p><i>Table 2 Hours of Work</i></p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Day</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>Construction</td> <td>Monday – Sunday</td> <td>6 am to 10 pm</td> </tr> <tr> <td>Concrete works (internal to building only)</td> <td>Monday – Sunday</td> <td>3 am to 10 pm</td> </tr> <tr> <td>Operation</td> <td>Monday – Sunday (including public holidays)</td> <td>24 hours</td> </tr> </tbody> </table>	Activity	Day	Time	Construction	Monday – Sunday	6 am to 10 pm	Concrete works (internal to building only)	Monday – Sunday	3 am to 10 pm	Operation	Monday – Sunday (including public holidays)	24 hours	Section 4.2
Activity	Day	Time											
Construction	Monday – Sunday	6 am to 10 pm											
Concrete works (internal to building only)	Monday – Sunday	3 am to 10 pm											
Operation	Monday – Sunday (including public holidays)	24 hours											
<p><i>Note: Concrete works (internal to building only) include concrete pours inside Building 2B, following the installation of all building walls and the building roof.</i></p>													



Condition	Where Addressed in CEMP
<p>B22. Works outside of the hours identified in condition B20 may be undertaken in the following circumstances:</p> <ul style="list-style-type: none"> <li>a) works that are inaudible at the nearest sensitive receivers;</li> <li>b) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or</li> <li>c) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.</li> </ul>	Section 4.2
<b>Construction Noise</b>	
<p>B27. The Applicant must implement all feasible and reasonable noise mitigation measures to minimise construction noise from the development. Any activities that could exceed the construction noise management levels detailed in the <i>Interim Construction Noise Guideline</i> (DECC, 2099), must be identified and managed in accordance with the Construction Noise Management Plan required by condition B28.</p>	Section 4.2
<p>B28. The Applicant must maintain the temporary noise curtain installed adjacent to Emmaus Catholic Care Village for the duration of construction, unless otherwise agreed with the Planning Secretary, or until such time as the permanent noise wall shown in Appendix 2 is completed.</p>	Section 4.2
<p>B29. The Applicant must maintain a real-time noise monitor at the western boundary of the site for the duration of construction. Where monitoring identifies any exceedance of the construction noise management levels, the Applicant must implement further feasible and reasonable mitigation measures to reduce construction noise levels. The results of noise monitoring must be provided to the Planning Secretary on request.</p>	Section 4.2
<b>Construction Noise Management Plan</b>	

Condition	Where Addressed in CEMP
<p>B30. The Applicant must prepare a Construction Noise Management Plan (CNMP) for the development to the satisfaction of the Planning Secretary. The CNMP must form part of the CEMP in accordance with condition C2 and must:</p> <ul style="list-style-type: none"> <li>a) be prepared by a suitably qualified and experienced noise expert;</li> <li>b) be approved by the Planning Secretary prior to the commencement of construction;</li> <li>c) describe procedures for achieving the noise management levels in EPA’s Interim Construction Noise Guideline (DECC, 2009), as may be updated or replaced from time to time;</li> <li>d) describe the measures to be implemented to manage noise generating activities during sensitive periods, including evenings, night-time and on Sundays, including but not limited to: <ul style="list-style-type: none"> <li>(i) maintenance of the temporary noise curtain along the western boundary of the Emmaus Catholic Care Village for the duration of construction;</li> <li>(ii) minimising coinciding use of multiple high noise generating equipment;</li> <li>(iii) orienting noisy equipment away from sensitive receivers;</li> <li>(iv) ensuring concrete trucks for internal concreting works are located to the east of Building 2B to maximum noise shielding for the Emmaus Catholic Care Village;</li> <li>(v) ensuring all equipment has non-tonal reversing alarms;</li> <li>(vi) regular maintenance and compliance checks of plant and equipment;</li> <li>(vii) consultation with adjacent sensitive receivers prior to and during construction;</li> </ul> </li> <li>e) include measures to minimise noise from construction vehicles on the public road network and on site, including but not limited to, a Driver Code of Conduct and induction training for drivers to minimise road traffic noise;</li> <li>f) include a monitoring program that: <ul style="list-style-type: none"> <li>(i) includes quarterly attended noise monitoring at the nearest sensitive receivers to determine compliance with the construction noise management levels in the Interim Construction Noise Guideline;</li> <li>(ii) evaluates and reports on the effectiveness of the noise management measures;</li> <li>(iii) includes procedures to relocate, modify, mitigate or stop work to ensure compliance with the construction noise management levels; and</li> </ul> </li> <li>g) include procedures for recording and responding to complaints.</li> </ul>	Section 4.1
<p>B31. The Applicant must:</p> <ul style="list-style-type: none"> <li>a) not commence construction of the development until the CNMP required by condition B30 is approved by the Planning Secretary; and</li> <li>b) implement the most recent version of the CNMP approved by the Planning Secretary for the duration of construction.</li> </ul>	
<b>SOIL AND WATER</b>	
<b>Discharge Limits</b>	
<p>B32. The development must comply with section 120 of the POEO Act, which prohibits the pollution of waters.</p>	Section 4.6
<b>Erosion and Sediment Control</b>	

Condition	Where Addressed in CEMP
<p>B33. The Applicant must prepare an Erosion and Sediment Control Plan (ESCP) for the development to the satisfaction of the Planning Secretary. The ESCP must form part of the CEMP required by condition C2 and must:</p> <ul style="list-style-type: none"> <li>a) be prepared by a suitably qualified and experienced person(s);</li> <li>b) be generally consistent with the Erosion and Sediment Control Plan(s) for the OWE;</li> <li>c) include detailed erosion and sediment controls developed in accordance with the relevant requirements of <i>Managing Urban Stormwater: Soils and Construction – Volume 1: Blue Book</i> (Landcom, 2014) guideline; and</li> <li>d) include procedures for maintaining erosion and sediment controls in efficient working order for the duration of construction, to ensure the development complies with condition B32.</li> </ul>	Section 4.6
<p>B34. The Applicant must:</p> <ul style="list-style-type: none"> <li>a) not commence construction of the development until the ESCP required by condition B33 is approved by the Planning Secretary; and</li> <li>b) implement the most recent version of the ESCP approved by the Planning Secretary for the duration of construction.</li> </ul>	Section 4.6
<p>B35. The Applicant must install the erosion and sediment control measures approved in accordance with Condition B34, prior to the commencement of construction.</p>	Section 4.6
<b>Stormwater Management System</b>	
<p>B36. The Applicant must install and operate a stormwater management system for the development, to the satisfaction of the Planning Secretary. The system must:</p> <ul style="list-style-type: none"> <li>a) be designed by a suitably qualified and experienced person(s);</li> <li>b) be generally consistent with the <i>Civil, Stormwater and Infrastructure Services Report</i>, prepared by AT&amp;L, dated January 2020;</li> <li>c) be in accordance with applicable Australian Standards and Penrith City Council's <i>Design Guidelines for Engineering Works, Water Sensitive Urban Design Policy December 2013</i> and <i>Water Management Development Control Plan</i>;</li> <li>d) ensure 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;</li> <li>e) ensure peak stormwater flows from the site do not exceed existing flows in the Water NSW drainage lines and water pipelines corridor; and</li> <li>f) incorporate rainwater harvesting measures to supplement non-potable water demand for the development.</li> </ul>	Section 4.6
<p>B37. 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.</p>	Section 4.6
<b>AIR QUALITY</b>	
<b>Dust Minimisation</b>	
<p>B38. The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.</p>	Section 4.4
<p>B39. During construction, the Applicant must ensure that:</p> <ul style="list-style-type: none"> <li>a) exposed surfaces and stockpiles are suppressed by regular watering;</li> <li>b) all trucks entering or leaving the site with loads have their loads covered;</li> <li>c) trucks associated with the development do not track dirt onto the public road network; and</li> <li>d) public roads used by these trucks are kept clean.</li> </ul>	Section 4.4
<b>Construction Air Quality Management Plan</b>	

Condition	Where Addressed in CEMP
<p>B40. Prior to the commencement of construction, the Applicant must update the Construction Air Quality Management Plan (CAQMP) for the OWE, to include the development. The updated CAQMP must:</p> <ul style="list-style-type: none"> <li>a) be prepared by a suitably qualified and experienced person(s);</li> <li>b) identify the control measures to be implemented to minimise emissions from all construction sources;</li> <li>c) detail procedures for measuring the performance of the control measures and triggers for implementing additional reasonable and feasible measures, if required, to minimise emissions; and</li> <li>d) include procedures for complaints handling and response.</li> </ul>	Section 4.4
<p>B41. The Applicant must:</p> <ul style="list-style-type: none"> <li>a) not commence construction of the development until the updated CAQMP required by condition B40 is approved by the Planning Secretary; and</li> <li>b) implement the most recent version of the CAQMP approved by the Planning Secretary for the duration of construction.</li> </ul>	Section 4.4
<b>WASTE MANAGEMENT</b>	
<b>Waste Storage</b>	
<p>B42. 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.</p>	Section 4.7
<b>Waste Management Plan</b>	
<p>B43. The Applicant must implement the Waste Management Plan (WMP) in the EIS for the duration of construction and operation of the development.</p>	Section 4.7
<b>Statutory Requirements</b>	
<p>B44. 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 <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (EPA, 2014) and dispose of all wastes to a facility that may lawfully accept the waste.</p>	Section 4.7
<p>B45. Waste generated outside the site must not be received at the site for storage, treatment, processing, reprocessing, or disposal.</p>	Section 4.7
<b>BUSHFIRE PROTECTION</b>	
<p>B46. The Applicant shall ensure the development complies with:</p> <ul style="list-style-type: none"> <li>a) the relevant provisions of <i>Planning for Bushfire Protection 2006</i>;</li> <li>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</li> <li>c) <i>AS2419.1 – 2005 Fire Hydrant Installations</i> for firefighting water supply.</li> </ul>	Section 4.11 Appendix Q
<b>HAZARD AND RISK</b>	
<b>Dangerous Goods</b>	
<p>B47. The quantities of dangerous goods stored and handled at the site must be below the threshold quantities listed in the Department of Planning's <i>Hazardous and Offensive Development Application Guidelines – Applying SEPP 33</i> at all times.</p>	Section 4.11
<b>Bunding</b>	

Condition	Where Addressed in CEMP
B48. 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 <i>Storing and Handling of Liquids: Environmental Protection – Participants Manual</i> (Department of Environment and Climate Change, 2007).	Section 4.11
<b>HERITAGE</b>	
<b>Unexpected Finds Protocol</b>	
B49. 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.	Appendix P
B50. Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the <i>National Parks and Wildlife Act 1974</i> (NSW).	Appendix P
B51. If any archaeological relics are uncovered during construction of the development, 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 Division.	Appendix P
<b>COMMUNITY ENGAGEMENT</b>	
B52. The Applicant must consult with the community regularly throughout the development, including consultation with the nearby sensitive receivers identified in Appendix 2, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy for the OWE.	Section 1.2.3 and Section 4.13
<b>PART C – ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING</b>	
<b>ENVIRONMENTAL MANAGEMENT</b>	
<b>Management Plan Requirements</b>	

Condition	Where Addressed in CEMP
<p>C1. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:</p> <ul style="list-style-type: none"> <li>a) details of: <ul style="list-style-type: none"> <li>(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);</li> <li>(ii) any relevant limits or performance measures and criteria; and</li> <li>(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 2 or any management measures;</li> </ul> </li> <li>b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;</li> <li>c) a program to monitor and report on the: <ul style="list-style-type: none"> <li>(i) impacts and environmental performance of the development; and</li> <li>(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;</li> </ul> </li> <li>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;</li> <li>e) a program to investigate and implement ways to improve the environmental performance of the development over time;</li> <li>f) a protocol for managing and reporting any: <ul style="list-style-type: none"> <li>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);</li> <li>(ii) complaint;</li> <li>(iii) failure to comply with statutory requirements; and</li> </ul> </li> <li>g) a protocol for periodic review of the plan.</li> </ul> <p><i>Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans</i></p>	<p>Section 1.2.1</p>
<b>CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN</b>	
<p>C2. The Applicant must prepare a Construction Environmental Management Plan (CEMP) in accordance with the requirements of Condition C1 and to the satisfaction of the Planning Secretary. The CEMP must be reviewed by the Environmental Representative for the OWE to ensure it is consistent with the requirements of this consent and the relevant requirements of the OWE consent.</p>	<p>This document</p>
<p>C3. As part of the CEMP required under Condition C2 of this consent, the Applicant must include:</p> <ul style="list-style-type: none"> <li>a) Construction Traffic Management Plan (CTMP) (see Condition B15);</li> <li>b) Construction Noise Management Plan (CNMP) (see Condition B30);</li> <li>c) Erosion and Sediment Control Plan (see Condition B33);</li> <li>d) Construction Air Quality Management Plan (see Condition B40); and</li> <li>e) Community Consultation and Complaints Handling.</li> </ul>	<p>Section 1.2.1</p>
<p>C4. The Applicant must:</p> <ul style="list-style-type: none"> <li>a) not commence construction of the development until the CEMP is approved by the Planning Secretary; and</li> <li>b) carry out the construction of the development in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time.</li> </ul>	<p>Noted</p>
<b>REVISION OF STRATEGIES, PLANS AND PROGRAMS</b>	

Condition	Where Addressed in CEMP
<p>C8. Within three months of:</p> <ul style="list-style-type: none"> <li>a) the submission of a Compliance Report under Condition C15;</li> <li>b) the submission of an incident report under Condition C10;</li> <li>c) the approval of any modification of the conditions of this consent; or</li> <li>d) the issue of a direction of the Planning Secretary under Condition (a) which requires a review,</li> </ul> <p>the strategies, plans and programs required under this consent must be reviewed, and the Department must be notified in writing that a review is being carried out.</p>	Section 6
<p>C9. If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.</p> <p><i>Note: This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.</i></p>	Noted
<b>REPORTING AND AUDITING</b>	
<b>Incident Notification, Reporting and Response</b>	
<p>C10. The Planning Secretary must be notified in writing to <a href="mailto:compliance@planning.nsw.gov.au">compliance@planning.nsw.gov.au</a> 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 5.</p>	Sections 3.5 and 5.2
<b>Non-Compliance Notification</b>	
<p>C11. The Planning Secretary must be notified in writing to <a href="mailto:compliance@planning.nsw.gov.au">compliance@planning.nsw.gov.au</a> within seven days after the Applicant becomes aware of any non-compliance.</p>	Sections 3.5 and 5.2
<p>C12. A non-compliance notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.</p>	Noted
<p>C13. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.</p>	Noted
<b>Compliance Reporting</b>	
<p>C14. 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.</p>	This has been prepared by SLR (2019b).
<p>C15. Compliance Reports of the development must be carried out in accordance with the Compliance Reporting Post Approval Requirements (Department 2018).</p>	Noted
<p>C16. 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.</p>	Noted

Condition	Where Addressed in CEMP
<b>Monitoring and Environmental Audits</b>	
<p>C17. 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&amp;A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance reporting and independent auditing.</p> <p><i>Note: For the purposes of this condition, as set out in the EP&amp;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.</i></p>	Section 5
<b>ACCESS TO INFORMATION</b>	
<p>C18. At least 48 hours before the commencement of construction until the completion of all works under this consent, the Applicant must:</p> <p>a) make the following information and documents (as they are obtained or approved) publicly available on its website:</p> <ul style="list-style-type: none"> <li>(i) the documents referred to in Condition A2 of this consent;</li> <li>(ii) all current statutory approvals for the Development;</li> <li>(iii) all approved strategies, plans and programs required under the conditions of this consent;</li> <li>(iv) the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;</li> <li>(v) minutes of CCC meetings;</li> <li>(vi) 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;</li> <li>(vii) 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;</li> <li>(viii) a summary of the current stage and progress of the Development;</li> <li>(ix) contact details to enquire about the development or to make a complaint;</li> <li>(x) a complaints register, updated monthly;</li> <li>(xi) the Compliance Report of the Development;</li> <li>(xii) 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;</li> <li>(xiii) any other matter required by the Planning Secretary; and</li> </ul> <p>b) keep such information up to date, to the satisfaction of the Planning Secretary.</p>	Section 5.2



# APPENDIX F

## Qanstruct's Incident Report Form

Incident Details	
Date of Incident	
Site & Address where Incident occurred	
Person/s Involved in the Incident (name & company)	

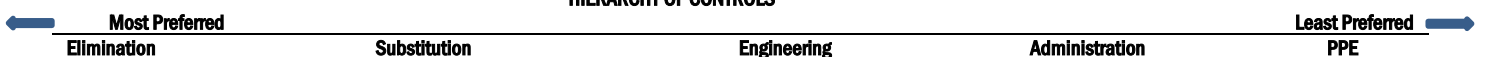
Incident Investigation - Site Manager & OHS Rep will be involved in all site incident investigations. The Construction Manager will also be involved in the incident investigation of HIGH & MODERATE potential risk incidents.	
Investigation Team (names)	
In which part of the workplace did the incident occur	
Job or task being done by the person at the time of the incident	
What happened unexpectedly (e.g. brake failed on a forklift, or slipped on wet floor etc)	
How exactly was the injury or damage sustained (e.g. bruised leg when fell to the floor etc)	
What preventive controls were in place that failed (e.g. guarding, harness etc)	
How did these controls fail (e.g. guard failed, rope became loose etc)	

Immediate Contributory Factors (assess the risks associated with the hazards identified). Be factual.
Additional Contributory Factors (assess the risks associated with the hazards identified). Be factual.

Details of Risk (refer to tables at end of sheet)	
Actual/ Potential Risk Class & Deadlines (choose whichever is highest)	<input type="checkbox"/> High (1) - primary cause/s must be resolved IMMEDIATELY. <input type="checkbox"/> Medium (2) - primary cause/s must be resolved WITHIN 24 HOURS <input type="checkbox"/> Low (3) - primary cause/s must be resolved WITHIN 7 DAYS

Was the incident a result of:
<input type="checkbox"/> Inadequate process/es, follow up required is to AMEND PROCESS/ES (inc. SWMS); or
<input type="checkbox"/> Inadequate compliance with process/es, follow up requires is to TOOLBOX WORKERS

### HIERARCHY OF CONTROLS



List the Actions that will be Taken to prevent a Reoccurrence (considering the Hierarchy of Controls)		Who	Date Completed
Does the SWMS require changing?	<input type="checkbox"/> No <input type="checkbox"/> Yes, If yes ..... [date] SWMS has been updated to control this hazard.		
Does the PRA require changing?	<input type="checkbox"/> No <input type="checkbox"/> Yes, If yes ..... [date] PRA has been updated to control this hazard		

<b>Subcontractor's Supervisor's/ Manager's Close Out</b>		<b>Name:</b>	
Signature		Date	

<b>Qanstruct OHS Representative's Close Out</b>		<b>Name:</b>	
Signature		Date	

<b>Qanstruct Manager's Close Out</b>		<b>Name:</b>	
Signature		Date	

Level	Description of Consequence
High (1) (High level of harm)	Potential death, permanent disability or major structural failure/damage. Off-site environmental discharge/release not contained and significant long-term environmental harm.
Medium (2) (Medium level of harm)	Potential temporary disability or minor structural failure/damage. On-site environmental discharge/release contained, minor remediation required, short-term environmental harm.
Low (3) (Low level of harm)	Incident that has the potential to cause persons to require first aid. On-site environmental discharge/release immediately contained, minor level clean up with no short-term environmental harm.

Consequence	Likelihood / Probability		
	Likely	Moderate	Unlikely
High (1)	1	1	2
Medium (2)	1	2	3
Low (3)	2	3	3

# APPENDIX G

## Community Communication Strategy

# COMMUNITY COMMUNICATION STRATEGY OAKDALE WEST ESTATE - CONCEPT AND STAGE 2

**Prepared for:**

Goodman Property Services (Australia) Pty Ltd

SLR Ref: 660.2005.00000-R01  
Version No: -v2.0  
April 2020



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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
660.20005.00000-R01-v0.1	21 January 2020	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v0.2	4 March 2020	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v0.3	30 March 2020	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v0.4	31 March 2020	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v1.0	31 March 2020	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v1.1	4 April 2020	Kate McKinnon	Samantha Hayes	Dan Thompson
660.20005.00000-R01-v2.0	24 April 2020	Kate McKinnon	Samantha Hayes	Dan Thompson

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# 1 Introduction

This Community Communication Strategy (CCS) has been prepared on behalf of Goodman Property Services (Australia) Pty Ltd (Goodman) for the Oakdale West Estate (OWE) Stage 2 Development (State Significant Development [SSD] application 10397).

This CCS has been prepared in accordance with Condition B52 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. This CCS is consistent with the Community Communication Strategy for the OWE and 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.

## 1.1 Purpose

The Stage 2 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 if the need arises as the project progresses to account for variations in the construction program and methodology, along with changes in stakeholder situation that impacts on stakeholder interests, with these articulated through the feedback mechanisms.

SSD 10397 contained the following conditions of relevance to this CCS used to benchmark the contents:

- **B2 – Landscape Plan**
- **B10 - Roadworks**
- **B15 – Construction Traffic Management Plan**
- **B17 – Operational Traffic Management Plan**
- **B22 – Hours of Work**
- **B30 – Construction Noise Management Plan**
- **B40 – Construction Air Quality Management Plan**
- **B52 – Community Engagement**
- **C1 - Management Plan Requirements**
- **C3 – Construction Environmental Management Plan**
- **C5-C7 - Operational Environmental Management Plan**
- **C8 – Revision of Strategies, Plans and Programs**
- **C18 – 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.

**Table 1 Relevant Conditions of Consent**

Condition Number	Condition Detail	Report Reference
B2 – Landscape Plan	<p>Prior to the commencement of construction of Building 2B, the Applicant must prepare a detailed Landscape Plan in consultation with Council and to the satisfaction of the Planning Secretary. The Landscape Plan must:</p> <ul style="list-style-type: none"> <li>(a) detail the plant species and layouts for all areas of the development;</li> <li>(b) include a diverse mix of species to provide canopy trees and understorey planting, to assist in achieving the</li> <li>(c) objectives of Council’s Cooling the City Strategy;</li> <li>(d) detail monitoring and maintenance procedures, including irrigation requirements.</li> </ul>	<p>Prior to the commencement of construction of Building 2B, consultation with Council and to the satisfaction of the Planning Secretary shall be undertaken by the proponent and their representatives.</p> <p>This is addressed within the following sections of this report:                      Table 5</p>
B10 – Roadworks	<p>The CTMP and any proposed measures must be to the satisfaction of Council and will be subject to Local Traffic Committee and Council approval.</p>	<p>Consultation with the Local Traffic Committee and Council regarding the CTMP and proposed measures is outlined within the CTMP</p>
B15 - Construction Traffic Management Plan	<p>Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by condition C2 and must:</p> <ul style="list-style-type: none"> <li>(e) be prepared by a suitably qualified and experienced person(s);</li> <li>(f) be prepared in consultation with Council, TfNSW, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School;</li> <li>(g) detail specific measures to manage construction traffic to avoid school drop-off and pick-up times (8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday), when the schools are in use, and Higher School Certificate exam periods, including any temporary infrastructure arrangements and traffic safety measures;</li> <li>(h) 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;</li> <li>(i) detail heavy vehicle routes, access and parking arrangements;</li> <li>(j) include a Driver Code of Conduct to:</li> </ul>	<p>Consultation and notification requirements addressed within the CTMP are consistent with the following sections of this report:                      Section 5.3</p>

Condition Number	Condition Detail	Report Reference
	<ul style="list-style-type: none"> <li>(i) minimise the impacts of construction on the local and regional road network;</li> <li>(ii) minimise conflicts with other road users;</li> <li>(iii) minimise road traffic noise, particularly during night-time periods; and</li> <li>(iv) ensure truck drivers use specified routes;</li> <li>(k) include a program to monitor the effectiveness of these measures; and</li> <li>(l) detail procedures for early notification for residents and the community (including local schools), of any potential disruptions to routes.</li> </ul>	
<p>B17 – Operational Traffic Management Plan</p>	<p>The Applicant must prepare an Operational Traffic Management Plan (OTMP) for the development. The OTMP must form part of the OEMP required by condition C5 and must:</p> <ul style="list-style-type: none"> <li>(a) be prepared by a suitably qualified and experienced expert, in consultation with Council and TfNSW;</li> <li>(b) detail the numbers and frequency of truck movements, sizes of trucks, vehicle routes and hours of operation;</li> <li>(c) include measures to maintain road safety and network efficiency;</li> <li>(d) detail measures to minimise noise from development related traffic, including, procedures for receiving and addressing complaints from the community about development related traffic and noise;</li> <li>(e) include a Driver’s Code of Conduct that addresses:                             <ul style="list-style-type: none"> <li>(i) designated routes, ensuring no use of Bakers Lane or Aldington Road for operational access;</li> <li>(ii) travelling speeds and adherence to site-specific speed limits;</li> <li>(iii) procedures to ensure drivers adhere to designated heavy vehicle routes; and</li> <li>(iv) procedures to ensure drivers implement safe driving practices</li> </ul> </li> </ul>	<p>Note: This CCS applies only to the construction phase of the development approval, a separate Operational Traffic Management Plan will be provided addressing community consultation and complaint resolution arising during ongoing operations of the development.</p>
<p>B22 – Hours of Work</p>	<p>Works outside of the hours identified in condition B21 may be undertaken in the following circumstances:</p> <ul style="list-style-type: none"> <li>(a) works that are inaudible at the nearest sensitive receivers;</li> <li>(b) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or</li> <li>(c) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.</li> </ul>	<p>Section 5.3.2</p>

Condition Number	Condition Detail	Report Reference
<p>B30 – Construction Noise Management Plan</p>	<p>The Applicant must prepare a Construction Noise Management Plan (CNMP) for the development to the satisfaction of the Planning Secretary. The CNMP must form part of the CEMP in accordance with condition C2 and must:</p> <ul style="list-style-type: none"> <li>(a) be prepared by a suitably qualified and experienced noise expert;</li> <li>(b) be approved by the Planning Secretary prior to the commencement of construction;</li> <li>(c) describe procedures for achieving the noise management levels in EPA’s Interim Construction Noise Guideline (DECC, 2009), as may be updated or replaced from time to time;</li> <li>(d) describe the measures to be implemented to manage noise generating activities during sensitive periods, including evenings, night-time and on Sundays, including but not limited to:                             <ul style="list-style-type: none"> <li>(i) maintenance of the temporary noise curtain along the western boundary of the Emmaus Catholic Care Village for the duration of construction;</li> <li>(ii) minimising coinciding use of multiple high noise generating equipment;</li> <li>(iii) orienting noisy equipment away from the sensitive receivers on the western boundary;</li> <li>(iv) ensuring concrete trucks for internal concreting works (between 3 am and 6 am) are located to the east of Building 2B to maximise noise shielding for the Emmaus Catholic Care Village;</li> <li>(v) ensuring all equipment has non-tonal reversing alarms;</li> <li>(vi) regular maintenance and compliance checks of plant and equipment;</li> <li>(vii) consultation with adjacent sensitive receivers prior to and during construction;</li> </ul> </li> <li>(e) include measures to minimise noise from construction vehicles on the public road network and on site, including but not limited to, a Driver Code of Conduct and induction training for drivers to minimise road traffic noise;</li> <li>(f) include a monitoring program that:                             <ul style="list-style-type: none"> <li>(i) includes quarterly attended noise monitoring at the nearest sensitive receivers to determine compliance with the construction noise management levels in the Interim Construction Noise Guideline;</li> <li>(ii) evaluates and reports on the effectiveness of the noise management measures;</li> <li>(iii) includes procedures to relocate, modify, mitigate or stop work to ensure compliance with the construction noise management levels; and</li> </ul> </li> </ul>	<p>Notification and complaints receipt and response requirements addressed within the CNMP are consistent with the following sections of this report:</p> <p>Section 5.3                      Section 5.4</p>

Condition Number	Condition Detail	Report Reference
	(g) include procedures for recording and responding to complaints.	
B40 – Construction Air Quality Management Plan	<p>Prior to the commencement of construction, the Applicant must update the Construction Air Quality Management Plan (CAQMP) for the OWE, to include the development. The updated CAQMP must:</p> <ul style="list-style-type: none"> <li>(a) be prepared by a suitably qualified and experienced person(s);</li> <li>(b) identify the control measures to be implemented to minimise emissions from all construction sources;</li> <li>(c) detail procedures for measuring the performance of the control measures and triggers for implementing additional reasonable and feasible measures, if required, to minimise emissions; and</li> <li>(d) include procedures for complaints handling and response.</li> </ul>	<p>Complaints receipt and response requirements addressed within the CAQMP are consistent with the following sections of this report: Section 5.4</p>
B52 – Community Engagement	<p>The Applicant must consult with the community regularly throughout the development, including consultation with the nearby sensitive receivers identified in Appendix 2, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy for the OWE.</p>	<p>This CCS is consistent with the CCS prepared for the wider OWE development. Community consultation and engagement is addressed throughout the entirety of this CCS Document.</p>
C1 – Management Plan Requirements	<p>Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:</p> <ul style="list-style-type: none"> <li>(a) details of:                             <ul style="list-style-type: none"> <li>(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);</li> <li>(ii) any relevant limits or performance measures and criteria; and</li> <li>(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;</li> </ul> </li> <li>(b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;</li> <li>(c) a program to monitor and report on the:                             <ul style="list-style-type: none"> <li>(i) impacts and environmental performance of the development; and</li> <li>(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>a) Section 5.4.1</li> <li>b) Section 5.4.2</li> <li>c) Section 5.4.4</li> <li>d) Section 6</li> </ul>

Condition Number	Condition Detail	Report Reference
	<p>(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;</p> <p>(e) a program to investigate and implement ways to improve the environmental performance of the development over time;</p> <p>(f) a protocol for managing and reporting any:</p> <ul style="list-style-type: none"> <li>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); complaint;</li> <li>(ii) failure to comply with statutory requirements; and</li> </ul> <p>(g) a protocol for periodic review of the plan.</p> <p><i>Note: the Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</i></p>	
<p>C3 – Construction Environmental Management Plan</p>	<p>As part of the CEMP required under Condition C2 of this consent, the Applicant must include the following:</p> <ul style="list-style-type: none"> <li>(a) Construction Traffic Management Plan (see Condition B15);</li> <li>(b) Construction Noise Management Plan (see Condition B30);</li> <li>(c) Erosion and Sediment Control Plan (see Condition B33);</li> <li>(d) Construction Air Quality Management Plan (see Condition B40)</li> <li>(e) Community Consultation and Complaints Handling.</li> </ul>	<p>This CCS is provided to outline the Community Consultation and Complaints Handling measures to be implemented during the construction of the development and forms part of the CEMP.</p>
<p>C5-C7 - Operational Environmental Management Plan</p>	<p>The Applicant must prepare an Operational Environmental Management Plan (OEMP) in accordance with the requirements of condition C1 and to the satisfaction of the Planning Secretary.</p> <p>As part of the OEMP required under Condition C5 of this consent, the Applicant must include the following:</p> <ul style="list-style-type: none"> <li>(a) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;</li> <li>(b) describe the procedures that would be implemented to:                             <ul style="list-style-type: none"> <li>(i) keep the local community and relevant agencies informed about the operation and environmental performance of the development;</li> <li>(ii) receive, handle, respond to, and record complaints;</li> <li>(iii) resolve any disputes that may arise;</li> <li>(iv) respond to any non-compliance;</li> <li>(v) respond to emergencies; and</li> </ul> </li> <li>(c) include the following environmental management plans:</li> </ul>	<p>Note: This CCS applies only to the construction phase of the development approval, a separate Operational Environment Management Plan will be provided addressing community consultation and complaint resolution arising during ongoing operations of the development.</p>

Condition Number	Condition Detail	Report Reference
	<ul style="list-style-type: none"> <li>(i) Operational Traffic Management Plan (see Condition B17); and</li> <li>(ii) Noise Validation Monitoring (see Condition B26).</li> </ul> <p>The Applicant must:</p> <ul style="list-style-type: none"> <li>(a) not commence operation until the OEMP is approved by the Planning Secretary; and</li> <li>(b) operate the development in accordance with the OEMP approved by the Planning Secretary (and as revised and approved by the Planning Secretary from time to time).</li> </ul>	
<p>C8 – Revision of Strategies, Plans and Programs</p>	<p>Within three months of:</p> <ul style="list-style-type: none"> <li>(a) the submission of a Compliance Report under condition C15;</li> <li>(b) the submission of an incident report under condition C10;</li> <li>(c) the approval of any modification of the conditions of this consent; or</li> <li>(d) the issue of a direction of the Planning Secretary under condition (a) which requires a review,</li> </ul> <p>the strategies, plans and programs required under this consent must be reviewed, and the Department must be notified in writing that a review is being carried out.</p>	<p>Section 6.2</p>
<p>C18 – Access to Information</p>	<p>At least 48 hours before the commencement of construction until the completion of all works under this consent, including rehabilitation and remediation, the Applicant must:</p> <ul style="list-style-type: none"> <li>(a) make the following information and documents (as they are obtained or approved) publicly available on its website:                             <ul style="list-style-type: none"> <li>(i) the documents referred to in condition A2 of this consent;</li> <li>(ii) all current statutory approvals for the development;</li> <li>(iii) all approved strategies, plans and programs required under the conditions of this consent;</li> <li>(iv) the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;</li> <li>(v) minutes of CCC meetings;</li> <li>(vi) 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;</li> <li>(vii) 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;</li> <li>(viii) a summary of the current stage and progress of the development;</li> <li>(ix) contact details to enquire about the development or to make a complaint;</li> </ul> </li> </ul>	<p>Section 5.3</p>

Condition Number	Condition Detail	Report Reference
	(x) a complaints register, updated monthly; (xi) the Compliance Report of the development; (xii) audit reports prepared as part of any Independent Audit of the development and the Applicant's response to the recommendations in any audit report; (xiii) any other matter required by the Planning Secretary; and (b) keep such information up to date, to the satisfaction of the Planning Secretary.	

## 1.2 Community Communications Strategy Scope

This CCS applies to Stage 2 from commencement of construction works to completion of construction. A CEMP has been prepared to address all components of the project which references this CCS. The project will be serviced by the same project website and phone number currently in place for the Concept and Stage 1 approval (SSD 7348) for the OWE to provide a simplified and consistent communications process across the project.

## 1.3 Background

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 2** below:

**Table 2 Previous Approved Development and Modifications**

Application Number	Development Description
SSD 7348	A Concept Proposal including: <ul style="list-style-type: none"> <li>• 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;</li> <li>• concept layout of development lots, internal roads, drainage, landscaping, noise walls, basins and biodiversity offsets; and</li> <li>• development controls</li> </ul> A Stage 1 Development including: <ul style="list-style-type: none"> <li>• bulk earthworks across all five stages including retaining walls and noise walls;</li> <li>• lead in services including but not limited to drainage, power, sewer, water and telecommunications;</li> <li>• service infrastructure to Precinct 1, including drainage, power, sewer, water and telecommunications;</li> <li>• 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;</li> <li>• Western North-South Link Road and associated subdivision, basins and drainage;</li> <li>• estate roads 1, 2 and 6 and eastern part of road 7;</li> <li>• landscaping of Stage 1, the western boundary, Western North-South Link</li> </ul>



Application Number	Development Description
	Road, estate roads 1, 2 and 6 and the eastern part of road 7, detention basins and the amenity lot <ul style="list-style-type: none"> <li>• subdivision of Stage 1 lots and road</li> </ul> infrastructure including the services (substation) lot; <ul style="list-style-type: none"> <li>• stormwater drainage infrastructure for Lots 2A and 2B and all basins;</li> <li>• temporary works to facilitate construction</li> </ul> including but not limited to swales, haul road (construction access), landscaping and basins; and <ul style="list-style-type: none"> <li>• works including construction of traffic signals at Lenore Drive/Grady Crescent/WNSLR intersection.</li> </ul>
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 3	Amendments to the Concept Proposal: <ul style="list-style-type: none"> <li>•the OWE layout and staging</li> <li>•precinct boundaries</li> <li>•reconfigure estate road layout</li> <li>•basic design and infrastructure (including building height, basins, noise wall, pad levels and GLA)</li> <li>•civil strategy and servicing strategy</li> <li>•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.</li> </ul> Amendment to the Stage 1 Development: <ul style="list-style-type: none"> <li>•construction of estate road 03, roundabout, retaining wall, noise wall, basins and infrastructure</li> <li>•subdivision of estate roads</li> <li>•extension to noise wall</li> <li>•change to pad levels, bulk earthworks and landscaping and construction hours.</li> </ul>
SSD 7348 MOD 4	Inclusion of an additional lot in the subject site and carrying out works in the additional lot to facilitate development of the WNSLR

Details of the proposed modifications to SSD 7348 are identified below in **Table 3**.

**Table 3 Proposed Modifications**

Application Number	Development Description
SSD 7348 MOD 2	Confirmation for a future tenant of Precinct 1, and their specific operational requirements, has resulted in the need for minor amendments to the approved site layout of Precinct 1 and necessitates modifications to SSD 7348. Changes proposed will result in amendments to both the concept approval, and the Stage 1 approval conditions. An overview of the key changes to the proposed built form within stage 1 are included below: <ul style="list-style-type: none"> <li>•Development controls to facilitate changes in built form</li> <li>•Acoustic controls</li> </ul>

---

Application Number	Development Description
	<ul style="list-style-type: none"><li>•Approved Plans</li><li>•Updated architectural plans</li><li>•Updated Civil Plans</li><li>•Updated landscape plans</li></ul>

## 1.4 Project Description

The project as approved under SSD 10397 comprises 3 key components:

- A single warehouse and office building with a footprint of 51,310 m<sup>2</sup> and warehouse space over four levels to a height of 26 metres, providing a Gross Floor Area (GFA) of 206,968 m<sup>2</sup> and Gross Lettable Area (GLA) of 200,668 m<sup>2</sup>;
- Parking for trucks and cars; and
- Fit-out and use approval including racking and automated distribution hub infrastructure and loading bays.

**Figure 1** below identifies the precinct layout for the OWE site. Further project details are located in the Environmental Impact Statement, Stage 2 Development Application (EIS) (GHD 2020).

Figure 1 Proposed Oakdale West Precinct Plan

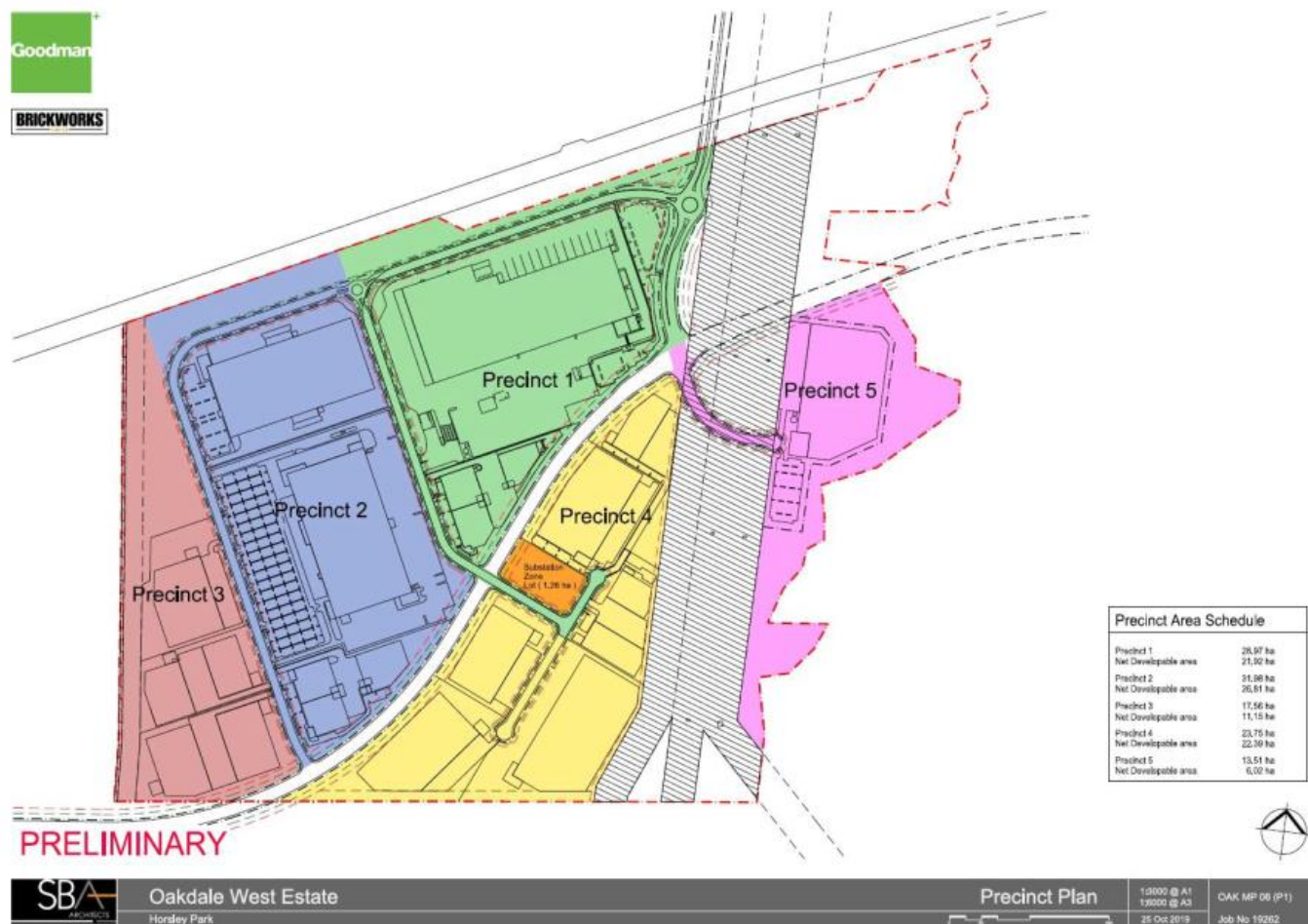
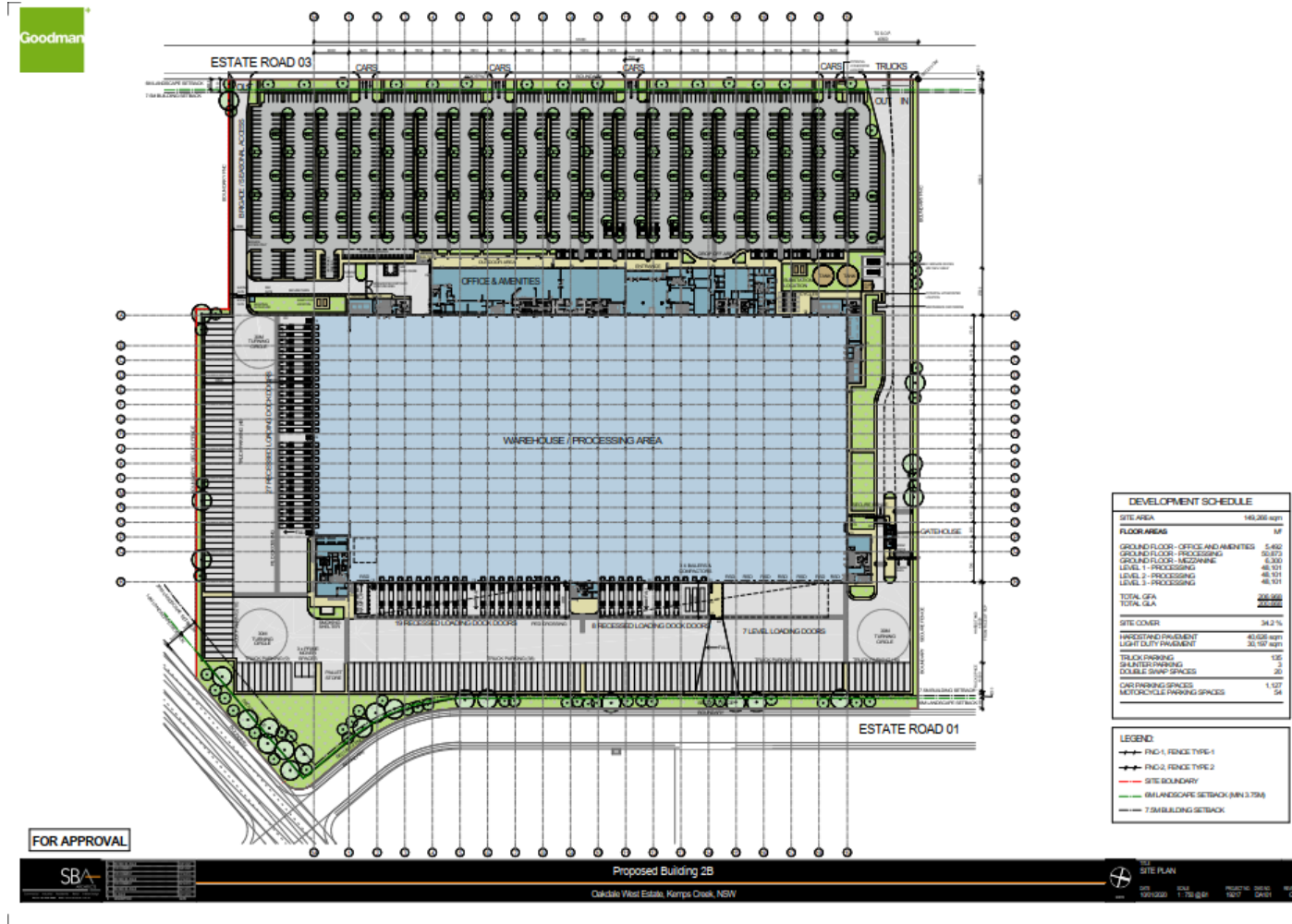


Figure 2 Proposed Oakdale West Staging Plan



Figure 3 Proposed Stage 2 Layout





## 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 School, Anglican School and Aged 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) for the original SSD 7348 and during construction activities undertaken as approved under that consent. The key stakeholders previously identified remain the key stakeholders for the Stage 2 project given the developments location within the same site as the previous approval and the similar nature of the development proposed under SSD 10397 and SSD 7348. 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: <ul style="list-style-type: none"> <li>• Residential property – 20 Aldington Road</li> <li>• Emmaus Catholic College</li> <li>• Trinity Catholic Primary School</li> <li>• Emmaus Village</li> <li>• Mamre Anglican School</li> <li>• Catholic Healthcare Emmaus Village</li> <li>• Little Smarties Early Learning Centre</li> </ul>
Local Councils	<ul style="list-style-type: none"> <li>• Penrith City Council</li> </ul>
State Government Departments and Offices	<ul style="list-style-type: none"> <li>• NSW EPA</li> <li>• NSW Heritage Office</li> <li>• NSW Biodiversity and Conservation Division, Department of Planning Industry and Environment</li> <li>• NSW Department of Industry</li> <li>• Roads and Maritime Service</li> <li>• Transport for NSW</li> <li>• NSW Rural Fire Service</li> <li>• WaterNSW</li> <li>• National Resources Asset Regulator</li> </ul>
Utility and Service Providers	<ul style="list-style-type: none"> <li>• TransGrid</li> <li>• Endeavour Energy</li> <li>• WaterNSW</li> <li>• Sydney Water</li> <li>• Jemena</li> <li>• NBN</li> <li>• Telstra</li> </ul>
Other Interested Parties	<ul style="list-style-type: none"> <li>• Registered Aboriginal Parties</li> </ul>

Contact details for the key stakeholders listed in **Table 4** above are included in **Appendix A & B**.

### 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 round 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 assessment and after the approval of Stage 1 and Concept Plan of the Oakdale West Estate (SSD 7348). A CCS was developed, approved and is currently being implemented as part of the ongoing project roll out.

Consultation was also undertaken during the preparation and prior to the approval of SSD 10397. Details of this consultation were included in the EIS prepared for the State Significant Development Application (GHD, 2020).

Details of consultation undertaken with key stakeholders during the preparation and assessment of SSD 10397 are included below in **Table 5**

**Table 5 Stakeholder Consultation Undertaken**

Stakeholder	Consultation
DPIE (Water Group, Climate Change and Sustainability)	Recent correspondence has been held between Goodman's ecologist and DPIE. It has been confirmed that MOD 3 and the Stage 2 Development Application does not affect any previous biodiversity approvals
Transport for NSW (TfNSW)	A meeting was held with TfNSW on 12 December 2019 with the tenant and Goodman to discuss a proposed bus route to the estate given the worker population proposed to be generated from this application
Roads and Maritime Services (now TfNSW)	Goodman consulted with TfNSW (ex RMS) numerous times in relation to construction and operational access into the Estate. Several meetings have been held with TfNSW, DPIE, and GMG to discuss access, but particularly the construction access, which has now been agreed with TfNSW
Penrith City Council (PCC)	Ongoing discussions with PCC have been undertaken by Goodman regarding this application. This includes face to face meetings, emails and phone calls. The main item for discussion was the increase in building height, construction access, and landscaping requirements. A detailed landscape plan is under preparation in consultation with PCC in accordance with Condition B2 of the development consent.
Fire & Rescue NSW	A meeting was held with Fire & Rescue NSW in February 2020. A Fire Engineering Brief Questionnaire has been lodged to Fire & Rescue NSW with further consultation underway.

Stakeholder	Consultation
Endeavour Energy	Goodman met with Endeavour Energy on 13 November 2019 to discuss this application specifically. Endeavour Energy requested Goodman to complete an application for the power for the property as soon as practical. Goodman have subsequently lodged the application and have met again with Endeavour Energy.
TransGrid	Building 2B does not affect the Transgrid land. Goodman spoke to Transgrid in late November 2019 regarding Goodman’s proposed site works and general maintenance Transgrid were completing on site. Transgrid participate in Goodman’s authority liaison group. Through the course of the development assessment process Transgrid raised a number of queries, with Goodman providing responses.
WaterNSW	Building 2B is not adjacent to WaterNSW’s land and therefore, further consultation with WaterNSW is not required.
WSEA Community	As mentioned above, Goodman have a monthly meeting with the community group where upcoming applications and current works are discussed.
General public, neighbourhoods schools and community	<p>Goodman has emailed all neighbours to the south and west to outline the proposal. In addition to this, Goodman has had a meeting with the owners along Aldington Road (sensitive receiver N3, N4, and N5) to discuss the proposal at length and outline any possible impacts to their sight. As a result, Goodman will be entering into a noise agreement with the owner of N4 and N5. N3 is aware of the proposed development and has an existing noise agreement in place.</p> <p>Goodman has consulted with the owner of the land at N1 and N2, and their tenants being the schools and aged care facilities.</p> <p>Goodman continues to have regular communication with all sensitive receivers. Noise agreements have now been entered into with N3, N4, and N5.</p> <p>Goodman remains committed to updating the schools and aged care facilities of upcoming work and progress.</p>

For more information, refer to the Department of Planning and Environment’s Major Project Assessments webpage at:

<https://www.planningportal.nsw.gov.au/major-projects/project/25921>

## 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 6** 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 6 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 and construction works have potential to result in negative impacts associated with noise, vibration and dust.	<p>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.</p> <p>Up to date information on current and proposed works will be accessible to stakeholders and the wider public on the project web page.</p> <p>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.</p> <p>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.</p>
Stormwater, Sediment Control, Erosion, Water Quality	<p>High rainfall events could result in localised flooding.</p> <p>Construction could result in impacts to local water quality, associated with sediment laden runoff.</p>	<p>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.</p> <p>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.</p>
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.	<p>Sensitive receivers will be notified prior to actions likely to cause traffic disruption in accordance with Section 5.4.2 of this strategy.</p> <p>The CEMP and supporting Construction Traffic Management Plan and Fill Importation Plan identify specific mechanisms to manage and mitigate these impacts.</p>

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 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, phone call or email and these items are to be 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.
Impacts on Flora and Fauna	SSD 10397 does not involve the removal of additional vegetation (the site will be cleared in accordance with the consent for SSD 7348). Notwithstanding, construction associated with Stage 2 has the potential to impact on fauna communities currently located within or adjacent to the site.	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, email and/or text message and will be discussed at 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	<p>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.</p> <p>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.</p>	<p>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.</p> <p>Contact details including the hotline details will be provided on site, the project web page and in all information issued.</p>
Emergency Event	<p>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.</p>	<p>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.</p>

## 4 Communications and Community Liaison Representative

Goodman have appointed a Communications and Community Liaison Representative (CCLR) for the Concept and Stage 1 Approval of the OWE who currently provides the community and stakeholders with a single point of contact for the project and is responsible for receiving and disseminating information requests and complaints, along with addressing any interface issues. The CCLR also helps facilitate property access as required. The current CCLR for the site will undertake the role for the proposed Stage 2 works to provide continuity of service and a simplified single point of contact for the community regarding any works occurring across the site.

The CCLR is 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 has 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 is 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](mailto:dthompson@slrconsulting.com); 1300 002 887
- Kate McKinnon – Associate Planner – SLR  
[kmckinnon@slrconsulting.com](mailto: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 B52 of SSD 10397 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 7** 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. Where tools and mechanisms are already in place or being utilised to consult and communicate with stakeholders regarding the Concept and Stage 1 works at the OWE site, these will be expanded to encompass the Stage 2 project to reduce duplication and avoid confusion.



**Table 7 Communication Management and Mitigation Tools**

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Community Consultation Meetings/Workshops/ Forums	Informal or formal meetings, workshops and/or forums 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 update including a review of upcoming works program and any complaints received and remedial actions, followed by informal discussion with stakeholders and the community.
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 B52 of SSD 10397, 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 Consultant	All environmental stakeholders	As required for the project duration	If deemed necessary by the Environmental Consultant, 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.

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
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.
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.

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Toolbox and Prestart Meetings Stage 2 Construction 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.
Website	A web page is established at: <a href="http://oakdaleopportunities.com">oakdaleopportunities.com</a>	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 previously established a website for the project ([oakdaleopportunities.com](http://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 website will also include relevant information on Stage 2 of the OWE.

The following information will be updated monthly or more frequently when necessary and made available on the website as required by SSD 10397 Condition C18:

- the documents referred to in condition A2 of the consent;
- all current statutory approvals for the development;
- all approved strategies, plans and programs required under the conditions of the consent;
- the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;
- minutes of CCC meetings;
- 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 the consent;
- a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of the consent, or any approved plans and programs;
- a summary of the current stage and progress of the development;
- contact details to enquire about the development or to make a complaint;
- a complaints register, updated monthly;
- the Compliance Report of the development;
- audit reports prepared as part of any Independent Audit of the development and the Applicant's response to the recommendations in any audit report; and
- any other matter required by the Planning Secretary;

### 5.3.2 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 Emmaus 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** of the CEMP).
- Emmaus Catholic Primary School and High School and Retirement Village on Bakers Lane.

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 8** below:

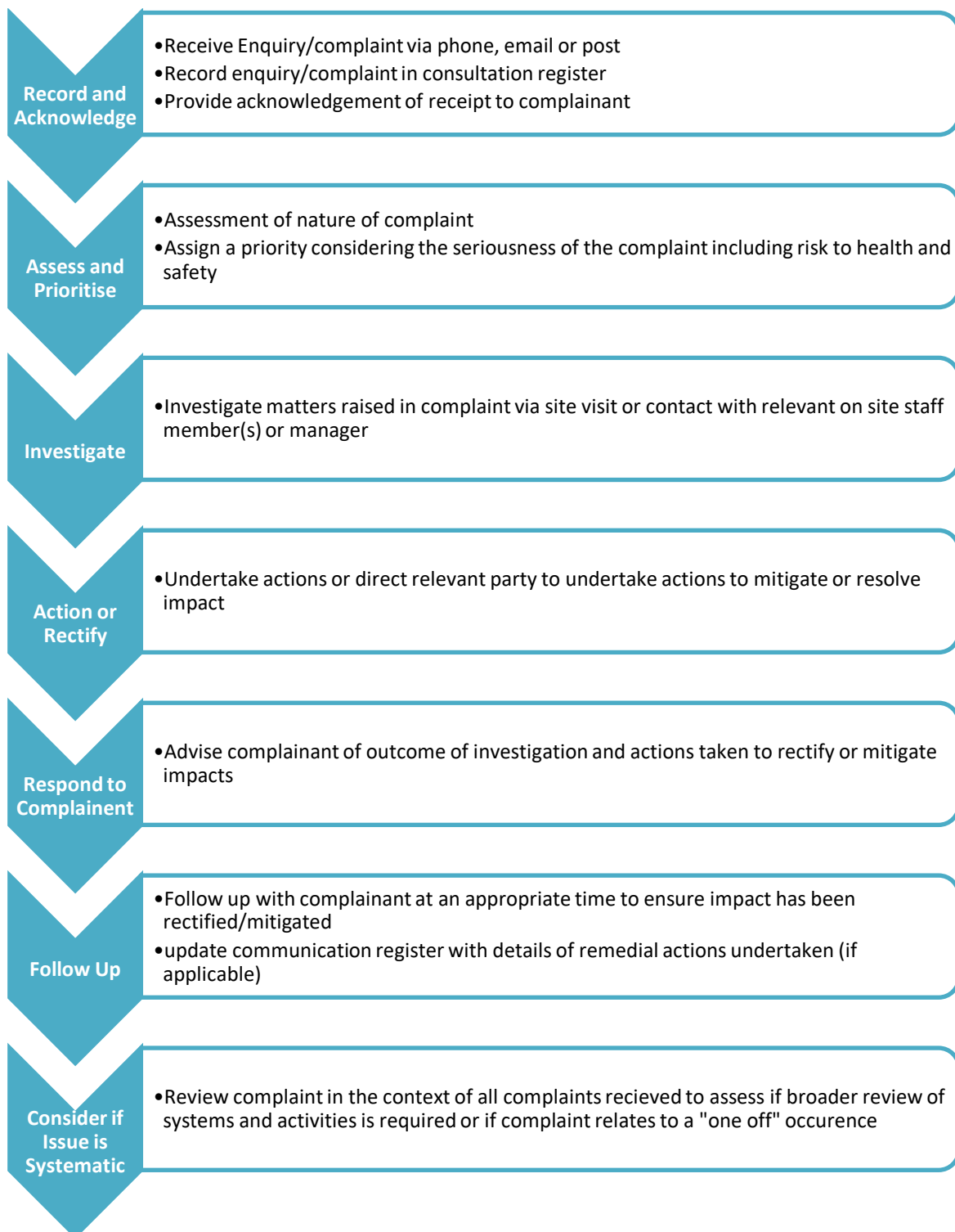
**Table 8 Sensitive Receiver Procedure**

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 4** 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 4 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 approved 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 9**.

**Table 9 Enquiries 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.	<a href="mailto:community.oakdalewest@goodman.com">community.oakdalewest@goodman.com</a>
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

A consultation register has been established for the Concept and Stage 1 OWE Project to record all complaints and enquiries received by the above means. All consultation and communications undertaken with regard to the Stage 2 development shall be included in the existing consultation register, with a notation added to delineate between matters relating to the SSD 7348 and SSD 10397 approvals. 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.
- Notation attributing the complaint/enquiry to the SSD 7348 or SSD 10397 projects (or both).

An excerpt and of the consultation register template is included at **Appendix C**.

#### 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 Complaint 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 2<sup>nd</sup> Edition”*.

#### 5.4.4 Contingency Management Plan

In accordance with Condition C1(d) of the SSD 10397 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 10** below:



**Table 10 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 11** below.

**Table 11 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 Consultant 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 C8 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 2<sup>nd</sup> Edition
- SLR Consulting Australia (2020) Construction Environmental Management Plan
- GHD (2020) Environmental Impact Statement – Oakdale West Estate Stage 2 (State Significant Development Application Ref 10397)
- Urbis (2017) Environmental Impact Statement – Oakdale West Estate (State Significant Development Application Ref 7348)

# APPENDIX A

## Key Stakeholder Contact Details

Contact Name/Organisation	Contact Details
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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 B

## Registered Aboriginal Parties



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# APPENDIX C

## 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	Project/ Stage

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Australia  
T: +61 404 939 922

# APPENDIX H

## Qanstruct's Complaint Form

# Complaint Form

<b>COMPLAINT REPORT FORM</b>			
Workplace: _____ Date: ____ / ____ / ____ Time: _____ am/pm			
Supervisor: _____			
Nature of complaint: _____			
How was complaint lodged? _____			
<b>Complaint Details</b>		<b>Summary of Complaint</b>	
<b>Print Name</b>	<b>Contact Details</b>		
<b>Comments, Points Raised and any Follow Up Required:</b>			
<b>Corrective Action To Be Taken</b>	<b>Action by</b>	<b>Action Complete</b>	
		<b>Sign off</b>	<b>Date</b>

# APPENDIX I

## Construction Air Quality Management Plan



# PROJECT WARATAH

## Construction Air Quality Management Plan SSD 10397

### Prepared for:

Goodman Property Services (Aust) Pty Ltd  
Level 17  
60 Castlereagh Street  
Sydney NSW 2000

SLR Ref: 610.19215-R02  
Version No: -v0.5  
April 2020



## PREPARED BY

SLR Consulting Australia Pty Ltd  
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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
610.19215-R02-v0.5	27 April 2020	Varun Marwaha	Kirsten Lawrence	Varun Marwaha
610.19215-R02-v0.4	3 April 2020	Varun Marwaha	Kirsten Lawrence	Varun Marwaha
610.19215-R02-v0.3	30 March 2020	Varun Marwaha	Kirsten Lawrence	Varun Marwaha
610.19215-R02-v0.2	26 February 2020	Varun Marwaha	Kirsten Lawrence	DRAFT
610.19215-R02-v0.1	3 February 2020	Varun Marwaha	Kirsten Lawrence	DRAFT

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Appendix D	Curriculum Vitae of Author

# 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 Stage 2 works within the Oakdale West Estate (OWE) located in the western Sydney area of Erskine Park, New South Wales (NSW).

The Development Consent for OWE (SSD 7348) was granted for the OWE 'Concept Proposal' and 'Stage 1 Development'. The Stage 1 Development includes construction of the proposed Western North South Link Road (WNSLR), OWE site-wide bulk earthworks, estate-wide basins, and lead-in services. The CAQMP for construction of the OWE was finalised by SLR in January 2020 (SLR 2020), which was required under Condition D92 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 Stage 2 works, and generally adheres to the requirements stipulated in the overarching OWE CAQMP. The Stage 2 works were approved on 9 April 2020 under SSD 10397 and involve establishing a warehouse and distribution facility at Lot 2B.

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.



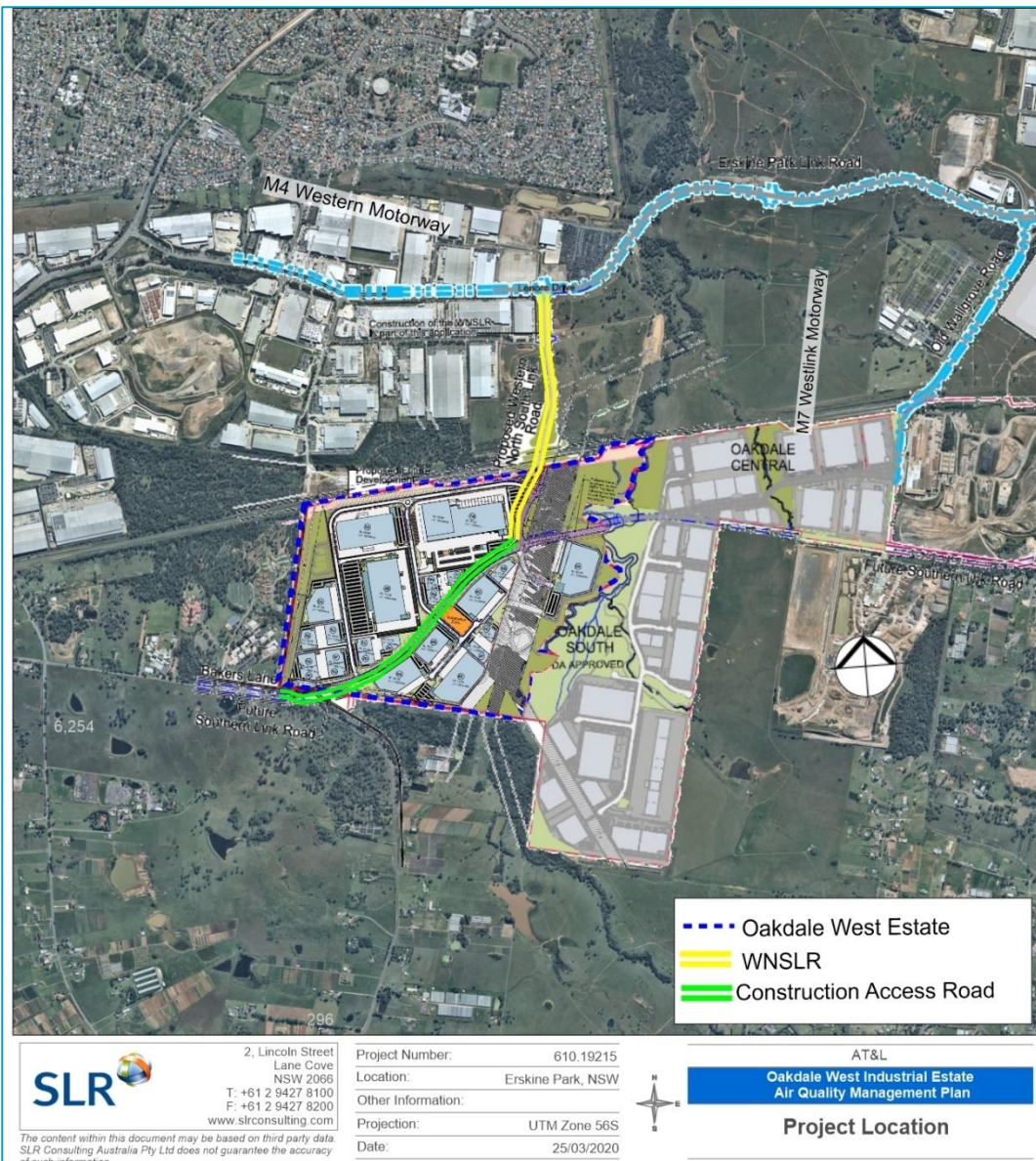
## 2 Development Description

### 2.1 Location

The Oakdale West Estate is legally described as Lot 11 DP 1178389 at the far south-western extent of the Western Sydney Employment Area (WSEA) within the Penrith Local Government Area (LGA).

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. 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. The location of the OWE is shown in **Figure 1**.

**Figure 1 Regional Locality**

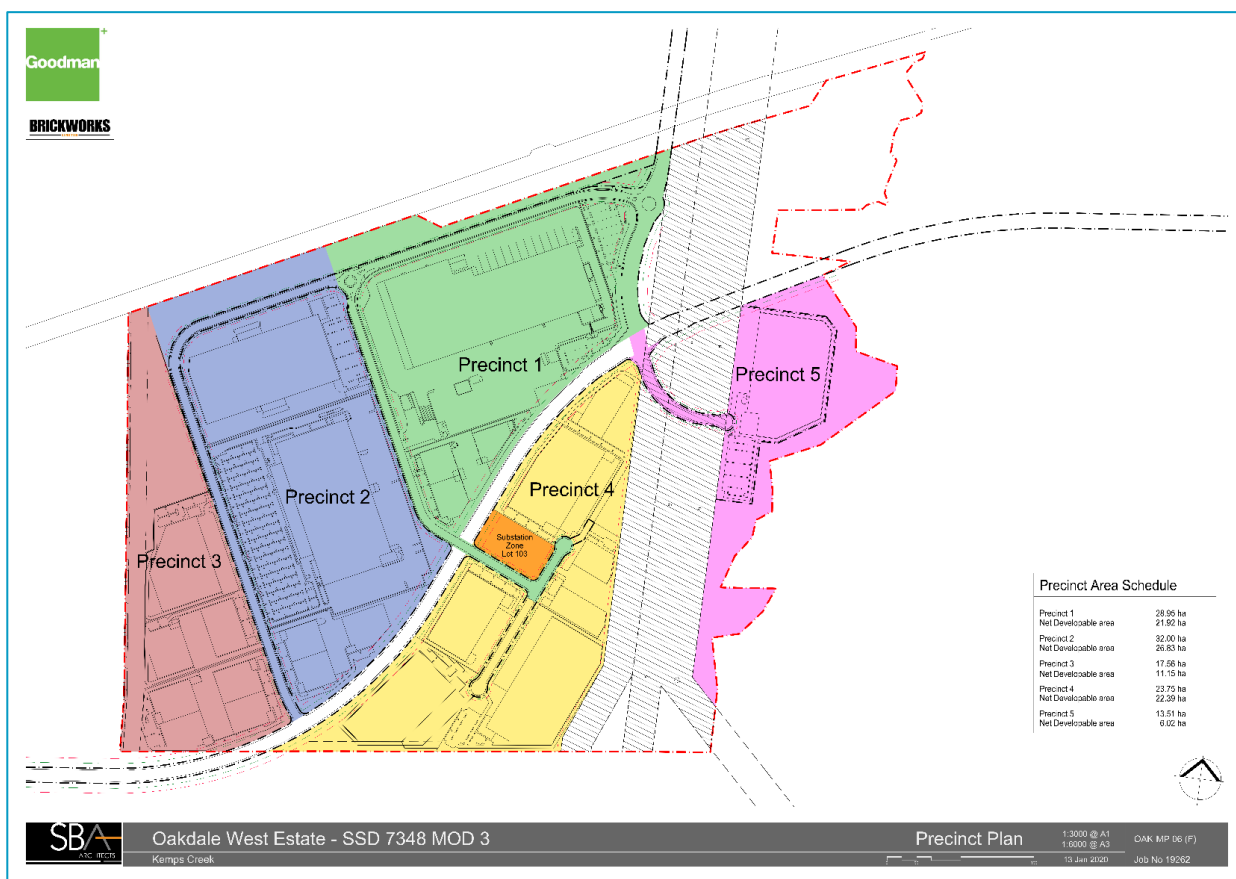


The Stage 2 works will be undertaken in Precinct 2 of the OWE, which is bordered by the future Southern Link Road to the south, Estate Road No. 1 to the east, and Estate Road No. 3 to the north and west. The location of Stage 2 works is shown in **Figure 2**.

Stage 2 has a site area of 149,266 m<sup>2</sup> and will comprise four key components:

- Single warehouse and office building with a footprint of 51,310 m<sup>2</sup> and warehouse space over four levels to a height of 26 metres (m), providing a Gross Floor Area (GFA) of 192,930 m<sup>2</sup> and Gross Lettable Area (GLA) of 189,130 m<sup>2</sup>;
- Parking (truck and car); and
- Fit-out and use approval including racking and automated distribution hub infrastructure and loading bays.

**Figure 2 Oakdale West Precinct Plan**





## 2.2 Construction Activities

Stage 2 works will include the works to be undertaken on Lot 2B at Precinct 2 (**Figure 2**). Site works are proposed to commence in April 2020 with deliveries of materials in June 2020 and be completed over a 16 month period until September 2021. Construction activities for Stage 2 works include:

- Installation of in-ground services
- Pouring of concrete slabs
- Construction of the warehouses including wall and roof cladding
- Internal office fit outs
- Fire services
- Estate roads and infrastructure

The construction works associated with Stage 2 will be completed by Qanstruct. Where Goodman is nominated as having responsibility as the Applicant, this may be delegated to their specialist consultants.

## 2.3 Construction Hours

Construction hours will be in accordance with Conditions B20 of Development Consent SSD 10397, which are reproduced below:

*B21 The Applicant must comply with the hours detailed in Table 2, unless otherwise agreed in writing by the Planning Secretary.*

**Table 2: Hours of Work**

Activity	Day	Time
Construction	Monday – Sunday	6 am to 10 pm
Concrete works (internal to building only)	Monday – Sunday	3 am to 10 pm

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

## 2.4 Construction Site Access

Access to Lot 2B will be through Oakdale West and will initially occur via Bakers Lane. Upon completion of the WNSLR, providing access to the work area from the north becomes available, all vehicular access will be restricted to the northern access routes, via Lenore Drive and WNSLR.

Bakers Lane is the primary access point for these works with works arriving from Mamre Road to the west. All construction vehicles are to use the primary access from Bakers Lane. A secondary access route is proposed from Aldington Road (to the south-west of the access gate), however the proposed alternative route will be restricted for use only when Bakers Lane is unavailable.

## 2.5 Construction Contact Details

**Table 1** lists the key contacts during the construction of Stage 2.

**Table 1 Construction Contact List**

Role	Name	Company	Contact Details
Project Principal	Kym Dracopoulos	Goodman	0411 511 431 kym.dracopoulos@goodman.com
Principal's Superintendent	Mark Ward	AT&L	0408 699 026 mark.w@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 Project Manager	Damien Burns	Qanstruct	0409 240 098 dburns@qanstruct.com.au
Contractor's National OHSE Manager	Michael Harvey	Qanstruct	0417 470 678 mharvey@qanstruct.com.au
Contractor's NSW OHSE Manager	Jason Baker	Qanstruct	0410 444 333 jbaker@qanstruct.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

## 3 Statutory Requirements

### 3.1 Development Consent

The Development Consent (SSD 10397) requirements stipulated for the construction of Stage 2 and where they have been addressed in this CAQMP are shown in **Table 2**.

**Table 2 Assessment against Development Consent Conditions**

Conditions	Response/Section Reference
<b>Dust Minimisation</b>	
<b>B38</b> The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent	<b>Section 8</b>
<b>B39</b> During construction, the Applicant must ensure that: <ul style="list-style-type: none"> <li>(a) exposed surfaces and stockpiles are suppressed by regular watering;</li> <li>(b) all trucks entering or leaving the Site with loads have their loads covered;</li> <li>(c) trucks associated with the development do not track dirt onto the public road network; and</li> <li>(d) public roads used by these trucks are kept clean.</li> </ul>	<b>Section 8</b>
<b>Construction Air Quality Management Plan</b>	
<b>B40</b> Prior to the commencement of construction, the Applicant must update the Construction Air Quality Management Plan (CAQMP) for the OWE, to include the development. The updated CAQMP must:	
(a) be prepared by a suitably qualified and experienced person(s)	2-page CV of the author is attached in <b>Appendix D</b>
(b) identify the control measures that will be implemented to minimise emissions from all construction sources	<b>Section 8</b>
(c) detail procedures for measuring the performance of the control measures and triggers for implementing additional reasonable and feasible measures, if required, to minimise emissions; and	<b>Section 12</b>
(d) include procedures for complaints handling and response	<b>Section 10</b>
<b>B41</b> The Applicant must:	
(a) not commence construction of the development until the updated CAQMP required by condition B38 is approved by the Planning Secretary; and	to be approved
(b) implement the most recent version of the CAQMP approved by the Planning Secretary for the duration of construction	to be approved

## 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 the OWE have been identified as:

- Dust emissions from earthworks activities (eg 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 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<sub>10</sub> and PM<sub>2.5</sub>) 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 Stage 2 works.

The construction activities are broadly divided into four categories, ie demolition, earthworks, construction (building) and trackout. Potential air quality impacts associated with the Stage 2 works 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 Stage 2 works 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 ( $\mu\text{m}$ ) in diameter. Particulate matter with an aerodynamic diameter of 10 microns or less is referred to as  $\text{PM}_{10}$ . The  $\text{PM}_{10}$  size fraction is sufficiently small to penetrate the large airways of the lungs, while  $\text{PM}_{2.5}$  (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  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  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  $\text{PM}_{2.5}$  is primarily associated with vehicles exhausts resulting from the incomplete combustion of diesel.

For the purposes of this CAQMP, suspended particulate matter refers to  $\text{PM}_{10}$  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 3** and **Table 4**.

### 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 3**.

**Table 3 NSW EPA Criterion for Particulate Matter**

Pollutant	Averaging Period	Concentration
PM <sub>10</sub>	24 Hours	50 µg/m <sup>3</sup>
	Annual	25 µg/m <sup>3</sup>

Source: EPA 2017a

### 5.2.2 Deposited Dust

The relevant criterion for nuisance dust deposition is provided in **Table 4**. 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 4 NSW EPA Criterion of Nuisance Dust Deposition**

Pollutant	Averaging Period	Assessment Criteria (g/m <sup>2</sup> /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.

There were no exceedances of the 24 hour average criterion in 2014 and 2017, one exceedance in 2015 and three exceedances in 2016 and two exceedances in 2018. A summary of the PM<sub>10</sub> concentrations for the last five years (2014-2018) is tabulated in **Table 5** and presented graphically in **Figure 3**.

**Table 5 Summary of PM<sub>10</sub> Monitoring Data at St Marys AQMS (2014 – 2018)**

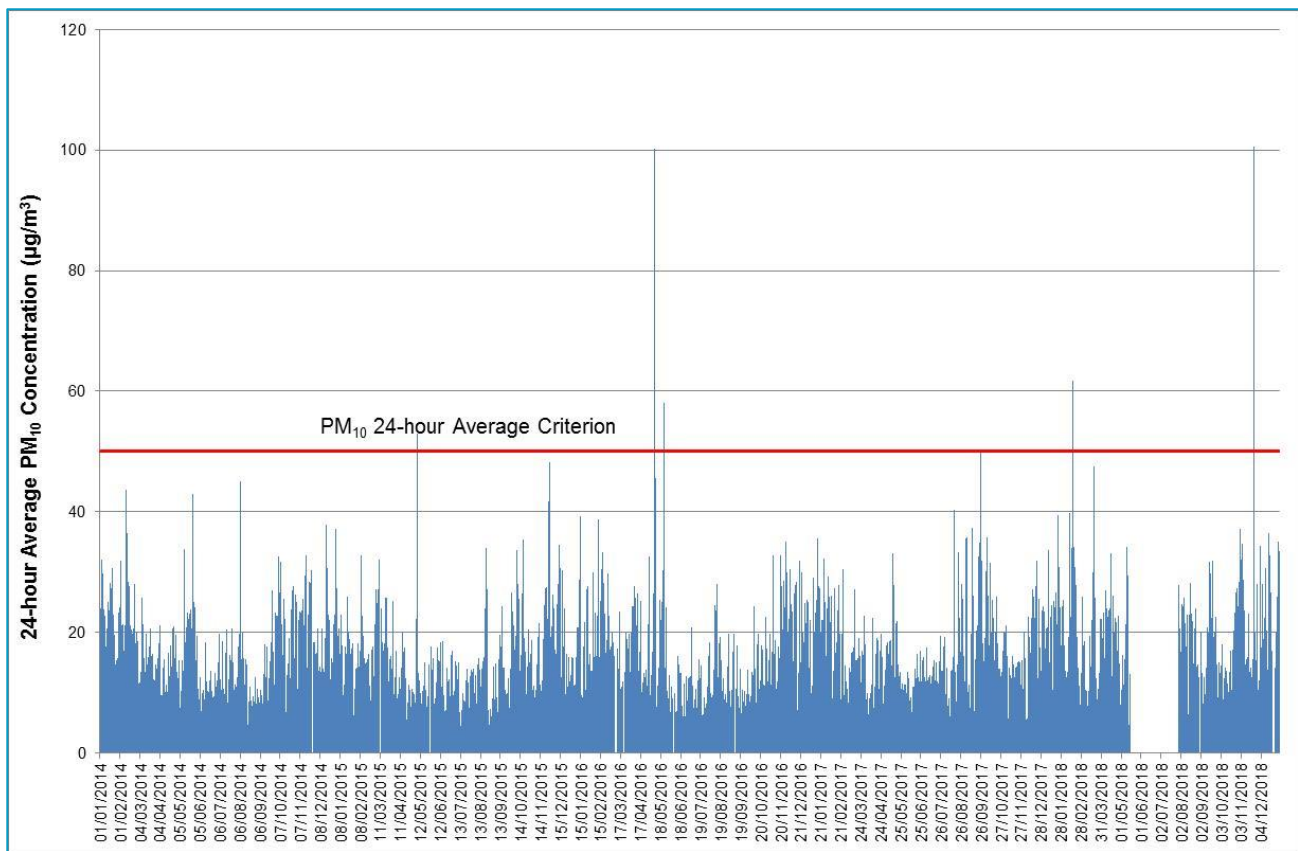
Year	Maximum 24-hour Average	Annual Average
	µg/m <sup>3</sup>	µg/m <sup>3</sup>
2014	45.0	16.7
2015	53.0 <sup>a</sup>	15.0
2016	100.2 <sup>b</sup>	16.1
2017	49.8	16.2
2018	100.5 <sup>c</sup>	19.4
<b>Criterion</b>	<b>50</b>	<b>25</b>

<sup>a</sup> Recorded on 6 May 2015

<sup>b</sup> Recorded on 8 May 2016

<sup>c</sup> Recorded on 22 November 2018

**Figure 3 Measured 24-Hour Average PM<sub>10</sub> Concentrations at St Marys AQMS (2014 – 2018)**



A review of the exceedances recorded during 2015 (OEH 2017a), 2016 (OEH 2018a), 2017 (OEH 2018b) and 2018 (OEH 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 2018 (OEH 2019) state that air quality is generally good in New South Wales based on information from the 43 station NSW Air Quality Monitoring Network. 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.

PM<sub>10</sub> concentrations vary across years with higher levels and more exceedances occurring in bushfire and dust storm affected years. Dry El Niño years (2002–2007) have been associated with a greater frequency of bushfires and dust storms and therefore higher particle pollution levels. Lower particle pollution levels have occurred during wetter La Niña years (2010–2012).



## 7 Assessment of Dust Emissions During Construction

The key potential health and amenity issues associated with construction of the OWE are, respectively:

- Elevated suspended particulate concentrations (PM<sub>10</sub>); 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 6** 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 the Stage 2 works in isolation.

**Table 6 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 Stage 2 works at the OWE 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 the Stage 2 works are detailed in **Table 7**, which are consistent with those stipulated in the CAQMP for OWE (SLR 2020). The dust mitigation measures specific to the key emission activities (ie earthworks, construction, track out and demolition) are also provided in **Table 7**.

Note: **Table 7** is replicated as Table 12 in the CEMP.

**Table 7 Dust Mitigation Measures**

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
<b>Communications</b>			
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.	Qanstruct		
The head or regional office contact information will be displayed on site signage.			
<b>Site Management</b>			
All dust and air quality incidents will be undertaken as per Section 3.5 of the CEMP.	Qanstruct	Ongoing	<b>Section 9</b>
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	
<b>Preparing and Maintaining the Site</b>			
All reasonable steps to minimise dust generated will be undertaken during construction.	Qanstruct	Ongoing	SSD 10397 Condition B38
Exposed surfaces and stockpile will be suppressed by regular watering or use of approved dust suppressants.			SSD 10397 Condition B39 (a)
Land stabilisation works will be carried out in such a way on site to minimise exposed surfaces.			Best practice

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Dust generating activities in areas close to receptors will be closely monitored and additional mitigation applied as required to best manage potential dust emissions			
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.			Best practice
Site fencing and barriers will be kept clean using wet methods.			
<b>Operating Vehicle/Machinery and Sustainable Travel</b>			
Trucks associated with Stage 2 will not track dirt off site and onto Bakers Lane			SSD 10397 Condition B39 (c)
Public roads used by delivery trucks will be kept clean.			SSD 10397 Condition B39 (d)
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. This can be achieved by maintaining the vehicles and staying up to date with vehicle service requirements.	Qanstruct	Ongoing	
Delivery trucks will switch off engines whilst undertaking a delivery on-site, if idling time is likely to exceed 5 minutes.			Best practice
Vehicle speed limit restrictions are implemented on site, including: <ul style="list-style-type: none"> <li>• General - 20km/h</li> <li>• High risk area - 10km/h</li> <li>• Haul routes – 50 km/h</li> </ul>			
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 and Bakers Lane			
<b>Operations</b>			
Only cutting, grinding or sawing equipment fitted with suitable dust suppression systems, such as water sprays will be used.	Qanstruct	Ongoing	Best practice

Environmental Management Control	Person Responsible	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. It is possible that there will be shared demand for harvested water for dust suppression, within the contractors at the estate (ie construction contractors for OWE and WNSLR). This will be managed by maintaining communication with other contractors on a weekly basis.	Qanstruct	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	
<b>Waste Management</b>			
All trucks that are carrying loads, entering or leaving the Site will have their loads covered.	Qanstruct	Ongoing	SSD 10397 Condition B39 (b)
No waste materials, timbers or any other combustible materials will be burnt on site.			Best practice
<b>Earthworks</b>			
Scopes of work will be planned in such a way to assist in minimising the duration that surfaces are left denuded	Qanstruct	Ongoing	Best practice
Rehabilitation of disturbed surfaces will be undertaken within 20 days of final construction levels. This can be achieved by planting native vegetation, in line with the OWE Landscaping Plan.		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 Qanstruct's Project Manager to identify the scope of work or source of the emission prior to undertaking and applying any additional mitigation measures.		Ongoing	

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
<b>Construction</b>			
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.	Qanstruct	Ongoing	Best practice
<b>Trackout</b>			
Water-assisted road sweeper(s) will be used on an as required basis on Bakers Lane should any material be tracked out of the site.	Qanstruct	Ongoing	Best practice
Record all regular inspections and maintenance undertaken of site haul routes and project related access roads (Bakers Lane) 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.			
<b>Demolition</b>			
Ensure effective water suppression of dust is used during demolition operations.	Qanstruct	Ongoing	Best practice
Bag and remove any biological debris or damp down such material before demolition.			

## 9 Incident and Non-Compliance Response and Handling Procedure

For the purposes of this CAQMP, SSD 10397 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 10397 describes a 'non-compliance' as an occurrence, set of circumstances or development that is a breach of the consent.

### 9.1 Performance Objective

To ensure that any incident and/or non-compliance caused by or relating to the construction of the Stage 2 is effectively responded to, and any resulting adverse environment and/or human health impact is promptly prevented or effectively managed.

### 9.2 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 the CEMP 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.

### 9.3 Notification Requirements

#### 9.3.1 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 Stage 2 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 Environmental Consultant 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 will 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 5** 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 8 Regulatory Authority Contact List**

Regulatory Authority / Stakeholder	Key Contact	Contact Details
<b>Department of Planning, Industry and Environment (DPIE)</b>	Compliance Unit	1300 305 695 or 02 9228 6111 compliance@planning.nsw.gov.au
<b>Environment Protection Authority (EPA)</b>	Environment Line	131 555 info@environment.nsw.gov.au
	Head office (Sydney)	02 9995 5000
<b>Penrith City Council</b>	Main switchboard	02 4732 777 council@penrith.city
<b>Water NSW</b>	Main switchboard	1300 662 077 Customer.Helpdesk@waternsw.com.au



Regulatory Authority / Stakeholder	Key Contact	Contact Details	
	Incident Notification Number – 24 hours	1800 061 069	
<b>NSW Public Health Unit</b>	Sydney Local Health District	Business hours: 1300 066 055 After hours: 02 9515 6111	
<b>SafeWork NSW</b>	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.	
<b>Emergency Services</b>	NSW Police NSW Fire and Rescue NSW Ambulance Service	131 444 1300 729 579 -	In case of emergency – 000

In accordance with Condition C10 of Development Consent SSD 10397, 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.

### 9.3.2 Non-Compliances

In accordance with Condition C11 of SSD 10397, the DPIE will be notified in writing to [compliance@planning.nsw.gov.au](mailto:compliance@planning.nsw.gov.au) within seven days of becoming aware of any non-compliance.

C12 and C13 of SSD 10397 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.

## 9.4 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 9.3**.

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 C10 and Appendix 4 of Development Consent SSD 10397 requires that the DPIE and other relevant authorities be provided with a written incident notification via email within seven day of 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 9.3.2**.

### 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 Qanstruct’s Incident Report Form (**Appendix C of the CEMP**). A copy of the completed report will be maintained for at least five years by Qanstruct.

Condition C10 and Appendix 5 of Development Consent SSD 10397 requires that a detailed incident report be provided to the DPIE within 30 days of the incident occurring.

The Incident Report 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 C12 of SSD 10397.

## 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.

## 9.5 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 9.3** and **9.4**;
- 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 8**;
- Blank hard copies of Qanstruct's Incident Report Form; and
- Copies of all completed Incident Report Forms, which are to be maintained for at least five years after the event to which they relate.

## 9.6 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 9.3**). 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 (RMS 2018).

Minor environmental incidents will still be handled under the process outlined in **Section 9.4** 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.

## 10 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).

### 10.1.1 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.

### 10.1.2 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.

### 10.1.3 Complaints Handling Procedure

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

#### 8. 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.

#### 9. 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).

#### 10. 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.

## 11. 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 12**, 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 11** is to be reviewed and, the AQMP updated as appropriate.

## 12. 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.

## 13. 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.

## 14. 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.

### 10.1.4 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.

## 11 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 was implemented by Goodman as part of the management of air emissions during construction of the OWE. Construction of the OWE commenced on 5 December 2019, and the air quality monitoring program has been in place since 12 November 2019.

A summary of the on-site air quality monitoring programme at the OWE is shown in **Table 9**. The locations of these monitors are shown in **Figure 4**.

**Table 9 Summary of On-Site Monitoring Programme**

Pollutant	Equipment Used	Number of Monitoring Sites	Criterion (Averaging Period)
PM <sub>10</sub>	Dust Pro 7000 <sup>a</sup> (with telemetric capacity managed by Sentinex systems)	3	50 µg/m <sup>3</sup> (24-hour average)
Deposited dust	Dust Deposition Gauges (DDGs) <sup>b</sup>	7	4 g/m <sup>2</sup> /month (annual average)

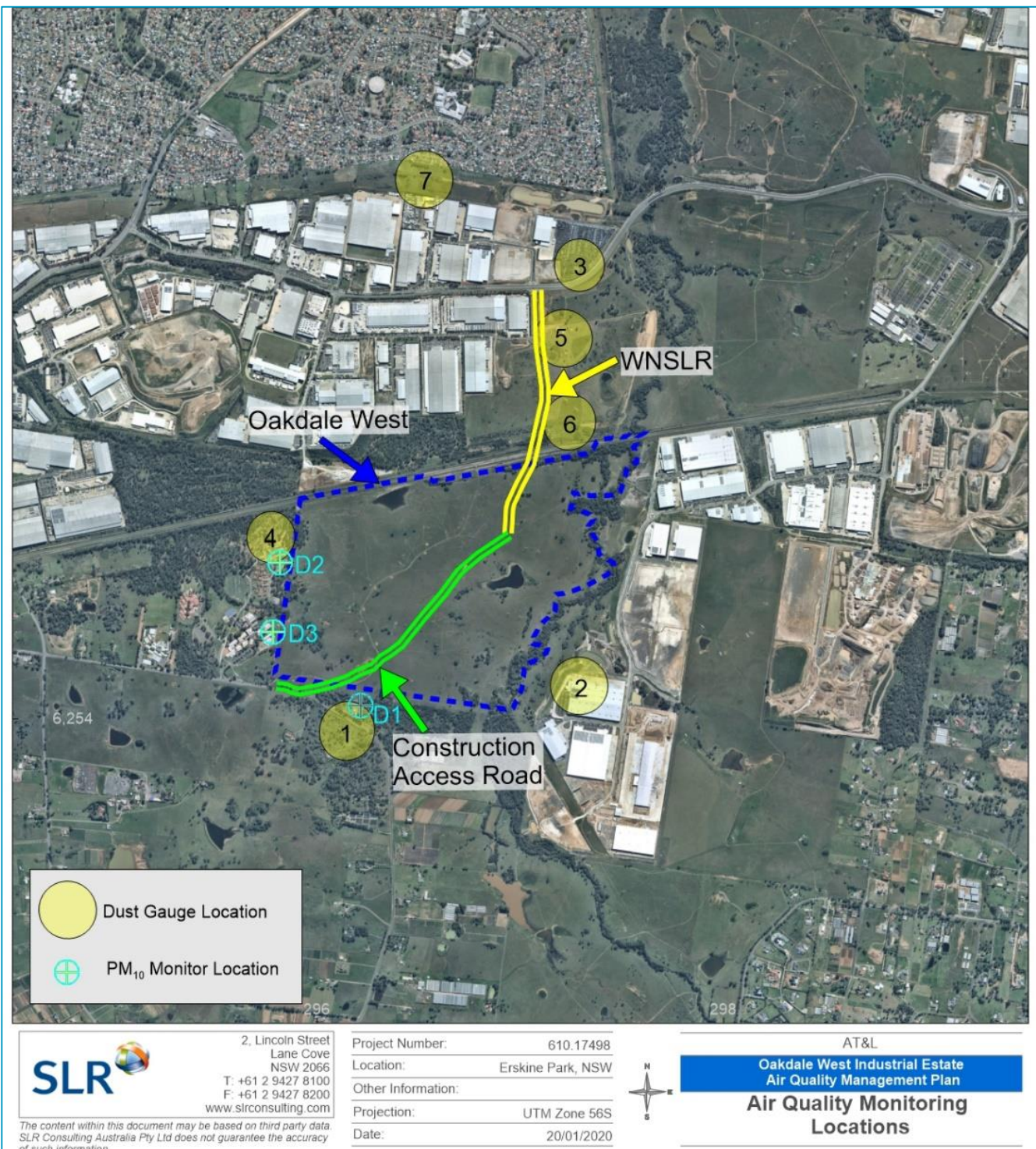
<sup>a</sup> The Dust Pro 7000 system is non-compliant with the *Approved Methods for Sampling and Analysis of Air Pollutants in NSW* (December 2006), and is used as a management tool to proactively manage the onsite operations to reduce dust impacts.

<sup>b</sup> The dust gauges were installed and maintained by construction contractor (Burton). 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.

As there is no stipulated requirement for air quality monitoring for the Stage 2 works within SSD 10397, no separate air quality monitoring is recommended for the Stage 2 works. The monitoring results from the air quality monitoring program in place can be used to manage the offsite air quality impacts during the Stage 2 works.



**Figure 4 Air Quality Monitoring Locations for the OWE and WNSLR Construction Project**



## 12 Contingency Management Plan

The air quality contingency management plan for the Stage 2 works is shown in **Table 10**.

**Table 10 Air Quality Contingency Management Plan for the Stage 2 Works**

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: <ul style="list-style-type: none"> <li>• <i>Deployment of additional water sprays, water trucks etc</i></li> </ul>	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 <sup>2</sup> /month	Trigger	Dust deposition rates are less than 4 g/m <sup>2</sup> /month at all the dust gauges.	Dust deposition rate greater than 4 g/m <sup>2</sup> /month is recorded by any of the dust gauges	Dust deposition rates greater than 4 g/m <sup>2</sup> /month are recorded by two or more dust gauges for two months in a row.
	Response	Continue monitoring program as normal.	<ul style="list-style-type: none"> <li>Analyse data to try to identify the source(s) of dust.</li> <li>Review operations to reduce dust emissions from the identified key source(s). Implement any additional mitigation measures as required, such as additional watering.</li> </ul>	<ul style="list-style-type: none"> <li>Review and investigate construction activities and respective control measures for the monitoring period.</li> <li>If it is concluded that construction activities 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), submit an incident report to government agencies.</li> </ul> <p><b>Note:</b> Real time suspended particulate monitoring is also to be undertaken, to assist in managing dust from onsite activities (see <b>Section 11</b>).</p>
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.	<ul style="list-style-type: none"> <li>Report the complaint to the regulator, in line with complaints handling procedure (See <b>Section 10</b>).</li> <li>Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc), where appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>Review real-time monitoring data at the existing continuous monitors to investigate the likelihood of onsite activities contributing (see <b>Appendix D</b>).</li> </ul>

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Real-time suspended particulate matter monitoring (TSP and PM <sub>10</sub> )	Trigger	Running 24-hour average PM <sub>10</sub> concentrations < 40 µg/m <sup>3</sup>	Running 24-hour average PM <sub>10</sub> concentrations >40 µg/m <sup>3</sup> but <50 µg/m <sup>3</sup>	Running 24-hour average PM <sub>10</sub> concentrations >50 µg/m <sup>3</sup>
	Response	Continue monitoring program as normal.	<p>Review and investigate construction activities and respective control measures. Where appropriate, implement additional remedial measures, such as:</p> <ul style="list-style-type: none"> <li>• Deployment of additional water sprays, water trucks etc</li> <li>• Relocation or modification of dust-generating sources</li> <li>• Record findings of investigations and actions taken to reduce dust levels</li> <li>• Continue to closely monitor dust levels to ensure they are decreasing</li> </ul> <p>If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the site to minimise cumulative impacts, but also record details of the cause of the elevated background levels.</p>	<ul style="list-style-type: none"> <li>• Review and investigate construction activities and respective control measures for the monitoring period, in an air pollution incident report (see <b>Appendix D</b>).</li> <li>• If it is concluded that construction activities 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), submit an incident report to government agencies.</li> </ul>

## 13 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:

### 13.1 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<sub>10</sub> 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 10**).

### 13.2 Environmental Coordinator

- Undertaking dust monitoring program; and
- Review that control measures are working in accordance with the CAQMP.

### 13.3 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.

## 14 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.

## 15 References

- DEC 2006, Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales, Department of Environment and Conservation NSW, December 2006.
- EPA 2017, Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, Environment Protection Authority NSW, January 2017.
- EPA 2018, Local Government Air Quality Toolkit, Module 3 – Guidelines for Managing Air Pollution, Part 3 – Guidance Notes for Construction Sites, available online at <https://www.epa.nsw.gov.au/your-environment/air/air-nsw-overview/local-government-air-quality-toolkit>, accessed on 17 July 2018.
- OEH 2017a, NSW Annual Compliance Report 2015, National Environment Protection (Ambient Air Quality) Measure, published by Office of Environment and Heritage, OEH 2017/0211, May 2017.
- OEH 2017b, NSW Air Quality Statement 2016 – Towards Cleaner Air, published by Office of Environment and Heritage, OEH 2017/0013, January 2017.
- OEH 2018, NSW Air Quality Statement 2017 – Clearing the Air, published by Office of Environment and Heritage, OEH 2018/0044, January 2018.
- OEH 2019, NSW Annual Air Quality Statement 2018, published by Office of Environment and Heritage, OEH 2019/0031, January 2019.
- SLR Consulting (2019b) Community Communications Strategy
- SLR 2020, Oakdale West Estate, Construction Air Quality Management Plan SSD 7348, v1.6 10 January 2020.
- URBIS 2017, Environmental Impact Statement Oakdale West Estate, State Significant Development Application, prepare for: Goodman Limited, SA6642, 1 November 2017.
- USEPA 2006, AP42 Fifth Edition, Volume I, Chapter 13: Miscellaneous Sources, 13.2.5 – Industrial Wind Erosion, November 2006.

# 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 2014 to 2018 (**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 12%-14.5% for all the years between 2014 and 2018.

A review of the annual wind roses (**Figure A1**) indicates that:

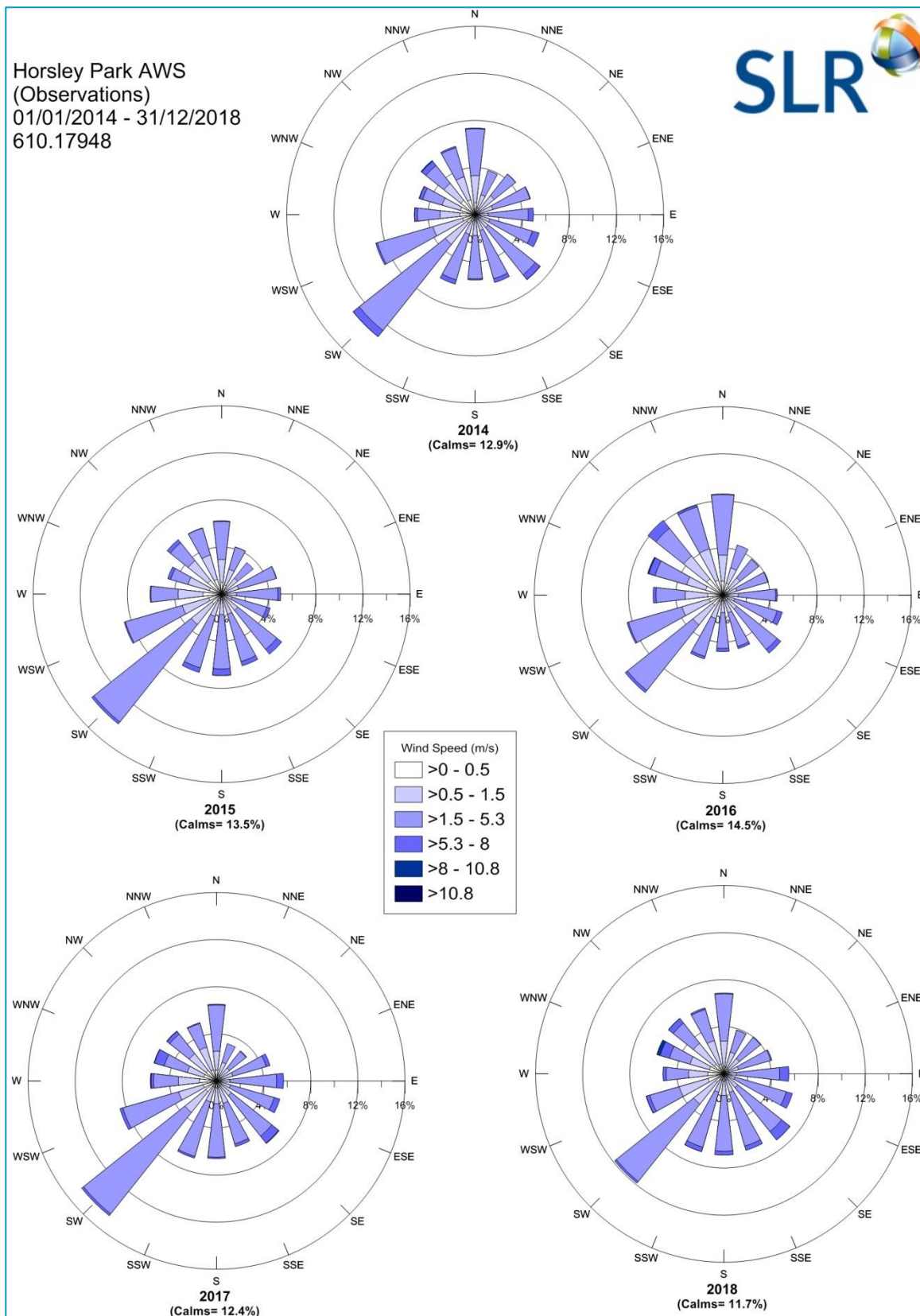
- Winds that would blow fugitive dust emissions from the demolition/construction works towards the nearest sensitive receptors located to the north and northwest of the proposed construction activities occur approximately 15-20% of the time.

The seasonal wind roses for the year 2018 (**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 13% 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 north eastern directions. Calm wind conditions were observed to occur approximately 16% 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 northeast and east directions. Calm wind conditions were observed to occur approximately 16% 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 mostly even in each directions, with relatively low frequency of winds originating from northwest quadrant. Calm wind conditions were observed to occur approximately 14% 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 2014-2018 is presented in **Figure A3**. The plot showed that the frequency of wind speeds exceeding 5 m/s for the period 2014-2018 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 (2018)**

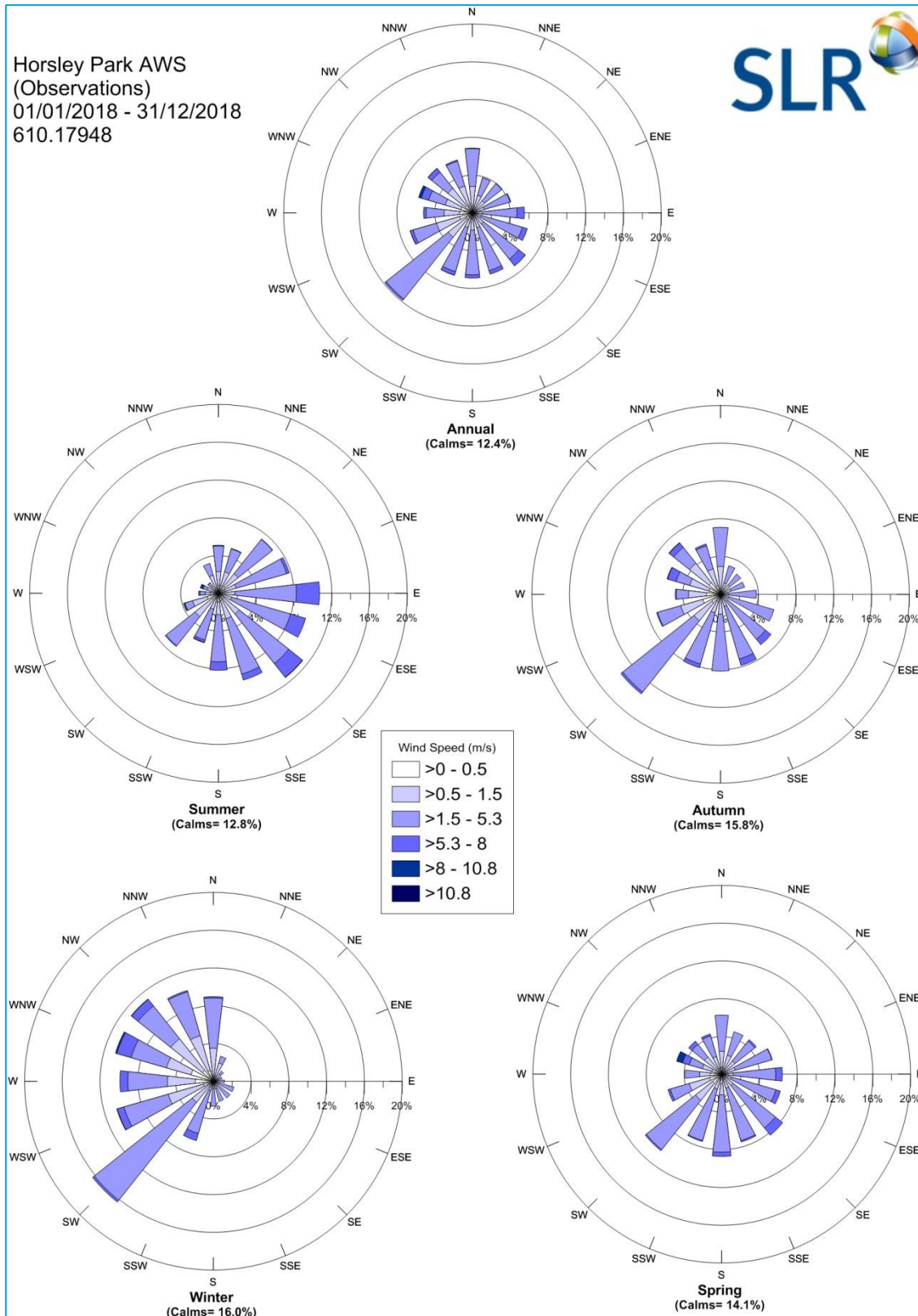
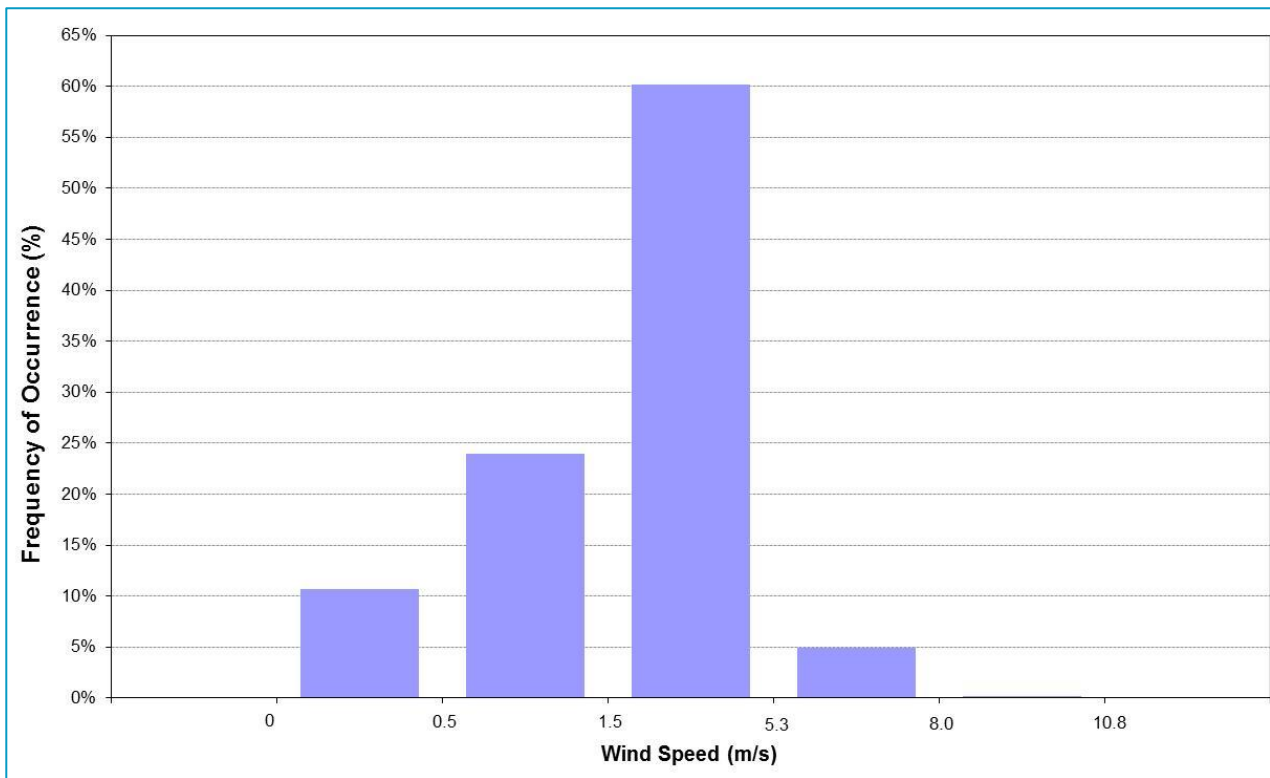


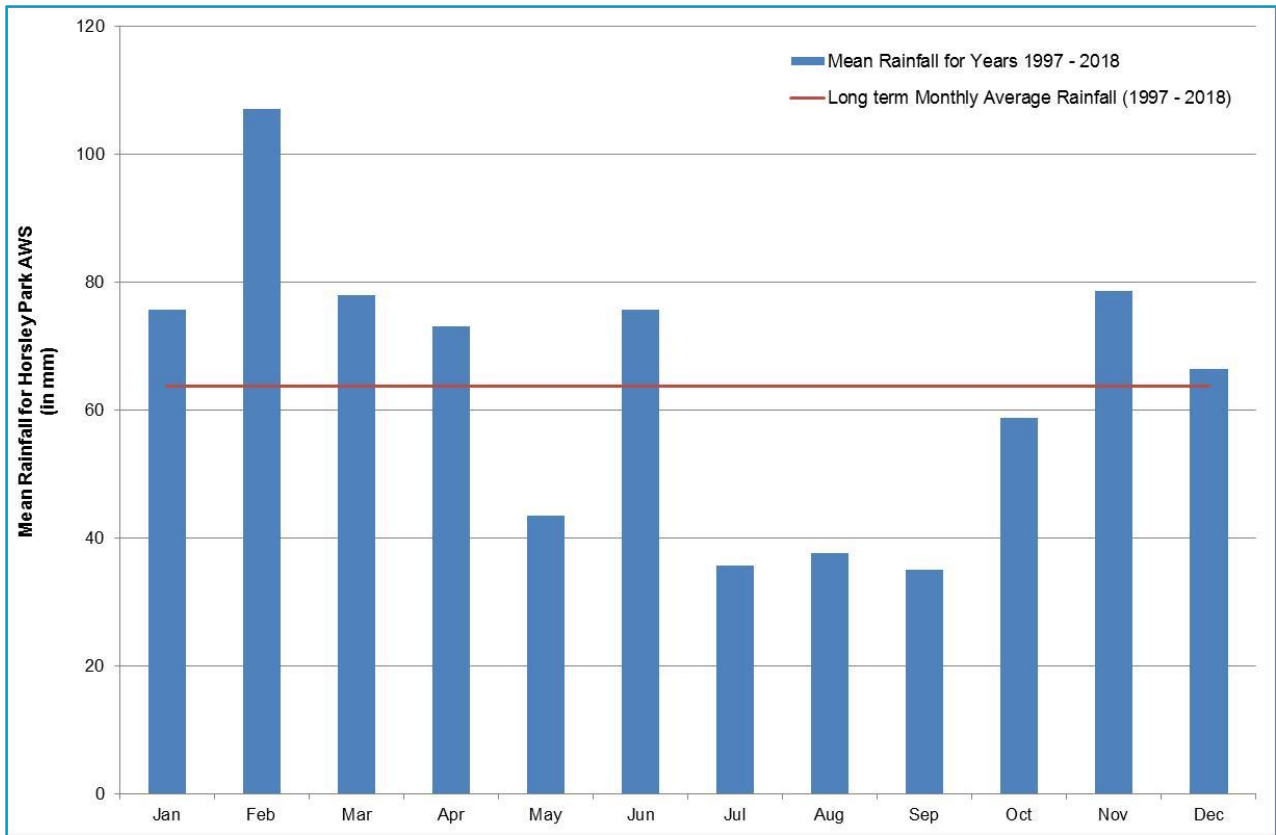
Figure A3 Wind Speed Frequency Chart for Horsley Park AWS – 2014-2018



### 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<sup>3</sup>, 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<sup>3</sup> – 50,000 m<sup>3</sup>, potentially dusty construction material, demolition activities 10-20 m above ground level; and
- **Small:** Total building volume <20,000 m<sup>3</sup>, 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<sup>2</sup>, potentially dusty soil type (eg 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<sup>2</sup> to 10,000 m<sup>2</sup>, moderately dusty soil type (eg 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<sup>2</sup>, soil type with large grain size (eg 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<sup>3</sup>, piling, on site concrete batching; sandblasting.
- **Medium:** Total building volume 25,000 m<sup>3</sup> to 100,000 m<sup>3</sup>, potentially dusty construction material (eg concrete), piling, on site concrete batching.
- **Small:** Total building volume less than 25,000 m<sup>3</sup>, construction material with low potential for dust release (eg 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	<p><b>IAQM Definition:</b>                      Total building volume &lt;20,000 m<sup>3</sup>, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities &lt;10m above ground, demolition during wetter months.</p> <p><b>Relevance to this Project:</b>                      Demolition activities will predominantly be limited to removal of structures associated with the one old house within the site boundary.</p>

Activity	Dust Emission Magnitude	Basis
Earthworks	Large	<p><b>IAQM Definition:</b>                      Total site area greater than 10,000 m<sup>2</sup>, potentially dusty soil type (eg 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.</p> <p><b>Relevance to this Project:</b>                      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<sup>3</sup>).</p>
Construction	Large	<p><b>IAQM Definition:</b>                      Total building volume greater than 100,000 m<sup>3</sup>, piling, on site concrete batching; sandblasting.</p> <p><b>Relevance to this Project:</b>                      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<sup>3</sup>).</p>
Trackout	Medium	<p><b>IAQM Definition:</b>                      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.</p> <p><b>Relevance to this Project:</b>  <i>The traffic volume during construction is estimated to be 20 vehicle movements per hour.</i></p>

## 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<sub>10</sub>, 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.
	<i>Examples: Dwellings, museums, medium and long term car parks and car showrooms.</i>	<i>Examples: Parks and places of work.</i>	<i>Examples: Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.</i>
Health effects	Locations where the public are exposed over a time period relevant to the air quality objective for PM <sub>10</sub> (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 <sub>10</sub> (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.
	<i>Examples: Residential properties, hospitals, schools and residential care homes.</i>	<i>Examples: Office and shop workers, but will generally not include workers occupationally exposed to PM<sub>10</sub>.</i>	<i>Examples: Public footpaths, playing fields, parks and shopping street.</i>

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<sub>10</sub> 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<sub>10</sub> (as an annual average) experienced in the area of interest into account and is based on the air quality objectives for PM<sub>10</sub> in the UK. As these objectives differ from the ambient air quality criteria adopted for use in this assessment (ie an annual average of 19.4 µg/m<sup>3</sup> for PM<sub>10</sub>) 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 <sub>10</sub> conc.	Number of receptors <sup>a,b</sup>	Distance from the source (m)				
			<20	<50	<100	<200	<350
High	>25 µg/m <sup>3</sup>	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	21-25 µg/m <sup>3</sup>	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	17-21 µg/m <sup>3</sup>	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<17 µg/m <sup>3</sup>	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>25 µg/m <sup>3</sup>	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	21-25 µg/m <sup>3</sup>	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	17-21 µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<17 µg/m <sup>3</sup>	>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<sub>10</sub> concentration of 19.4 µg/m<sup>3</sup> 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

Stage 2 Works							
<h3>Air Quality Notification Form</h3> <ul style="list-style-type: none"> <li>➤ This form to be completed within 24hrs of an exceedance of PM10 dust &gt;50 µg/m<sup>3</sup> (24hr average) on site (CAQMP Sect 5.2.1 Table 4 – 24hr average)</li> <li>➤ This form to be completed by the Contractor PM, PE or Environmental Representative</li> <li>➤ Please attach site observation photographs as required</li> </ul>							
Contract							
Prepared by (Print Name)							
Position (Project PM, Engineer etc)							
Time/Day/Date of notification							
What were the PM <sub>10</sub> levels recorded at the start of the shift?							
Condition Red Notification Summary Provide PM <sub>10</sub> level data for the three Sentinex units located on site Ref: CAQMP Sect 11 Table 12.	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">South</td> <td style="text-align: right;">µg/m<sup>3</sup>(24hr)</td> </tr> <tr> <td>North</td> <td style="text-align: right;">µg/m<sup>3</sup>(24hr)</td> </tr> <tr> <td>West</td> <td style="text-align: right;">µg/m<sup>3</sup>(24hr)</td> </tr> </table>	South	µg/m <sup>3</sup> (24hr)	North	µg/m <sup>3</sup> (24hr)	West	µg/m <sup>3</sup> (24hr)
South	µg/m <sup>3</sup> (24hr)						
North	µg/m <sup>3</sup> (24hr)						
West	µg/m <sup>3</sup> (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 <sup>3</sup> (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)							

Stage 2 Works	
Sign/Date	
<b>OWE Contract Superintendent to Complete</b>	
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
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#### 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<sub>10</sub> 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<sub>10</sub> 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

<p><b>Capital Metro Project, Canberra, ACT, Australia (2018-2019)</b></p>	<p>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.</p>
<p><b>Proposed Residential Development, RMS</b></p>	<p>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)</p>
<p><b>Proposed Haul Roads (Fortescue Metals Group), WA, Australia</b></p>	<p>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.</p>
<p><b>Confidential Highway Project, QLD, Australia</b></p>	<p>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.</p>
<p><b>MEMBERSHIPS</b></p>	<p>Clean Air Society of Australia and New Zealand (CASANZ)                  Member of Engineers Australia (EA)                  Institute of Chemical Engineers (IChemE)</p>
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<p><b>TRAINING</b></p>	<p>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</p>

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# APPENDIX J

## Construction Traffic Management Plan



Prepared for

GOODMAN PROPERTY SERVICES (AUST)

# Construction Traffic Management Plan

Building 2B, Kemps Creek

Ref: 1086r03v15  
6/05/2020

# Document Control

Project No: 1086r03v15

**Project:** Building 2B – Construction Traffic Management Plan

**Client:** Goodman Property Services (Aust) Pty. Limited

**File Reference:** 1086r03v15 CTMP\_Building 2B, Kemps Creek

## Revision History

Revision	Date	Details	Author	Approved by
-	19/12/2018	Draft	J. Laidler	J. Laidler
Issue I	06/03/2020	Issue I	J. Laidler	J. Laidler
Issue II	12/03/2020	Issue II	J. Laidler	J. Laidler
Issue III	18/03/2020	Issue III	J. Laidler	J. Laidler
Issue IV	19/03/2020	Issue IV	J. Laidler	J. Laidler
Issue V	26/03/2020	Issue V	J. Laidler	J. Laidler
Issue VI	27/03/2020	Issue VI	J. Laidler	J. Laidler
Issue VII	30/03/2020	Issue VII	J. Laidler	J. Laidler
Issue VIII	31/03/2020	Issue VIII	J. Laidler	J. Laidler
Issue IX	06/04/2020	Issue IX	J. Laidler	J. Laidler
Issue X	24/04/2020	Issue X	J. Laidler	J. Laidler
Issue XI	27/04/2020	Issue XI	J. Laidler	J. Laidler
Issue XII	28/04/2020	Issue XII	J. Laidler	J. Laidler
Issue XIII	04/05/2020	Issue XIII	J. Laidler	J. Laidler
Issue XIV	05/05/2020	Issue XIV	J. Laidler	J. Laidler
Issue XV	06/05/2020	Issue XV	J. Laidler	J. Laidler

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# 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 2B 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 include:

“Condition A7:               The Applicant must ensure construction of the development does not generate more than 935 vehicle trips (1,870 total vehicle movements) during the day, evening and night, on the public road network.

Note: This condition does not apply to construction vehicles using the West-North-South Link Road.

Condition A8:               The Applicant must keep accurate records of the number of vehicles entering or leaving the site, for the duration of construction and provide these records to the Planning Secretary on request.

Condition B9:               Prior to any use of Aldington Road and Abbots Road for construction traffic, the Applicant must submit a Construction Traffic Management Plan (CTMP) to the satisfaction of Council. The CTMP shall be:

- (a) prepared in accordance with Council's Engineering Construction Specification for Civil Works;
- (b) be prepared by a suitably qualified consultant with appropriate training and certification from TfNSW;
- (c) be approved by Council, prior to any construction traffic using Aldington Road and Abbots Road;
- (d) include but not be limited to:
  - (i) swept path analysis at critical points (bends and intersections) along the entire Aldington Road /Abbots Road route for the largest proposed vehicle to use this route;
  - (ii) a detailed road safety audit of the Aldington Road / Abbots Road route that factors the increase in traffic volumes (both in light & heavy vehicles), and proposes measures such that the road can safely accommodate this increase (including upgrades to road infrastructure, signage and line marking treatments, vehicle length restrictions and temporary traffic control measures during the construction period);
  - (iii) left-in, left-out restrictions at the intersection with Mamre Road for construction vehicles.

Condition B13: The applicant must ensure:

(b) construction traffic does not use Bakers Lane during the hours of 8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday when schools are in use, to avoid conflict with peak school traffic on Bakers Lane;

Condition B15: Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by condition C2 and must:

- (a) be prepared by a suitably qualified and experienced person(s);
- (b) be prepared in consultation with Council, TfNSW, 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 (8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday), when the schools are in use, 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;
  - (iii) minimise road traffic noise, particularly during night-time periods; and
  - (iv) ensure truck drivers use specified routes;
- (g) include a program to monitor the effectiveness of these measures; and
- (h) detail procedures for early notification for residents and the community (including local schools), of any potential disruptions to routes.

Condition B16: The Applicant must:

- a) not commence construction of the development until the CTMP required by condition B15 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.

Condition C1: 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, the development 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 the development; and
  - (ii) effectiveness of the management measures set out pursuant to paragraph (c) 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 the development 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*

The purpose of this report is to detail a traffic plan for construction that would minimise traffic impacts on the surrounding road network, ensure safety and efficiency for workers, pedestrians and road users, and provide information regarding the construction vehicle access routes and any changed road conditions (if applicable).

## 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 users( including schools and neighbours to the west), 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.

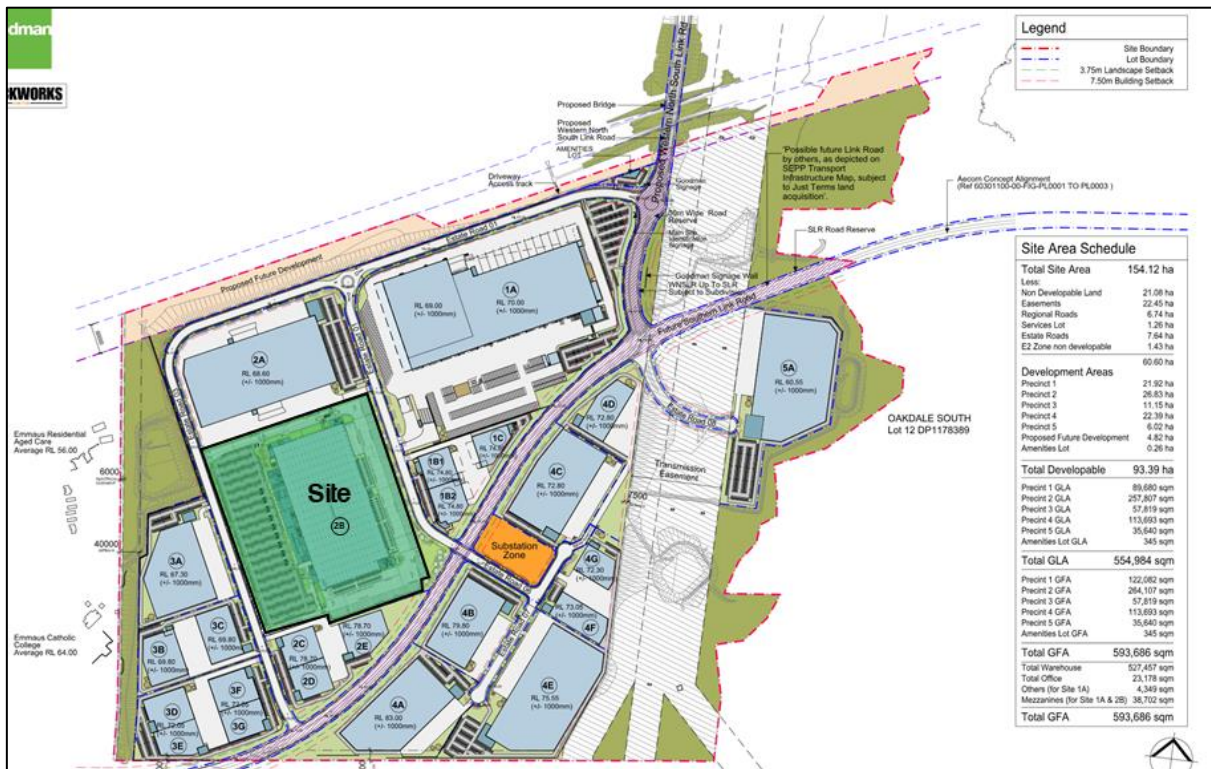


Figure 1: OWE Context Showing Building 2B

### 1.3 Site Context

There is existing works associated with the construction of the Western North South Link Road (WNSLR) and the OWE. For context, the works are generally summarised as follows:

- OWE is a staged development for warehousing and distribution hub. Stage 1 of the OWE (the proposed works) comprises of estate wide earthworks and construction of road infrastructure in preparation of the construction of warehouses, however it currently excludes the actual construction of any warehouses.
- WNSLR is proposed as part of a State Significant Development. It is intended that 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.

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, WNSLR, Erskine Park (Western North South Link Road), 0605r01v5 CTMP\_WNSLR, Erskine Park, 12/09/2019*
- *Ason Group, Construction Traffic Management Plan, Oakdale West Estate, Kemps Creek, 0129r06v19 CTMP\_Oakdale West Estate, Kemps Creek Issue IX, 06/04/2020*

Each of the above details varying access arrangements throughout the construction program. As such, an additional report was prepared which provided a summary of construction traffic volumes for both projects using each of the key connections of Bakers Lane and Lenore Drive separately.

- *Ason Group, Western North-South Link Road & Oakdale West Estate Construction Vehicle Cumulative Impacts, 0129i04v2 WNSLR & OWE Cumulative Construction Impacts Issue II, 12/09/2019*

The findings of the report indicates that specific measures are to be proposed in order to respond to existing congestion associated with the schools along Bakers Lane. Commentary regarding vehicular access via Bakers Lane should be included to ensure that the impact of vehicles, particularly heavy vehicles, will be minimised.

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 10397 Approval - Compliance Table**

Reference	Requirement	Response
A7	The Applicant must ensure construction of the development does not generate more than 935 vehicle trips (1,870 total vehicle movements) during the day, evening and night, on the public road network.  Note: This condition does not apply to construction vehicles using the West-North-South Link Road.	Construction volumes are expected to reach 1,760 movements prior to completion of the WNSLR. Section 4.3.1 and Section 6.1.1 outline the expected construction traffic volumes
A8	The Applicant must keep accurate records of the number of vehicles entering or leaving the site, for the duration of construction and provide these records to the Planning Secretary on request.	Vehicles will be tracked on arrival to site, as outlined within Section 4.2.8, and will be made available to the Planning Secretary on request.
B9	Prior to any use of Aldington Road and Abbots Road for construction traffic, the Applicant must submit a Construction Traffic Management Plan (CTMP) to the satisfaction of Council. The CTMP shall be:	
	a) prepared in accordance with Council's Engineering Construction Specification for Civil Works;	All signs and line marking, as a result of the works being undertaken, shall be installed as per Council's Engineering Construction Specification for Civil Works, Reference should be made to Section 4.2.9
	b) be prepared by a suitably qualified consultant with appropriate training and certification from TfNSW;	Consultants from Ason Group are suitably qualified (with certification) Traffic Engineers, with relevant "Prepare a Work Zone Traffic Management Plan" accreditation,
	c) be approved by Council, prior to any construction traffic using Aldington Road and Abbots Road;	No vehicles shall utilise Aldington Road and Abbots Road Prior to approval by Council.
	d) include but not be limited to:  (i) swept path analysis at critical points (bends and intersections) along the entire Aldington Road /Abbots Road route for the largest proposed vehicle to use this route;  (ii) a detailed road safety audit of the Aldington Road / Abbots Road route that factors the increase in traffic volumes (both in light & heavy vehicles), and proposes measures such that the road can safely accommodate this increase (including upgrades to road infrastructure, signage and line marking treatments, vehicle length restrictions and temporary traffic control measures during the construction period);  (iii) left-in, left-out restrictions at the intersection with Mamre Road for construction vehicles.	Swept paths have been included within Appendix B which outlines that a concrete truck can utilise Aldington Road and Abbots Road.  A Road Safety Audit has been undertaken along the proposed route within Aldington Road and Abbots Road. Meetings within Council and TfNSW have resulted in additional road works being undertaken, which have been outlined in Section 4.2.7.  Reference should be made to Section 6.2 and the Drivers Code of Conduct with regard to specific measures to manage the restriction of right turners into and out of Abbots Road.

Reference	Requirement	Response
B13	b) construction traffic does not use Bakers Lane during the hours of 8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday when schools are in use, to avoid conflict with peak school traffic on Bakers Lane;	Section 4.3.2 outlines that construction vehicles will not utilise Bakers Lane during the hours of 8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday when schools are in use.
B15	Prior to the commencement of construction of the development, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by condition C2 and must:	
	a) be prepared by a suitably qualified and experienced person(s)	<p>Consultants from Ason Group are suitably qualified Traffic Engineers, with relevant “Prepare a Work Zone Traffic Management Plan” accreditation.</p> <p>Further consultation is expected to occur, following issue of development approval, prior to finalisation of this CTMP.</p>
	b) be prepared in consultation with Council, TfNSW, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School;	<p>Consultation has been undertaken with the schools within Bakers Lane.</p> <p>Reference should be made to minutes regarding the consultation with the schools which has been completed to date which outlined/discussed the use of Bakers Lane during school peak periods.</p> <p>This CTMP has further been discussed with the schools, and the additional meeting minutes have been provided.</p>
	c) detail specific measures to manage construction traffic to avoid school drop-off and pick-up times (8 am – 9.30 am and 2.30 pm – 4 pm, Monday to Friday), when the schools are in use, and Higher School Certificate exam periods, including any temporary infrastructure arrangements and traffic safety measures;	<p>Refer Section 4.1.4. Deliveries and contractor movements will be scheduled by Qanstruct within these periods. Additional Signage shall be provided within Bakers Lane (including Variable Message Board Signs (VMS)).</p> <p>Notwithstanding, deliveries and contractor movements will be scheduled to avoid these periods. Light vehicles will be directed to use Aldington Road to access Mamre road and thus not pass directly past the neighbouring schools during these periods. Light Vehicles shall be clarified within Section 4.1.2</p> <p>Upon completion and dedication of WNSLR, construction vehicles shall use WNSLR and avoid using Bakers Lane.</p>
	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;	<p>Refer Section 6.2 with regard to impacts to traffic efficiency. This section concludes that construction traffic can be satisfactorily mitigated to not have a material impact on the road network.</p> <p>Furthermore, Traffic Controllers (TC’s) shall be utilised, and Traffic Control Plans (TCPs) be developed for works impacting public roads and will be approved by the Traffic Management Centre.</p> <p>Finally, A Road Safety Audit has been undertaken along the proposed route within Aldington Road and Abbots Road., with the findings outlined in Section 4.2.7.</p>

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: <ul style="list-style-type: none"> <li>(i) minimise the impacts of earthworks and construction on the local and regional road network.</li> <li>(ii) minimise conflicts with other road users, including the students, staff, visitors and residents of the neighbouring schools and aged care village.</li> <li>(iii) minimise road traffic noise, both on Bakers Lane and from construction vehicles on Site; and</li> <li>(iv) ensure truck drivers use specified routes and adhere to the speed restrictions on Bakers Lane;</li> </ul>	<p>A driver Code of Conduct is a requirement of and included within this CTMP.</p> <p>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.</p>
	g) include a program to monitor the effectiveness of these measures	<p>The Contractor / Owner of Estate shall include a program to monitor the effectiveness of the measures. Deliveries will be tracked against approved volumes and will keep a vehicle log - including rego &amp; time of entry - for the purpose of assessing the effectiveness of these monitoring programs.</p> <p>These programs will be completed in accordance with Section 7.1.</p>
	h) detail procedures for early notification for residents and the community (including local schools), of any potential disruptions to routes.	<p>Consultation has been undertaken with the schools within Bakers Lane. Further consultation with the schools is currently being undertaken specifically in relation to the CTMP.</p> <p>Notwithstanding, the Contractor will notify the community liaison representative (SLR) when traffic conditions are expected to exceed parameters with within Condition Green of Table 9. Measures that may be included within the strategy have been identified within Section 7.3.</p> <p>Meetings are to be undertaken on a regular basis to keep key stakeholders informed of any upcoming events</p> <p>Furthermore, Goodman will provide the schools with a FAQ fact sheet, so they have the appropriate knowledge to respond to any queries from parents.</p>
B16	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.
C1	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	

Reference	Requirement	Response
	a) details of: <ul style="list-style-type: none"> <li>i. the relevant statutory requirements (including any relevant approval, licence or lease conditions).</li> <li>ii. any relevant limits or performance measures and criteria; and</li> <li>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;</li> </ul>	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 to Section 4
	c) program to monitor and report on the: <ul style="list-style-type: none"> <li>i. impacts and environmental performance of the development; and</li> <li>ii. effectiveness of the management measures set out pursuant to paragraph (c) above;</li> </ul>	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 7.2 of this Plan which outlines the requirement for this Plan to be updated regularly.  Traffic Control Plans — outlined in Section 4.3.3 shall be prepared to respond to specific work situations and subject to approval by the relevant Roads Authority (Council and/or TfNSW), providing a suitable level of independent oversight.
	e) a program to investigate and implement ways to improve the environmental performance of the development 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: <ul style="list-style-type: none"> <li>i. incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria).</li> <li>ii. complaint.</li> <li>iii. failure to comply with statutory requirements; and</li> </ul>	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 2B is located between Estate Road 01 and Estate Road 03 and comprises a total site area of 149,266 m<sup>2</sup>.

## 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 the Site and 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 Wallgrove Road

Wallgrove Road is an arterial road that runs in a north-south direction to the east of the Site 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 the Site. 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.

### 1.6.3 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.

#### 1.6.4 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 TfNSW (formally 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.

#### 1.6.5 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.

#### 1.6.6 Bakers Lane

Bakers Lane is a local road that connects the Site to Mamre Road. Surrounding land-uses include schools and rural residential properties. A signalised intersection is provided at Mamre Road providing access to the wider road network.

#### 1.6.7 Aldington Road

Aldington Road is a local road that is a continuation of Bakers Lane as it turns south, and then connects to Abbots Road to the south. Surrounding land-uses include schools, market gardens and rural residential properties. It is a sealed two lane, two road with no kerbs and gutters.

#### 1.6.8 Abbots Road

Abbots Road is a local road that connects to Mamre Road via an unsignalised T-intersection. Surrounding land-uses include rural residential properties. It is a sealed two lane, two road with no kerbs and gutters.

#### 1.6.9 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



1.6.10 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

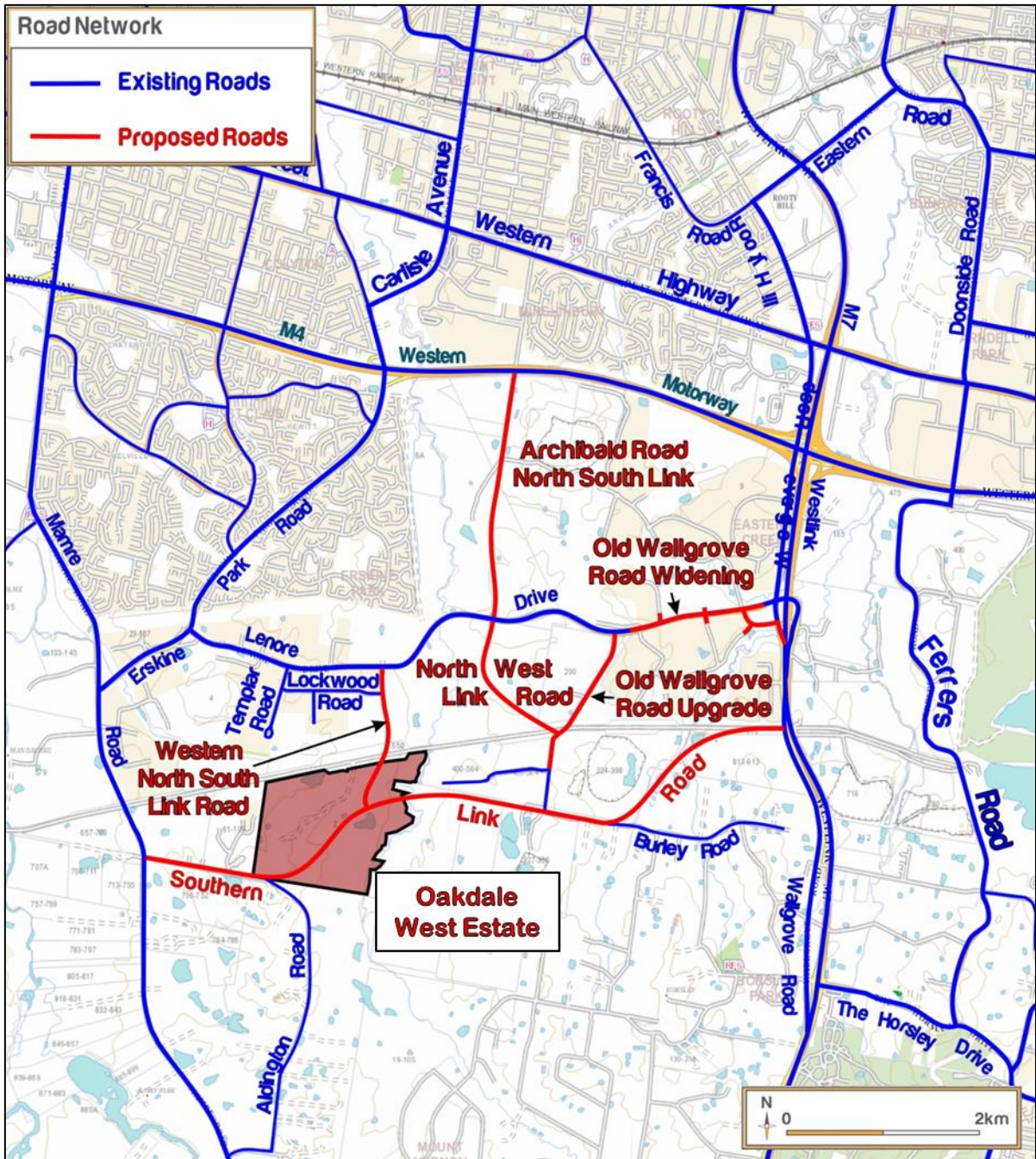


Figure 2: Road Hierarchy

## 2 Overview of Works

### 2.1 Works Stages

For the purposes of this CTMP, these works are broadly grouped as the following Phases:

1. Phase 1: Prior to the completion of WNSLR
2. Phase 2: After the completion of WNSLR

It is anticipated that Phase 1 and the construction of WNSLR shall occur concurrently. The access and traffic management required for each Phase is outlined separately for each stage later within this report.

Recognising the purpose of this CTMP, it is estimated that the total duration of the construction works will be approximately 74 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 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 03.
- Stage 2: The general construction and associated landscape works will occur during Stage 2 – including construction of crossovers Estate Road 03.

### 2.2 Hours of Work

Having regard for the Conditions of Consent, Condition B21 outlines the permitted hours of works are as follows:

*During General Construction:*

- 6:00AM – 10:00PM Monday – Sunday.
- No work public holidays.

*During Concrete Works:*

- 3:00AM – 10:00PM Monday – Sunday.
- 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.

### 2.3 Access Arrangements

Access to the Site shall be through the OWE and shall occur via Bakers Lane and/or Aldington Road. Upon completion and dedication of the WNSLR, such that access to the work area from the north becomes available, all vehicular access shall be restricted to the northern access routes, via Lenore Drive and WNSLR. This is discussed in further detail below.

Bakers Lane is the primary access point for these works with works arriving to site from Mamre Road to the west. All construction vehicles are to use the primary access from Bakers Lane. A secondary access route is proposed from Aldington Road (to the south-west of the access gate), however the proposed alternative route will be restricted for use only when Bakers Lane is unavailable.

Every effort shall be made to plan deliveries out side of school zone hours along Bakers Lane. The monitoring strategies outlined within Section 6.1 shall ensure that deliveries via Bakers lane are scheduled outside of the school zone hours in order to avoid any additional conflicts between construction vehicles and the school. During school zones, Aldington Road shall be used for deliveries to and from the Site.

### 3 Existing Conditions

#### 3.1 Existing Conditions

Access is currently available via the Bakers Lane access gate. Once within OWE, access to the Site shall be via the haul road and Estate Road 03, as shown within Figure 3.

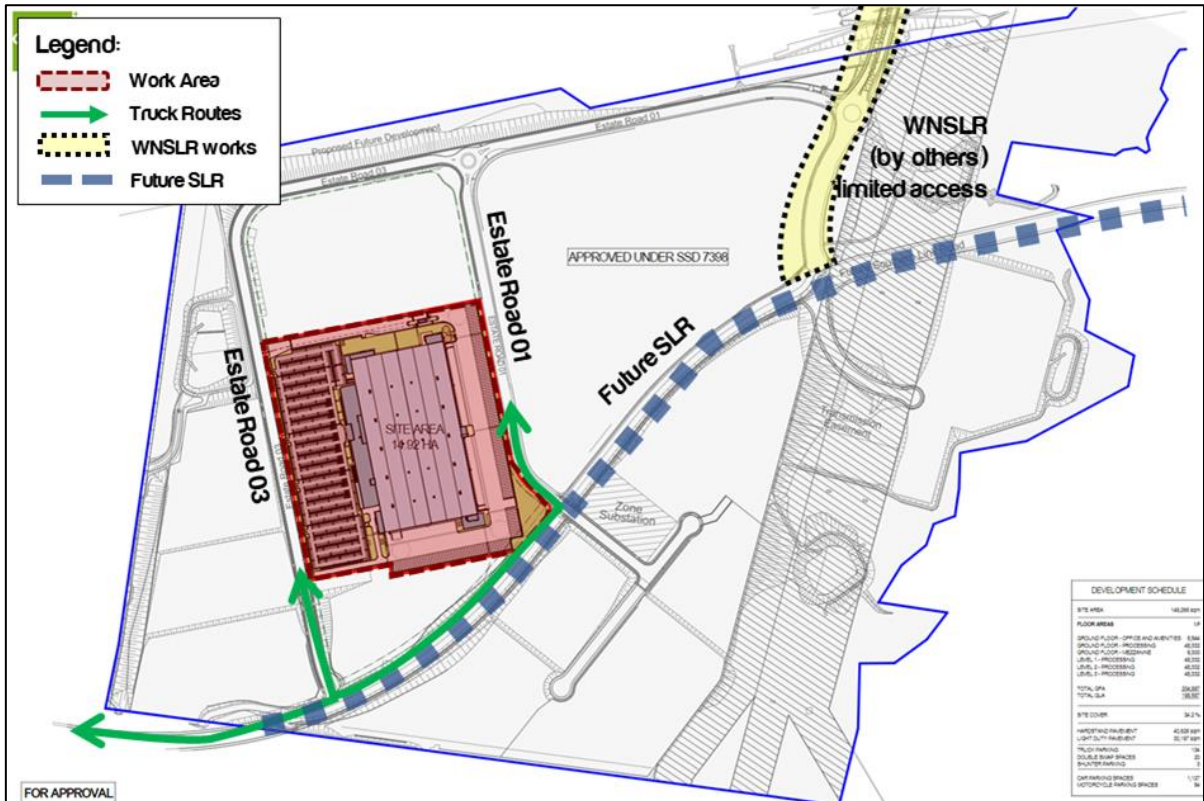


Figure 3: Existing Site Access - Bakers Lane

#### 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.

No footpaths are provided on Mamre Road or Bakers Lane in the vicinity of the proposed construction site access locations. However, an on-road cycle lane is provided within Mamre Road to the north of the Water NSW Pipeline. 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.

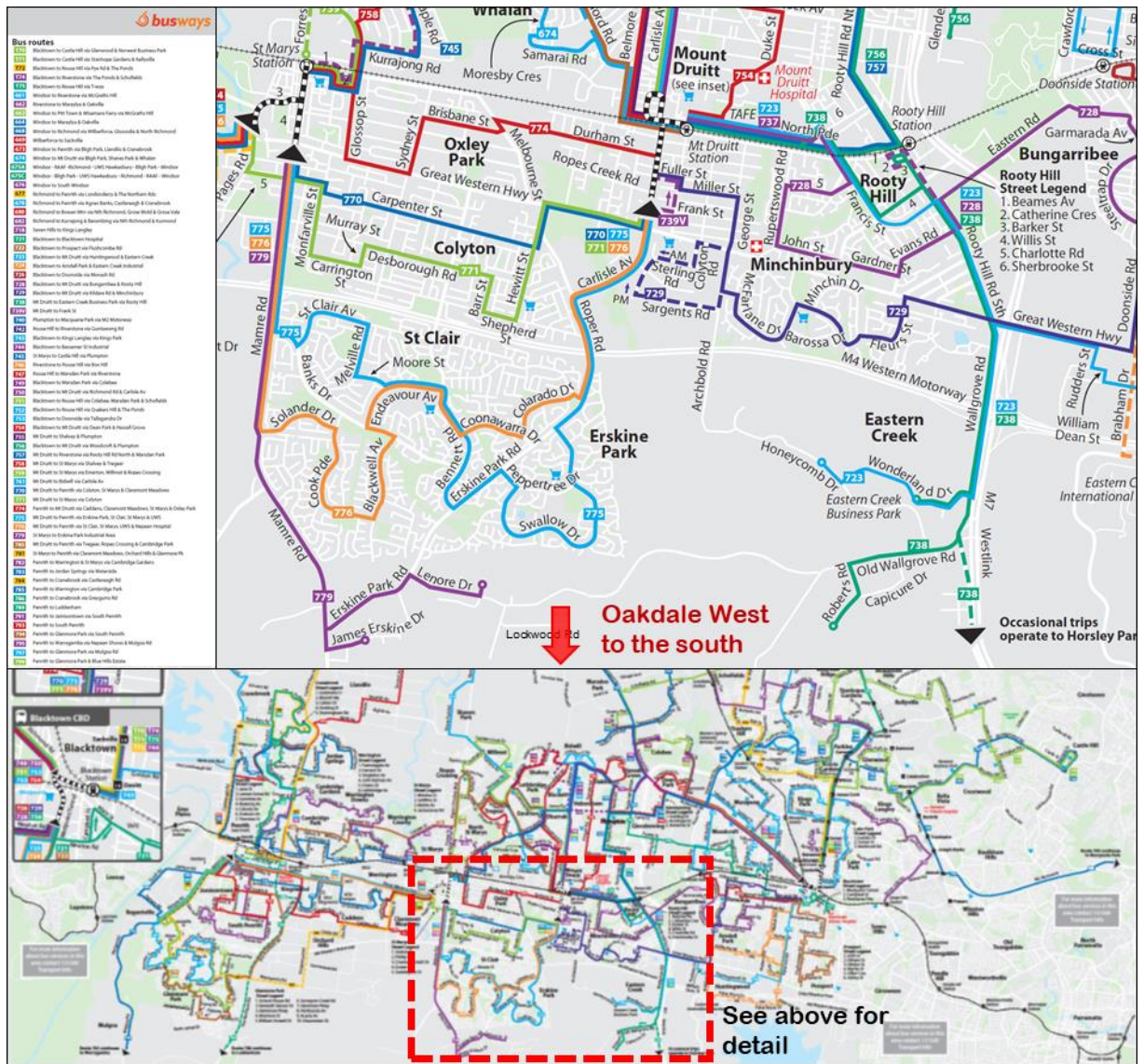


Figure 4: Public Transport Connections



## 4 Management Plan

### 4.1 Traffic Movement Restrictions

#### 4.1.1 Background

The traffic report (Ason Group Ref: 1086r02v8) supporting the Building 2B submission, outlined the following relevant figures with regard to future operational traffic volumes associated with the Site:

- AM Peak 580 movements per hour (movements, in & out combined)
- PM Peak 371 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 2B 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 2B site via Bakers Lane within November 2020, 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 trucks up to 9.6m in length that relates to the construction works of the site.
- 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 that relates to the construction works of the site..

During the Phase 1, prior to completion of the WNSLR and its associated Water NSW pipeline crossing, it is anticipated that all construction traffic will use Mamre Road, via Bakers Lane.

Finally, For additional reference, a construction vehicle would relate to all contracted parties involved in day to day construction activities on site. This would include ;

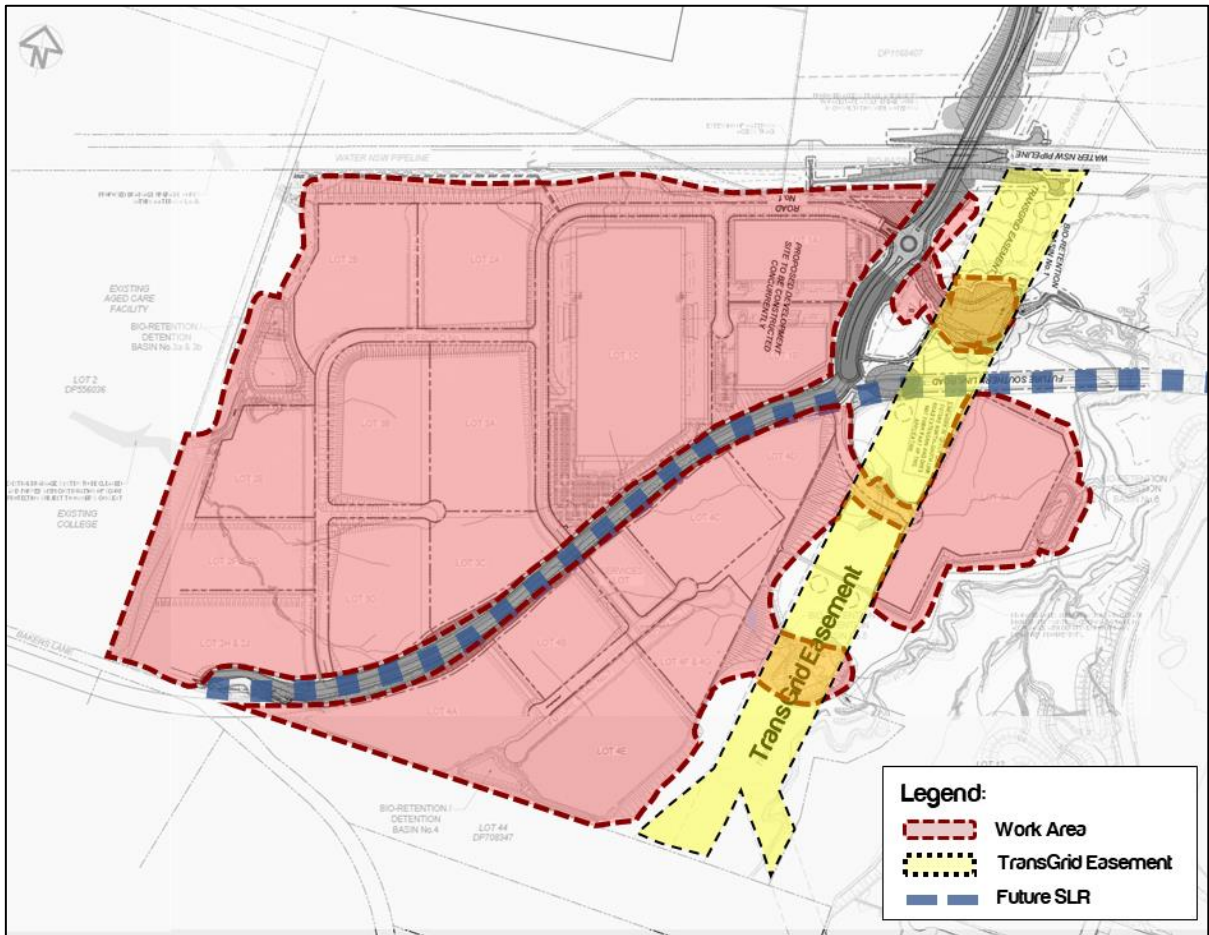
- All Vehicles making material deliveries to and from the Site
- All Contractors and their sub-contractors construction site vehicles
- All construction staff working on the projects arriving / departing the Site in private cars

In turn, the following are exempt from the requirements of the CTMP (as they are not part of construction works within the Site);

- All Goodman staff and their design / management consultants
- Food vans / food deliveries by non-contracted parties
- Relevant Authorities / Agencies (including DPIE or Penrith City Council/, and other stakeholders including Endeavour Energy, TransGrid, Sydney Water, NBN or others who have assets on the site)
- Members of the public who may drive in ad hoc

#### 4.1.3 TransGrid Easement

A TransGrid easement runs along the eastern side of the Work Area which is subject to a number of restrictions. Importantly, 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, however it is not expected that construction vehicles are required to access the clearance zones.



**Figure 5: TransGrid Easement Within Site**

4.1.4 Measures to Manage Construction Traffic in Bakers Lane During School Zone Periods

It is noted that the conditions of consent require detail of specific measures to manage construction traffic during school drop-off and pick up times (Monday to Friday 8:00 – 9.30AM and 2.30 – 4:00PM, and Higher School Certificate exam periods). The following measures will be completed to ensure that the construction traffic is adequately managed during school peak periods:

At all times:

- All suppliers/haulage contractors to have Vehicle Movement Plans issued at supply agreement stage,
- Drivers will be required to complete an induction form prior to arrival on site, and be familiar with the Driver Code of Conduct,
- When placing all orders, drivers are to be made aware of the specific protocols regarding the access to Site and shall be notified to dispatch, and included on delivery docket, where possible,
- Deliveries scheduled for outside restricted times (if possible),

- Signage installed on approach to Bakers Lane (primary route) notifying delivery drivers of time limitations,
- Similarly, additional signage is to be installed along Aldington Road – particularly near crests in the road – outlining an increase in construction vehicles, and the prominence in crests which limits sight visibility to oncoming vehicles ahead.
- Line marking is to be installed along the full length of Aldington Road with centre-line and edge-line marking, whilst also including raised reflective pavement markers (RRPM's).
- Gate personnel tracking loads in/out and communicating and monitoring access/egress routes accordingly. This shall include estate entry protocols if they are not inducted, which can include video recognition system, and
- Any vehicles found to be in breach to undergo driver induction on the spot and their manager/dispatch advised; repeat offenders to be prevented from returning to site.

*During School Peak Periods:*

Supplementary to the above, additional measures are proposed during the school peak periods:

- Traffic Controllers (TC's) will have 2 way radio to control traffic flow, and
- Variable Message Signage Boards shall be installed on Bakers Lane.

## 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 Work Zone Requirements

An on-street Works Zone is proposed for the use of hydrant fill points on Bakers Lane by Contractor water carts. The locations will be confirmed (and approved) with 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.



#### 4.2.3 Traffic Control Plans

Any Traffic Control Plans (TCPs) shall be prepared by an accredited person, in accordance with the TfNSW *Traffic Control at Worksites Manual* and AS1742.3.

All TCPs involving signage or impacts to public roads shall be approved by the Traffic Management Centre (TMC), 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.

#### 4.2.4 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.

#### 4.2.5 Fencing Requirements

Temporary exclusion fencing will be erected along the entire boundary of the site and will be maintained for the duration of the construction program. The fencing is to ensure unauthorised persons are kept out of the Site. Site access gates would be provided within Estate Road 03 and will be closed at all times outside of the permitted construction hours.

Careful consideration for pedestrian protection shall be included within relevant TCP's, 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 Response to Road Safety Audit Requirements

Based on the discussions with Council and TfNSW (attached within Appendix C), the following works are to be undertaken and completed prior to Aldington Road and Abbots Road being utilised as part of the construction route;

- Ensure there is a minimum seal width of 6.0m along the length of Abbots Road and Aldington Road to be utilised by construction vehicles,
- Ensure a minimum unsealed shoulder width of 1.0m on either side of Abbots Road and Bakers Road (providing for an 8m road formation),
- Provide a 1m seal to driveways only
- Modify any sections of road within Abbots Road and/or Aldington Road where pooling water was identified within the RSA (where possible),
- Ensure a safe space on the shoulder of Aldington Road / Bakers Lane for vehicles that may attempt to overtake a vehicle slowing down / or stopped to turn into the sites access,
- Change the posted speed limits to a 60 km/h Works Zone for the entire length of Aldington Road and Abbots Road, and
- Install line marking (as noted within Appendix B) to achieve a 6.0m sealed carriageway.

Geotech investigations and survey works are currently being completed along Aldington Road and Abbots Road. These will inform the final design which once completed will be issued to council for approval.

#### 4.2.8 Access Road Management

Access to the Site will be separate from the construction access associated with the WNSLR works which itself is to be constructed along the future Southern Link Road alignment. The Site's construction access shall be located to the west of the SLR access.

Vehicles shall be tracked upon entry and exit of the Site's access to ensure that vehicles are abiding by both the timed restrictions and construction volume constraints.

#### 4.2.9 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).

### 4.3 Phase 1 - Prior to the completion of WNSLR

#### 4.3.1 Key Stage Details Summary

**Table 2: Stage Summary – Phase 1**

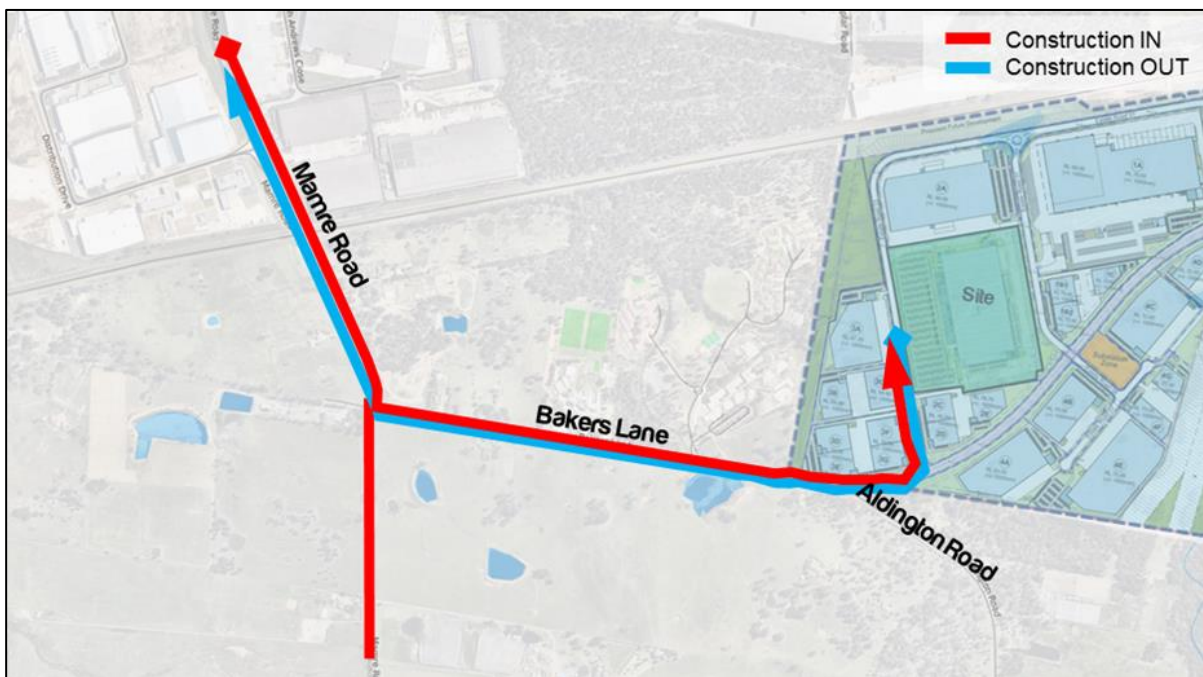
Criteria	Response
Description of Key Activities	General earthworks, Construction of the temporary accesses, and General construction of warehouse and car parks
Max. Vehicle Size	Truck + Dog Trailer (Special Permits may be required for floating in plant)
Vehicle Movement Frequency	Approximately 1,760 <u>movements</u> / day <i>(Will not exceed 1,870 Movements / day)</i>
Truck Access Requirements	All vehicles shall access via Baker Lane outside of school peak periods  Access during school periods shall be limited to vehicles up to 9.6m in length via Aldington Road (including concrete trucks)– therefore no other heavy vehicles to arrive to site during school peak periods.
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon receipt of final conditions
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas and wholly within Site
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)	Y – Kerbside lane occupancy within Access Road 03 may be required for a short duration. Works may be restricted to outside of peak periods or prior to road becoming a publicly owned asset
Traffic Control Plan	Refer below.

4.3.2 Truck Movements & Contractor Parking

Truck access routes under Phase 1 shall occur via Bakers Lane as shown in Figure 6 and Figure 7, in accordance with the conditions of consent received. 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 queuing occur on the public road network.

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 queuing occur on the public road network.

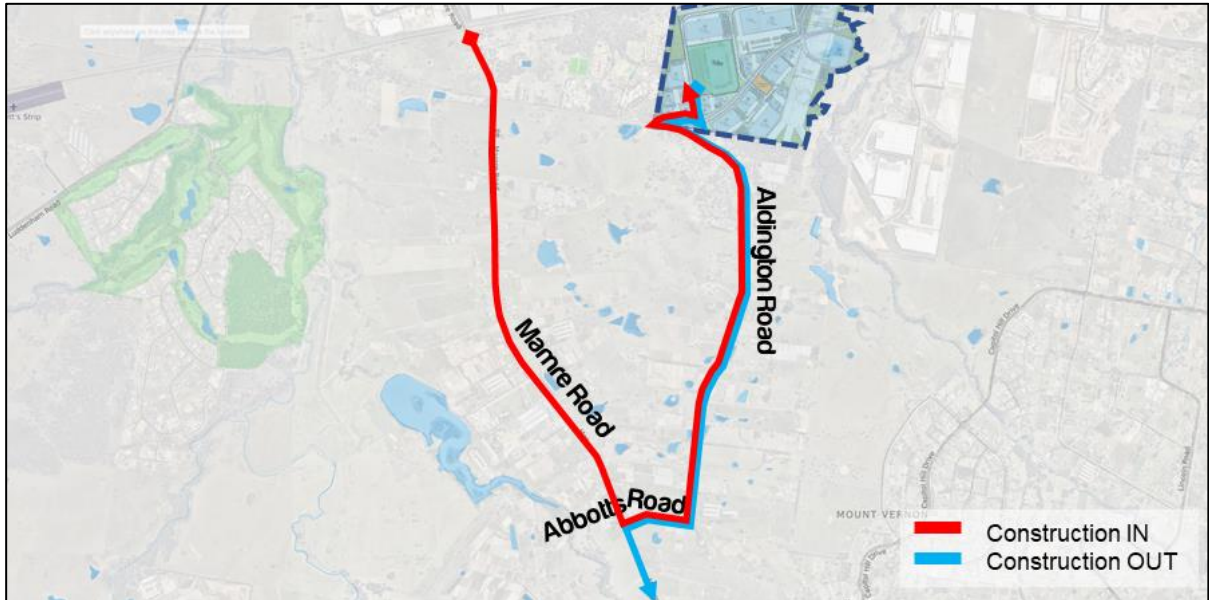
For access **OUTSIDE** of the network peak hours vehicles shall utilise **Bakers Lane**, via Mamre Road from the north and south as shown in Figure 6. The Mamre Road / Bakers Lane intersection currently exists as a signalised intersection.



**Figure 6: Network Non-Peak Route via Bakers Lane**

In consideration of the existing vehicular traffic and the response to conditions imposed under the consent, construction traffic accessing and egressing the site **DURING network Peak periods** will be rerouted to utilise **Aldington Road** and the **Abbotts Road** connection to Mamre Road, as identified within Figure 7. There shall be further restrictions to restrict right hand turns into and out of Abbotts Road.

The alternative route is due to safety concerns surrounding the interaction between the schools and construction vehicles. By separating construction vehicles from schools, a safer route for the schools shall be utilised by removing construction vehicles on Bakers Lane during the school pick-up and drop-off periods.



**Figure 7: Network -Peak Route via Abbotts Road**

A Traffic Control Plan (TCP) provided within Appendix A outlines the number and location of TC’s during the AM school peak, as well as the VMS and additional signage along Bakers Lane.

It is expected that there will be some queueing (although minimal) within the haulage road within the site. At no time shall there be queueing on Bakers Lane. 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 Distribution Drive before arriving to site in order to avoid any on-street queueing. Distribution Drive is a more preferable location for a layover than Bakers Lane, as it off a main road, and removed from larger interactions to schools. **Figure 8** identifies the proposed location in reference to the Site.





Figure 8: Truck Layover Locations

These sub-phases assume that Stage 1 earthworks and surrounding precinct roads will be completed first to enable building works associated with the final built form to commence, whilst remaining earthworks are to be complete. It is expected that the contractor shall prepare Vehicle Movement Plans (VMP) for on-site circulation.

In preparing the relevant details to be included within 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.
- Maintain connectivity between Bakers Lane and the southern end of the WNSLR works

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.

#### 4.3.3 Traffic Control Plans

Having regard for the anticipated truck movements 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.

Further to the above, it is expected that additional signage shall be installed within Bakers Lane near the intersection of Mamre Road x Bakers lane, and VMS shall be installed on approach to the schools to provide additional opportunities for drivers to be made aware of the increased pedestrian activity ahead.

In addition, site-specific versions of standard TCP 93 will be required for any works within the road network, 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.

## 4.4 Phase 2 – Post completion of the WNSLR

### 4.4.1 Key Stage Details Summary

**Table 3: Stage Summary – Phase 2**

Criteria	Response
Description of Key Activities	General construction of warehouse and car parks, and Associated landscape works.
Max. Vehicle Size	Truck + Dog Trailer (Special Permits may be required for floating in plant)
Vehicle Movement Frequency	Approximately 2,076 <u>movements</u> / day
Truck Access Requirements	All vehicles shall access via the WNSLR.
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas and wholly within Site
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
Traffic Control Plan	Refer below.



4.4.2 Truck Movements & Contractor Parking

Relevant truck routes to be adhered to during this Phase are outlined below in **Figure 9**. Upon the completion of the WNSLR, all construction vehicles shall access work areas via the WNSLR.

Contractors shall nominate a parking area within the Site that does not obstruct any construction vehicle manoeuvre routes, nor shall any contractor parking be permitted on estate roads.

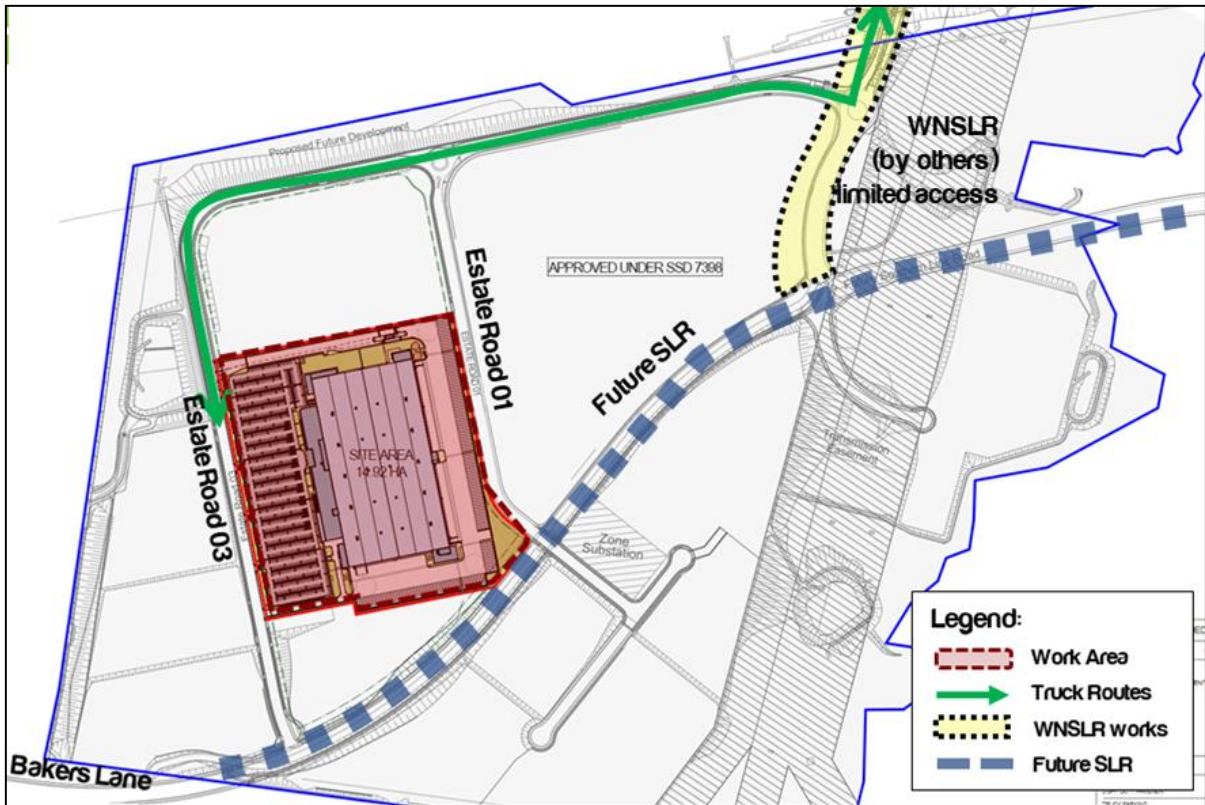


Figure 9: Truck Routes - Phase 2

4.4.3 Traffic Control Plans

Having regard for the anticipated truck movements, 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.

In addition, site-specific versions of standard TCP 93 will be required for any works within the road network, where the kerbside lane is obstructed or insufficient clearances to passing traffic cannot be maintained.

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.

## 5 Drivers Code of Conduct

Safe Driving Policy for Building 2B 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 issued 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
- Turning right into Abbots Road from Mamre Road, or turning right out of Abbots Road into Mamre Road in direct contradiction to the approved traffic route.

### 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, including the adhering to any project specific road rules such as the no right turn out of or in to Abbots Road.
- 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 3
- 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

#### 6.1.1 Phase 1 Construction Traffic – Prior to the completion of WNSLR

As discussed above, the construction works are expected to generate up to 1,760 vehicle movements per day. Vehicle movements will be spread throughout the day. Reference is made to the detailed breakdown of vehicle movements which details projected movements during a number of periods:

- Pre-School Zone (3:00 – 8:00AM)
- Morning School Zone (8:00 – 9:30AM)
- Between School Zones (9:30AM – 2:30PM)
- Afternoon School Zone (2:30 – 4:00PM)
- Post-School Zones (4:00 – 6:00PM)
- Evening (6:00 – 10:00PM)

The peak for each of these periods varies for each work area during the life of the construction program. Works will typically generate peak hourly traffic before and after the School Zone periods, as demonstrated below. This adopts a similar Light Vehicle (LV) and Heavy Vehicle (HV) arrival profile via Bakers Lane / Aldington Road to other construction works in the locality.

**Table 4: Hourly Construction Traffic Movements – Phase 1 via Bakers Lane**

Vehicle Type	Pre-School Zones	Morning School Zone	Between School Zones	Afternoon School Zone	Post School Zones	Evening	Daily
Light (up to 6.4m)	134	5	14	5	105	35	1,140
Light Rigid (6.4 – 9.6m)	19	0	2	0	1	0	107
Rigid Heavy (12.5.m)	1	0	1	0	0	0	10
Articulated Heavy (>12.5m)	19	0	3	0	0	0	112
<b>TOTAL</b>	<b>173</b>	<b>5</b>	<b>20</b>	<b>5</b>	<b>107</b>	<b>35</b>	<b>1,369</b>

Note: 1) Vehicles in excess of 9.6m are not to arrive to site during School Zone periods.

**Table 5: Hourly Construction Traffic Movements – Phase 1 via Aldington Road**

Vehicle Type	Pre-School Zones	Morning School Zone	Between School Zones	Afternoon School Zone	Post School Zones	Evening	Daily
Light (up to 6.4m)	0	107	0	107	0	0	321
Light Rigid (6.4 – 9.6m)	0	45	0	1	0	0	69
Rigid Heavy (12.5.m)	0	0	0	0	0	0	0
Articulated Heavy (>12.5m)	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>0</b>	<b>152</b>	<b>0</b>	<b>108</b>	<b>0</b>	<b>0</b>	<b>390</b>

- Note: 1) Vehicles in excess of 9.6m are not to arrive to site during School Zone periods  
 2) In the event that the WNSLR has not been completed by the end of November 2020, these volumes shall increase to approximately 465 movements.

When combined, the daily construction traffic movements are as follows.

**Table 6: Hourly Construction Traffic Movements – Combined**

Vehicle Type	Pre-School Zones	Morning School Zone	Between School Zones	Afternoon School Zone	Post School Zones	Evening	Daily
Light (up to 6.4m)	134	112	14	112	105	35	1,461
Light Rigid (6.4 – 9.6m)	19	45	2	1	1	0	176
Rigid Heavy (12.5.m)	1	0	1	0	0	0	10
Articulated Heavy (>12.5m)	19	0	3	0	0	0	112
<b>TOTAL</b>	<b>173</b>	<b>157</b>	<b>20</b>	<b>113</b>	<b>107</b>	<b>34</b>	<b>1,759</b>

- Note: 1) Vehicles in excess of 9.6m are not to arrive to site during School Zone periods.  
 2) In the event that the WNSLR has not been completed by the end of November 2020, these volumes shall increase to approximately 1,952 movements.



### 6.1.2 Phase 2 Construction Traffic – Post completion of the WNSLR

Post completion of the WSLNR, the construction works are expected to generate up to approximately 2,080 vehicle movements per day, spread across the day. During this time, construction traffic volumes utilise this access via the WNSLR and therefore will not utilise Bakers Lane, ultimately not creating a material impact the operation of the schools within Bakers Lane.

**Table 7: Hourly Construction Traffic Movements – Phase 2 via WNSLR to Lenore Dr**

Vehicle Type	Pre-School Zones	Morning School Zone	Between School Zones	Afternoon School Zone	Post School Zones	Evening	Daily
LV	190	5	62	76	57	36	1,676
HV	28	54	25	16	15	0	400
<b>TOTAL</b>	<b>218</b>	<b>59</b>	<b>87</b>	<b>92</b>	<b>72</b>	<b>36</b>	<b>2,076</b>

Volumes of heavy vehicles are to increase as the capacity within the WNSLR exceeds the proposed daily volumes of heavy vehicle movements. It should be noted that OWE – when fully operational – will generate up to 1,108 vehicles per hour, or 9,776 vehicle movements per day (MOD 3) and relies upon similar network (i.e. once WNSLR is operational). Construction traffic is substantially less than this future operational traffic and will therefore not have any unacceptable impacts on the surrounding road network.

## 6.2 Impacts on Surrounding Network

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

- Construction Traffic in Bakers Lane:** Construction traffic will initially use Bakers Lane to access the work area for preliminary works. To ensure the impacts to residents and schools within the area is kept to a minimum, TC’s shall monitor the accesses of the schools, and direct deliveries to use Abbots Road / Aldington Road.

Additionally, the installation of ancillary signage and VMS’s along Bakers Lane also attempts to increase awareness of the high pedestrian area ahead (the schools).

- Right hand turn out of Abbots Road:** Additional signage on Mamre Road and Abbots Road shall be installed to notify drivers that they cannot turn right in to or out of Abbots Roads. Furthermore, the Drivers Code of Conduct shall include commentary to ensure that all drivers are aware of the changed traffic conditions at the intersection of Mamre Road x Abbots Road.

- **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
- **Management of deliveries:** Construction vehicle access via Bakers Lane shall be directed to use Abbotts Road / Aldington Road during school peaks in order to maximise the safety of all patrons of the schools and retirement village within Bakers lane.
- **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 during key school periods is to be undertaken to ensure that drivers are adhering to restricted times, and to ensure that the approved traffic generation, and subsequent impacts on the road network, are in line with those approved.

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 Oakdale West Estate works in isolation.

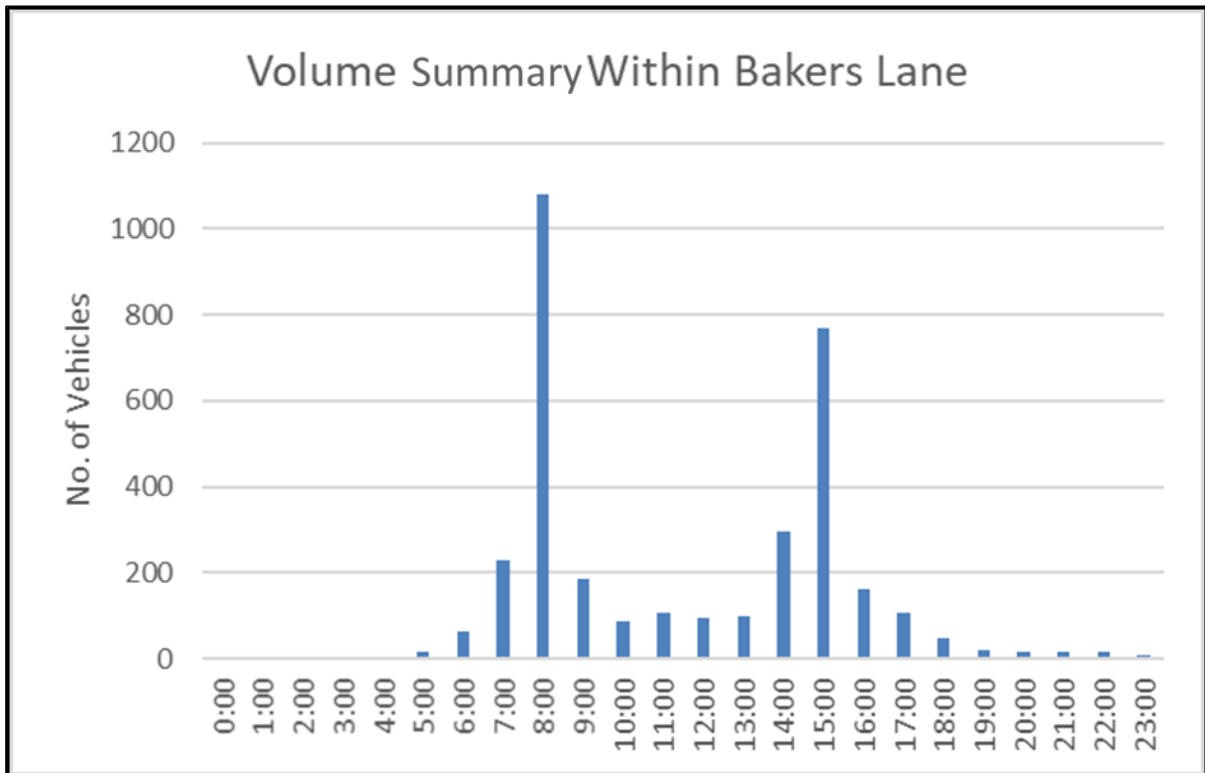
Noting that a number of other concurrent works are proposed, the cumulative impact of known construction works (covered by separate CTMPs) is addressed within a Cumulative Construction Traffic Impact Assessment (CCTIA). This CCTIA is prepared separately and shall be updated from time to time should any existing or future CTMPs envisage an increase in the cumulative construction traffic on the surrounding road network. In this regard, the CCTI report shall be subject to ongoing review and will be updated as required.

Notwithstanding, the table below outlines the cumulative construction movements for all known works during the worst peak period (AM school peak) both before and after the opening of the WNSLR.

**Table 8: Consolidated AM Site Peak Hour Construction Traffic Volumes**

Access Route	Vehicle Type	Period	
		Phase 1	Phase 2
Bakers Lane	LV	175	
	HV	0	
Lenore Drive	LV		252
	HV		220
Total (Combined)	TOTAL	175	472

Furthermore, the Site’s peak hours occur prior to the network peak and the AM school peak, therefore the background volume of traffic will be negligible and can be discounted from the review of impacts within the road network. Tube counts undertaken in March 2016 further illustrates that volumes within Bakers Lane remains negligible during the before school peak period (between 3:00am to 8:00am) and can be seen within **Figure 10**.



**Figure 10: Vehicle Counts within Bakers Lane**

Having regard for the above and for the approved operational daily volumes outlined within Section 4 (580 vehicles per hour), it is evident that the operational threshold will not be exceeded and therefore will not result in any unreasonable impacts on the surrounding road network. Notwithstanding, each contractor shall liaise regularly in order to avoid any conflict of large deliveries and to ensure that the cumulative construction impacts are minimised.

Currently, it is unknown if there are any further construction projects planned throughout the duration of the project. In the event that other construction works are to be undertaken, consultation with all projects will be undertaken. Notwithstanding, any additional impacts would be determined on the timing and type of activity, and would be site-specific in nature, so are difficult to define at this stage.

## 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.
- A Dilapidation report shall be undertaken every periodically to assess the condition of the road and note whether there has been any reduction in quality of the road as result of construction vehicles.

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 9** 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 9: 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 permissible volume and time constraints
	Response	No response required Continue monitoring program	<p>Review and investigate construction activities, and where appropriate, implement additional remediation measures such as:</p> <p>Temporary halting of activities and resuming when conditions have improved</p> <p>Review CTMP and update where necessary</p> <p>Provide additional training</p>	<p>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.</p> <p>Where appropriate, implement additional remediation measures such as:</p> <p>Temporary halting of activities and resuming when conditions have improved</p> <p>Stop all transportation into and out of the site.</p> <p>Review CTMP and update where necessary.</p> <p>Provide additional training</p>
	Trigger	Construction traffic does not utilise Bakers Lane during School Peaks	Construction traffic utilises Bakers Lane close to School Peaks	Construction traffic utilises Bakers Lane during School Peaks
	Response	No response required Continue monitoring program	<p>Review and investigate construction activities, and where appropriate, implement additional remediation measures such as:</p> <p>Review vehicles arriving to site and remind them of the strict exclusion time periods</p> <p>Provide additional training (including toolbox talks and further notification of Driver Code of Conduct)</p>	<p>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.</p> <p>Where appropriate, implement additional remediation measures such as:</p> <p>Stop all transportation into and out of the site.</p> <p>Review CTMP and update where necessary.</p> <p>Provide additional training (including toolbox talks and further notification of Driver Code of Conduct).</p>

Risk	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	<p>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:</p> <p>Temporary halting of activities and resuming when conditions have improved</p> <p>Stop all transportation into and out of the site.</p> <p>Review CTMP and update where necessary.</p> <p>Provide additional training.</p>
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 undertaken 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.

Risk	Condition Green	Condition Amber	Condition Red	
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	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. The contractor is to notify the community liaison representative when traffic is expected to exceed the parameters set within “Condition Green” of Table 9. Notwithstanding, **Table 10** outlines an indicative communication strategy to ensure that adequate communication with key stakeholders have been met.



**Table 10: 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 Email to local schools & Dept of Education
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	

Previously, there has been communication undertaken with Penrith City Council and schools adjacent to the Site. Comments received has generally been accepting of the proposed construction strategy. The responses of the initial communication to the key stakeholders are as follows.

**Table 11: Stakeholder Responses**

Stakeholder	Response
Catholic Education Diocese of Parramatta	We note and appreciate the restrictions on heavy vehicle movement during peak drop off and peak times. At this point, we have no further comment, but will monitor traffic flow and raise any safety concerns that may arise as the project progresses
The Anglican Schools Corporation	<p>The current designated "peak periods" nominated appear reasonable but should continue to be assessed during the works to identify as to whether these time periods need to be altered.</p> <p>The school is a "live environment" that can change quickly during any day and we feel that on-going effective communication between the school and those responsible for traffic management during the works should be maintained to provide the school with an avenue for raising any concerns.</p> <p>The peak periods identified are typical for a standard operating day. Each of the schools along Bakers Lane will have a number of "special days and activities" during the course of the year such as "grandparents day and carnivals" where peak period shall need to be extended and we request a mechanism be established for allowing effective communication of these requirements by the school.</p>
Catholic Healthcare	No issues

Further to the above, additional stakeholder meetings have taken place in April 2020 with the schools along Bakers Lane. The meeting minutes of this consultation have been attached within the Appendix C.

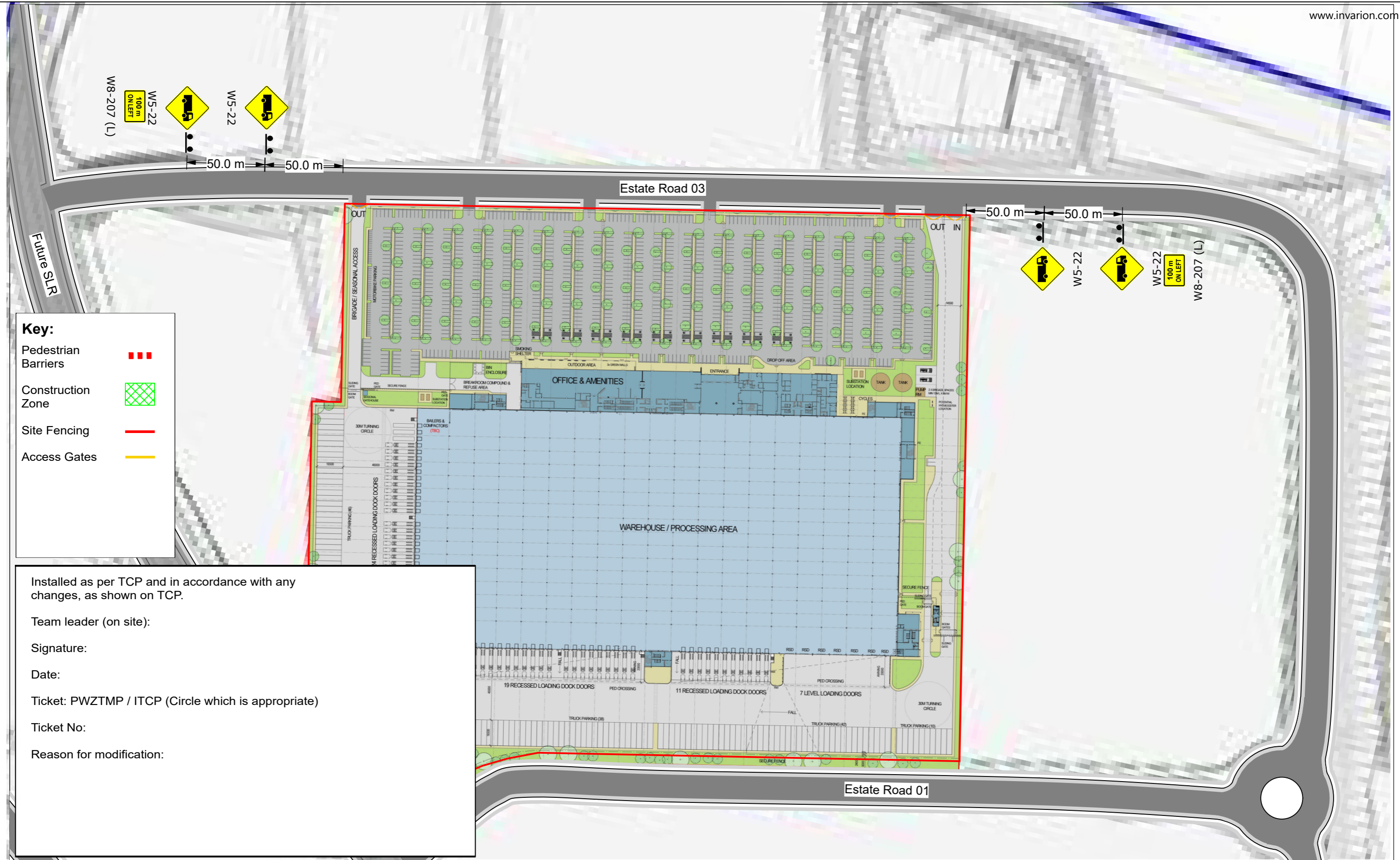
Following consultation with the key stakeholders, construction related traffic issues shall be monitored (as outlined within Section 7.1), be mitigated through the Community Consultation Strategy, and through meetings held with key stakeholders throughout the life of the project (these meetings include the standard community liaison group meetings). Regular meetings shall be undertaken with key stakeholders in order to inform the stakeholders of any upcoming extra-ordinary activities. These meetings shall be utilised from both the OWE works and any additional school activities (such as carnivals or grandparents' day).

This communications strategy outlines the most effective communication methods to ensure adequate information within the community and assist the project team to deliver the traffic changes with minimal disruption to the road network.

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

# Appendix A

## Traffic Control Plans



**Key:**

- Pedestrian Barriers - - -
- Construction Zone
- Site Fencing
- Access Gates

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

Team leader (on site):

Signature:

Date:

Ticket: PWZTMP / ITCP (Circle which is appropriate)

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:**  
TCP

**Client:**  
Goodman Property

**Project:**  
Job No: 1086  
Address: Project Waratah, Kemps Creek

**Drawing Title:**  
1086-TCP-01-Project Waratah\_Kemps Creek

**Date:**  
05/02/2020

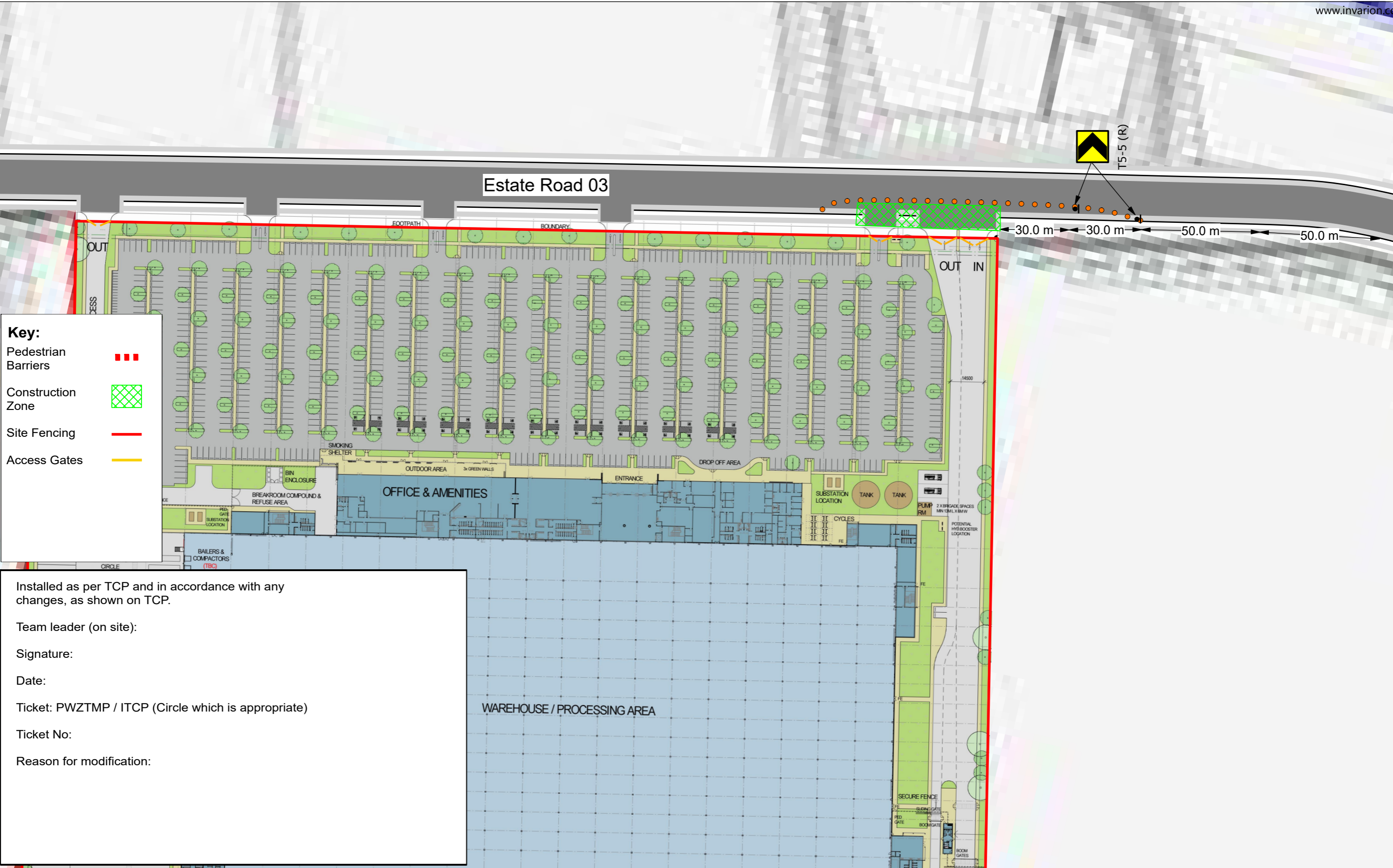
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**Drawing Number:**  
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**asongroup**

**DESIGNER:** JAMES LAIDLER  
CERT: 0034322012





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

Team leader (on site):

Signature:

Date:

Ticket: PWZTMP / ITCP (Circle which is appropriate)

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:**  
TCP

**Client:**  
Goodman Property

**Project:**  
Job No: 1086  
Address: Project Waratah, Kemps Creek

**Drawing Title:**  
1086-TCP-02-Project Waratah\_Kemps Creek

**Date:**  
05/02/2020

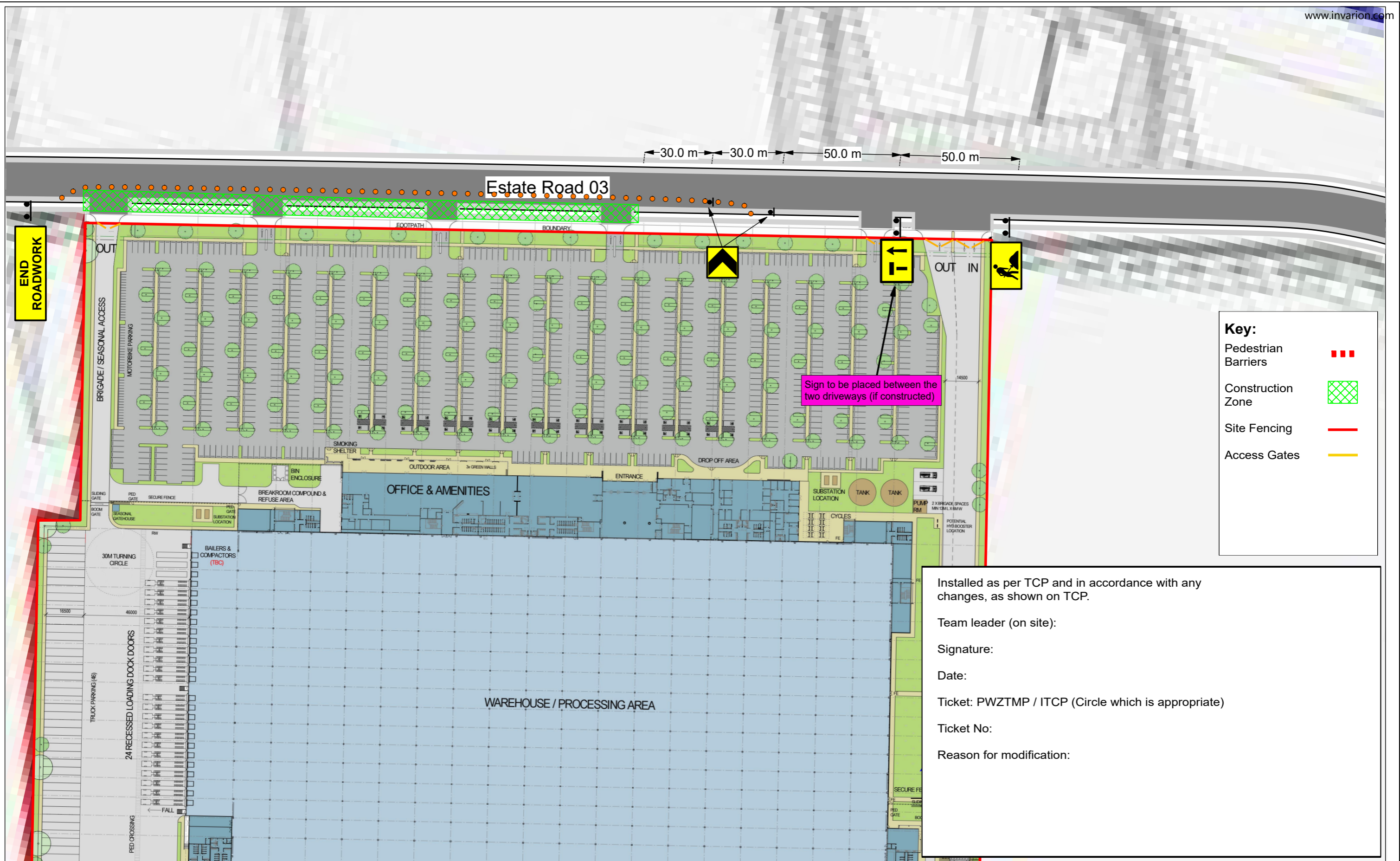
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**Drawing Number:**  
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**asongroup**

**DESIGNER:** JAMES LAIDLER  
CERT: 0034322012





**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:**  
TCP

**Client:**  
Goodman Property

**Project:**  
Job No: 1086  
Address: Project Waratah, Kemps Creek

**Drawing Title:**  
1086-TCP-03-Project Waratah\_Kemps Creek

**Date:**  
05/02/2020

**Scale @ A3:**

**Drawing Number:**  
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Signature:

Date:

Ticket: PWZTMP / ITCP (Circle which is appropriate)

Ticket No:

Reason for modification:

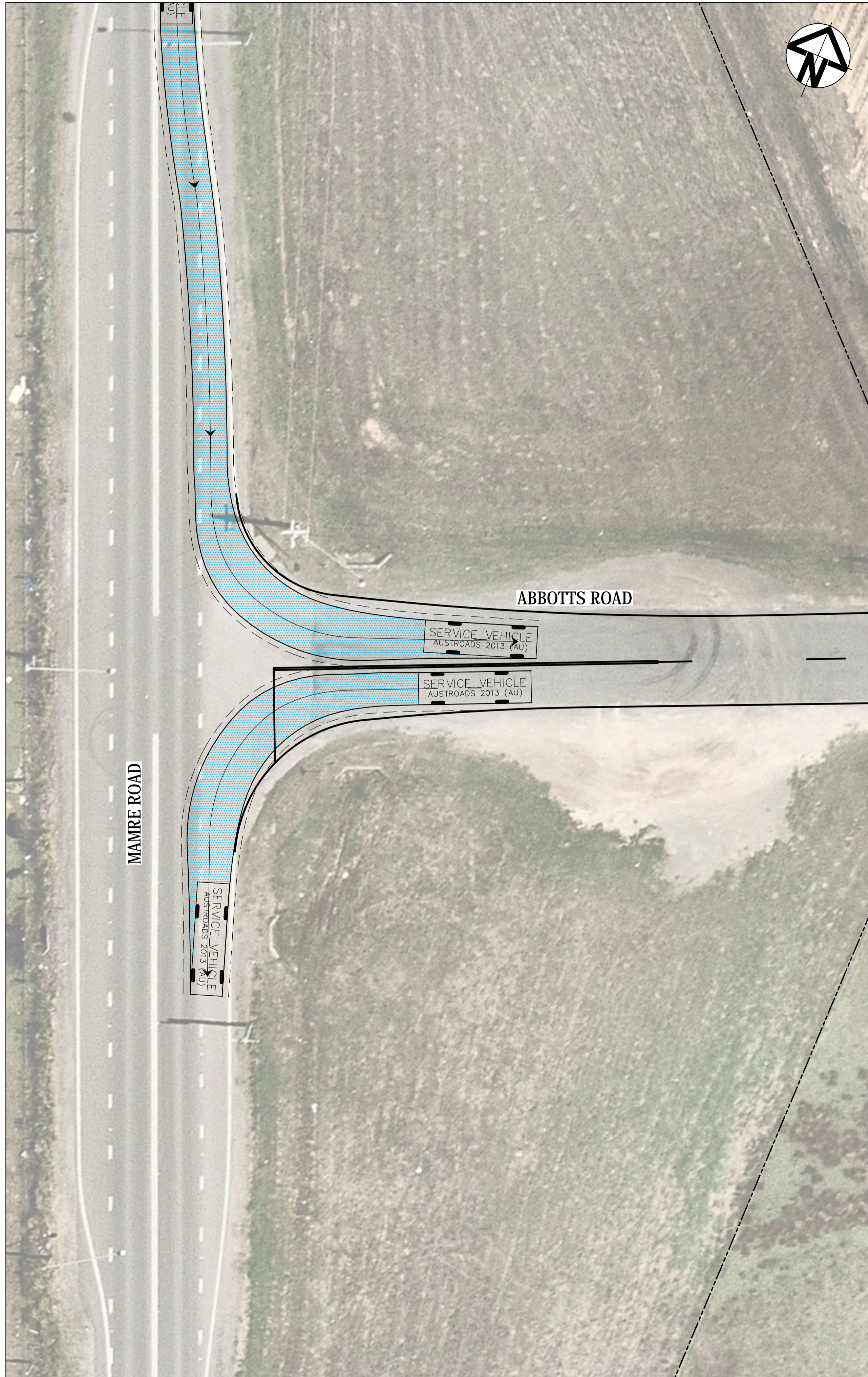


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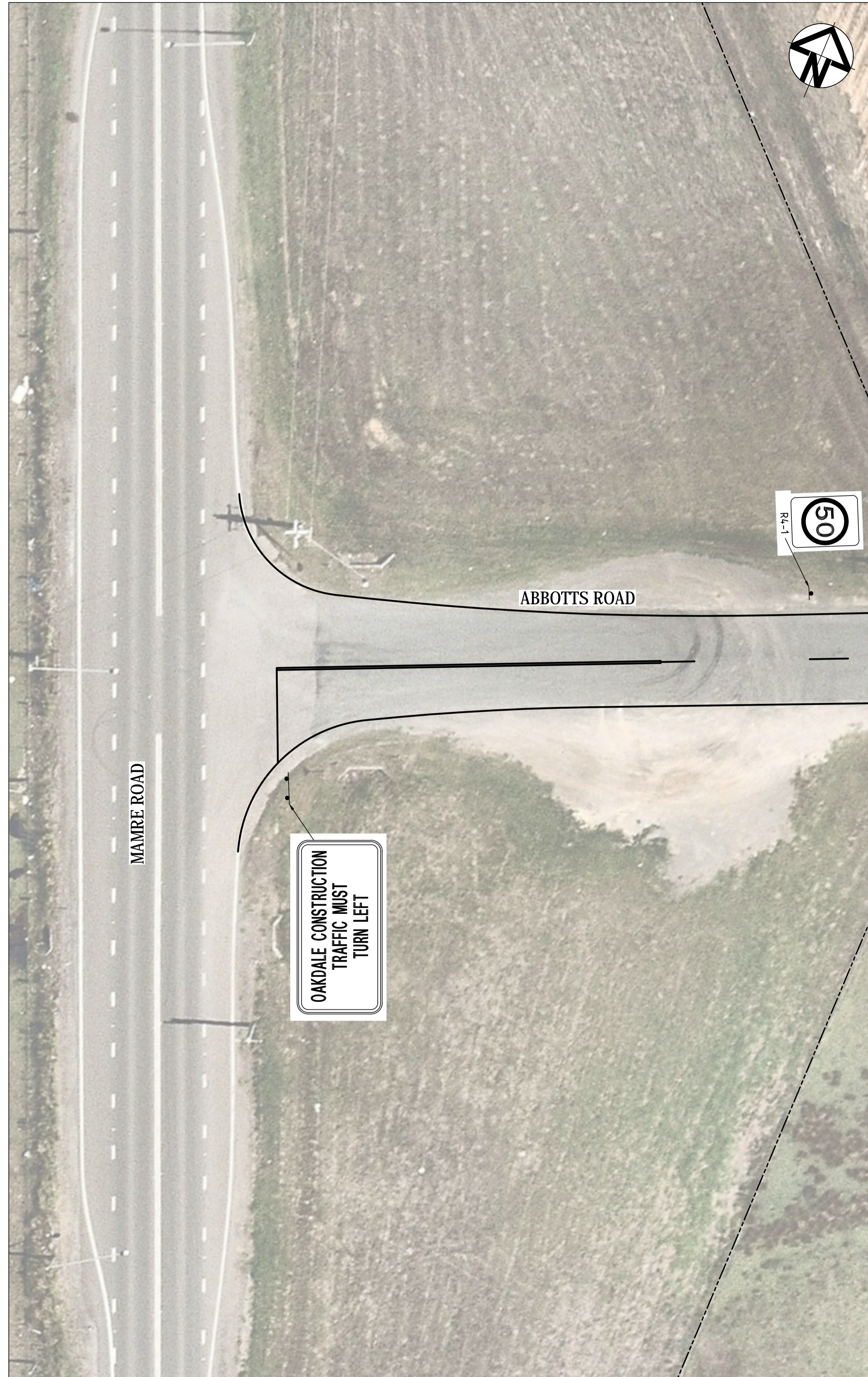
# Appendix B

## Swept Path Analysis

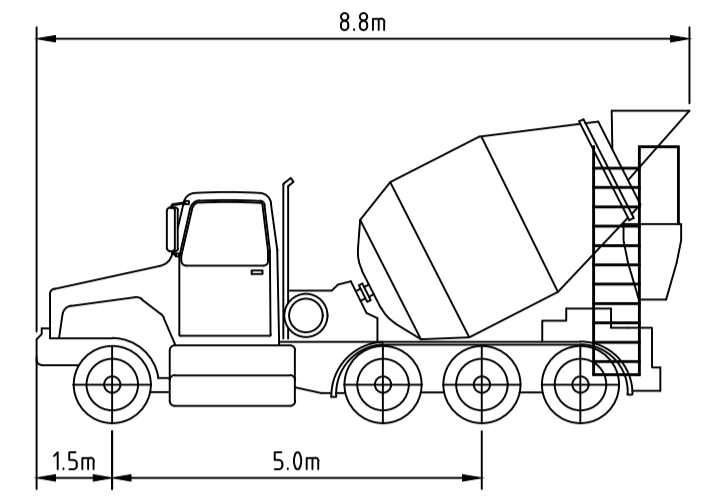




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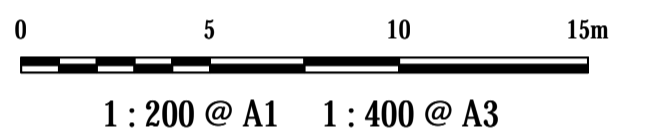


PLAN  
1:200



8.8m CONCRETE TRUCK  
 METERS  
 WIDTH : 2.50  
 TRACK : 2.50  
 LOCK TO LOCK TIME : 6.0  
 STEERING ANGLE : 38.7

Bar Scales



Issue	Description	Date
P2	ISSUED FOR INFORMATION	16-03-20
P1	ISSUED FOR INFORMATION	05-03-20

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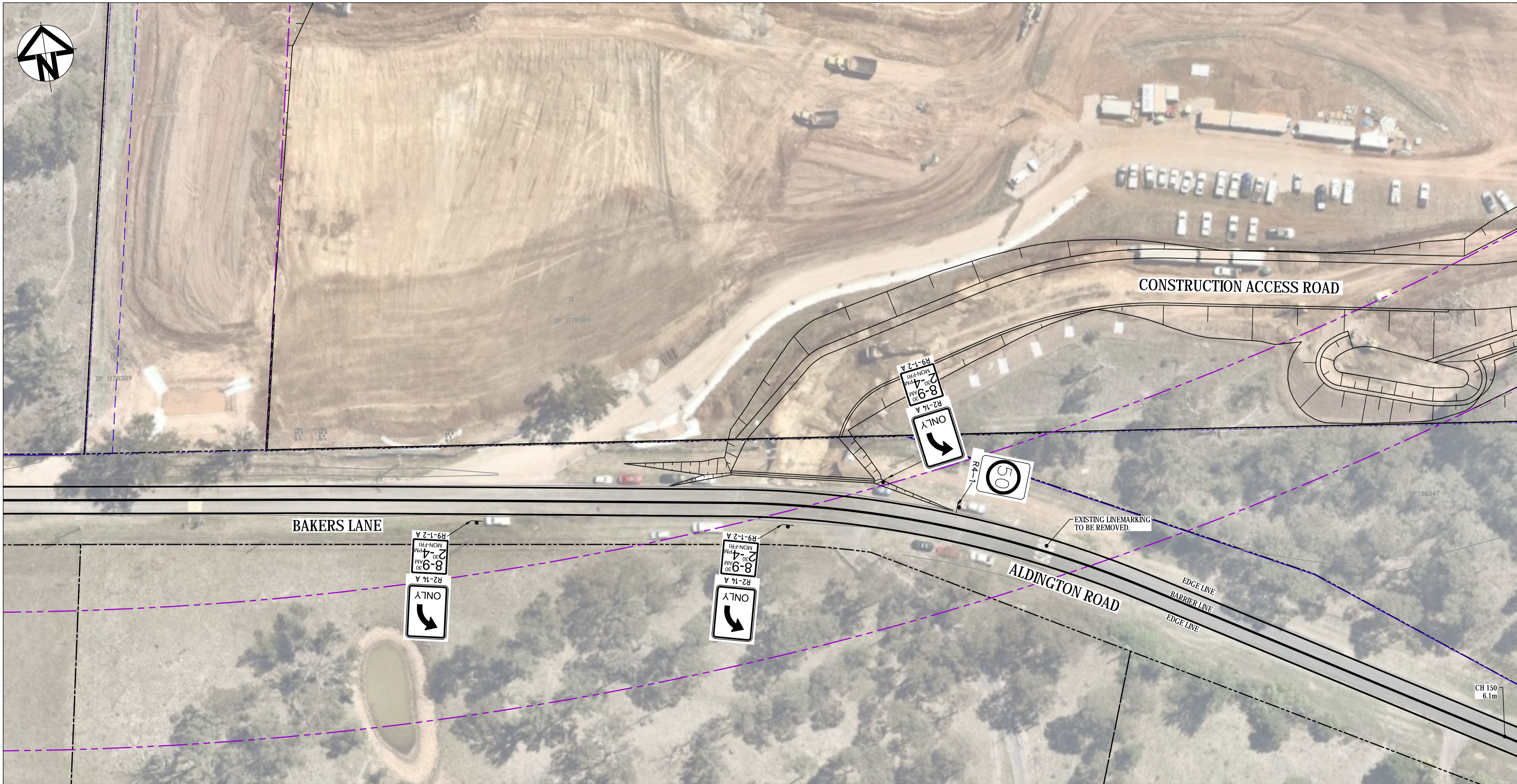
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Project  
**PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST**

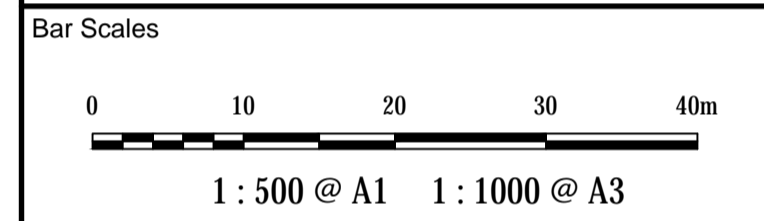
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**MAMRE ROAD ABBOTTS ROAD 8.8m SERVICE VEHICLE TURNING PATH PLAN**

Drawing No.	Project No.	Issue
SKC320	15-272	P2





PLAN  
1 : 500 @ A1



Issue	Description	Date
P2	ISSUED FOR INFORMATION	04-04-20
P1	ISSUED FOR INFORMATION	17-03-20

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Scale: SKC322 - Aldington Road Site Access Plan Sheet 1.dwg

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	Designed	GB
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Grid	MGA	Approved AM



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Project

**PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST**

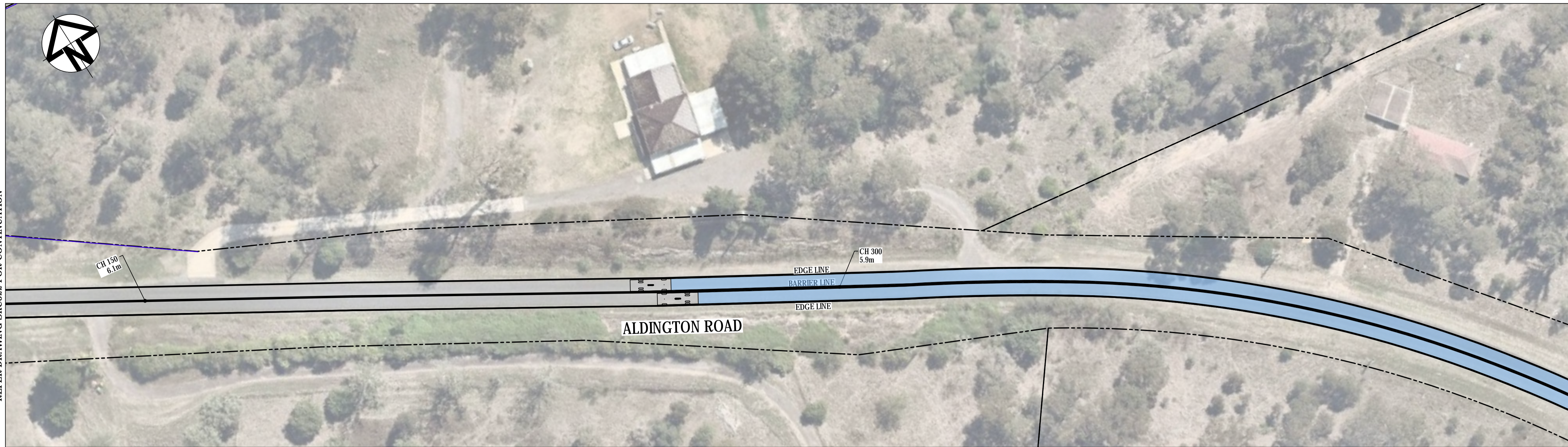
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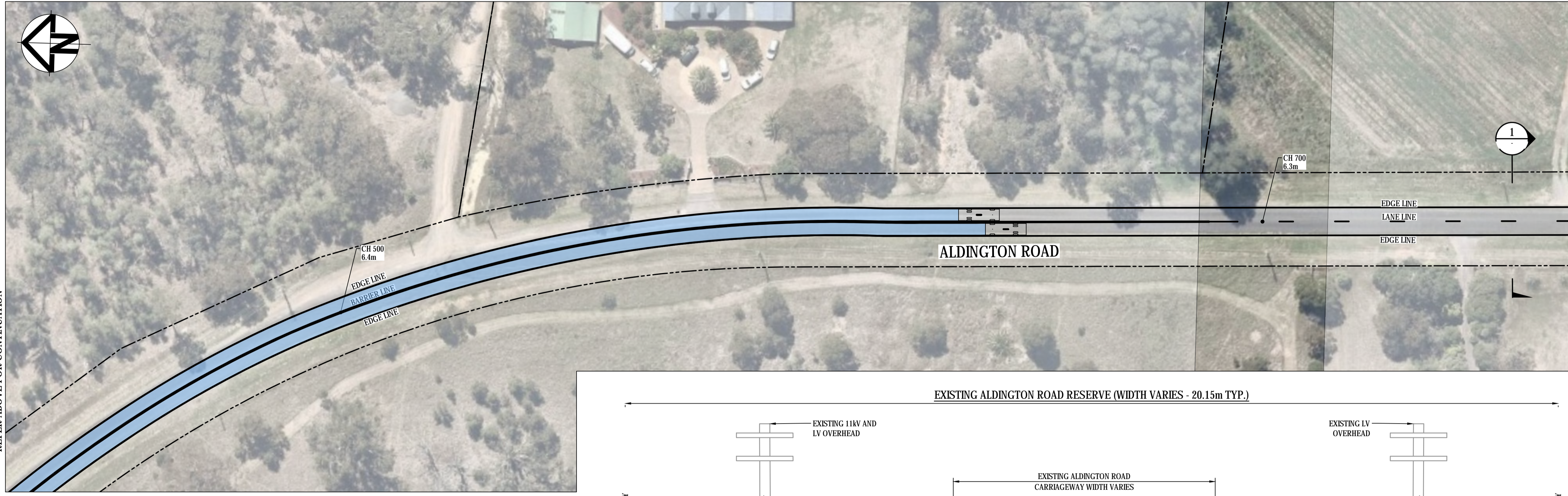
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SKC322	15-272	P2

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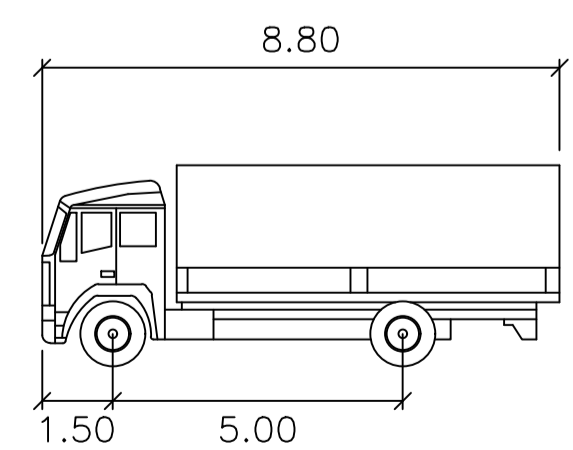




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PLAN  
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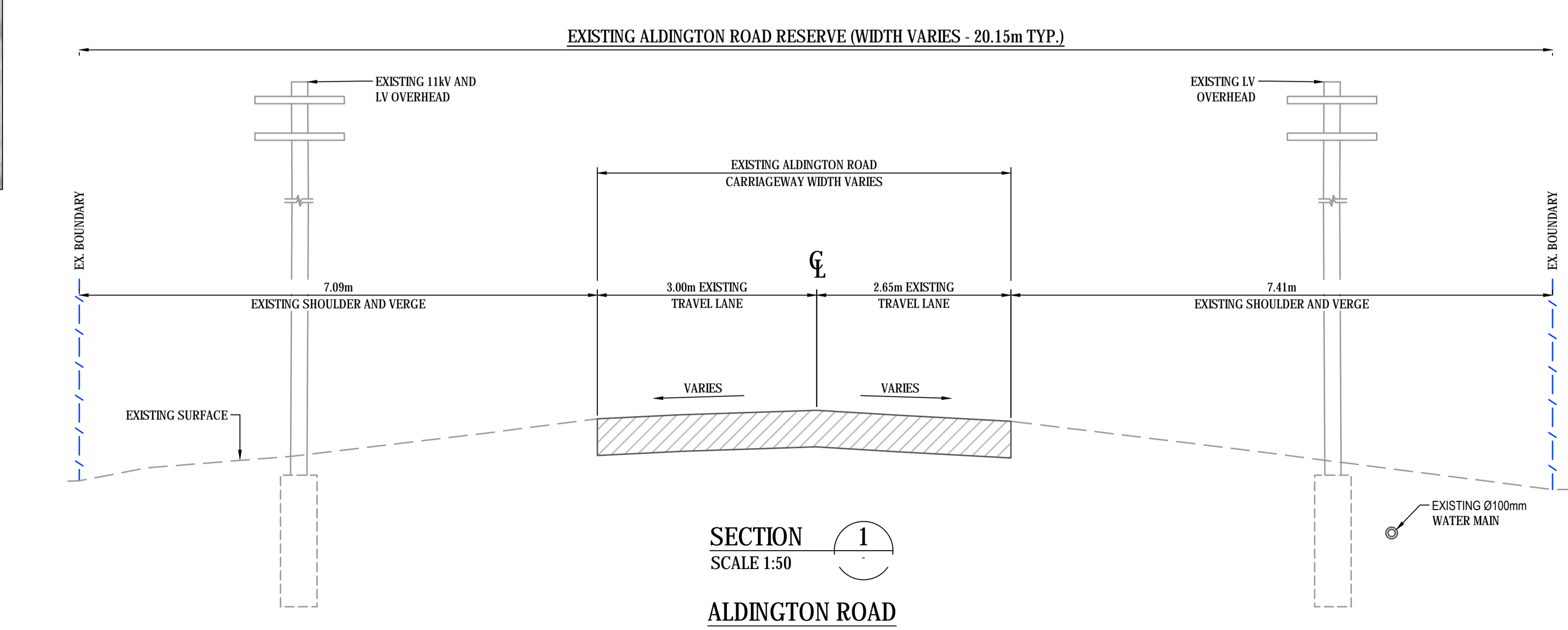
MRV meters

Width : 2.50

Track : 2.50

Lock to Lock Time : 6.0

Steering Angle : 34.0



SECTION 1  
SCALE 1:50  
ALDINGTON ROAD

Bar Scales

0	1	2	3	4m
0	10	20	30	40m

1 : 50 @ A1 1 : 100 @ A3

1 : 500 @ A1 1 : 1000 @ A3

Issue	Description	Date
P2	ISSUED FOR INFORMATION	04-04-20
P1	ISSUED FOR INFORMATION	17-03-20

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Grid	MGA	Approved	AM



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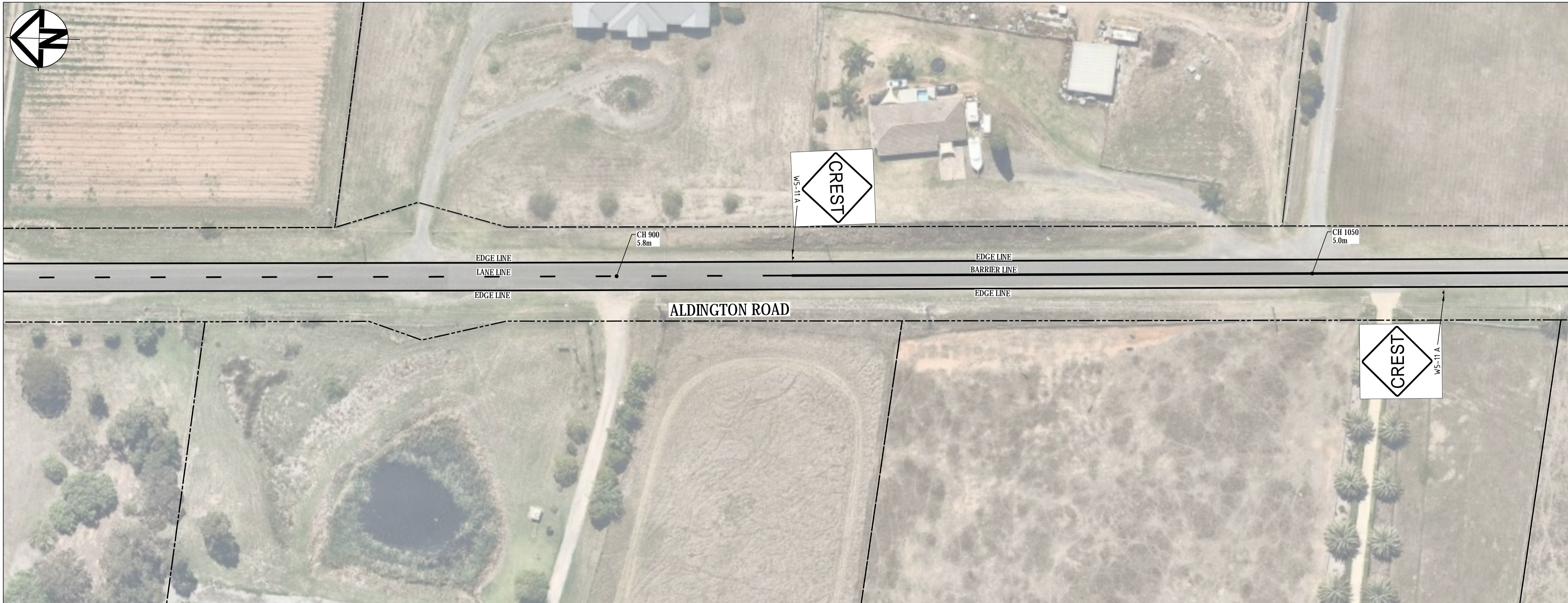
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Project  
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Title  
**ALDINGTON ROAD SITE ACCESS PLAN SHEET 2**

Drawing No. <b>SKC323</b>	Project No. <b>15-272</b>	Issue <b>P2</b>
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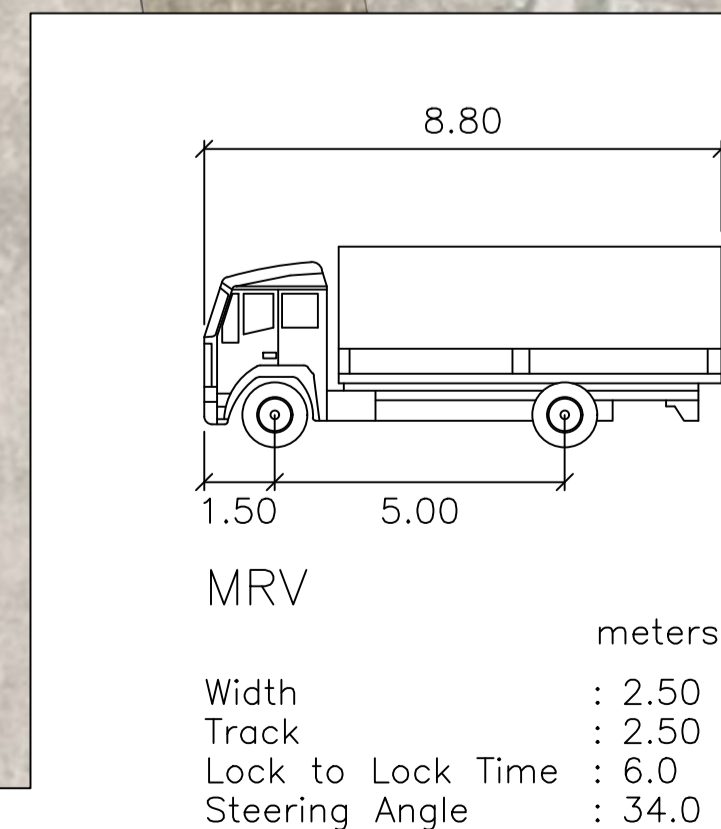




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PLAN  
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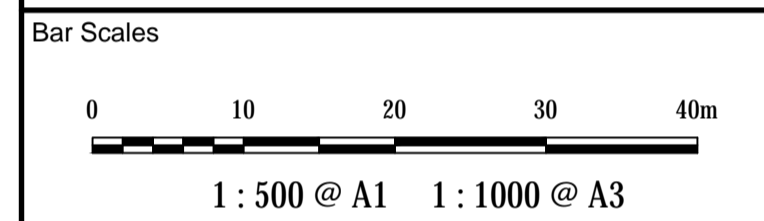


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REFER BELOW FOR CONTINUATION

REFER ABOVE FOR CONTINUATION

REFER DRAWING SKC325 FOR CONTINUATION



Issue	Description	Date
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P1	ISSUED FOR INFORMATION	17-03-20

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	Designed	GB
Height Datum	AHD	Checked AL
Grid	MGA	Approved AM



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**PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST**

Title

**ALDINGTON ROAD SITE ACCESS PLAN SHEET 3**

Drawing No.	Project No.	Issue
SKC324	15-272	P2

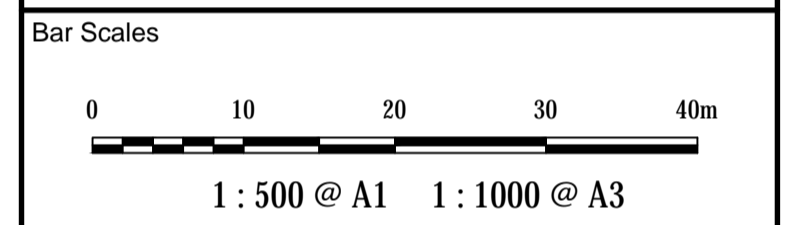
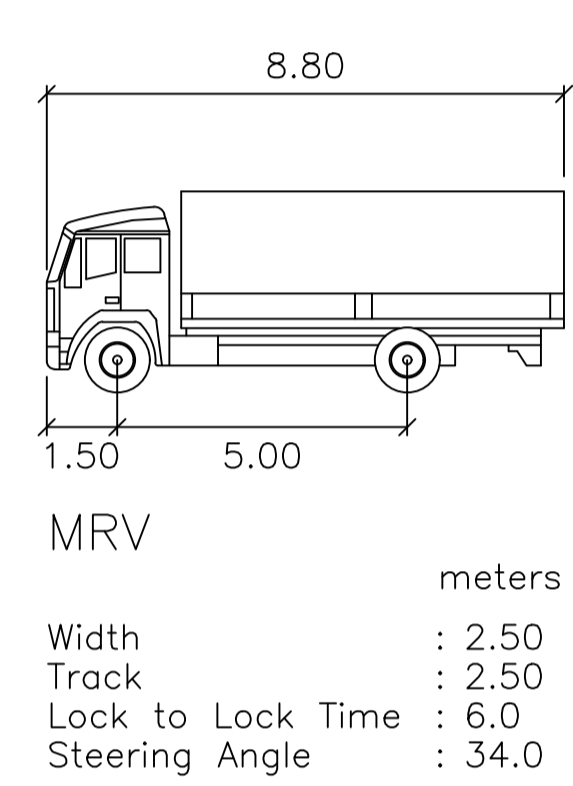




PLAN  
1 : 500 @ A1



PLAN  
1 : 500 @ A1



Issue	Description	Date
P2	ISSUED FOR INFORMATION	04-04-20
P1	ISSUED FOR INFORMATION	17-03-20

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Height Datum	AHD	Checked AL
Grid	MGA	Approved AM

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Project

**PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST**

Title

**ALDINGTON ROAD SITE ACCESS PLAN SHEET 4**

Drawing No.	Project No.	Issue
SKC325	15-272	P2

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REFER BELOW FOR CONTINUATION

REFER ABOVE FOR CONTINUATION

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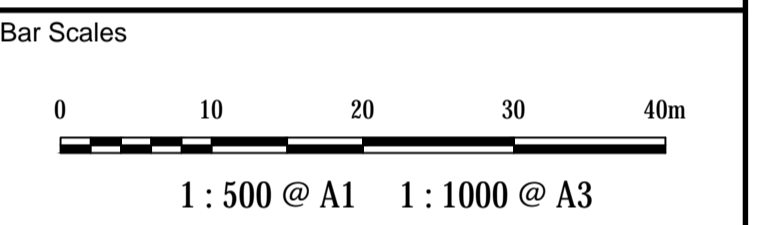




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REFER BELOW FOR CONTINUATION

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REFER ABOVE FOR CONTINUATION

REFER DRAWING SKC327 FOR CONTINUATION

PLAN  
1 : 500 @ A1

Issue	Description	Date
P2	ISSUED FOR INFORMATION	04-04-20
P1	ISSUED FOR INFORMATION	17-03-20

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Scale: SKC326 - Aldington Road Site Access Plan Sheet 5.dwg

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Height Datum	AHD	Checked AL
Grid	MGA	Approved AM



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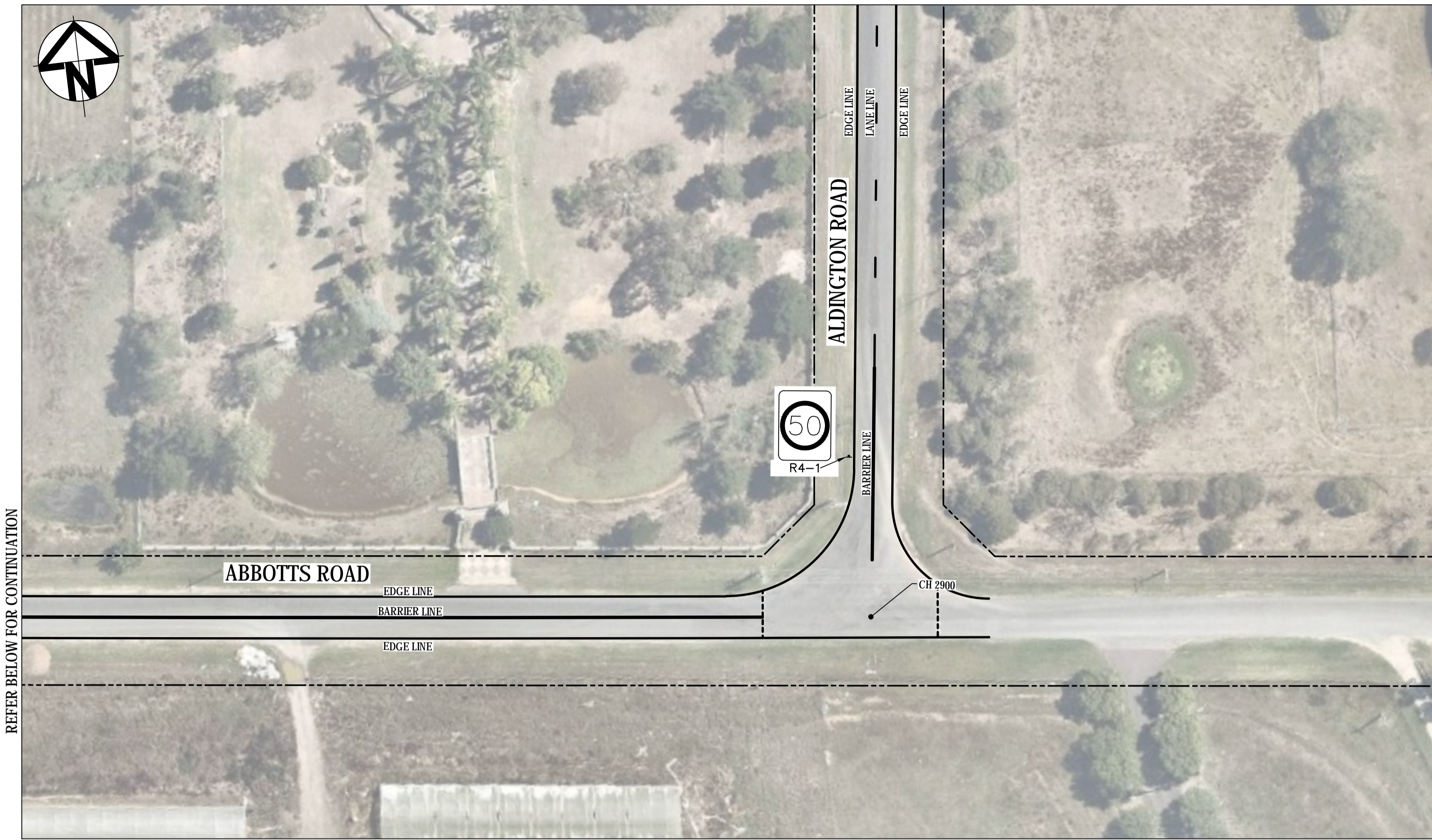
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Title  
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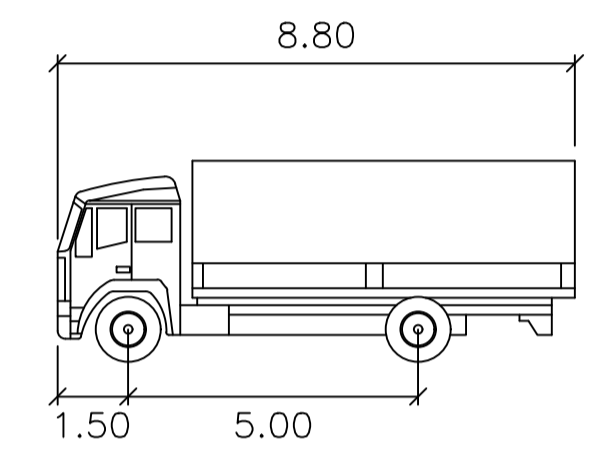
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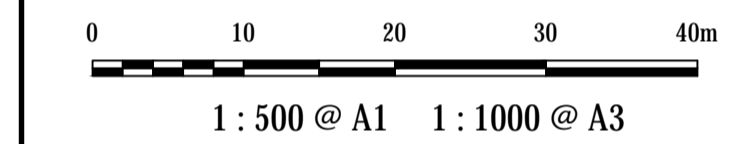
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 Track : 2.50  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0

PLAN  
 1 : 500 @ A1

Bar Scales



Issue	Description	Date
P2	ISSUED FOR INFORMATION	04-04-20
P1	ISSUED FOR INFORMATION	17-03-20

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	Designed	GB

Height Datum	AHD	Checked	AL
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 www.atl.net.au  
 info@atl.net.au

Project  
**PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST**

Title  
**ALDINGTON ROAD SITE ACCESS PLAN SHEET 6**

Drawing No.	Project No.	Issue
SKC327	15-272	P2



REFER ABOVE FOR CONTINUATION

PLAN  
 1 : 500 @ A1



# Appendix C

## Meeting Minutes

# Meeting with School Principals – Traffic and Stage 2B Consultation

**Minutes**      23 April 2020      10:30am      Virtual (Zoom)

<b>ATTENDEES</b>	Robert Nastasi – Principal Emmaus College (RN), Catherine Hey – Principal Trinity Primary School (CH), Cathie Graydon – Principal Mamre Anglican School (CG), Stephanie Partridge - Goodman (SP), Kym Dracopoulos - Goodman (KD), Kate McKinnon – SLR Consulting
<b>APOLOGIES</b>	Nil
<b>MINUTES TAKER</b>	Kate McKinnon

ITEM	DISCUSSION
SP	<p>Purpose of meeting is to provide an update in relation to Construction traffic (with specific reference to the CTMP) and the timing of construction of Building 1A and 2B, Oakdale West;</p> <p>Goodman recently received approval for Building 1A and Building 2B at the site;</p> <p>The Building 2B project remains on track for a 1 June 2020 commencement;</p> <p>Site handover from the earthworks contractor to the building contractor is taking place over a staged process and commenced on the 14<sup>th</sup> of April through to end of May 2020;</p> <p>Steel deliveries are underway and will continue throughout the coming months;</p> <p>Building 1A will not commence until the Western North South Link Road is completed (expected Jan 21).</p> <p>Construction access to the site will continue along Bakers Lane, with Aldington / Abbots Road being used during school peak-hour periods;</p> <p>This has been endorsed 'in-principle' by DPIE, PCC, and TrfNSW to determine.</p>
CG	When is the WNSLR due to open?
SP	Opening of WNSLR is targeted for early next year (2021) dependant on weather. Once it is built all traffic will be via that road. We are obviously keen to complete it as soon as possible
SP	<p>The consent granted for Building 2B had several conditions attached to the use of Aldington Road / Abbots Road</p> <p>This includes and is not limited to consultation with relevant authorities and stakeholders, completion of dilapidation report, completion of Road Safety Audit where recommendations are made to complete minor works on Aldington Road / Abbots Road to ensure safety along this road noting that it is a rural road;</p> <p>Goodman has completed the dilapidation report and Road Safety Audit;</p> <p>Findings from the Road Safety Audit have been discussed with Penrith City Council;</p> <p>AT&amp;L / ASON are currently preparing a proposed scope of works including line marking, signage, and minor upgrade works to satisfy the requirements of the Penrith City Council and TrfNSW;</p> <p>This will not result in any works out the front of the school;</p> <p>All works will be completed from the site entry through to Mamre Road (via Aldington &amp; Abbots Road);</p>
CG	What is the timeframe for this to commence?
SP	We want to have everything in place to commence building works on 1 June. The road safety works will take place over the next 6 weeks.



ITEM	DISCUSSION
KD	We are also conscious of the condition of Bakers Lane -potholes present. We are liaising with PCC on how that is best repaired, everyone recognises they are rural roads. There is monitoring and street sweeping currently underway and we are working through the long term process/plan for the road.
CG	Given COVID19 our traffic is well down at the moment. Once school resumes in full (about 6 weeks away) traffic will likely increase. We still have students attending, we had 40 students and 30 staff at end of last term and anticipate the same for the first 2 weeks back. From May 11 approx we are anticipating 200 students on site everyday.
SP	Our contractors have been asking what is the plan moving forward however the current situation is unprecedented. With the lower number of students attending in the next two weeks the contractors are questioning the implications this will have on construction traffic, it's an ongoing discussion we will need to have.
CG	We still have 10 bus services running but parent traffic is well down.
CH	We have had around 20 students in last couple of weeks and the same for staff but I anticipate larger numbers commencing this week from Wednesday onwards
RN	We are in the same situation. Steph and Kym – We are grateful for what you've done in terms of the hours and working outside the peaks, you will be aware of the petitions we put forward, that was done with good will – I agree with both Cath's that we will have greater numbers returning compared to last term. I witnessed a truck using Bakers Lane at 8am in the last week of last term. That is not a criticism but I think a few of them were taking advantage of the low numbers and quietness of Bakers Lane. Would it be worth having someone on the intersection of Bakers Lane and Mamre to deter trucks using Bakers Lane.
SP	We have a solution for traffic coming out of site – someone standing at exit point of site during peak hours in addition we are installing gatehouse to formalise that process also.
CG	We have started a project at Mamre and we have had big trucks coming in. I have asked them not to use Bakers Lane after 8am or peak times. They are trucks and graders because we are putting in a COLA. It may have been one of our trucks
RN	I witnessed it driving to the Goodman site. We would like to see additional calming measures to support everyone. We would also like a fact sheet to distribute to our community. It would appease and allay fears among our community.
CH	Particular information regarding traffic restrictions regarding school hours should be included
SP	Yes we can arrange that for you. Any additional questions please contact myself or Kate, please keep us updated also, I respect it's a constantly changing situation.
RN	Thankyou for the work at the Creek – much appreciated. The creek is looking terrific, thankyou for your support
KD	The works were completed yesterday, the workers are proud of the work and enjoyed working with the School's staff.
CG	Thankyou for responding to concerns, we are the faces of our school in a unique and difficult situation being surrounded by industrial development. Thankyou for being so responsive
SP	Always happy to hear feedback and do right by the community.

ITEM	DISCUSSION
	Regarding the precinct to the South of the School – the rezoning is to go through quite soon (in the next couple of weeks)
CG	I have been working with the Department of Planning on a State level and they were hoping to get that through by the end of April to the Minister. We are well aware of our site being rezoned for Industrial however there are caveats on the land that we can still proceed as a School. It will change a lot in the coming years and working out how to handle that will be tricky
SP	We will continue to keep you posted, thankyou for your time
<b>Meeting Close 10:53am</b>	

## James Laidler

---

**From:** Malgy Coman <Malgy.COMAN@transport.nsw.gov.au>  
**Sent:** Friday, 1 May 2020 9:09 AM  
**To:** anthony.m@atl.net.au  
**Cc:** Stephanie Partridge; Deana Burn; Pahee Rathan; Rachel Cumming  
**Subject:** FW: Aldington Road

Hi Anthony,

Reference is made to your email regarding the Mamre Road left turn slip lane comments in the RSA. TfNSW previously considered the left-in/left-out 9.8m long vehicle swept path plans and traffic counts provided for the left turning construction vehicles at the Mamre Road/Abbotts Road intersection. TfNSW provided comments/requirements to DPI&E on 30 March 2020 and 2 April 2020 regarding construction access arrangements for vehicles up to 9.8m long, in a left-in/left-out arrangement, during the school zone times.

TfNSW does not require additional road works on Mamre Road to extend the left turn slip lane, based on the information that has been provided to TfNSW to date.

I hope this information is of assistance.

Regards,

Malgy

Malgy Coman  
Senior Land Use Planner  
Part-time arrangements – Monday, Tuesday and Thursday  
Sydney Roads  
Greater Sydney  
**Transport for NSW**

T 02 8849 2413  
27 Argyle Street Parramatta NSW 2150



---

**From:** Anthony McLandsborough [<mailto:anthony.m@atl.net.au>]  
**Sent:** Thursday, 30 April 2020 11:03 AM  
**To:** Pahee Rathan <[Pahee.RATHAN@transport.nsw.gov.au](mailto:Pahee.RATHAN@transport.nsw.gov.au)>  
**Cc:** [stephanie.partridge@goodman.com](mailto:stephanie.partridge@goodman.com); Alex Lohrisch <[Alex.L@atl.net.au](mailto:Alex.L@atl.net.au)>; Kym Dracopoulos <[Kym.Dracopoulos@goodman.com](mailto:Kym.Dracopoulos@goodman.com)>  
**Subject:** Aldington Road

Pahee, further to our discussion last week regarding SSD 10397 and the use of Aldington Road (during school AM/PM peaks) for construction vehicle access an RSA has been prepared in accordance with condition B9.d.ii. The RSA identified several findings one of these being the length of the left turn lane into Abbotts Road.

Whilst the left slip is of limited length, it will require the left turning vehicles during the AM and PM school peak to decelerate on approach to Abbotts Road slip lane. This is the existing situation.

We are not proposing to undertake any additional works at the intersection at this stage as we discussed.


I would ask for you to please confirm back, that this is also your understanding.


If you have any questions, please give me a call.


Kind Regards.



**Anthony McLandsborough**  
Director

 **Level 7, 153 Walker Street  
North Sydney NSW 2060**

 **e: anthony.m@atl.net.au**

 **p: 02 9439 1777  
m: 0433 973 423**

 **w: www.atl.net.au**



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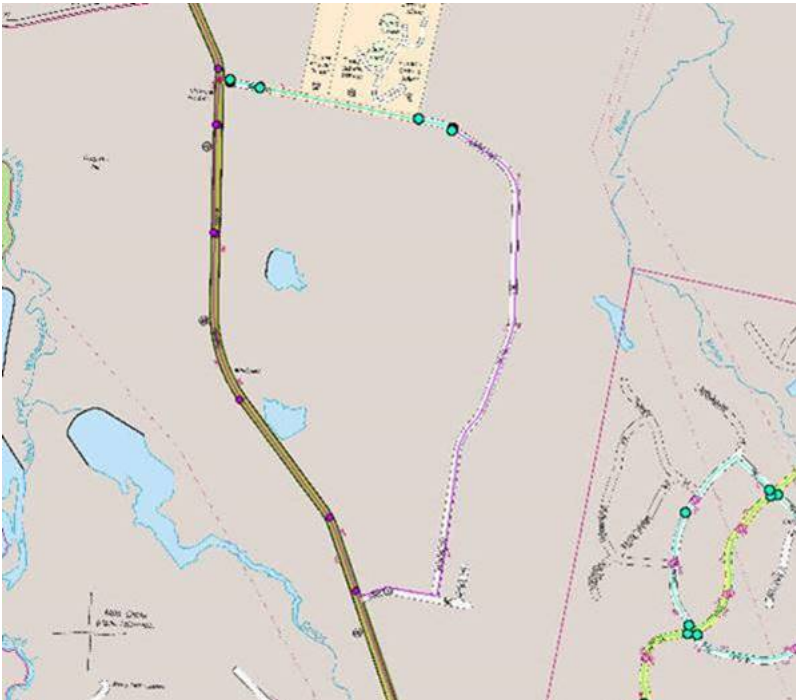
## James Laidler

---

**From:** Malgy Coman <Malgy.COMAN@transport.nsw.gov.au>  
**Sent:** Wednesday, 29 April 2020 8:29 PM  
**To:** Stephanie Partridge  
**Cc:** Pahee Rathan; Rachel Cumming; Deana Burn  
**Subject:** RE: Meeting with Stephanie from Goodman

Hi Stephanie,

Regarding the speed zone matter I have obtained some information for the existing speed limits for Aldington Road and Abbotts Road and the following speed map shows that these two roads have a 80km/hr speed limit (purple coloured line). Bakers Lane is the green/aqua coloured line with a 60km/hr speed limit.



It could take some considerable time for TfNSW to consider the 60km/hr signage proposed in the RSA and undertake a speed limit review, due to various approval and community communication requirements. In the interim it would be better for Goodman to work with Council to obtain signoff for a 60km/hr road works zone via a TCP, whilst TfNSW undertakes a speed limit review for Aldington Road and Abbotts Road. Please let me know if you have any questions regarding this information.

I will need to discuss point two in your email with Pahee tomorrow. The meeting that I proposed earlier in the week for tomorrow is currently postponed.

Regards,

Malgy

Malgy Coman  
Senior Land Use Planner  
Part-time arrangements – Monday, Tuesday and Thursday  
Sydney Roads  
Greater Sydney  
Transport for NSW



---

**From:** Stephanie Partridge [mailto:Stephanie.Partridge@goodman.com]  
**Sent:** Wednesday, 29 April 2020 6:32 PM  
**To:** Malgy Coman <Malgy.COMAN@transport.nsw.gov.au>  
**Cc:** Pahee Rathan <Pahee.RATHAN@transport.nsw.gov.au>  
**Subject:** RE: Meeting with Stephanie from Goodman

Hi Malgy

As mentioned today, please see attached results / recommendations from the Road Safety Audit.

The two items that we require assistance from RMS are as follows;

- 1.) 1a-1c & 3 of the attached – per our discussions today. RMS to confirm steps forward re speed zone;
- 2.) 2 of the attached – I understand Pahee has spoken to AT&L about this. RMS to confirm position on this item.

Many thanks for your assistance.

Regards  
Stephanie



+ Stephanie Partridge  
Development Manager  
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Mobile: +61 410 470 138  
Fax: +61 2 9230 7444  
[Stephanie.Partridge@goodman.com](mailto:Stephanie.Partridge@goodman.com)  
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---

**From:** Malgy Coman <[Malgy.COMAN@transport.nsw.gov.au](mailto:Malgy.COMAN@transport.nsw.gov.au)>  
**Sent:** Tuesday, 28 April 2020 8:38 PM  
**To:** Stephanie Partridge <[Stephanie.Partridge@goodman.com](mailto:Stephanie.Partridge@goodman.com)>  
**Cc:** Pahee Rathan <[Pahee.RATHAN@transport.nsw.gov.au](mailto:Pahee.RATHAN@transport.nsw.gov.au)>  
**Subject:** FW: Meeting with Stephanie from Goodman

Hi Stephanie,

The email below refers to changing speed signs to 60kph and we are seeking more information regarding this proposal because TfNSW is the responsible roads authority for speed changes across Sydney.

Is there any chance that we could have a teleconference with yourself and any other relevant consultants sometime this week to discuss this matter? We have Microsoft teams set up and are both free 12noon-2pm on Thursday and 11:30am-2pm on Friday.

Regards,

Malgy

Malgy Coman  
Senior Land Use Planner  
Part-time arrangements – Monday, Tuesday and Thursday  
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Greater Sydney  
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27 Argyle Street Parramatta NSW 2150



---

**From:** Stephanie Partridge [<mailto:Stephanie.Partridge@goodman.com>]  
**Sent:** Monday, 27 April 2020 12:42 PM  
**To:** Rhian Greenup <[rhian.greenup@penrith.city](mailto:rhian.greenup@penrith.city)>; Gavin Cherry <[Gavin.Cherry@penrith.city](mailto:Gavin.Cherry@penrith.city)>; Isaac Mann <[Isaac.Mann@penrith.city](mailto:Isaac.Mann@penrith.city)>; David Drozd <[David.Drozd@penrith.city](mailto:David.Drozd@penrith.city)>  
**Cc:** Anthony McLandsborough <[anthony.m@atl.net.au](mailto:anthony.m@atl.net.au)>; Kym Dracopoulos <[Kym.Dracopoulos@goodman.com](mailto:Kym.Dracopoulos@goodman.com)>; Tim Lewis <[tim.lewis@asongroup.com.au](mailto:tim.lewis@asongroup.com.au)>; James Laidler <[james.laidler@asongroup.com.au](mailto:james.laidler@asongroup.com.au)>; Pahee Rathan <[Pahee.RATHAN@transport.nsw.gov.au](mailto:Pahee.RATHAN@transport.nsw.gov.au)>; Alex Lohrisch <[Alex.L@atl.net.au](mailto:Alex.L@atl.net.au)>  
**Subject:** RE: Meeting with Stephanie from Goodman

Hi All

Thanks for your time last Tuesday to discuss the proposed use of Aldington & Abbots Road.

Please see below comments / actions:

- Attached are the construction traffic volumes proposed;
- GMG to discuss with TrfNSW the Road Safety Audit and specifically the item raised at Mamre Road / Abbots Road intersection – AT&L to resolve with TrfNSW;
- GMG to provide an updated proposal (plans showing proposed upgrade works) to PCC for approval;
- Based on our discussions and the Road Safety Audit, we see the following modifications to the roads required;
  - Ensure there is at least a 6m seal;
  - Ensure at least 1m shoulder both sides (total 8m formation);
  - Modify areas on the road where pooling water was found in RSA;
  - Ensure safe space on shoulder for vehicles attempting to overtake a turning vehicle into the site gate;
  - Change speed signs to 60kph in line with the RSA;
  - Install linemarking generally as noted once the 6m seal is achieved.

In order to ensure these works are done properly, we are undertaking a survey and Geotech investigations which will inform the specifics of the above scope.

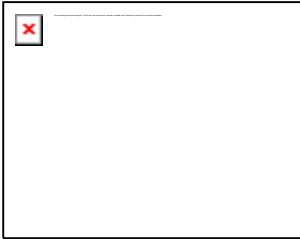
These works will take 2-3 weeks to be completed.

Thereafter, final plans will be provided for approval by PCC and TrfNSW.

We believe the CTMP can be finalised and submitted to DPIE on the basis that the above works will be completed prior to Aldington / Abbots Road being used. The details of the design and scope can be worked through in parallel to the CTMP being approved by DPIE.

Please let me know if you have anything to add to the above, or any comments regarding process.

Kind regards  
Stephanie



**Stephanie Partridge**  
Development Manager  
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Mobile: +61 410 470 138  
Fax: +61 2 9230 7444  
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-----Original Appointment-----

**From:** Rhian Greenup <[rhian.greenup@penrith.city](mailto:rhian.greenup@penrith.city)>

**Sent:** Wednesday, 15 April 2020 2:44 PM

**To:** Rhian Greenup; Gavin Cherry; Isaac Mann; David Drozd; Stephanie Partridge

**Cc:** Anthony McLandsborough; Kym Dracopoulos; Tim Lewis; James Laidler; Pahee Rathan

**Subject:** Meeting with Stephanie from Goodman

**When:** Tuesday, 21 April 2020 10:00 AM-11:30 AM (UTC+10:00) Canberra, Melbourne, Sydney.

**Where:**

Meeting with Traffic Engineers regarding Oakdale West

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## James Laidler

---

**From:** David Drozd <David.Drozd@penrith.city>  
**Sent:** Thursday, 30 April 2020 10:01 AM  
**To:** Stephanie Partridge; Tim Lewis; James Laidler; Anthony McLandsborough; Alex Lohrisch; Kym Dracopoulos; Gavin Cherry  
**Subject:** RE: Meeting with Stephanie from Goodman

Hi all, there is no issue with having it a temporary 60km/h under work zone conditions, this was always going to be the approach to my knowledge.

This does not however negate the need for widening and signage / linemarking as previously discussed

Thanks  
David

**David Drozd**  
Traffic Engineering Coordinator

E [David.Drozd@penrith.city](mailto:David.Drozd@penrith.city)  
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**From:** Stephanie Partridge <Stephanie.Partridge@goodman.com>  
**Sent:** Thursday, April 30, 2020 8:12 AM  
**To:** Tim Lewis <tim.lewis@asongroup.com.au>; James Laidler <james.laidler@asongroup.com.au>; Anthony McLandsborough <anthony.m@atl.net.au>; Alex Lohrisch <Alex.L@atl.net.au>; Kym Dracopoulos <Kym.Dracopoulos@goodman.com>; Gavin Cherry <Gavin.Cherry@penrith.city>; David Drozd <David.Drozd@penrith.city>  
**Subject:** FW: Meeting with Stephanie from Goodman

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

---

All

Please see below from RMS.

Gavin / David – could you please review and advise if council would be pleased for Goodman to have a 60km/hr work zone instead of amending the line marking and signage.

Regards  
Stephanie



+ Stephanie Partridge  
Development Manager

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Fax: +61 2 9230 7444  
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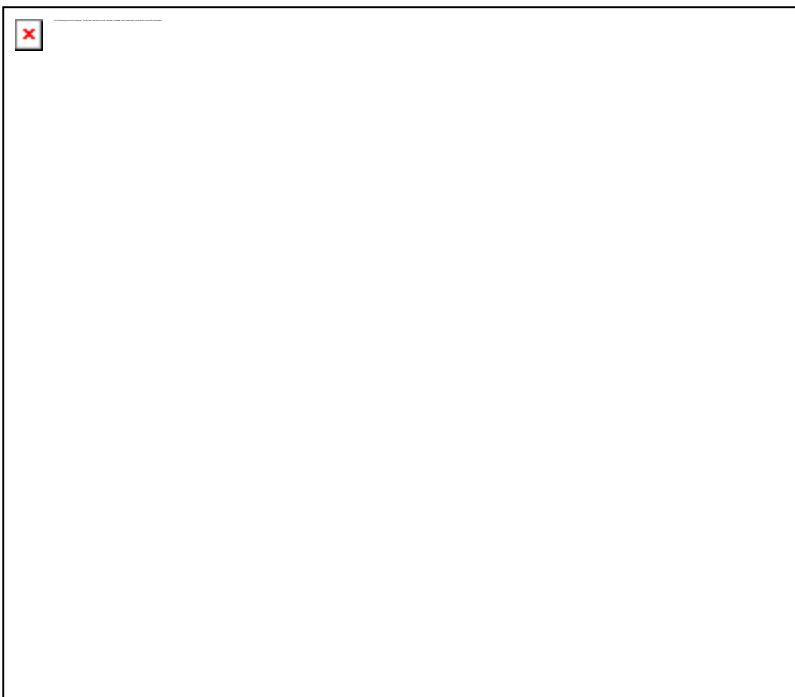
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**Subject:** RE: Meeting with Stephanie from Goodman

Hi Malgy

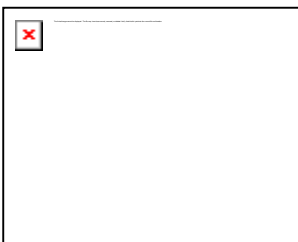
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Many thanks for your assistance.

Regards  
Stephanie



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Development Manager  
Direct: +61 2 9230 7169  
Mobile: +61 410 470 138  
Fax: +61 2 9230 7444  
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**Sent:** Tuesday, 28 April 2020 8:38 PM  
**To:** Stephanie Partridge <[Stephanie.Partridge@goodman.com](mailto:Stephanie.Partridge@goodman.com)>  
**Cc:** Pahee Rathan <[Pahee.RATHAN@transport.nsw.gov.au](mailto:Pahee.RATHAN@transport.nsw.gov.au)>  
**Subject:** FW: Meeting with Stephanie from Goodman

Hi Stephanie,

The email below refers to changing speed signs to 60kph and we are seeking more information regarding this proposal because TfNSW is the responsible roads authority for speed changes across Sydney.

Is there any chance that we could have a teleconference with yourself and any other relevant consultants sometime this week to discuss this matter? We have Microsoft teams set up and are both free 12noon-2pm on Thursday and 11:30am-2pm on Friday.

Regards,

Malgy

Malgy Coman  
Senior Land Use Planner  
Part-time arrangements – Monday, Tuesday and Thursday  
Sydney Roads  
Greater Sydney  
**Transport for NSW**

T 02 8849 2413  
27 Argyle Street Parramatta NSW 2150



---

**From:** Stephanie Partridge [<mailto:Stephanie.Partridge@goodman.com>]  
**Sent:** Monday, 27 April 2020 12:42 PM  
**To:** Rhian Greenup <[rhian.greenup@penrith.city](mailto:rhian.greenup@penrith.city)>; Gavin Cherry <[Gavin.Cherry@penrith.city](mailto:Gavin.Cherry@penrith.city)>; Isaac Mann <[Isaac.Mann@penrith.city](mailto:Isaac.Mann@penrith.city)>; David Drozd <[David.Drozd@penrith.city](mailto:David.Drozd@penrith.city)>  
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**Subject:** RE: Meeting with Stephanie from Goodman



Hi All

Thanks for your time last Tuesday to discuss the proposed use of Aldington & Abbotts Road.

Please see below comments / actions:

- Attached are the construction traffic volumes proposed;
- GMG to discuss with TrfNSW the Road Safety Audit and specifically the item raised at Mamre Road / Abbotts Road intersection – AT&L to resolve with TrfNSW;
- GMG to provide an updated proposal (plans showing proposed upgrade works) to PCC for approval;
- Based on our discussions and the Road Safety Audit, we see the following modifications to the roads required;
  - Ensure there is at least a 6m seal;
  - Ensure at least 1m shoulder both sides (total 8m formation);
  - Modify areas on the road where pooling water was found in RSA;
  - Ensure safe space on shoulder for vehicles attempting to overtake a turning vehicle into the site gate;
  - Change speed signs to 60kph in line with the RSA;
  - Install linemarking generally as noted once the 6m seal is achieved.

In order to ensure these works are done properly, we are undertaking a survey and Geotech investigations which will inform the specifics of the above scope.

These works will take 2-3 weeks to be completed.

Thereafter, final plans will be provided for approval by PCC and TrfNSW.

We believe the CTMP can be finalised and submitted to DPIE on the basis that the above works will be completed prior to Aldington / Abbotts Road being used. The details of the design and scope can be worked through in parallel to the CTMP being approved by DPIE.

Please let me know if you have any anything to add to the above, or any comments regarding process.

Kind regards  
Stephanie



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Development Manager  
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-----Original Appointment-----

**From:** Rhian Greenup <[rhian.greenup@penrith.city](mailto:rhian.greenup@penrith.city)>

**Sent:** Wednesday, 15 April 2020 2:44 PM

**To:** Rhian Greenup; Gavin Cherry; Isaac Mann; David Drozd; Stephanie Partridge

**Cc:** Anthony McLandsborough; Kym Dracopoulos; Tim Lewis; James Laidler; Pahee Rathan

**Subject:** Meeting with Stephanie from Goodman

**When:** Tuesday, 21 April 2020 10:00 AM-11:30 AM (UTC+10:00) Canberra, Melbourne, Sydney.

**Where:**

Meeting with Traffic Engineers regarding Oakdale West

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14 April 2020

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Attn: Stephanie Patridge; Development Manager

**RE: Oakdale West Estate – Stage 2 SSDA (10397) Construction Traffic Impact Assessment**

Dear Stephanie,

I refer to the Oakdale West Estate (OWE), Stage 2 State Significant Development (SSD 10397) and the recent meeting with the Department of Planning, Industry and Environment (DPIE) held on 16 March 2020 (the meeting).

For context, the exhibited Transport Impact Assessment (Ason Group Traffic Impact Assessment, *Oakdale West Estate, State Significant Development Application – Response to Submissions*, Ref: 0129r04v02) proposed that construction vehicles would utilise the Mamre Road / Abbots Road intersection during the morning and afternoon school zone peak periods.

However, during the meeting, it was established that DPIE seeks to undertake further consultation with the schools in relation to the construction access routes and forecast construction traffic volumes in Bakers Lane. In response to school concerns, it is now proposed that the majority of construction traffic shall use Abbots Road / Mamre Road during school peak periods to minimise interaction with local school traffic. It is still intended that the Mamre Road / Bakers Lane intersection shall still be utilised by construction vehicles, outside of school peak periods.

Accordingly, we have now been requested to clarify:

- the number of vehicles proposed to use Bakers Lane, compared to the initial SSD approval, and
- to further outline the volume of vehicles using Mamre Road / Abbots Road access. Outside of the school peak periods.

Regarding the above, this Technical Note (TN) addresses those additional concerns and requests.

## **1 Construction Period**

Based on the advice provided to Ason Group, the use of Mamre Road / Bakers Lane and Mamre Road / Abbots Road intersections will be temporary and limited to the period between April 2020 to the end of November 2020 (i.e. two school terms only). The Western North South Link Road (WNSLR) has a targeted completion date of November 2020 and all construction traffic shall use that link, once available.

## **2 Construction Traffic Management Plan (CTMP)**

This assessment considers the cumulative traffic from the following construction programs and their respective Construction Traffic Management Plans, which have been prepared previously and detail the appropriate management measures to manage the construction traffic within Bakers Lane:

- Stage 2 SSD (Building 2B) construction works (1086r03v9 CTMP\_Building 2B, Kemps Creek),
- OWE infrastructure works (0129r06v20 CTMP\_Oakdale West Estate, Kemps Creek Issue XX), and
- WNSLR construction works (0605r01v14 CTMP\_WNSLR, Erskine Park)

### 3 Cumulative Construction Traffic Estimate

Following submission of the originally exhibited TIA, additional detailed regarding construction works and estimate has become available. As such, the Project Team has provided us with more accurate estimates of the construction traffic volumes for the following construction projects;

- OWE construction works,
- WNSLR construction works, and
- Stage 2 SSD (Building 2B).

As such, **Table 1** provides a comparison of the approved volumes (and the projects which they were based) against the updated and proposed volumes. These proposed volumes are based on the busiest month (November 2020) and against the updated worst case cumulative daily construction traffic volumes.

**Table 1: Maximum Cumulative Construction Traffic Volumes (Two-ways) – November 2020**

	OWE	WNSLR	Building 2B	Cumulative Daily Volumes
Approved	400	260	Not Assessed	660
Proposed	810	420	1,760	2,990
<b>Difference</b>	<b>+410</b>	<b>+160</b>	<b>+1,760</b>	<b>+2,330</b>

From the outset, it should be noted that there shall be no intent for vehicles to utilise Bakers Lane during school peak periods, which includes Monday to Friday 8:00 – 9.30AM and 2.30 – 4:00PM (also including Higher School Certificate exam periods). These restrictions shall not be enforced during school holidays. It is expected that light vehicles and essential rigid trucks (effectively concrete trucks during scheduled ‘pour’ days) shall utilise Abbots Road / Aldington Road during these school peak periods. Heavy Vehicles—other than concrete trucks—are not to arrive to site within these times.

For reference, the definition of a 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 trucks up to 9.6m in length.
- 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.

Although there is an increase in daily volumes between the approved and proposed, the proposed construction hours have also changed as outlined within Table 2. As you can see, there is an increase in construction hours in which the increased construction vehicles are to arrive and depart the site, minimising the amount of additional traffic during peak periods.

**Table 2: Approved vs Proposed Hours of Operation**

	Monday - Friday	Saturday	Sunday & Public Holidays
Approved	7:00am – 6:00pm	8:00am – 1:00pm	No Work
Proposed	3:00am – 10:00pm	3:00am – 10:00pm	3:00am – 10:00pm
<b>Difference</b>	<b>+ 8 hours</b>	<b>+ 14 hours</b>	<b>+ 19 hours</b>

It is important to again re-iterate that the construction works will only be temporary and in accordance with the periods indicated above. Cumulative daily construction movements exhibit their peak load in Bakers Lane during **November 2020**. In this regard, the respective proportion of daily construction traffic volumes are compared against the peak volumes and outlined in the following **Table 3**.

**Table 3: Estimated Construction Traffic Volumes Percentage**

Peak Period	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20
Daily	15%	16%	29%	46%	56%	70%	84%	<b>100%</b>

It is noteworthy reiterate that the targeted opening of the WNSLR is November 2020, and post opening, all construction vehicles will utilise the WNSLR rather than Bakers Lane.

Post completion of the WSLNR, the construction traffic volumes utilise the access via the WNSLR and therefore will not utilise Bakers Lane, ultimately not creating a material impact the operation of the schools within Bakers Lane. It should be noted that OWE – when fully operational – will generate up to 1,108 vehicles per hour, or 9,776 vehicle movements per day. As such, the construction traffic projected after November 2020 will not have a material impact on the surrounding road network—that network being designed for much larger future operational volumes.

#### **4 Traffic Management Measures**

In addition to access restrictions during peak times (as outlined above), the following measures shall be implemented to minimise the impact to the schools, as far as practicable, from construction vehicles using Bakers Lane during the school peak periods:

- All suppliers/haulage contractors to have Vehicle Movement Plans issued at supply agreement stage,
- When placing all orders, dispatch shall be instructed to refrain from organising deliveries during school peak periods and include the notification on the delivery docket provided to the driver, where possible,
- Additional signage to be provided on Bakers Lane prior to the schools, notifying delivery drivers of increased school activity interactions ahead and to use extra caution. Such signage includes long term fixed signs and Variable Message Signage (VMS) boards. There is signage already erected within the site to advise drivers not to leave the site during school peak periods,



- Similarly, additional signage is to be installed along Aldington Road – particularly near crests in the road – outlining an increase in construction vehicles, and the prominence in crests which limits sight visibility to oncoming vehicles ahead.
- Line marking is to be installed along the full length of Aldington Road with centreline and edge-line marking, whilst also including raised reflective pavement markers (RRPM's).
- Tracking loads in/out of each site, which also includes communicating and monitoring access/egress routes accordingly, to ensure that construction volumes are kept within the prescribed limits,
- Any vehicles found to be in breach of the Driver Code of Conduct (to be provided to all drivers prior to arrival to the site) to undergo driver induction on the spot and their manager/dispatch advised; repeat offenders to be prevented from returning to site

We trust the above is of assistance and please contact either the undersigned or Tim Lewis should you have any queries or require further information in relation to the above.

Yours sincerely,



**Traffic Engineer – Ason Group**

Email: [james.laidler@asongroup.com.au](mailto:james.laidler@asongroup.com.au)

# APPENDIX K

## Soil and Water Management Plan

# PROPOSED INDUSTRIAL DEVELOPMENT – LOT 2B - OAKDALE WEST ESTATE

## SOIL & WATER MANAGEMENT PLAN

April 2020 - Revision 2

Prepared for:



Prepared by:

ANDREW LITTLEWOOD

CPESC & Senior Soil Conservationist

## Document Status

Rev No.	Date	Revision Description	Prepared by	Reviewed		Approved	
				Name	Date	Name	Date
0	27/01/2019	Revision 0	A Littlewood				
1	06/03/2020	Revision 1	A. Littlewood				
2	27/04/2020	Revision 2	A. Littlewood				

## Document Authorship Information

Project	Proposed Industrial Development – Lot 2b - Oakdale West Estate
Document	Soil & Water Management Plan
Document Author	Andrew Littlewood – Senior Soil Conservationist
Qualification	Certified Professional in Erosion and Sediment Control (CPESC No. 5988).
Relevant Training	<ul style="list-style-type: none"> <li>SEEC and IECA (Australasia) – ‘Water Management on Construction sites’ &amp; ‘Preparing and Reviewing Plans for Soil and Water Management’ – 2009</li> <li>University of Western Sydney and Hawkesbury Global Ltd - Certificate of Attainment in Soil and Water Management for Urban Development - 2000</li> </ul>
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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### **Appendix A: Erosion & Sediment Control Plan**



# Oakdale West Estate: Lot 2B – Soil and Water Management 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 the Stage 2 Development of Oakdale West Estate (OWE) relating to the development of Lot 2B for warehousing and distribution uses (the Project).

This SWMP is required to support the CEMP and has been prepared to address the requirements of a Development Application - State Significant Development 10397 and the Environmental Impact Statement, January 2020, titled '*Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (MOD 3 SSD 7348) and Stage 2 Development Application (SSD 10397)*' prepared by GHD

### **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 is a 154-hectare tract of land that comprises 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 new DA (SSD 10397) for the Stage 2 Development which involves the development of Lot 2B. The industrial development will entail the construction of Building 2B; a four level (ground + 3) warehouse and one level office building, with associated parking facilities for cars, trucks and motorcycles and associated landscaping.

The EIS's produced for DA SSD 7348 and this DA SSD 10397 have separately assessed the impacts of the project on surface water and soils. The EIS prepared by GHD noted at Section 7.3.1 that; '*The topography of the site is of a rolling ridge and valley nature. The site generally falls from south to north and east to west. The high point of the ridge is approximately the middle portion of the site and close to the southern boundary. The long main ridge runs through the middle portion of the site on a north-south alignment, falling to east, west and north, with several spurs to the east and west.*'

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 Concept Proposal and Stage 1 Development. The EIS prepared by GHD also notes at Section 7.3.1; '*The approved SSD 7348 Concept Proposal and Stage 1 Development would result in a significant change to the levels across the site. The major change to existing ground levels will be the cutting of the major ridge line that runs in a south-north direction on the site. The ground level at the existing high points in the site will be lowered by over ten metres.*'

As a result of the preliminary bulk earthworks, the topography of the site will be significantly altered, from having localised steep gradients to being a slightly graded, level pad with a cut batter on the eastern boundary and a retaining wall on the southern boundary. The overall disturbance footprint of approximately 14.92 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 REF.

### **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 Quanstruct's 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 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 Quanstruct 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 Quanstruct 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, Quanstruct 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 10397 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).

## Oakdale West Estate: Lot 2B – Soil and Water Management Plan

### 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 3-1 Management measures from the EIS relevant to construction soil and water management**

Issue	SSDA Component	Mitigation & Management
General Construction Management	Stage 2 Development	<ul style="list-style-type: none"> <li>A CEMP to be prepared for the OWE Stage 2 Development capturing standard and specific management and mitigation measures as described in the SSDA, EIS and supporting technical documents.</li> </ul>
Soils & Water	Stage 2 Development	<ul style="list-style-type: none"> <li>A SWMP will be prepared for the construction phase of the development</li> <li>A gross pollutant trap (GPT) will be installed within Lot 2B on the final downstream stormwater pit prior to discharging. As these GPT's will be located on-lot as they will be owned and maintained by Goodman. The GPT will capture 90% of Gross Pollutants from Lot 2B as per water sensitive urban design guidelines.</li> <li>all design, documentation, installation and maintenance of sediment and erosion controls will be in accordance with the correct requirements</li> <li>site inspection and maintenance specified in Section 5.2 of the report provided in Appendix I of the EIS</li> <li>sediment basin maintenance, including drainage within 5 days, implementation of flocculation when the 5 day target cannot be met.</li> </ul>
Air Quality and Odour - Construction	Stage 2 Development	<ul style="list-style-type: none"> <li>CEMP to include standard air quality control measures, contingency plans and response procedures and suitable reporting and performance monitoring procedures.</li> <li>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</li> </ul>



## 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 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 Wianamatta Group formation (Bringelly Shale) and alluvium associated with Ropes Creek.*

Section 7.6.1 of EIS for DA SSD 10397 revises the description of the soil profiles encountered over the Project area, described as follows;

*The underlying geology and soils on the site are as follows:*

- *Topsoil – Clay with rootlets and grass surface, depth 0.0 metres*
- *Natural Soil – Clay, depth 0.04-0.5 metres*
- *Bedrock – Sandstone and Shale, depth 0.7-4.0 metres.*

*The potential for acid sulfate soils on the site is low.*

The predominant soil landscape characteristics are described in general terms in both of the EISs prepared for SSD 7348 & SSD 10397, 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.

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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.

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Figure 4.1.2 – Extract map of the occurrence of the 'Blacktown' (bt) soil landscape unit



### 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.”*

Section 7.6.1 of EIS for DA SSD 10397 revisits the hydrology encountered over the Project area, described as follows

*‘Ropes Creek runs along the eastern boundary of the site. The creek is classified as a third order watercourse, requiring the maintenance of an average 30 m, vegetated riparian zone in accordance with NOW guidelines.*

*Existing overland flows on the OWE run either side of a central north-south ridgeline. Flows generated on the eastern side flow into farm dams and Ropes Creek, whilst flows generated on the western side flow first to farm dams on the western and north-western boundaries of the site and ultimately into creeks to the north of Emmaus Catholic College and the Catholic Healthcare facility west 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.

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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.”*

The EIS prepared for DA SSD 10739 at Section 7.6.2 briefly addresses groundwater impacts from the Project area as follows;

*‘Groundwater will not be affected as a result of the proposal’*

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.

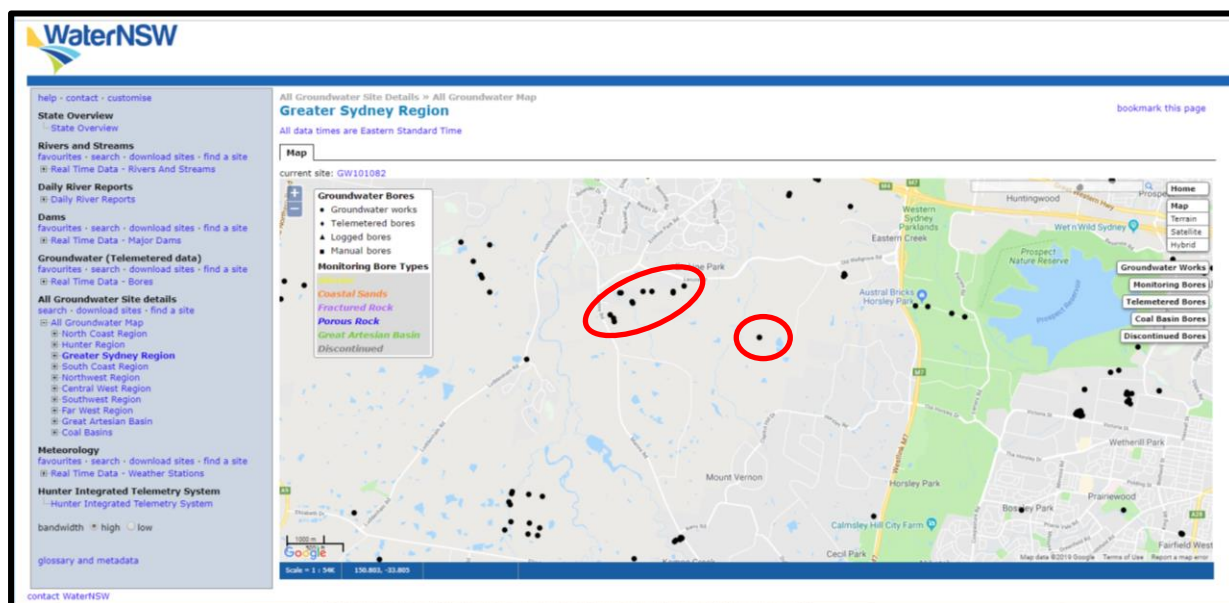
In summary, the assessment indicates that groundwater is not likely to impact on the scope of the Project works.



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Figure 4.4 – 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 4-5 - Summary of rainfall records

Summary of climate records from 1997 - 2019													
Summer		Autumn			Winter			Spring			Summer		Year
Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec		
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

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### 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 85<sup>th</sup> percentile rainfall depth for Blacktown of 32.2mm.

Table 4.6 – Intensity Frequency & Duration Table

<b>Intensity-Frequency-Duration Table</b>							
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) © Australian Government, Bureau of Meteorology

### 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 for DA SSD 10739 states;

*‘Modifications to the Concept Proposal and Stage 1 Development and the Stage 2 Development are located outside the modelled 100 year ARI flood levels and are not anticipated to impact upon flood levels or flood behaviour within the catchment’*

## **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.

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- 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.

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**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
<b>General</b>				
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	Best Practice & EIS S.7.6.3.
SW3	EWMSs may be prepared and implemented to manage soil and water impacts that include but are not limited to: <ul style="list-style-type: none"> <li>• Activities assessed as having high environmental risk;</li> <li>• Activities that impact on environmentally sensitive areas;</li> <li>• Activities that pose a risk to receiving water quality;</li> <li>• Earthworks including temporary stockpiling and disposal of excavated material and protocols for the management of contaminated material;</li> <li>• Work around drainage lines and where construction water may be discharged into natural waterways;</li> <li>• Construction and operation of sediment basins including connecting drainage for the associated catchment area; and drainage works.</li> </ul>	Construction	Project Engineer / Supervisor / Environmental Site Representative	EIS Table 5-4 SEARs reference table
SW4	<ul style="list-style-type: none"> <li>• 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.</li> </ul>	Pre-construction / Construction	Project Manager / Supervisor / Environmental Site Representative	EIS Table 5-4 SEARs reference table
<b>Erosion and sediment control</b>				
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	EIS Table 5-4 SEARs reference table  Managing Urban Stormwater: Soils and Construction Volume 1



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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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW9	Works will be programmed to minimise the extent and duration of unstabilised soil surfaces.	Pre-construction / Construction	Project Manager / Supervisor / Environmental Site Representative	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1

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ID	Measure / Requirement	When to implement	Responsibility	Reference
<b>Stockpiles</b>				
SW14	<p>Stockpiles will be:</p> <ul style="list-style-type: none"> <li>• located in designated stockpile sites, above 10 year flood levels,</li> <li>• located at least 5 m from likely areas of concentrated water flows and drainage lines,</li> <li>• 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,</li> <li>• established so that any slump of the stockpile will not affect erosion and sediment control measures or infringe on specified minimum clearance requirement,</li> <li>• 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.</li> <li>• 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.</li> </ul>	Construction	Project Engineer / Supervisor / Environmental Site Representative	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
<b>Sediment basins</b>				
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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW16	Construction Sediment basins will be constructed in accordance with the procedure and methods detailed in Managing Urban Stormwater: Soils and Construction Volume 1.	Construction	Project Engineer / Supervisor / Environmental Site Representative	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW17	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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW18	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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1

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ID	Measure / Requirement	When to implement	Responsibility	Reference
SW19	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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW20	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	EIS Table 5-4 SEARs reference table & S.7.6.3. Managing Urban Stormwater: Soils and Construction Volume 1
SW21	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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW22	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	EIS Table 5-4 SEARs reference table & S.7.6.3. Managing Urban Stormwater: Soils and Construction Volume 1
SW23	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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW24	A sediment basin management register will be maintained for each sediment basin that records; <ul style="list-style-type: none"> <li>• personnel approving the dewatering activities;</li> <li>• time &amp; date;</li> <li>• water quality test results and estimated volumes for each discharge.</li> </ul>	Construction	Environmental Site Representative / Project Engineer	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
<b>Dewatering</b>				
SW25	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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1

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ID	Measure / Requirement	When to implement	Responsibility	Reference
SW26	<p>Water to be discharged from site will be discharged in accordance with a Site Dewatering Procedure.</p> <p>In accordance with NSW EPA water quality criteria, the water quality parameters for discharge from site discharge points will be:</p> <ul style="list-style-type: none"> <li>• Total Suspended Solids &lt;50mg/L</li> <li>• pH 6.5 - 8.5</li> <li>• Oil &amp; grease – not visible.</li> </ul>	Construction	Environmental Site Representative / Supervisor	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW27	<p>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;</p> <ul style="list-style-type: none"> <li>• dewatering procedure;</li> <li>• date and time for each discharge at each location;</li> <li>• water quality test results for each discharge;</li> <li>• personnel approving the dewatering activities</li> <li>• evidence of discharge monitoring, or risk assessment and mitigation measures used to eliminate the risks of pollution or erosion.</li> </ul>	Pre-construction / Construction	Environmental Site Representative / Project Engineer	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW28	<p>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.</p>	Construction	Environmental Site Representative / Project Engineer / Supervisor	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW29	<p>All dewatering activities will be subject to prior approval from relevant project personnel. The dewatering activities will be monitored to ensure:</p> <ul style="list-style-type: none"> <li>• intake suction devices are positioned to prevent extraction or disturbance of settled sediments,</li> <li>• no erosion is occurring at discharge locations and/or downstream areas,</li> <li>• no inadvertent or intentional controlled discharge of untreated waters occurs.</li> </ul>	Construction	Environmental Site Representative / Supervisor	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
<b>Site stabilisation and restoration</b>				
SW30	<p>Management and procedures for site stabilisation will be in accordance with the primary Erosion and Sediment Control Plan at Appendix A of this SWMP.</p>	Construction	Environment Manager / Project Soil Conservationist	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1

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ID	Measure / Requirement	When to implement	Responsibility	Reference
SW31	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.			EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW32	Restoration of these areas includes; <ul style="list-style-type: none"> <li>• topsoiling of the areas;</li> <li>• seeding, planting, watering and maintenance;</li> <li>• removal of temporary erosion control devices and of accumulated sediments</li> </ul> removal of unused construction materials and waste materials.	Construction / Post construction	Environmental Site Representative / Supervisor	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
<b>Spill prevention and response</b>				
SW33	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	EIS Table 5-4 SEARs reference table
SW34	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	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW35	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	EIS Table 5-4 SEARs reference table
SW36	The ancillary facilities will be managed within the ESCP. The following measures will be included to limit sediment and other contaminations entering receiving waterways: <ul style="list-style-type: none"> <li>• 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</li> <li>• Vehicle movements will be restricted to designated pathways where feasible and appropriate controls will be in place where plant is stored</li> <li>• Areas that will be exposed for extended periods, such as car parks and main access roads, will be stabilised where feasible.</li> </ul>	Contractor	Construction	EIS Table 5-4 SEARs reference table Managing Urban Stormwater: Soils and Construction Volume 1
SW37	All spills and associated environmental incidents are to be reported in accordance with the CEMP.	Construction	Environmental Site Representative / Supervisor	EIS Table 5-4 SEARs reference table



## Oakdale West Estate: Lot 2B – Soil and Water Management Plan

ID	Measure / Requirement	When to implement	Responsibility	Reference
<b>Monitoring and inspections</b>				
SW38	Nominated project personnel will conduct site inspections of erosion and sedimentation controls at least weekly.	Construction	Environmental Site Representative / Supervisor	EIS Table 5-4 SEARs reference table & S.7.6.3. Managing Urban Stormwater: Soils and Construction Volume 1
SW39	All disturbed areas, revegetated/stabilised areas and all permanent and temporary erosion and sediment control works will be inspected: <ul style="list-style-type: none"> <li>• At least weekly</li> <li>• Immediately before extended site shut down</li> <li>• At the conclusion of all rainfall events exceeding 10mm and during periods of prolonged rainfall as soon as practicable.</li> </ul>	Construction	Environmental Site Representative / Supervisor	EIS Table 5-4 SEARs reference table & S.7.6.3. Managing Urban Stormwater: Soils and Construction Volume 1
SW40	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; <ul style="list-style-type: none"> <li>• High: within 24 hours of inspection</li> <li>• Medium: within 3 working days of inspection; and</li> <li>• Low: within 3 working days of inspection.</li> </ul>	Construction	Environmental Site Representative / Supervisor	EIS Table 5-4 SEARs reference table & S.7.6.3. Managing Urban Stormwater: Soils and Construction Volume 1
SW41	Monitoring of rainfall events (with observations of rainfall in millilitres) will be undertaken daily during normal work days.	Construction	Environmental Site Representative	EIS Table 5-4 SEARs reference table & S.7.6.3. Managing Urban Stormwater: Soils and Construction Volume 1

## **7 COMPLIANCE MANAGEMENT**

### **7.1 Roles and responsibilities**

The Quanstruct 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 eg 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.

## Oakdale West Estate: Lot 2B – Soil and Water Management Plan

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



# PROPOSED INDUSTRIAL DEVELOPMENT – LOT 2B - OAKDALE WEST ESTATE

## EROSION AND SEDIMENT CONTROL PLAN

April 2020 - Revision 2

Prepared for:



Prepared by:

ANDREW LITTLEWOOD

CPESC & Senior Soil Conservationist

## Document Status

Rev No.	Date	Revision Description	Prepared by	Reviewed		Approved	
				Name	Date	Name	Date
0	27/01/2019	Revision 0	A Littlewood				
1	06/03/2020	Revision 1	A. Littlewood				
2	27/04/2020	Revision 2	A. Littlewood				

## Document Authorship Information

Project	Proposed Industrial Development – Lot 2b - Oakdale West Estate
Document	Soil & Water Management Plan
Document Author	Andrew Littlewood – Senior Soil Conservationist
Qualification	Certified Professional in Erosion and Sediment Control (CPESC No. 5988).
Relevant Training	<ul style="list-style-type: none"> <li>SEEC and IECA (Australasia) – ‘Water Management on Construction sites’ &amp; ‘Preparing and Reviewing Plans for Soil and Water Management’ – 2009</li> <li>University of Western Sydney and Hawkesbury Global Ltd - Certificate of Attainment in Soil and Water Management for Urban Development - 2000</li> </ul>
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: Lot 2B – Erosion and Sediment Control Plan

## **1 Introduction**

This Primary Erosion and Sediment Control Plan (ESCP) is a sub-plan that has been developed 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 of ESCP**

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 of ESCP**

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 of ESCP**

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**

### **5.1 Performance Criteria**

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,

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

- 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 the & SSD 10397 Development Consent.

**Table 5.2**

SSD 7348 Development Consent Condition	SSD 10397 Development Consent Condition	ESCP Section & Page
D80(a) – ' <i>Erosion and Sediment Control Plan must.... be prepared by a suitably qualified and experienced person(s);</i> '	B33(a) – ' <i>Erosion and Sediment Control Plan must.... be prepared by a suitably qualified and experienced person(s);</i> '	See ' <i>Document Authorship Information</i> ' – Page 2
D80(b) – ' <i>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.</i> '	B33(b) – ' <i>Erosion and Sediment Control Plan must be generally consistent with the Erosion and Sediment Control Plan(s) for the OWE;</i> '	See Section 3 - ' <i>Scope of ESCP</i> ' – 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) – ' <i>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;</i> '	B33(c) - ' <i>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;</i> '	<ul style="list-style-type: none"> <li>• See Section 8 – '<i>Erosion Control Measures and Sediment Control Methods</i>' – Table 8 – Page 10, and;</li> <li>• See Section 9 – '<i>Soil &amp; Water Management Activities &amp; Controls</i>' Table 9 – Page 13</li> </ul>
D80(d) – ' <i>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.</i> '	B33(d) – ' <i>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.</i> '	<ul style="list-style-type: none"> <li>• See Section 7.6 '<i>Erosion and Sediment Control Training for Site Personnel</i>' – Page 8, and;</li> <li>• See Section 7.7 '<i>Inspection and Maintenance</i>' – Page 8</li> </ul>



## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

### **6. Guidelines, Standards and Procedures**

The following table details the relevant Guidelines, Standards and Procedures applicable to the Project.

**Table 6**

<b>Name of Document/Publication</b>	<b>Author</b>	<b>Published</b>
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, 4 <sup>th</sup> 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.

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

- 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 runoff 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.
- Implementation of progressive erosion methods & techniques throughout various work stages.

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

- 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.

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

### **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

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

- 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**

<b>Erosion Control – Raindrop Impact</b>	
Situation	Control measure or method
Soil surface protection - Vegetation	<ul style="list-style-type: none"> <li>• Temporary vegetation (cover crop only)</li> <li>• Permanent vegetation – introduced (exotic) pasture species or native (endemic) species</li> </ul>
Soil surface protection - Batter protection	<ul style="list-style-type: none"> <li>• Organic rolled erosion control products (RECP's) such as jute mesh, jute mat, coir fibre blankets</li> <li>• Non-organic RECP's such as non-woven geotextile membrane or heavy grade plastic sheeting.</li> <li>• Mulched, site generated vegetation</li> </ul>
Soil surface protection - Mulching	<ul style="list-style-type: none"> <li>• Hydromulch or hydraulic bonded-fibre matrix</li> <li>• Straw mulching with bitumen tack</li> <li>• Mulched, site generated vegetation</li> <li>• Brush-matting</li> <li>• Rock or gravel mulch</li> </ul>
Soil surface protection - Surface roughening	<ul style="list-style-type: none"> <li>• Roughening dormant areas parallel to contour</li> <li>• Contour ripping or scarifying</li> <li>• Machinery 'track walking' perpendicular to the contour</li> </ul>
Soil surface protection - geobinders	<ul style="list-style-type: none"> <li>• Organic tackifiers</li> <li>• Co-polymer emulsions</li> <li>• Bitumen emulsion</li> <li>• Cementitious products</li> </ul>

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<b>Erosion control - Concentrated Water Flow</b>	
Situation	Control measure or method
Up-slope diversions	<ul style="list-style-type: none"> <li>• Excavated channel-type bank</li> <li>• Back push-type bank or windrow</li> <li>• Catch drains</li> <li>• Batter lip berm</li> </ul>
Mid-slope diversions	<ul style="list-style-type: none"> <li>• Berms and benches</li> <li>• Temporary diversions (at cut/fill line)</li> <li>• Cross banks</li> </ul>
Soft armour channels	<ul style="list-style-type: none"> <li>• Trapezoidal or parabolic shape design drain cross sections</li> <li>• Organic rolled erosion control products (RECP's) such as jute mesh, jute mat, coir fibre blankets</li> <li>• Non-organic RECP's such as non-woven geotextile membrane or heavy grade plastic sheeting</li> <li>• Organic tackifiers &amp; co-polymer emulsions</li> <li>• Bitumen emulsion</li> <li>• Hydro mulch</li> <li>• Standard or reinforced turf</li> </ul>
Hard armour channels	<ul style="list-style-type: none"> <li>• Loose rock – hard quarry rock or reclaimed river rock</li> <li>• Rock-filled wire mattresses</li> <li>• Grouted rock</li> <li>• Cast in-situ concrete</li> <li>• Underlays utilising heavy grade plastic lining or geotextile lining</li> </ul>
In-stream works	<ul style="list-style-type: none"> <li>• Temporary coffer dams and control bunds</li> <li>• Temporary lined channels</li> <li>• Stabilised working platforms</li> </ul>
Check dams	<ul style="list-style-type: none"> <li>• Stacked rock</li> <li>• Sandbags and aggregate filter bags</li> <li>• Geotextile covered straw bales</li> <li>• Coir logs</li> </ul>
Batter drainage	<ul style="list-style-type: none"> <li>• Geotextile lined or heavy grade plastic chutes</li> <li>• Pipes and Half pipes</li> <li>• Loose-rock rip rap</li> <li>• Concrete (pre-cast or on-site)</li> <li>• Rock-filled wire mattresses</li> </ul>



## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

Situation	Control measure or method
Grade control structures and flumes	<ul style="list-style-type: none"> <li>• Geotextile lined or heavy grade plastic chutes</li> <li>• Pipes and Half pipes</li> <li>• Concrete chutes</li> <li>• Loose-rock rip rap</li> <li>• Gully pits and field inlets</li> <li>• Sandbag drop structures</li> <li>• Rock-filled wire gabions and mattress structures</li> </ul>
Outlet dissipation structures	<ul style="list-style-type: none"> <li>• Loose-rock rip-rap apron diffusers</li> <li>• Rock-filled wire mattresses</li> <li>• Pinned geotextile aprons</li> <li>• Level spreaders</li> </ul>
Revetments and retaining walls	<ul style="list-style-type: none"> <li>• Rip rap</li> <li>• Rock-filled wire gabions and mattresses</li> </ul>
<b>Sediment control - Sheet Flows</b>	
Vegetative filters	<ul style="list-style-type: none"> <li>• Stripped topsoil and surface vegetation windrowed parallel to the contour</li> <li>• Compacted mulch berms with geotextile lined spillways</li> <li>• Designated &amp; controlled vegetated filter areas within the Project boundaries</li> <li>• Turf strips</li> </ul>
Sediment barriers/filters	<ul style="list-style-type: none"> <li>• Sediment fencing</li> <li>• Topsoil berms stabilised with vegetation or geotextile with filter outlets at intervals</li> <li>• Compacted mulch berms and sediment traps with geotextile lined spillways</li> <li>• Excavated and geotextile lined sediment traps</li> <li>• Geotextile covered rock or gravel windrows</li> <li>• Coir logs</li> </ul>
Site exit points	<ul style="list-style-type: none"> <li>• Shaker grids with paved or rock aprons and sediment sumps</li> <li>• Wheel wash equipment and designated/controlled areas</li> </ul>
<b>Sediment control - Concentrated Flows</b>	
Sediment curtains / turbidity barriers	<ul style="list-style-type: none"> <li>• Geotextile turbidity curtain &amp; floating boom</li> <li>• Sediment fence</li> <li>• Temporary coffer dams</li> </ul>
Sediment traps	<ul style="list-style-type: none"> <li>• Sediment basins</li> <li>• Stacked rock with geotextile</li> <li>• Excavated and geotextile lined sediment traps</li> <li>• Straw bale or sand bag structures</li> <li>• Gully pit, field inlet and kerb inlet traps</li> </ul>

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

### 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**

<b>Planning, permits &amp; personnel</b>		
<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
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 ' <i>Soils and Construction: Managing Urban Stormwater</i> ' 4 <sup>th</sup> 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

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
Catchment risk assessments are to be undertaken for the implementation of staging for catchment clearing to ensure adequate resources are available to implement controls.	Supervisor / Environmental Site Representative	Site establishment
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
<b>Clearing, site establishment, topsoil stripping &amp; stockpiling</b>		
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, windrowed soil, 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 long-term soil stockpile locations are to be located 5 metres away from major drainage lines and from any waterway. 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

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
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
Subgrade excavations and engineered fill formations at risk of temporary inundation during rain events may be stabilised with moisture-repelling soil binders.	Supervisor / Environmental Site Representative	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

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
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
<b>Drainage and water management</b>		
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: <ul style="list-style-type: none"> <li>• Total suspended solids (TSS) – less than 50 mg/L</li> <li>• pH – 6.5 to 8.5</li> <li>• oil and grease – not visible and less than 10 mg/L</li> </ul>	Supervisor / Environmental Site Representative	Duration

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
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
<b>Sediment Controls</b>		
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, or compacted mulch bunds, 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 60% 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



## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

<b>Soil Contamination</b>		
<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
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 ' <i>Waste Classification Guidelines: Parts 1 and 2</i> (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
<b>Soil &amp; Water pollution control</b>		
All waste will be handled, stored and disposed of in accordance with the ' <i>Waste Classification Guidelines: Parts 1 and 2</i> (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

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
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

## Oakdale West Estate: Lot 2B – Erosion and Sediment Control Plan

<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
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
<b>Stabilisation</b>		
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 Lot 2B – Industrial Development
Construction duration	<12 months earthworks – 85 <sup>th</sup> 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.
Location	Oakdale West Estate: Lot 2B – Industrial Development
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)

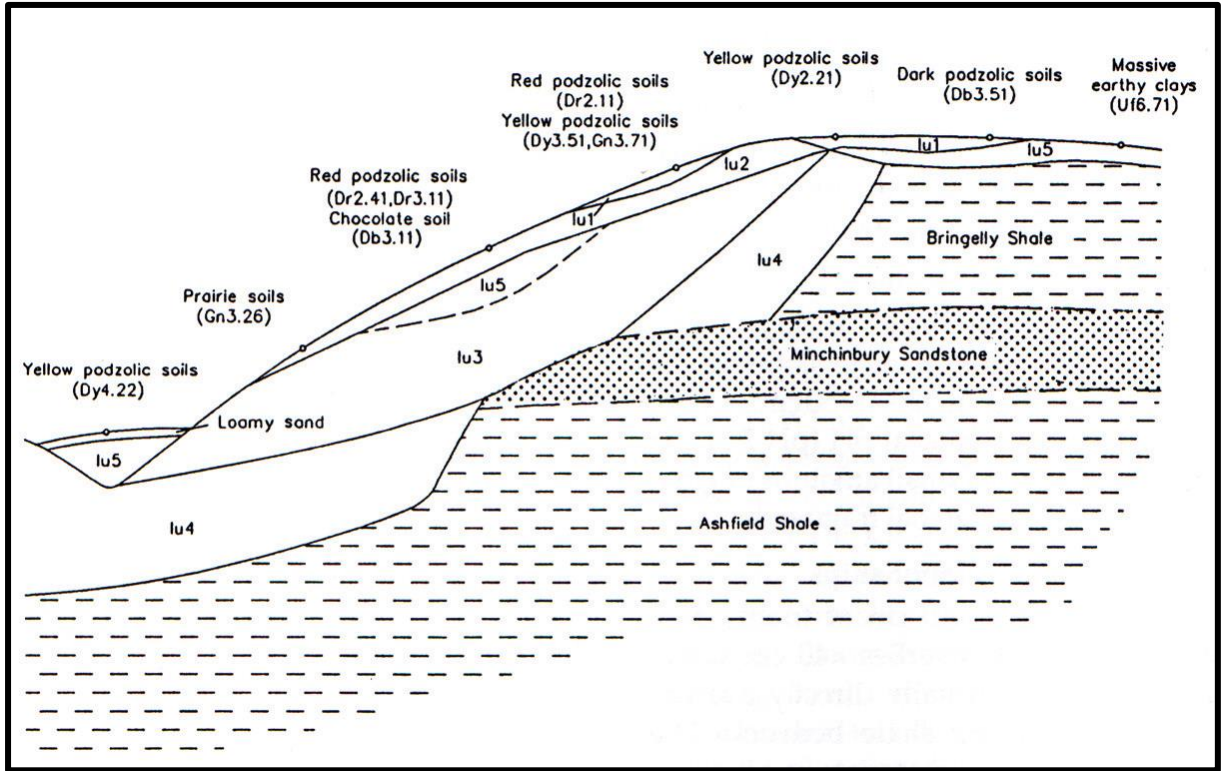
**Site Characteristics Table & Revised Universal Soil Loss Equation (Rusle) Data**

Location	Oakdale West – Industrial Development
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 $R = 164.74(1.1177)^{0.6444} S^{0.6444}$ 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)

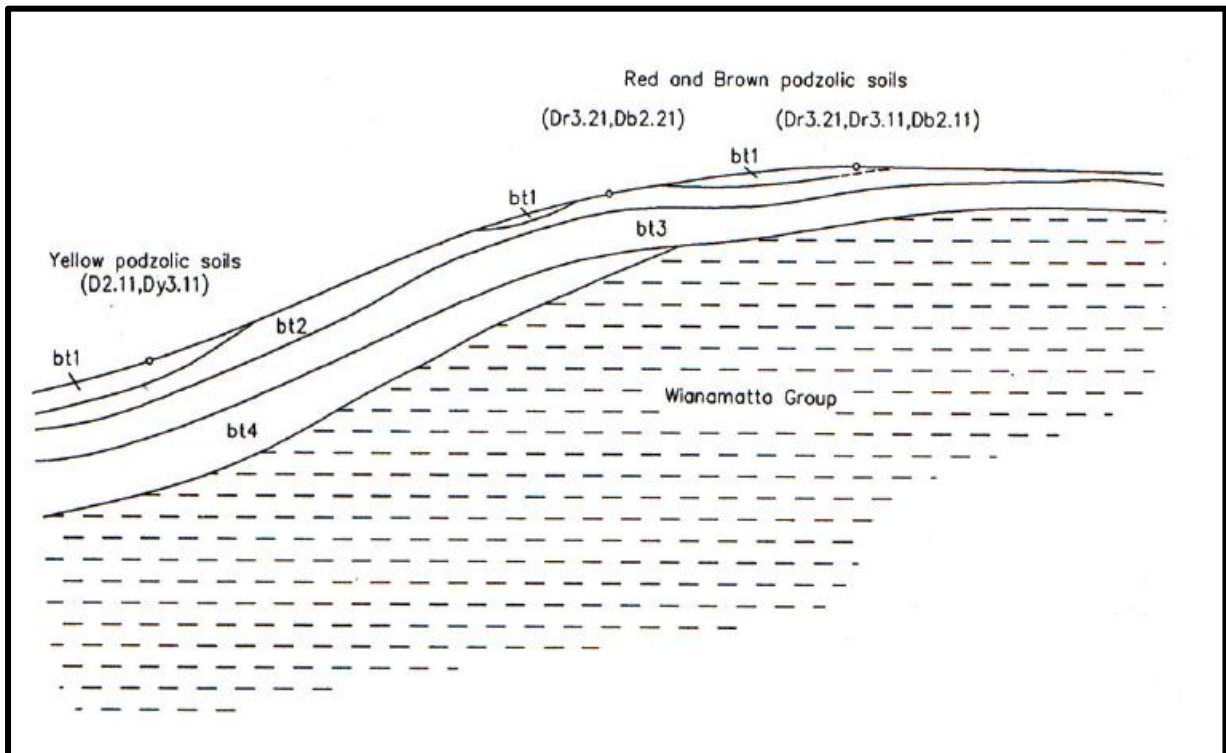


## Typical Soil Profile diagrams

### 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 - Lot 2B

Site Location:

Precinct:

2

Description of Site: Lot 2B Construction Area

Site area	Sub-catchments						Remarks
	1%/80	2%/80	1%/85	2%/85			
Total catchment area (ha)	14.92	14.92	14.92	14.92			
Disturbed catchment area (ha)	14.92	14.92	14.92	14.92			

#### 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)							E.g. enter 10 for dispersion of 10%
Dispersion percentage							See Section 6.3.3(e). Auto-calculated
% of whole soil dispersible							Automatic calculation from above
Soil Texture Group	D	D	D	D			

#### 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	0.38			RUSLE LS factor calculated for a high rill/interill ratio.
Slope length (m)	80	80	80	80			
Slope gradient (%)	1	2	1	2			
Lengthgradient (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	445			
Soil Loss Class	1	1	1	4			See Section 4.4.2(b)
Soil loss (m <sup>3</sup> /ha/yr)	16	34	16	342			
Sediment basin storage volume, m <sup>3</sup>	41	87	41	867			See Sections 6.3.4(f) 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:

$$V = 10 \times C_v \times A \times R_{x\text{-day}, y\text{-tile}} \text{ (m}^3\text{)}$$

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

$R_{x\text{-day}, y\text{-tile}}$  = 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	$C_v$	$R_{x\text{-day}, y\text{-tile}}$	Total catchment area (ha)	Settling zone volume (m <sup>3</sup> )	Sediment storage volume (m <sup>3</sup> )	Total basin volume (m <sup>3</sup> )
1%/80	0.51	24.6	14.92	1871.8632	41	1912.8632
2%/80	0.51	24.6	14.92	1871.8632	87	1958.8632
1%/85	0.51	32.2	14.92	2450.1624	41	2491.1624
2%/85	0.51	32.2	14.92	2450.1624	867	3317.1624

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
<b>Planning</b>		
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
<b>Training and Awareness</b>		
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 <ul style="list-style-type: none"> <li>• Construction of Sediment Basins</li> <li>• Preliminary post-rainfall inspections</li> <li>• Testing and recording</li> <li>• Treatment methods and recording</li> <li>• Details of the Water Discharge Permit</li> <li>• Dewatering requirements, methods and recording</li> <li>• Maintenance requirements, methods and recording</li> <li>• Storage, Handling and Application of Flocculants</li> </ul>	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
<b>Construction of Sediment Basins</b>		
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: <ul style="list-style-type: none"> <li>• 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.</li> <li>• Impervious clay to be used where required in construction of the internal basin invert and embankments.</li> <li>• Inlet and outlet structures will be appropriately designed to cater for the nominated rainfall event.</li> <li>• Markers will be present to indicate sediment storage volume and to ensure adequate capacity levels are available.</li> </ul>	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

<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
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
<b>Water Quality Testing, Treatment &amp; Criteria for Discharge</b>		
Captured water to be discharged from sediment basins must meet the following criteria: <ul style="list-style-type: none"> <li>• pH between 6.5 – 8.5</li> <li>• TSS &lt; 50mg/L ; and</li> <li>• Oil and grease &lt; 10mg/L (and no visible trace).</li> </ul>	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
<b>Water Treatment</b>		
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
<p>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:</p> <ul style="list-style-type: none"> <li>• pH between 6.5 – 8.5</li> <li>• TSS &lt; 50mg/L ; and</li> <li>• Oil and grease &lt; 10mg/L (and no visible trace).</li> </ul> <p>Treatment should commence as soon as practical following cessation of a rain to allow enough time for settlement of flocculants.</p>	Supervisor / Environmental Site Representative	Duration
<p>Records of water quality management must be maintained and the required records include:</p> <ul style="list-style-type: none"> <li>• The date(s) on which the sample was taken;</li> <li>• The time(s) at which the sample was collected;</li> <li>• The point at which the sample was taken; and</li> <li>• The name of the person who collected the sample.</li> </ul>	Supervisor / Environmental Site Representative	Duration
<p><b>pH</b></p> <p>Treatment should be undertaken as follows:</p> <ul style="list-style-type: none"> <li>• Test basin water with a suitable pH meter. No action is required if the pH reading is between 6.5 and 8.5</li> <li>• 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</li> <li>• Determine volume of water to be treated in the sediment basin.</li> <li>• 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.</li> <li>• 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.</li> <li>• Add the required amount of lime or acid to the basin and mix the water in the sediment basin well</li> <li>• Treat for pH prior to T.S.S.</li> </ul>	Supervisor / Environmental Site Representative	Duration
<p><b>Total Suspended Solids</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• When the comparative NTU readings indicate T.S.S. levels are &lt;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.</li> <li>• No further treatment action is required if T.S.S. results are &lt;50mg/l.</li> </ul>	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
<p><b><u>Total Suspended Solids</u></b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• When the comparative NTU readings indicate T.S.S. levels are &lt;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.</li> <li>• No further treatment action is required if T.S.S. results are &lt;50mg/l.</li> <li>• If basins require flocculation (e.g. T.S.S. &gt;50mg/l), gypsum is to be utilised at the manufacturers recommended dosage initially, then at an acceptable rate should more flocculant be required.</li> <li>• Basins should be monitored daily after flocculation until desired TSS is achieved and to assist in determination of optimal dosage levels.</li> </ul> <p>Methods of application to include:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• When spraying flocculants the mixture should hit the water at between 10 to 20 degrees to increase surface areas exposure to the water column.</li> <li>• When using liquid gypsum, the general recommended dosage is 40L/megalitre</li> <li>• 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.</li> </ul> <p>The process outlined may need to be repeated if acceptable water quality is not achieved initially.</p> <p><b><u>Oil and Grease</u></b></p> <ul style="list-style-type: none"> <li>• Examine surface of water for evidence (e.g. sheen, discoloration).</li> <li>• No action if no visual contamination.</li> <li>• Oil absorbent material to be spread if there is contamination (e.g. cell-u-sorb). Leave basins to compensate for 24 to 48 hours.</li> </ul>	<p>Supervisor / Environmental Site Representative</p>	<p>Duration</p>

Environmental Management Controls	Person Responsible	Timing / Frequency
<p><b>Oil and Grease</b></p> <ul style="list-style-type: none"> <li>• Examine surface of water for evidence (e.g. sheen, discoloration).</li> <li>• No action if no visual contamination.</li> <li>• Oil absorbent material to be spread if there is contamination (e.g. cell-u-sorb). Leave basins to compensate for 24 to 48 hours.</li> </ul>	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
<b>Discharging Water</b>		
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 <u>dewatered by pump</u> , 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 <u>pumps</u> 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
<b>Maintenance</b>		
<p>Maintenance of the sediment basins will be ongoing for the duration of the Project and will comprise the following:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Sediment removed from basins may be reused on site by incorporating into spoil.</li> <li>• 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.</li> <li>• Maintenance inspections will be undertaken and the results incorporated into the Weekly Environmental Inspection Checklist.</li> </ul>	Supervisor / Environmental Site Representative	Duration
<p>The stormwater capacity of sediment basins will be reinstated within 5 days of the cessation of a rainfall event that causes runoff to occur</p>	Supervisor / Environmental Site Representative	Duration
<b>Storage and Handling of Flocculants</b>		
<p>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.</p>	Supervisor / Environmental Site Representative	Duration
<p>All treatment chemicals particularly acids and basics will be stored in appropriately bunded and covered locations that are locked to prevent unauthorised access.</p>	Supervisor / Environmental Site Representative	Duration
<p>All chemicals on site will be stored with MSDSs for ease of reference in the event of a spill or irritation/injury to handlers.</p>	Supervisor / Environmental Site Representative	Duration
<p>Requirements of the Material Safety Data Sheets (MSDSs) will be met to ensure compatible storage with other chemicals to ensure safety.</p>	Supervisor / Environmental Site Representative	Duration
<b>Monitoring and Record Keeping</b>		
<p>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:</p> <ul style="list-style-type: none"> <li>• Water Storage capacity and water quality treatment requirements prior to discharge</li> <li>• Following treatment and discharge from the sediment basin the sediment storage capacity and requirement for clean out will be assessed.</li> </ul>	Supervisor / Environmental Site Representative	Duration
<p>The results of all inspections, including inspection reports will be retained in the site environmental inspection register</p>	Supervisor / Environmental Site Representative	Duration



<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
<p>All discharges will be recorded on a discharge permit which will include:</p> <ul style="list-style-type: none"> <li>• Volume to be discharged</li> <li>• Treatment details (e.g. Coagulant/ flocculant used, dosage, duration and treatment date)</li> <li>• Water quality monitoring results (including date and time of testing)</li> <li>• Discharge water quality results</li> <li>• Date and time of discharge</li> </ul>	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
<b>Decommissioning Construction Sediment Basins</b>		
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
<p>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:</p> <ul style="list-style-type: none"> <li>• Removing all redundant basin equipment such as basin markers, siphons, spillway linings, etc.</li> <li>• Spreading and compacting the embankment material in the basin area</li> <li>• Disturbed ground will be compacted to at least the relative density of the material in the ground adjacent to it.</li> </ul>	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
<b>Planning</b>		
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
<b>Training and Awareness</b>		
Training & instruction of site personnel will be the responsibility of the Environment Manager/ Environmental Site Representative.	Environmental Site Representative	Site Establishment / Duration
<p>Training sessions will be conducted with Supervisors, Foreman, Environmental Work Crew and relevant personnel. The training will address</p> <ul style="list-style-type: none"> <li>Weather forecast monitoring procedures and interpretation of forecasting by BOM and other sources</li> <li>Site erosion and sediment control status and high-risk areas</li> <li>Roles and responsibilities for wet weather preparation</li> <li>Temporary measure selection for augmentation or additional ERSED measures</li> <li>Pre &amp; post-rainfall inspections and recording</li> <li>Dewatering requirements, methods and recording</li> <li>Identification of stabilisation and rectification works required.</li> </ul>	Supervisor / Environmental Site Representative	Site Establishment / Duration
<b>Identification of significant rainfall events</b>		
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
<b>Wet Weather Management Procedures</b>		
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
<b>Wet Weather Management Procedures</b>		
<p>The high-risk work areas that are identified will be managed by;</p> <ul style="list-style-type: none"> <li>Completion and temporary/permanent stabilisation of the high-risk work areas where time &amp; resource constraints allow, prior to the onset of the potential rainfall event.</li> <li>Re-allocating resources from low risk activities to assist with completion of high risk works prior to the onset of a rainfall event.</li> <li>Implementation of erosion controls in high risk areas to minimise sediment control requirements. Erosion controls will be employed such as;</li> </ul>	Project Manager / Senior Engineer / Supervisors / Environmental Site Representative	Duration



<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
<ul style="list-style-type: none"> <li>○ temporary geotextile linings or soil binders will be installed around culverts, scour protection works and drain junctions,</li> <li>○ 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.</li> </ul>		
<p>The site sediment controls and sediment basins are to be inspected and any necessary rectification works undertaken such as;</p> <ul style="list-style-type: none"> <li>• Sediment basins are to be managed in accordance with Sediment Basin Management Procedure to regain the maximum runoff capacity parameters, where possible,</li> <li>• Sediment traps and filters to be desilted where more than 60% storage capacity is exceeded,</li> <li>• Spillways and discharge points from sediment traps to be inspected and reinstated as required.</li> <li>• Sediment fences, mulch bunds, earth berms to be inspected and repairs or reinstatement implemented as required.</li> </ul>	Supervisor / Environmental Site Representative	Duration
<p>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.</p>	Supervisor / Environmental Site Representative	Duration
<p>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.</p>	Supervisor / Environmental Site Representative	Duration
<b>Post-Rainfall/Storm Procedure</b>		
<p>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.</p>	Supervisor / Environmental Site Representative	Duration
<p>Records detailing the necessary works to reinstate the controls will be conducted in accordance with Section 7.7 of this ESCP.</p>	Supervisor / Environmental Site Representative	Duration
<p>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.</p>	Supervisor / Environmental Site Representative	Duration
<b>Environmental Management Controls</b>	<b>Person Responsible</b>	<b>Timing / Frequency</b>
<p>High risk work areas that are inundated will be prioritised for dewatering by;</p> <ul style="list-style-type: none"> <li>• Dewatering to a sediment basin where sufficient capacity is available,</li> <li>• Flocculated in-situ and discharged at a licensed discharge point when EPL water quality parameters are attained,</li> <li>• Dewatered by water cart and utilised for construction purposes.</li> </ul>	Supervisor / Environmental Site Representative	Duration
<p>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.</p>	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 - 4<sup>th</sup> 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**


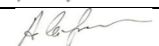
29. Excavation of sub-soils to be inspected and monitored as works proceeds, to identify potential contamination. Any potentially contaminated soils to be stripped or excavated separately and transported directly to the designated stockpile, treatment area or licensed waste facility.
30. Potentially 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.

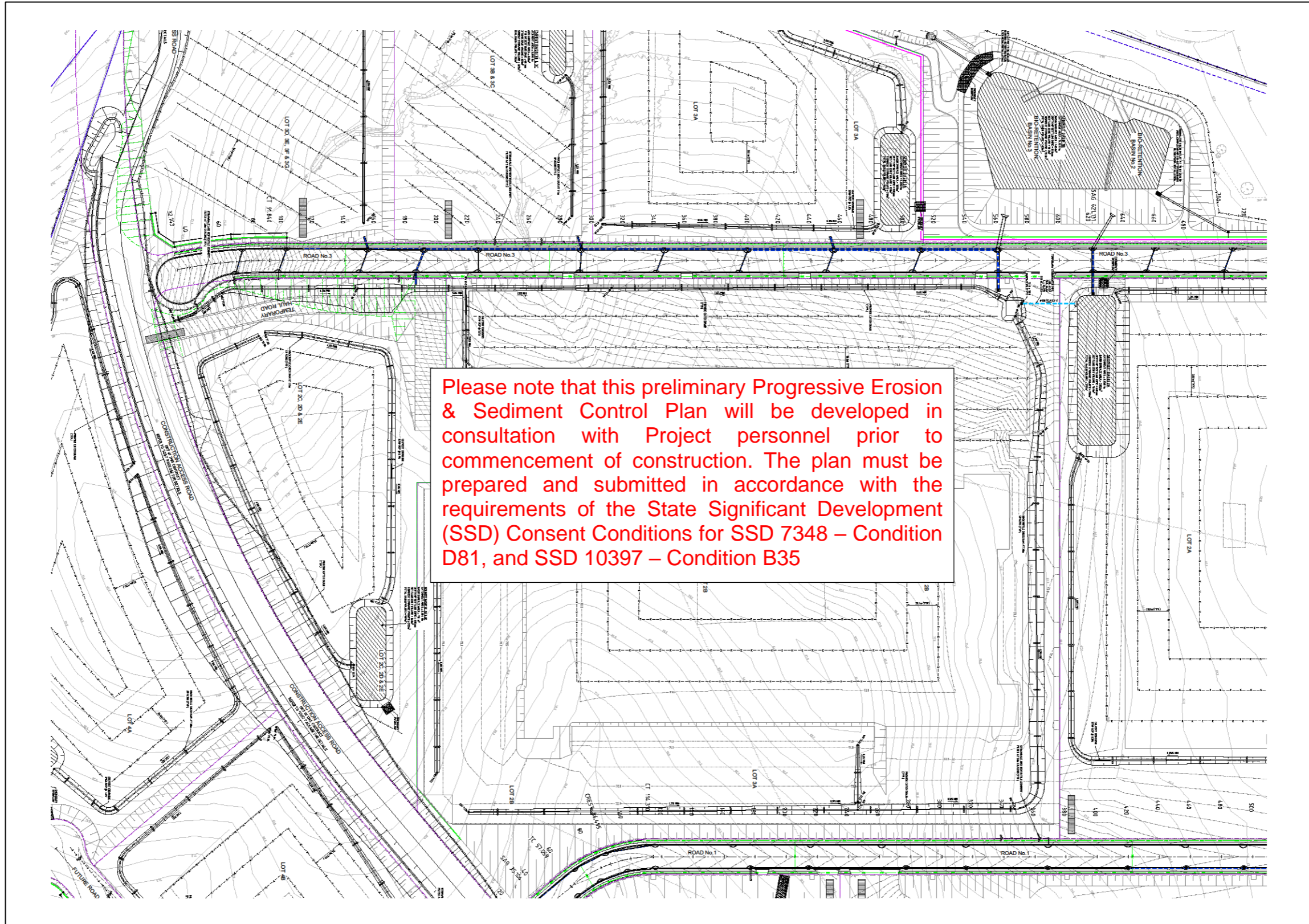
**Monitoring & Reporting and Inspection & Maintenance**






















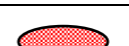


32. Inspections of erosion and sediment controls will occur following rainfall events >10mm (daily on work days or as soon as practical during site shutdown periods), with any necessary repairs implemented as soon as possible.
33. Relevant checklists and records to be maintained noting details such as 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	08/02/2020			
02	A. Littlewood	06/03/2020			



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**

- Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
- Construct on the contour as low, flat, elongated mounds.
- Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
- 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.
- 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**

- Remove any rocks, clogs, sticks or grass from the ground surface before laying the matting.
- Spread topsoil to at least 75 mm depth.
- Where appropriate, complete fertilising and seeding on a properly prepared seedbed (Standard Drawing 7-1) before laying the matting.
- Ensure the fabric can be continuously in contact with the soil by grading the surface carefully first.
- Lay the matting in "hinge-fashion" with the ends of each upstream roll overlapping the next roll downslope.
- Ensure sufficient staples are used to maintain a good contact between the soil and the matting.

**RECP : SHEET FLOW** SD 5-2

**Construction Notes**

- Remove any rocks, clogs, sticks or grass from the surface before laying matting.
- Ensure that topsoil is at least 75 mm deep.
- Complete fertilising and seeding before laying the matting.
- Ensure fabric will be continuously in contact with the soil by grading the surface carefully first.
- Lay the fabric in "hinge-fashion", with the end of each upstream roll overlapping those downstream. Ensure each roll is anchored properly at its upslope end (Standard Drawing 5-7b).
- 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.
- Divert water from the structure until vegetation is stabilised properly.

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

**Construction Notes**

- 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.
- 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.
- Normally, their maximum height should not exceed 500 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
- Space the dams so the top of the upstream dam is level with the spillway of the next downstream dam.

**ROCK CHECK DAM** SD 5-4

**Construction Notes**

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

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

**Construction Notes**

- Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent.
- Avoid removing trees and shrubs if possible - work around them.
- Ensure the structures are free of projections or other irregularities that could impede water flow.
- Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
- Ensure the banks are properly compacted to prevent failure.
- Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
- Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
- Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
- 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

**Construction Notes**

- Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent.
- Avoid removing trees and shrubs if possible - work around them.
- Ensure the structures are free of projections or other irregularities that could impede water flow.
- Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
- Ensure the banks are properly compacted to prevent failure.
- Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
- Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
- Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
- 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 (ONSITE & OFFSITE COMBINED)** N.T.S.

**Construction Notes**

- CONSTRUCT WITH GRADIENT OF 1% TO 5%.
- AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
- DRAINS TO BE CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED.
- EARTH BANK TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
- PERMANENT OR TEMPORARY STABILISATION OF THE EARTH BANK TO BE COMPLETED WITHIN 10 DAYS OF CONSTRUCTION.
- ALL OUTLETS FROM DISTURBED LANDS ARE TO BE FED INTO A SEDIMENT BASIN OR SIMILAR.
- 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.
- COMPACT BANK WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN FIVE DAYS.
- EARTH BANK TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.

**GENERAL CONSTRUCTION NOTES**

# Standard Drawings

**Construction Notes**

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

**STABILISED SITE ACCESS SD 6-14**

**Construction Notes**

- 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.
- Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
- 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.
- 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.
- Join sections of fabric at a support post with a 150-mm overlap.
- Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

**SEDIMENT FENCE SD 6-18**

**Construction Notes**

- 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.
- 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.
- 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**

- Install the fence to the height specified in the ESCP/SWMP.
- Cut a channel 200 mm deep along the fence line.
- Place wire and tight resistant, open-weave polymer mesh with 40 percent porosity on the prevailing wind side of fence.
- 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.
- Use one 75-mm to 100-mm diameter treated round timber post every 20 metres.
- 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 N.T.S.**

**SEDIMENT BARRIER (SD 5-4) DETAIL**

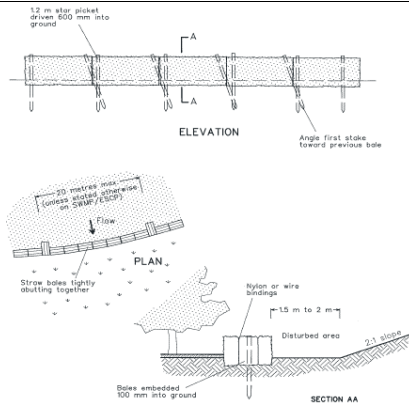
**Coir Log Filter**

**Star pickets / wooden stakes 35mm x 38mm x 900mm min Minimum 2 per bale**

**Stakes through anchor straps held in place by cable ties**

**Anchor straps pinned to ground with U pins**

# Standard Drawings

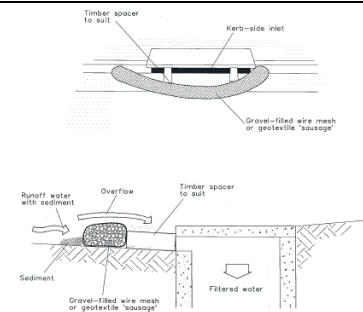


### Construction Notes

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 at 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



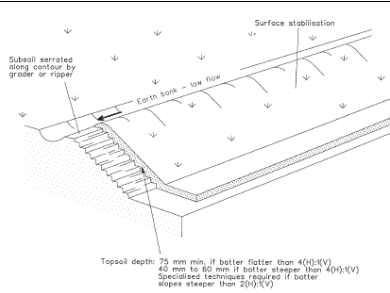
NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

### 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. Sackbags 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

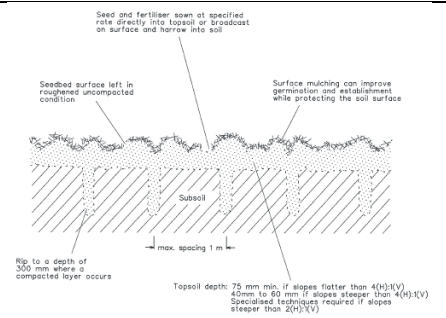


### Construction Notes

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

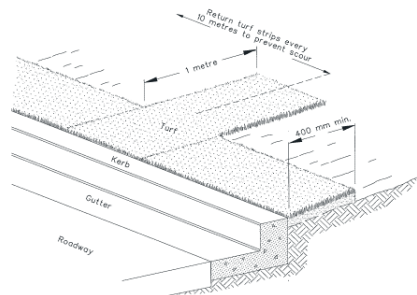


### Construction Notes

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 L

## Fill Importation Protocol

# Pad 2B Fill Importation Protocol

Oakdale West Estate



## Pad 2B Fill Importation Protocol

Oakdale West Estate

Client: Goodman Property Services (Aust) Pty Ltd

ABN: 40 088 981 793

Prepared by

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31-Mar-2020

Job No.: 60599325

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## Quality Information

Document Pad 2B Fill Importation Protocol  
 Ref 60599325  
 Date 31-Mar-2020  
 Prepared by Alex Latham  
 Reviewed by Brad Eismen

### Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	06-Feb-2020	draft for comment	Alex Latham Associate Director	
0	31-Mar-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 Pad 2B at the Oakdale West Estate (OWE), Kemps Creek, NSW.

Pad 2B is approximately 14.9 hectares (ha) and will be constructed by bulk cut to fill earthworks. The earthworks cut to fill plan for Pad 2B indicates that at least 10 m of cut will occur, with some placement of cut material in the northern portion.

A FIP was prepared by AECOM in October 2019<sup>1</sup> 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 Pad 2B. It is understood that no importation of fill material from non-OWE sources will be required for construction of Pad 2B, except for the possible use of materials for construction of in-ground services and/or retaining walls. As required by the October 2019 FIP, fill materials that are imported to Pad 2B will undergo compliance sampling and analysis to confirm their suitability for commercial/industrial land use.

Goodman requires a FIP for the development of Pad 2B, effective after the completion of bulk earthworks and implemented during construction activities. This FIP has therefore been prepared for the development phase of Pad 2B (i.e. construction of above ground assets). The development of Pad 2B will be undertaken under conditions of consent for SSD 10397.

This FIP only relates to the contamination status of fill materials to be imported to Pad 2B.

### 1.1 SSD 10397 Conditions of Consent

The SSD 10397 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, it is expected that that materials imported to Pad 2B 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.

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<sup>1</sup> Fill Importation Protocol, Oakdale West Estate. 31-October-2019 (60599325-OWE-FIP(CEMP)-20191031\_2).

## 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.
- 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 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 Pad 2B, 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 Pad 2B 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 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 Pad 2B, these requirements must be met.

Stockpiled excavated natural materials must be sampled as per the requirements in **Table 3**. The following also applies:

- Composite sampling must be undertaken for analysis of Attributes 1 to 10 and 18 in **Table 2** 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 3** (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 4** and **5** below. For source sites larger than 50 000 m<sup>2</sup>, 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 <sup>2</sup> )	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 <sup>2</sup> )	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
<p>1 soil sample at 1 m below ground level from each surface sampling point followed by 1 soil sample for every metre thereafter.</p> <p>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).</p>	<p>Required if the depth of excavation is equal to or greater than 1 m below ground level.</p>

### 2.1.2 Compliance Sampling Assessment Requirements

To confirm suitability for use at Pad 2B, 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<sup>3</sup>: 1 sample per 200 m<sup>3</sup>.
- Source site volumes between 1000 m<sup>3</sup> and 10 000 m<sup>3</sup>: 1 sample per 1000 m<sup>3</sup> including the first 1000 m<sup>3</sup> sampled as above.
- Source site volume greater than 10 000 m<sup>3</sup>: 1 sample per 2000 m<sup>3</sup> including the first 10 000 m<sup>3</sup> 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 1.2**. 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: <ul style="list-style-type: none"> <li>Review of current and historical aerial photographs, to confirm no previous industrial land uses.</li> <li>Review of historical certificates of title, to assess previous owners and potential land use.</li> <li>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.</li> <li>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.</li> <li>Review the Department of Defence website for Unexploded Ordnance records.</li> <li>Review geological and soil maps to evaluate anticipated subsurface conditions.</li> <li>Inspection of the source site to ascertain current conditions, with photographic records to be provided as a line of evidence.</li> </ul>
Are sulfidic ores or soils present	VENM cannot contain sulfidic ores or soils	<ul style="list-style-type: none"> <li>Review acid sulfate soil risk maps.</li> <li>Material cannot be classified as VENM if the acid sulfate soil risk maps identify a high probability of occurrence of ASS or PASS.</li> <li>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).</li> </ul>
Are naturally occurring asbestos soils present	VENM cannot contain naturally occurring asbestos	<ul style="list-style-type: none"> <li>Review the naturally occurring asbestos risk maps available on SafeWork NSW website.</li> <li>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<sup>2</sup>.</li> </ul>
Is there any other waste present	VENM cannot contain any waste	<ul style="list-style-type: none"> <li>Inspection of source site.</li> <li>Interviews with personnel at source site.</li> <li>Supplier to provide VENM certificate (refer <b>Appendix A</b>).</li> </ul>

<sup>2</sup> 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	<ul style="list-style-type: none"> <li>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 <b>Table 1 and</b> TRH C6-C40, OCP, OPP, PCB and VHC (refer to Glossary for definitions).</li> <li>Analysis for PFAS if background data (<b>refer Section 2.7</b>) indicate it is a contaminant of concern.</li> <li>Analysis for ASS/PASS.</li> </ul>

### 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<sup>3</sup>: 1 sample per 100 m<sup>3</sup>.
- Source site volumes between 1000 m<sup>3</sup> and 10 000 m<sup>3</sup>: 1 sample per 1000 m<sup>3</sup> including the first 1000 m<sup>3</sup> sampled as above.
- Source site volumes exceed 10 000 m<sup>3</sup>: 1 sample per 2500 m<sup>3</sup> including the first 10 000 m<sup>3</sup> 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 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 &amp; Concentrations

Column 1	Column 2	Column 3	Column 4
Chemicals/Attributes	Max' Average Concentration for Characterisation <sup>(1)</sup>	Max' Average Concentration for Routine Testing <sup>(1)</sup>	Absolute Maximum Concentration <sup>(1)</sup>
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 <sup>(2)</sup>	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<sup>3</sup>).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
  - Collection of representative samples of each type of recovered aggregate imported to pad 2B
  - Samples to be collected and analysed at a rate of 1 per 500 m<sup>3</sup>
  - 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
<b>Chemicals/Attributes</b>	Max' Average Concentration for Characterisation <sup>(1)</sup>	Max' Average Concentration for Routine Testing <sup>(1)</sup>	Absolute Maximum Concentration <sup>(1)</sup>
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 <sup>(2)</sup>	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<sup>3</sup>).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
  - Collection of representative samples of the material(s) imported to Pad 2B
  - Samples to be collected at a rate of 1 per 1000 m<sup>3</sup>
  - 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
<b>Chemicals/Attributes</b>	Max' Average Concentration for Characterisation <sup>(1)</sup>	Max' Average Concentration for Routine Testing <sup>(1)</sup>	Absolute Maximum Concentration <sup>(1)</sup>
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 <sup>(2)</sup>	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 2.8**).
- CC to advise the environmental consultant of the total expected net import quantity (in m<sup>3</sup>).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
  - Collection of representative samples of the material(s) imported to Pad 2B
  - Samples to be collected at a rate of 1 per 500 m<sup>3</sup>
  - 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 Pad 2B 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 Pad 2B 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 provided in the draft PFAS National Environmental Management Plan March 2019 (PFAS NEMP 2.0).

The draft PFAS NEMP 2.0 ‘residential and garden accessible soil’ land use criteria are:

- PFOS + PFHxS: 0.01 mg/kg
- PFOA: 0.3 mg/kg.

In the event that the draft PFAS NEMP 2.0 criteria are not adopted by the Regulators, the assessment criteria shall be consistent with the PFAS NEMP January 2018, which are:

- PFOS + PFHxS: 0.009 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 Pad 2B.

In the event that the review indicates insufficient assessment data, no materials shall be imported to Pad 2B 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 Pad 2B 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 Pad 2B. 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 Pad 2B.
- 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 Pad 2B. 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 Pad 2B 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 Pad 2B, to meet all trucks. The Spotter(s) will:
  - Log all vehicles entering Pad 2B, including license plate details and 'time in'.
  - Check the loading docket, including time left source site and time-in at Pad 2B. 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 Pad 2B.
  - 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**

<b>Sampling of Stockpiled Material</b>		
<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
<b>Quantity (tonnes)</b>	<b>Number of samples</b>	<b>Validation</b>
<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 m<sup>2</sup> 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**

<i>In Situ Sampling at surface</i>				
Column 1	Column 2	Column 3	Column 4	Column 5
Size of <i>in situ</i> area (m <sup>2</sup> )	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**

<i>In Situ Sampling at Depth</i>	
Column 1	Column 2
Sampling Requirements *	Validation
<p>1 soil sample at 1.0 m bgl from each surface sampling point followed by 1 soil sample for every metre thereafter.</p> <p>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.</p>	<p>Required if the depth of excavation is equal to or greater than 1.0 m bgl</p>

\* 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**

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
<b>Chemicals and other attributes</b>	<b>Maximum average concentration for characterisation</b> (mg/kg 'dry weight' unless otherwise specified)	<b>Absolute maximum concentration</b> (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 <sub>10</sub> -C <sub>36</sub>	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](http://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](http://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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Published by:

Environment Protection Authority, 59–61 Goulburn Street, Sydney South 1232

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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**

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>	<b>Column 4</b>
<b>Chemicals and other attributes</b>	<b>Maximum average concentration for characterisation</b> (mg/kg 'dry weight' unless otherwise specified)	<b>Maximum average concentration for routine testing</b> (mg/kg 'dry weight' unless otherwise specified)	<b>Absolute maximum concentration</b> (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](http://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
<b>Chemicals and other attributes</b>	<b>Maximum average concentration for characterisation</b> (mg/kg 'dry weight' unless otherwise specified)	<b>Maximum average concentration for routine testing</b> (mg/kg 'dry weight' unless otherwise specified)	<b>Absolute maximum concentration</b> (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](http://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**

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>	<b>Column 4</b>
<b>Chemicals and other attributes</b>	<b>Maximum average concentration for characterisation</b> (mg/kg 'dry weight' unless otherwise specified)	<b>Maximum average concentration for routine testing</b> (mg/kg 'dry weight' unless otherwise specified)	<b>Absolute maximum concentration</b> (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](http://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](http://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





# APPENDIX M

## Waste Management Plan

# OAKDALE WEST ESTATE

## SSD 7348 Modification 3 and SSD 10397 Stage 2 Development Application Waste Management Plan

### Prepared for:

Goodman Property Services (Aust) Pty Limited  
Level 17, 60 Castlereagh Street  
Sydney, NSW, 2000

SLR Ref: 610.19170-R01  
Version No: -v5.0  
January 2020



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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 Limited (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
610.19170-R01-v5.0	13 January 2020	Taylor Parsons	Celine El-Khoury	Andrew Quinn
610.19170-R01-v4.0	19 December 2019	Taylor Parsons	Andrew Quinn	Andrew Quinn
610.19170-R01-v3.0	4 December 2019	Celine El-Khoury	Andrew Quinn	Andrew Quinn
610.19170-R01-v2.0	29 November 2019	Celine El-Khoury	Andrew Quinn	Andrew Quinn
610.19170-R01-v1.0	19 November 2019	Taylor Parsons	Celine El-Khoury	Andrew Quinn

## EXECUTIVE SUMMARY

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Goodman Property Services (Aust) Pty Ltd (the Client) to prepare a Waste Management Plan (WMP) in support of SSD 7348 Modification 3 (MOD 3) and SSD 10397 Stage 2 Development Application (DA). This WMP will comply with the requirements of the Secretary's Environmental Assessment Requirements (SEARs) relevant to this project. The WMP is for the site preparation, construction and operational activities of MOD 3 and the Stage 2 development of Oakdale West industrial Estate (the Project).

This WMP applies to the waste generated from the site preparation, construction and operational stages of the Project and has been prepared using architectural drawings supplied by the Client.

### Site Preparation and Construction Waste Management

From aerial imagery and the architectural drawings, attached in **Appendix A** and **Appendix B**, SLR understands that some excavation work is required to prepare the site for development of both MOD 3 and Stage 2 DA. Estimated quantities of site preparation waste have been calculated and are shown in **Sections 5.3.1** and **5.3.2** in the WMP.

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 Project, as this provides a comparable waste generation rate to what can be expected from the Project, which is in the Penrith Local Government Area. The anticipated construction waste quantities for MOD 3 and Stage 2 are shown in **Sections 5.4.1** and **5.4.2** in the WMP.

All construction waste materials are to be preferentially sold or reused and recycled on site, where possible. Where not possible, materials are to be sent for recycling and reused off-site. Delivery of items to an appropriately licenced landfill is to be considered as a last resort. Better practice waste minimisation measures for the construction stage the Project are discussed in detail in the WMP.

### Operational Waste Management

The estimated number of bins required for weekly storage of operational waste and recycling generated by MOD 3, including Stage 2, are shown **Table 16** in the WMP. The waste storage areas for MOD 3 are only recommendations, based on preliminary master planning information, and should be updated for each building once detailed drawings are available. Better practice waste minimisation measures for the Project are discussed in detail in the WMP. The waste storage areas for Stage 2 are shown on the architectural drawing 'Site Plan' attached in **Appendix B**.

## EXECUTIVE SUMMARY

**Table 1 Minimum number of bins and waste storage area for operational waste of MOD 3 and Stage 2**

Location	Bins Required			Total Number of Bins	Recommended Storage Area (m <sup>2</sup> )
	General Waste	Paper and Cardboard Recycling	Comingled Recycling		
<b>Precinct 1</b>					
Warehouse 1A	1 x 35 m <sup>3</sup> compactor	2 x paper and cardboard compactors	2 x plastic film compactors	5	External storage
Warehouse 1B1	1 x 4.5 m <sup>3</sup> 1 x 240 L	2 x 3 m <sup>3</sup> 1 x 240 L		5	25
Warehouse 1B2	1 x 4.5 m <sup>3</sup> 1 x 240 L	2 x 3 m <sup>3</sup> 1 x 240 L		5	25
Warehouse 1B3	1 x 3 m <sup>3</sup> 1 x 240 L	1 x 4.5 m <sup>3</sup> 1 x 240 L		4	20
<b>Precinct 2</b>					
Warehouse 2A	2 x 3 m <sup>3</sup>	2 x 3 m <sup>3</sup>	2 x 1.5 m <sup>3</sup>	6	30
Warehouse 2B	1 x 25 m <sup>3</sup> compactor	1 x baler	1 x 1,100 L	3	35
Warehouse 2C and 2D	1 x 3 m <sup>3</sup>	2 x 1,100 L	1 x 1,100 L	4	15
Warehouse 2E	2 x 1,100 L	1 x 1,100 L	1 x 660 L	4	10
<b>Precinct 3</b>					
Warehouse 3A	1 x 3 m <sup>3</sup>	2 x 1,100 L	1 x 1,100 L	4	15
Warehouse 3B	2 x 1,100 L	1 x 1,100 L	1 x 1,100 L	4	10
Warehouse 3C	2 x 1,100 L	1 x 1,100 L	1 x 1,100 L	4	10
Warehouse 3D and 3E	1 x 3 m <sup>3</sup>	2 x 1,100 L	1 x 1.5 m <sup>3</sup>	4	15
Warehouse 3F and 3G	1 x 3 m <sup>3</sup>	2 x 1,100 L	1 x 1.5 m <sup>3</sup>	4	15
<b>Precinct 4</b>					
Warehouse 4A	2 x 3 m <sup>3</sup>	3 x 1,100 L	2 x 1,100 L	7	20
Warehouse 4B	1 x 3 m <sup>3</sup>	1 x 1.5 m <sup>3</sup>	1 x 1,100 L	3	15
Warehouse 4C	2 x 3 m <sup>3</sup>	3 x 1,100 L	2 x 1,100 L	7	20
Warehouse 4D	2 x 1,100 L	1 x 1,100 L	1 x 660 L	4	10
Warehouse 4E	2 x 3 m <sup>3</sup>	1 x 3 m <sup>3</sup>	2 x 1,100 L	5	20
Warehouse 4F	1 x 1.5 m <sup>3</sup>	1 x 1,100 L	1 x 660 L	3	10
Warehouse 4G	1 x 1,100 L	1 x 660 L	1 x 660 L	3	10
<b>Precinct 5</b>					
Warehouse 5A	2 x 3 m <sup>3</sup>	3 x 1.5 m <sup>3</sup>	2 x 1,100 L	7	25

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# 1 Introduction

## 1.1 Overview

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Goodman Property Services (Aust) Pty Ltd (the Client) to prepare a Waste Management Plan (WMP) in support of SSD 7348 Modification 3 (MOD 3) and SSD 10397 Stage 2 Development Application (DA). This WMP will comply with the requirements of the Secretary's Environmental Assessment Requirements (SEARs) relevant to this project. The WMP is for the site preparation, construction and operational activities of MOD 3 and the Stage 2 development of Oakdale West industrial Estate (the Project).

This WMP applies to the waste generated from the site preparation, construction and operational stages of the Project and has been prepared using architectural drawings supplied by the Client and attached in **Appendix A** and **Appendix B**.

The relevant requirements of the SEARs issued for SSD 7438 (MOD 3) and SSD 10397, and Schedule C conditions to SSD 7348 are addressed in this report as shown in **Table 2**.

**Table 2 SSD 10397 and SSD 7348 SEARs and Conditions for Waste Management**

SSD 10397 and SSD 7348 Conditions	Relevant Sections in this WMP
Waste Management – Including details of the quantities and classification of waste streams generated during construction and operation and proposed storage, handling and disposal requirements.	Section 5 Section 6
Schedule C C17. Future DAs shall include a Waste Management Plan prepared in accordance with NSW Waste Classification Guidelines (DECCW, 2009)	Section 5.2 Section 6.2

## 1.2 Objectives

The principal objective of this WMP is to identify all potential wastes likely to be generated at the Project site during construction and operational phases, 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 Project 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 will be reviewed and updated:

- To remain consistent with waste and landfill regulations and guidelines
- If changes are made to site waste and recycling management, or
- To take advantage of new technologies, innovations and methodologies for waste or recycling management.

Copies of the original WMP and its future versions should be retained by the building manager. Changes made to the WMP, as well as the reasons for the changes made, should be documented by the building manager as part of the review process.

## 2 Project Description

### 2.1 Overview of Proposed Development

The Client is developing the Oakdale West Industrial Estate site at Lot 11 in DP 1178389 in Kemps Creek. This site is primarily a greenfield site and will be comprised of five industrial warehouse and office precincts, including internal roads, car parking spaces and hardstand.

The Client intends to progress development to Stage 2. The works for Stage 2 require an alteration to the existing masterplan, identified as MOD 3. Under MOD 3, Stage 2 will relate to the development of building 2B.

### 2.2 Overview of Proposed Construction Work

Project works for MOD 3 and Stage 2 are expected to include site preparation and construction activities.

#### 2.2.1 MOD 3

MOD 3 consists of five precincts Precinct 1 to Precinct 5 and requires alterations to the masterplan layout. The new layout is shown in **Figure 1**. The changes from the previous layout include:

- An increase in gross lettable area
- Alterations to the internal road network
- Alterations to the civil design, retaining wall, building pad levels, noise wall and storm basin
- The amenities required for site operation including Estate Road 03, fencing, utilities, safety and communications infrastructure, and
- An increase in building heights.

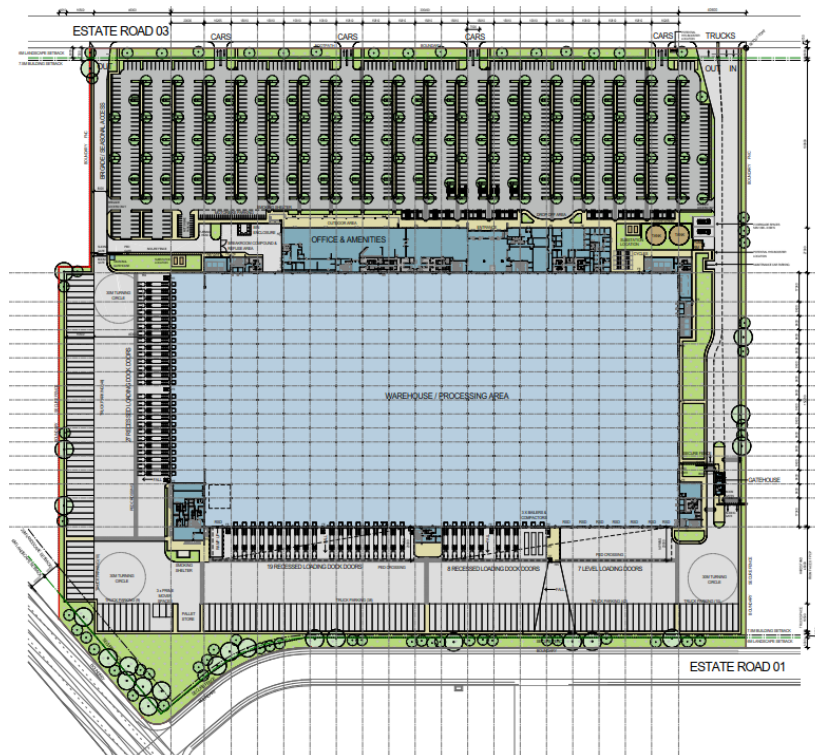


**Figure 1** MOD 3 Masterplan

## 2.2.2 Stage 2

The development of Stage 2 relates to building 2B in Precinct 2 under MOD 3. A site plan for Stage 2 is shown in **Figure 2**. The anticipated construction works for this development include the construction of the below:

- A four-storey warehouse building
- An ancillary office
- A mezzanine, and
- Truck and car parking areas and associated site hardstand.



**Figure 2** Stage 2 Site Plan

## 2.3 Overview of Proposed Operations

Based on communication with the Client, SLR understands the Project will retain its function as a regional distribution park of warehouses, distribution centres and freight logistics facilities under MOD 3. Stage 2 will function as a packaging reception and distribution centre staffed by over 1,500 employees. The warehouse will be operated by both robotics and staff handling.



## 3 Better Practice Waste Management and Recycling

### 3.1 Waste Management Hierarchy

This WMP has been prepared in line with the waste management hierarchy shown in **Figure 3**, 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.

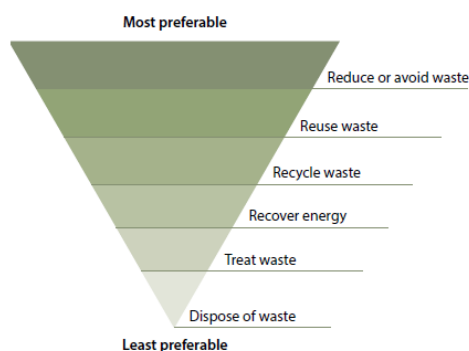


Image from NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

**Figure 3** 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 Project.

**Table 3** Legislation and guidance

Legislation and Guidance	Objectives
Council legislation and guidelines	
Secretary Environmental Assessment Requirements (SEARs)	SEARs provide the additional 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. The SEARs SSD 10397 and SSD 7348 apply to this Project.
Penrith Local Environmental Plan (LEP) 2010 <sup>1</sup>	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 <sup>2</sup>	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 <i>Waste Avoidance and Resource Recovery Act 2001</i> . 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 and the Waste Management Guidelines for Industrial, Commercial and Mixed Use.
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.

<sup>1</sup> <https://legislation.nsw.gov.au/#/view/EPI/2010/540>

<sup>2</sup> <https://www.penrithcity.nsw.gov.au/building-development/planning-zoning/planning-controls/development-control-plans>

Legislation and Guidance	Objectives
NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21	The <i>NSW Waste Avoidance and Resource Recovery Strategy 2014-21</i> 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.
NSW EPA Resource Recovery Orders and Resource Recovery Exemptions	<p>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.</p> <ul style="list-style-type: none"> <li>• Resource recovery orders present conditions which generators and processors of waste must meet to supply the waste material for beneficial re-use.</li> <li>• Resource recovery exemptions contain the conditions which consumers must meet to use waste for beneficial re-use.</li> </ul>
NSW EPA’s Waste Classification Guidelines 2014	The NSW EPA <i>Waste Classification Guidelines</i> 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 <i>POEO Act 1997</i> and is associated regulations.
<i>Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011</i>	The <i>POEO Act 1997</i> and <i>POEO Amendment Act 2011</i> 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.
The Work Health and Safety Regulation 2011	The Work Health and Safety Regulation 2011 provide detailed actions and guidance associated with the topics discussed in <i>The Work Health and Safety Act 2011</i> . The primary aim of the regulation is to protect the health and safety of workers and ensure that risks are minimised in work environments. Workplaces are to ensure that they are compliant with the requirements specified in the regulations. The regulations discuss items such as actions that are prohibited or obligated in work environments, the requirements for obtaining licences and registrations, and the roles and responsibilities of staff in workplaces.
<i>Waste Avoidance and Resource Recovery Act 2001</i>	<p>The <i>Waste Avoidance and Resource Recovery Act 2001</i> aims to promote waste avoidance and resource recovery and repeals the <i>Waste Minimisation and Management Act 1995</i>. Specific objectives of the <i>Waste Avoidance and Resource Recovery Act 2001</i> include:</p> <ul style="list-style-type: none"> <li>• encouraging efficient use of resources</li> <li>• 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</li> <li>• ensuring industry and the community share responsibility in reducing/dealing with waste, and</li> <li>• efficiently funding of waste/resource management planning, programs and service delivery.</li> </ul> <p>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.</p>

## 5 Site Preparation and Construction Waste and Recycling Management

### 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 have been recycled during the construction and site preparation stage of the Project.

### 5.2 Waste Streams and Classifications

The site preparation and construction of the Project is likely to generate the following broad waste streams:

- Site clearance wastes,
- Construction wastes,
- Plant maintenance waste
- Packaging wastes, 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*<sup>3</sup>. Further information on managing site preparation and construction wastes is available from the NSW EPA website<sup>4</sup>.

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<sup>3</sup> Available online from <https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>

<sup>4</sup> <http://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition>

**Table 4 Potential waste types and their management methods**

Waste Types	NSW EPA Waste Classification	Proposed Management Method
<b>Site Clearance</b>		
Green waste including timber, pine and particle board	General solid waste (non-putrescible)	Separated, some chipped and stored on-site for landscaping, remainder to landscape supplies or off-site recycling. Stumps and large trees to landfill.
Clean fill	General solid waste (non-putrescible)	On-site re-use
Contaminated fill	To be classified subject to the results of testing	Off-site treatment or disposal to landfill
Excavated natural material (ENM) or virgin excavated natural material (VENM)	General solid waste (non-putrescible)	On-site re-use of topsoil for landscaping of the site, off-site beneficial re-use or send to landfill site.
<b>Construction</b>		
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)	Cleaned for reuse as footings, broken bricks for internal walls, crushed for landscaping or driveway use, off-site recycling
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, including copper and aluminium	General solid waste (non-putrescible)	Off-site recycling at metal recycling compounds and remainder to landfill
Conduits and pipes	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling, Chip for landscaping, Sell for firewood <i>Treated</i> : reused for formwork, bridging, blocking, propping or second-hand supplier <i>Untreated</i> : reused for floorboards, fencing, furniture, mulched second hand supplier Remainder to landscape supplies.
Doors, Windows, Fittings	General solid waste (non-putrescible)	Off-site recycling at second hand building 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

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Asbestos	Hazardous waste	Off-site disposal at a licenced landfill facility.
Fluorescent light fittings and bulbs	Hazardous waste	Off-site recycling or disposal; contact <i>FluoroCycle</i> for more information <sup>5</sup>
Paint	Hazardous waste	Off-site recycling, Paintback collection <sup>6</sup> or disposal
Synthetic Rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling; reprocessed and used in safety devices and speed humps
Ceramics including tiles	General solid waste (non-putrescible)	Off-site recycling at a crushing and recycling company
Carpet	General solid waste (non-putrescible)	Off-site recycling or disposal; reused for landscaping, insulation or equestrian uses
<b>Plant Maintenance</b>		
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 Note: Discharge to sewer subject to Trade Waste Agreement with local Council
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 <sup>7</sup> for more information
<b>Packaging</b>		
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 <i>Business Recycling</i> for more information <sup>8</sup>
<b>Work Compound and Associated Offices</b>		
Food Waste	General solid (putrescible) waste	Dispose to landfill with general garbage

<sup>5</sup> Available online from <http://www.fluorocycle.org.au/> or <http://www.environment.gov.au/settlements/waste/lamp-mercury.html>

<sup>6</sup> Available online from <https://www.paintback.com.au/>

<sup>7</sup> <http://www.batteryrecycling.org.au/home>

<sup>8</sup> Available online from <http://businessrecycling.com.au/search/>



Waste Types	NSW EPA Waste Classification	Proposed Management Method
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 deliver to local NSW container deposit scheme 'Return and Earn' facility <sup>9</sup>
Clean paper and cardboard	General solid waste (non-putrescible)	Paper and cardboard recycling at off-site licensed facility
General domestic waste generated by workers such as soiled paper and cardboard and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

### 5.3 Site Preparation Waste Types and Quantities

From aerial imagery and the architectural drawings, attached in **Appendix A** and **Appendix B**, SLR understands that some excavation work is required to prepare the site for development of both MOD 3 and Stage 2.

The estimated site preparation waste for MOD 3 and Stage 2 are shown in **Sections 5.3.1** and **5.3.2** below.

#### 5.3.1 MOD 3

The earthworks quantities for MOD 3 are provided in the 'Civil, Stormwater and Infrastructure Services Report – DA Modification No. 3' by AT&L<sup>10</sup>. The anticipated waste quantities from the site preparation of MOD 3, including the developments of Stage 2, are shown in **Table 5** below. The 'Civil, Stormwater and Infrastructure Services Report' states that the areas used are representative of the net site area, including the site area that will be developed.

**Table 5 Estimated quantities of site preparation waste for MOD 3**

Project Component	Existing topsoil stripping volume (m <sup>3</sup> )	Existing creeks and dams excavation (m <sup>3</sup> )	Total Cut (m <sup>3</sup> )	Total Fill (m <sup>3</sup> )	Balance (m <sup>3</sup> )
Precinct 1	-43,347	-27,007	-412,468	561,821	78,999
Precinct 2	-33,394	-5,795	-1,129,837	892,682	-276,343
Precinct 3	-12,361	-6,166	-108,546	447,377	320,304
Precinct 4	-18,631	-17,896	-205,979	733,279	490,773
Precinct 5	-4,516	-16,247	-2,974	172,957	149,220
<b>Total</b>	<b>-112,249</b>	<b>-73,111</b>	<b>-1,859,804</b>	<b>2,724,785</b>	<b>679,620</b>

For more information on the depth and location of the cut and fill works, refer to the 'Civil, Stormwater and Infrastructure Services Report'.

<sup>9</sup>Available online from <http://returnandearn.org.au/>

<sup>10</sup> AT&L, 2019, Civil, Stormwater and Infrastructure Services Report – DA Modification No. 3, Issue 01

### 5.3.2 Stage 2

A 'Lot 2B Civil Report' has been prepared by AT&L<sup>11</sup> that provides information on the expected civil works for Stage 2. For more information on the anticipated earthworks for Stage 2, refer to the 'Lot 2B Civil Report'. Based on information from the Client, SLR understands that the Building 2B pad levels will be per the Stage 1 MOD 3 documents which detail the finalised pad levels across the site. There will be no additional pad works sought under the Stage 2 consent.

As mentioned in Council's DCP, care should be taken to minimise site disturbance and limit unnecessary excavation.

Council's DCP states that if excess material is transported offsite, they are to be informed of the quantity, quality, method of transport and where the material will be disposed. SLR recommends that excavated spoil is classified by a specialist contaminated land consultant and separated into contaminated materials, if any, uncontaminated fill or ENM. 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 5.7.4** of this WMP.

## 5.4 Construction Waste Types and Quantities

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.

In the absence of readily available construction waste generation rates from Council, SLR has adopted the 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 Project. The waste generation rates listed in the Hills DCP include '2 Bedroom', '3 Bedroom', 'Block of Flats', 'Factory' and 'Office'. SLR has adopted the 'Factory' and 'Office' rates to measure waste expected from the Project, as the construction of a factory and office is the most relevant in representing the construction of the industrial warehouse and office precinct.

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<sup>2</sup> of construction.

The waste generation rates are shown in **Table 6**.

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<sup>11</sup> AT&L, 2019, 'Lot 2B Civil Report', Issue 01

**Table 6 Waste generation rates for the construction of the Project**

Rate Type	Floor Area (m <sup>2</sup> )	Waste types and quantities (m <sup>3</sup> )						
		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 Project. The anticipated construction waste quantities for MOD 3 and Stage 2 are shown in **Sections 5.4.1** and **5.4.2** below.

The waste generation rates for 'Factory' are applied to calculate the waste quantities from the construction of each level of the warehouses and the mezzanines. The 'Office' waste generation rates are applied to calculate the waste quantities from all office administration areas. The 'Carpark' waste generation rates are applied to calculate the waste quantities from the construction of all external hard surface areas including access roads, carparks, light duty surfaces and platforms for the generators. The areas are based on area information provided by the architects for the project, SBA Architects Pty Ltd<sup>12</sup>.

Actual waste quantities 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.

#### **5.4.1 MOD 3**

The construction waste quantities anticipated from MOD 3, which includes the construction of Stage 2, are provided in **Table 7**. Construction waste quantities for Precinct 1 are addressed the waste management plan prepared by SLR for the Precinct 1 DA submission (SLR, Oakdale West Estate, Waste Management Plan, 29 October 2019) and have been included in **Table 7**.

<sup>12</sup> Email from William Ly – SBA Architects Pty Ltd, "19262 OAKDALE WEST ESTATE MOD 3 - UPDATED ESTATE MASTERPLAN", dated 7 November 2019.

**Table 7 Estimated types and quantities of construction waste from MOD 3**

Project Component		Area (m <sup>2</sup> )	Waste types and quantities (m <sup>3</sup> )						
			Timber	Concrete	Brick	Gyprock	Sand and Soil	Metal	Other
Precinct 1	Office	3,903	20	75	35	35	35	15	20
	Warehouse	81,773	25	175	135	50	400	60	50
	Mezzanine	32,402	10	70	55	15	160	20	20
	Outbuildings	4,004	5	10	10	5	20	5	5
	Hardstand	96,050	0	2,940	0	0	1,375	435	780
	Light Duty	17,050	0	525	0	0	245	80	140
Precinct 2	Office	8,992	50	170	80	80	80	25	45
	Warehouse	250,894	65	530	415	115	1,205	155	130
	Mezzanine	6,300	5	15	15	5	35	5	5
	Hardstand	116,969	-	3,580	-	-	1,675	530	950
Precinct 3	Office	3,120	20	60	30	30	30	10	20
	Warehouse	54,700	15	115	95	25	265	35	30
	Hardstand	38,774	-	1,190	-	-	555	175	315
Precinct 4	Office	5,414	30	105	50	50	50	15	30
	Warehouse	108,279	30	230	180	50	520	65	55
	Hardstand	68,628	-	2,105	-	-	985	310	560
Precinct 5	Office	1,697	10	35	15	15	15	5	10
	Warehouse	33,943	10	75	60	20	165	25	20
	Hardstand	18,308	-	565	-	-	265	85	150
<b>Totals</b>		<b>951,200</b>	<b>235</b>	<b>8,775</b>	<b>940</b>	<b>390</b>	<b>5,845</b>	<b>1,440</b>	<b>2,320</b>

Waste estimates have been rounded up to the nearest 5 m<sup>3</sup>.

#### 5.4.2 Stage 2

The construction wastes quantities anticipated from the construction of Building 2B alone are provided in **Table 8**.

**Table 8 Estimated types and quantities of construction waste from Stage 2**

Project Component		Area (m <sup>2</sup> )	Waste types and quantities (m <sup>3</sup> )						
			Timber	Concrete	Bricks	Gyprock	Sand and Soil	Metal	Other
Warehouse 2B	Office	5,492	30	105	50	50	50	20	30
	Warehouse Ground Floor	50,873	15	110	85	25	245	35	30
	Warehouse Level 1	48,101	15	105	80	25	235	30	25
	Warehouse Level 2	48,101	15	105	80	25	235	30	25
	Warehouse Level 3	48,101	15	105	80	25	235	30	25
	Mezzanine	6,300	5	15	15	5	35	5	5
	Hardstands	70,823	0	195	0	0	440	55	50
	<b>Totals</b>	<b>277,843</b>	<b>95</b>	<b>740</b>	<b>390</b>	<b>155</b>	<b>1,475</b>	<b>205</b>	<b>190</b>

Waste estimates have been rounded up to the nearest 5 m<sup>3</sup>.

A waste management plan form provided by Council is attached in **Appendix C**. The form is also available on Council's website<sup>13</sup>. This is to be updated by the Site Manager once waste streams, estimated quantities, and final disposal locations and recycling services have been identified.

## 5.5 Waste Avoidance

In accordance with Council's DCP and better practice waste management, the Building Contractor, Building Designer and/or equivalent roles should:

- Develop a purchasing policy based on the approximate volumes of materials to be used so that the correct quantities are purchased.
- Arrange for delivery of materials on an 'as needed' basis to avoid material degradation through weathering and moisture damage.
- Communicate strategies to handle and store waste to minimise environmental, health and amenity impacts.
- Select materials with a low environmental impact over the lifecycle of the building.
- Choose timber from certified plantations and avoid unsustainable timber imports including western red cedar, oregon, meranti, luan or merbau.
- Use leased equipment rather than purchase and disposal.
- Minimise site disturbance and unnecessary excavation.
- Incorporate existing trees and shrubs into the landscape plan.
- Grouping wet areas together to minimise the amount of pipe work required.
- Design the Project to require standard material sizes or make arrangements with manufacturing groups for the supply of non-standard material sizes.
- Design works for de-construction.
- Reduce packaging waste by:

<sup>13</sup> [https://www.penrithcity.nsw.gov.au/images/documents/forms/Waste\\_Management\\_Plan\\_Application\\_Form.pdf](https://www.penrithcity.nsw.gov.au/images/documents/forms/Waste_Management_Plan_Application_Form.pdf)

- Returning packaging to suppliers where practicable to reduce waste further along the supply chain
- 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.
- Use prefabricated materials.
- Select materials for Project works with low embodied energy properties or materials that have been salvaged or recycled for the construction of the Project including concrete that utilises slag and fly ash content, structural and reinforced steel that uses recycled steel content or bulk insulation products that contain recycled content, such as recycled glass in glass-wool.
- Preferentially use paints, floor coverings and adhesives with low VOC (volatile organic compound) content.
- Reduce the use of polyvinyl chloride products.
- Implement measures to prevent the occurrence of windblown litter, dust and stormwater pollution.
- Ensure subcontractors are informed of and implement site waste minimisation and management procedures.

## 5.6 Reuse, Recycling and Disposal

Effective management of construction materials and construction and demolition waste, including options for reuse and recycling where applicable and practicable, will be conducted. Only wastes that cannot be cost effectively reused or recycled are to be sent to landfill or appropriate disposal facilities.

Refer to **Table 4** for an outline of the proposed reuse, recycling and disposal methods for potential site preparation and construction waste streams generated by the Project.

In accordance with Council's DCP and best practice waste management, the following specific procedures should be implemented:

- 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.
- Store wastes on site appropriately to prevent cross-contamination and guarantee the highest possible re-use value.
- Consider the potential of any new materials to be re-used and recycled at the end of the Project's life.
- Determine opportunities for the use of prefabricated components and recycled materials.
- Strip topsoil from areas designated for excavation and store it on site for reuse.
- Reuse excavation material will be on-site where possible.
- Re-use formwork where appropriate.
- Retain roofing material cut-offs for re-use or recycling.



- Retain used crates for storage purposes unless damaged.
- Recycle cardboard, glass and metal wastes.
- 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.
- Return excess materials and packaging to the supplier or manufacturer.
- Dispose of all garbage via a council approved system.

## 5.7 Waste Storage and Servicing

### 5.7.1 Waste Segregation and Storage

As outlined in the Penrith DCP, waste materials produced from site preparation and construction activities are to be separated at the source and stored separately on-site. It is anticipated that the Project will provide enough space on-site for separate storage, for example, separate skip bins or appropriately managed stockpiles, of the following waste types:

- Bricks, concrete and scrap metal
- Metal and steel, in a condition suitable for recycling at metal recycling facilities
- Timber
- Glass
- Hardstand rubble
- Uncontaminated excavation spoil, if present
- Contaminated excavation spoil, if present
- Hazardous waste, if present
- Paper and cardboard
- General co-mingled recycling waste, and
- Non-recyclable general waste.

If there is insufficient space on-site for full segregation of waste types, the Site Manager, or equivalent role, should consult with the waste and recycling collection contractor to confirm which waste types may be co-mingled prior to removal from the site.

### 5.7.2 Waste Storage Areas

Waste storage areas will be accessible and allow enough 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.

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 containers and storage areas are to be kept clean and in a good state of repair.

As per Council's DCP, areas designated for waste storage should:

- Allow unimpeded access by site personnel and waste disposal contractors
- Consider environmental factors which could potentially cause an impact to the waste storage, such as slope, drainage and the location of watercourses and native vegetation
- Allow enough space for the storage of garden waste and other waste materials on-site
- 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
- Consider visual amenity, safety, accessibility and convenience in their selection, and
- Not present hazards to human health or the environment.

### 5.7.3 Waste Servicing and Record Keeping

The Site Manager or equivalent role is to:

- Arrange for suitable waste collection contractors to remove any construction 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 contractors and facilities receiving the waste and recyclables
  - Records of waste and recycling collection vehicle movements, for example, date and time of loads removed, licence plate of collection vehicles, tip dockets from receiving facility, and
  - Waste classification documentation for materials disposed to off-site recycling or landfill facilities.
- Ensure lawful waste disposal records are readily accessible for inspection by regulatory authorities such as Council, SafeWork NSW or NSW EPA, and
- Remove waste during hours approved by Council.

If skips and bins are reaching capacity, removal and replacement should be organised as soon as possible. All site generated building waste collected in the skips and bins will leave the site and be deposited in the approved site lawfully able to accept them.

### 5.7.4 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.

## 5.8 Site Inductions

All staff, including sub-contractors and labourers, employed during the site preparation and construction phases of the Project must undergo induction training regarding waste management for the Site.

Induction training is to cover, as a minimum, an outline of the WMP including:

- Legal obligations and targets
- Emergency response procedures on-site
- Waste priorities and opportunities for reduction, reuse and recycling
- Waste storage locations and separation of waste
- Procedures for suspected contaminated and hazardous wastes
- Waste related signage
- The implications of poor waste management practices, and
- Responsibilities and reporting, including identification of personnel responsible for waste management and individual responsibilities.

It is the responsibility of the Site Manager or Building Contractor to notify Council of the appointment of waste removal, transport or disposal contractors.

## 5.9 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<sup>14</sup> and should be used where applicable. A selection of signs prepared by NSW EPA is provided in **Figure 4**.

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<sup>14</sup> NSW EPA approved waste materials signage <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs>



Figure 4 Examples of NSW EPA labels for waste skips and bins

## 5.10 Monitoring and Reporting

The following monitoring practices are to be undertaken to improve site preparation and construction waste management and to obtain accurate waste generation figures:

- Conduct waste audits of current projects where feasible.
- Note waste generated and disposal methods.
- Look at past waste disposal receipts.
- Record this information to track waste avoidance, reuse and recycling performance and to help in waste estimations for future waste management plans.

As per Council's DCP, records of waste volumes recycled, reused or contractor removed are to be maintained. This can include dockets or receipts verifying recycling and disposal in accordance with this WMP. This evidence should also be presented to regulatory bodies when required.

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.

## 5.11 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 always comply with the WMP.

Where possible, an Environmental Management Representative should be appointed for the Project. Suggested roles and responsibilities are provided in **Table 9**.

**Table 9 Suggested roles and responsibilities for site preparation and construction waste management.**

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.
Construction Environmental Manager or equivalent	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 Project.
	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

### 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<sup>15</sup>. Each commercial and industrial development can 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 Project 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 is anticipated to 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.

Potential ongoing waste types, their associated waste classifications, and management methods are provided in **Table 10**. For further information on how to determine a waste's classification, refer to the NSW EPA (2014) Waste Classification Guidelines. Suggestions for recycling drop off locations and contacts can be found on <https://businessrecycling.com.au/> for each waste type.

**Table 10 Potential waste types, classifications and management methods for operational waste**

Waste Types	NSW EPA Classification	Proposed Management Method
<b>General Operations</b>		
Clean office paper	General solid (non-putrescible) waste	Paper recycling at off-site licensed facility
Cardboard including bulky cardboard boxes	General solid (non-putrescible) waste	Cardboard recycling at off-site licensed facility
Recyclable beverage containers, glass and plastic bottles, aluminium cans, steel cans	General solid (non-putrescible) waste	NSW container deposit scheme 'Return and Earn', container recycling at off-site licensed facility

<sup>15</sup> <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/wastestrategy/140876-warr-strategy-14-21.pdf?la=en&hash=EC6685E6624995242B0538B18C2E80C0CA2E51B3>



Waste Types	NSW EPA Classification	Proposed Management Method
Food waste	General solid (putrescible) waste	Compost on or off-site or dispose to landfill with general garbage
Batteries	Hazardous waste	Off-site recycling, alternatively contact the Australian Battery Recycling Initiative for more information
Mobile Phones	Hazardous waste	Off-site recycling; can be taken to the Mobile Muster program. Contact Mobile Muster for more information
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	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
<b>Maintenance</b>		
Spent smoke detectors <sup>16</sup>	General solid (non-putrescible) waste, or Hazardous waste (some commercial varieties)	Disposal to landfill, or off-site disposal at licensed facility
Glass, other than containers	General solid (non-putrescible) waste	Off-site recycling
Light bulbs and fluorescent tubes	Hazardous waste	Off-site recycling or disposal, contact FluoroCycle <sup>17</sup> or Lamp Recyclers <sup>18</sup> for more information
Cleaning chemicals, solvents, area wash downs, empty oil or paint drums, 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.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility.
Garden organics - lawn mowing, tree branches, hedge cuttings, leaves	General solid (non-putrescible) waste	Reuse on-site or contractor removal for recycling at licenced facility

<sup>16</sup> The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) require that when more than 10 smoke alarms (particularly americium-241 sources) are collected for bulk disposal they must be treated as radioactive waste and the requirements of the National Health and Medical Research Council's Code of practice for the near-surface disposal of radioactive waste in Australia (1992) must be met.

<sup>17</sup> <https://www.fluorocycle.org.au/>

<sup>18</sup> <https://www.lamprecyclers.com.au/>

## 6.3 Estimated Quantities of Operational Waste

SLR has adopted the ‘Offices’ and ‘Warehouse’ waste generation rates from Council’s DCP Industrial, Commercial and Mixed-Use Waste Management Guidelines for estimating the type and quantities of waste generated from the operational activities of the Project. The operational waste generation rates used are shown below in **Table 11**.

**Table 11 Waste generation rates applied to the operations of the Project**

Type of Premises	General Waste Generation (L/100 m <sup>2</sup> /day)	Recycling Generation (L/100 m <sup>2</sup> /day)
Warehouse	10	10
Offices	10	10

Using the waste generation rates in **Table 11** above, the approximate weekly waste quantities for the Project have been calculated and are presented in **Sections 6.3.1** and **6.3.2**. The operational waste quantities were additionally calculated based on the below assumptions:

- The floor areas as presented on the architectural drawings shown in **Appendix A** and **Appendix B**
- A week comprising seven days of operation, and
- General recycling consisting of approximately 60% paper and cardboard, and 40% other recycling<sup>19</sup>.

Based on documents of the Project’s activities<sup>20</sup>, 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 waste stream will consist of food waste. As per Council’s DCP, food scraps should be placed in specialised containment bins and collected on a regular basis. 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 MOD 3

The estimated quantities of operational waste generated by MOD 3 are shown in **Table 12**. Operational waste quantities for Precinct 1 are addressed the waste management plan prepared by SLR for the Precinct 1 DA submission (SLR, Oakdale West Estate, Waste Management Plan, 29 October 2019) and have been included in **Table 12**. The naming conventions used in **Table 12** are as per the masterplan area spreadsheet provided by the Client. Warehouse 2B is addressed in more detail in **Section 6.3.2**.

<sup>19</sup> [https://www.epa.nsw.gov.au/~/\\_media/EPA/Corporate%20Site/resources/warrlocal/140442-audits-2011.ashx](https://www.epa.nsw.gov.au/~/_media/EPA/Corporate%20Site/resources/warrlocal/140442-audits-2011.ashx)

<sup>20</sup> Document from Goodman, “Development Application Information – PROJECT WARATAH”, dated 28 October 2019.

**Table 12 Estimated quantities of operational general waste and recycling for MOD 3**

Complex	Location	Area (m <sup>2</sup> )	General Waste (L/week)	Recycling Paper and Cardboard (L/week)	Recycling Other (L/week)
<b>Precinct 1</b>					
Warehouse 1A	Warehouse	68,160	143,150	143,150	
	Office	2,646	1,855	1,855	
	Mezzanine	32,402	68,075	68,075	
Warehouse 1B1	Warehouse	4,380	9,205	9,205	
	Office	500	350	350	
Warehouse 1B2	Warehouse	4,691	9,870	9,870	
	Office	500	350	350	
Warehouse 1B3	Warehouse	3,846	8,085	8,085	
	Office	400	280	280	
<b>Precinct 2</b>					
Warehouse 2A	Warehouse	40,045	28,035	16,835	11,235
	Office	2,000	1,400	840	560
Warehouse 2B	Warehouse	195,176	136,745	21,385	-
	Office	5,492	3,850	2,310	1,540
Warehouse 2C and 2D	Warehouse 2C and 2D	9,675	6,790	4,095	2,730
	Office 2C	500	350	210	140
	Office 2D	500	350	210	140
Warehouse 2E	Warehouse	6,000	4,200	2,520	1,680
	Office	500	350	210	140
<b>Precinct 3</b>					
Warehouse 3A	Warehouse	18,400	12,880	7,735	5,180
	Office	920	665	420	280
Warehouse 3B	Warehouse	7,150	5,005	3,010	2,030
	Office	400	280	175	140
Warehouse 3C	Warehouse	7,100	4,970	3,010	1,995
	Office	600	420	280	175
Warehouse 3D and 3E	Warehouse 3D and 3E	11,000	7,700	4,620	3,080
	Office 3D	300	210	140	105
	Office 3E	300	210	140	105
Warehouse 3F and 3G	Warehouse	11,050	7,735	4,655	3,115
	Office	300	210	140	105
	Office	300	210	140	105
<b>Precinct 4</b>					
Warehouse 4A	Warehouse	21,598	15,120	9,100	6,055
	Office	1,080	770	455	315

Complex	Location	Area (m <sup>2</sup> )	General Waste (L/week)	Recycling Paper and Cardboard (L/week)	Recycling Other (L/week)
Warehouse 4B	Warehouse	14,771	10,360	6,230	4,165
	Office	739	525	315	210
Warehouse 4C	Warehouse	21,712	15,225	9,135	6,090
	Office	1,086	770	490	315
Warehouse 4D	Warehouse	6,594	4,620	2,800	1,855
	Office	330	245	140	105
Warehouse 4E	Warehouse	33,205	23,275	13,965	9,310
	Office	1,660	1,190	700	490
Warehouse 4F	Warehouse	6,043	4,235	2,555	1,715
	Office	302	245	140	105
Warehouse 4G	Warehouse	4,356	3,080	1,855	1,225
	Office	218	175	105	70
<b>Precinct 5</b>					
Warehouse 5A	Warehouse	33,943	23,765	14,280	9,520
	Office	1,697	1,190	735	490

Waste quantity estimates have been rounded up to the nearest 5 L.

'Other Recycling': comingled recycling excluding paper and cardboard.

### 6.3.2 Stage 2

The estimated quantities of operational waste generated by Stage 2 alone are shown in **Table 13**. Based on communication from the Client<sup>21</sup>, the mezzanine areas are only to be used for good storage and therefore not anticipated to generate waste.

Due to the anticipated operations of Warehouse 2B, the recycling generated from the building is primarily anticipated to be packaging waste consisting of paper and recycling. Based on communication from the Client<sup>22</sup>, levels 1 to 3 of the warehouse are anticipated to generate minimal paper and cardboard waste, as all incoming paper and cardboard packaging will be separated on the ground floor. The paper and cardboard recycling will be sent directly from the ground floor warehouse to the baler. Hence paper and cardboard recycling has only been considered for the ground floor of the warehouse, where it will be primarily generated.

Comingled recycling is anticipated to be minimal and primarily be generated from the office areas. Hence the recycling breakdown of 60% paper and cardboard, and 40% other recycling has only been considered for the office spaces, where comingled recycling will be generated.

<sup>21</sup> Email from Stephanie Partridge – Goodman, "RE: MOD 3 & Stage 2 DA co-ordination meeting – Oakdale West", dated 30 October 2019.

<sup>22</sup> Email from Stephanie Partridge – Goodman, "FW: DA Package – Oakdale West", dated 03 December October 2019.

**Table 13 Estimated quantities of operational general waste and recycling for Stage 2**

Complex	Location	Area (m <sup>2</sup> )	General Waste (L/week)	Recycling Paper and Cardboard (L/week)	Recycling Other (L/week)
Warehouse 2B	Warehouse - Ground Floor	50,873	35,630	21,385	-
	Warehouse - Level 1	48,101	33,705	-	-
	Warehouse - Level 2	48,101	33,705	-	-
	Warehouse - Level 3	48,101	33,705	-	-
	Offices	5,492	3,850	2,310	1,540
	<b>Total</b>		<b>200,668</b>	<b>140,595</b>	<b>23,695</b>

Waste quantity estimates have been rounded up to the nearest 5 L.

'Other Recycling': comingled recycling excluding paper and cardboard.

Due to the anticipated quantity of operational general waste and recycling, a baler is recommended to be used for the storage compaction of paper and cardboard waste and a general waste compactor for the storage and compaction of general waste. Based on an assumed compaction ratio for 1:3<sup>23</sup> for general waste compactors and 1:10<sup>24</sup> for paper and cardboard balers, the compacted waste volumes generated by Stage 2 have been calculated and are shown in **Table 14** below.

**Table 14 Compacted operational waste and recycling quantities for Stage 2**

		General Waste	Paper and Cardboard Recycling	Other Recyclables
Warehouse 2B	Uncompacted waste (m <sup>3</sup> /week)	140.60	23.70	1.6
	Compaction ratio	3	10	No compaction
	Compacted waste (m <sup>3</sup> /week)	<b>46.87</b>	<b>2.37</b>	<b>1.6</b>

The Project 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.

## 6.4 Waste Storage Area Size

For each building that is a part of the Project, the waste storage area must be large enough to adequately store all quantities of operational waste and recycling between collections. Interim storage units are to be provided for general waste and recyclables on each floor in buildings three storeys or greater. All waste material will be transported from these units to the central waste storage area at the end of each day by the site cleaners.

All waste storage room calculations have considered the bin dimensions listed in Council's DCP, as outlined in **Table 15**.

<sup>23</sup> <https://wasteinitiatives.com.au/products/waste-compactors/>

<sup>24</sup> [https://cdn2.hubspot.net/hubfs/5089498/Orwak%20Brochures/Orwak%20Selection%20Guide\\_nz.pdf](https://cdn2.hubspot.net/hubfs/5089498/Orwak%20Brochures/Orwak%20Selection%20Guide_nz.pdf)

**Table 15 Dimensions and approximate footprint of bins**

Dimension	Height (mm)	Depth (mm)	Width (mm)	Gross Floor Area (GFA) (m <sup>2</sup> )
660 L Bin	1,400	1,260	800	1.01
1,100 L Bin	1,330	1,240	1,090	1.35
1.5 m <sup>3</sup>	1,190	1,080	2,070	2.24
3 m <sup>3</sup>	1,540	1,520	2,060	3.13

To allow for ready movement of bins into and out of the bin storage area, the bin storage area is to provide a floor area of at least 150% of the total minimum bin GFA. This can also act as a contingency in the event of spikes in waste generation. Additionally, in accordance with Council's DCP, an additional 0.2 m is to be permitted between the bins to allow for manoeuvrability. This has been considered in the calculation of the waste storage area for each of the buildings in the Project. The waste storage areas are shown in **Sections 6.4.1 and 6.4.2**.

The recommended storage areas do not include consideration for the storage of bulky and hazardous waste. For the additional storage space for bulky and hazardous waste, refer to **Section 6.4.3**.

#### 6.4.1 MOD 3

The estimated number of bins required for weekly storage of operational waste and recycling generated by MOD 3 are in **Table 16** and are based on:

- The estimated quantities of operational waste and recycling as shown in **Table 12**
- Bin dimensions from the Council's DCP as shown in **Table 15**
- Garbage and recycling collection frequency of five times per week for warehouses 2A, 3A, 4B, 4E and 5A, and
- Garbage and recycling collection frequency of three times per week for all other warehouses.

The waste storage areas calculations in **Table 16** are only recommendations, based on preliminary master planning information, and should be updated for each building once detailed drawings are available. Building 2B is addressed in more detail in **Section 6.4.2**.



**Table 16 Recommended number of bins and storage area for weekly operations for MOD 3**

Location	Bins Required			Total Number of Bins	Recommended Storage Area (m <sup>2</sup> )
	General Waste	Paper and Cardboard Recycling	Comingled Recycling		
<b>Precinct 1</b>					
Warehouse 1A	1 x 35 m <sup>3</sup> compactor	2 x paper and cardboard compactors	2 x plastic film compactors	5	External storage
Warehouse 1B1	1 x 4.5 m <sup>3</sup> 1 x 240 L	2 x 3 m <sup>3</sup> 1 x 240 L		5	25
Warehouse 1B2	1 x 4.5 m <sup>3</sup> 1 x 240 L	2 x 3 m <sup>3</sup> 1 x 240 L		5	25
Warehouse 1B3	1 x 3 m <sup>3</sup> 1 x 240 L	1 x 4.5 m <sup>3</sup> 1 x 240 L		4	20
<b>Precinct 2</b>					
Warehouse 2A	2 x 3 m <sup>3</sup>	2 x 3 m <sup>3</sup>	2 x 1.5 m <sup>3</sup>	6	30
Warehouse 2B	1 x 25 m <sup>3</sup> compactor	1 x baler	1 x 1,100 L	3	35
Warehouse 2C and 2D	1 x 3 m <sup>3</sup>	2 x 1,100 L	1 x 1,100 L	4	15
Warehouse 2E	2 x 1,100 L	1 x 1,100 L	1 x 660 L	4	10
<b>Precinct 3</b>					
Warehouse 3A	1 x 3 m <sup>3</sup>	2 x 1,100 L	1 x 1,100 L	4	15
Warehouse 3B	2 x 1,100 L	1 x 1,100 L	1 x 1,100 L	4	10
Warehouse 3C	2 x 1,100 L	1 x 1,100 L	1 x 1,100 L	4	10
Warehouse 3D and 3E	1 x 3 m <sup>3</sup>	2 x 1,100 L	1 x 1.5 m <sup>3</sup>	4	15
Warehouse 3F and 3G	1 x 3 m <sup>3</sup>	2 x 1,100 L	1 x 1.5 m <sup>3</sup>	4	15
<b>Precinct 4</b>					
Warehouse 4A	2 x 3 m <sup>3</sup>	3 x 1,100 L	2 x 1,100 L	7	20
Warehouse 4B	1 x 3 m <sup>3</sup>	1 x 1.5 m <sup>3</sup>	1 x 1,100 L	3	15
Warehouse 4C	2 x 3 m <sup>3</sup>	3 x 1,100 L	2 x 1,100 L	7	20
Warehouse 4D	2 x 1,100 L	1 x 1,100 L	1 x 660 L	4	10
Warehouse 4E	2 x 3 m <sup>3</sup>	1 x 3 m <sup>3</sup>	2 x 1,100 L	5	20
Warehouse 4F	1 x 1.5 m <sup>3</sup>	1 x 1,100 L	1 x 660 L	3	10
Warehouse 4G	1 x 1,100 L	1 x 660 L	1 x 660 L	3	10
<b>Precinct 5</b>					
Warehouse 5A	2 x 3 m <sup>3</sup>	3 x 1.5 m <sup>3</sup>	2 x 1,100 L	7	25

## 6.4.2 Stage 2

The estimated number of bins required for weekly storage of operational waste and recycling generated by Stage 2 are shown in **Table 17** and are based on:

- The estimated quantities of compacted operational waste and recycling as shown in **Table 14**
- Bin dimensions from the Council’s DCP as shown in **Table 15**
- Garbage and comingled recycling collection frequency of two times per week
- Paper and cardboard collection frequency of once per week
- General waste compactor capacity of 25 m<sup>3</sup>
- Paper and cardboard bale capacity of 500 kg

To calculate the anticipated number of bales generated per week, the volume of paper and cardboard in cubic metres was converted to the weight of compacted paper and cardboard in tonnes. A density of 0.13 t/m<sup>3</sup> was applied and taken from the NSW Department of Environment, Climate Change and Water Disposal based survey of the commercial and industrial waste stream in Sydney<sup>25</sup>. The estimated number of bins required for weekly storage of operational waste and recycling generated by Stage 2 is shown in **Table 17**.

**Table 17 Minimum number of bins and waste storage area for operational waste of Stage 2**

Location	Bins Required			Recommended Storage Area (m <sup>2</sup> )
	General Waste	Paper and Cardboard Recycling	Comingled Recycling	
Warehouse 2B	1 x 25 m <sup>3</sup> compactor	1 x baler	1 x 1,100 L	35

## 6.4.3 Bulky and Hazardous Waste Management

As outlined in the Penrith DCP, additional storage space for the bulky waste stream must be provided. This stream includes broken pallets, broken storage units, e-waste and other materials that cannot be disposed of in the general or recyclable waste stream.

Council’s guidelines do not provide storage area dimensions for bulky waste. In the absence of dimensions provided by Council, SLR has adopted storage area dimensions for bulky waste presented in The City of Sydney’s Guidelines for Waste Management in New Developments. These are applied as they are the most recent recommendations for bulky waste storage that have been provided in guidelines for new developments in NSW and are applicable to non-residential developments. The recommended space for storing bulky wastes should be at least:

- 4 m<sup>2</sup> for developments between 100 m<sup>2</sup> and 2,000 m<sup>2</sup>, and
- An additional 4m<sup>2</sup> for developments over 2,000 m<sup>2</sup> and for every 20,000 m<sup>2</sup> of office space.

SLR recommends 8 m<sup>2</sup> to be allocated for bulky waste storage. Hence in addition to the recommended waste storage area noted in **Table 17**, the total waste storage area recommended for Stage 2 is identified in **Table 18**.

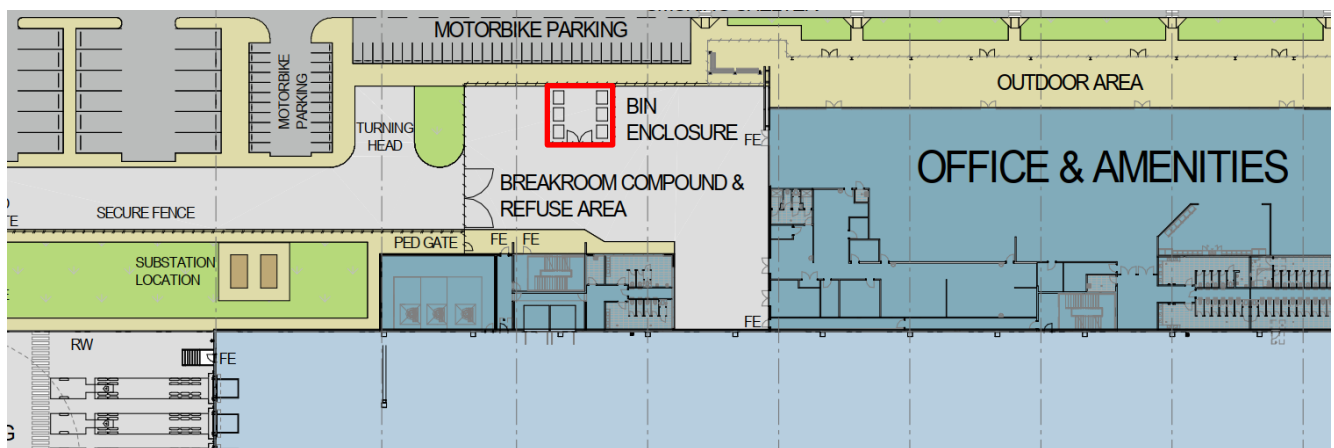
<sup>25</sup> <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/warrlocal/100005-waste-survey-append.pdf>

**Table 18 Total recommended storage area for operations at Stage 2**

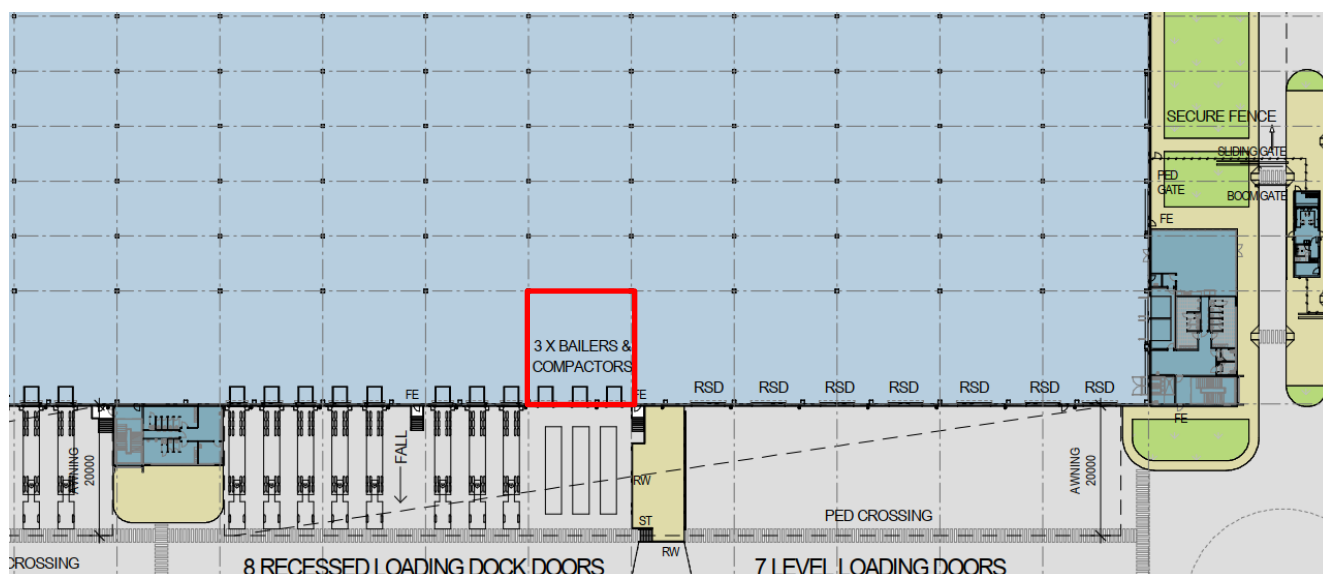
Location	Recommended Storage Area (m <sup>2</sup> )		
	Waste and Recycling	Bulky waste	Total Storage Area
Warehouse 2B	35	8	43

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.

The waste storage areas for Stage 2 are shown on the architectural drawing the 'Site Plan' labelled as 'Bin Enclosure' and 'Balers and Compactors'. The waste storage areas are highlighted in red in **Figure 5** and **Figure 6** below. The 'Site Plan' can be seen in the architectural drawings attached in **Appendix B**.



**Figure 5 Refuse area location for Stage 2**



**Figure 6** Bailers and compactors location for Stage 2

In the unlikely event of hazardous waste generation, SLR also recommends using this space to separate and manage hazardous waste. In accordance with Council’s DCP, hazardous waste management at the site must be placed in specialised containment bins and 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. Removal is to be undertaken by appropriately licensed specialised services. Based on communication with the Client<sup>26</sup>, SLR understands a private contractor is to be engaged for the collection of hazardous waste to be undertaken as needed.

SLR recommends that waste audits be undertaken approximately one month into the operational phase of Stage 2 to quantify actual waste generation rates. The assessment of generated waste quantities will be influenced by management, employee and tenant attitudes to recycling and disposal, and the adequacy of signage and education provided for occupants.

#### 6.4.4 Recycling Bale Management

It is important to note that bales of recyclable material are susceptible to degradation by exposure to the elements and vermin. Therefore, recycling bales should be stored indoors for no longer than two weeks until collection. An indoor bale storage area for the Project should:

- Be clean and well-maintained
- Be of sufficient size to store the required number of bales
- Be sufficiently lighted with vermin control measures
- Have appropriate security measures to prevent theft of bales, and
- Be equipped with a high-volume sprinkler system to retard the spread of fire.

The bales themselves should be stored with the following considerations:

<sup>26</sup> Email from Stephanie Partridge – Goodman, “RE: MOD 3 & Stage 2 DA co-ordination meeting - Oakdale West”, dated 1 November 2019.

- Bales should be placed on storage pallets, not directly on the floor or ground
- Bales should be stacked and secured in accordance with relevant SafeWork Australia Codes of Practice, and any other relevant legislation or guidance to prevent bales from presenting a risk of harm to workers
- Bales should not be stacked too close to sprinkler systems to avoid compromising the effectiveness of the fire suppression system, and
- Although not generally recommended, if bales are stored outdoors, they should be covered with plastic sheeting, or similar, as protection from exposure to the elements.

In accordance with better practice management and to reduce packaging waste generation, it is recommended that packaging materials are returned to the suppliers through the services of the supplier delivery trucks, allowing the reduction of waste further along the supply chain.

## 6.5 Waste Storage Room Location

In accordance with Council's DCP, the design for the waste storage areas of the Project are to take into consideration better practice waste management and recommendations from Council's DCP. In accordance with better practice waste management and Council's DCP, the waste storage area should be located so that:

- It is located away from primary street frontages
- It is near any on-site loading bays
- It is convenient, safe, functional and directly accessible to users in each tenancy and servicing collection staff, but inaccessible to the public
- It avoids pedestrian or vehicular traffic hazards likely to be caused by waste collection and storage,
- It has 1.8 m zone of unobstructed clearance between the waste storage area and the entrance.

As per Council's DCP, the nominated collection areas for each warehouse tenancy is to be clearly nominated on site plans accompanying development applications.

## 6.6 Waste Storage Area Features

In accordance with better practice waste management and Council's DCP, the Project's waste storage areas should have the following features:

- Blend in to the design of the wider development and the surrounding streetscape
- Be well lit and well-ventilated
- Fully enclosed and walled
- Adequate vermin prevention measures
- Reduce potential noise and odour impacts
- Enhance safety for the public
- Be connected to a water outlet for washing purposes
- Equipped with a hot and cold tap-based water supply centralised mixing valve
- Floor graded to a central drainage point which is connected to the sewer

- Have water discharge from washing flow to a sewer approved by the relevant authority
- Waterproofed and sealed non-slip floor constructed in accordance with the Building Code of Australia.
- Waste equipment is protected from theft and vandalism
- Be fully enclosed, walled and not permit through access to other on-site waste infrastructure
- Have a minimum 2.7 m unobstructed internal room height in accordance with the Building Code of Australia
- Adequate lighting and natural or mechanical ventilation in accordance with the Building Code of Australia
- Provide suitable dual door access with a minimum width of 1.8 m and a minimum 1.8 m unobstructed access corridor for the service of bins
- Provide administrative management, including signage to ensure appropriate use
- Be screened from public areas to reduce the impacts of noise, odour and visual amenity, and
- Flexible in design to allow for future changes in operation, tenancies and uses.

## 6.7 Waste Servicing

In accordance with Council's DCP, for buildings three storeys or greater, interim waste and recyclables storage units are required on each level. The units are to be collected at the end of each day and transferred by cleaners to the central waste storage room.

Based on communication with the Client, SLR understands that waste collections will be undertaken through a private contractor<sup>27</sup>. The following general waste servicing access requirements should be implemented:

- Waste will be removed regularly.
- Arrangements should be in place so that the waste and recycling storage rooms are not accessible to the general public.

In accordance with Council's DCP, the following is required for the access provisions for of waste collection vehicles:

- Collection vehicles must be able to enter and exit the collection area in a forward direction
- Drawings must show the site's entry point, vehicle's route of travel and manoeuvring
- Swept path models must illustrate how a standard waste collection vehicle will enter, service and exit the site
- A 0.5 m unobstructed clearance is required from all obstructions for the vehicle's ingress and egress manoeuvres
- For rear loaded vehicles, an additional 2 m unobstructed loading zone is required behind the vehicle for the loading of 1,100 L bins. Additionally, a 0.5 m side clearance is required on either side of the vehicle for driver movements and accessibility

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<sup>27</sup> Email from Stephanie Partridge – Goodman, "RE: MOD 3 & Stage 2 DA co-ordination meeting - Oakdale West", dated 1 November 2019.



- Unobstructed access, adequate driveways and ramps of sufficient strength to support waste collection
- A structural engineer's report is to accompany the DA and confirm that all infrastructure used for vehicle ingress and egress movements can support the waste collection vehicle's weight. Council's DCP consists of dimensions for waste collection vehicles.

SLR recommends that the design of the Project is reviewed by a traffic specialist and that the drawings are updated to be in accordance with Council's servicing requirements listed above. This WMP should be updated to reflect those updates.

Hazardous waste produced at the site will be collected by appropriately licensed specialised services.

Once a private waste contractor is engaged, a valid waste and recycling collection contract is recommended to demonstrate disposal at a waste facility lawfully able to accept it. Written evidence of the valid contract should be kept on-site.

## 6.8 Waste Avoidance, Reuse and Recycling Measures

### 6.8.1 Waste Avoidance

Waste avoidance measures 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.

### 6.8.2 Re-use

Possible re-use opportunities include establishing systems with in-house and supply chain stakeholders to transport products in re-useable packaging where possible.

### 6.8.3 Recycling

Recycling opportunities include:

- Collecting and recycling e-wastes
- 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.

## 6.9 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
- 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 Project
- Ensure all staff are trained in correct waste separation and management procedures
- Provide directional signage to show location of and routes to waste storage area
- 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.

## 6.10 Signage

As outlined in the Penrith DCP, the waste storage and collection areas should be provided with appropriate signage. These signs should clearly identify waste management procedures and provisions to contractors, tenants and visitors should be distributed around the Project.

Signs which clearly identify waste management procedures and provisions to staff and visitors should be distributed around the Project. 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 7**
- 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 Project, 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<sup>28</sup>. 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 7 Example of bin labels for operational waste

## 6.11 Monitoring and Reporting

Monitoring is recommended to ensure waste and recycling management arrangements and provisions for the Project are functional, practical and are maintained to the standard outlined in this plan, at a minimum.

Visual assessments of bins and bin storage areas should be conducted by the building manager, at minimum:

- Weekly, in the first two months of operation to ensure the waste management system is sufficient for the operation, and
- Every six months, to ensure waste is being managed to the standards outlined in this document.

In addition, audits are to be conducted on a half-yearly basis to ensure WMP provisions are maintained.

Quantities of waste and recycling associated with disposal of waste and recycling, including dockets, receipts and other physical records should be recorded by the Building Manager. This is to allow reviews of the waste management arrangements and provisions at the site over time. Records of waste disposal should also be available to regulatory authorities such as the NSW Environmental Protection Authority and SafeWork NSW, upon request.

Any deficiencies identified in the waste management system, including, but not limited to, unexpected waste quantities, is to be rectified by the Building Manager as soon as it is practical. Where audits show that recycling is not carried out effectively, management should carry out additional staff training, signage re-examination and reviews of the waste management system where the audit or other reviewing body has deemed necessary. If this waste management plan no longer sufficiently meets the needs of the Project, review and updates to maintain suitability must be undertaken.

<sup>28</sup> NSW EPA waste signage and label designs <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>

## 6.12 Roles and Responsibilities

It is the responsibility of the Building Manager, or equivalent role, to implement this WMP and a responsibility of all warehouse tenants and staff to follow the waste management procedures set out by the WMP. SLR recommends that all subcontractors enlisted by the Client are to have roles and responsibilities identified and the Project's waste management system clearly explained. A summary of recommended roles and responsibilities are provided in **Table 19**.

**Table 19 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.
	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 daily 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

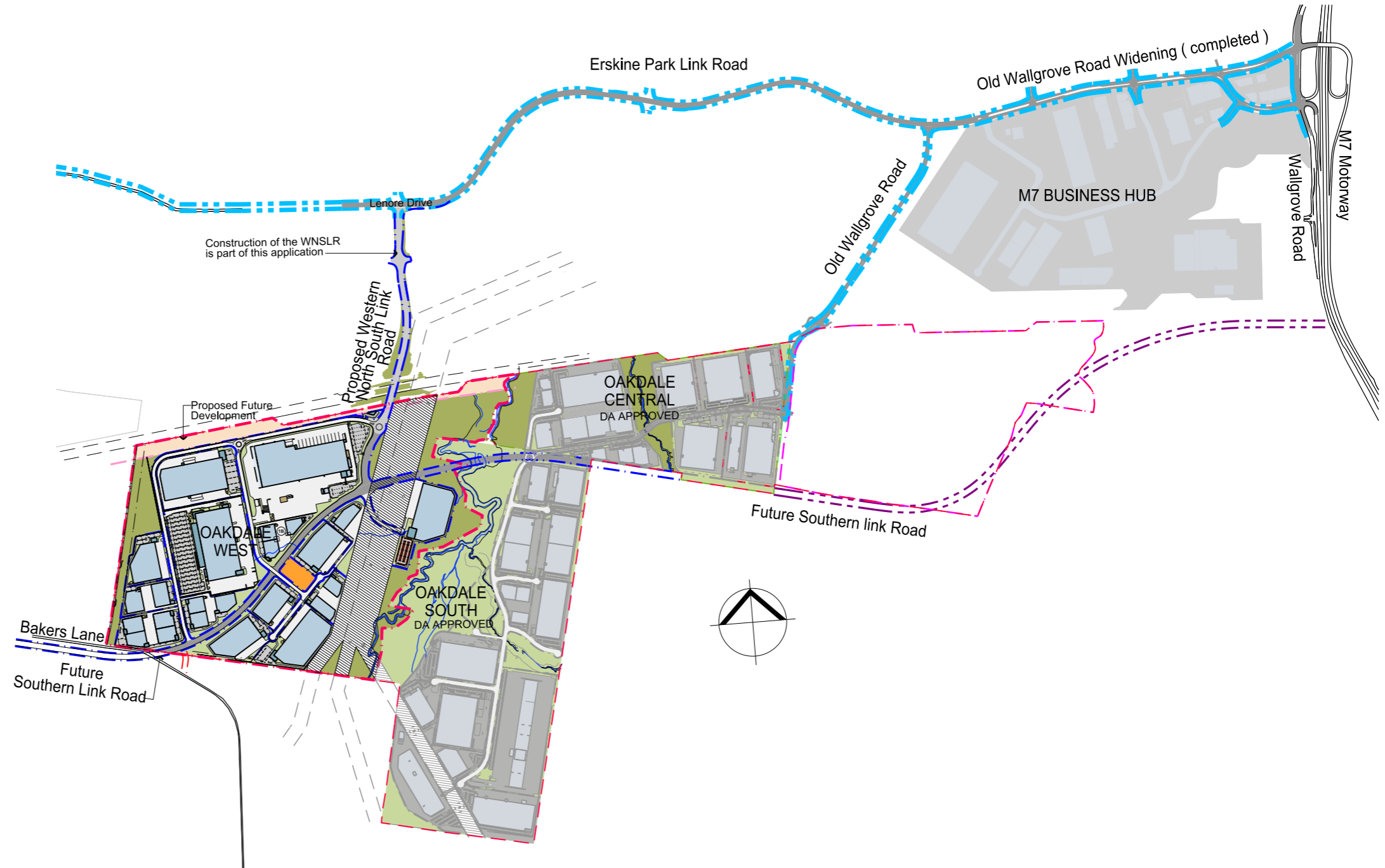
## Modification 3 Architectural Drawings

**PROPOSED INDUSTRIAL FACILITIES**

**OAKDALE WEST**  
Estate Road HORSLEY PARK, NSW 2175

**Drawing List**

Masterplans	
OAK MP01	Cover Sheet & Location
OAK MP02	Masterplan
OAK MP03	Not Used
OAK MP04	Not Used
OAK MP05	Not Used
OAK MP06	Precinct Plan
OAK MP07	Indicative Ultimate Lot Layout
OAK MP08	Site Analysis Plan
OAK MP09	Existing Zoning
OAK MP10	Not Used
OAK MP11	Not Used
OAK MP12	Not Used
OAK MP13	Fire Protection Plan
OAK MP14	Biodiversity Management Plan





Legend	
	Site Boundary
	Lot Boundary
	3.75m Landscape Setback
	7.50m Building Setback

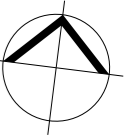
Site Area Schedule	
<b>Total Site Area</b>	<b>154.12 ha</b>
Less:	
Non Developable Land	21.08 ha
Easements	22.45 ha
Regional Roads	6.74 ha
Services Lot	1.26 ha
Estate Roads	7.64 ha
E2 Zone non developable	1.43 ha
	<b>60.60 ha</b>
<b>Development Areas</b>	
Precinct 1	21.92 ha
Precinct 2	26.83 ha
Precinct 3	11.15 ha
Precinct 4	22.39 ha
Precinct 5	6.02 ha
Proposed Future Development	4.82 ha
Amenities Lot	0.26 ha
<b>Total Developable</b>	<b>93.39 ha</b>
Precinct 1 GLA	89,680 sqm
Precinct 2 GLA	259,886 sqm
Precinct 3 GLA	57,819 sqm
Precinct 4 GLA	113,693 sqm
Precinct 5 GLA	35,640 sqm
Amenities Lot GLA	345 sqm
<b>Total GLA</b>	<b>557,063 sqm</b>
Precinct 1 GFA	122,082 sqm
Precinct 2 GFA	266,186 sqm
Precinct 3 GFA	57,819 sqm
Precinct 4 GFA	113,693 sqm
Precinct 5 GFA	35,640 sqm
Amenities Lot GFA	345 sqm
<b>Total GFA</b>	<b>595,765 sqm</b>
Total Warehouse	529,589 sqm
Total Office	23,126 sqm
Others (for Site 1A)	4,349 sqm
Mezzanines (for Site 1A & 2B)	38,702 sqm
<b>Total GFA</b>	<b>595,765 sqm</b>



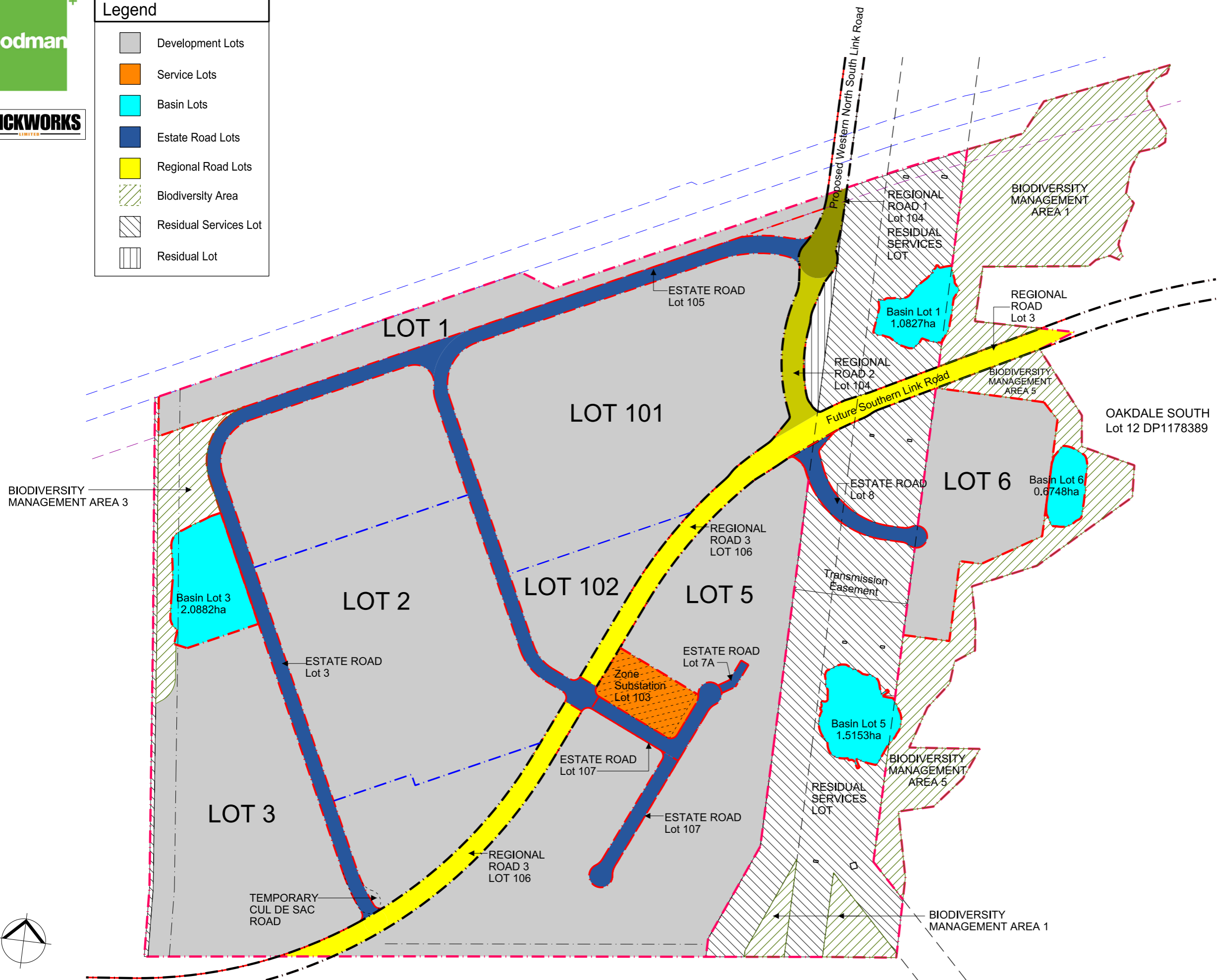




Precinct 1	28.95 ha
Net Developable area	21.92 ha
Precinct 2	32.00 ha
Net Developable area	26.83 ha
Precinct 3	17.56 ha
Net Developable area	11.15 ha
Precinct 4	23.75 ha
Net Developable area	22.39 ha
Precinct 5	13.51 ha
Net Developable area	6.02 ha



Legend	
	Development Lots
	Service Lots
	Basin Lots
	Estate Road Lots
	Regional Road Lots
	Biodiversity Area
	Residual Services Lot
	Residual Lot



Lot 1 DP120679		Sub Total
<b>Total Land Area</b>	<b>WEST</b>	<b>154.12 ha</b>
Biodiversity Lot 1	8.0710 ha	
Biodiversity Lot 2	Not Used	
Biodiversity Lot 3	2.1208 ha	
Biodiversity Lot 4	Not Used	
Biodiversity Lot 5	7.2420 ha	17.4338 ha
Regional Road 1 Lot 104	.6057 ha	
Regional Road 2 Lot 104	.915 ha	
Regional Road 3 Lot 106	5.0791 ha	6.5998 ha
Services Lot 103	1.2614ha	1.2614 ha
Residual Lot	.5918 ha	.5918 ha
Residual Services Lot	20.0564 ha	20.0564 ha
Estate Road Lot 105	2.8247 ha	
Estate Road Lot 2	Deleted	
Estate Road Lot 3	2.8491 ha	
Estate Road Lot 4	Deleted	
Estate Road Lot 5	Deleted	
Estate Road Lot 107	1.3473 ha	
Estate Road Lot 7A	.0845 ha	
Estate Road Lot 8	.747 ha	7.8526 ha
Basin Lot 1	1.0828 ha	
Basin Lot 2	Not Used	
Basin Lot 3	2.0882 ha	
Basin Lot 4	Not Used	
Basin Lot 5	1.5153 ha	
Basin Lot 6	0.6748 ha	5.3611 ha
Development Lot 101 & 102	21.9242 ha	
Development Lot 1	5.0751 ha	
Development Lot 2	26.8293 ha	
Development Lot 3	12.7244 ha	
Development Lot 4	Deleted	
Development Lot 5	22.3902 ha	
Development Lot 6	6.0196 ha	94.9628 ha

\*All areas subject to survey.



# APPENDIX B

## Stage 2 Architectural Drawings



# Proposed Building 2B

OAKDALE WEST ESTATE, KEMPS CREEK, NSW

## DRAWING LIST

- DA000 COVERPAGE
- DA001 WAREHOUSE 3D VIEWS
- DA002 OFFICE 3D VIEWS
- DA100 MASTERPLAN
- DA101 SITE PLAN
- DA102 SIGNAGE PLAN
- DA200 GF PLAN
- DA201 LEVEL 1 PLAN
- DA202 LEVEL 2 PLAN
- DA203 LEVEL 3 PLAN
- DA204 ROOF PLAN
- DA210 MAIN OFFICE PLANS
- DA211 OFFICE ELEVATIONS
- DA212 TRUCKERS LOUNGE
- DA213 BREAKOUT AREA PLANS
- DA214 GATEHOUSE PLANS
- DA300 OVERALL ELEVATIONS
- DA400 SECTIONS
- DA410 TYPICAL WALL SECTIONS



**FOR APPROVAL**

0	ISSUE	10/01/2020
1	REVISED DA ISSUE	11/12/2019
2	REVISED DA ISSUE	26/11/2019
3	REVISED DA ISSUE	25/11/2019
4	DA ISSUE	
5	DESCRIPTION	

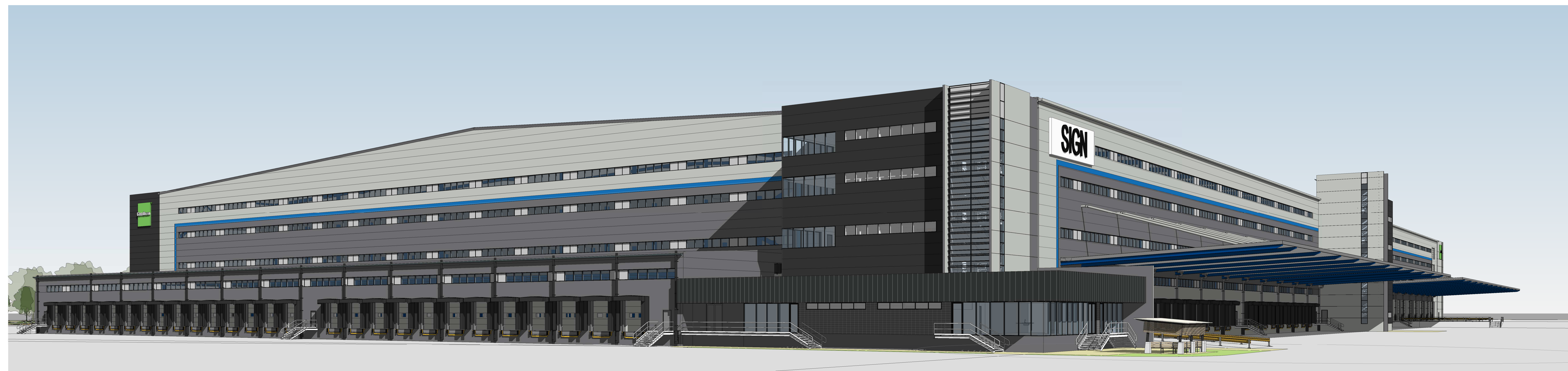
**Project Waratah**  
Oakdale West Estate, Kemps Creek, NSW

TITLE		COVERPAGE		REVISION	
DATE	SCALE	PROJECT NO.	DWG NO.		
10/01/2020		19217	DA000	D	





1 NORTH - WEST VIEW FROM ESTATE ROAD 03

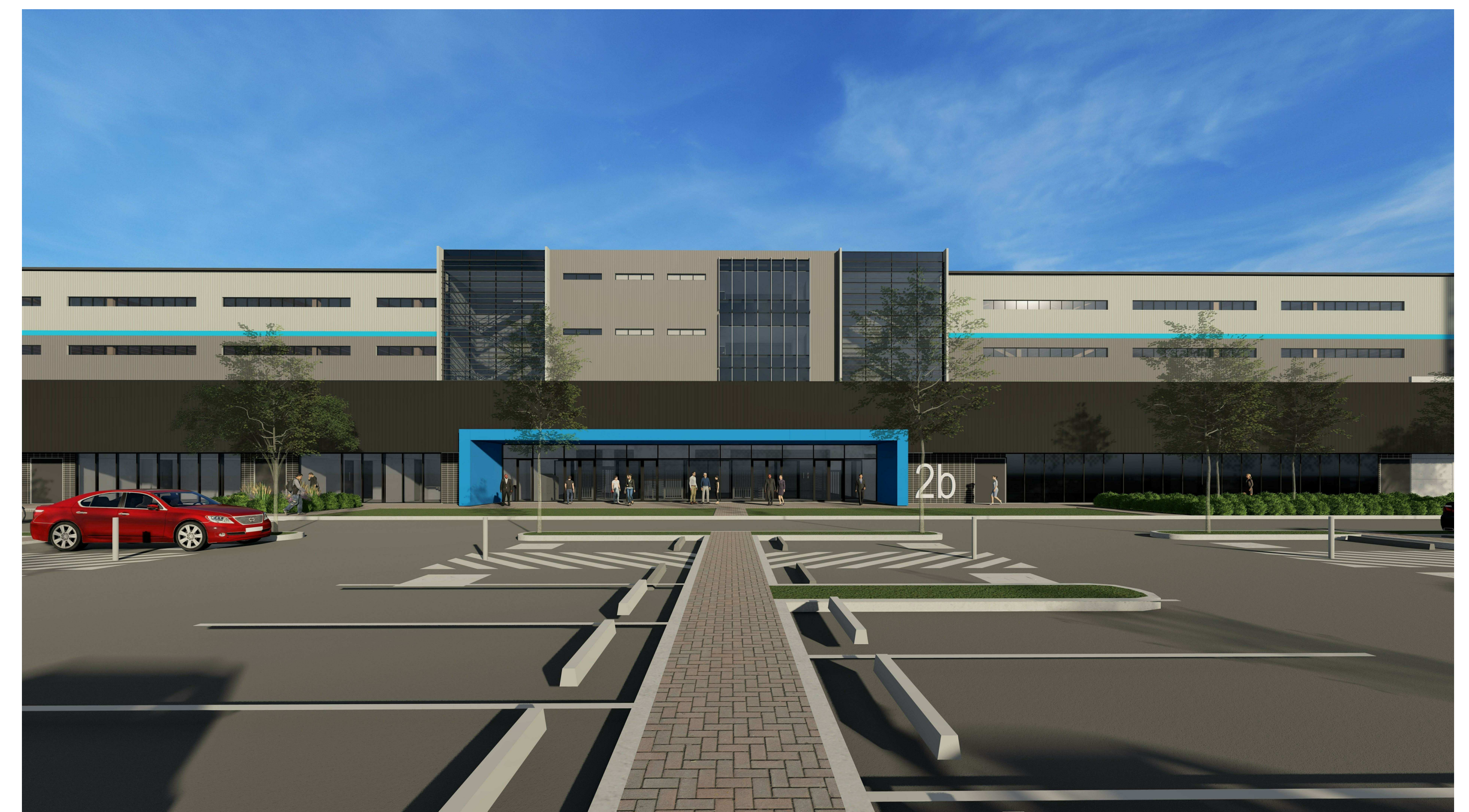
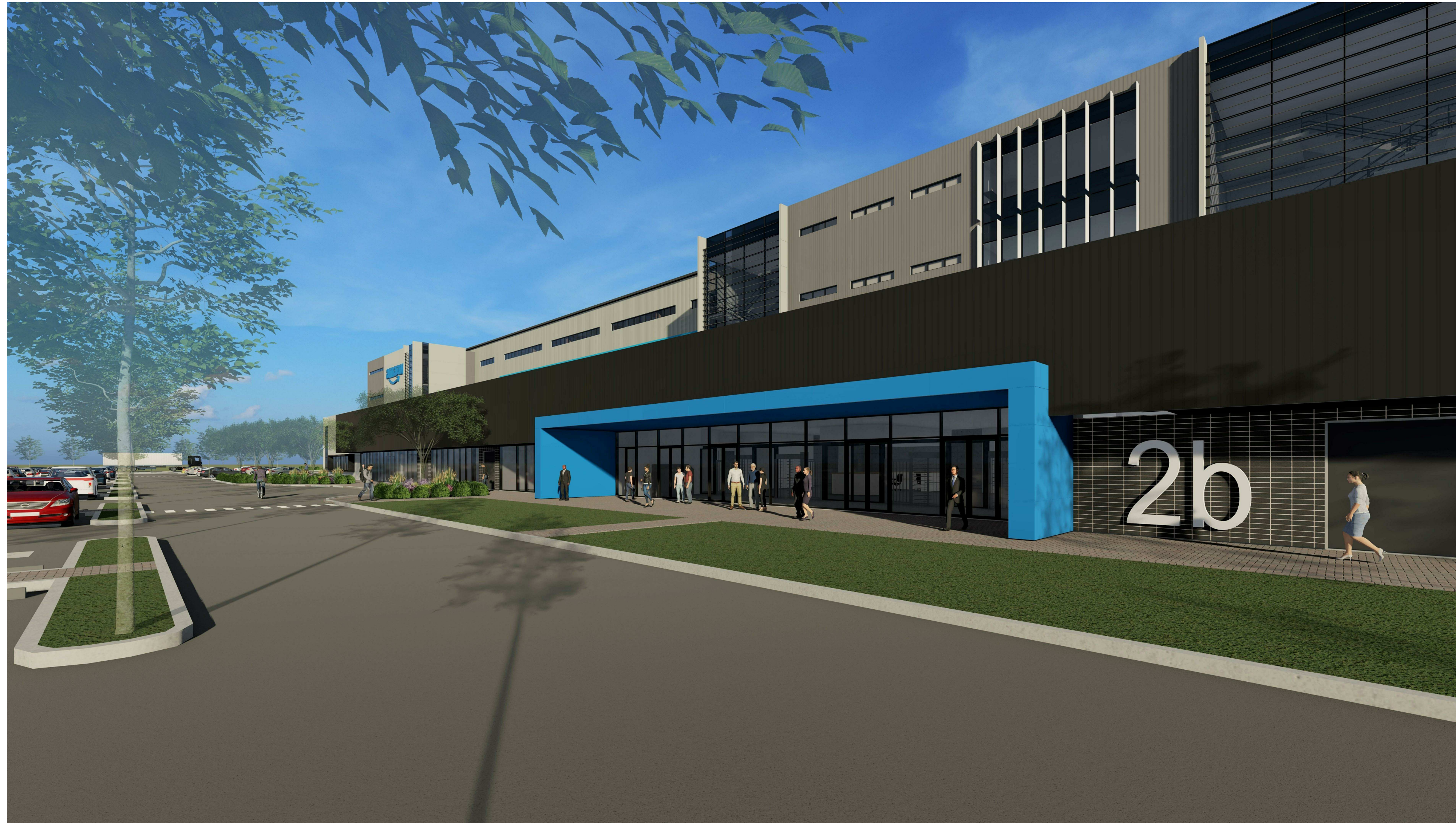


2 SOUTH - EAST VIEW FROM FUTURE LINK ROAD

INDICATIVE EXTERNAL FINISHES LEGEND

- FOR APPROVAL**
- AL-1 P.C. ALU. FRAME BLACK
  - AL-2 ALU. LOUVRES COLORBOND - MONUMENT
  - BLK-1 CONCRETE BLOCK CHARCOAL - STACK BOND
  - GL-1 GLAZING DARK GREY TINT
  - GL-2 SPANDREL GLAZING DARK GREY (OPAQUE)
  - GL-3 TRANSLUCENT GLAZING LIGHT GREY
  - MDC-1 METAL BARGE CASPIING COLORBOND BASALT
  - MDR-1 METAL DECK ROOFING TYPE 1
  - MDR-2 METAL DECK ROOFING TYPE 2
  - IWP-1 INSULATED WALL PANEL COLORBOND - BASALT
  - IWP-2 INSULATED WALL PANEL COLORBOND - SHALE GREY
  - IWP-3 INSULATED WALL PANEL BLUE FINISH
  - IWP-4 INSULATED WALL PANEL COLORBOND - MONUMENT
  - MMC-1 METAL WALL CLADDING RAISED SEAM PANELS COLORBOND - MONUMENT
  - MMC-2 FC WALL CLADDING BLUE FINISH
  - MMC-3 LYSAGHT SPANDEK COLORBOND - BASALT
  - MMC-4 METAL WALL CLADDING RAISED SEAM PANELS COLORBOND - BASALT
  - PCP-1 PRECAST CONCRETE PANELS OFF FORM CONCRETE
  - PCP-PF-2 PRECAST CONCRETE PANELS PAINT FINISH - SHALE GREY
  - PCP-PF-3 PRECAST CONCRETE PANELS PAINT FINISH - BASALT
  - PF-1 PAINT FINISH - 1 MONUMENT
  - PF-2 PAINT FINISH - 2 SHALE GREY
  - PF-3 PAINT FINISH - 3 COLORBOND - BASALT
  - TRS-1 TRANSLUCENT ROOF SHEETING - OPAL



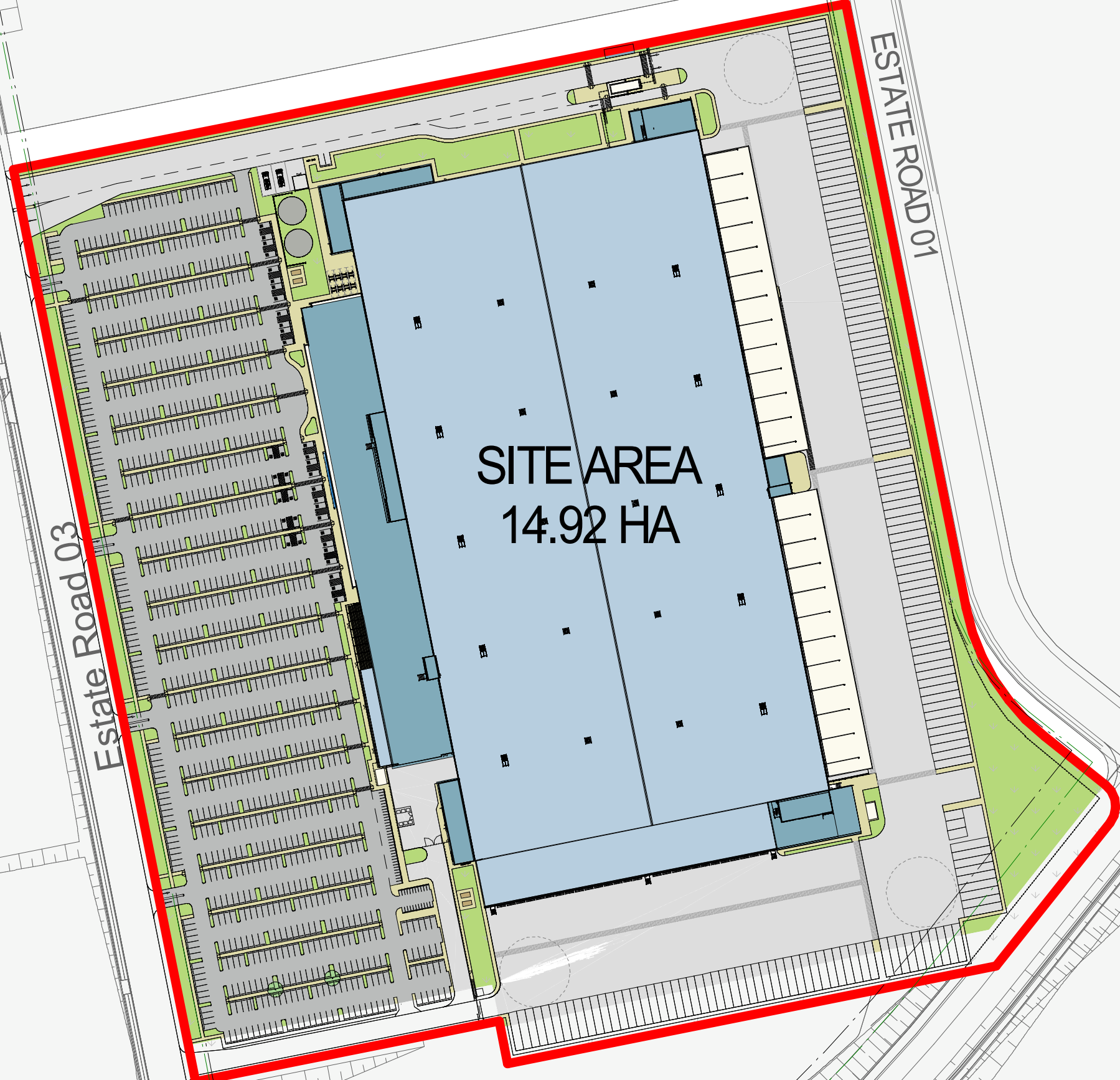


FOR APPROVAL





APPROVED UNDER SSD 7398

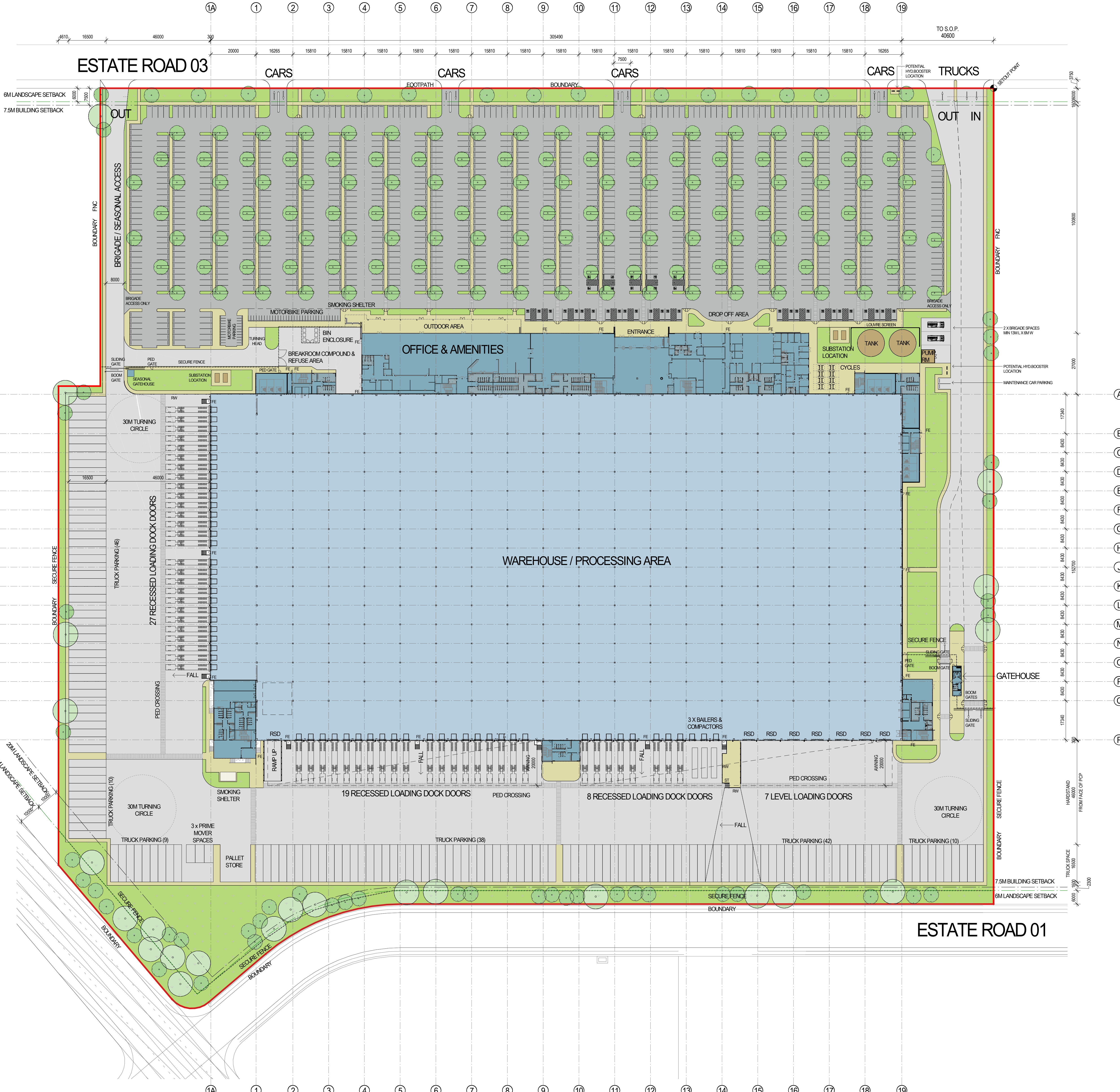


SITE AREA  
14.92 HA

DEVELOPMENT SCHEDULE	
SITE AREA	149,266 sqm
<b>FLOOR AREAS</b>	
	M <sup>2</sup>
GROUND FLOOR - OFFICE AND AMENITIES	5,492
GROUND FLOOR - PROCESSING	50,873
GROUND FLOOR - MEZZANINE	6,300
LEVEL 1 - PROCESSING	48,101
LEVEL 2 - PROCESSING	48,101
LEVEL 3 - PROCESSING	48,101
TOTAL GFA	206,968
TOTAL GLA	200,668
<b>SITE COVER</b>	
	%
HARDSTAND PAVEMENT	40,626 sqm
LIGHT DUTY PAVEMENT	30,197 sqm
TRUCK PARKING	134
SHUNTER PARKING	3
<b>CAR PARKING SPACES</b>	
	1,127
<b>MOTORCYCLE PARKING SPACES</b>	
	54

FOR APPROVAL





DEVELOPMENT SCHEDULE	
SITE AREA	149,266 sqm
<b>FLOOR AREAS</b>	
M <sup>2</sup>	
GROUND FLOOR - OFFICE AND AMENITIES	5,492
GROUND FLOOR - PROCESSING	50,873
GROUND FLOOR - MEZZANINE	6,300
LEVEL 1 - PROCESSING	48,101
LEVEL 2 - PROCESSING	48,101
LEVEL 3 - PROCESSING	48,101
<b>TOTAL GFA</b>	<b>206,968</b>
<b>TOTAL GLA</b>	<b>200,688</b>
<b>SITE COVER</b>	
34.2 %	
HARDSTAND PAVEMENT	40,626 sqm
LIGHT DUTY PAVEMENT	30,197 sqm
<b>TRUCK PARKING</b>	
135	
SHUNTER PARKING	3
DOUBLE SWAP SPACES	20
<b>CAR PARKING SPACES</b>	
1,127	
<b>MOTORCYCLE PARKING SPACES</b>	
54	

LEGEND:	
	FNC-1, FENCE TYPE-1
	FNC-2, FENCE TYPE 2
	SITE BOUNDARY
	6M LANDSCAPE SETBACK (MIN 3.75M)
	7.5M BUILDING SETBACK

FOR APPROVAL

NO.	REVISION	DATE
6	REVISED DA ISSUE	10/01/2020
7	FOR COMMENT	09/01/2020
8	FOR COMMENT	17/01/2019
9	REVISED DA ISSUE	11/01/2019
10	FOR COMMENT	09/12/2018
11	FOR COMMENT	09/12/2018
12	REVISED DA ISSUE	28/11/2018
13	DA ISSUE	25/11/2018
14	DESCRIPTION	DATE

**Project Waratah**  
Oakdale West Estate, Kemps Creek, NSW

TITLE		SCALE		PROJECT NO.		DWG NO.		REVISION	
SITE PLAN		1:750 @ B1		19217		DA101		G	
DATE	10/01/2020	SCALE	1:750 @ B1	PROJECT NO.	19217	DWG NO.	DA101	REVISION	G

# APPENDIX C

## Council Waste Management Plan

# WASTE MANAGEMENT PLAN

## DEMOLITION, CONSTRUCTION AND USE OF PREMISES

.....  
If you need more space to give details, you are welcome to attach extra pages to this form.

PLEASE COMPLETE ALL PARTS OF THIS FORM THAT ARE RELEVANT TO YOUR DEVELOPMENT APPLICATION (DA).

IF YOU NEED MORE SPACE TO GIVE DETAILS, YOU ARE WELCOME TO ATTACH EXTRA PAGES TO THIS FORM.

Council will assess the information you provide on this form along with your attached plans. We will take into account the types and volumes of waste that could be produced as a result of your proposed development, and how you are planning to:

- minimise the amount of waste produced
- maximise re-use and recycling
- store, transport and dispose of waste safely and thoughtfully.

### APPLICANT DETAILS

First name

Surname

Postal Address

Street No.

Street name

Suburb

Post code

Contact phone number

Email address

### DETAILS OF YOUR PROPOSED DEVELOPMENT

Street No.

Street name

Suburb

Post code

What buildings and other structures are currently on the site?

.....  
.....  
.....

Briefly describe your proposed development

.....  
.....  
.....

Applicant Signature

Date



## SECTION 1: DEMOLITION

\*Please include details on the plans you submit with this form, for example location of on-site storage areas/containers, vehicle access point/s.

Materials		Destination		
		Re-use and recycling		Disposal
Material	Estimated volume (m <sup>2</sup> or m <sup>3</sup> )	ON-SITE* Specify proposed re-use or on-site recycling	OFF-SITE Specify contractor and recycling facility	Specify contractor and landfill site
Excavation (eg soil, rock)				
Green waste				
Bricks				
Concrete				
Timber (Please specify type/s)				
Plasterboard				
Metals (Please specify type/s)				
Other				



## SECTION 2: CONSTRUCTION

\*Please include details on the plans you submit with this form, for example location of on-site storage areas/containers, vehicle access point/s.

Materials		Destination		
		Re-use and recycling		Disposal
Material	Estimated volume (m <sup>2</sup> or m <sup>3</sup> )	ON-SITE* Specify proposed re-use or on-site recycling	OFF-SITE Specify contractor and recycling facility	Specify contractor and landfill site
Excavation (eg soil, rock)				
Green waste				
Bricks				
Concrete				
Timber (Please specify type/s)				
Plasterboard				
Metals (Please specify type/s)				
Other				

### SECTION 3: WASTE FROM ON-GOING USE OF PREMISES

If relevant, please list the type/s of waste that may be generated by on-going use of the premises after the development is finished.	Expected volume (average per week)

### SECTION 4: ON-GOING MANAGEMENT OF PREMISES

If relevant, please give details of how you intend to manage waste on-site after the development is finished, for example through lease conditions for tenants or an on-site caretaker/manager. Describe any proposed on-site storage and treatment facilities. Please attach plans showing the location of waste storage and collection areas, and access routes for tenants and collection vehicles.

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## ASIA PACIFIC OFFICES

### BRISBANE

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Spring Hill QLD 4000  
Australia  
T: +61 7 3858 4800  
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# APPENDIX N

## Sustainability Management Plan



global environmental solutions

Sustainability Management Plan  
Oakdale West Estate  
Stage 2 MOD 3

Report Number: 610.19170 R2

13 January 2020

Goodman Property Services  
Level 17  
60 Castlereagh Street  
Sydney NSW

Version: v1.1

# Sustainability Management Plan

## Oakdale West Estate

### Stage 2 MOD 3

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This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with 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 Goodman Property Services. 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	Status	Date	Prepared	Checked	Authorised
610.19170-R2	V1.1	13 January 2020	Dr. Hamidul Islam Horatio Cai	Dr. Neihad Al-Khalidy	Dr. Neihad Al-Khalidy
610.19170-R2	V1.0	12 December 2019	Dr. Hamidul Islam Horatio Cai	Dr. Neihad Al-Khalidy	Dr. Neihad Al-Khalidy



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APPENDIX A: LIGHTING CALCULATION

APPENDIX B: WATER CALCULATION

## 1 INTRODUCTION

SLR Consulting Australia Pty Ltd (SLR Consulting) has been commissioned by Goodman Property Services to prepare a Sustainability Management Plan (SMP) for the site preparation, construction and operational activities of Modification 3 (MOD 3) and the Stage 2 development of Oakdale West industrial Estate (the Project).

The SMP has been undertaken in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development (SSD 10397 and SSD 7348 MOD 3) application.

## 2 OBJECTIVES

The principal objective of this Sustainability Management Plan is to identify all potential energy savings that may be realised during the operational phase of the Project, including a description of likely energy consumption levels and options for alternative energy sources such as solar power in accordance with Penrith City Council (Council) requirements.

The specific objectives of this plan are as follows:

- To encourage energy use minimisation through the implementation of energy efficiency measures.
- To promote improved environmental outcomes through energy management.
- To ensure the appropriate management of high energy consumption aspects of the Project.
- To identify energy savings procedures for overall cost reduction, greenhouse gas emission reduction and effective energy 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.
- To ensure the long term sustainability of resource use through more efficient and cost effective energy use practices for the life of the development.

### 3 SUSTAINABILITY MANAGEMENT GUIDELINES AND LEGISLATION

#### 3.1 Building Code of Australia

The Building Code of Australia (BCA) is produced and maintained by the Australian Building Codes Board (ABCB) on behalf of the Australian Government with the aim of achieving nationally consistent, minimum necessary standards of relevant health and safety, amenity and sustainability objectives efficiently. The BCA contains mandatory technical provisions for the design and construction of BCA class buildings.

Volume 1, Section J of the BCA (2016) outlines energy efficiency provisions required for BCA class buildings (including Class 7b Warehouses and Class 5 Offices). There are eight (8) Deemed-to-Satisfy subsections, J1 to J8, that focus on separate aspects of energy efficiency as follows:

- J1 - Building Fabric (i.e. the ability of the roof, walls and floor to resist heat transfer).
- J2 - External Glazing (i.e. the resistance to heat flow and solar radiation of the glazing).
- J3 - Building Sealing (i.e. how well parts of a building are sealed to ensure comfortable indoor environments are efficiently maintained).
- J4 - Air Movement (i.e. the provision of air movement for free cooling, in terms of opening and breeze paths).

Note: This subsection has been removed from the most current version.

- J5 - Air Conditioning and Ventilation Systems (i.e. the efficiency and energy saving features of heating, ventilation and air-conditioning systems).
- J6 - Artificial Lighting and Power (i.e. power allowances for lighting and electric power saving features)
- J7 - Hot Water Supply (i.e. the efficiency and energy saving features of hot water supply)
- J8 - Access for Maintenance (i.e. access to certain energy efficiency equipment for maintenance purposes)

#### 3.2 Secretary's Environmental Assessment Requirements (SEARs)

The SEARs of the Oakdale Site states:

- **Greenhouse Gas and Energy Efficiency** – including an assessment of the energy use on-site, and demonstrate the measures to be implemented to ensure the proposal is energy efficient.

## 4 PROJECT DESCRIPTION

Goodman Property Services (Aust) Pty Ltd is developing the Oakdale West site at Lot 11 in DP 1178389 in Erskine Park. This site is primarily a greenfield site and will be comprised of industrial warehouses and office precincts, including internal roads, car parking spaces and hardstand.

The Oakdale West site is a precinct within the wider Oakdale Estate development and forms part of a progressive development designed to make Oakdale a regional distribution park of warehouses, office facilities and distribution centres.

The project is a staged development which includes bulk earthworks, civil works and the construction of infrastructure and stormwater management.

The site has received a Concept and Stage 1 consent for implementation of the masterplan. Modifications 1 and 2 to that consent are currently under assessment by NSW Department of Planning, Infrastructure and Environment (DPIE).

The works for the proposed Stage 2 SSDA requires an alteration to the existing masterplan, identified as MOD 3. Under MOD 3, Stage 2 will relate to the development of building 2B.

### 4.1 Overview of Proposed Development

The overall Oakdale West Estate is a 154 hectare (ha) site located within the Oakdale Estate, a 421 ha area of land within the Western Sydney Employment Area. Oakdale West Estate is the third of four stages of the broader Oakdale Estate under the management of Goodman Limited.

Oakdale West is essentially a Greenfield site at present which has been 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 (grazing, market gardens, etc) and rural residential to the south-east, south and west.
- Sydney Water Pipeline and industrial land to the north (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: Mamre Anglican School, Emmanuel Catholic College and Trinity Primary School. Other land uses include recreational and sporting facilities.

Oakdale West Estate will be developed in stages with the stage 2B including:

- A four-storey warehouse building;
- An ancillary office;
- A mezzanine;
- The amenities required for site operation including Estate Road 03, fencing, utilities, safety and communications infrastructure, and
- Truck and car parking areas and associated site hardstand.

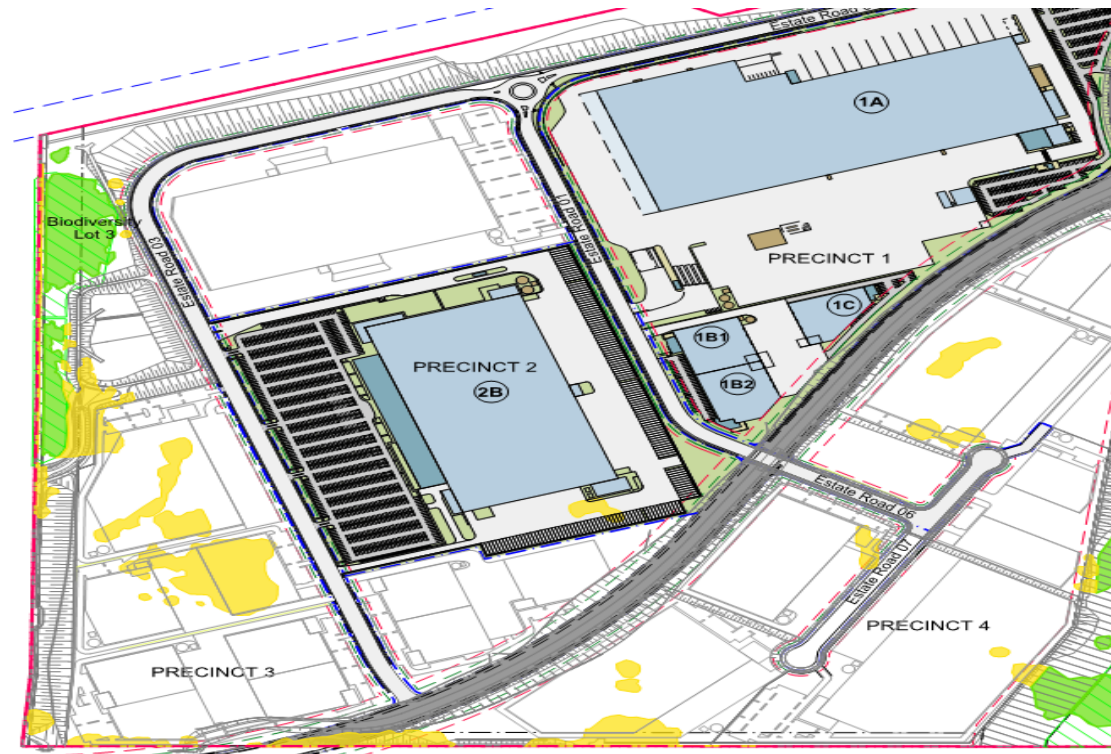
The Stage 2 has a site area of 149,266 m<sup>2</sup> and a GLA area of 200,668 m<sup>2</sup>. Building areas and development schedule are outlined in Table 1:

Table 1 Outlined Areas

Site	Unit and Area
Site Area	149,266 m <sup>2</sup>
Ground Level - Processing	50,873 m <sup>2</sup>
Ground Level – Mezzanine	6,300
Level 1 to Level 3	48,101 m <sup>2</sup> per level
Office	5,492 m <sup>2</sup>
Hardstand Pavement	40,626 m <sup>2</sup>
Light duty pavement	30,197 m <sup>2</sup>
Truck parking	135
Double swap spaces	20
Shunter parking	3
Car parking	1127

The stage 2 development is shown in **Figure 2** to **Figure 4**.

**Figure 1 Overview of the Oakdale West Estate showing Precinct 2 Development Area**



Source: SBA Architects (2019)

Figure 2 Oakdale West Estate, Stage 2 Development

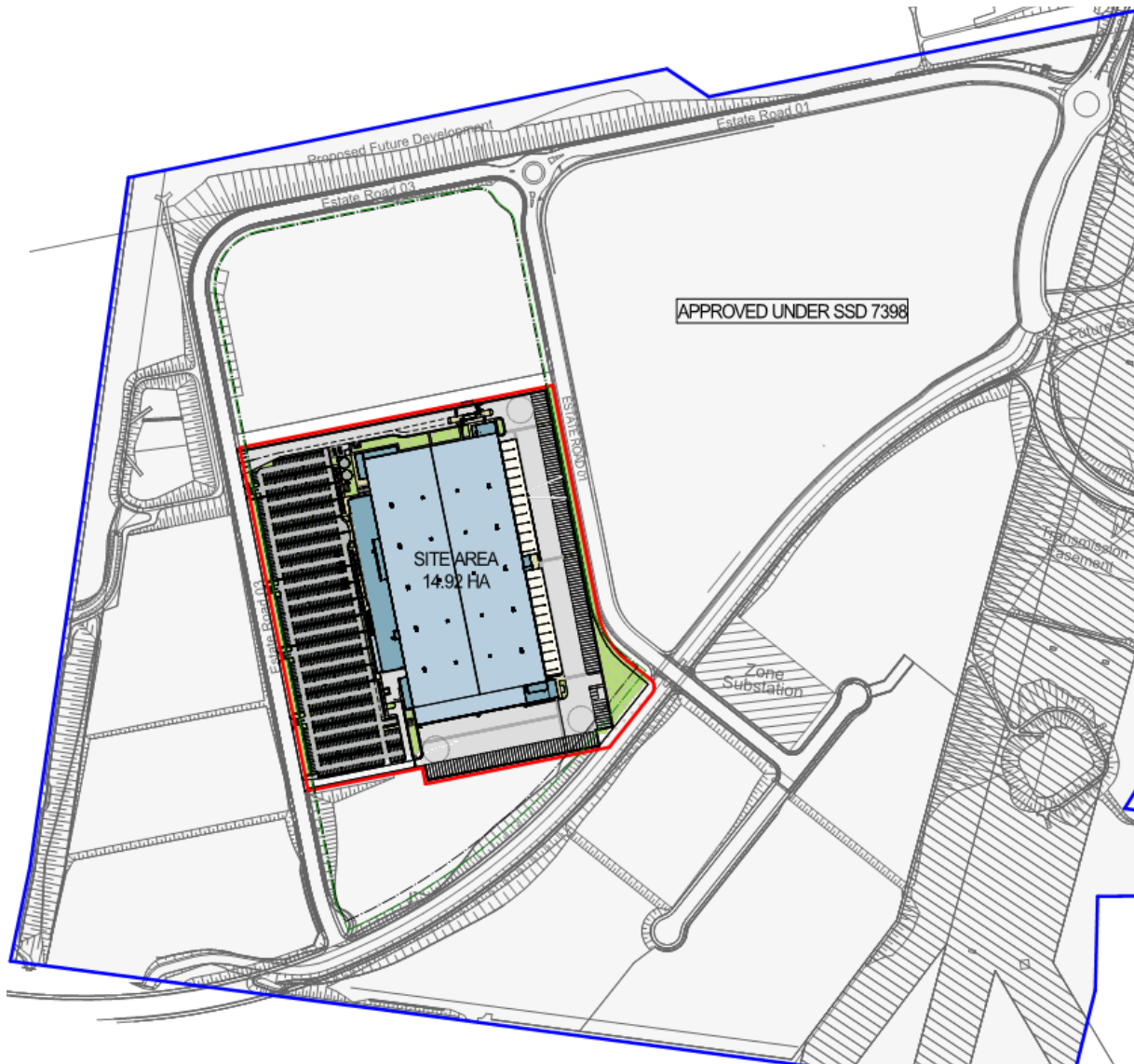


Figure 3 Oakdale West Estate, 3D Image of Stage 2B

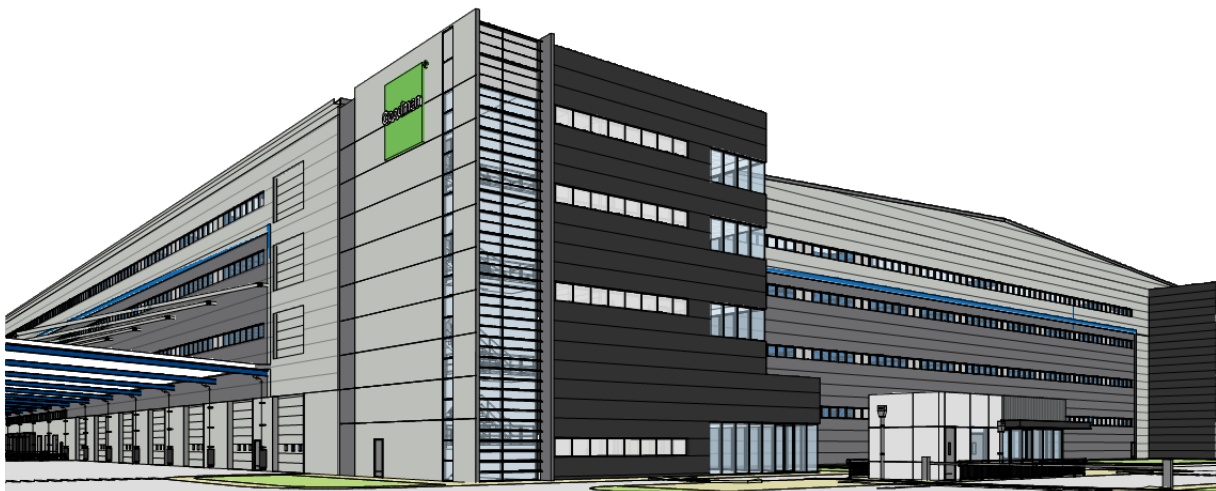
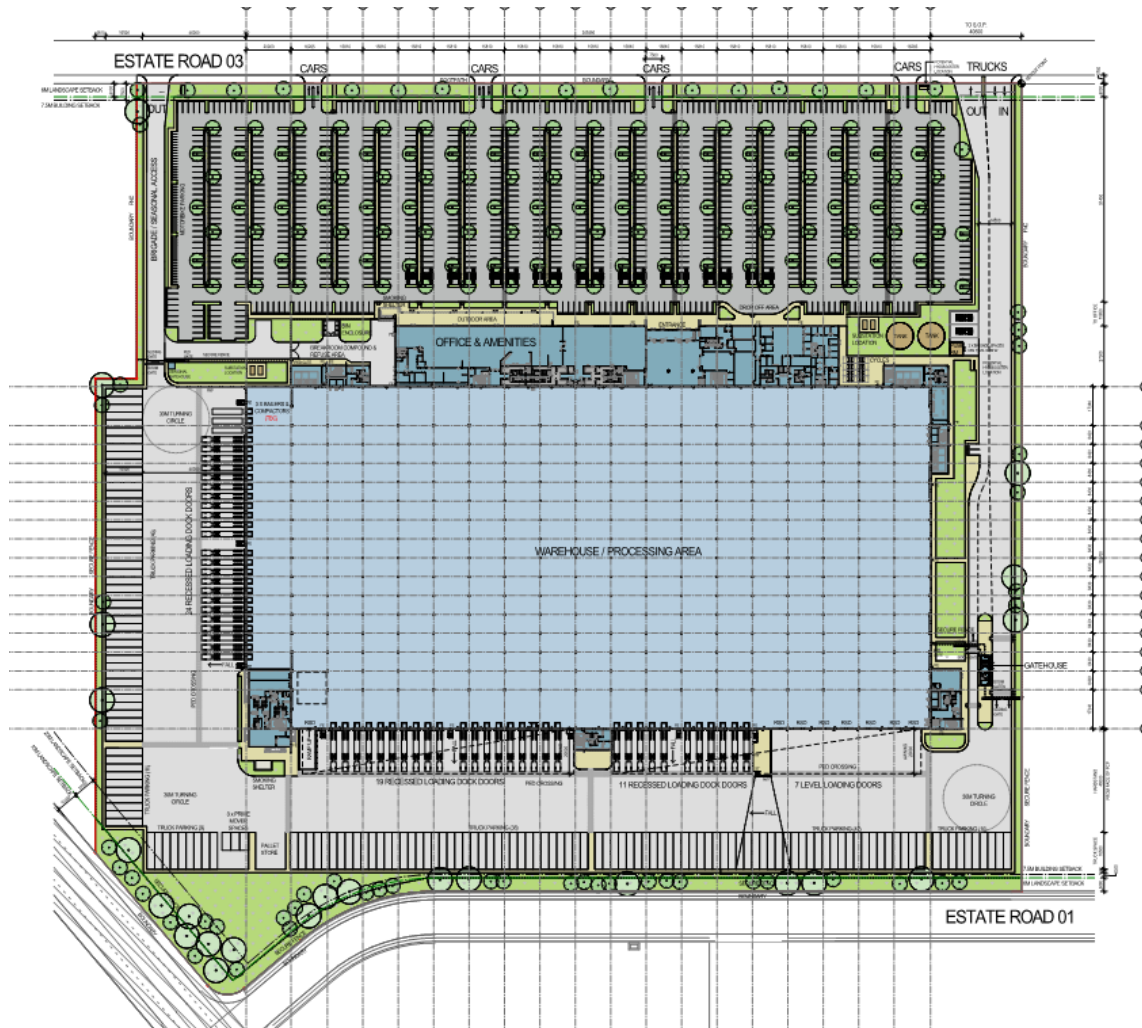




Figure 4 Site Plan - Warehouse and office & Amenities



## 5 OPERATIONAL ENERGY MANAGEMENT

Ineffective energy management for industrial and commercial premises can lead to unnecessary growth in greenhouse gas emissions and consumption of natural resources. Effective energy management reduces costs through the use of energy efficiency measures and improves environmental outcomes locally, regionally and globally.

Effective energy management is achieved through the implementation of a Sustainability Management Plan (SMP) for the operational life of the Project.

### 5.1 Identified Major Energy Use Components

Major energy use components of the Project Site have been identified below based on information available within the Project Design Brief.

- Lighting (include natural and artificial lighting and shading).
- Air Conditioning.
- Power.

## 5.2 Energy Sources

The main source of energy for the proposed site is electricity, but it is also proposed to have gas available at the site as required.

## 6 PROPOSED SUSTAINABLE MEASURES

The following Sustainability Management Plan (SMP) and Energy Efficiency measures are recommended based on the following project documentation:

Document Type	Document Number	Issue Date
Architectural Drawings	OAK MP 01-14	29/11/2019
Architectural Drawings	DA000 to 002	10/01/2020
Architectural Drawings	DA100 to 102	10/01/2020
Architectural Drawings	DA200 to 204	10/01/2020
Architectural Drawings	DA210 to 214	10/01/2020
Architectural Drawings	DA300, 400 & 410	10/01/2020
Performance Package AR Sortable Design Criteria v20.1.1	V201.1.1	October 2019

**Table 2 Summary of Assessment**

Objective	Proposed Target	Proposed Strategy	Project Implementation	Comments
<p><b>Design and Management</b></p> <ul style="list-style-type: none"> <li>Documentation of design intent and expected outcomes.</li> <li>Appropriate commissioning.</li> </ul>	<ul style="list-style-type: none"> <li>Communicate sustainability initiatives and operation to building users.</li> <li>Commissioning and building tuning required by contractors and reviewed for 12 months after completion.</li> </ul>	<ul style="list-style-type: none"> <li>Provision of Building Users Guide.</li> <li>Investigate costs and viability of commissioning and building tuning requirements and appointing an independent commissioning agent.</li> <li>Independent consultant to perform quarterly tuning of fire, mechanical, electrical and hydraulic services.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>SLR recommends the preparation of a Building User Guide that enables building users to optimise the building's environmental performance.</p> <p>A sub-contractor will be engaged to maintain the facility in accordance with the operations and maintenance manuals during the 12 month defects liability period.</p>
<p><b>Façade Performance</b></p> <ul style="list-style-type: none"> <li>Optimised façade performance.</li> </ul>	<ul style="list-style-type: none"> <li>Achieve minimum performance requirements under NCC Section J1 and J2.</li> <li>Reduce heat gain through the warehouse façade.</li> </ul>	<ul style="list-style-type: none"> <li>Meet or exceed NCC Section J1 and J2 façade performance for conditioned spaces.</li> <li>Light coloured roofing with high reflectivity and appropriate insulation to reduce solar heat gain into the warehouse.</li> <li>Daylight: evenly spaced translucent roof sheeting to warehouses areas.</li> <li>Performance glazing in office spaces appropriate to the window size and orientation.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<ul style="list-style-type: none"> <li>NCC Section J report needs to be prepared by a qualified ESD consultant.</li> <li>This warehouse will comply with all the requirements specified within the report during construction stage.</li> <li>Colourbond roof sheeting which has a higher solar reflectivity is proposed;</li> <li>As per project NCC Section J report.</li> </ul>

Objective	Proposed Target	Proposed Strategy	Project Implementation	Comments
<p><b>Social sustainability</b></p> <ul style="list-style-type: none"> <li>Consider design with due regard to occupant satisfaction in accessibility, usability, Indoor air quality and public space utility.</li> </ul>	<ul style="list-style-type: none"> <li>High level of occupant satisfaction.</li> <li>Provide external as well as internal comfort.</li> </ul>	<ul style="list-style-type: none"> <li>Flexibility of space for potential future configurations.</li> <li>Use of Low VOC paints, carpets and sealants.</li> <li>Consider using dense planting to screen the outdoor areas from the docks to increase visual amenity.</li> <li>Consider occupant user control eg A/C systems, glare reducing strategies, lighting etc.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>The design will incorporate open plan workspaces, offices, client rooms, meeting rooms, lunch room and outdoor seating area</p> <p>Low VOC paints, carpet and sealant will be used</p> <p>Selection of endemic and low maintenance landscaping species</p> <p>Both AC and lighting control is provided to offices and warehouses.</p>

Objective	Proposed Target	Proposed Strategy	Project Implementation	Comments
<p><b>Minimising Transport Impact</b></p> <ul style="list-style-type: none"> <li>Consider location with links to public transport and employee services.</li> <li>Consider location to reduce operational transport.</li> <li>Consider the impact of industrial trucks on local traffic.</li> </ul>	<ul style="list-style-type: none"> <li>Reward drivers of fuel efficient vehicles by providing spaces for small cars and or motorbikes.</li> <li>Provide alternatives to single-occupancy vehicles.</li> <li>Reduce operational fuel consumption through close proximity to major arterial roads.</li> <li>Reduce the impact of operational traffic on local communities.</li> </ul>	<ul style="list-style-type: none"> <li>Consider providing 10% of total parking spaces for small cars and 5% for motorbikes situated near the office entrance.</li> <li>The site is located within close proximity (&lt;5km) to both the M7 and M4 motorways.</li> <li>The roads linking the site to the motorways are predominantly used for industrial traffic, as such the traffic is unlikely to impact on local areas.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>54 Motorcycle Parking Spaces are provided. Refer Architectural Drawings</p> <p>Due to the location of the site, it is considered that staff bicycle riding will be unlikely, although if staff surveys indicate a preference for cycling, consider appropriate amenities.</p> <p>Car park numbers and provision for disabled parking are provided be in accordance with Consent Authority requirements.</p>

Objective	Proposed Target	Proposed Strategy	Project Implementation	Comments
<p><b>Optimising IEQ</b></p> <ul style="list-style-type: none"> <li>• Optimise natural light to work environment.</li> <li>• Optimise fresh air ventilation.</li> <li>• Consider Thermal Comfort of occupants.</li> <li>• Consideration of noise transference in space planning.</li> <li>• Minimise use of materials that emit volatile organic compounds.</li> <li>• Create a pleasant working environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Daylight: Daylight Factor (DF) of at least 2% at finished floor level under a uniform sky for at least 60% of the GLA.</li> <li>• Thermal comfort: 95% of office areas have PMV levels between -1 and +1 for 98% of the year; Warehouse spaces include passive thermal comfort strategies.</li> <li>• Finishes: 95% of all paints, adhesives &amp; sealants and all carpet and flooring to be low-VOC finishes; use low-formaldehyde wood products.</li> <li>• Electric lighting levels: 95% of GLA has a lighting system that is flicker free and has a maintained illuminance of no more than 25% above those recommended in AS1680.2.4, 2.1 and 0.1.</li> <li>• Reduce visual glare.</li> </ul>	<ul style="list-style-type: none"> <li>• Daylight: rationalised glazing to offices; high performance glass.</li> <li>• Thermal comfort: Office envelope and HVAC system designed to meet thermal comfort requirements;</li> <li>• Provide sufficient roof and wall insulation to the air conditioned spaces;</li> <li>• Finishes: Specify and track correct finishes and wood products.</li> <li>• Provide pleasant indoor and outdoor breakout spaces with sufficient daylight and plants.</li> <li>• Lighting: Good light fixtures and well-designed layout.</li> <li>• Ventilation: Consider increased fan and duct sizing.</li> <li>• Provide sufficient shading and blinds with rationalised glazing for visual and thermal comfort.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>High performance glazing to all air-conditioned areas will be considered to satisfy NCC Section J requirements</p> <p>Refer Section 6.3.1 of this report for proposed set up temperatures</p> <p>Roof and External Wall insulation as per the NCC requirements</p> <p>LED lighting and lighting controls to warehouse and offices.</p> <p>Adequate ventilation will be supplied in accordance with AS1668.</p> <p>Shown on the Architectural Drawings</p>



Objective	Proposed Target	Proposed Strategy	Project Implementation	Comments
<p><b>Minimising Energy Use</b></p> <ul style="list-style-type: none"> <li>Consider passive design to minimise energy use such as orientation, ventilation, shading and floor plate design.</li> <li>Appropriate sizing of plant and equipment in heating and cooling, lighting, control systems,</li> <li>Building management systems and renewable energy sources.</li> <li>Reduce reliance on connection to grid electricity and gas.</li> </ul>	<ul style="list-style-type: none"> <li>Target a 20% reduction in Greenhouse gas emissions.</li> <li>Energy sub-metering for all major uses greater than 100kVa; linked to monitoring system.</li> <li>High efficiency warehouse lighting and controls.</li> <li>Reduce energy for water heating.</li> <li>Integrated building management.</li> <li>Consider renewable energy generation for a portion of energy consumption and/or consider future-proofing the building for future installation.</li> <li>Reduce urban heat island effect and heat load through the roof by providing a highly reflective roof.</li> <li>Reduce office equipment load from 20W/m<sup>2</sup> to 15W/m<sup>2</sup>.</li> <li>Optimise insulation for energy and thermal comfort.</li> </ul>	<ul style="list-style-type: none"> <li>Roof Insulation, External Wall Insulations, Reduced Glazing area and associated heat loss in winter.</li> <li>Air conditioned to warehouse spaces.</li> <li>Consider office air conditioning temperature set-points for an increased comfort band.</li> <li>Provide energy efficient T5 lighting, with zoning and automatic controls where reasonable.</li> <li>Consider LED lighting strategies and advanced controls.</li> <li>Consider a solar hot water system with gas boost</li> <li>Sub-metering: install appropriate metering; develop metering and tracking strategy to allow for self-assessment, problem solving and ongoing improvements during operations</li> <li>Use roofing material that has a high Solar Reflective Index</li> <li>Investigate current insulation design and determine proposed options.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>Shown on the Architectural Drawing</p> <p>Design brief sets the temperature - Refer Section 6.3.1 of this report.</p> <p>LED lighting and lighting controls to warehouse and offices.</p> <p>Sub meters for major energy/water uses in the offices and warehouses.</p> <p>Colourbond roof sheeting which has a higher solar reflectivity is proposed.</p> <p>As per project NCC Section J report.</p>

Objective	Proposed Target	Proposed Strategy	Project Implementation	Comments
<p><b>Choosing Materials</b></p> <ul style="list-style-type: none"> <li>• With consideration to energy inputs in manufacture.</li> <li>• Toxicity.</li> <li>• Consequential impacts – rain forest timbers.</li> <li>• Regional or local manufacturer employment support.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce steel and cement in internal slab (10% reduction in embodied energy).</li> <li>• Reduce embodied energy in concrete and plasterboard elements.</li> <li>• Consider 95% of timber to be AFS or FSC certified.</li> <li>• Reduce emissions associated with insulation and refrigerant.</li> <li>• Reduce environmental impact of materials for tiling, awning.</li> </ul>	<ul style="list-style-type: none"> <li>• Jointless fibre reinforced slab.</li> <li>• Use pre-cast concrete panels with recycled content.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>To minimise the environmental impacts of materials used by encouraging the use of materials with a favorable lifecycle assessment based on the following factors:</p> <ul style="list-style-type: none"> <li>- Fate of material</li> <li>- Recycling / re-use</li> <li>- Embodied energy</li> <li>- Biodiversity</li> <li>- Human health</li> <li>- Environmental toxicity</li> <li>- Environmental responsibility.</li> </ul>

Objective	Proposed Target	Proposed Strategy	Project Implementation	Comments
<p><b>Minimising Waste</b></p> <ul style="list-style-type: none"> <li>• By clever design.</li> <li>• Contracted to builder as a requirement on site for construction waste.</li> <li>• During the life of the building.</li> <li>• And in dealing with building end of life options.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce construction waste going to landfill by 90%.</li> <li>• Reduce operational waste going to landfill.</li> <li>• Consider a design that can be disassembled at the end of the building's life.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor is to develop and implement a Waste Management Plan and track all waste going offsite to show that 90% of all construction waste is re-used or recycled.</li> <li>• Waste storage and recycling facilities to be provided for different operational recycling streams such as paper, glass, plastics, metals, food waste etc. Consider operational waste plans and training for staff to provide incentive to reduce waste.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>SLR recommends more than 70% of the predicted construction waste arising from development can be re-used (on-site or at another development) or recycled off-site. Refer project Waste Management Plan.</p> <p>The following waste avoidance measures are recommended in the Waste Management Plan for the Project:</p> <ul style="list-style-type: none"> <li>- Provision of take back services to clients to reduce waste further along the supply chain;</li> </ul>
<p><b>Water Conservation and Reuse</b></p> <ul style="list-style-type: none"> <li>• Monitoring of meters to track use.</li> <li>• Timely maintenance of fixtures and fittings.</li> <li>• Water sensitive landscape design.</li> <li>• Source potable water alternatives such as rain water harvesting, grey and black water treatment.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce potable water in internal fixtures.</li> <li>• Reduce potable water for irrigation.</li> <li>• Water efficient operation of appliances.</li> <li>• Utilise rainwater and/or recycled water.</li> </ul>	<ul style="list-style-type: none"> <li>• Water efficient sanitary taps and toilets.</li> <li>• Water efficient and drought tolerant landscaping.</li> <li>• Water and energy efficient dishwasher.</li> <li>• Rainwater collection for toilets, irrigation and truck wash down.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>Low flow fixtures and fitting including taps and shower heads</p> <p>Selection of endemic and low maintenance landscaping species</p> <p>SLR recommends water efficient dishwashers</p> <p>25 kL Rainwater tanks have been proposed for rainwater harvesting and re-use for landscape irrigation and flushing of toilets.</p>

Objective	Proposed Target	Proposed Strategy	Project Implementation	Comments
<p><b>Land Use and Ecology Impact</b></p> <ul style="list-style-type: none"> <li>Consider local biodiversity impacts of flora and fauna.</li> <li>Look to specialist advice on land in development.</li> </ul>	<ul style="list-style-type: none"> <li>Encourage biodiversity.</li> <li>Reduce light pollution from the site.</li> <li>Consider reducing impact of stormwater flows off the site into the natural watercourses including Ropes Creek adjacent to the site.</li> </ul>	<ul style="list-style-type: none"> <li>Install indigenous plating appropriate to the area and the adjacent biodiversity lots.</li> <li>Design external lighting to avoid emitting light into the night sky or beyond the site boundary.</li> <li>Consider integrated stormwater management to minimise the impact on receiving waters of flow volumes and pollution content, eg bioswales, bio retention, OSD tanks and treatment.</li> <li>Consider permeable concrete/paving for staff parking areas and footpaths, etc.</li> </ul>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p>Selection of endemic and low maintenance landscaping species</p> <p>LED lights have been proposed for all external lights to avoid emitting light</p> <p>The warehouse sustainability objectives include:</p> <ul style="list-style-type: none"> <li>Reduce the impact of stormwater runoff and improve quality of stormwater runoff</li> <li>Achieve best practice stormwater quality outcomes</li> <li>Incorporate water sensitive urban design principles.</li> </ul>

## 6.1 Baseline and Proposed Energy Consumption

A NCC Sections J Deem-to-Satisfy compliant building is used as the baseline building for energy consumption savings. NCC Section J provides the minimum requirement for energy efficiency and it is predicted that the proposed development will have more than 42.3% energy reduction (Refer **Section 6.7** for energy simulation results) via:

- All luminaire shall be low energy LED type.
- Warehouse lighting is generally to be zonally controlled via motion sensor.
- Office lighting shall be controlled via dual technology infrared/ultrasonic sensor.
- Daylight harvesting function to office with external windows.
- Efficient air conditioning system.

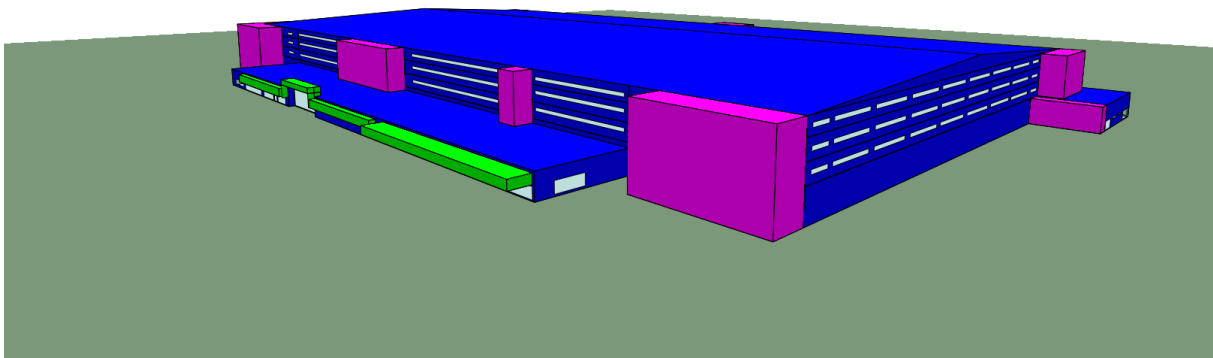
All building information and associated parameters are listed in the following sections of this report.

## 6.2 Energy Calculation of the Proposed and Reference Buildings

The Energy Simulation Program used in this study is the IES computer program Virtual Environment 2019(VE). The program is based on the ASHRAE response factor and the modifications included utilising Australian weather data and including building materials more appropriate to those used in Australia and enabling the input of metric data.

- SLR Consulting Pty Ltd (SLR) supports a perpetual license of the Energy Simulation Software package IES <VE>.
- IES <VE> has passed the BESTEST (ASHRAE Standard 140) external validation process.
- The weather data from ACADS-BSG NSW Richmond Test Reference Year (TRY) is used for the modelling.
- IES<VE> assesses U-Value, SHGC, and shade coefficient when evaluating the effect of glazing.
- Detailed warehouse operating schedules are not available at this stage. Therefore, NCC standard building operating profiles such as occupancy, lighting, air conditioning and equipment were adopted for warehouse and office area.
- At least 100 kW of PV system has been proposed for the warehouse.

**Figure 5 Proposed Warehouse in IES Model**



## 6.3 Artificial Lighting

In Section J6 of the NCC, the requirement for the total lighting power load within the proposed spaces of a building is to be no greater than a maximum illumination power load, measured in Watts (W). The maximum allowable building illumination power load is based on the total illumination power load calculated for each space.

For artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances. This may be obtained by multiplying the area of each space by the maximum illumination power density (as found in Table J6.2a of the NCC 2016 Volume One). The maximum illumination density for a storage warehouse is 10 W/m<sup>2</sup> as per Table J6.2a of the NCC 2016 Volume One.

The proposed warehouses will adopt the following energy efficiency measures to reduce the lighting energy consumptions:

### Office lighting

- LED fitting for offices.
- Occupancy sensors to low occupancy areas e.g. office, toilets and lunch room.
- Lighting will be dimmable up to 10% when daylight allows, or area is vacated.

### Warehouse lighting

- LED fitting for warehouse.
- Occupancy sensors to low occupancy areas.

### Outside lighting

- LED external lighting for all outside areas.
- External lighting will be controlled via daylight sensor (photocell).

Electrical lighting is the major energy reduction component for warehouse with a large footprint.

The lighting calculation for NCC reference building is based on the maximum illumination power density specified within NCC Table J6.2A as below:

- Warehouse = 10 W/m<sup>2</sup>
- Offices = 9 W/m<sup>2</sup>

The electrical lighting layout of the proposed building is not provided at the time of preparing this report. It is assumed the maximum design lighting power density will be achieved as below:

- Warehouse = 6 W/m<sup>2</sup>
- Offices = 5 W/m<sup>2</sup>

Therefore, the proposed building is likely to achieve a 40.2% lighting energy reduction when compared with reference building. Detailed calculation is shown in **Appendix A**.



## 6.4 Mechanical Air-Conditioning

The mechanical service design is not available at this stage. Performance Package AR sortable Design Criteria has specified the following system types for the proposed building:

- Offices - Dedicated VRF/VRV system with heat recovery units
- Warehouses – Single zone packaged rooftop units with economiser

### 6.4.1 Air-conditioning temperature control and set point

Air-conditioning temperature control is summarised in Table 3.

**Table 3 AC Unit Temperature Control Range**

Space Type	Temperature Control Range (°C)
Offices	21 to 24°C BD
Warehouse	16 to 27°C BD

### 6.4.2 Air-conditioning energy efficiency requirements

2016 NCC Section J5.2e has specified the minimum energy efficiency ratios requirements for package air conditioning equipment.

**Table 4 BCA Unitary Plant Requirement**

Office Equipment	Minimum energy efficiency ratio	
	NCC Requirement	Proposed System <sup>1</sup>
Cooling	2.7	3.5
Heating	2.7	3.5

Note 1: Detailed Mechanical design is not available at this stage. It is assumed that the proposed VRF/VAV system will achieve the performance requirements above.

Warehouse Equipment	Energy Efficiency Ratio (EER)	
	NCC Requirement	Proposed System <sup>1</sup>
Cooling Efficiency	2.7	12.0 -Units below (70Kw)
Heating Efficiency	2.7	11.6 -Units above (70Kw)

Note 1: The AR Sortable Design Criteria has specified the above system performance to the warehouse.

Details or NCC Section J5 certification demonstrating compliance will need to be submitted with the application for a Construction Certificate.

## 6.5 Building Fabric Requirements

Part J1 to J3 of the BCA Section J contains the requirements of the Deemed-to-Satisfy compliance of the building fabric. The purpose of this subsection is to ensure that the building fabric will provide sufficient thermal insulation to minimise heating and cooling loads placed on the building and the commensurate energy consumption HVAC systems servicing internal building spaces.

All fabrics of the proposed building shall comply with 2016 NCC Section J. Project Section J report will need to be submitted with the application for a Construction Certificate.

## 6.6 Domestic Hot Water (DHW)

The BCA specifies the thermal efficiency for hot water systems to be at least 80%. The solar hot water reticulation system shall be provided to all faucets' fittings, equipment and apparatus within the development. Hot water will be generated from the roof mounted solar water packaged plant.

With the installation of water efficient fixture, the hot water consumption will be decreased and thus the domestic hot water usage will also decrease. If the domestic hot water usage is less than the energy required to heat to the water also decreases. Moreover, the supplement natural gas consumption will be reduced by using the proposed solar hot water system.

The energy simulation in this analysis is assumed both reference and proposed building are using same gas fired boiler for DHW. The actual energy consumption will be reduced once solar hot water is adopted for the proposed building.

## 6.7 Simulation Results

The predicted Total Energy Consumed annually by the reference building and the proposed building with the reference services is summarised in **Table 5**.

The reference and proposed building with reference services temperature is within the range 16°CDB to 27°CDB for 100% of the plant operation time.

Table 5 Comparison of Annual Energy Consumption between the reference and proposed building

Electricity Usage	Reference building (MWh)	Proposed building (MWh)
Heating	679.7	204.2
Cooling	1432.9	442.0
Auxiliary	150.1	150.1
Lighting	29760.9	17804.6
Equipment	Same	Same
DHW	Same	Same
PV System	-	-123.8
<b>Total</b>	<b>32023.6</b>	<b>18477.1</b>

The energy consumptions of equipment, warehouse ventilation fans and domestic hot water (DHW) are specific to the tenant's application. Therefore, it is assumed they will be the same as the NCC reference building energy consumption.

By implementing all energy efficiency measures described in **Section 6**, the project is predicted to achieve a 42.3% GHG emission reduction when compared with NCC reference building.

## 7 POTABLE WATER CONSUMPTION

The project will have several sustainable water saving measures, including:

- 25 kL rainwater reuse and reticulation system – Rainwater will be harvested from the roof and reuse for irrigation and toilet flushing. The reticulation will be a separate system to the domestic cold water with domestic water top up in the event of insufficient rainfall.
- Use of water saving plumbing devices.
- Water sensitive landscape design.

Further to above sustainable water measures, the following items are considered during the detailed design stage:

- Water efficient sanitary taps and toilets – install higher WELS Rating sanitary fixtures such as 4 stars for water taps, urinals and toilet.
- Water and energy efficient dishwashers with minimum 4 star WELS water rating.

By installing 4-star water efficient sanitary taps, urinals and toilets combined with the proposed rainwater harvesting facility the proposed development will reduce its potable water demand by approximately 37%. The quantities of each water fittings are assumed from the drawing and listed in **Appendix B**.

## 8 MONITORING AND REPORTING

All sustainable measures will be implemented into the project need to be commissioned and tuned once the project is completed, to ensure all services operate to their full potential and as designed.

As specified within the Tenant Base Building Specification, the building tuning will be provided by service contractors and overseen by an independent assessor, at least once a month within the Defects Liability Period (DLP) period to ensure that services are operating effectively and efficiently. Monthly reports to be provided to the tenant for DLP.

### 8.1.1 Energy Review and Audit

An energy usage review should be undertaken within the first few months of operation to ensure the Energy Management Plan is sufficient for the development's needs. A breakdown of energy usage per month at the Project Site will help to measure the development's baseline energy use and assess what appliances, equipment and processes are consuming energy.

An energy review is also necessary for the assessment of energy utilisation to further identify opportunities for improvement. Energy usage data obtained during the review process may be used to establish key performance indicators and annual energy targets for the Project.

Energy usage to be included in the review should include all purchased electricity and energy which is consumed by stationary equipment on site. Energy consumed by mobile equipment (e.g. forklifts) should also be examined as this will identify variations in warehouse operation efficiency. (Refer to 'Guidelines for Energy Savings Action Plans' (2005) (as developed by the former Department of Energy, Utilities and Sustainability) for reporting templates and further information.)

An energy audit and management review should also be undertaken on a half-yearly basis to ensure employees are following energy savings procedures correctly. Where audits show that energy savings procedures are not carried out effectively, additional employee training should be undertaken and signage and procedures re-examined.

The Energy Management Plan should be progressively improved and updated on an annual basis, or as required, to reflect changes to the Energy Management System and to promote continual improvement of energy management at the Project Site.

### 8.1.2 Energy Metering and Monitoring

To enable effective review of energy usage by the project, sub-metering should be implemented for all major energy consuming processes or items of equipment including sub-metering for all loads greater than 100 kVA.

Electrical equipment should be maintained to Australian Standards to ensure unnecessary energy wastage is minimised. Roof access system is proposed for third party access to roof for carry out necessary maintenance as required.

In accordance with the Goodman's Industrial Building Specification, a Building Users' Guide is to be prepared for the Project. The Building Users' Guide provides details regarding the everyday operation of a building and should include energy minimisation initiatives such as natural ventilation strategies, user comfort control, maintenance of air conditioning units and other electrical devices to ensure maximum operating efficiency, and lighting zoning strategies.

An effective Building Users' Guide will ensure that:

- Facility managers understand in detail their responsibilities for the efficient operation of the facility and any additional building tuning necessary to continuously improve energy management.

- Maintenance contractors understand how to service the particular systems to maintain reliable operations and maximum energy efficiency.
- Employees understand energy minimisation procedures and working limitations required to maintain design performance for energy efficiency.
- Future fit-out / refurbishment designers understand the design basis for the building and the systems so that these are not compromised in any changes.

## **8.2 Roles and Responsibilities**

It is the responsibility of the facility manager to routinely check energy savings procedures are undertaken correctly (i.e. lighting turned off while areas of the development are not in use). The facility manager should also ensure all monitoring and audit results are well documented and carried out as specified in the Energy Management Plan.

Senior management should also be involved in energy management planning as an indication of the organisation's commitment to the Energy Management Plan.

## 9 CONCLUSION

SLR Consulting Australia Pty Ltd (SLR Consulting) has been engaged by Goodman Property Limited (Goodman) to provide a Sustainability Management Plan (SMP) for Stage 2 MOD 3 establishing warehouse and office facility within a portion of Precinct 2 at Oakdale West Estate development.

The SMP has been undertaken in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development (SSD 10397 and SSD 7348 MOD 3) application.

- **Greenhouse Gas and Energy Efficiency** – including an assessment of the energy use on site, and demonstrate what measures would be implemented to ensure the proposal is energy efficient.

The principal objective of this Sustainability Management Plan is to identify all potential energy savings that may be realised during the operational phase of the project, including a description of likely energy consumption levels and options for alternative energy sources such as PV solar power.

A BCA Sections J Deem-to-Satisfy compliant building is used as the baseline building for energy consumption savings. BCA Section J provides the minimum requirement for energy efficiency and it is expected that the proposed development will operate energy efficiently via:

- At least 100 kW PV Solar Installation;
- Daylight controlled fluorescent/LED lighting for the warehouse instead of metal halide, resulting in a considerable energy reduction and reduced maintenance;
- Motion sensors to all LED lights within the warehouse, and offices;
- Roof and external wall insulation as per the NCC requirements;
- High performance glazing to all air-conditioned areas or minimum NCC requirements;
- Passive solar design for external outdoor areas;
- High efficient air conditioning system;
- Power sub-metering to enable continued review of power consumption for the offices, and warehouse;
- Selection of endemic and low maintenance landscaping species;
- 25 kL rainwater tank for rainwater harvesting and re-use for landscape irrigation and toilet flushing;
- Low water flow fixtures and fittings including taps and shower heads;
- Low VOC paints, carpet and sealant and
- Other measures are detailed in report.

By implementing all energy efficiency measures described in Section 6 of this report, the project is predicted to achieve a 42.3% GHG emission reduction when compared with NCC reference building.

By installing 4-star water efficient sanitary taps, urinals and toilets combined with the proposed rainwater harvesting facility the proposed development will reduce its potable water demand by approximately 37%.

In conclusion, the relevant ESD initiatives and Energy Efficiency measures outlined in this report are incorporated into the proposed building and development details. The proposed ESD initiatives will help to achieve significant reductions in the energy required by the development both in building and operation.



Building tuning will be conducted by builder and SLR Consulting recommends that a quarter reviews of actual building energy and water consumption be carried out once the warehouses are operational to check the actual energy usage and energy savings and verify that all systems are performing at their optimum efficiency. This will provide an opportunity for the systems to be tuned to optimise time schedules to best match occupant needs and system performance while satisfying the sustainability target for the project.

## 10 CLOSURE

This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Goodman Property Services. 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 Consulting.

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

APPENDIX A: LIGHTING CALCULATION

BCA Lighting Requirements Oakdale West Stage 2 MOD 3								
BCA Comply Building	BCA Requirements	Area	Operating Hrs	Lighting Control		Total Annual Energy Consumption (kWh)		
	Warehouse Ground Level (W/m2)	10	50873	Monday to saturday 24 hours	Motion Detector, Daylight Sensor	0.9	0.6	2406496
	Warehouse* (Level 1 - Level 3) (W/m2)	10	144303	Monday to saturday 24 hours	Motion Detector, Daylight Sensor	0.9	0.6	6826109
	Offices W/m2	9	5492	Monday to saturday 24 hours	Motion Detector	0.9	1	389690
	Mezzanines	10	6300	Monday to saturday 24 hours	Motion Detector, Daylight Sensor	0.9	0.6	298015
			206968					
							<b>Total</b>	<b>9920311</b>
							<b>kWh/m2</b>	<b>47.93</b>
* Area per Level = 48,101 m2								
Proposed Lighting - Oakdale West Stage 2 MOD 3								
BCA Comply Building	BCA Requirements	Area	Operating Hrs	Lighting Control		Total Annual Energy Consumption (kWh)		
	Warehouse Ground Level (W/m2)	6	50873	Monday to saturday 24 hours	Motion Detector, Daylight Sensor	0.9	0.6	1443898
	Warehouse (Level 1 - Level 3) (W/m2)	6	144303	Monday to saturday 24 hours	Motion Detector, Daylight Sensor	0.9	0.6	4095665
	Offices W/m2	5	5492	Monday to saturday 24 hours	Motion Detector	0.9	1	216495
	Mezzanines	6	6300	Monday to saturday 24 hours	Motion Detector, Daylight Sensor	0.9	0.6	178809
			206968					
							<b>Total</b>	<b>5934867</b>
							<b>kWh/m2</b>	<b>28.68</b>

APPENDIX B: WATER CALCULATION

<b>WATER SAVINGS CALCULATION</b>				
<b>Table C1 - Number of fixtures</b>				
Area	Toilets	Urinal	Basins	Showers
Amenities	256	46	221	8
Total	256	46	221	8
<i>Assume 70% of toilet water usage is supplied by rainwater</i>				
Fraction not supplied by RWH	0.3			
<b>Table C2 - Results</b>				
<b>No water saving measures</b>		<b>Max water usage rate <sup>1</sup></b>		
Toilet	Adopt 3* Average Flush Usage in Table C3	1024	L/s	
Tap	Adopt 3* Tap Usage in Table C3	1989	L/s	
Urinal	Adopt 3* Urinal Usage in Table C3	92	L/s	
<b>Water reuse measures (4*) with RWH</b>		<b>Max water usage rate <sup>1</sup></b>		
Toilet	Adopt 4* Average Flush Usage in Table C3	896	L/s	
Tap	Adopt 4* Tap Usage in Table C3	1657.5	L/s	
Urinal	Adopt 4* Urinal Usage in Table C3	69	L/s	
<b>Water reuse measures (5*) with RWH</b>		<b>Max water usage rate <sup>1</sup></b>		
Toilet	Adopt 5* Average Flush Usage in Table C3	768	L/s	
Tap	Adopt 5* Tap Usage in Table C3	1326	L/s	
Urinal	Adopt 5* Urinal Usage in Table C3	46	L/s	
	<b>3* with RWH</b>	<b>4* with RWH</b>	<b>5* with RWH</b>	
<b>Improvement Percentage (%) <sup>3</sup></b>	<b>25</b>	<b>37</b>	<b>49</b>	

# APPENDIX O

## Flora and Fauna Management Plan



# Oakdale West Estate Stage 2 SSD 10397

## Flora and Fauna Management Plan

Prepared for

Goodman Property Services (Aust.) Pty Ltd



# Oakdale West Estate Stage 2 SSD 10397 - Flora and Fauna Management Plan

prepared for

Goodman Property Services (Aust.) Pty Ltd.

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## Document status

Revision	Date	Description	Issued to
01	24/04/2020	Flora and Fauna Management Plan	Goodman

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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 (Oakdale West) comprising a warehousing and a distribution hub at Kemps Creek 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.

Stage 2 Development is the next stage of development to occur at Oakdale West, which was approved in April 2020 under SSD 10397 and involves establishing a warehouse and distribution facility at Lot 2B in Precinct 2.

This Flora and Fauna Management Plan (FFMP) has been prepared as a sub-plan to the Construction Environmental Management Plan (CEMP) for the Stage 2 works at Lot 2B at Precinct 2, prepared by SLR Consulting Australia Pty Ltd (April 2020).

## 1.2 Consent Conditions

This CEMP has been prepared to satisfy Consent Conditions C1 - C4 of SSD 10397. Condition C3 lists the specialist management plans that must be included in the CEMP as follows:

- (a) Construction Traffic Management Plan (CTMP)
- (b) Construction Noise Management Plan (CNMP)
- (c) Erosion and Sediment Control Plan
- (d) Construction Air Quality Management Plan (CAQMP)
- (e) Community Consultation and Complaints Handling

Additional specialist management plans supporting the CEMP include the following:

- Fill Importation Protocol (FIP)
- Sustainability Management Plan (SMP)
- Unexpected Finds Protocol - Contamination (UFP - Contamination)
- Waste Management Plan (WMP)

While not included in the above specialist management plans, the requirements for the preparation of this FFMP are referenced in the following Conditions:

Schedule 2 Part A (Administrative Conditions)

### A1. OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

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

### A2. TERMS OF CONSENT

Part (e) The development may only be carried out in accordance with the management and mitigation measures in Appendix 3. Biodiversity management and mitigation measures outlines in Appendix 3 are specified in Table 1-1.

Table 1-1. Biodiversity mitigation and management measures

Mitigation and management measures	Reference
<p>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.</p>	<p>Purpose of this FFMP Refer also:</p> <ul style="list-style-type: none"> <li>• Oakdale West FFMP v7 (écologique, 11/03/2020)</li> </ul>
<p>Implement a Vegetation Management Plan for the restoration and rehabilitation and ongoing management of 4.2 ha of Riparian Corridor adjacent to Ropes Creek.</p>	<p>Not relevant to this FFMP Refer:</p> <ul style="list-style-type: none"> <li>• Oakdale West Vegetation Management Plan prepared for SSD 7348 MOD 1 (écologique, 02/10/2019)</li> </ul>
<p>Ongoing management of retained native vegetation to be in accordance the Vegetation Management Plan</p>	<p>Not relevant to this FFMP No retained native vegetation occurs within Lot 2B at Precinct 2</p>
<p>Ongoing maintenance and management of other areas of planted native vegetation including road batters, embankments and bio-retention basins in accordance with the Landscape Management Plan.</p>	<p>Not relevant to this FFMP Refer:</p> <ul style="list-style-type: none"> <li>• Oakdale West Stage 2 Development Application Landscape Drawing Set (Scape Design, 13/01/2020)</li> <li>• Landscape Management Plan prepared for the Oakdale West CEMP (Scape Design, 14/11/2019)</li> </ul>

## 2 Existing Environment

### 2.1 Stage 2 Lot 2B

Within the context of Oakdale West, Lot 2B is bordered by the future Southern Link Road to the south, Estate Road No. 1 to the east, Estate Road No. 3 to the west and the remainder of Precinct 2 to the north.

Both Stage 1 and 2 works and the wider Oakdale West Estate are illustrated in master plan diagrams provided in Appendix A.

Figure 2-1 shows the location of Lot 2B in the context of the progressive bulk earthworks underway across the Oakdale West site.

The site was cleared of native vegetation prior to earthworks at this location and substantial cut and fill has occurred. Clearing of native vegetation from Lot 2B was undertaken in compliance with the Oakdale West FFMP v7 (écologique, 11/03/2020).

No native vegetation or fauna habitat features have been retained on Lot 2B.

As shown in Figure 2-1, the Stage 2 works are located proximal to an existing construction detention basin and a Biodiversity Management Area (BMA) located to the north west. The existing basin will be reconstructed as a bio-retention basin at a time when 90% of development within contribution catchment areas is completed.

### 2.2 Construction Detention Basin

The existing construction detention basin (located immediately west of Estate Road 3 and Lot 2B) currently collects construction site surface flows, which at times of high rainfall are discharged to an unnamed creekline within the land west of the Oakdale West. Figure 2-1 shows the flow path into the adjacent land.

Progressive Erosion & Sediment Control Plans prepared for Lot 2B (Qanstruct, 06/03/2020) provide for onsite detention and various control measures prior to waters being discharged off site. Off site discharge will include flows to the existing detention basin and future bio-retention basin and indirectly flows into the unnamed creekline within the land west of the Oakdale West.

### 2.3 Biodiversity Management Area

The remnant native vegetation within the BMA is a critically endangered ecological community protected under both the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *NSW Biodiversity Conservation Act 2017* (BC Act).

The proposed Stage 2 works do not directly impact on the BMA, or this vegetation community, however off site or indirect impacts are considered in Section 2.5 of this FFMP.

### 2.4 Wildlife

#### 2.4.1 Terrestrial fauna

Terrestrial fauna (predominantly kangaroos and reptiles) are typically found within the BMA to the west of Lot 2B. 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 work zones, particularly at dusk at dawn.

#### 2.4.2 Aquatic fauna

Farm dams that were proximal to Lot 2B have been decommissioned and aquatic fauna rescued and relocated to Ropes Creek. However, eels may return to these locations during high rainfall events, as they are highly migratory during their breeding season and along with their new born will attempt to return to

their place of origin. Turtles are also capable of overland dispersal and may attempt to return to the location where dams were decommissioned.

### **2.4.3 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 Stage 2 works.

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.

## **2.5 Potential Impacts**

### **2.5.1 Potential direct impacts**

While considered unlikely to occur, potential direct impacts on wildlife include:

- Vehicle / mobile plant strike resulting in injury or death of terrestrial fauna;
- Injury or death of terrestrial fauna that inadvertently become stranded in excavations; and
- Injury or death of aquatic fauna during basin(s) management and later dewatering / decommissioning.

### **2.5.2 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.

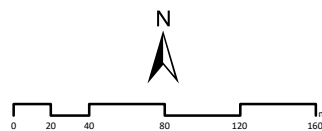
Potential indirect impacts relevant to Lot 2B may include the following:

- Transport of weeds and pathogens into the site and spread into the adjacent BMA;
- Pollution of downstream waterways and aquatic habitat;
- Introduction or increase in pest animal populations (such as vermin); and
- Rubbish / litter from the site entering adjacent vegetation, through either accident drift or deliberate dumping.





- OWE boundary
- Biodiversity management area
- Precinct 2b
- Stage 2 works extent
- Vegetation clearing



## Oakdale West Stage 2 SSD10397

### Flora & Fauna Management Plan

Figure 2-1. Location of Lot 2B

Coordinate System: MGA Zone 56 (GDA 94)  
Image sources: Nearmap 13 April 2020



### 3 Mitigation Measures

While Lot 2B and the wider estate works area have been substantially modified (through vegetation clearance and bulk earthworks), the potential to encounter wildlife must still be considered in accordance with Schedule 2 - 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
<b>[WILDLIFE PROTECTION]</b>			
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: <ul style="list-style-type: none"> <li>• 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.</li> <li>• All on site personnel shall alert vehicle/mobile plant entering or existing the works area if kangaroo movement is observed (via two way radio)</li> </ul>	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
<b>[EROSION &amp; SEDIMENT CONTROL]</b>			
FF4	Offsite discharge that flows into existing Oakdale West existing detention basins, shall be managed in strict accordance with the Progressive Erosion & Sediment Control Plans prepared for Lot 2B (Qanstruct, 06/03/2020).  A spill kit should be provided in an easily assessable location in the event that fuel or other contaminant spills occur.	Management / Contractors	Throughout construction

ID	Measure/Requirement	Responsibility	Timing / Frequency
[WEED, PEST SPECIES AND PATHOGEN MANAGEMENT]			
FF5	<p>The following hygiene procedures are to be implemented to avoid the introduction and/or spread of soil borne pathogens and weeds:</p> <ul style="list-style-type: none"> <li>• Minimise work during wet/rainy periods;</li> <li>• Vehicles, plant and machinery are to be clean and free of soil on arrival to the works area;</li> <li>• 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;</li> <li>• Mud spilt on roads to be immediately removed by a road sweeper.</li> </ul>	Management / Contractors / Employees	Ongoing throughout construction
FF6	Future tenants are to install rodent (electronic or sonar) repellents to minimise prey for snakes	Management / Future tenants	Post construction, operation
[WASTE MANAGEMENT]			
FF7	<p>Waste management shall be in accordance with the Waste Management Plan prepared by SLR (January 2020) for Lot 2B.</p> <p>Of relevance to the protection of the adjacent BMA area and future bioretention basin is as follows:</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• Lids on skips or bins are to be kept closed at all times; and</li> <li>• 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</li> </ul>	Management / Contractors / Future tenants	Ongoing throughout construction and 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.

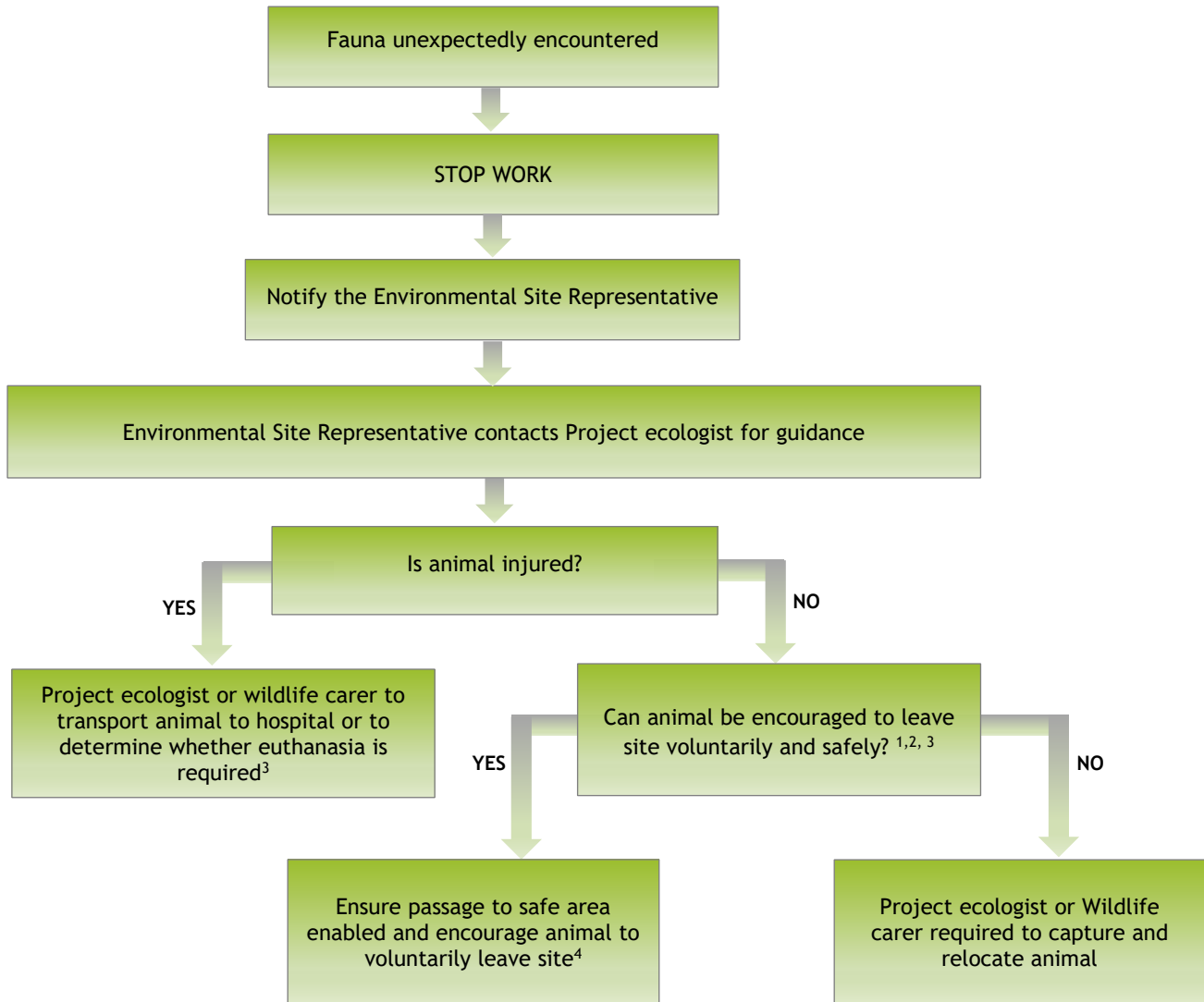


Figure 4-1. Stop work procedure

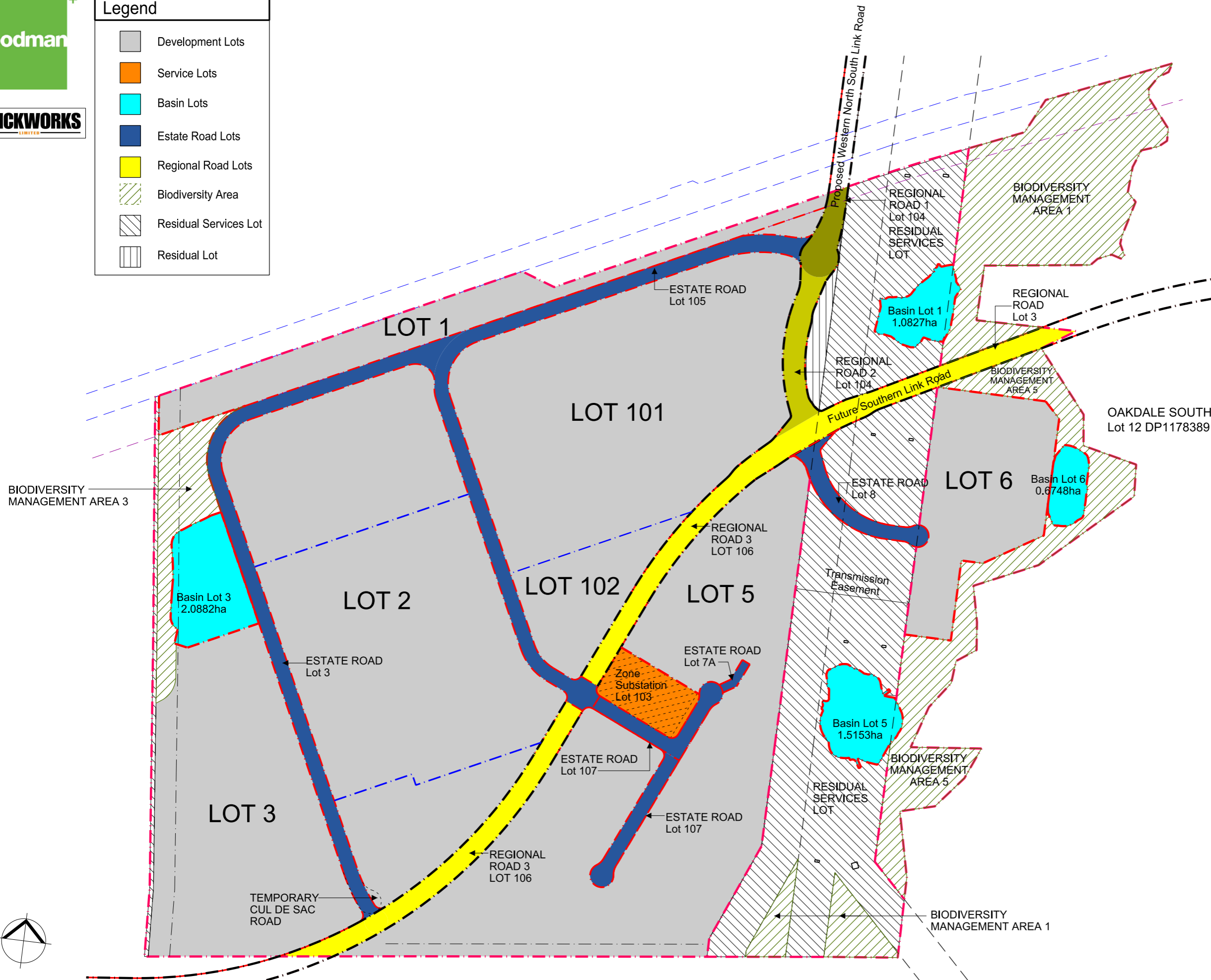
### FOOTNOTES

- <sup>1</sup> Snakes are to be left alone and not disturbed. A specialist reptile handler should be engaged for capture and relocation.
- <sup>2</sup> 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.
- <sup>3</sup> 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.
- <sup>4</sup> Should safe passage be obstructed by fencing or other immovable impedances, Footnote 3 should be implemented.

## Appendix A. Masterplan Drawings

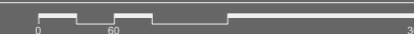


Legend	
	Development Lots
	Service Lots
	Basin Lots
	Estate Road Lots
	Regional Road Lots
	Biodiversity Area
	Residual Services Lot
	Residual Lot







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	2.1208 ha	
Biodiversity Lot 4	Not Used	
Biodiversity Lot 5	7.2420 ha	17.4338 ha
Regional Road 1 Lot 104	.6057 ha	
Regional Road 2 Lot 104	.915 ha	
Regional Road 3 Lot 106	5.0791 ha	6.5998 ha
Services Lot 103	1.2614ha	1.2614 ha
Residual Lot	.5918 ha	.5918 ha
Residual Services Lot	20.0564 ha	20.0564 ha
Estate Road Lot 105	2.8247 ha	
Estate Road Lot 2	Deleted	
Estate Road Lot 3	2.8491 ha	
Estate Road Lot 4	Deleted	
Estate Road Lot 5	Deleted	
Estate Road Lot 107	1.3473 ha	
Estate Road Lot 7A	.0845 ha	
Estate Road Lot 8	.747 ha	7.8526 ha
Basin Lot 1	1.0828 ha	
Basin Lot 2	Not Used	
Basin Lot 3	2.0882 ha	
Basin Lot 4	Not Used	
Basin Lot 5	1.5153 ha	
Basin Lot 6	0.6748 ha	5.3611 ha
Development Lot 101 & 102	21.9242 ha	
Development Lot 1	5.0751 ha	
Development Lot 2	26.8293 ha	
Development Lot 3	12.7244 ha	
Development Lot 4	Deleted	
Development Lot 5	22.3902 ha	
Development Lot 6	6.0196 ha	94.9628 ha

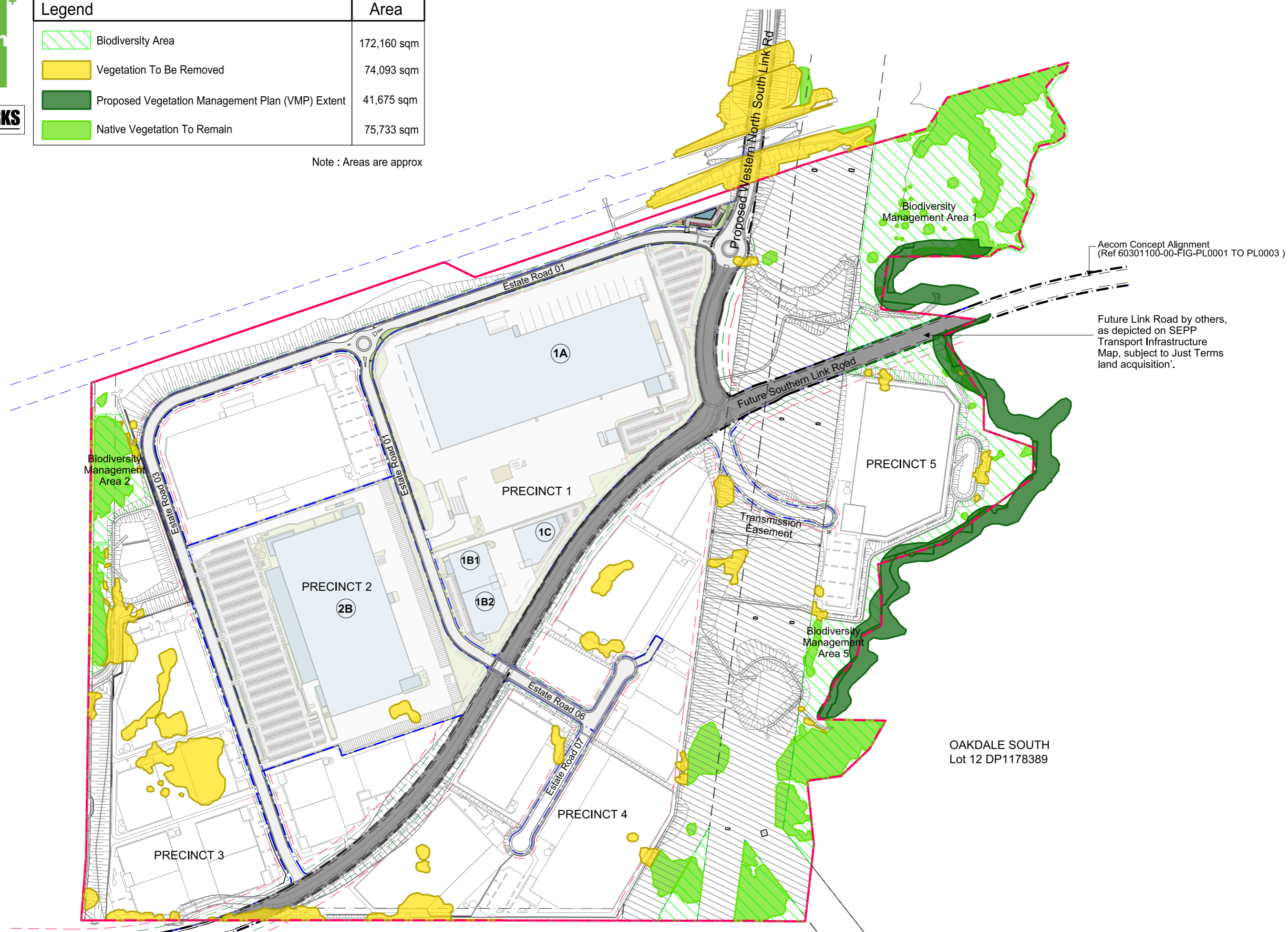
\*All areas subject to survey.



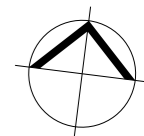


Legend	Area
 Biodiversity Area	172,160 sqm
 Vegetation To Be Removed	74,093 sqm
 Proposed Vegetation Management Plan (VMP) Extent	41,675 sqm
 Native Vegetation To Remain	75,733 sqm

Note : Areas are approx



OAKDALE SOUTH  
Lot 12 DP1178389





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# APPENDIX P

## Unexpected Finds Protocol – Contamination

# Pad 2B Unexpected Finds Protocol

Oakdale West Estate



## Pad 2B Unexpected Finds Protocol

Oakdale West Estate

Client: Goodman Property Services (Aust) Pty Ltd

ABN: 40 088 981 793

Prepared by

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## Quality Information

Document Pad 2B Unexpected Finds Protocol  
 Ref 60599325  
 Date 31-Mar-2020  
 Prepared by Alex Latham  
 Reviewed by Brad Eismen

### Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	06-Feb-2020	draft for comment	Alex Latham Associate Director	
0	31-Mar-2020	Final	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 Pad 2B at Oakdale West Estate (OWE), Kemps Creek, NSW.

Pad 2B is approximately 14.9 hectares (Ha) and will be developed for commercial/industrial land use. A UFP was completed by AECOM in October 2019<sup>1</sup> and applied to the bulk earthworks at OWE. Pad 2B will be constructed by bulk cut to fill earthworks. The earthworks cut to fill plan for Pad 2B (refer **Appendix A**) indicates that at least 10 m of cut will occur, with some placement of cut material in the northern portion.

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<sup>2</sup>. 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 Pad 2B 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 Pad 2B is suitable for commercial/industrial land use.

This UFP applies to Pad 2B after the completion of bulk earthworks. At the completion of bulk earthworks, the surface of Pad 2B is expected to comprise natural soil or bedrock across the cut zone (majority of Pad 2B) and re-worked cut material in the northern portion.

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 Pad 2B is considered to be low to negligible.

This UFP relates to soil contamination and applies to the construction of above-ground assets at Pad 2B (i.e. after the completion of bulk earthworks). It is understood that the development of above ground assets at Pad 2B will be undertaken under conditions of consent for SSD 10397.

### 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 Pad 2B.

### 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 OEH (2011). *Guidelines for Consultants Reporting on Contaminated Sites*. NSW Government Office of Environment & Heritage (OEH).

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<sup>1</sup> Unexpected Finds Protocol, Oakdale West Estate. 31 October 2019 (60599325-OWE-UFP-20191031\_3).

<sup>2</sup> Fill Importation Protocol, Oakdale West Estate. 31 October 2019 (60599325-OWE-FIP(CEMP)-20191031\_2).

- 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.

### **1.3 SSD 10397 Conditions of Consent**

The SSD 10397 Conditions of Development Consent have been issued.

## 2.0 Background Information

This section provides a summary of the expected conditions at Pad 2B, based on previously prepared reports. The proposed layout of Pad 2B and previous sampling locations are shown on **Figure 1** and **2** in **Appendix A**.

### 2.1 Features

Pad 2B comprised undulating grasslands, with a ridge running from the northeast to the south. Other features included:

- Residential house.
- Unpaved internal access roads.
- Former buildings located to the north east of the residential house (probable former residences).
- A former piggery.

The residential house has recently been removed. The former buildings and piggery were not present in 2007, when AECOM completed a Phase I ESA (refer **Section 2.4**).

### 2.2 Current Land Use

Pad 2B is not currently used for any purpose. Bulk earthworks have commenced.

### 2.3 Surrounding Land Use

Land use surrounding Pad 2B includes the future OWE, comprising former agricultural (grazing) land.

### 2.4 Phase I ESA (2007)

The Phase I ESA included the (then) proposed Oakdale development, representing approximately 420 hectares. Pad 2B is situated within the Phase I ESA study area. Background data relevant to Pad 2B are summarised below:

- Pad 2B comprised rural (pastoral lands) since the early to mid 1800s. 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.
- The residential house was located on the ridge line. The house was of brick construction with a tiled roof.
- Small quantities of brick and steel waste were scattered over the ground surface in the area of the former piggery.
- There were no licensed dangerous goods stores at Pad 2B.
- 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, areas of potential environmental concern (AEC) were identified at Pad 2B. The AEC were investigated in the targeted Phase II Assessment, as summarised in **Table 2**:

**Table 1 AEC and Targeted Assessment**

AEC	Investigation	Results
Former piggery	15 test pits at former piggery (TP3 to TP17)	Concentrations of Contaminants of Potential Concern (CoPC) less than criteria or laboratory limit of reporting (LOR).
Former buildings area	5 test pits (TP24 to TP28)	

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. Sandstone and 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 Hazmat Assessment

EP Risk completed a destructive hazardous materials (hazmat) assessment of the residential house in 2019. Data from the EP Risk report indicated:

- The house had a footprint of approximately 160 m<sup>2</sup> and was constructed circa 1960.
- Lead based paints were not identified.
- Asbestos was identified in:
  - Fuses within the electrical box (Class A friable)
  - Backing board within the electrical box, eaves, internal wall panels and vinyl floor tiles (Class B non-friable).
- An in-ground septic tank (concrete construction) was present on the western side of the house.



## 2.7 House Removal

The residential house was removed as part of the OWE development works. The identified asbestos building products were removed by appropriately licensed contractors and disposed to a landfill facility.

Sampling of the house footprint and the excavation formed by the removal of the sewage pipe and septic tank was completed by ADE Consulting Group Pty Ltd in January 2020. Concentrations of asbestos, TRH, BTEX, OCP, OPP and M8 were reported below the ASC NEPM commercial/industrial exposure scenario in the soil samples analysed.

Fragments of bonded asbestos containing material (ACM) were identified at concentrations below the ASC NEPM commercial/industrial health screening level in a small stockpile of soil formed by the excavation of the sewage pipe and septic tank. This stockpile was relocated to a separate area of OWE (i.e. off Pad 2B).

## 2.8 Summary

Based on the reviewed background data:

- The potential for 'legacy' contamination to be present at Pad 2B at the completion of bulk earthworks is low.
- The potential for current activities to contaminate soil and/or groundwater is considered to be low.

In the event that contamination is identified during bulk earthworks at Pad 2B, 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 Pad 2B 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 Pad 2B.
- 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<sup>2</sup> 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<sup>2</sup> 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 (NO<sub>3</sub>), nitrite (NO<sub>2</sub>), total Kjeldahl nitrogen (TKN) and ammonia (NH<sub>4</sub><sup>+</sup>). 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 Pad 2B. 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 Pad 2B 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 Pad 2B 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 OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites* and NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme* (3<sup>rd</sup> 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 Pad 2B FIP.
- Conclusion as to the suitability of Pad 2B for the proposed land use.



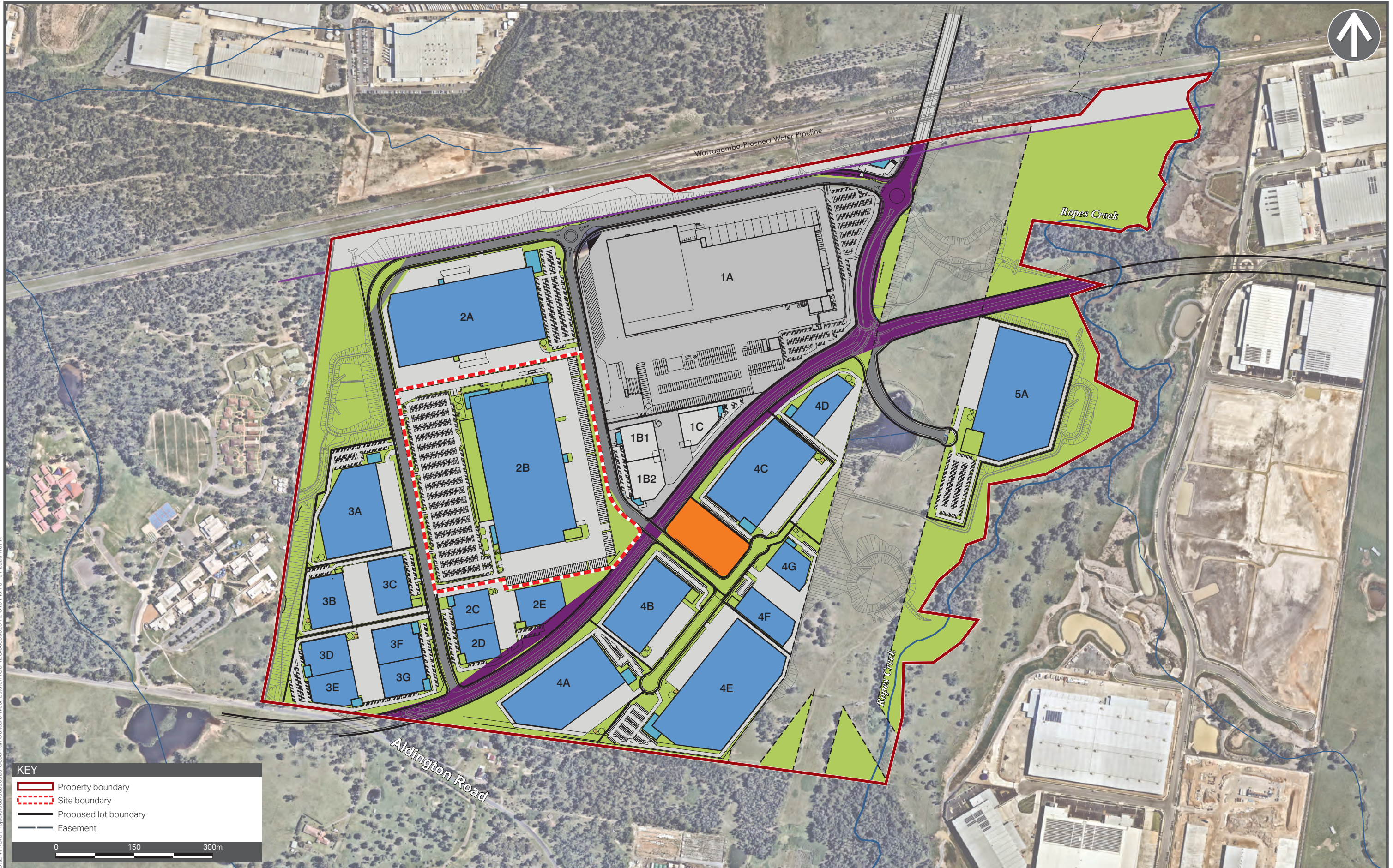
## 6.0 References

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# Appendix A

Figures





G:\ENV\GIS\Projects\606\0599325\Oakdale West Estate\FIGURES\60599325 F2 Site Plan\_31\_01\_2020 Rev.A





G:\ENV\GIS\Projects\6050599325 Goodman Oakdale West Estate\FIGURES\60599325 F7 Targeted Phase II Sample Locations 31.01.2020 Rev A



# Appendix B

## Materials Tracking Register (proformas)

**MATERIALS EXCAVATION FORM**

**DATE.....**

<b>Material Type</b>	<b>Material Description</b>	<b>Source Location</b>	<b>Volume m<sup>3</sup></b>	<b>Intended Destination</b>

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 banded 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).





# APPENDIX Q

## Bushfire Protection Assessment

**UPDATED**

**BUSHFIRE PROTECTION ASSESSMENT**

**FOR THE OAKDALE WEST SSD 7348 MODIFICATION 3  
AND THE  
SSD 10397 STAGE 2 DEVELOPMENT APPLICATION**

**OAKDALE INDUSTRIAL ESTATE - WEST  
ON LOT 11 in DP 1178389  
KEMPS CREEK**

**FOR GOODMAN PROPERTY SERVICES (AUST) PTY LTD**

***Australian Bushfire Protection Planners Pty Limited***

**Bushfire Mitigation Consultants**

ACN 083 085 474

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Phone: (02) 43622112

Email: [abpp@bigpond.net.au](mailto:abpp@bigpond.net.au)



**ABPP**

Australian Bushfire  
Protection Planners Pty Ltd  
ABN 48 935534 462

Bushfire Mitigation Consultants

**UPDATED**

**BUSHFIRE PROTECTION ASSESSMENT**

**FOR THE OAKDALE WEST SSD 7348  
MODIFICATION 3**

**&**

**THE PROPOSED SSD 10397 STAGE 2  
DEVELOPMENT APPLICATION**

**ON**

**LOT 11 in DP 1178389**

**KEMPS CREEK**

**FOR**

**GOODMAN PROPERTY SERVICES (AUST.) PTY  
LTD**

<b>Report Number</b>	<b>Document</b>	<b>Preparation Date</b>	<b>Issue Date</b>	<b>Directors Approval</b>
B193412 - 7	Final	05.11.2019	13.01.2020	<i>G.L.Swain</i>



## BACKGROUND

*Australian Bushfire Protection Planners Pty Limited*, at the request of *Goodman Property Services (Australia) Pty Ltd*, undertook the bushfire consultancy to inform the State Significant Development Application (SSDA – Reference SSD 7348) for the staged development of the Oakdale West Estate (OWE) on the bushfire protection measures required for the development of the proposed Oakdale West Estate (OWE) on Lot 11 in DP 1178389 Kemps Creek, here-in known as the ‘development site’.

The aim of the proposed OWE development is to integrate with the broader Oakdale Estate to create a high quality warehouse and logistics estate which maximises the employment generating potential of the land to create an efficient, attractive and high quality employment zone for Western Sydney.

SSDA 7348 for OWE incorporated a Master Plan to guide the staged development of the OWE and a Stage 1 Development Application.

Development Consent was issued under Section 4.38 of the *Environmental Planning & Assessment Act 1979* on the 13<sup>th</sup> September 2019 for a Concept Proposal including:

- Concept layout of 22 warehouse buildings providing 476,000 square metres of gross floor area and ancillary offices, built over five development stages;
- Concept layout of development lots, internal roads, drainage, landscaping and biodiversity offsets;
- Development controls.

A Stage 1 Development Application including:

- Bulk earthworks across all five stages including retaining walls and noise walls;
- Construction and operation of three warehouse buildings in Precinct 1 (1A, 1B and 1C);
- West-North-South Link Road and associated subdivision;
- Estate roads 1, 2, 6 and the eastern part of road 7;
- Service infrastructure to Precinct 1, including drainage, power, sewer, water and telecommunications;
- Landscaping of Stage 1, the western site boundary, West-North-South Link Road, estate roads 1, 2, 6 and the eastern part of road 7 and detention basins;
- Subdivision of Stage 1 lots and road infrastructure; and
- Stormwater drainage infrastructure for Lots 2A and 2B.

B20 – Bushfire Protection of Schedule B – Conditions for the Concept Proposal requires the Applicant to ensure that 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 ABPP, dated September 2016; and
- c. AS2419.1 – 2005 for fire-fighting water supply.

Goodman is seeking modification to the approved Concept Plan with a MOD 3 Application (SSD 7398 MOD 3) and approval for the Stage 2B Development Application being lodged with the Department of Planning, Industry & Environment (SSD 10397).

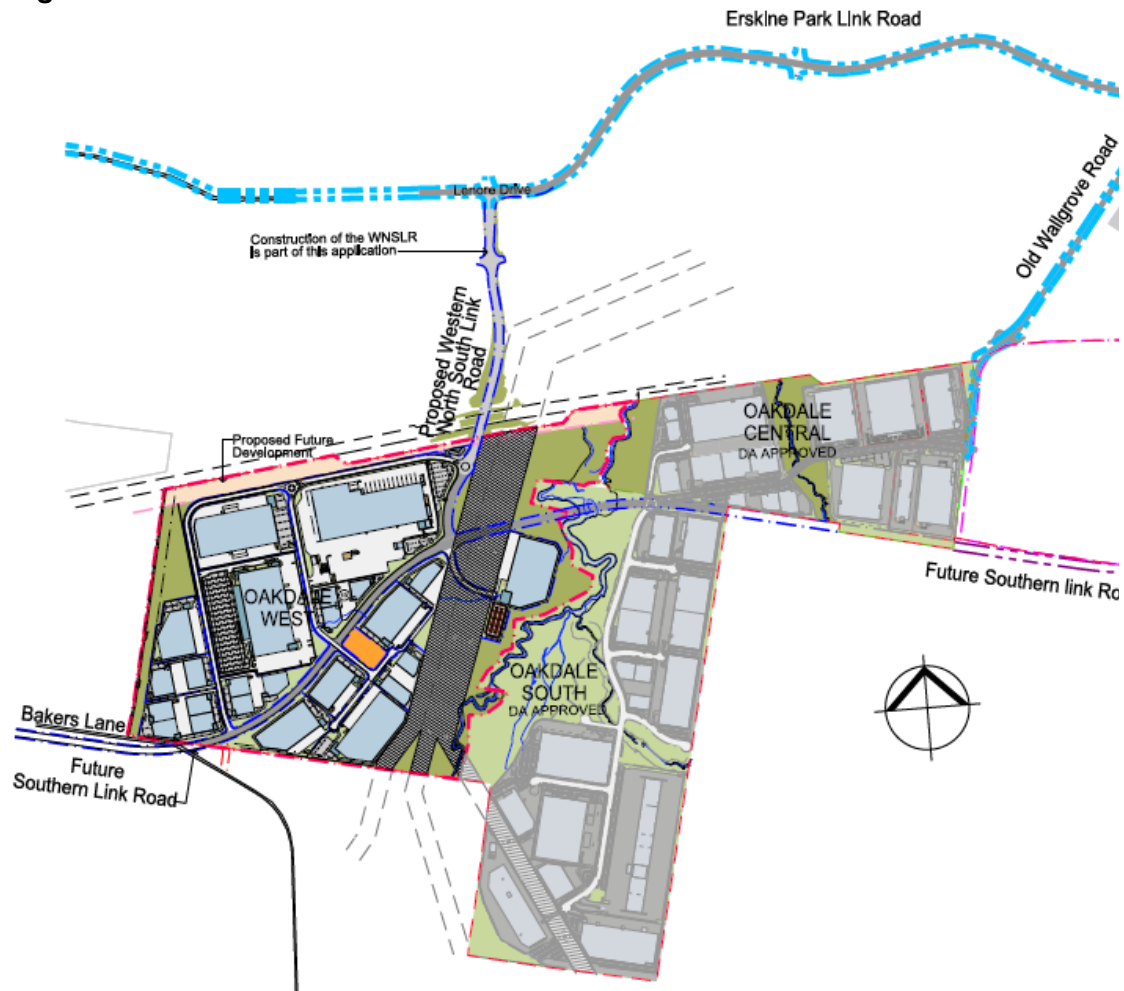
Chapter One of this report examines the proposed SSD 7348 MOD 3 layout for consistency with the bushfire protection requirements of B20 – Bushfire Protection of Schedule B – Conditions for the Concept Proposal.

Chapter Two of this report examines the compliance of the SSD 10397 Stage 2B Application with the relevant provisions of *Planning for Bushfire Protection 2006*.

## CHAPTER ONE – SSD 7348 MODIFICATION 3 APPLICATION

The site is known as Oakdale West and comprises the third stage of four stages within the broader 'Oakdale Estate' under the management of Goodman Property Services (Aust.) Pty Ltd Limited – refer to Figure 1 – Oakdale Estate.

**Figure 1 – Oakdale Estate**



The development site is an irregular shaped parcel which is mainly located to the west of Ropes Creek. The development site is largely zoned IN1 – General Industrial under the WSEA SEPP but also includes large areas of land zoned E2 – Environmental Protection, associated with the Ropes Creek riparian corridor.

The Penrith Council Bushfire Prone Land Map indicates that the Kemps Creek corridor contains Category 1 Bushfire Prone Vegetation with Category 1 vegetation occupying the land to the south and west of the site. The vegetation within the site is mapped as Category 2 Bushfire Prone Vegetation.

Therefore, measures are required to be provided to minimise bushfire risk on the proposed development in accordance with the provisions of *Planning for Bushfire Protection 2006*.

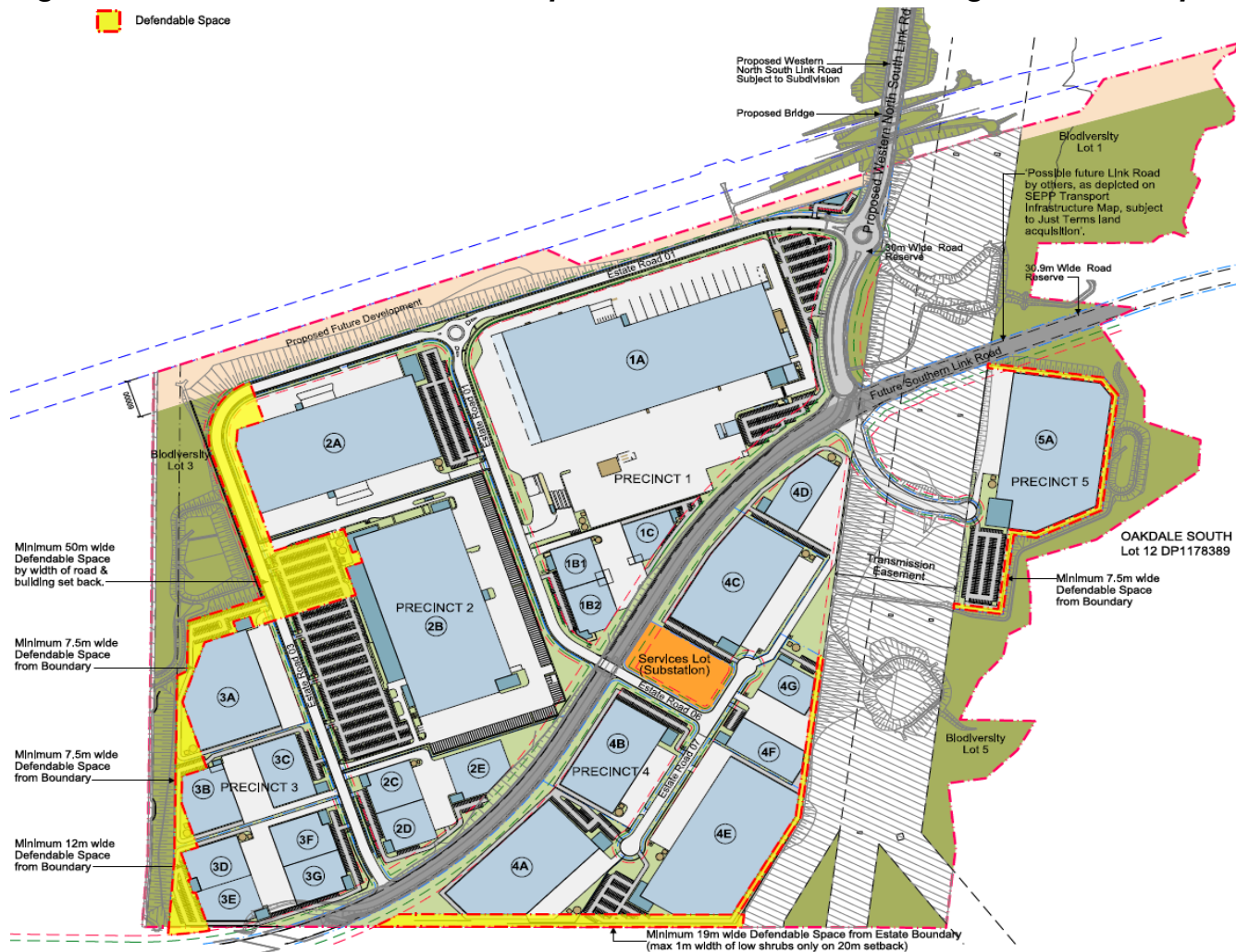
Figure 2 on Page 6 provides a copy of the Bushfire Protection Measures Plan approved under the Concept Plan Approval. Figure 3 on Page 7 provides a copy of the bushfire protection measures proposed for the SSD 7348 MOD 3 layout.

Figure 2 - Oakdale West Estate 2019 Approved Masterplan showing Defendable Space widths to the future buildings.





**Figure 3 - Oakdale West Estate Masterplan SSD 7348 MOD 3 showing Defendable Space widths to the future buildings.**





I have reviewed the Oakdale West Estate Master Plan SSD 7348 Modification 3 and confirm that the bushfire protection measures are consistent with the measures provided in the approved Concept Plan and Consent Condition B20 – Bushfire Protection of Schedule B – Conditions for the Concept Proposal.

A handwritten signature in black ink, appearing to read 'Graham Swain', written in a cursive style.

Graham Swain,  
Managing Director,  
**Australian Bushfire Protection Planners Pty Limited**  
13.01.2020

**Fire Protection Association Australia Member No: 48781**

## CHAPTER TWO – SSD 10397 STAGE 2 DEVELOPMENT APPLICATION

*Australian Bushfire Protection Planners Pty Limited* has been commissioned by *Goodman Property Services (Aust.) Pty Ltd* to prepare a Bushfire Protection Assessment that provides advice on the bushfire protection measures required for the construction of the proposed warehouse building 2B within the SDD 10397 Stage 2 Precinct on Lot 11 in DP 1178389 Kemps Creek.

Development Consent was issued under Section 4.38 of the *Environmental Planning & Assessment Act 1979* on the 13<sup>th</sup> September 2019 for a Concept Proposal and a Stage 1 Building Approval contained the following condition relating to the construction of buildings within Stage 1 of the estate.

B91 – Bushfire Protection of Schedule D – Conditions for the Stage 1 requires the Applicant to ensure that 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 ABPP, dated September 2016; and
- c. AS2419.1 – 2005 for fire-fighting water supply.

In recognition that this condition will prevail over the SSD 10397 Stage 2 Precinct I have reviewed the Stage 2 layout against the relevant provisions of *Planning for Bushfire Protection 2006* and construction standards and asset protection zone requirements recommended in the Oakdale Industrial Estate – West Bushfire Protection Assessment prepared by ABPP, dated September 2016, and confirm:

1. The location of Building 2B within the Stage 2 Precinct exceeds the width determined in Table 2 of the ABPP report.

This width removes the chance of flame contact on the building - therefore satisfying Section 4.3.6(f) of *Planning for Bushfire Protection 2006*.

2. The management of the defendable space shall be in accordance with Strategy 2 of the ABPP report;
3. In accordance with Strategy 3 of the ABPP report the fire-fighting water supply to the proposed building shall comply with the Building Code of Australia (BCA) and Australian Standard A.S. 2419.1 – 2005.

4. In accordance with Strategy 4 – Table 4, Building 2B shall be constructed to comply with Section 3 and Section 5 (BAL 12.5) of A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’ and the following additional construction standards shall apply:
  - The downpipe/stormwater system to the internal box gutters shall be sized to provide a self flushing of combustible materials from the roof/gutter. This shall include increased fall in the box gutters to the sumps;
  - Any operable windows shall be fitted with aluminium/stainless steel mesh flyscreens having a maximum mesh aperture size of 2mm;
  - Access doors (PA and Vehicle) to the building shall be fitted with seals that seal the bottom, stiles and head of the door against the opening/frame to prevent the entry of embers into the building. Particular attention shall be given to the gap at the head of the curtain of the roller doors, where mohair type seals can be used;
  - External timber doors shall be fitted with a stainless steel/Colorbond kick plate of 400mm high on the outside of the door;
  - External glazed doors and windows shall comply with the requirements for glazing less than 400mm above finished ground level; paths / pavement and elevated roofs;
  - Any external vents, grilles and ventilation louvres shall have stainless steel mesh with a maximum aperture of 2mm square fitted to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.
  - Roof ventilators shall be fitted with stainless steel flymesh (2mm aperture) to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.
5. In accordance with Strategy 4 of the ABPP report there shall be prepared for Building B2 a Bushfire Evacuation & Emergency Plan (BEEP).
6. In accordance with Strategy 5 of the ABPP report access to the bushfire prone vegetation shall be provided either by a perimeter road or by vehicular access to the building or parking areas that are incorporated into the defendable space setbacks.

The access provisions shall satisfy the NSW Rural Fire Service and Fire & Rescue NSW appliance requirements.

Figure 4 on Page 12 is a plan of the Stage 2 Precinct showing the location and extent of the Defendable Space provided to the west of Building 2B.

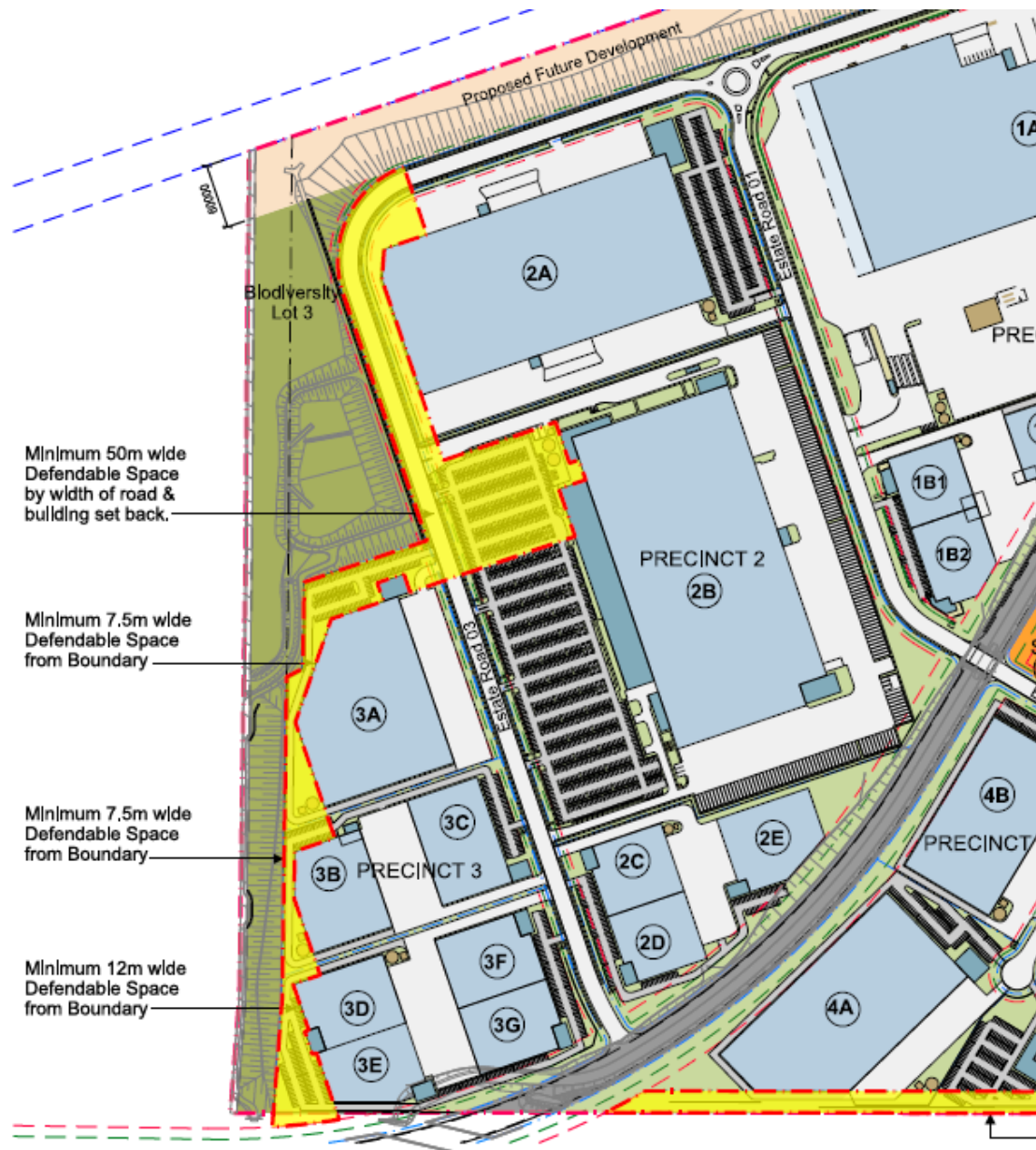
Figure 5 on Page 13 is the Site Plan for the proposed Warehouse Building on site 2B within the Stage 2 Precinct.



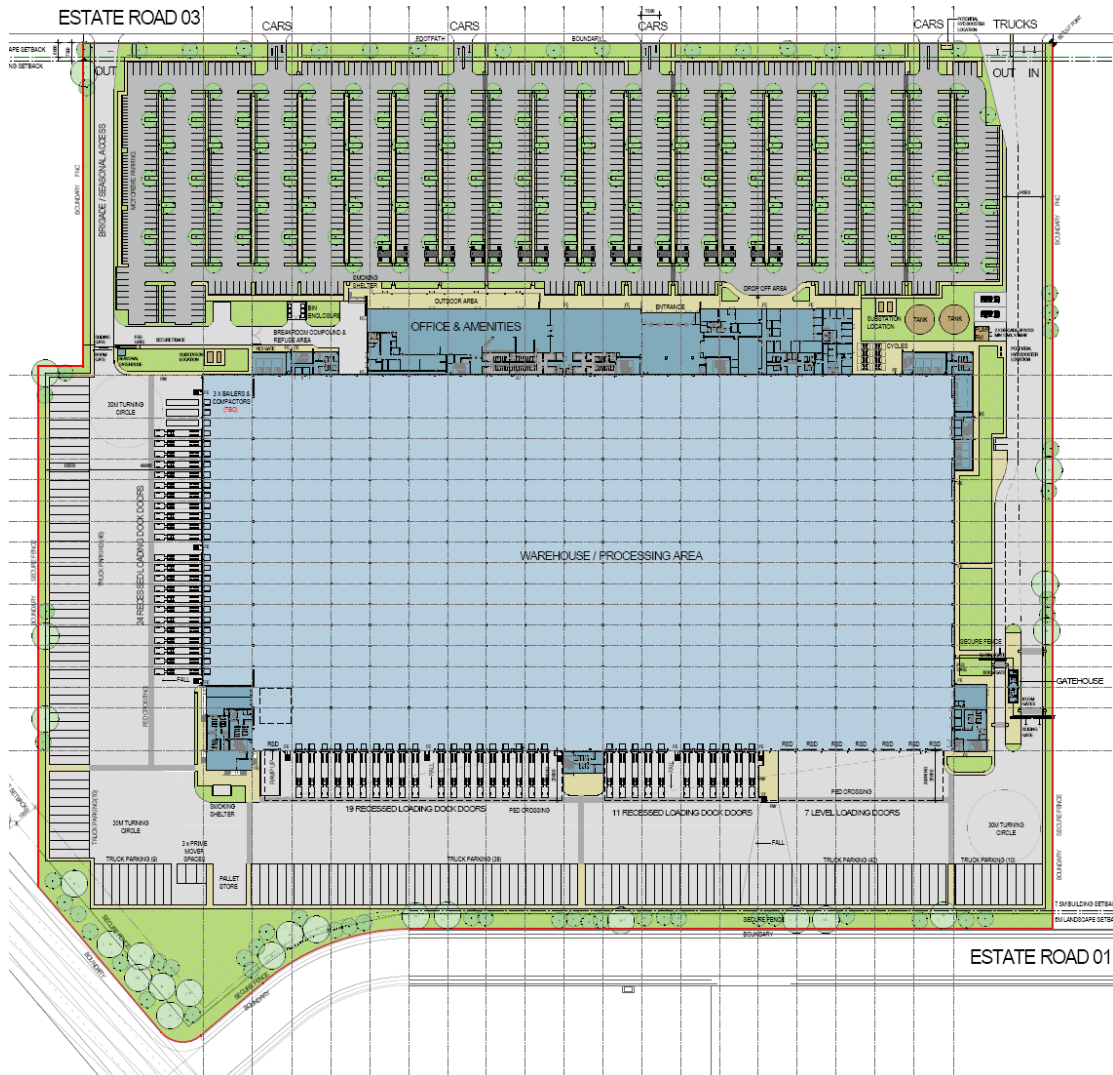
Graham Swain  
Managing Director,  
**Australian Bushfire Protection Planners Pty Limited.**  
13.01.2020

**Fire Protection Association Australia Member No: 48781**

**Figure 4 – Plan of the Stage 2 Precinct showing the location and extent of the defensible space to the west of SSD 10397 Stage 2 Building 2B.**



**Figure 5 – Site Plan for the proposed Warehouse Building on Site 2B within the Stage 2 Precinct of the Oakdale West Estate.**





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