

0 100m  
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FIGURE 1  
METROPOLITAN REGION SCHEME ZONING

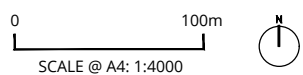
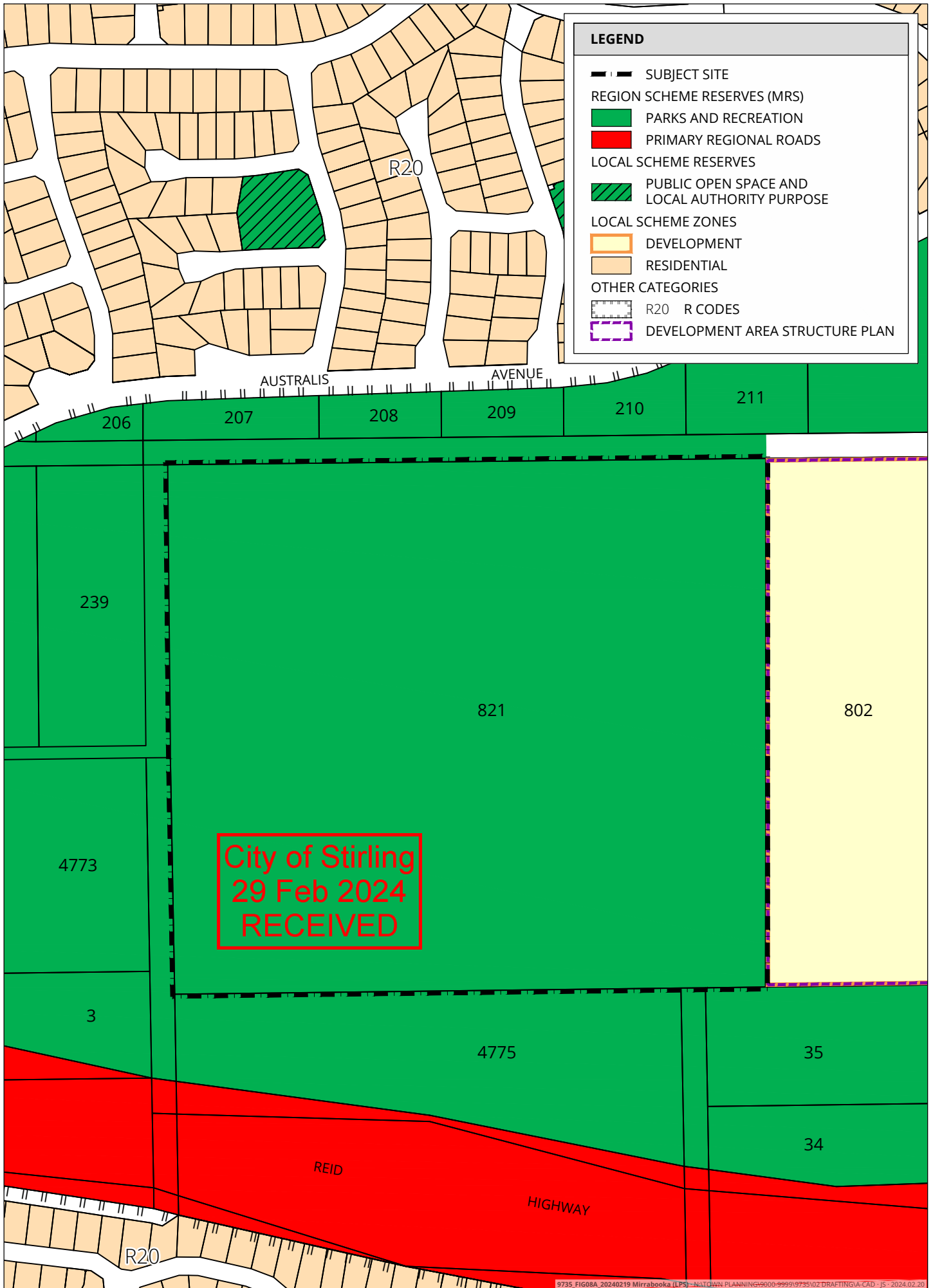


FIGURE 2  
CITY OF STIRLING LOCAL PLANNING SCHEME No.3 ZONING

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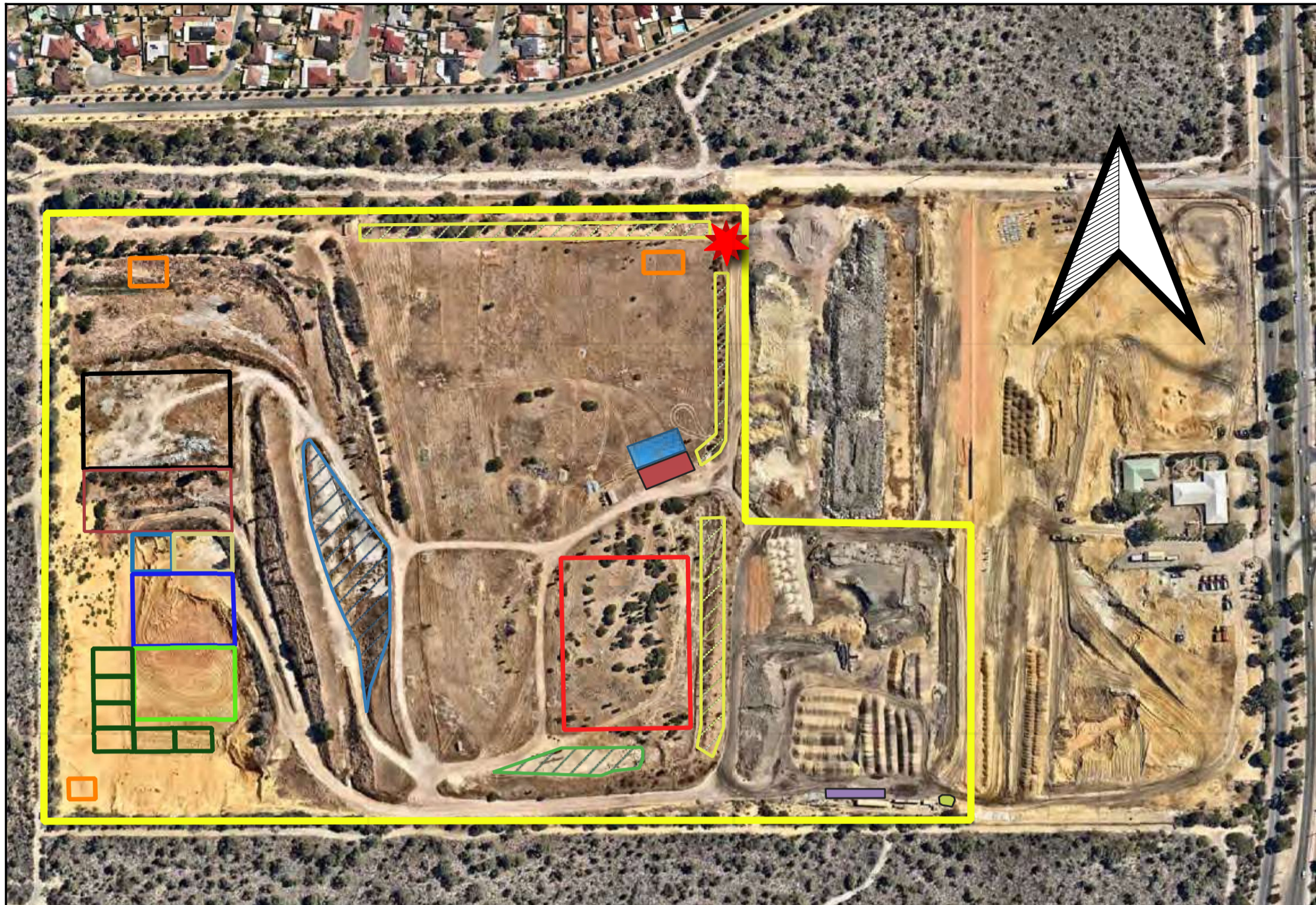
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**Legend**


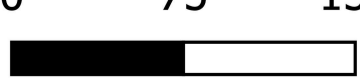
- ★ Entry
- Cell One
- Bore tank
- Stockpiles
- Water tank
- Screening Area
- Administration
- Tipping Area
- Weighbridge
- C&D Waste
- ▨ Bunds
- Non-conforming Waste Storage
- ▨ Green Waste
- Bin Storage Area
- ▨ Steel Sorting Area
- Cover Material Storage Area
- Dust Monitor
- Sie Boundary

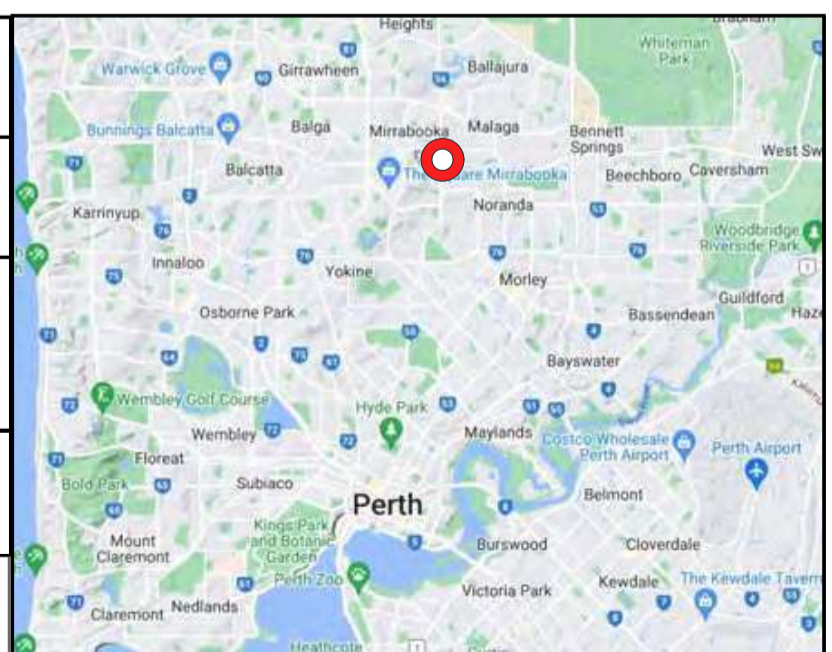
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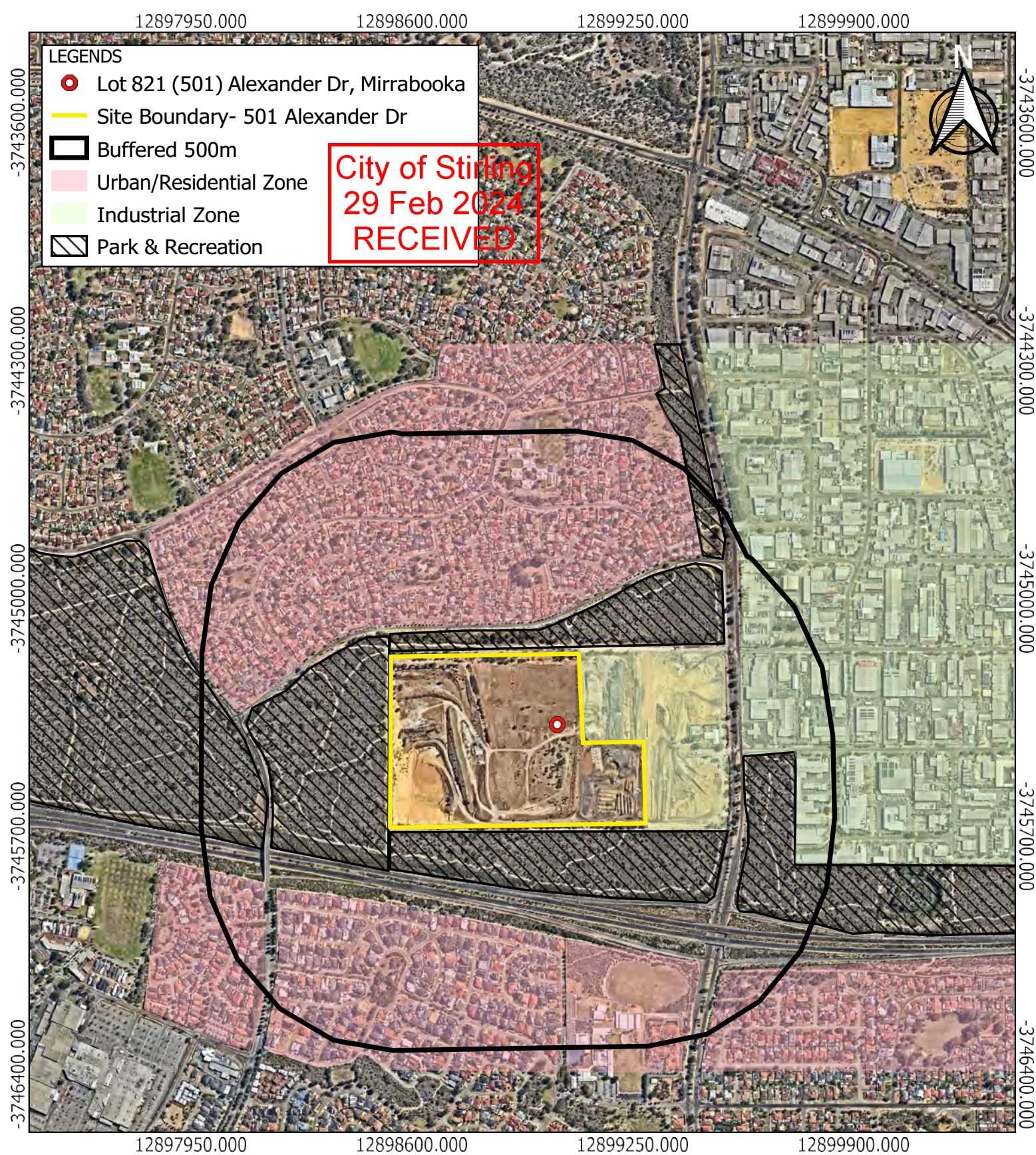
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|   |                    |  |             |
|---|--------------------|--|-------------|
| <b>TITLE</b>  |                    |  |             |
| Figure 2. Site Layout & Infrastructure  |                    |  |             |
| <b>PROJECT</b>  |                    | <b>PROJECT CODE</b>  |             |
| Lot 821 (501) Alexander Drive, Mirrabooka A 6061                                    |                    | 004-28   |             |
| <b>CLIENT</b>   |                    |  |             |
| Brajkovich landfill and recycling Pty Ltd   |                    |  |             |
| <b>DESIGN/DRAW</b>  | <b>APPROVED BY</b> | <b>VERSION</b>   | <b>DATE</b> |
| JC  | MC                 | 00   | 14/04/2023  |
|  |                    | <b>SCALE</b>   |             |
|   |                    | 0      75      150 m<br> |             |

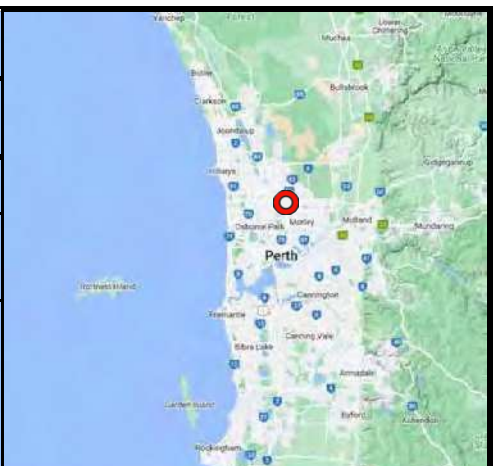


**SOURCE**  
 Coordinate System GDA2020. Basemap 1: Google Maps. Near Maps



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|   |            |                        |   |                                |                               |
|---|------------|------------------------|---|--------------------------------|-------------------------------|
| <b>TITLE</b>  |            |                        |   | Figure 3. Surrounding Land Use |                               |
| <b>PROJECT</b>  |            |                        | Lot 821 (501) ALEXander Drive, Mirrabooka WA 6061 |                                | <b>PROJECT CODE</b><br>004-28 |
| <b>DESIGN/DRAW</b><br>BK  | Checked By | MC                     | <b>VERSION</b><br>01                              | <b>DATE</b>                    | 08/03/2023                    |
| <b>PREPARED BY</b>  |            | <b>Source</b> NearMaps |   |                                |                               |
|  |            | <b>Scale</b>           |   |                                |                               |
|   |            | 0 5 10 km              |   |                                |                               |
| <b>PREPARED FOR</b><br>Brajkovich Landfill and Recycling Pty Ltd                    |            |                        |   |                                |                               |



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**LEGENDS**

● Lot 821 (501) Alexander Dr, Mirrabooka

— Site Boundary- 501 Alexander Dr



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**TITLE** Figure 1. General Site Location

**PROJECT** Lot 821 (501) Alexander Drive, Mirrabooka WA 6061

**PROJECT CODE** 004-28

**DESIGN/DRAW** BK Checked By MC

**VERSION** 01

**DATE** 08/03/2023

**PREPARED BY**



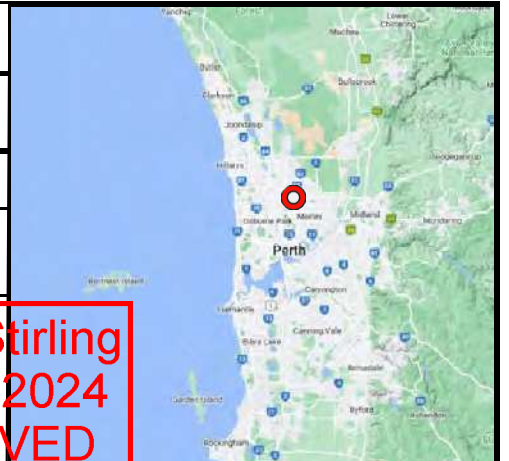
**SERS**  
Site Environmental and Remediation Services

**Source** NearMaps

**PREPARED FOR**  
Brajkovich Landfill and Recycling Pty Ltd

**Scale** 0 5 10 km

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### Legend



Entry



Bore tank



Water tank



Administration



Weighbridge



Bunds



Green Waste



Steel Sorting Area



Dust Monitor



Cell One



Stockpiles



Screening Area



Tipping Area



C&D Waste



Non-conforming Waste Storage



Bin Storage Area



Cover Material Storage Area



Sie Boundary

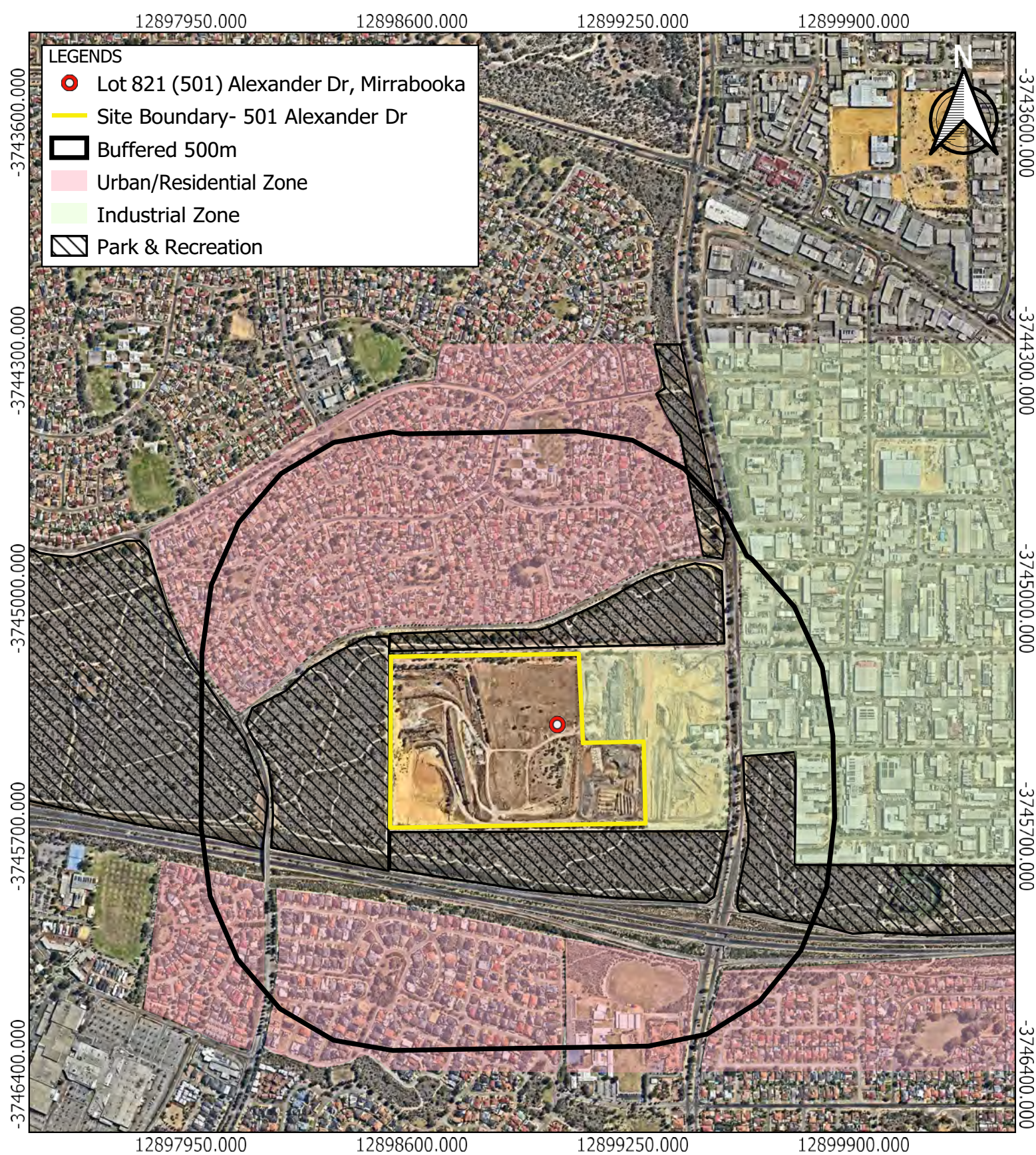
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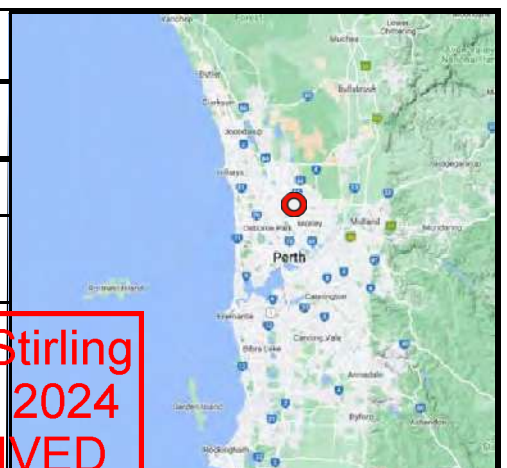
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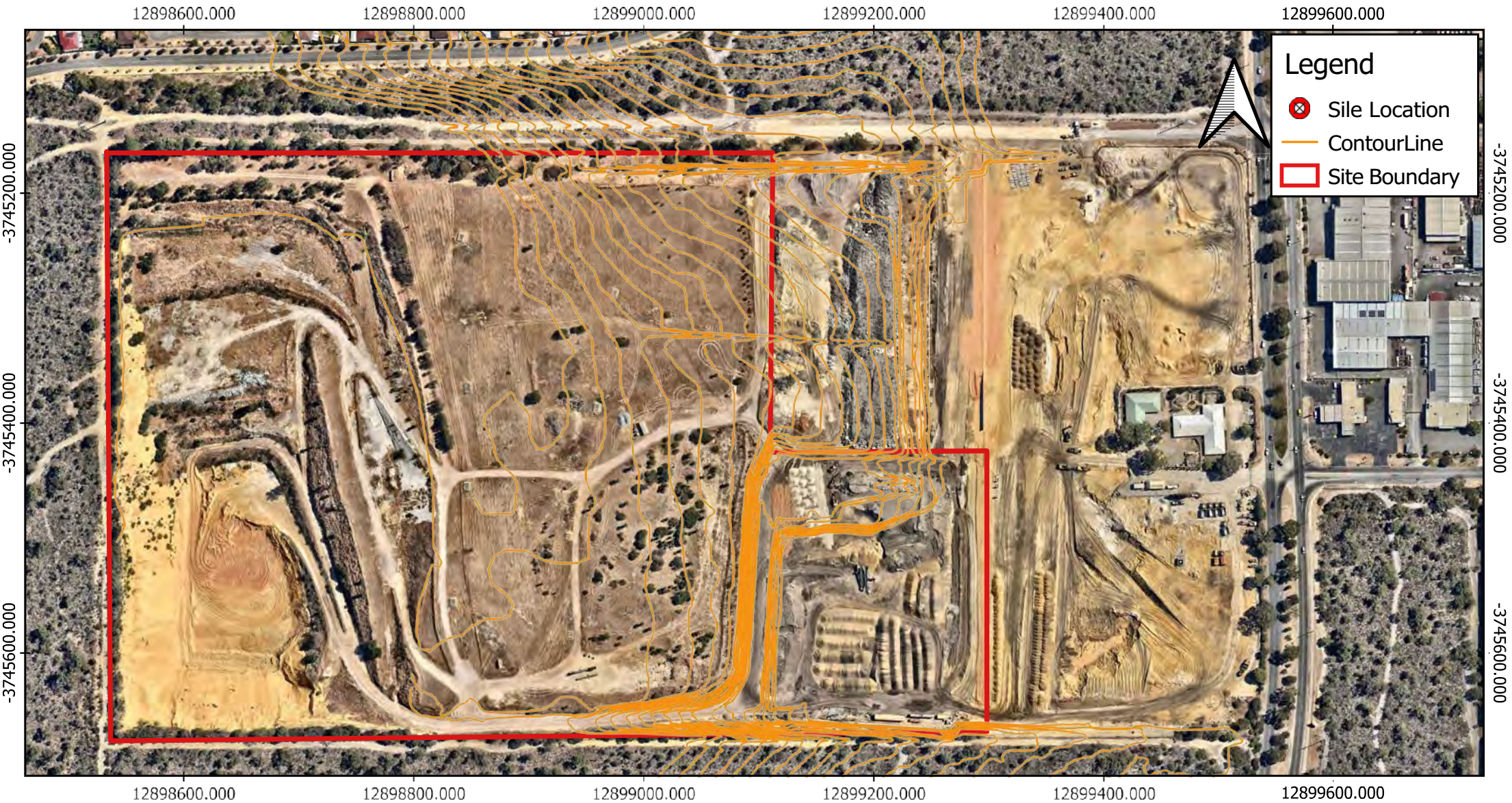




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| <b>TITLE</b>  |            |   |   | Figure 3. Surrounding Land Use |                               |
| <b>PROJECT</b>  |            |   | Lot 821 (501) Alexander Drive, Mirrabooka WA 6061 |                                | <b>PROJECT CODE</b><br>004-28 |
| <b>DESIGN/DRAW</b><br>BK  | Checked By | MC  | <b>VERSION</b><br>01                              | <b>DATE</b>                    | 08/03/2023                    |
| <b>PREPARED BY</b>  |            | <b>Source</b> NearMaps                    |   |                                |                               |
|  |            | <b>Scale</b><br>0 5 10 km                 |   |                                |                               |
| <b>PREPARED FOR</b>   |            | Brajkovich Landfill and Recycling Pty Ltd |   |                                |                               |



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|   |  |                                |                            |  |  |  |
|---|--|--------------------------------|----------------------------|--|--|--|
| <b>TITLE</b> Figure 5. ContourLine                            |  |                                |                            |  |  |  |
| <b>PROJECT</b> Lot 821 (501) Alexander Dr, Mirrabooka WA 6061 |  |                                | <b>PROJECT CODE</b> 004-28 |  |  |  |
| <b>CLIENT</b> Brajkovich Landfill and Recycling Pty Ltd       |  |                                |                            |  |  |  |
| <b>DESIGN/DRAW</b> AO   |  | <b>APPROVED BY</b> MC          |                            | <b>VERSION</b> 00  |  |  |
|   |  |                                |                            | <b>DATE</b> 05/05/2023   |  |  |
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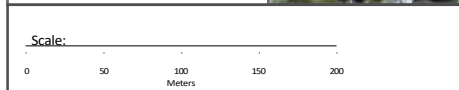
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# Aerial Imagery 2022

501 Alexander Road, Mirrabooka, WA 6061

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Data Sources: Aerial Imagery © Aerometrex Pty Ltd

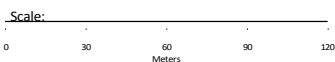
Coordinate System: GDA  
2020 MGA Zone 50

Date: 28 February 2023



**Legend**

-  Site Boundary
-  Buffer 150m



Data Sources Aerial Imagery: © Aerometrex Pty Ltd

Coordinate Reference System:  
GDA2020 MGA50

Date: 14 March 2023



**SERS**  
Site Environmental and  
Remediation Services

# Dust Management Plan

PROPOSED SOLID WASTE DEPOT

Lot 821 & Part of Lot 820 (501) Alexander Drive, Mirrabooka WA 6061



Prepared for:

**Brajkovich Landfill & Recycling Pty Ltd**

Prepared by:

**Site Environmental and Remediation Services Pty Ltd  
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# DOCUMENT CONTROL SHEET

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**Client:** Brajkovich Landfill & Recycling Pty Ltd

**Project:** Solid Waste Depot at 501 Alexander Drive, Mirrabooka WA 6061




**Title:** Dust Management Plan- 501 Alexander Drive, Mirrabooka WA 6061

**Reference:** 00428\_DMP\_BK\_150523

**Status:** Final

**Report Date:** 15<sup>th</sup> May 2023

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| 1            | 15 <sup>th</sup> May 2023 | Issue            |

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Attachment A- Table of Sensitive Receptors within 200m buffer around the site

Attachment B- Dust Management Site Inspection Checklist

Attachment C- Complaints Form

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## 1 Introduction

Site Environmental and Remediation Services (SERS) have been engaged by Brajkovich Landfill & Recycling (BLR) to develop a Dust Management Plan in support of a Works Approval Application located at 501 Alexander Drive, Mirrabooka (hereby known as 'the Site'). The site location and boundary are attached in **Figure 1**. The plan has been collated to identify dust causing activities, the health impacts and mitigation protocols. Dust-sensitive receptors are present surrounding the site, in the form of residential and industrial premises.

Solid Waste Depot operations have the potential to generate dust in the following waste.

- Movement of heavy vehicles
- Tipping of waste material
- Sorting and stockpiling waste material

Movement of materials, disturbance of stockpile surfaces has the potential to contribute to dust emission, potentially impacting human health, air pollution, and the amenity value of the site if not effectively managed. As such, management is proposed in line with the EP Act 1986 Section 49, the Regulations 1987 Schedule 1 Categories 61A and 62.

The purpose of the plan is to provide the best management strategies for dust control within the site boundaries. This DMP also identifies key issues and areas of concern and purposes to implement appropriate control measure.

### 1.1 Definition

Dust is any particle suspended within the atmosphere. Particles can range in size from as small as a few nanometres to 100 microns ( $\mu\text{m}$ ) and can become airborne through the action of wind turbulence, by mechanical disturbance of fine materials, or through the release of particulate-rich gaseous emission. Emissions from operating machinery not included as greenhouse gases can also be classed as dust particulates.

Dust is measured using a variety of methods, the most common being Total Suspended Particulates (TSP), which measure up to  $50\mu\text{m}$  in size, and  $\text{PM}_{10}$  or  $\text{PM}_{2.5}$  (particulate matter less than  $10\mu\text{m}$  or  $2.5\mu\text{m}$  in size, respectively) (DEC 2011).

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## 1.2 Purpose and Scope

The purpose of the plan is to provide the best management strategies for dust control within site boundaries. This DMP also identifies key issues and areas of concern and proposes to implement appropriate control measures.

## 1.3 Objectives

The objectives of the DMP are to protect human health and minimise adverse effect on environmental health and amenity by ensuring that dust arising from processing activities is curtailed, achieving benchmark for dust deposition levels and concentration of suspended particulate matter. Management strategies have been selected specifically to the site in question to address the above priorities. National Standards have been selected as performance criteria used to monitor performance.

- Prevent dust emission and implement control measures
- Fire prevention, undertake no deliberate burning, gain control of bushfires
- Prevent dust emission during site closure operation.

## 1.4 Legislation

The lessee of the site is to ensure that its employees and contractors comply with all relevant Commonwealth and State legislation that applies to the operation of the Solid Waste Depot. Legislation, Policy, and Guidelines relevant to the Dust Management Plan can be viewed in **Table 1**.

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**Table 1.1 Relevant Legislation and Guidelines**

|   |
|---|
| Environmental Protection Act 1986- Part II, III, IV, and V  |
| Environmental Protection Regulations 1987   |
| Environmental Protection (Unauthorised Discharge) Regulations 2004  |
| <p>Environmental Protection Authority Guidance Statements</p> <ul style="list-style-type: none"> <li>- 3- Assessment of Environmental Factors- Separation distances between industrial and sensitive land uses 2005</li> <li>- 18- Assessment of Environmental Factors- Prevention of air quality impacts from land development site 2000</li> <li>- 33- Assessment of Environmental Factors- Environmental Guidance for Planning and Development 2005</li> </ul> |
| Department of Environment and Conservation- A guidance for the development and implementation of a dust management program 2008   |
| Department of Environment and Conservation- a guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites, remediation, and other related activities 2011  |
| National Environment Protection Council (Western Australia) Act 1996  |
| National Environment Protection (Ambient Air Quality) Measure 2021  |
| Health Act 1911   |
| Local Government Act 1995   |
| Work Health and Safety Act 2020   |
| Work Health and Safety Regulations 2022   |
| Contaminated Sites Act 2003   |
| Health (Asbestos) Regulation 1992   |

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National Pollutant Inventory NEPM

**EPA Guidance Note 3- Separation Distances between Industrial and Sensitive Land Uses (2005)**

Specifically addresses generic separation distances between industrial and sensitive land uses to avoid conflict between these land uses, taking into account protection of the environment under the EP Act 1986, in particular protecting sensitive land uses from impacts on amenity from industrial operations, emission and infrastructure that are deemed unacceptable.

Separation distances referred to in the State Industrial Buffer Policy 1997 are provided, along with the types of emission associated with that particular industrial land use.

**EPA Guidance Note 18- Prevention of air quality impact from land development sites (2000)**

Specifically addresses the prevention of impacts on air quality from dust and smoke generation on land development sites.

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## 2 Impacts of Dust on health

Particles with an aerodynamic diameter of less than 50 $\mu\text{m}$  (usually referred to as TSP) are typically associated with adverse aesthetic effects rather than health effects. This is because they are trapped in the upper respiratory tract (just behind the nose and mouth) when inhaled. These larger particles are called inhalable particles and comprise visible dust following settling on surfaces, causing soiling and discolouration. They may, however, be associated with irritation of the mucosal membranes (eyes, nose, and throat) and if contaminated may pose an increased health risk through ingestion.

Human health effects of dust tend to be associated with particles with an aerodynamic diameter of 10 $\mu\text{m}$  or less (<10 $\mu\text{m}$ ). These smaller particles tend to remain suspended in the air for long periods and can penetrate into the lungs.

The PM<sub>10</sub> fraction (coarse fraction) is termed 'thoracic particles' or 'inhalable dust'. These particles are inhaled into the upper part of the airways and lungs. PM<sub>2.5</sub> particles are inhaled more deeply and lodge in the gas exchange region (alveolar region) of the human lung and are termed 'respirable dust'. Further, if contaminated, these fine particles may pose a further health risk through the absorption of the chemicals on the particles in the bloodstream. Sensitive groups such as people with lung or heart diseases, children, and older adults are the most likely to be affected by particle pollution exposure.

However, even healthy people may experience temporary symptoms from exposure to elevated levels of particle pollution.

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### 3 Site Background

#### 3.1 Site History

The site is located approximately 12 km north of the Perth CBD and is bounded by industrial/commercial receptors to the east and west and residential receptors to the north and south. The closest commercial receptor is located on east of the site. Vehicle Access to the site is gained off Victoria Road (see **Figure 2- Site Layout and Key Infrastructure**)

Previously sand resources were extracted from the site. This operation has been active since late 1950s resulting in a vast amount of the site being cleared. This extraction operation began on the eastern boundary of the site and were progressed towards the western boundary. In 1977, the western side of the site were repurposed into a landfill and previously both putrescible and inert wastes were accepted for burial. In 1997, the premises was reclassified from a Putrescible landfill to a Class I inert landfill only.

The proponent, Brajkovich Landfill and Recycling acquired the site with intention of conducting operations in line with the land use of a Solid Waster Depot ancillary to the existing Landfill Licence L6764/1997/14.

#### 3.2 Current Site Condition

Current site condition consists of Class I inert landfill with some remnant native vegetation scattered across the site. Receptors are located to the east, north and south of the property. The closest receptor is an industrial receptor located approximately 20m away from the eastern boundary of the site.

#### 3.3 Nearby sensitive receptors

The nearby sensitive receptors are industrial and residential resident (within 500m buffer around the site boundary); however, the closest commercial receptor is approximately 20m and residential receptor is approximately 81m from the site. A table of all sensitive receptors are attached in **Appendix A**.

#### 3.4 Surrounding Land Uses

The property is located on industrial and park and recreation zoned land. However, land area on the north and south of the site are zoned as a residential.

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### 3.5 Geology and particle size distribution

Lotsearch, via the Atlas of Australian Soil, identified the soil across the whole site to be a Podsol. Podosols are described as follows “Subdued dune-swale terrain: chief soils are leached sands (Uc2.33) with (Uc2.22) and (Uc2.21) on the low dunes. Associated are small areas of other sand soils (Uc).”

It should be noted that disturbance of natural soils has not been the cause of any complaints about the site throughout the history of its operations. As such, it is more likely to be the composition of the materials brought on-site that will contribute to the generation of dust at the site.

### 3.6 Contamination Status

Both Lot 821 and Part of Lot 820 (521) Alexander Drive, Mirrabooka have been listed on the DWER Contaminated Site database as “Possibly Contaminated- Investigation Required” based on possible contamination that could be present as a result of historical site use (mixed putrescible and industrial landfill and other operations including brick works on the south-eastern portion of the site). This is a land use that has the potential to cause contamination, as specified in the guideline ‘Potentially Contaminating Activities, Industries and Land Uses’ (Department of Environment, 2004).

As per Basic Summary of Records Search Response, a compliance inspection undertaken by DER in September 2008 found that a diesel spill had occurred on the site, however the contaminated soil in the area was immediately removed and disposed of at an appropriate landfill facility. Additionally, a landfill gas extraction system has operated at the site since 1996 and is understood to still be in operation.

Groundwater monitoring has been undertaken at the site since 1989, as a requirement of the site’s license under the ‘Environmental Protection Act 1986’. A review of groundwater monitoring data was carried out by DER in January 2009, following a report of poor domestic bore water quality to the south-west of the site. The review indicated that this site was acting as a source of contamination to off-site properties.

In October 2011, off-site groundwater investigation was carried out in Dianella and Mirrabooka which indicated that groundwater beneath that site and in the broader area (to the south-west of the landfill) has been impacted by the presence of landfill leachate and contains elevated level of total dissolved solids (salts), ammonia, chloride, iron, phosphorus, and degraded hydrocarbons (such as from petrol, diesel and/or oil). However, a detailed health risk assessment found that the level of substances presents in groundwater beneath residential areas south of Reid Highway do not pose an unacceptable risk to human health and the environment.

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According to basic summary report, following actions are required to determine the contamination status of the site.

- Groundwater monitoring should continue as part of the landfill's license under Part V of the 'Environment Protection Act 1986'.
- Soil and landfill gas assessment are required
- Soil investigation should include the diesel tank storage area and the waste oil collection hard stand area should be carried out in accordance with DER's Contaminated Site Management Series of guidelines and the 'National Environmental Protection (Assessment of Site Contamination) Measure 1999'

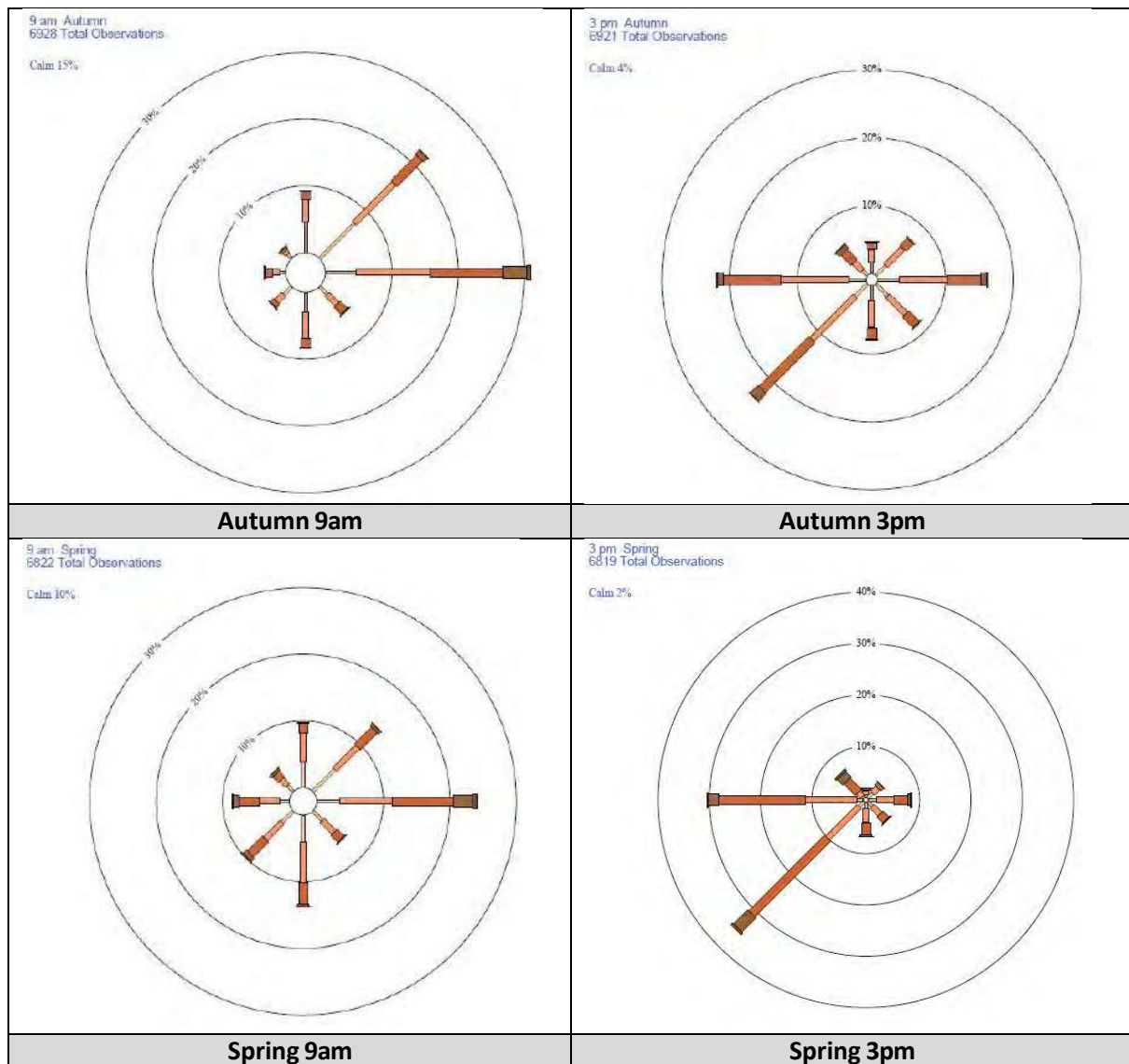
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## 4 Meteorological Conditions

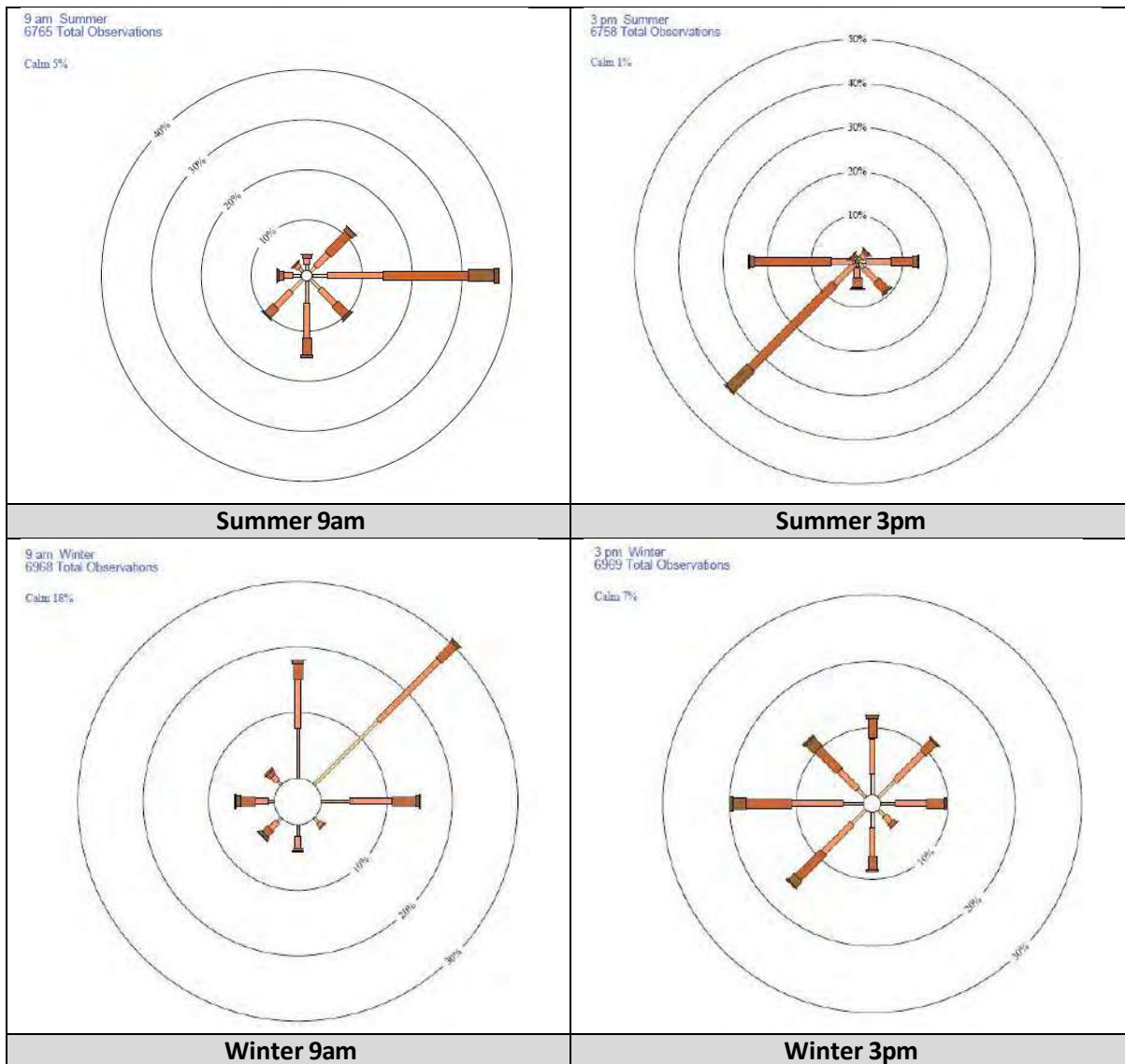
The site experiences meteorological conditions like those recorded in Perth, with the same wind patterns. Wind roses showing prevailing conditions at both 9am and 3pm are displayed in **Table 4.1**.

The surrounding area is not sufficiently built up that local wind conditions would not reflect regional wind conditions.

**Table 4.1 Wind Roses- Data recorded at Perth Airport (BOM 2023)**



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**4.1 Morning- Wind direction**

Prevailing winds in the morning are from easterly to north-easterly direction.

Any dust generation by solid waste deport operation will be intercepted by bunds, belts of remnant vegetation, and screen of established trees prior to reaching the industrial receptor located adjacent eastern boundary of the site and by another belt of dense vegetation along the bush forever area prior to teaching the nearest residential human receptors to the north, west and south of the site.

**4.2 Afternoon- Wind direction**

Prevailing winds in the afternoon are from a south-westerly to westerly direction. There are activities such as sorting and stockpiling taking place to the west of the site, however dust control measure will be in place so that dust generation can be avoided or minimised.

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## 5 Dust-generating Activities

The activities listed below have the highest potential to generate dust.

**Table 5.1 Dust-generating activities and predicted levels of associated risk**

| Activity                                  | Duration and Frequency                                | Level of impact |
|---|---|-----------------|
| Movements of heavy vehicles on haul roads | Like to occur throughout all hours of operation       | Medium          |
| Tipping C&D material                      | Occurs only upon delivery to the material to the site | Medium          |
| Filing rubble                             | Occurs throughout all hours of operation              | Medium          |

### 5.1 Dust Control Measures

Dust can arise at the site from a variety of sources. Fugitive dust arises from surface lift-off from exposed soil surfaces and exposed stockpile and the movement of heavy vehicles and machinery around unpaved areas of the site causing dust to become airborne. Nuisance dust arises from the loading and off-loading of rubble. Dust management measures are primarily addressed at the landfill and crushing operations and secondarily at sand extraction activities as there is no history of complaints received from landfill operation, however, there will be no crushing at this facility and these control measures are precautionary.

Dust mitigation measures shall comprise of:

- Frequent passes by the water cart on all roads in use by heavy vehicles and machinery
- Installation of a mobile reticulation system that caters to all areas inaccessible to the water cart i.e., stockpiles
- Speed limited to 10km/h
- Supervision of tipping, loading and compaction
- Wetting down of waste loads during tipping
- Reducing tipping heights
- Ensuring vehicles are well maintained to control emission
- An integrated response to complaints and installation of boundary monitors on the site perimeter
- Additional sprinkler/water cart use throughout dry and windy conditions

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A range of control measures to mitigate dust generation on the site is detailed below.

|          |  |
|----------|--|
| <b>1</b> | <b><i>Reticulation Check</i></b>   |
|          | The water system and sprinkler are checked daily in summer to ensure it remains fully functional to the inherent operating creation at of dust maximum through efficiency. An example dust management/Site inspection checklist is provided in <b>Appendix B</b> .   |
| <b>2</b> | <b><i>Employee induction</i></b>   |
|          | Employees are to be made familiar with all dust prevention measures to be implemented on-site. Dust prevention measures appropriate with to all dust forecasted prevention working measures conditions to be implemented on-site at the pre-start toolbox meeting each day.  |
| <b>3</b> | <b><i>Dissemination of control measures</i></b>  |
|          | Introduced Management Measures to be presented to all employees at pre-start toolbox meetings each morning.  |
| <b>4</b> | <b><i>Patrol of the site boundaries</i></b>  |
|          | Employees shall maintain is a vigilant routine patrol along the site boundaries to detect possible errant dust. If any site activity is reported to the site supervisor who has the ultimate responsibility of immediate implementation of the management and remediation measures. On-site staff shall actively patrol site boundaries every hour throughout operating hours during periods of hot, dry, weather, and high wind forecasts (roles to be designated at pre-start toolbox meetings). It must be confirmed that all dust-suppression systems are functioning adequately to prevent dust from leaving site boundaries at pre-start toolbox meetings. Should any dust be observed leaving the site, the measures described below must be implemented. |
| <b>5</b> | <b><i>Feedback</i></b>   |
|          | <p>Community notification- Notification of works shall be advertised as part of the Works Approval Application process. Notification of works and contact details of the Site supervisor shall also be provided to neighbouring properties to allow for open communication of feedback.</p> <p>On-site information- Contact details for the Site supervisor shall be provided at the entrance to the site to allow for open communication of feedback.</p> <p>Register- Information regarding feedback is to be recorded on a Feedback form as soon as it is</p>   |

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received. It should be forwarded to the Site supervisor for review and action as soon as possible. The Site Supervisor shall respond to every complaint as it is received and enact appropriate remedial action. The complainant shall be duly informed for any remedial action taken and the Site Supervisor shall record the complaint in a Register of Complaints. The register shall be stored on-site always together with copies of the License for Prescribed Premises.

**6 Storage of documentation**

The Dust Management Plan Register of Complaints is to be stored in a central data location and available onsite on request.

**7 Consideration of meteorological conditions**

Portable hand-held wind speed and direction tracker employed. Employees are to be observant of condition and implement dust-prevention measures accordingly. Where wind conditions are forecast above 35 knots (BoM- Perth Airport) (disseminated at pre-start toolbox meeting) staff shall post-pone dust-generating activities according to wind speed and on advice from the site supervisor.

**5.1.1 Measures to enact should dust be observed crossing site boundaries:**

**8 Stop work**

Site activities are to cease immediately if dust is observed crossing site boundaries. Should unforeseen conditions arise that cause visible dust to be generated at levels that allow it to be observed approaching or crossing site boundaries, the activities responsible must be immediately identified, all site activities halted, and the Site Supervisor notified. All dust management systems are to be assessed for functionality. If a dust-suppression system failure has been identified and rectified should site activities re-start.

**5.2 Suppression of nuisance dust at the source**

Dust suppression primarily consists of dampening dust-generating material with water or the placement of a cover to stop dust from becoming airborne, whereby it can be transported from the site.

Water to be used for dust suppression within the site is sourced from the on-site bore. In the event of a water shortage for dust suppression, water can be immediately brought onto the site using a tanker

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truck and hydro-mulch such as Gluon 240 used for broadacre, and stockpile stabilisation will be used for an interim period.

### 5.3 Proposed Control Measures

Dust is suppressed as much as possible using water at various stages throughout the operating period of the storage depot. Visible dust originating on-site must not cross any of the site boundaries. The creation of visible dust is to be addressed at the source of the dust-generating activity (movement of heavy machinery, loading and off-loading of rubble, stockpiles) rather than at the site boundaries.

|  |                           |
|--|---------------------------|
| <b>9</b>   | <b><i>Access-ways</i></b> |
| <p>On-site haul roads and access ways are regularly dampened by the watering cart as required when visual checks have identified dust to be rising as a result of vehicle movements. A 10km/h speed limit is implemented on-site, regulated by all Site staff, and enforced by the Site Supervisor.</p> <p>Additional watering of roads (at a minimum frequency of three times a day) during dry or windy conditions. Frequency is to be determined according to the weather report at each pre-start toolbox meeting. The Site Supervisor is to dictate further watering requirements should the need arise throughout the day.</p>   |                           |
| <b>10</b>  | <b><i>Stockpiles</i></b>  |
| <p>Sprinklers continue out of hours to effectively wet down all stockpiles. Stockpiles shall be used to store material prior to its ultimate end use. Dust emissions from stockpiles shall also be suppressed by water from a water cart and the mobile sprinkler system, placed strategically to cover the entire surface area of the stockpile.</p> <p>Uncovered working stockpiles are to be wet down daily. Static unworked stockpiles are to be covered using hessian, plastic, shade cloth, or hydro-mulch. Hydro-mulch covers shall be maintained as necessary to prevent windblown dust from the stockpiles. Hydro-mulching will also improve the aesthetics of the site as well as act as a barrier to escaping dust. Hydro-mulched areas will be regularly monitored with appropriate maintenance as required.</p> |                           |
| <b>11</b>  | <b><i>Off-loading</i></b> |
| <p>Off-loading of C&amp;D waste material at the site will be always supervised by appropriately trained site personnel. Water hoses will be readily available on all tipping loads to negate high-risk dust generation. Designated staff will water down the material</p>  |                           |

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|  |                        |
|--|------------------------|
| <b>12</b>  | <b>Vehicle exhaust</b> |
| <p>All on-site vehicles will not have downward-facing exhaust as these may act to raise dust in dry conditions. All vehicles and equipment will be maintained regularly to ensure minimum emissions.</p> |                        |

**5.3.1 Measures to enact should dust be observed crossing the site boundary**

|  |                   |
|--|-------------------|
| <b>13</b>  | <b>Monitoring</b> |
| <p>Real-time monitoring of PM<sub>10</sub> is to be implemented as an aid for an alert to site personnel of dust leaving the boundary of the site. Notification of exceedance is to occur via an email alert to on-site staff should the level exceed 450µg/m over any 15-minute period.</p>   |                   |
| <b>14</b>  | <b>Copolymer</b>  |
| <p>Application of a biodegradable, liquid copolymer on designated haul roads. Wetting agents and polymer binders can be added to the water for haul road dust suppression to improve the performance of the water in thoroughly wetting the surface and binding the surface materials together to reduce the likelihood of particles becoming airborne.</p> <p>The addition of these wetting agents and binders decreases both the application frequency and water required. This watering cart also acts as a pumper truck and has a fire hose application fitted which will be utilised for additional dust control.</p> |                   |

**Prevention of fugitive dust from leaving site boundaries**

Where dust has become airborne, it can travel beyond site boundaries where it has the potential to affect receptors sensitive to the accumulation of dust.

**Proposed standard measures:**

A water cart will be utilised around the site to suppress dust lift-off from site haul roads, a sprinkler system is being utilised for suppression of dust from stockpiles.

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### 5.3.2 Proposed further measures

|  |   |
|--|---|
| <b>15</b>  | <b>Windbreaks</b>                                       |
| Stockpiles of rubble are positioned as a screen around the area generating dust, decided according to the direction of prevailing winds and the direction in which any surrounding sensitive receptors are located.  |   |
| <b>16</b>  | <b>On-site positioning of dust-generating equipment</b> |
| The greatest potential for dust to leave the site is during the periods of the strongest winds from the north to northeast during the morning. Dust lift-off caused by south to southwest winds during the afternoon will be trapped by the trees on the eastern side of the screening area ( <b>Figure 2. Site layout and Infrastructure</b> ). Equipment shall be relocated at wind speed above 25knots to provide the largest possible on-site area for any dust generated to settle out prior to reaching site boundaries. |   |

**Table 5.2 Dust management and consequential reduction in risk level with the implementation**

| Activity                                  | Duration and Frequency                            | Level of impact without management | Management method  | Level of risk with management |
|---|---|------------------------------------|--|-------------------------------|
| Movements of heavy vehicles on haul roads | Likely to occur throughout all hours of operation | Medium                             | Dampening of haul road using water truck                                 | Low                           |
| Tipping C&D material                      | Occurs only upon delivery of material to the site | Medium                             | Dampening of material using a sprinkler system and targeted reticulation | Low                           |

### 5.4 Water Sources

Sources of water for dust suppression shall be the groundwater extraction bore at the east of the site. Storage tanks to ensure a constant retention of water capacity available will be constructed in the south-eastern corner of the site. The reticulation system shall run off the bore.

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#### **5.4.1 Application Points**

Spray points shall correspond with the location of operations areas and shall ensure coverage over areas inaccessible to the water cart. Sprinklers shall rotate and will be positioned from above to gain the greatest spray coverage and address any rising dust.

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## 6 Risk Assessment

### 6.1 Ambient Dust levels

In metropolitan areas, particulate matter is present in the air because of, for example, vehicle exhausts, disturbed surface particles from traffic, construction, and demolition work, grinding and welding works, industrial stack emissions from heavy industry, bush fire smoke, and smoke from domestic fireplaces, among others.

Ambient dust levels can also be measured as Particulate Matter (PM<sub>10</sub>) - particle sizes of 10µm and below, and Particulate Matter (PM<sub>2.5</sub>) - particle sizes of 2.5µm and below. These parameters have a more direct correlation between exposure to levels and observed resulting health effects.

Being located adjacent to a major arterial road, levels of airborne particulate matter are expected to be comparatively high.

Ambient air monitoring within the Perth Metropolitan Air Quality Data Map is carried out at two locations which may be considered representative of conditions at the site:

- Caversham
- Swanbourne

Swanbourne air monitoring station does not show PM<sub>2.5</sub> and PM<sub>10</sub> particulate dust data, therefore, only Caversham air monitoring station was available for ambient dust level data. PM<sub>2.5</sub> and PM<sub>10</sub> values were collected at Caversham between 2011 and 2022. Like all other stations at which levels have varied over this period, levels at Caversham have notably increase over the period.

Due to the rapidity of change in land use, ambient air quality has been affected, as well as increase in population and industrial activity since this time, these values should be taken as indicative only.

### 6.2 Risk Assessment of Threatened Species found within 2km of the Site

It is considered that dust-generating activities on-site cannot be said to contribute to the factors outlined below, and as such, the presence of the species in the area should not prevent site activities from occurring.

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Threats to the species identified comprise of:

- Habitat fragmentation and loss
- Removal of nest hollows
- Competition with other species for hollows
- Loss of native food sources
- Invasive species
- Poaching and illegal shooting
- Fire

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Flora species are threatened by clearing. Whilst clearing has been carried out on-site, the vegetation consists of boundary trees and a patch of vegetation to the west and was highly unlikely to have provided suitable growing conditions for the threatened species.

### **6.3 Potential impacts of airborne dust on human receptors**

Potential impact on human health have been outlined earlier in this section.

As shown in **Figure 3**, 19 receptors fall within the 100m buffer. It is anticipated that bush forever area around the north, west and south boundary, existing buffers in the form of screens of trees or proposed earth bunds as well as dust and asbestos management techniques proposed will sufficiently diminish airborne dust level such that dust will not leave the site.

Residents within 1000m of the site boundary live in a reasonably dust-prone area. Other localised dust source includes:

- Vehicles on surrounding arterial roads

The proponent is unaware of any complaints registered in relation to dust emission from the notated source. Dust levels generated at the site are not estimated to exceed those from the above source, inferring that no impact on the surrounding community is anticipated from the operation of proposed solid waste depot.

### **6.4 Possible effect- Air Quality**

The generation of dust, smoke and odour shall be prevented by placing control measures. The generation of toxic gas shall be prevented by the active sorting and exclusion of biodegradable material that may be subject to microbial activity under anaerobic conditions.

There shall be no burning on site to prevent the generation of smoke. Vehicle movement shall be restricted to roads accessible by the water cart.

#### **6.4.1 Odour**

Due to the inert nature of the proposed waste material being accepted on-site, there is no perceived reason for offensive odours to occur in quantities at which they might affect either on-site staff within the proposed storage area or off-site receptors surrounding property.

#### **6.4.2 Monitoring**

The proposed dust suppression measure is outlined earlier in the document. With the extensive implementation of these measures, there is not expected to be any visual dust leaving the site boundary. Baseline values for PM<sub>10</sub> shall be established prior to site works commencing as a point of comparison.

Further monitoring of dust deposition is not proposed unless complaints are received from neighbouring premises at which point it will be considered. Monitoring shall be carried out at strategic points along the site perimeter.

#### **6.4.3 Monitoring Policy**

A dust monitoring program will be conducted in accordance with the methods below:

- *AS 2922 Ambient Air – Guide for the Siting of Sampling*
- *AS/NZS 3580.1.1:2007 Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment.*

The most suitable criteria to apply to results are listed below.

#### **PM<sub>10</sub> measurements**

NEPM (2021) levels for PM<sub>10</sub> do not represent levels of nuisance dust but would be used to assess the presence of a potential correlation between dust levels and observed health impacts. Criteria are shown in **Table 6.1** and will be subject to review following the issue of future editions of the NEPM. PM<sub>10</sub> can be measured using a DustTrak utilising the methods described below.

- *AS/NZS 3580.9.6:2003 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM10 high volume sampler with size-selective inlet - Gravimetric method*
- *AS 3580.9. 7-1990 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter- PM (sub)10(/sub) dichotomous sampler - Gravimetric method*

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- AS 3580.9.8-2001 Method for sampling and analysis of ambient air - Determination of suspended particulate matter -PM (sub)10(/sub) continuous direct mass method using a tapered element oscillating microbalance analyser

The National Environment Protection Measure (NEPM) standard for particles 10 microns and under (PM<sub>10</sub>) is a maximum (ambient) concentration of 50µg/m<sup>3</sup> averaged over one calendar day (midnight to midnight) and an average of 25 µg/m<sup>3</sup> over 1 year.

The National Environment Protection Measure (NEPM) standard for particles 2.5 microns and under (PM<sub>2.5</sub>) is a maximum (ambient) concentration of 25µg/m<sup>3</sup> averaged over one calendar day (midnight to midnight) and an average of 8 µg/m<sup>3</sup> over 1 year.

This is presented in the table below:

**Table 6.1:** NEPM standards

| Pollutant | Averaging Period | Maximum Concentration | Maximum Allowance Exceedances (goal) |
|-----------|------------------|-----------------------|--------------------------------------|
| PM2.5     | 1 Calendar Day   | 25 µg/m <sup>3</sup>  | No Exceedances (see note)            |
|           | 1 Year           | 8 µg/m <sup>3</sup>   |                                      |
| PM10      | 1 Calendar Day   | 50 µg/m <sup>3</sup>  | No Exceedances (see note)            |
|           | 1 Year           | 25 µg/m <sup>3</sup>  |                                      |

**Note:**

Prior to 2016, there was an allowance of 5 exceedances per year for the PM standards. This was replaced in 2016 by an exceptional event rule.

An exceptional event is a fire or dust occurrence that adversely affects air quality at a particular location, causes an exceedance of 1-day average standards in excess of normal historical fluctuations and background levels; and is directly related to bushfire, jurisdiction-authorised hazard reduction burning or continental-scale windblown dust.

The handling of exceptional events in the reporting of averages is specified in the Air NEPM.

**6.4.4 Performance criteria and monitoring methods**

Levels of TSP and PM<sub>10</sub> will be measured, identifying levels of nuisance dust and the proportion of dust composed of particle size with the greatest impact on human health.



#### **6.4.4.1 Number and location of monitoring sites**

Three monitoring sites' will be selected to effectively correlate dust emissions onto and off the site. Monitors can be relocated on site boundaries as necessary. Should dust complaints be received from nearby sensitive receptors, monitors will be placed to measure levels at the receiving point.

#### **6.4.4.2 Quality assurance/quality control requirements**

Quality assurance of dust monitoring results follows from the annual calibration of PM<sub>10</sub> monitors completed by the authorised agent for TSI in Australia. Additionally, monitors are auto calibrated in the field every 12 hours.

#### **6.4.4.3 Deposited dust**

Dust deposition measurements may also be applicable if dust is observed off-site at nuisance levels. It can be measured using the method below:

*AS/NZS 3580.10.1:2003 Methods for sampling and analysis of ambient air - Determination of particulate matter -Deposited matter - Gravimetric method.*

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## 7 Feedback Policy

Any off-site complaints known to the proponent will be taken and addressed immediately. It is the aim of the proponent is to handle all these complaints without delay. Should any complaints be received, the Site Supervisor will act as the liaison between the complainant and the proponent. Contact will be made with the complainant and investigations will occur into the nature and cause of the complaint and a corrective action solution devised to mitigate a future similar occurrence. A Complaints Register will be compiled by the Site Supervisor incorporating all future known complaints from this site, a complaints form is attached as **Appendix C**.

### 7.1 Roles and Responsibility

All on-site haul roads and access ways will be maintained by the proponent. Dust management measures will be employed by all site employees during all hours of work. It is the duty of every staff member to prevent and/or reduce dust generation from on-site practices.

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## 8 Conclusion

Whilst proposed activities have the potential to generate dust, this potential can be minimised using the management measures outlined. Every effort will be made to ensure that proposed works enhance rather than detract from the value of the surrounding area.

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## Figures

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12898900.000

12899250.000

12899600.000

**LEGENDS**

● Lot 821 (501) Alexander Dr, Mirrabooka

— Site Boundary- 501 Alexander Dr



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-3745280.000

-3745660.000

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**TITLE** Figure 1. General Site Location

**PROJECT** Lot 821 (501) Alexander Drive, Mirrabooka WA 6061

**PROJECT CODE** 004-28

**DESIGN/DRAW** BK Checked By MC

**VERSION** 01 **DATE** 08/03/2023

**PREPARED BY**

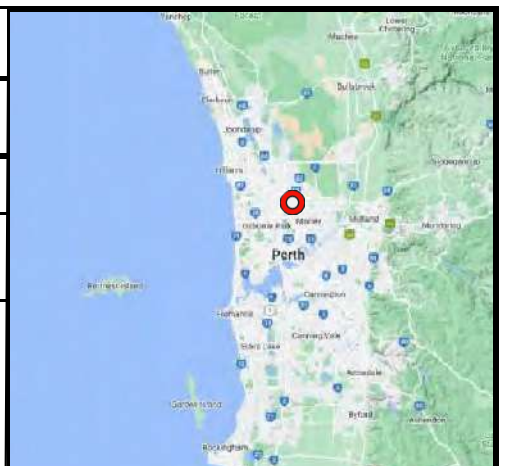


**SERS**  
Site Environmental and Remediation Services

**Source** NearMaps

**PREPARED FOR**  
Brajkovich Landfill and Recycling Pty Ltd

**Scale** 0 5 10 km





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12899100.000

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 Legend  
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- Cell One
- Stockpiles
- Screening Area
- Tipping Area
- C&D Waste
- Non-conforming Waste Storage
- Bin Storage Area
- Cover Material Storage Area
- Site Boundary
- Bore tank
- Water tank
- Administration
- Weighbridge
- Bunds
- Green Waste
- Steel Sorting Area
- Dust Monitor

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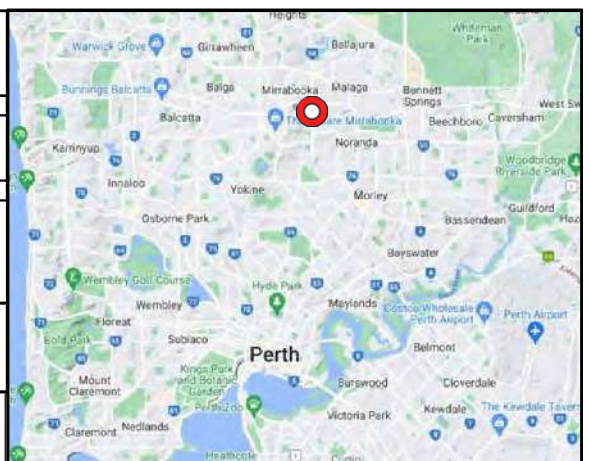
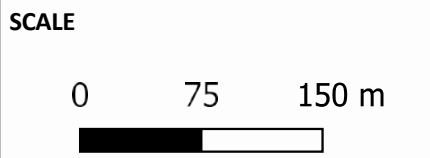
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Figure 2. Site Layout &

|  |  |                     |  |
|--|--|---------------------|--|
| <b>PROJECT</b>                                   |  | <b>PROJECT CODE</b> |  |
| Lot 821 (501) Alexander Drive, Mirrabooka A 6061 |  | 004-28              |  |

Brajkovich landfill and recycling

|                    |                    |                |             |
|--------------------|--------------------|----------------|-------------|
| <b>DESIGN/DRAW</b> | <b>APPROVED BY</b> | <b>VERSION</b> | <b>DATE</b> |
| JC                 | MC                 | 00             | 14/04/2023  |



**SOURCE**  
 Coordinate System GDA2020. Basemap 1: Google Maps. Near Maps

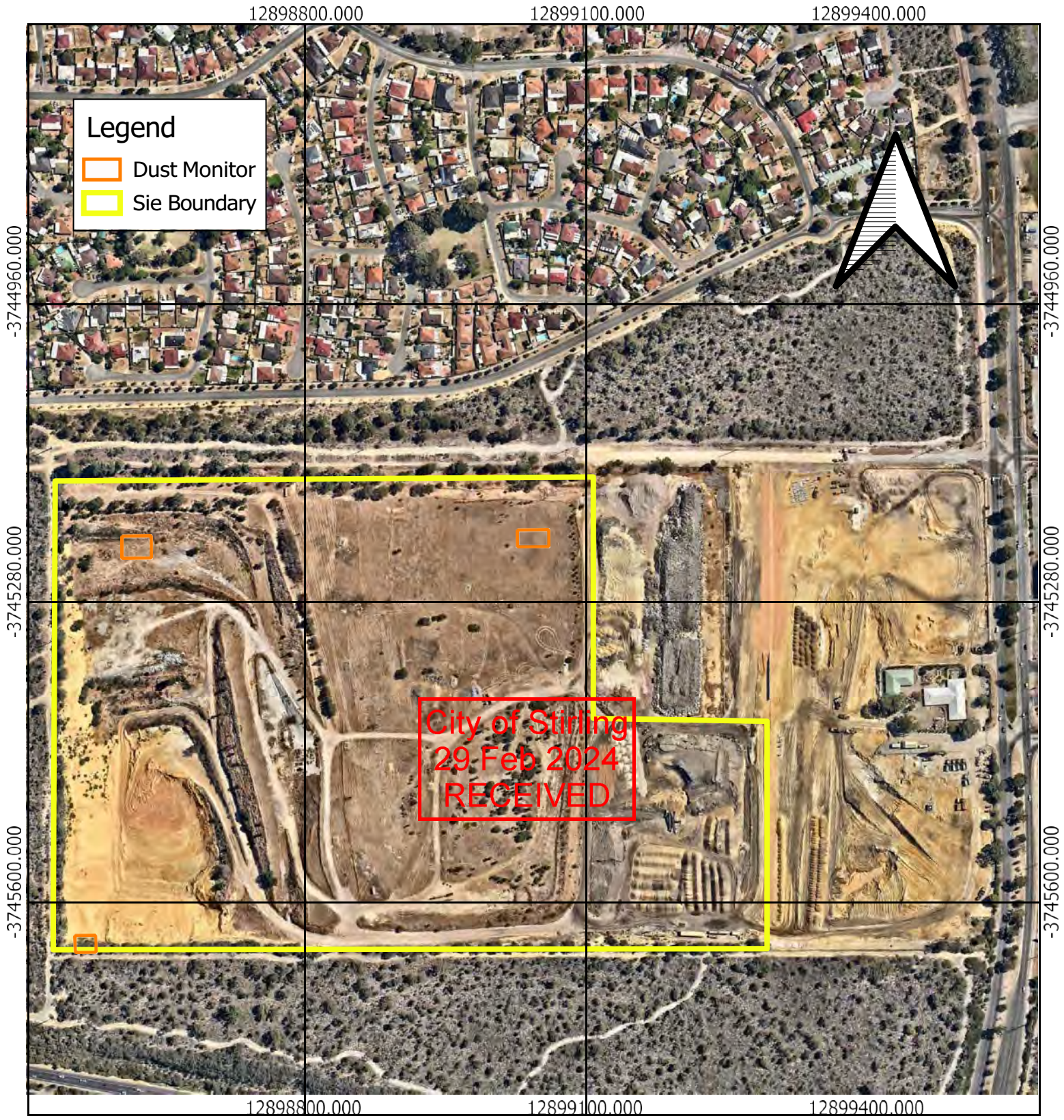
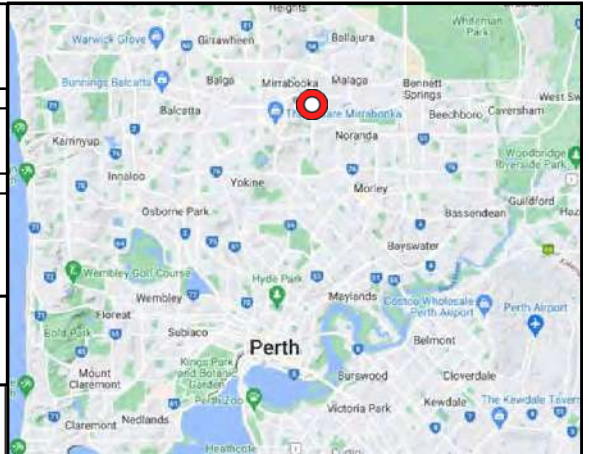
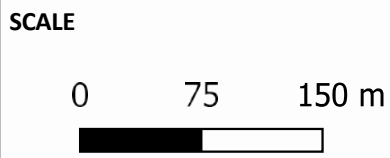


Figure 3. Dust

|  |                    |                     |             |
|--|--------------------|---------------------|-------------|
| <b>PROJECT</b>                                   |                    | <b>PROJECT CODE</b> |             |
| Lot 821 (501) Alexander Drive, Mirrabooka A 6061 |                    | 004-28              |             |
| Brajkovich landfill and recycling                |                    |                     |             |
| <b>DESIGN/DRAW</b>                               | <b>APPROVED BY</b> | <b>VERSION</b>      | <b>DATE</b> |
| JC   | MC                 | 00                  | 14/04/2023  |



**SERS**  
Site Environmental and Remediation Services







**SOURCE**  
Coordinate System GDA2020. Basemap 1: Google Maps. Near Maps

12898200.000

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LEGENDS

-  ATLAS- Mirrabooka
-  Site Boundary- 501 Alexander Dr
-  Buffered 100m
-  Buffered 500m



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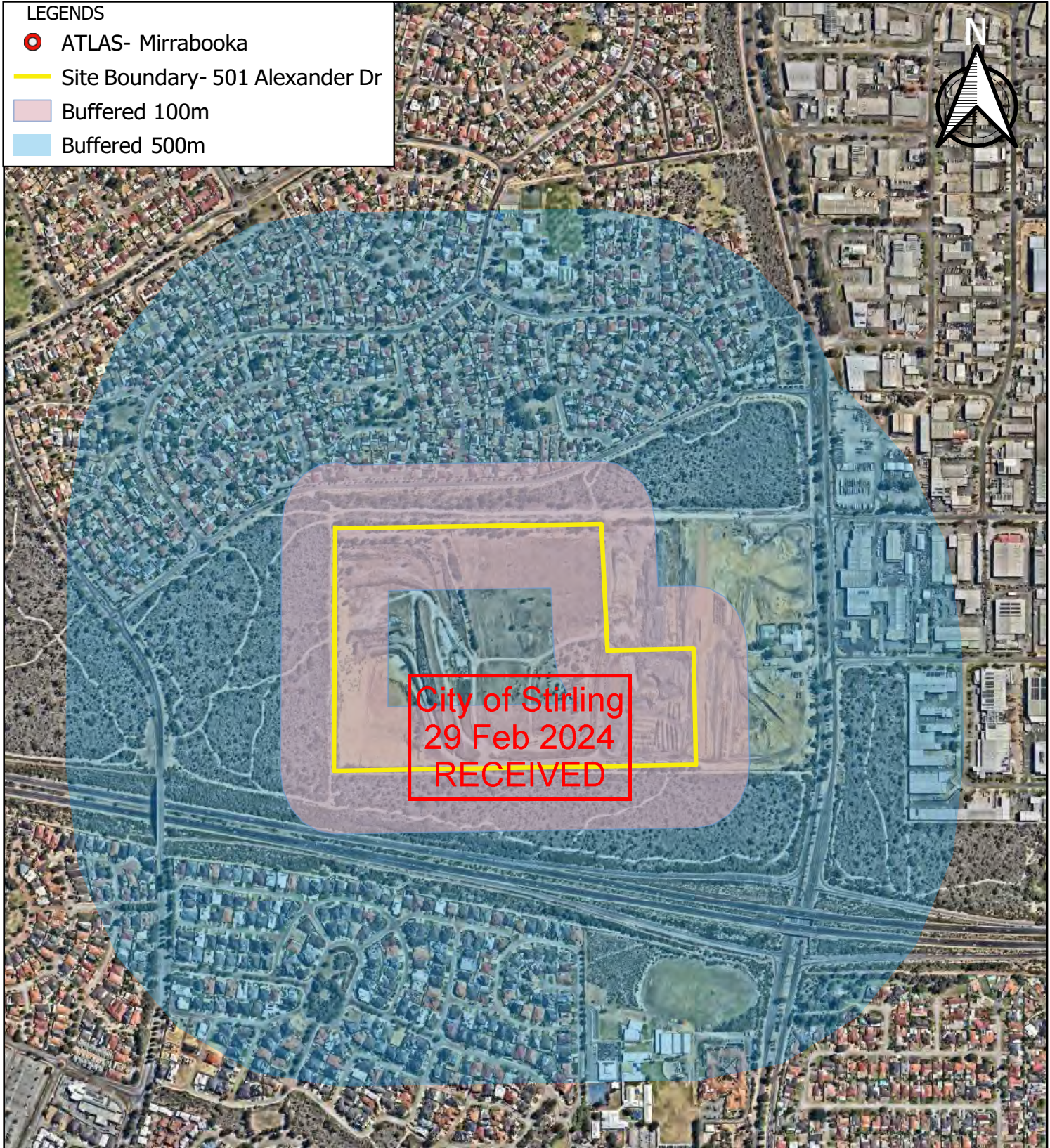
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|  |               |  |                        |
|--|---------------|--|------------------------|
| <b>TITLE</b> Figure 4. Sensitive Receptors (Buffered 100m & 500m)  |               |  |                        |
| <b>PROJECT</b> Lot 821 (501) Alexander Drive, Mirrabooka WA 6061   |               | <b>PROJECT CODE</b> 004-28   |                        |
| <b>DESIGN/DRAW</b><br>BK   | Checked By MC | <b>VERSION</b><br>01   | <b>DATE</b> 08/03/2023 |
| <b>PREPARED BY</b><br> <b>SERS</b><br>Site Environmental and Remediation Services |               | <b>Source</b> NearMaps   |                        |
| <b>PREPARED FOR</b><br>Brajkovich Landfill and Recycling Pty Ltd   |               | <b>Scale</b><br>0 5 10 km<br> |                        |



## Attachment A- Table of Sensitive Receptors within 200m buffer around the site

| Sensitive Receptors (within 200m buffer)      |   |  |
|---|---|--|
| 29 Liquidambar Heights, Mirrabooka<br>WA 6061 | 16 Rheingold Pl, Mirrabooka<br>WA 6061  | 17 Rheingold Pl, Mirrabooka<br>WA 6061       |
| 25 Liquidambar Heights, Mirrabooka<br>WA 6061 | 18 Rheingold Pl, Mirrabooka<br>WA 6061  | 19 Rheingold Pl, Mirrabooka<br>WA 6061       |
| 27 Liquidambar Heights, Mirrabooka<br>WA 6061 | 18A Rheingold Pl, Mirrabooka<br>WA 6061 | 21 Rheingold Pl, Mirrabooka<br>WA 6061       |
| 3 Pecan Rise, Mirrabooka WA 6061              | 20 Rheingold Pl, Mirrabooka<br>WA 6061  | 23 Rheingold Pl, Mirrabooka<br>WA 6061       |
| 5 Pecan Rise, Mirrabooka WA 6061              | 22A Rheingold Pl, Mirrabooka<br>WA 6061 | 25 Rheingold Pl, Mirrabooka<br>WA 6061       |
| 7 Pecan Rise, Mirrabooka WA 6061              | 12 Rheingold Pl, Mirrabooka<br>WA 6061  | 27 Rheingold Pl, Mirrabooka<br>WA 6061       |
| 22 Rheingold Pl, Mirrabooka WA 6061           | 4 Rheingold Pl, Mirrabooka<br>WA 6061   | 29 Rheingold Pl, Mirrabooka<br>WA 6061       |
| 24 Rheingold Pl, Mirrabooka WA 6061           | 10 Rheingold Pl, Mirrabooka<br>WA 6061  | 15 Boskoop Pl, Mirrabooka WA<br>6061         |
| 14 Rheingold Pl, Mirrabooka WA 6061           | 15 Rheingold Pl, Mirrabooka<br>WA 6061  | 11 Boskoop Pl, Mirrabooka WA<br>6061         |
| 10 Manna Cl, Mirrabooka WA 6061               | 11 Manna Cl, Mirrabooka WA<br>6061      | 9 Boskoop Pl, Mirrabooka WA<br>6061          |
| 12 Manna Cl, Mirrabooka WA 6061               | 9 Manna Cl, Mirrabooka WA<br>6061       | 7 Boskoop Pl, Mirrabooka WA<br>6061          |
| 14 Manna Cl, Mirrabooka WA 6061               | 7 Manna Cl, Mirrabooka WA<br>6061       | 14 Floribunda Gardens,<br>Mirrabooka WA 6061 |

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| <b>Sensitive Receptors (within 200m buffer)</b> |   |   |
|---|---|---|
| 16 Manna Cl, Mirrabooka WA 6061                 | 5 Manna Cl, Mirrabooka WA 6061            | 16 Floribunda Gardens, Mirrabooka WA 6061 |
| 17 Manna Cl, Mirrabooka WA 6061                 | 3 Manna Cl, Mirrabooka WA 6061            | 18 Floribunda Gardens, Mirrabooka WA 6061 |
| 15 Manna Cl, Mirrabooka WA 6061                 | 1 Manna Cl, Mirrabooka WA 6061            | 20 Floribunda Gardens, Mirrabooka WA 6061 |
| 11 Floribunda Gardens, Mirrabooka WA 6061       | 21 Floribunda Gardens, Mirrabooka WA 6061 | 22 Floribunda Gardens, Mirrabooka WA 6061 |
| 15 Floribunda Gardens, Mirrabooka WA 6061       | 23 Floribunda Gardens, Mirrabooka WA 6061 | 24 Floribunda Gardens, Mirrabooka WA 6061 |
| 17 Floribunda Gardens, Mirrabooka WA 6061       | 25 Floribunda Gardens, Mirrabooka WA 6061 | 26 Floribunda Gardens, Mirrabooka WA 6061 |
| 19 Floribunda Gardens, Mirrabooka WA 6061       | 27 Floribunda Gardens, Mirrabooka WA 6061 | 17 Silkpod Heights, Mirrabooka WA 6061    |
| 12 Silkpod Heights, Mirrabooka WA 6061          | 29 Floribunda Gardens, Mirrabooka WA 6061 | 15 Silkpod Heights, Mirrabooka WA 6061    |
| 2 Dusky Ln, Mirrabooka WA 6061                  | 5 Silkpod Heights, Mirrabooka WA 6061     | 11 Silkpod Heights, Mirrabooka WA 6061    |
| 1 Dusky Ln, Mirrabooka WA 6061                  | 3 Silkpod Heights, Mirrabooka WA 6061     | 9 Silkpod Heights, Mirrabooka WA 6061     |
| 3 Dusky Ln, Mirrabooka WA 6061                  | 1 Silkpod Heights, Mirrabooka WA 6061     | 7 Silkpod Heights, Mirrabooka WA 6061     |
| 5 Dusky Ln, Mirrabooka WA 6061                  | 24 Coppercups Retreat, Mirrabooka WA 6061 | 8 Silkpod Heights, Mirrabooka WA 6061     |
| 7 Dusky Ln, Mirrabooka WA 6061                  | 26 Coppercups Retreat, Mirrabooka WA 6061 | 6 Silkpod Heights, Mirrabooka WA 6061     |

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| <b>Sensitive Receptors (within 200m buffer)</b> |   |   |
|---|---|---|
| 9 Dusky Ln, Mirrabooka WA 6061                  | 28 Coppercups Retreat,<br>Mirrabooka WA 6061  | 4 Silkpod Heights, Mirrabooka<br>WA 6061      |
| 19 Coppercups Retreat, Mirrabooka WA<br>6061    | 30 Coppercups Retreat,<br>Mirrabooka WA 6061  | 2 Silkpod Heights, Mirrabooka<br>WA 6061      |
| 21 Coppercups Retreat, Mirrabooka WA<br>6061    | 14 Everlasting Gardens,<br>Mirrabooka WA 6061 | 4 Caffrum Grn, Mirrabooka<br>WA 6061          |
| 23 Coppercups Retreat, Mirrabooka WA<br>6061    | 16 Everlasting Gardens,<br>Mirrabooka WA 6061 | 6 Caffrum Grn, Mirrabooka<br>WA 6061          |
| 25 Coppercups Retreat, Mirrabooka WA<br>6061    | 18 Everlasting Gardens,<br>Mirrabooka WA 6061 | 8 Caffrum Grn, Mirrabooka<br>WA 6061          |
| 27 Coppercups Retreat, Mirrabooka WA<br>6061    | 20 Everlasting Gardens,<br>Mirrabooka WA 6061 | 10 Caffrum Grn, Mirrabooka<br>WA 6061         |
| 14 Caffrum Grn, Mirrabooka WA 6061              | 16 Caffrum Grn, Mirrabooka<br>WA 6061         | 12 Caffrum Grn, Mirrabooka<br>WA 6061         |
| 18 Caffrum Grn, Mirrabooka WA 6061              | 11 Everlasting Gardens,<br>Mirrabooka WA 6061 | 13 Everlasting Gardens,<br>Mirrabooka WA 6061 |
| 15 Everlasting Gardens, Mirrabooka WA<br>6061   | 15 Everlasting Gardens,<br>Mirrabooka WA 6061 | 17 Everlasting Gardens,<br>Mirrabooka WA 6061 |
| 19 Everlasting Gardens, Mirrabooka WA<br>6061   | 21 Everlasting Gardens,<br>Mirrabooka WA 6061 | 23 Everlasting Gardens,<br>Mirrabooka WA 6061 |
| 7 Northcliffe Ave, Dianella WA 6059             | 21 Bencubbin Cres, Dianella<br>WA 6059        | 19 Bencubbin Cres, Dianella<br>WA 6059        |
| 17 Bencubbin Cres, Dianella WA 6059             | 15 Bencubbin Cres, Dianella<br>WA 6059        | 13 Bencubbin Cres, Dianella<br>WA 6059        |
| 11 Bencubbin Cres, Dianella WA 6059             | 9 Bencubbin Cres, Dianella WA<br>6059         | 43 Balikpapan Ave, Dianella<br>WA 6059        |

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| <b>Sensitive Receptors (within 200m buffer)</b> |  |  |
|---|--|--|
| 41 Balikpapan Ave, Dianella WA 6059             | 39 Balikpapan Ave, Dianella<br>WA 6059 | 37 Balikpapan Ave, Dianella<br>WA 6059 |

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## Attachment B- Dust Management Site Inspection Checklist

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| Dust Management Inspection Checklist |     |    |    |  |                  |          |
|--------------------------------------|-----|----|----|--|------------------|----------|
| Date:                                |     |    |    |  |                  |          |
| Item to Check                        | Yes | No | NA |  | Person to repair | Repaired |
| Water running                        |     |    |    |  |                  |          |
| Access tracks watered                |     |    |    |  |                  |          |
| Hoses not leaking                    |     |    |    |  |                  |          |
| Sprinklers working                   |     |    |    |  |                  |          |
| Other:                               |     |    |    |  |                  |          |
| Inspected by:                        |     |    |    |  |                  |          |
| Signed:                              |     |    |    |  |                  |          |
| Repairs completed by                 |     |    |    |  |                  |          |
| Signed:                              |     |    |    |  |                  |          |
|                                      |     |    |    |  |                  |          |
|                                      |     |    |    |  |                  |          |
|                                      |     |    |    |  |                  |          |

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## Attachment C – Complaints Register

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## APPENDIX D – NOISE MANAGEMENT PLAN

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# Noise Management Plan

PROPOSED SOLID WASTE DEPOT

Lot 821 & Part of Lot 820 (501) Alexander Drive, Mirrabooka WA 6061



Prepared for:

**Brajkovich Landfill & Recycling Pty Ltd**

Prepared by:

**Site Environmental and Remediation Services Pty Ltd  
(SERS)**

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# DOCUMENT CONTROL SHEET

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**Client:** Brajkovich Landfill & Recycling Pty Ltd

**Project:** Solid Waste Depot at 501 Alexander Drive, Mirrabooka WA 6061




**Title:** Noise Management Plan- 501 Alexander Drive, Mirrabooka WA 6061

**Reference:** 00428\_NMP\_BK\_032023

**Status:** Final

**Report Date:** 27<sup>th</sup> March 2023

### Document Production Record

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| Approved By  |   | Matt Campbell   |  |

### Document Revision Record

| Issue Number | Date                        | Revision Details                |
|--------------|-----------------------------|---------------------------------|
| 1            | 27 <sup>th</sup> March 2023 | SERS Internal Review            |
| 2            | 4 <sup>th</sup> May 2023    | Amended as per Client's request |

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## 1 Introduction

Site Environmental and Remediation Services (SERS) have been engaged by the proponent to develop a Noise Management Plan (NMP) for the proposed Solid Waste Depot at Lot 821 and Part of Lot 820 (521) Alexander Drive, Mirrabooka WA 6063 (hereafter referred to as 'the site'). The site location and boundary are attached in **Figure 1**.

Noise assessments are undertaken as part of an environmental impact assessment to ensure that noise emissions comply with the Environmental Protection (Noise) Regulations 1997. Such an assessment includes both audible vibration (sound) and non-audible vibration, experienced as a physical sensation. Both forms have the capacity to cause discomfort, and long-term environmental noise exposure has been linked to community health impacts.

Movement of materials, disturbance of stockpile surfaces, have the potential to contribute to noise emissions, potentially impacting human health and the amenity value of the site if not effectively managed. As such, management is proposed in line with the EP Act 1986 Section 49 and the Noise Regulations 1987.

From the proposed work area within Lot 821, the nearest residential buildings lie within the distances below:

- 215m- 13 Bencubbin Crescent, Mirrabooka (to the south of the work area on Lot 821)
- 216m- 11 Bencubbin Crescent, Mirrabooka (to the south of the work area on Lot 821)
- 216m- 15 Bencubbin Crescent, Mirrabooka (to the south of the work area on Lot 821)
- 216m- 17 Bencubbin Crescent, Mirrabooka (to the south of the work area on Lot 821)
- 223m- 9 Bencubbin Crescent, Mirrabooka (to the south of the work area on Lot 821)
- 224m- 19 Bencubbin Crescent, Mirrabooka (to the south of the work area on Lot 821)
- 233m- 21 Bencubbin Crescent, Mirrabooka (to the south of the work area on Lot 821)
- 254m- 23 Bencubbin Crescent, Mirrabooka (to the south of the work area on Lot 821)

### 1.1 Objectives of Noise Management

Objectives of managing noise include

- Prevention of noise pollution
- Prevention of impact on residents of neighbouring properties
- Prevention of impact on the amenity of the area

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## **2 Applicable Regulation, Standards and Codes of practice**

### **Environmental Protection (Noise) regulations 1987**

The Noise Regulations govern the following areas of noise management:

- Allowable noise emissions
- Noise management

### **EPA Guidance for the Assessment of Environmental Factors (in accordance with the Environmental Protection Act 1986)- Environmental Noise Draft 2007**

Provides guidance to protect the environment as defined by the EP Act 1986 with a focus on noise emissions from premises; ensures noise emissions from premises comply with the Regulations 1997; addresses the factor of noise emissions from all types of proposals that result in noise emissions; and, to present the EPA position on noise emissions from premises to ensure adverse impacts are prevented.

It is used to conduct a screening procedure for deciding whether a detailed assessment of noise is required. It then provides the methodology to carry out a detailed assessment, should the screening process have identified that one was necessary.

### **Australian Standard- Guide to noise and vibration control on construction, demolition, and maintenance activities (AS 2436:2010)**

Provides guidance on noise and vibration control with respect to construction, demolition, and maintenance sites as well as for the preparation of noise and vibration management plans, work method statements, and environmental impact studies.

### **National Standard and National Code of Practice- Occupational Noise NOHSC (2000)**

Objectives of the above Standard comprise the reduction of the incidence and severity of an occupational noise-induced hearing loss. The Code of Practice provides practical guidance on achieving the above objective by providing a framework for the management of exposure to noise at work and minimising the effects of such exposure.

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### 3 Noise Management and Noise control Methods

Noise can be controlled via a combination of machinery-specific and ambient methods.

#### **Machinery-specific methods:**

- De-activating reversing beepers during more sensitive times of the day
- Negating the need for reversing beepers by using a one-way traffic system
- Ensuring machinery is well-maintained
- Using mufflers on machinery where possible

#### **Ambient methods:**

- Restricting vehicle speeds
- Restricting the use of airbrakes
- Prohibiting excess revving
- Prohibiting entry of excessively noisy trucks and reporting them for service
- Restricted operating hours

#### **3.1 Screening procedure to establish the significance of noise emission**

The screening procedure detailed in Guideline for the Assessment of Environmental Factors No. 8- Environmental Noise (WA EPA, 2005) was utilised to decide whether predicted noise levels are significant enough to warrant a detailed investigation, comprised of five questions:

**i) Is the proposal particularly sensitive within the community?**

Landfill activities have been carried out at the site over the past four decades. Signage has advertised the use of the site throughout this period and council reports record no incidence of complaints.

Proposed works differ from those that have historically occurred at the site, consisting of the delivery of waste material, sorting and storage.

Mitigation measures incorporate best practice measures outlined in AS 2436-2010 *Guide to noise and vibration control on construction, demolition, and maintenance sites*.

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**ii) Are there any noise-sensitive premises within the buffer distances indicated in Guidance Statement No. 3 for this type of proposal?**

Appendix 1 of Guidance of the Assessment of Environmental Factor No. 3- Separation Distances between Industrial and Sensitive Land Uses (WA EPA,2005) includes the following applicable category:

- a) Waste disposal- Waste Depot

*Table 3.1 Separation distances between industrial and sensitive land use*

| Industry       | Description of industry   | Buffer Distance (m) |
|----------------|---|---------------------|
| Waste disposal | Waste Depot (62)- premises on which waste is stored or sorted, pending final disposal or re-use | 200                 |

**3.1.1 Distance to Sensitive Receptor**

There are 117 noise-sensitive premises (residential buildings) within a 200m noise buffer around the site boundary, as shown in **Figure 3**. **Table 3.2** shows list of sensitive receptors within 200m buffer around the site.

*Table 3.2 Noise-sensitive Receptors within 200m buffer around the site*

| Noise-sensitive Receptors (within 200m buffer) |                                      |                                     |
|--|--------------------------------------|-------------------------------------|
| 29 Liquidambar Heights, Mirrabooka WA 6061     | 16 Rheingold Pl, Mirrabooka WA 6061  | 17 Rheingold Pl, Mirrabooka WA 6061 |
| 25 Liquidambar Heights, Mirrabooka WA 6061     | 18 Rheingold Pl, Mirrabooka WA 6061  | 19 Rheingold Pl, Mirrabooka WA 6061 |
| 27 Liquidambar Heights, Mirrabooka WA 6061     | 18A Rheingold Pl, Mirrabooka WA 6061 | 21 Rheingold Pl, Mirrabooka WA 6061 |
| 3 Pecan Rise, Mirrabooka WA 6061               | 20 Rheingold Pl, Mirrabooka WA 6061  | 23 Rheingold Pl, Mirrabooka WA 6061 |
| 5 Pecan Rise, Mirrabooka WA 6061               | 22A Rheingold Pl, Mirrabooka WA 6061 | 25 Rheingold Pl, Mirrabooka WA 6061 |

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| <b>Noise-sensitive Receptors (within 200m buffer)</b> |  |  |
|---|--|--|
| 7 Pecan Rise, Mirrabooka WA 6061                      | 12 Rheingold Pl,<br>Mirrabooka WA 6061       | 27 Rheingold Pl,<br>Mirrabooka WA 6061       |
| 22 Rheingold Pl, Mirrabooka WA 6061                   | 4 Rheingold Pl, Mirrabooka<br>WA 6061        | 29 Rheingold Pl,<br>Mirrabooka WA 6061       |
| 24 Rheingold Pl, Mirrabooka WA 6061                   | 10 Rheingold Pl,<br>Mirrabooka WA 6061       | 15 Boskoop Pl, Mirrabooka<br>WA 6061         |
| 14 Rheingold Pl, Mirrabooka WA 6061                   | 15 Rheingold Pl,<br>Mirrabooka WA 6061       | 11 Boskoop Pl, Mirrabooka<br>WA 6061         |
| 10 Manna Cl, Mirrabooka WA 6061                       | 11 Manna Cl, Mirrabooka<br>WA 6061           | 9 Boskoop Pl, Mirrabooka<br>WA 6061          |
| 12 Manna Cl, Mirrabooka WA 6061                       | 9 Manna Cl, Mirrabooka<br>WA 6061            | 7 Boskoop Pl, Mirrabooka<br>WA 6061          |
| 14 Manna Cl, Mirrabooka WA 6061                       | 7 Manna Cl, Mirrabooka<br>WA 6061            | 14 Floribunda Gardens,<br>Mirrabooka WA 6061 |
| 16 Manna Cl, Mirrabooka WA 6061                       | 5 Manna Cl, Mirrabooka<br>WA 6061            | 16 Floribunda Gardens,<br>Mirrabooka WA 6061 |
| 17 Manna Cl, Mirrabooka WA 6061                       | 3 Manna Cl, Mirrabooka<br>WA 6061            | 18 Floribunda Gardens,<br>Mirrabooka WA 6061 |
| 15 Manna Cl, Mirrabooka WA 6061                       | 1 Manna Cl, Mirrabooka<br>WA 6061            | 20 Floribunda Gardens,<br>Mirrabooka WA 6061 |
| 11 Floribunda Gardens, Mirrabooka<br>WA 6061          | 21 Floribunda Gardens,<br>Mirrabooka WA 6061 | 22 Floribunda Gardens,<br>Mirrabooka WA 6061 |
| 15 Floribunda Gardens, Mirrabooka<br>WA 6061          | 23 Floribunda Gardens,<br>Mirrabooka WA 6061 | 24 Floribunda Gardens,<br>Mirrabooka WA 6061 |
| 17 Floribunda Gardens, Mirrabooka<br>WA 6061          | 25 Floribunda Gardens,<br>Mirrabooka WA 6061 | 26 Floribunda Gardens,<br>Mirrabooka WA 6061 |

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| <b>Noise-sensitive Receptors (within 200m buffer)</b> |  |  |
|---|--|--|
| 19 Floribunda Gardens, Mirrabooka WA 6061             | 27 Floribunda Gardens, Mirrabooka WA 6061  | 17 Silkpod Heights, Mirrabooka WA 6061 |
| 12 Silkpod Heights, Mirrabooka WA 6061                | 29 Floribunda Gardens, Mirrabooka WA 6061  | 15 Silkpod Heights, Mirrabooka WA 6061 |
| 2 Dusky Ln, Mirrabooka WA 6061                        | 5 Silkpod Heights, Mirrabooka WA 6061      | 11 Silkpod Heights, Mirrabooka WA 6061 |
| 1 Dusky Ln, Mirrabooka WA 6061                        | 3 Silkpod Heights, Mirrabooka WA 6061      | 9 Silkpod Heights, Mirrabooka WA 6061  |
| 3 Dusky Ln, Mirrabooka WA 6061                        | 1 Silkpod Heights, Mirrabooka WA 6061      | 7 Silkpod Heights, Mirrabooka WA 6061  |
| 5 Dusky Ln, Mirrabooka WA 6061                        | 24 Coppercups Retreat, Mirrabooka WA 6061  | 8 Silkpod Heights, Mirrabooka WA 6061  |
| 7 Dusky Ln, Mirrabooka WA 6061                        | 26 Coppercups Retreat, Mirrabooka WA 6061  | 6 Silkpod Heights, Mirrabooka WA 6061  |
| 9 Dusky Ln, Mirrabooka WA 6061                        | 28 Coppercups Retreat, Mirrabooka WA 6061  | 4 Silkpod Heights, Mirrabooka WA 6061  |
| 19 Coppercups Retreat, Mirrabooka WA 6061             | 30 Coppercups Retreat, Mirrabooka WA 6061  | 2 Silkpod Heights, Mirrabooka WA 6061  |
| 21 Coppercups Retreat, Mirrabooka WA 6061             | 14 Everlasting Gardens, Mirrabooka WA 6061 | 4 Caffrum Grn, Mirrabooka WA 6061      |
| 23 Coppercups Retreat, Mirrabooka WA 6061             | 16 Everlasting Gardens, Mirrabooka WA 6061 | 6 Caffrum Grn, Mirrabooka WA 6061      |
| 25 Coppercups Retreat, Mirrabooka WA 6061             | 18 Everlasting Gardens, Mirrabooka WA 6061 | 8 Caffrum Grn, Mirrabooka WA 6061      |
| 27 Coppercups Retreat, Mirrabooka WA 6061             | 20 Everlasting Gardens, Mirrabooka WA 6061 | 10 Caffrum Grn, Mirrabooka WA 6061     |

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| <b>Noise-sensitive Receptors (within 200m buffer)</b> |   |   |
|---|---|---|
| 14 Caffrum Grn, Mirrabooka WA 6061                    | 16 Caffrum Grn,<br>Mirrabooka WA 6061         | 12 Caffrum Grn,<br>Mirrabooka WA 6061         |
| 18 Caffrum Grn, Mirrabooka WA 6061                    | 11 Everlasting Gardens,<br>Mirrabooka WA 6061 | 13 Everlasting Gardens,<br>Mirrabooka WA 6061 |
| 15 Everlasting Gardens, Mirrabooka<br>WA 6061         | 15 Everlasting Gardens,<br>Mirrabooka WA 6061 | 17 Everlasting Gardens,<br>Mirrabooka WA 6061 |
| 19 Everlasting Gardens, Mirrabooka<br>WA 6061         | 21 Everlasting Gardens,<br>Mirrabooka WA 6061 | 23 Everlasting Gardens,<br>Mirrabooka WA 6061 |
| 7 Northcliffe Ave, Dianella WA 6059                   | 21 Bencubbin Cres, Dianella<br>WA 6059        | 19 Bencubbin Cres, Dianella<br>WA 6059        |
| 17 Bencubbin Cres, Dianella WA 6059                   | 15 Bencubbin Cres, Dianella<br>WA 6059        | 13 Bencubbin Cres, Dianella<br>WA 6059        |
| 11 Bencubbin Cres, Dianella WA 6059                   | 9 Bencubbin Cres, Dianella<br>WA 6059         | 43 Balikpapan Ave, Dianella<br>WA 6059        |
| 41 Balikpapan Ave, Dianella WA 6059                   | 39 Balikpapan Ave, Dianella<br>WA 6059        | 37 Balikpapan Ave, Dianella<br>WA 6059        |

### 3.1.2 Noise Standard

The Environmental Protection (Noise) Regulations 1997 (As Amended) regulates the level of noise emitted from any premise or public place that can be received at other premises. Regulations 7 and 8 (from the Noise Regulations), stipulate the maximum allowable external noise levels with the combination of base levels. These levels are based on the type of premises receiving the noise. For this operation, the closest receptor is residential property located 780m away from the site which could be noise sensitive. **Table 3.3.** shows the maximum assigned noise level for this category.

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Table 3.3 Baseline assigned outdoor noise level

| Type of premises receiving noise                | Time of day   | Assigned level (dB) |       |            |
|---|---|---------------------|-------|------------|
|   |   | LA10*               | LA1** | LAmx*<br>* |
| Noise sensitive premises: Highly sensitive area | 0700 to 1900 hours Monday to Saturday   | 54                  | 64    | 7<br>4     |
|   | 0900 to 1900 hours Sunday & Public holidays   | 49                  | 59    | 7<br>4     |
|   | 1900 to 2200 hours all days   | 49                  | 59    | 6<br>4     |
|   | 2200 hours on any day to 0700 hours Monday to Saturday, and 0900 hours Sunday & public holidays | 44                  | 54    | 6<br>4     |
| Commercial Premises                             | All hours   | 60                  | 75    | 8<br>0     |

\*L<sub>A10</sub> – a noise level not to be exceeded for more than 10% of the time i.e., over a five-hour work shift for not more than 30 minutes

\*\*L<sub>A1</sub> – a noise level not to be exceeded for more than 1% of the time i.e., over a five- hour work shift for not more than 3 minutes

\*\*L<sub>Amax</sub> – noise not to be exceeded at any time

**iii) Is operational noise likely to be above the relevant screening criterion?**

Operational noise sources shall consist of the following:

- Arrival at and departure from the site - light vehicle movements
- Tipping of material - engine noise of trucks and impact noise
- Placement of material into stockpiles - engine noise of excavator
- Dust suppression - engine noise of water cart
- Heavy equipment use is predicted below:
  - Excavator x 3
  - Wheel Loader x 2
  - Water Cart x1
  - Trucks (>20 tonnes)

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EPA Guidance Note 8- Environmental Noise (2007) states the screening procedure as follows:

1. Identify a point on the proposed site where the noise sources could be said to be concentrated.
2. Estimate a total A-weighted sound power level for all noise sources.
3. Identify the locations of all nearby residences not owned by the proponent and estimate their distances from the source point on site.
4. Plot the sound power level(s) for day/night operations for the nearest residence or residences.
5. If below the line for daytime and night-time operations. Then operational noise is not likely to be significant.

The detailed noise assessment study undertaken by Llyod George Acoustics in March 2023 considered noise emission from the proposed operations to surrounding properties by way of noise modelling. The Environmental Noise Assessment report is included in **Appendix B**.

### **3.1.3 Noise Prediction**

To determine the estimated noise generated during the works, calculation have been undertaken using the method listed in Appendix B (Estimating Noise from Sites) of the *Australian Standard (AS) 2436:2010- Guide to noise and vibration control on construction, demolition, and maintenance sites*. This method accounts for the sound level of the equipment, the distance of receptors from the noise source and the type of ground between the two locations. All properties within 100m buffer zone have been taken into consideration as a sensitive noise receptor. The typical sound levels from construction, maintenance and demolition plant equipment listed in Table A1 of Appendix A of AS2436.2010 have been used to estimate the equipment for the project (**Table 3.4 and 3.5**). The calculations have been based on a worst-case scenario with all equipment operating simultaneously, however it should be noted that it is unlikely all equipment will be operating at the same time. The results of these calculations are displayed in **Table 3.6** and the detailed calculations are included in **Appendix A**.

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Table 3.4 A-weighted sound power level typical range

| Plant Description | A-weighted sound power level- typical range $L_{WA}$ (dB x $10^{-12}$ W) | A-weighted sound power level- typical mid-point $L_{WA}$ (dB x $10^{-12}$ W) | Indicative sound Pressure Level at 10m distance |
|-------------------|--|--|---|
| Wheeled loader    | 99-111   | 105  | 77  |
| Truck >20 tonnes  | 107  | 107  | 79  |
| Excavator         | 97-117   | 107  | 79  |
| Water Cart        | 106-108  | 107  | 79  |
| Light vehicle     | 106  | 106  | 78  |

Table 3.5 Cumulative sound pressure level (Low) of proposed site equipment

| Equipment/Process  | Indicative Sound Power Level (mid-level) | Indicative Sound Pressure Level at 10m in distance | Rearranged from the highest to lowest sound power level | Equipment/Process  | Indicative Sound Power Level (mid-level) | Cumulative Sound Pressure Level (Lwa) |
|--------------------|--|--|---|--------------------|--|---------------------------------------|
| Light vehicle      | 106                                      | 78   |   | Excavator          | 107                                      | -                                     |
| Truck (>20 tonne)  | 107                                      | 79   |   | Truck (>20 tonnes) | 107                                      | 110                                   |
| Excavator          | 107                                      | 79   |   | Truck (water cart) | 107                                      | 112                                   |
| Truck (water cart) | 107                                      | 79   |   | Light vehicle      | 106                                      | 113                                   |
| Loader (Wheeled)   | 105                                      | 77   |   | Loader (wheeled)   | 105                                      | 114                                   |

Note: Measurement have been taken conservatively from the closet boundary of the site to the boundary of the receptor. It should be noted that operation areas will have additional buffer due to their location onsite and strategic positioning.

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Table 3.6 List of receptors within 100m buffer zone of the site and assigned noise level as per Western Australian Environmental Protection (Noise) Regulation 1997 (EPNR)

| Receiver | Location                                  | Type of Receptor | Proximity to Site boundary <sup>1</sup> (m) | Cumulative Sound pressure level (L <sub>WA</sub> ) | Log values of distance (Log <sub>10</sub> R) | Estimated Sound Level (L <sub>pa</sub> ) | Assigned Level (dBA) (LA <sub>max</sub> ) | Assigned Level Exceedance |
|----------|---|------------------|---|--|--|--|---|---------------------------|
| 1        | 29 Rheingold Place, Mirrabooka WA 6061    | Residential      | 93  | 114  | 1.97   | 67                                       | 74  | No                        |
| 2        | 27 Rheingold Place, Mirrabooka WA 6061    | Residential      | 99  | 114  | 2.00   | 66                                       | 74  | No                        |
| 3        | 26 Floribunda Gardens, Mirrabooka WA 6061 | Residential      | 81  | 114  | 1.91   | 68                                       | 74  | No                        |
| 4        | 24 Floribunda Gardens, Mirrabooka WA 6061 | Residential      | 100   | 114  | 2.00   | 66                                       | 74  | No                        |

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| Receiver | Location                                  | Type of Receptor | Proximity to Site boundary <sup>1</sup> (m) | Cumulative Sound pressure level (L <sub>WA</sub> ) | Log values of distance (Log <sub>10</sub> R) | Estimated Sound Level (L <sub>pa</sub> ) | Assigned Level (dBA) (L <sub>Amax</sub> ) | Assigned Level Exceedance |
|----------|---|------------------|---|--|--|--|---|---------------------------|
| 5        | 20 Floribunda Gardens, Mirrabooka WA 6061 | Residential      | 100   | 114  | 2.00   | 66                                       | 74  | No                        |
| 6        | 18 Floribunda Gardens, Mirrabooka WA 6061 | Residential      | 93  | 114  | 1.97   | 67                                       | 74  | No                        |
| 7        | 16 Floribunda Gardens, Mirrabooka WA 6061 | Residential      | 94  | 114  | 1.97   | 67                                       | 74  | No                        |
| 8        | 27 Floribunda Gardens, Mirrabooka WA 6061 | Residential      | 100   | 114  | 2.00   | 66                                       | 74  | No                        |

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| Receiver | Location                                  | Type of Receptor | Proximity to Site boundary <sup>1</sup> (m) | Cumulative Sound pressure level (L <sub>WA</sub> ) | Log values of distance (Log <sub>10</sub> R) | Estimated Sound Level (L <sub>pa</sub> ) | Assigned Level (dBA) (L <sub>Amax</sub> ) | Assigned Level Exceedance |
|----------|---|------------------|---|--|--|--|---|---------------------------|
| 9        | 29 Floribunda Gardens, Mirrabooka WA 6061 | Residential      | 99  | 114  | 2.00   | 66                                       | 74  | No                        |
| 10       | 3 Silkpod Heights, Mirrabooka WA 6061     | Residential      | 100   | 114  | 2.00   | 66                                       | 74  | No                        |
| 11       | 1 Silkpod Heights, Mirrabooka WA 6061     | Residential      | 98  | 114  | 1.99   | 66                                       | 74  | No                        |
| 12       | 2 Silkpod Heights, Mirrabooka WA 6061     | Residential      | 85  | 114  | 1.93   | 67                                       | 74  | No                        |

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| Receiver | Location                                  | Type of Receptor | Proximity to Site boundary <sup>1</sup> (m) | Cumulative Sound pressure level (L <sub>WA</sub> ) | Log values of distance (Log <sub>10</sub> R) | Estimated Sound Level (L <sub>pa</sub> ) | Assigned Level (dBA) (L <sub>Amax</sub> ) | Assigned Level Exceedance |
|----------|---|------------------|---|--|--|--|---|---------------------------|
| 13       | 4 Silkpod Heights, Mirrabooka WA 6061     | Residential      | 99  | 114  | 2.00   | 66                                       | 74  | No                        |
| 14       | 28 Coppercups Retreat, Mirrabooka WA 6061 | Residential      | 92  | 114  | 1.96   | 67                                       | 74  | No                        |
| 15       | 30 Coppercups Retreat, Mirrabooka WA 6061 | Residential      | 85  | 114  | 1.93   | 67                                       | 74  | No                        |
| 16       | 25 Coppercups Retreat, Mirrabooka WA 6061 | Residential      | 98  | 114  | 1.99   | 66                                       | 74  | No                        |

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| Receiver | Location  | Type of Receptor | Proximity to Site boundary <sup>1</sup> (m) | Cumulative Sound pressure level (L <sub>WA</sub> ) | Log values of distance (Log <sub>10</sub> R) | Estimated Sound Level (L <sub>pa</sub> ) | Assigned Level (dBA) (L <sub>Amax</sub> ) | Assigned Level Exceedance |
|----------|---|------------------|---|--|--|--|---|---------------------------|
| 17       | 27 Coppercups Retreat, Mirrabooka WA 6061                 | Residential      | 86  | 114  | 1.93   | 67                                       | 74  | No                        |
| 18       | 14 Everlasting Gardens, Mirrabooka WA 6061                | Residential      | 93  | 114  | 1.97   | 67                                       | 74  | No                        |
| 19       | Part of Lot 820 (501) Alexander Drive, Mirrabooka WA 6061 | Industrial       | 20  | 114  | 1.30   | 80                                       | 80  | No                        |

*Note: Distances presented in above table have been calculated from the site boundary and not the operation area.*

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### 3.2 Noise management measures

Based on the calculation the estimated noise level from the site is within the assigned levels for residential and commercial receptors, however Condition 13(2) of the noise regulations states that the assigned noise levels listed in Condition 7 does not apply to work if the following conditions are met:

- The noise is emitted during the hours of 07.00 and 19.00 Monday to Saturday.
- The equipment used is the quietest possible.
- A noise management plan was prepared (only if required)

As such the following noise management and mitigation measures are recommended during each Stage of works:

- Careful selection of machinery based on noise output.
- All machinery/ equipment proposed across the site will be used in accordance with appropriate manufactures instructions.
- All machinery/ equipment will be regularly serviced to ensure no excess noise emissions are received.
- Ensure no work is conducted outside of the operating hours.
- Where possible, specific activities will be scheduled during hours that least adversely affect sensitive receivers.
- The current site fencing around the Site will be maintained to ensure no public access is permitted.
- Where possible, maintain any onsite vegetation to act as noise buffer.

**iv) Is construction noise likely to be above the relevant screening criterion?**

No construction is proposed in this area of the site, however noise levels generated by this activity are not expected to differ from predicted levels as the machinery in use shall be the same.

**v) Is the proposal likely to involve blasting?**

No blasting is proposed.

As there are 171 sensitive receptors were identified within 200m of the site, a detailed noise assessment has been conducted. Detailed noise assessment report has been attached as **Appendix B**.

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#### **4 Assigned Level Criteria**

Environmental Protection (Noise) regulation 1997 Summary of the Regulations (1997) defines assigned noise level as ‘the level of noise allowed to be received at premises at a particular time of the day or night.

They apply at the premises receiving the noise and consider the impact of surrounding land use on noise levels received at each premise. They comprise the integration of a transport factor and a consideration of the proportion of surrounding land occupied by land uses with the potential to generate ambient noise i.e., commercial, and industrial.

The transport factor is calculated according to the number of major and minor roads within 100m buffer of the premises, and the number of major roads within a 450m buffer of the premises. Proportion of 100 and 450m buffers of the site occupied by commercial and industrial premises are calculated based on zoning displayed on a combination of metropolitan regional scheme and local town planning maps.

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## 5 Conclusion

As shown above, there are three sets of criteria applied to the cumulative sound pressure levels received by sensitive receptors within a one hundred metre buffer of the proposed waste depot.

Predicted noise levels does not exceed applicable criteria, therefore no detailed noise assessment has not been carried out for this site.

The values calculated did not, however factor in natural elevation or added noise attenuation by buffers located between the source and the receptors. Several buffers will exist between site and receptors, comprised of attenuation bunds and screens of mature trees and vegetation. Such buffers can decrease A-weighted sound pressure level by up to 15dB, and more at greater distances, with a conservative estimation of reduction by 7-10dB as per AS 2436:2010.

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## Figures

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12898900.000

12899250.000

12899600.000

**LEGENDS**

● Lot 821 (501) Alexander Dr, Mirrabooka

— Site Boundary- 501 Alexander Dr



-3744900.000

-3744900.000

-3745280.000

-3745280.000

-3745660.000

-3745660.000




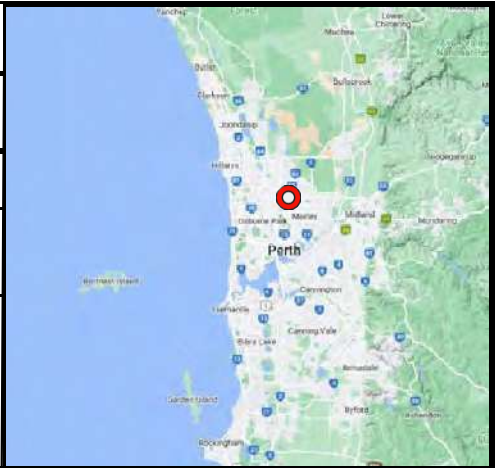
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12899600.000

|   |   |    |   |                                 |                               |
|---|---|----|---|---------------------------------|-------------------------------|
| <b>TITLE</b>                              |   |    |   | Figure 1. General Site Location |                               |
| <b>PROJECT</b>                            |   |    | Lot 821 (501) Alexander Drive, Mirrabooka WA 6061 |                                 | <b>PROJECT CODE</b><br>004-28 |
| <b>DESIGN/DRAW</b>                        | Checked By  | MC | <b>VERSION</b>                                    | 01                              | <b>DATE</b><br>08/03/2023     |
| <b>PREPARED BY</b>                        |  |    | <b>Source</b><br>NearMaps                         |                                 |                               |
| <b>PREPARED FOR</b>                       |   |    | <b>Scale</b><br>0 5 10 km                         |                                 |                               |
| Brajkovich Landfill and Recycling Pty Ltd |   |    |   |                                 |                               |



12898800.000

12899100.000

12899400.000

-3745280.000

-3745600.000

-3745920.000

-3745280.000

-3745600.000

-3745920.000



### Legend



Entry



Bore tank



Water tank



Administration



Weighbridge



Bunds



Green Waste



Steel Sorting Area



Dust Monitor



Cell One



Stockpiles



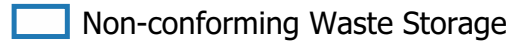
Screening Area



Tipping Area



C&D Waste



Non-conforming Waste Storage



Bin Storage Area



Cover Material Storage Area



Sie Boundary

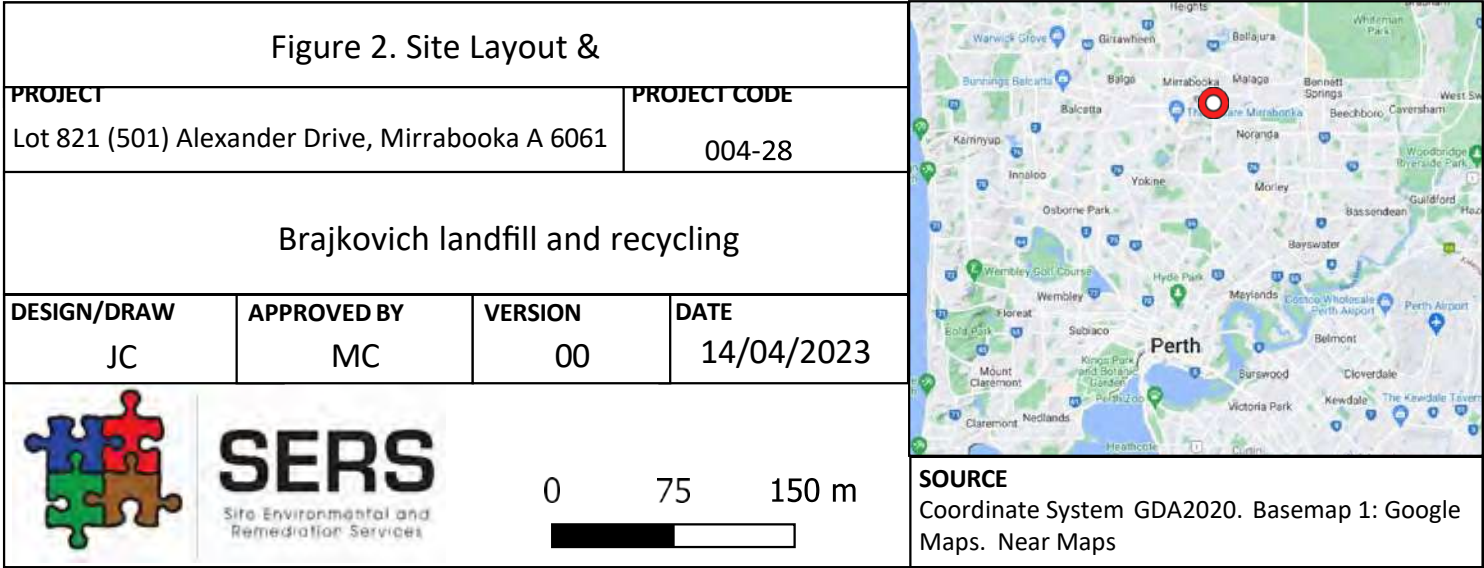
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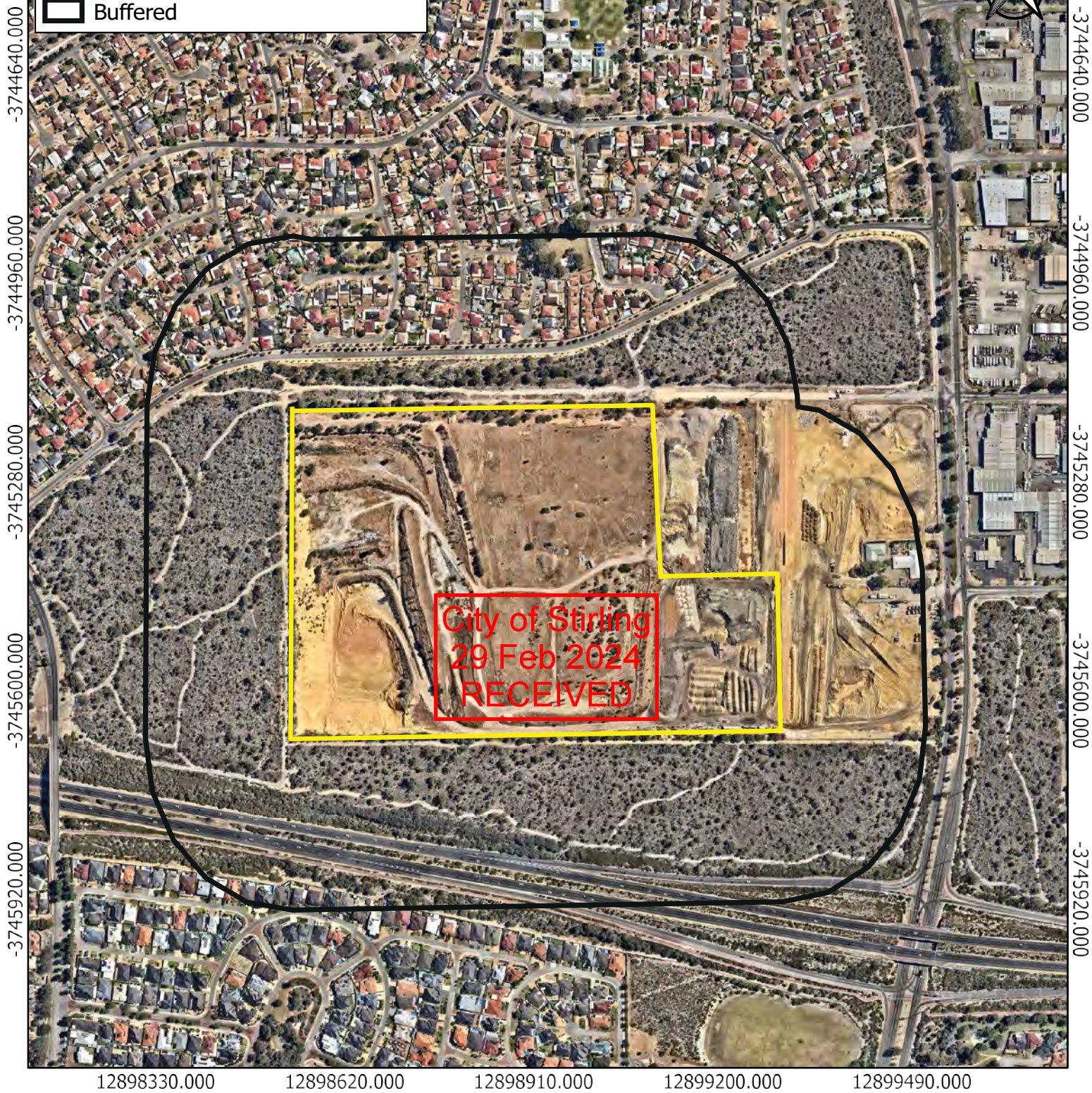


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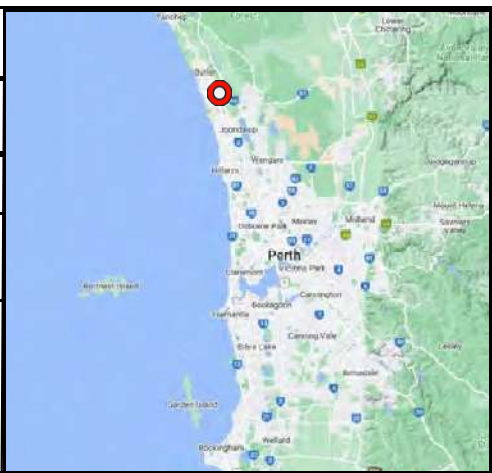
**LEGENDS**

- Site Boundary- 501 Alexander Dr
- Buffered



12898330.000 12898620.000 12898910.000 12899200.000 12899490.000

|                          |            |   |   |                               |                               |
|--------------------------|------------|---|---|-------------------------------|-------------------------------|
| <b>TITLE</b>             |            |   |   | Figure 3. Noise Buffer (200m) |                               |
| <b>PROJECT</b>           |            |   | Lot 821 (501) Alexander Drive, Mirrabooka WA 6061 |                               | <b>PROJECT CODE</b><br>004-28 |
| <b>DESIGN/DRAW</b><br>BK | Checked By | MC  | <b>VERSION</b><br>01                              | <b>DATE</b>                   | 08/03/2023                    |
| <b>PREPARED BY</b>       |            | <b>Source</b><br>NearMaps                 |   |                               |                               |
|                          |            | <b>Scale</b>                              |   |                               |                               |
|                          |            | 0 5 10 km                                 |   |                               |                               |
| <b>PREPARED FOR</b>      |            | Brajkovich Landfill and Recycling Pty Ltd |   |                               |                               |



## Attachment A - Sound Pressure Level calculation

Below calculation for sound pressure level is for hard ground where hard ground exists between item of plant and point of interest.

$$L_{PA} = L_{WA} - 20 \log_{10}R - 8$$

Where, LPA - Estimated sound level

LWA – A weighed sound pressure level

R- Distance from noise source

Below is an example of estimated sound level for closest sensitive receptor located 93m away from the site boundary.

$$\begin{aligned} L_{PA} &= L_{WA} - 20 \log_{10}R - 8 \\ &= 114 - 20 (\log_{10} 93) - 8 \\ &= 114 - 20 (1.96) - 8 \\ L_{PA} &= 67 \end{aligned}$$

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**Attachment B- Noise Assessment Report (Llyod George Acoustic)**

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Lloyd George Acoustics

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# Environmental Noise Assessment – Rehabilitation Works

**Lot 821 Alexander Drive, Mirrabooka**

Reference: 23037947-01

Prepared for:  
Brajkovich Demolition & Salvage (WA) Pty Ltd



## Reference: 23037947-01

### Lloyd George Acoustics Pty Ltd

ABN: 79 125 812 544

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| P:       | 0410 107 440   | 0420 364 650   | 0438 481 207   | 0448 912 604   |

This report has been prepared in accordance with the scope of services described in the contract or agreement between Lloyd George Acoustics Pty Ltd and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client, and Lloyd George Acoustics Pty Ltd accepts no responsibility for its use by other parties.

| Date      | Rev | Description      | Author     | Verified     |
|-----------|-----|------------------|------------|--------------|
| 28-Mar-23 | 0   | Issued to Client | Matt Moyle | Terry George |
|           |     |                  |            |              |

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## EXECUTIVE SUMMARY

Lloyd George Acoustics was engaged by Brajkovich Demolition & Salvage (WA) Pty Ltd to undertake a noise assessment for a proposed screening, sorting and filling operation to be located at Lot 821 Alexander Drive, Mirrabooka. The activities are part of a local government contract to rehabilitate the existing sand quarry to natural ground levels.

This report considered noise emissions from the proposed operations to surrounding properties by way of noise modelling. The overall site is already approved for filling operations, involving tipper trucks, front end loaders and water cartage. However, the requirement to screen and sort rubble and waste on site (within the sand quarry) has been recently proposed. It is therefore considered relevant to assess noise impacts from this additional activity and associated plant items. The plant items relevant to this study are listed as follows:

- 1x Screener (Mobiscreen MSS 802 EVO);
- 1x Excavator Volvo RC615;
- 1x TC420X PL27 Telestacker;
- 1x Case 1021F Front End Loader (Wheel) 4 cu.m.

As part of the study, noise emissions of the above items were measured on site, under typical operating conditions, while working in an adjoining approved area.

Noise emissions were then predicted from the proposed location by way of computer noise modelling and assessed against assigned levels in accordance with the *Environmental Protection (Noise) Regulations 1997*. The computer modelling also allowed for prediction of noise levels as the quarry pit is filled, being approximately 35m RL (Starting level), to 45m RL, 55m RL, and 65m RL (Fully filled).

The predicted noise levels are demonstrated to be compliant with daytime assigned levels without the need for mitigation measures. It is understood that the nature of the project to fill the quarry site is long term (up to 100 years).

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## 1. INTRODUCTION

Lloyd George Acoustics was engaged by Brajkovich Demolition & Salvage (WA) Pty Ltd to undertake an environmental noise assessment for a proposed screening, sorting and filling operation to be located at Lot 821 Alexander Drive, Mirrabooka - refer *Figure 1-1*.

The overall site is already approved for filling operations, involving tipper trucks, front end loaders and water cartage. However, the requirement to screen and sort rubble and waste on site (within the sand quarry) has been recently proposed. It is therefore considered relevant to assess noise impacts from this additional activity and associated plant items in isolation. The plant items relevant to this study are listed as follows:

- 1x Screener (Mobiscreen MSS 802 EVO);
- 1x Excavator Volvo RC615;
- 1x TC420X PL27 Telestacker;
- 1x Case 1021F Front End Loader (Wheel) 4 cu.m.

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Noise emissions of the above items were measured on site, under typical operating conditions, while working in an adjoining approved area.

Noise emissions were then predicted from the proposed location by way of computer noise modelling and assessed against assigned levels in accordance with the *Environmental Protection (Noise) Regulations 1997* for daytime operations. The computer modelling also allowed for prediction of noise levels as the quarry pit is filled, being approximately 35m RL (Starting level), to 45m RL, 55m RL, and 65m RL (Fully filled).



**Figure 1-1: Subject Site Location (Source: DPLH PlanWA)**

*Appendix C* contains a description of some of the terminology used throughout this report.

## 2. CRITERIA

Environmental noise in Western Australia is governed by the *Environmental Protection Act 1986*, through the *Environmental Protection (Noise) Regulations 1997* (the Regulations) as follows:

### **“7. Prescribed standard for noise emissions**

- (1) *Noise emitted from any premises or public place when received at other premises –*
- (a) *must not cause, or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind; and*
  - (b) *must be free of–*
    - (i) *tonality; and*
    - (ii) *impulsiveness; and*
    - (iii) *modulation,**when assessed under regulation 9.*
- (2) *For the purposes of subregulation (1)(a), a noise emission is taken to significantly contribute to a level of noise if the noise emission ... exceeds a value which is 5 dB below the assigned level at the point of reception.”*

Tonality, impulsiveness and modulation are defined in regulation 9 (refer *Appendix C*). Under regulation 9(3), “Noise is taken to be free of the characteristics of tonality, impulsiveness and modulation if -

- (a) *the characteristics cannot be reasonably and practicably removed by techniques other than attenuating the overall level of noise emission; and*
- (b) *the noise emission complies with the standard prescribed under regulation 7(1)(a) after the adjustments in the table [Table 2-1] ... are made to the noise emission as measured at the point of reception.”*

**Table 2-1 Adjustments Where Characteristics Cannot Be Removed**

| Where Noise Emission is Not Music* |            |               | Where Noise Emission is Music |               |
|------------------------------------|------------|---------------|-------------------------------|---------------|
| Tonality                           | Modulation | Impulsiveness | No Impulsiveness              | Impulsiveness |
| + 5 dB                             | + 5 dB     | + 10 dB       | + 10 dB                       | + 15 dB       |

\* These adjustments are cumulative to a maximum of 15 dB.

The assigned levels (prescribed standards) for all premises are specified in regulation 8(3) and are shown in *Table 2-2*. The  $L_{A10}$  assigned level is applicable to noises present for more than 10% of a representative assessment period, generally applicable to “steady-state” noise sources. The  $L_{A1}$  is for short-term noise sources present for less than 10% and more than 1% of the time. The  $L_{Amax}$  assigned level is applicable for incidental noise sources, present for less than 1% of the time.

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**Table 2-2 Baseline Assigned Levels**

| Premises Receiving Noise  | Time Of Day  | Assigned Level (dB)     |                         |                         |
|---|--|-------------------------|-------------------------|-------------------------|
|   |  | L <sub>A10</sub>        | L <sub>A1</sub>         | L <sub>Amax</sub>       |
| Noise sensitive premises: highly sensitive area <sup>1</sup>        | 0700 to 1900 hours Monday to Saturday (Day)  | 45 + influencing factor | 55 + influencing factor | 65 + influencing factor |
|   | 0900 to 1900 hours Sunday and public holidays (Sunday)   | 40 + influencing factor | 50 + influencing factor | 65 + influencing factor |
|   | 1900 to 2200 hours all days (Evening)  | 40 + influencing factor | 50 + influencing factor | 55 + influencing factor |
|   | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night) | 35 + influencing factor | 45 + influencing factor | 55 + influencing factor |
| Noise sensitive premises: any area other than highly sensitive area | All hours  | 60                      | 75                      | 80                      |
| Commercial Premises   | All hours  | 60                      | 75                      | 80                      |
| Industrial and Utility Premises                                     | All hours  | 65                      | 80                      | 90                      |

1. *highly sensitive area* means that area (if any) of noise sensitive premises comprising —

- (a) a building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
- (b) any other part of the premises within 15 metres of that building or that part of the building.

The influencing factor (IF), in relation to noise received at noise sensitive premises, has been calculated as either 2 dB or 8 dB, as determined in *Appendix B*. *Table 2-3* shows the assigned levels including the influencing factor and transport factor at the receiving locations.

The screening, sorting and filling activities are proposed to be conducted within the hours 7am and 7pm Monday to Saturday.

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**Table 2-3 Assigned Levels**

| Premises Receiving Noise   | Time Of Day  | Assigned Level (dB) |                 |                   |
|--|--|---------------------|-----------------|-------------------|
|  |  | L <sub>A10</sub>    | L <sub>A1</sub> | L <sub>Amax</sub> |
| +8 dB IF<br>Noise sensitive premises: highly sensitive area <sup>1</sup> | 0700 to 1900 hours Monday to Saturday (Day)  | 53                  | 63              | 73                |
|  | 0900 to 1900 hours Sunday and public holidays (Sunday)   | 48                  | 58              | 73                |
|  | 1900 to 2200 hours all days (Evening)  | 48                  | 58              | 63                |
|  | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night) | 43                  | 53              | 63                |
| +2 dB IF<br>Noise sensitive premises: highly sensitive area <sup>1</sup> | 0700 to 1900 hours Monday to Saturday (Day)  | 47                  | 57              | 67                |
|  | 0900 to 1900 hours Sunday and public holidays (Sunday)   | 42                  | 52              | 67                |
|  | 1900 to 2200 hours all days (Evening)  | 42                  | 52              | 57                |
|  | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night) | 37                  | 47              | 57                |
| Noise sensitive premises: any area other than highly sensitive area      | All hours  | 60                  | 75              | 80                |

It must be noted the assigned levels above apply outside the receiving premises and at a point at least 3 metres away from any substantial reflecting surfaces. Where this was not possible to be achieved due to the close proximity of existing buildings and/or fences, the noise emissions were assessed at a point within 1 metre from building facades and a -2 dB adjustment was made to the predicted noise levels to account for reflected noise.

The assigned levels are statistical levels and therefore the period over which they are determined is important. The Regulations define the Representative Assessment Period (RAP) as “a period of time of not less than 15 minutes, and not exceeding 4 hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission”. An inspector or authorised person is a person appointed under Sections 87 & 88 of the *Environmental Protection Act 1986* and include Local Government Environmental Health Officers and Officers from the Department of Water Environmental Regulation. Acoustic consultants or other environmental consultants are not appointed as an inspector or authorised person. Therefore, whilst this assessment is based on a 4-hour RAP, which is assumed to be appropriate given the nature of the operations, this is to be used for guidance only.

### 3. METHODOLOGY

#### 3.1. Site Measurements

Site measurements of the screening plant, namely an excavator, screener, telestacker and front end loader, were undertaken to derive source sound levels for use in noise modelling.

Under the Regulations, there are certain requirements that must be satisfied when undertaking measurements and are defined in Regulations 19, 20, 22 and 23 and Schedule 4. In undertaking the measurements, these have been satisfied, specifically noting the following:

- The sound level meter used was:
  - Bruel & Kjaer Type 2250 (S/N: 3011946);
- The equipment holds current laboratory certificates of calibration that are available upon request. The equipment was also field calibrated before and after and found to be within +/- 0.5 dB.
- The microphone was fitted with a standard wind screen.
- The microphone was at least 1.2 metres above ground level and at least 3.0 metres from reflecting facades (other than the ground plane).
- Measurements were recorded on 7 March between 12pm and 1pm.

The following plant were measured:

- 1x Screener (Mobiscreen MSS 802 EVO);
- 1x Excavator Volvo RC615;
- 1x TC420X PL27 Telestacker;
- 1x Case 1021F Front End Loader (Wheel) 4 cu.m.

The screener, excavator and telestacker are proposed to operate simultaneously at all times, therefore these were grouped and measured as one source.

#### 3.2. Noise Modelling

Computer modelling has been used to predict the noise emissions from the development to all nearby receivers. The software used was *SoundPLAN 8.2* with the ISO 9613 algorithms (ISO 171534-3 improved method) selected, as they include the influence of meteorological conditions. Input data required in the model are listed below and discussed in *Section 3.2.1* to *Section 3.2.4*:

- Meteorological Information;
- Topographical data;
- Ground Absorption; and
- Source sound power levels.

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### 3.2.1. Meteorological Conditions

Meteorological information utilised is provided in *Table 3-1* and is considered to represent worst-case conditions for noise propagation. At wind speeds greater than those shown, sound propagation may be further enhanced, however background noise from the wind itself and from local vegetation is likely to be elevated and dominate the ambient noise levels.

**Table 3-1: Modelling Meteorological Conditions**

| Parameter        | Day (7.00am to 7.00pm) | Night (7.00pm to 7.00am) |
|------------------|------------------------|--------------------------|
| Temperature (°C) | 20                     | 15                       |
| Humidity (%)     | 50                     | 50                       |
| Wind Speed (m/s) | Up to 5                | Up to 5                  |
| Wind Direction*  | All                    | All                      |

\* The modelling package allows for all wind directions to be modelled simultaneously.

Alternatives to the above default conditions can be used where one year of weather data is available and the analysis considers the worst 2% of the day and night for the month of the year in which the worst-case weather conditions prevail (source: *Draft Guideline on Environmental Noise for Prescribed Premises*, May 2016). In most cases, the default conditions occur for more than 2% of the time and therefore must be satisfied.

### 3.2.2. Topographical Data

Topographical data was adapted from publicly available information (e.g. *Google*) in the form of spot heights and combined with site survey information in 1-metre contour lines.

Surrounding existing buildings were also incorporated in the noise model, as these can provide noise shielding as well as reflection paths. Single storey buildings are modelled with a height of 3.5 metres and any double storey buildings identified assumed to be 7.0 metres in height with receivers 1.4 metres above ground.

### 3.2.3. Ground Absorption

The ground absorption has been assumed to be 0.0 (0%) for the roads and 0.5 (50%) elsewhere, noting that 0.0 represents hard reflective surfaces such as water and 1.0 represents absorptive surfaces such as grass and quarry areas.

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### 3.2.4. Source Sound Levels

The source sound power levels used in the modelling, derived from field measurements, are provided in *Table 3-2*.

**Table 3-2: Source Sound Power Levels, dB**

| Description  | Octave Band Centre Frequency (Hz) |     |     |     |  |    |  | Overall dB(A) |
|--|-----------------------------------|-----|-----|-----|--|----|--|---------------|
|  | 63                                | 125 | 250 | 500 |  | 2k |  |               |
| Screener (Mobiscreen MSS 802 EVo) with Excavator and Telestacker operating – $L_{A10}$ | 103                               | 108 | 108 | 107 |  | 99 |  | <b>108</b>    |
| Front End Loader Working – $L_{A10}$   | 107                               | 103 | 103 | 92  |  | 88 |  | <b>98</b>     |

The following is noted in relation to *Table 3-2*:

- Levels are based on measurements of actual equipment proposed for relocation into the sand quarry area.
- A source height of 3.0m was used as an average for the combined group source of Screener, excavator and telestacker.
- The front end loader is assumed to be working near the screening unit centrally located in the pit at a height of 1.5m above ground level.
- To simulate the various filled depths of the pit, the ground floor layer was modified in 10m intervals and subsequently raising the noise sources with it (so that they remained at the same relative level above pit floor).

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## 4. RESULTS

The noise levels were predicted for various scenarios over the duration of the project, noting that with time the pit will fill and therefore screening plant will progress to be higher and bring noise sources higher also.

Screening Operations ( $L_{10}$ ) at the following depths/stages of filling the pit were modelled:

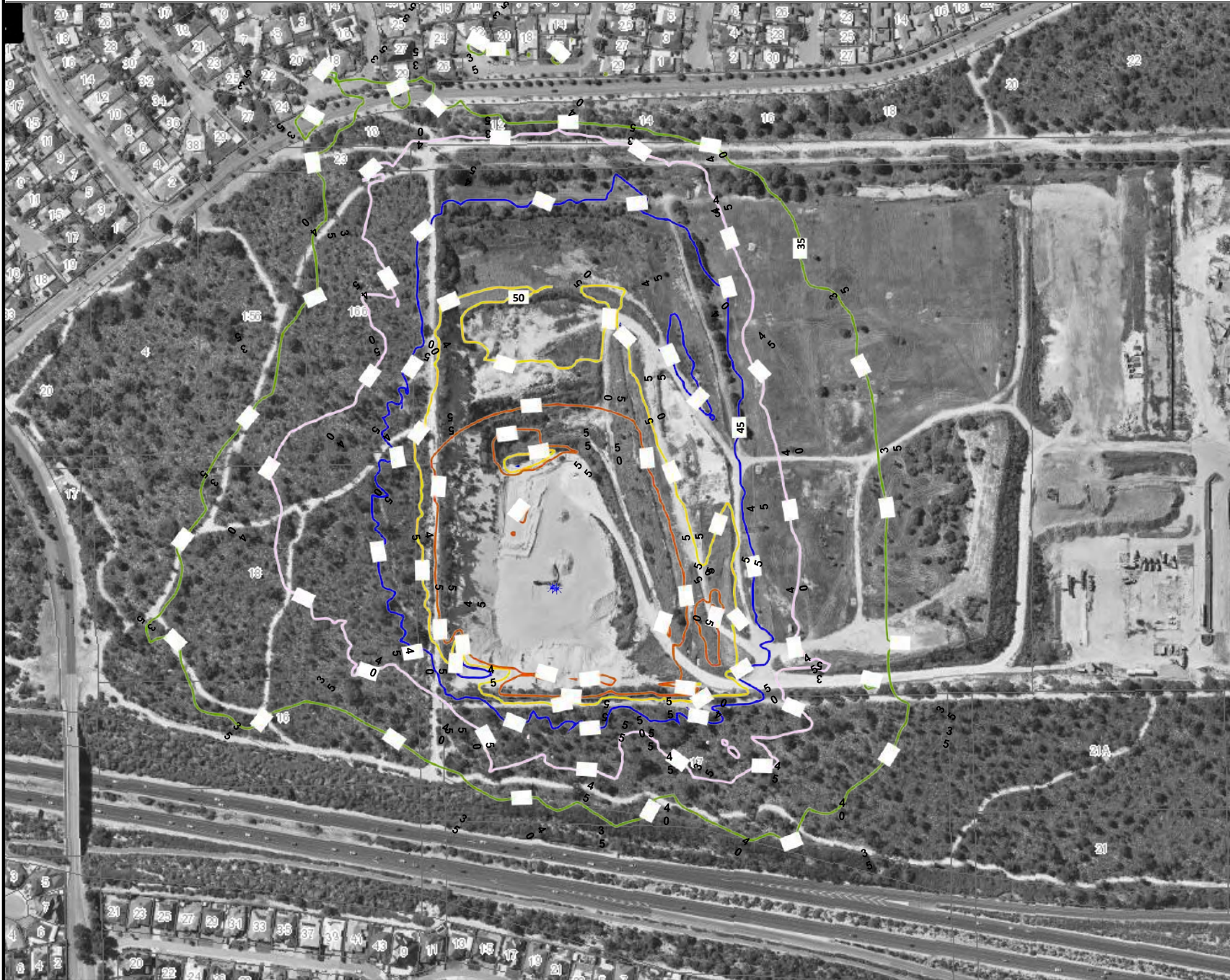
- At RL35m (existing pit floor level)
- At RL45m
- At RL55m
- At RL65m (approximately final natural ground level)

The results are best shown figuratively, with contour lines labelled and indicating predicted levels at all locations. These figures are provided as follows:

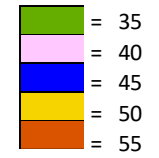
- *Figure 4-1* showing noise levels when the quarry is at RL 35m (starting levels).
- *Figure 4-2* showing noise levels when the quarry is at RL 45m.
- *Figure 4-3* showing noise levels when the quarry is at RL 55m.
- *Figure 4-4* showing noise levels when the quarry is at RL 65m.

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**Figure 4-1 Screening & Filling at RL35m, dB LA10**



**Predicted Noise level**



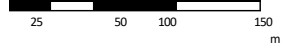
**Legend**

\* Screener/FEL Source

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Scale 1:4500

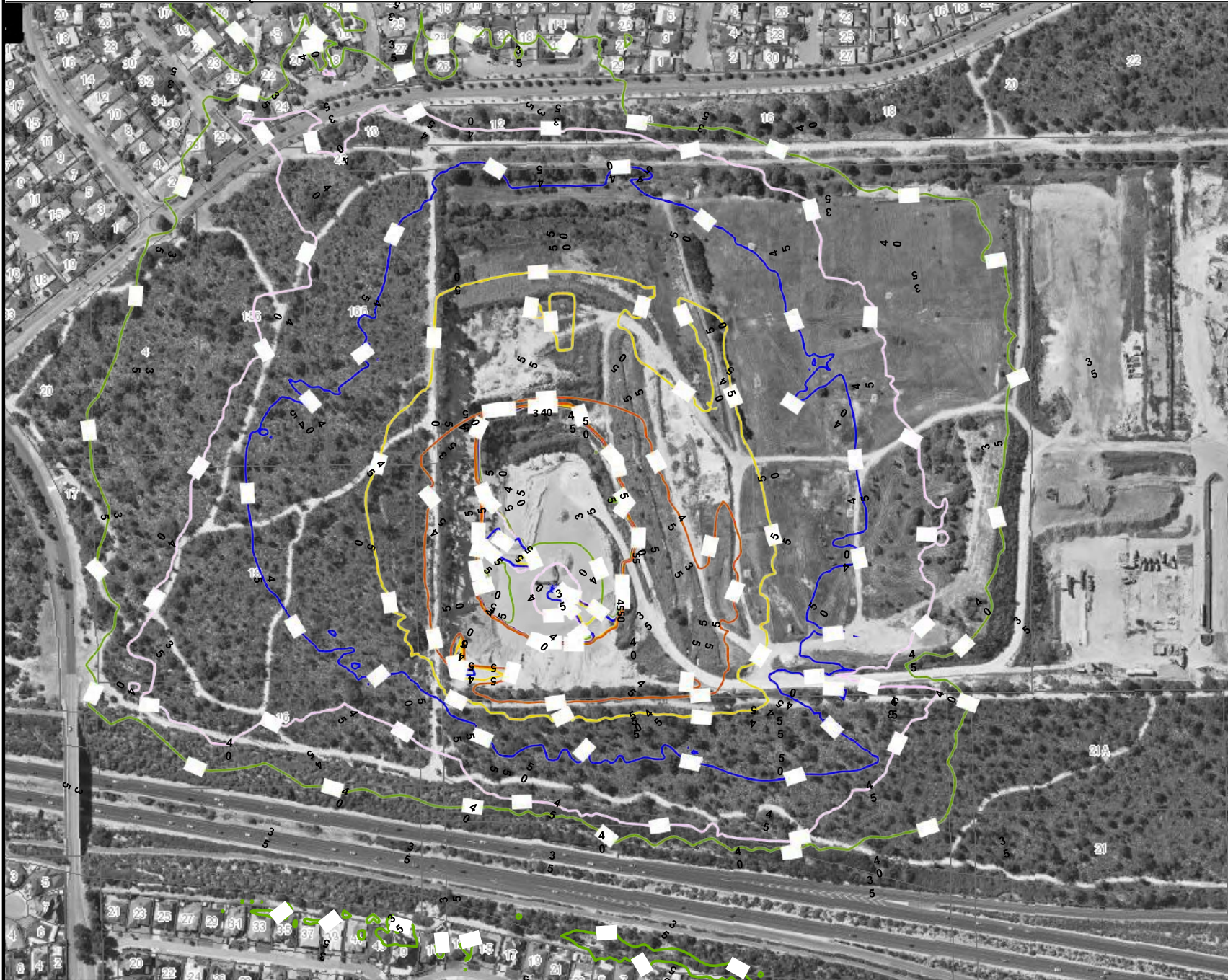


Project No: 23037947  
Consultant: MM  
Date: 21/03/2023 Algorithm:  
ISO 9613  
SoundPLAN Version: 8.2

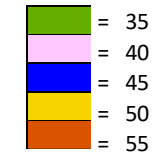


**Lloyd George Acoustics**  
PO Box 717  
HILLARYS WA 6923  
(08) 9401 7770

**Figure 4-2 Screening & Filling at RL45m, dB LA10**



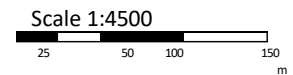
**Predicted Noise level**



**Legend**

\* Screener/FEL Source

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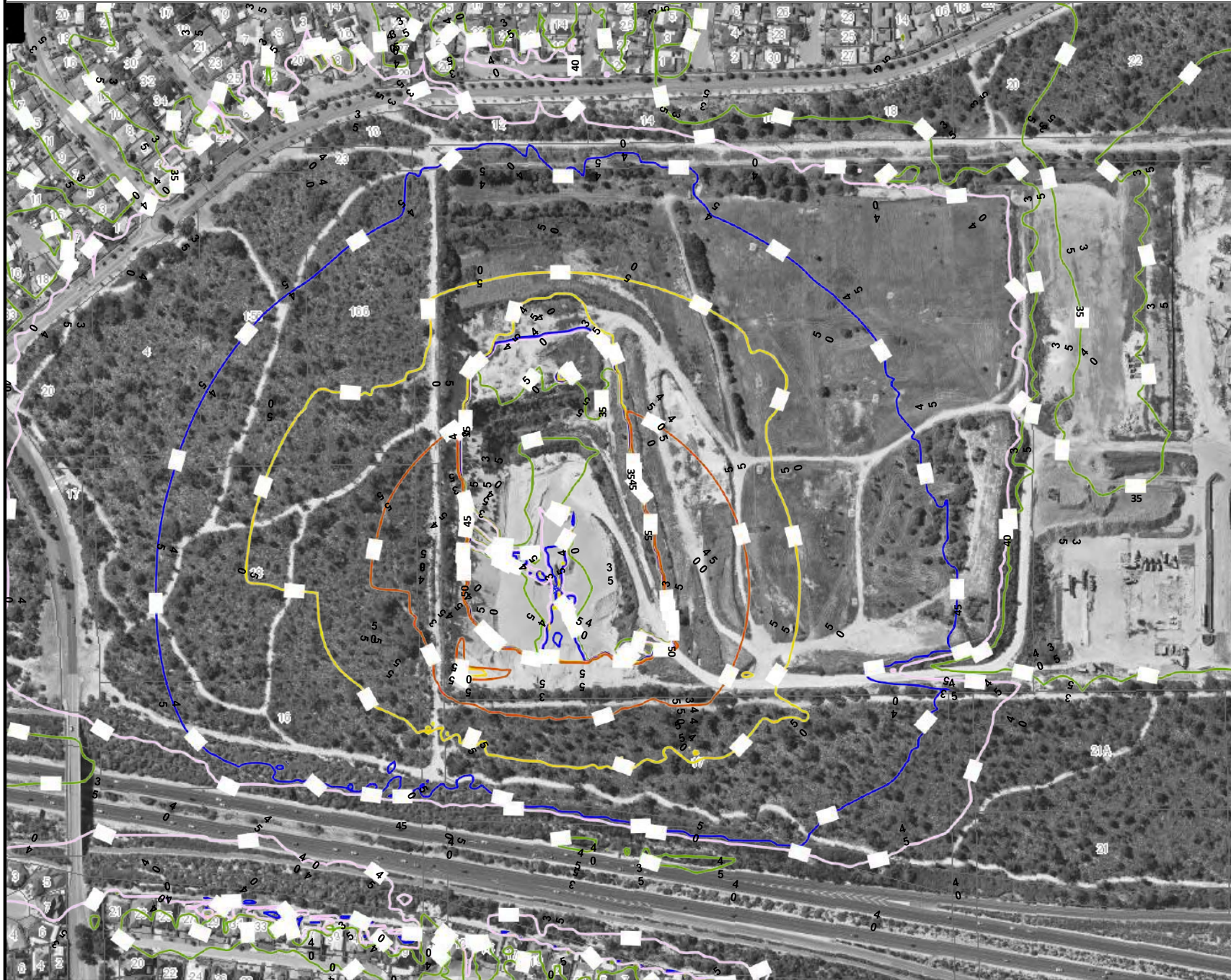


Project No: 23037947  
 Consultant: MM  
 Date: 21/03/2023 Algorithm:  
 ISO 9613  
 SoundPLAN Version: 8.2

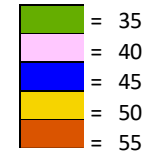


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**Figure 4-3 Screening & Filling at RL55m, dB LA10**



**Predicted Noise level**



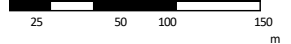
**Legend**

\* Screener/FEL Source

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Scale 1:4500



Project No: 23037947  
Consultant: MM  
Date: 21/03/2023 Algorithm:  
ISO 9613

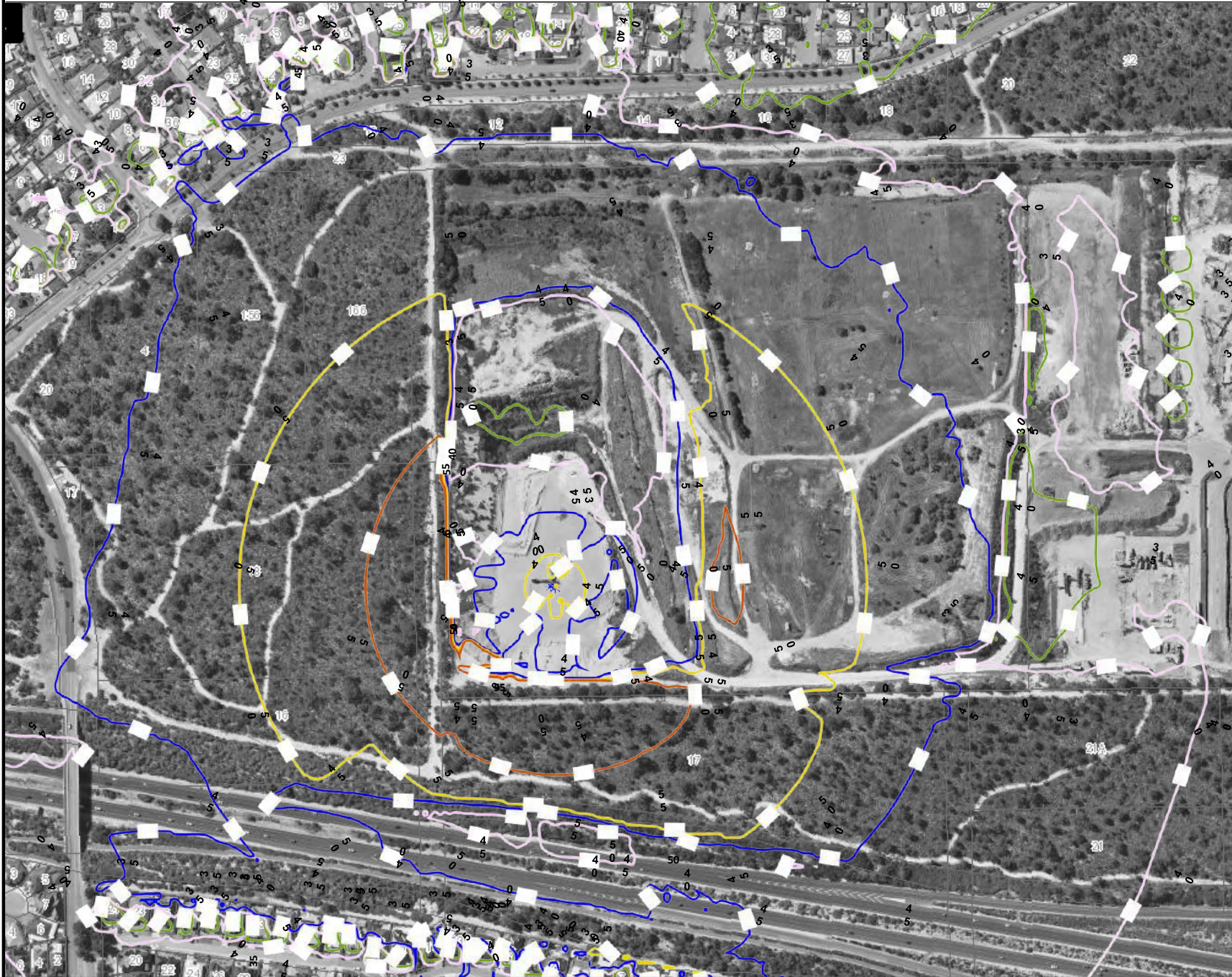
SoundPLAN Version: 8.2



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Figure 4-4 Screening & Filling at RL65m, dB LA10<sup>3</sup>



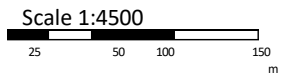
Predicted Noise level

- = 35
- = 40
- = 45
- = 50
- = 55

Legend

- Screener/FEL Source

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Project No: 23037947  
Consultant: MM  
Date: 21/03/2023 Algorithm:  
ISO 9613  
SoundPLAN Version: 8.2



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## 5. ASSESSMENT AND RECOMMENDATIONS

Based on noise modelling undertaken with the proposed equipment working in the southern pit area, noise levels are predicted to be compliant with daytime assigned levels for all nearest noise sensitive receivers. The worst case level at each receiver group, for each pit depth is provided in *Table 5-1* and also assessed against respective day time assigned levels. As expected noise levels increase as the pit is progressively filled, but are predicted to remain compliant with assigned noise levels at all stages.

**Table 5-1: Assessment of Predicted Noise Levels, dB L<sub>A10</sub>**

|                     | Pit at RL 35m | Pit at RL45m | Pit at RL 55m | Pit at RL 65m | Assigned Noise Level |
|---------------------|---------------|--------------|---------------|---------------|----------------------|
| Group R1<br>(North) | 36            | 40           | 42            | 45            | <b>47</b>            |
| Group R2<br>(South) | <25           | 35           | 43            | 48            | <b>53</b>            |

Given that works are proposed during the day and the distance to houses, tonality is not expected to be detectable, therefore no adjustments were made to predicted levels.

Whilst it is acknowledged that the proposed screening and filling operation is planned to occur over several decades, the assessment considers outcomes based on the assumptions provided. Should significant changes to plant type and scale or location within the pit, additional modelling should be undertaken to verify that compliance can be achieved or if additional mitigation measures are required.

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## Appendix A – Development Plans

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**MNG.**

McMullen Nolan Group Pty Ltd  
Level 1, 2 Sabine Crescent  
Jandakot, W.A. 6164  
PO Box 3526, Success  
W.A. 6964, Australia  
Tel: (08) 6436 1599  
Fax: (08) 6436 1500  
info@mngsurvey.com.au  
www.mngsurvey.com.au  
ABN: 90 009 363 311



# 501 ALEXANDER DRIVE - ORTHOPHOTO PLAN

35

34

| SOURCE DATA        | SOURCE   | DATE      | SCALE | EXPECTED ACCURACY* | PROJECT MANAGER: TREVOR VEEN      |
|--------------------|----------|-----------|-------|--------------------|-----------------------------------|
| AERIAL PHOTOGRAPHY | MNG      | JULY 2021 | 7cm   | ± 0.2m             | IMAGERY FILE NAME: 102450cm-003a  |
| CADASTRAL DATA     | LANDGATE | JULY 2021 | N/A   | ± 0.1m             | PROJECTION: PCG94 / AHD ZONE: I/A |
| TOPOGRAPHY         | MNG      | JULY 2021 | N/A   | ± 0.05m            | CONTOUR INTERVAL: 1.5m            |



MIRRABOOKA

102450 - OPM - 024 - A

THIS PLAN IS DERIVED FROM A SURVEY OF 0.40 HECTARES PREPARED BY THE CITY OF STIRLING IN 2017. THE SURVEY WAS CONDUCTED BY THE CITY OF STIRLING SURVEYING DEPARTMENT AND IS SUBJECT TO THE CURRENT AND CORRECT AS OF THE DATE OF THE SURVEY. THE CITY OF STIRLING DOES NOT ACCEPT LIABILITY FOR ANY ERRORS OR OMISSIONS IN THIS PLAN.

SCALE 1:500 @ A1 1:1,500 @ A2  
ALL DISTANCES ARE IN METRES

DATE 22/07/21 DRAWN BY CHECK OVP  
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## Appendix B – Influencing Factor Calculation

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The assigned levels combine a baseline assigned level with an influencing factor, with the latter increasing the assigned level on the basis of the existence of significant roads and commercial or industrial zoned land within an inner circle (100 metre radius) and an outer circle (450 metre radius) of the noise sensitive premises. The calculation for the influencing factor is:

$$= \frac{1}{10}(\% \text{ Type A}_{100} + \% \text{ Type A}_{450}) + \frac{1}{20}(\% \text{ Type B}_{100} + \% \text{ Type B}_{450})$$

where :

% Type A<sub>100</sub> = the percentage of industrial land within  
a 100m radius of the premises receiving the noise

%TypeA<sub>450</sub> = the percentage of industrial land within  
a 450m radius of the premises receiving the noise

% Type B<sub>100</sub> = the percentage of commercial land within  
a 100m radius of the premises receiving the noise

%TypeB<sub>450</sub> = the percentage of commercial land within  
a 450m radius of the premises receiving the noise

+ Transport Factor (maximum of 6 dB)

= 2 for each secondary road (6,000 to 15,000 vpd) within 100m

= 2 for each major road (>15,000 vpd) within 450m

= 6 for each major road within 100m

The nearest noise sensitive premises are identified as:

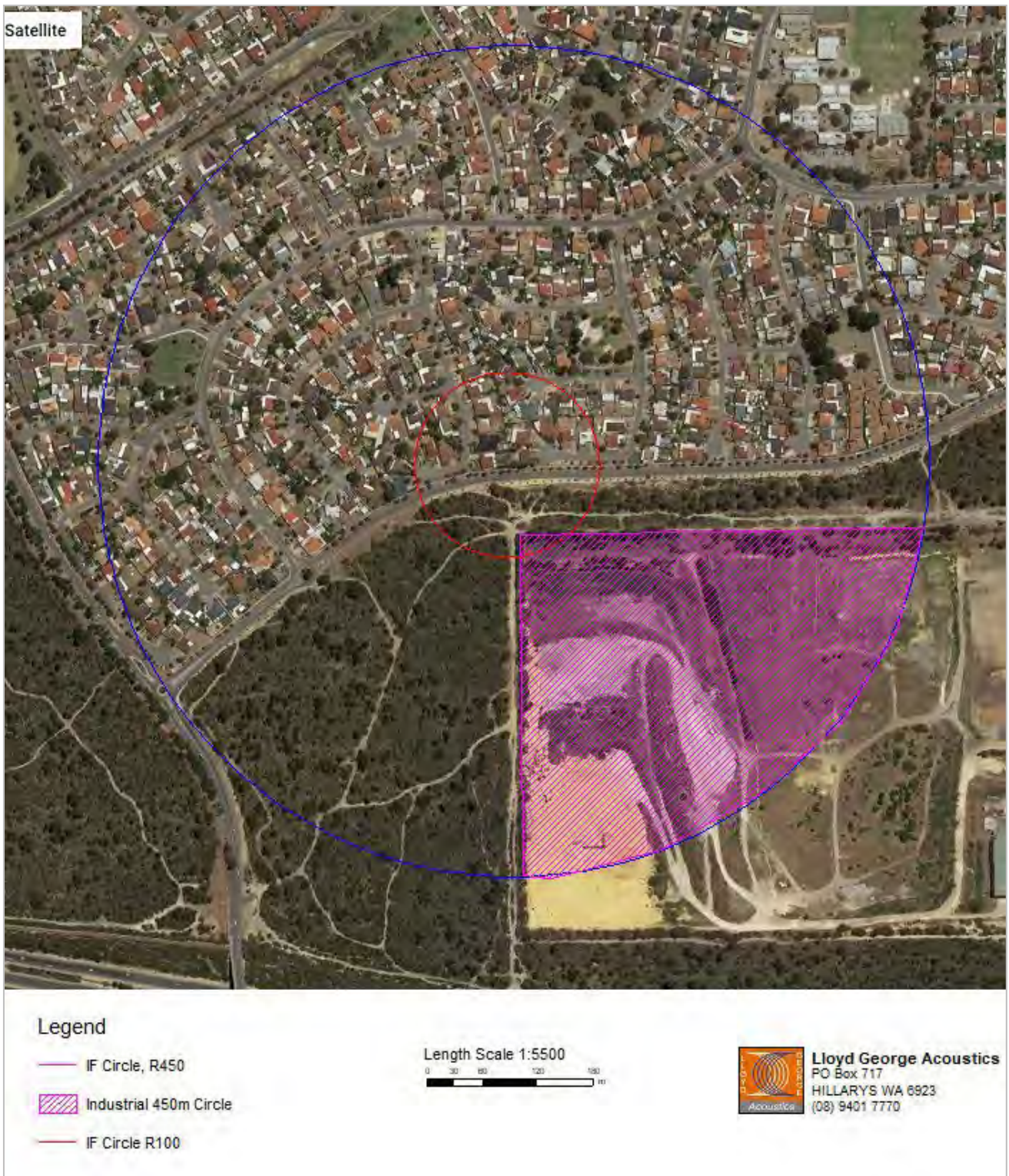
- R1 – North Residences along Australis Avenue
- R2 – South Residences across Reid Highway

The quarry premises is considered to be an industrial classification, in accordance with Schedule 1, Part A (5). *Table B-1* shows the percentage of industrial and commercial land within the inner (100 metre radius) and outer (450 metre radius) circles of the noise sensitive premises, with this also shown on *Figure B-1* for Receiver R1.

**Table B-2: Percentage of Land Types within 100m and 450m Radii**

| Receiver | Land Type                       | Within 100m | Within 450m |
|----------|---------------------------------|-------------|-------------|
| R1       | Type A - Industrial and Utility | 0           | 19%         |
|          | Type B – Commercial             | 0           | 0           |
| R2       | Type A - Industrial and Utility | 0           | 20%         |
|          | Type B – Commercial             | 0           | 0           |

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**Figure B-1: Land Types within 100m and 450m Radii of R1 (North Residents)**

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From the Main Roads WA Traffic Map (refer *Figure B-2*), *Table B-2* shows the relevant roads and their traffic counts within the inner (100 metre radius) and outer (450 metre radius) circles.

**Table B-3: Relevant Roads within 100m and 450m Radii**

| Receiver | Within 100m                              |                         | Within 450m                         |
|----------|--|-------------------------|-------------------------------------|
|          | Major Road (+ 6 dB)                      | Secondary Road (+ 2 dB) | Major Road Not Within 100m (+ 2 dB) |
| R1       | -  | -                       | -                                   |
| R2       | Reid Highway<br>(66, vpd 2020/21 #51545) | -                       | -                                   |



**Figure B-2: MRWA Published Traffic Data**

*Table B-3* combines the percentage land types and Transport Factor to calculate the influencing factor.

**Table B-4: Influencing Factor Calculation, dB**

| Receiver | Industrial Land | Commercial Land | Transport Factor | Total |
|----------|-----------------|-----------------|------------------|-------|
| R1       | 2.0             | 0               | 0                | 2     |
| R2       | 2.0             | 0               | 6.0              | 8     |

The influencing factor calculated in *Table B-3* is combined with those baseline assigned levels of *Table 2-2*, resulting in the project assigned levels provided in *Table 2-3*.

## Appendix C – Terminology

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The following is an explanation of the terminology used throughout this report:

- **Decibel (dB)**

The decibel is the unit that describes the sound pressure levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

- **A-Weighting**

An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as  $L_A$ , dB.

- **Sound Power Level ( $L_w$ )**

Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. This is similar to a 1kW electric heater always radiating 1kW of heat. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure level at known distances. Noise modelling incorporates source sound power levels as part of the input data.

- **Sound Pressure Level ( $L_p$ )**

The sound pressure level of a noise source is dependent upon its surroundings, being influenced by distance, ground absorption, topography, meteorological conditions etc. and is what the human ear actually hears. Using the electric heater analogy above, the heat will vary depending upon where the heater is located, just as the sound pressure level will vary depending on the surroundings. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.

- **$L_{ASlow}$**

This is the noise level in decibels, obtained using the A-frequency weighting and the S (slow) time weighting. Unless assessing modulation, all measurements use the slow time weighting characteristic.

- **$L_{AFast}$**

This is the noise level in decibels, obtained using the A-frequency weighting and the F (fast) time weighting. This is used when assessing the presence of modulation.

- **$L_{APeak}$**

This is the greatest absolute instantaneous sound pressure level in decibels using the A-frequency weighting.

- **$L_{Amax}$**

An  $L_{Amax}$  level is the maximum A-weighted noise level during a particular measurement.

- **$L_{A1}$**

The  $L_{A1}$  level is the A-weighted noise level exceeded for 1 percent of the measurement period and is considered to represent the average of the maximum noise levels measured.

- **$L_{A10}$**

The  $L_{A10}$  level is the A-weighted noise level exceeded for 10 percent of the measurement period and is considered to represent the “intrusive” noise level.

- **$L_{A90}$**

The  $L_{A90}$  level is the A-weighted noise level exceeded for 90 percent of the measurement period and is considered to represent the “background” noise level.

- **$L_{Aeq}$**

The equivalent steady state A-weighted sound level (“equal energy”) in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the “average” noise level.

- **One-Third-Octave Band**

Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20000 Hz inclusive.

- **Representative Assessment Period**

Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

- **$L_{Amax}$  assigned level**

Means an assigned level, which, measured as a  $L_{ASlow}$  value, is not to be exceeded at any time.

- **$L_{A1}$  assigned level**

Means an assigned level, which, measured as a  $L_{ASlow}$  value, is not to be exceeded for more than 1 percent of the representative assessment period.

- **$L_{A10}$  assigned level**

Means an assigned level, which, measured as a  $L_{ASlow}$  value, is not to be exceeded for more than 10 percent of the representative assessment period.

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- **Tonal Noise**

A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is:

- the presence in the noise emission of tonal characteristics where the difference between -
  - (a) the A-weighted sound pressure level in any one-third octave band; and
  - (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as  $L_{Aeq,T}$  levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as  $L_{A\ slow}$  levels.

This is relatively common in most noise sources.

- **Modulating Noise**

A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

- a variation in the emission of noise that —
  - (a) is more than 3 dB  $L_{A\ Fast}$  or is more than 3 dB  $L_{A\ Fast}$  in any one-third octave band; and
  - (b) is present for at least 10% of the representative assessment period; and
  - (c) is regular, cyclic and audible.

- **Impulsive Noise**

An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness means:

- a variation in the emission of a noise where the difference between  $L_{Apeak}$  and  $L_{Amax}$  is more than 15 dB when determined for a single representative event.

- **Major Road**

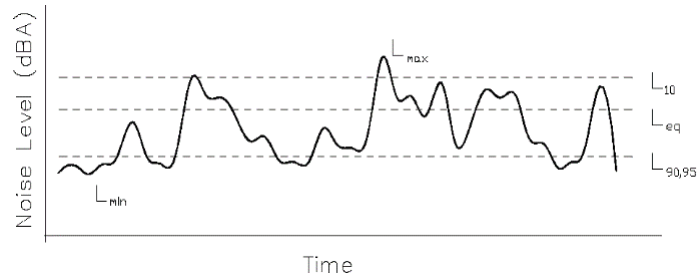
Is a road with an estimated average daily traffic count of more than 15,000 vehicles.

- **Secondary / Minor Road**

Is a road with an estimated average daily traffic count of between 6,000 and 15,000 vehicles.

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- **Chart of Noise Level Descriptors**



- **Austrroads Vehicle Class**

| VEHICLE CLASSIFICATION SYSTEM<br>AUSTRROADS |   |              |
|---|---|--------------|
| CLASS                                       | DESCRIPTION                                       | VEHICLE TYPE |
| <b>LIGHT VEHICLES</b>                       |   |              |
| 1   | Small car, van, wagon, and MPV (Motor, Passenger) |              |
| 2   | Bus, Coach, Public Conveyance, School             |              |
| <b>HEAVY VEHICLES</b>                       |   |              |
| 3   | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| 4   | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| 5   | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| 6   | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| 7   | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| 8   | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| 9   | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| <b>HEAVY VEHICLES AND ROAD TRAINS</b>       |   |              |
| 10  | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| 11  | Tractor, Trailer, Motor Car, Bus, Tractor         |              |
| 12  | Tractor, Trailer, Motor Car, Bus, Tractor         |              |

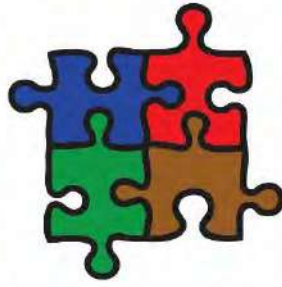
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- **Typical Noise Levels**



## APPENDIX E – ASBESTOS MANAGEMENT PLAN

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# SERS

Site Environmental and  
Remediation Services

## ASBESTOS MANAGEMENT PLAN

### PROPOSED SOLID WASTE DEPOT

LOT 821 & PART OF LOT 820 (501) ALEXANDER DRIVE, MIRRABOOKA WA 6061



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#### PREPARED FOR:

Brajkovich Landfill & Recycling  
1868 Great Northern Highway,  
Upper Swan WA 6069

#### PREPARED BY:

Site Environmental & Remediation Services Pty Ltd (SERS)  
281 Newcastle St Northbridge WA 6003  
PO Box 377 Northbridge WA 6865  
T: +61 8 9220 2000 F: +61 8 9220 2010 W: [www.sers.net.au](http://www.sers.net.au)



## DOCUMENT CONTROL SHEET

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 281 Newcastle Street Northbridge WA 6003  
 Tel: 1300 320 696  
[www.sers.net.au](http://www.sers.net.au)

**Client:** Brajkovich Landfill & Recycling

**Project:** Solid Waste Depot at 501 Alexander Drive, Mirrabooka WA 6061

**Title:** Asbestos Management Plan – Malaga Recycling Centre



**Reference:** 004-028\_AMP\_MC\_26052023

**Status:** Issue

**Report Date:** 26<sup>th</sup> May 2023

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| Abbreviation            | Definition   |
|-------------------------|--|
| Accredited Laboratories | A testing laboratory accredited by the National Association of Testing Authorities, Australia (NATA) or a similar accreditation authority, or otherwise granted recognition by NATA, either solely or in conjunction with one or more other persons  |
| ACM                     | Means any material or thing that as part of its design, contains asbestos. (Asbestos Containing Material)  |
| AF                      | Asbestos Fines   |
| AMP                     | Asbestos Management Plan   |
| CBD                     | Central Business District  |
| Client                  | Brajkovich Landfill & Recycling  |
| Competent Person        | A person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill, for the safe performance of the specific work   |
| Controls                | In the process of implementing asbestos materials management, it is fundamental that any identified asbestos situations have controls determined to prevent personnel from being place at risk. These controls include, but are not necessarily limited to: <ul style="list-style-type: none"> <li>- Elimination/substitution</li> <li>- Engineering controls</li> <li>- Administrative controls</li> <li>- Personal protective equipment</li> </ul> |
| C&D Waste               | Construction & Demolition waste  |
| DWER                    | Department of Water and Environmental Regulation   |
| DoH                     | Department of Health   |
| FA                      | Fibrous Asbestos, asbestos-containing material which, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure  |
| Membrane Filter Method  | The technique outlined in the NOHSC Guidance Note of the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003(2005)]  |
| NATA                    | A testing laboratory accredited by the National Association of Testing Authorities   |
| WHSC                    | Work Health and Safety Commission  |
| PCBU                    | Person Conducting a Business or Undertaking  |
| PPE                     | Equipment and clothing that is used or worn by an individual person to protect themselves against, or minimise their exposure to, workplace risks. It includes items such as facemasks and respirators, coveralls, goggles, helmets, gloves and footwear   |
| Regulations             | Include all provisions given force of law by the competent authority or authorities  |
| SERS                    | Site Environmental and Remediation Services Pty Ltd  |

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## 1 Introduction

Site Environmental & Remediation Services Pty Ltd (SERS) were engaged by Brajkovich Landfill & Recycling (the Client) to prepare an Asbestos Management Plan (AMP) for the operation of a Solid Waste Depot located at 501 Alexander Drive, Mirrabooka WA 6061 (hereby known as ‘the Site’).

In order to satisfy the requirements of *the Code of Practice for How to Manage and Control Asbestos in Workplaces (WHSC, 2022)* an Asbestos Management Plan is recommended to help persons with control of premises to comply with the asbestos prohibition and prevent exposure to airborne asbestos fibres while ACM remain in the workplace.

Asbestos is a hazardous material that poses a risk to health by inhalation if the asbestos fibres become airborne and people are exposed to these airborne fibres. Breathing in of asbestos fibres can potentially cause asbestosis, lung cancer and mesothelioma.

Asbestos is extremely difficult to visually identify. The only recognised method is to utilise competent persons to sample the material and adopt special laboratory techniques to identify asbestos fibres. If an area is inaccessible and is likely to contain asbestos containing materials, then it should be presumed that asbestos is present.

Where the evaluation process reveals a likelihood of exposure to asbestos fibres, all practical steps will be taken to ensure that persons and workers are not exposed. This document addresses the management of asbestos containing materials at the relevant sites and is compliant with the *Code of Practice for How to Manage and Control Asbestos in Workplaces (WHSC, 2022)* and *Code of Practice How to Safely Remove Asbestos (WHSC, 2022)*. These requirements and controls extend to all works associated with the removal of identified and potentially asbestos contaminated soils.

This Asbestos Management Plan (AMP) sets out the steps to be taken to eliminate or otherwise minimise the risk of exposure to airborne asbestos fibres, including the identification of asbestos-containing materials (ACM), risk assessments and the implementation of control measures.

### 1.1 Objectives

Asbestos management methods are proposed with the objective of minimising the risk of harm to human and environmental health through preventing the exposure to airborne fibres. Operational methodologies thus ensure material is heavily scrutinised at every step of processing. This AMP is to help with the control of the premises to comply with the asbestos prohibition and prevent exposure to airborne asbestos fibres while ACM remain in the workplace.

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## **2 Applicable regulations**

### **2.1 Health (Asbestos) Regulations 1992**

The *Health (Asbestos) Regulations 1992* (The Asbestos Regulations) govern the following areas of the Health Act: asbestos cement product; material containing asbestos; and disposal of material containing asbestos.

### **2.2 Code of Practice for How to Manage and Control of Asbestos in the Workplaces (WHSC, 2022)**

This Code is intended to be read by a person conducting a business or undertaking (PCBU). It provides practical guidance to PCBUs on how to manage risks associated with asbestos, asbestos containing material (ACM) and asbestos-contaminated dust or debris (ACD) at the workplace and thereby minimise the incidence of asbestos-related diseases such as mesothelioma, asbestosis and lung cancer.

This Code provides information on how to identify the presence of asbestos at the workplace (including where work is being carried out by a PCBU at a residential premise) and how to implement measures to eliminate or minimise the risk of exposure to airborne asbestos fibres.

### **2.3 Code of Practice for How to Safely Remove Asbestos (WHSC, 2022)**

This Code is intended to be read by a person conducting a business or undertaking (PCBU). It provides practical guidance to PCBUs on how to manage health and safety risks associated with removing asbestos or asbestos containing materials (ACM) from workplaces.

A PCBU may be an asbestos removalist who may carry out asbestos removal work that does not require a licence; Class A asbestos removal work; or Class B asbestos removal work. This could include both asbestos removal companies and those persons who may carry out small asbestos removal jobs and may not have an asbestos licence, for example, tradespersons.

### **2.4 Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, (DoH 2021).**

Provides guidance on sites where Asbestos Contamination in Soil (ASBINS) exists and outlines regulatory requirements for assessing, sampling and classifying soil wastes.

### **2.5 Guidelines for managing asbestos at construction and demolition waste recycling facilities (DWER April 2021)**

These guidelines provide a framework for C&D waste recycling facilities to work within in relation to the asbestos. The expectations of the former Department of Environment and Conservation (DEC) (currently reinstated as the DWER) are laid out in relation to waste acceptance, testing and monitoring and management procedures and practices at the site. The document does not provide guidance on occupational health and safety issues associated with C&D waste recycling facilities.

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### 3 Site Management Plan

Due to the confirmation of asbestos containing materials, the following procedures must be undertaken.

#### 3.1 Responsibilities

State legislation sets out specific requirements concerning ACM. Before commencing any work that may disturb ACM in the workplace, the relevant legislation should be checked to ensure there will be full compliance with these legal obligations.

#### 3.2 Legislative Requirements

In Western Australia, asbestos is regulated under the following Acts and Regulations:

1. Work Health and Safety Act, 2020 (Western Australia)
2. Work Health and Safety (General) Regulations 2022 (Western Australia)
3. Code of Practice: How to Safety Remove Asbestos (WHSC, 2022)
4. Code of Practice: How to Manage and Control Asbestos in the Workplace (WHSC, 2022)
5. Department of Health, *Guidelines for the Assessment, Remediation and Management of Asbestos- Contaminated Sites in Western Australia 2021*, Government of Western Australia, Perth, WA.
6. Department of Water and Environmental Regulation. *Managing Asbestos at Construction and Demolition Waste Recycling Facilities. (2021)*.
7. Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003 (2005)]

The Work Health & Safety Commission's *Code of Practice: How to Safety Remove Asbestos (WHSC, 2022)*, stipulates that:

Persons Conducting a Business or Undertaking (PCBU) must;

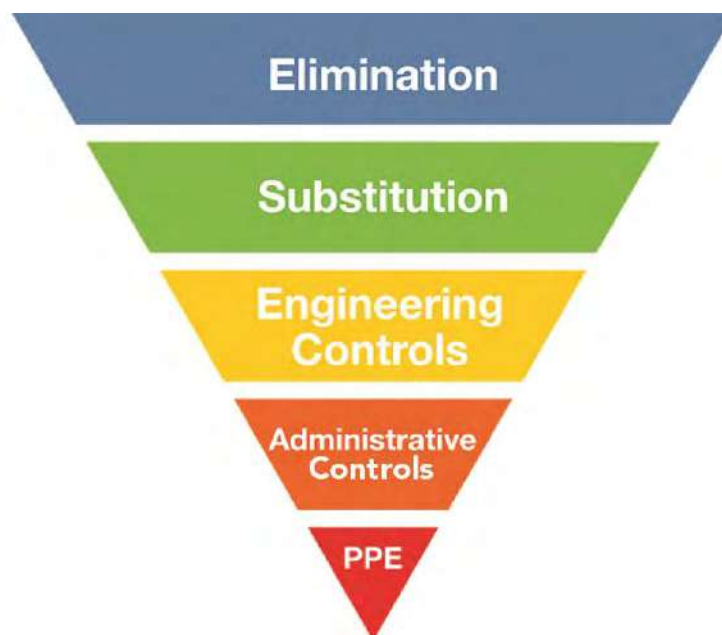
- develop, implement and maintain an AMP;
- investigate the site for the presence or possible presence of asbestos-containing materials (ACM);
- develop and maintain a register of the identified or presumed ACM, including details on their locations, accessibility, condition, risk assessments and control measures;
- develop measures to remove the ACM or otherwise to minimise the risks and prevent exposure to asbestos; and
- ensure control measures are implemented as soon as possible and are maintained as long as the ACM remain in the workplace.

#### 3.3 Management and Control Measures

Following the identification and assessment of the risks associated with ACM's, it is important to determine the best method of control by applying the Hierarchy of Control. The Hierarchy of Control refers to the preferred order of control measures for addressing occupational health and safety risks with elimination of the ACMs being the first choice and PPE the least preferred option.

The hierarchy of controls generally includes one or more of the following:

- Elimination – Complete removal of the hazard
- Substitution and process modification - controlling the hazard at source or replacing one substance or activity with a less hazardous one;
- Engineering controls – isolation, enclosure or sealing;
- Administrative controls - responsibilities, site inductions and policies, awareness and training, control procedures, procedures for safe work practices, reporting and record keeping; and
- Personal protective equipment (PPE) for residual risk which cannot be adequately controlled as above; or when the risk is difficult to quantify.



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### 3.4 Risk Assessment

The sites will require appropriate ongoing maintenance as they contain ACM. The contractor must ensure the associated risks are assessed in consultation with workers and/or their representatives. Only competent person/s should perform risk assessments or any subsequent reviews or revisions of risk assessments. The risk assessments should take account of the identification information in the register of ACM including:

- The condition of the ACM (e.g. friable);
- The likelihood of exposure, and;
- Where the nature or location of any work to be carried out is likely to disturb the ACM.

It is essential to minimise the number of people in the area and have the correct tools, personal protective equipment, decontamination materials, barricades, warning signs etc., ready at the workplace before any asbestos related work commences.

Control measures are implemented based on the level of risk of exposure to ACM's materials on site. Control measures are aimed at eliminating risk arising from ACM and prevent exposure to airborne asbestos fibres.



After elimination, the methods adopted should follow the remaining levels within the Hierarchy of Control. The following information should be used as a general guide when determining the correct control method for effective ACM management:

- If friable ACM in poor condition is encountered during site works, or is reported by the asbestos assessor, it should be immediately isolated. As soon as practicable, the friable ACM should be removed by an appropriate licensed asbestos removal contractor.
- If ACM at the sites is not friable and in good condition, it can be safely removed or managed going forward, whatever the preference for ongoing maintenance of the sites.

ACM needs to be removed in accordance with the *Code of Practice: How to Safely Remove Asbestos (WHSC, 2022)*.

### 3.5 Barriers

Any asbestos work area should be clearly defined to ensure non-essential personnel do not enter and warn persons that asbestos work is being carried out. Contractors shall arrange for all barriers and warning signs to remain in place until a clearance to re-occupy has been granted. Potential entry points to the asbestos work area should be sign posted or labelled in accordance with Australian Standard 1319: *Safety Signs for the Occupational Environment*. In determining the distance between barriers and the asbestos work area the risk assessment should take account of:

- The condition of the ACM (e.g. friable);
- Activity around the asbestos work area;
- The work methods used;
- Any existing barriers;
- The amount of work to be done; and
- The type of barrier used.

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### 3.6 PPE

Personal Protective Equipment (PPE) will need to be used when conducting work which will involve impacting ACM, in combination with other effective control measures.

The selection and use of PPE should be based on risk assessments and determined by a competent person.

The risk-rating of the material should be one of the factors considered when choosing PPE. Where possible, disposable equipment should be used. All disposable PPE should be disposed of as asbestos waste.

If work is expected to impact elements containing asbestos and also requires the use of other chemicals that are themselves hazardous substances, a further risk assessment must be performed by the Contractor. The relevant Safety Data Sheets (SDS) must be referred to for information on the PPE to be used and any other precautions to be taken when using the chemicals (the manufacturer can supply the SDS).

PPE is the last line of defence as an option to protect personnel — PPE only places a barrier between the person and the hazard...it does not control the hazard.

### **3.6.1 Coveralls**

Protective clothing should be made from material capable of providing adequate protection against fibre penetration. Type 5/6 coveralls shall be worn.

When selecting protective clothing, factors such as the possibilities of heat stress, fire and electrical hazards should also be considered.

Disposable coveralls with fitted hoods and cuffs should be worn. Fitted hoods should always be worn over the straps of respirators, and loose cuffs should be sealed with tape.

Asbestos fibres should be prevented from being transported outside the workplace by thoroughly vacuuming asbestos fibres from work clothes using an approved and HEPA filtered asbestos vacuum cleaner. Disposable coveralls should be disposed of as asbestos waste at the completion of the task.

### **3.6.2 Footwear and gloves**

Laced boots are prohibited, as they can be difficult to clean and asbestos dust can gather in the laces and eyelets. Lace-less boots, such as gumboots, are preferred where practicable, and boot covers should be worn where necessary.

Safety footwear must be decontaminated before leaving the asbestos work area for any reason or sealed in double bags for use only on the next asbestos maintenance task. Alternatively, work boots that cannot be effectively decontaminated must be disposed of as asbestos waste at the end of the job.

The use of protective gloves should be determined by a risk assessment. If significant amounts of asbestos fibres may be present, disposable gloves should be worn. Protective gloves can be unsuitable if dexterity is required. Any gloves used must be disposed of as asbestos waste.

### **3.6.3 Respirators**

In general, the selection of suitable respiratory protection equipment depends on the nature of the asbestos work, the probable maximum concentrations of asbestos fibres that would be encountered in this work and any personal characteristics of the wearer that may affect the facial fit of the respirator (e.g. facial hair and glasses).

A competent person should determine the most efficient respirator for the task. **A P2 disposable respiratory protection is the minimum required for the works.**

Respirators should comply with AS/NZS 1716-2003 *Respiratory Protective Devices* and be selected, used and maintained in accordance with AS/NZS 1715-1994 *Selection, Use and Maintenance of Respiratory Protective Devices*.

They should always be worn under fitted hoods. Face pieces should be cleaned and disinfected according to the manufacturer's instructions.

State legislation imposes minimum requirements for respiratory equipment, and relevant laws should be checked before selecting an appropriate respirator.

Respiratory protective equipment should be used until all contaminated disposable coveralls and clothing has been vacuum cleaned and/or removed and bagged for disposal, and personal washing has been completed. Respirators should be properly stored when not in use.

### **3.7 Signage and Labelling**

All warning signs and labels should comply with Australian Standard 1319 *Safety Signs for the Occupational Environment*.

Appropriate signage warning of asbestos is required across the relevant sites and at site access points.

All identified or presumed ACM should be clearly labelled.

The labels or signs are to remain in place until such time the asbestos containing material has been removed (or in the case of presumed results, a negative result returned when analysed) and the area/works are declared complete and a clearance certificate is issued.

### **3.8 Airborne Asbestos Fibre Monitoring**

The requirement for air monitoring onsite will be determined by a competent person on the completion of a formal risk assessment. Air monitoring shall occur where it is deemed appropriate as a control measure for the presence and remediation of asbestos containing material.

Asbestos monitoring must be carried out by a NATA registered or government accredited laboratory in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003 (2005)].

Static samples are collected as an indicator of the effectiveness of process control techniques and are also used to assist in the risk assessment process but should not be used as the only criteria. Airborne fibre monitoring requirements should be assessed by a competent person approved by the client.

### **3.9 Clearance Inspections**

Following non-friable asbestos removal, visual inspections of the removal site should be undertaken by a competent person, independent of the removal contractor, to ensure that the required removal and clean-up standards have been met and waste management systems are effective and in compliance with relevant regulations. Clearance Inspections certificates shall be produced/provided for the head contractor and client. The "Required Components of the Contractor Site Clearance Certificate" contains information about what is required to be included in the certificate.

These certificates shall be distributed to contractor and client where required.

Following friable asbestos removal, visual inspection of the removal work area must be conducted with additional clearance air monitoring prior to disassembly of the friable asbestos removal enclosure. All air monitoring and clearance inspections for friable asbestos removal works must be conducted by an approved Licensed Asbestos Assessor.

### **3.10 Asbestos Removal**

ACM removal will be carried out in accordance with the Code of Practice *How to Safely Remove asbestos* and best industry practice. Asbestos removal works should be carried out by a contractor holding an asbestos licence dependant on the type of ACM being removed. Friable ACM can only be removed by competent persons with a Class A Licence and asbestos waste should be disposed at a suitable landfill.

## **4 Site Personnel**

### **4.1 Site Roles**

The differing site responsibilities and roles of all operational personnel are outlined below and within Table 1 overleaf.

### **4.2 Gatehouse attendant**

Is responsible for undertaking acceptance procedures as per section 6.1.

### **4.3 Site Supervisor**

The day-to-day running of the site shall be overseen by the Site Supervisor. The Site Supervisor is directly responsible for management of all activities at the site, including:

- directing staff duties;
- co-ordinating all demolition materials onsite;
- dust controls;
- noise controls; and
- documentation control.
- Inspection or oversight of inspection of loads on receipt and tipping.

### **4.4 Machine Operator (all classes)**

Is responsible for mechanical sorting of loads and inspection of all materials during the sorting process.

### **4.5 Truck Driver**

Is responsible for the transfer of loads within the site and inspection of all materials during the sorting process.

### **4.6 Site Worker**

Is responsible for inspection at all stages of the sorting process and general labour onsite inclusive of dust suppression.

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#### **4.7 Training**

The training that onsite personnel will undertake (as part of induction formalities), will include detailed familiarisation with this AMP, as well as other associated management plans for noise and dust. Each employee will be provided with a copy of these plans and will be required to agree to work within the methodologies detailed in each document. Records of this process shall be retained in a suitable accessible databank of the PCUB.

All site personnel are required to undergo an Asbestos training course as prescribed as being the minimum of;

1. VET Course Remove Non-Friable Asbestos (current unit CPCCE3014) or equivalent.

Records are kept of all employees with the above accreditation or equivalent. Refresher training courses will be provided to employees where appropriate to ensure they have a clear understanding and awareness of the environmental and asbestos related issues.

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**Table 1** Provides details of the specific role's employee is expected to carry out.

| Step   | Personnel |                 |                  |              |             | Machinery |        |           |
|--|-----------|-----------------|------------------|--------------|-------------|-----------|--------|-----------|
|  | Gatehouse | Site Supervisor | Machine operator | Truck Driver | Site worker | Excavator | Loader | Screenner |
| Inspection of Load on entry to site and administration functions   | o         |                 |                  | o            |             |           |        |           |
| Inspection of the load post tipping  |           | o               |                  |              |             |           |        |           |
| Stockpiling of waste at the Site - Inspection of material as it is stockpiled  |           |                 | o                |              |             | o         | o      |           |
| ACM identified (post tipping) - If affected load is deemed ACM impacted and can be reasonably remediated by hand picking (as assessed by site supervisor) to be ACM free |           | o               | o                |              | o           |           |        |           |
| ACM identified (post tipping) - If affected load is deemed ACM impacted and load cannot be reasonably handpicked to collect and bag all ACM.                             |           | o               | o                |              | o           | o         | o      |           |
| Removal of ACM from site and disposal of ACM at appropriately authorised landfill facility   |           | o               | o                | o            | o           | o         | o      |           |
| Material sorting   |           |                 | o                |              | o           |           | o      |           |
| Stockpiling material   |           |                 | o                |              | o           |           | o      |           |
| Inspection of sorted material  |           | o               |                  |              |             |           |        |           |

## 5 Site Operations

### 5.1 Description of Proposed Development

Operations will be restricted to areas as outlined within **Figure 2 Site Layout and Key Infrastructure**. Site entry is proposed off Victoria Road, north of the Site. There is currently an accessible driveway suitable for Restricted Access Vehicles (RAV), which will be utilised in Site access and egress. Vehicles will be restricted to regimented traffic routes to ensure appropriate dust suppression.

Vehicles carrying waste will be directed to the waste sorting area on the central western portion of the site, where waste will be deposited into tipping are (*refer Figure 2 Site Layout & Infrastructure* for details). Loaders and excavators will be utilised in the sorting of waste materials. It is proposed that a mechanical screen (McClosky R155 or equivalent) will be utilised and situated on the southwest corner of the site (the lowest point of the site possible). Materials will be moved alongside the screen and stockpiled.

Stockpiles will be separated into areas clearly marked for unprocessed waste. Clearly visible and legible signage is to be installed in proximity of the stockpiles.

Middle porting of the site will be utilised as a steel sorting area.

The structure on the central-east portion of the site is intended to be utilised as an administration office and amenity block for site staff.

### 5.2 Equipment and Machinery

The equipment and machinery that will be utilised onsite as part of the proposed operations include;

- Water cart
- Excavators x 3
- Wheel loaders x 2
- Screen

### 5.3 Site Management & Staffing

The day-to-day running of the site shall be overseen by the Site Supervisor. The Site Supervisor is directly responsible for management of all activities at the site, including:

- directing staff duties;
- co-ordinating all demolition materials onsite;
- dust controls;
- noise controls; and
- documentation control.

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## 5.2 Water Supply

The water source for the site will be via a groundwater extraction bore, located on site. This bore has a licensed capacity of 53880kL per annum which will cover all onsite water requirements. Water will be pumped from the bore to a water cart as required. This watering cart will operate on permanent basis during operational hours to dampen haul roads throughout the site. The watering cart will also have a fire hose application fitted which will be utilised for additional dust control and in the unlikely event of a fire.

Further dust control measures are outlined within the site Dust Management Plan.

## 5.4 Complaints

All off-site complains are notated and treated very seriously. It is the aim to handle all these complaints without delay. Contact will be made with the complainant and an investigation will occur into the nature and cause of the complaint and a corrective action solution will be devised to mitigate a future similar occurrence. Individual complaint forms and a complaints register will be compiled by SERS for the PUCB incorporating all future known complaints from the site. A template complaint form can be seen in **Attachment A**.

## 5.5 Possible locations of asbestos on site

The pre-acceptance and acceptance procedures which will be put in place on site are expected to ensure that asbestos and ACM do not enter the site. However, it is possible for asbestos to be present on site. The following locations have the potential to contain asbestos:

- i. The landfill tipping area
- ii. Non-conforming waste area

All members of staff will be trained in the identification of asbestos and will inspect the material at all stages of the recycling process. Should asbestos be identified on site it will be transferred to a quarantine area, pending its final disposal at an appropriately license facility.

## 5.6 Records for Inspection

Records will be maintained on site for inspection should they be required by the DWER. The site records will include the following:

1. A record of all loads received which includes;
  - I. The carriers details
  - II. The source of the load (site address)
  - III. Classification of the load in accordance with the table within section 3.3 of DEWR guidelines (table 2 of this document)
  - IV. Images of the load taken by weighbridge camera system

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2. For all rejected loads, the following will be recorded.
  - i. Waste producer.
  - ii. Waste carrier.
  - iii. Registration number of the carrier vehicle.
  - iv. Date of rejection.
  - v. Images of the load taken by weighbridge camera system
3. Complaints received and the management response
4. Details of incidents of asbestos identification on site and the actions taken in response to the non-conformance
5. Record of the visual inspections of materials
6. Details of audits which have been undertaken in relation to the implementation of procedures on site.

All records will be kept in a centralised location within the administration of the proponent. All records will be made available for inspection by the DWER, DoH and WorkSafe upon request.

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## 6 Pre-Acceptance Procedures

### 6.1 Gatehouse (Site) entry protocol

Loads arriving at the depot for waste sorting and storage may contain asbestos and/or waste outside the waste classification presented in the license. The following procedure has been implemented for all material arriving onsite:

- I. Advise all clients (potential and existing) that any asbestos containing material are not permitted and will not be accepted onto site, and a no asbestos clause will be included in any contract with construction & demolition suppliers.
- II. A 'No Asbestos' sign will be installed at the site entrance.
- III. All drivers or a cartage company representative/s, are required to sign a declaration that loads brought into the facility contain no known ACM.
- IV. Staff are to record the details of all loads accepted onto site including the waste generator including site details, carrier, vehicle, registration number, date, and time.
- V. All vehicles will be inspected via remote camera system at the weighbridge to determine the risk of a load containing asbestos or ACM. This is in accordance with the risk of a load containing asbestos or ACM. This is in accordance with the risk classification procedure as outlined in the DWER 2021 *Guidelines for managing asbestos at construction and demolition waste recycling facilities*. This is presented as **Table 2** below.
- VI. Loads containing visibly identifiable ACM will be rejected from site and recorded in a registry. Details to be recorded include the waste producer, carrier, registration number, time, date and reason for rejection. The register will be made available for inspection upon request.

**Table 2 - DWER Risk Classification Matrix**

| RISK CLASSIFICATION MATRIX        |              |                                |           |
|-----------------------------------|--------------|--------------------------------|-----------|
| Material Type                     | Type of Load |                                |           |
|                                   | Commercial   | Public, Ute, Cars and Trailers | Skip Bins |
| Clean concrete (without formwork) | Low          | High                           | High      |
| Clean Brick                       | Low          | High                           | High      |
| Clean Bitumen/Asphalt             | Low          | High                           | High      |
| Mixed Construction Waste          | High         | High                           | High      |
| Mixed Demolition Waste            | High         | High                           | High      |

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## 6.2 Inspection of tipped loads by classification

Loads are classified in accordance with the DEWR Risk Classification Matrix with either a “Low” or “High” risk rating applied.

### 6.3 Low rated load inspection procedure

Loads classified as “Low” risk are to be inspected for ACM and fibrous asbestos (FA) whilst tipping is occurring. Where ACM and/or FA is sighted, the load is to be isolated, wet down and further measures enacted as per section 5.3 of this document. \*

*\*Asbestos Fines (AF) are not included in the above inspection criteria (as per DEWR, 2021) due to the general nature of AF not being able to be visible by the human eye.*

### 6.4 High Risk Rated load inspection procedure

Loads classified as “High” risk are to be inspected for ACM and fibrous asbestos (FA) with the load tipped across an area suitable for a visual inspection of all material within the load. Where ACM and/or FA is sighted, the load is to be isolated, wet down and further measures enacted as per section 7 of this document. \*

*\*Asbestos Fines (AF) are not included in the above inspection criteria (as per DEWR, 2021) due to the general nature of AF not being able to be visible by the human eye*

#### 6.2.3 Sorting of Loads

During the offloading of material to the stockpiles, the material usually needs to be further managed to form the stockpile. The operator of the loader/excavator does this by carefully displacing each bucket in a fashion as to not generate dust and, where possible, the operator inspects each bucket as it is moved.

The location of the stockpiles is to be within the area as outlined within **Figure 2**. It is proposed that stockpiling occurs in six categories, which are;

- I. C&D Waste
- II. Sorted, stockpiled materials suitable for recycling
- III. Green Waste
- IV. Steel
- V. Non-conforming waste
- VI. Landfill

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### 6.5 Isolation, signage, and sampling of sorted Inert C&D material

Following screening of inert waste material, screened inert waste will be classified as,

1. <10mm Separated stored pending sampling and analysis as per guideline for asbestos (NEPM soil sampling). Once soil analysis is completed and below the limit of 0.001 w/w product to be available for reuse.
2. 10 - 40mm Separated stored pending sampling and analysis as per guideline for asbestos (NEPM soil sampling). Once soil analysis is completed and below the limit of 0.001 w/w product to be available for reuse.
3. >40mm. Separated stored until visually inspected to be clear of ACM as per DEWR guideline. Once inspected and determined to be asbestos free, material to be loaded onto semi tippers for transport to an alternate recycling facility for further processing.

### 6.6 Signage and location of stockpiles (Inert C&D)

Clear signage shall be placed on all stockpiles to state the status of the sorted stockpile in the assessment of potential asbestos. Signage will clearly state at each stage where.

**Table 3 - Signage**

| Stockpile delineation  | Signage                      |
|--|------------------------------|
| <40mm not sampled / Inspected or samples in progress           | Samples Pending              |
| >40mm not inspected / sampled or samples in progress*          | Inspection Pending           |
| <40mm sampled & Inspected and deemed below limit of 0.001% w/w | Sampled– No Asbestos         |
| >40mm inspected and deemed below limit of 0.001% w/w           | Inspected – No Asbestos      |
| Any Stockpile deemed Asbestos Contaminated                     | Asbestos – For Disposal Only |

\*Sampling and analysis conducted on ACM >7mm where deemed necessary post visual inspection by the Site Supervisor.

Stockpiles deemed asbestos free by sampling and / or visual inspection shall be physically separated from any non-sampled or contaminated stockpile by either 3 lineal metres or a physical barrier at all times.



## 7 Containment of identified ACM

In instances where ACM is identified, work will be ceased immediately until the material is removed and the area is deemed free of ACM. Where possible, ACM will be removed from the affected area by manual hand picking by a qualified staff member wearing appropriate PPE. All ACM will be wetted down for potential fibre release. Following this, it will be immediately bagged in a heavy duty, impermeable, 200um polyethylene bag, which will then be sealed and clearly marked with 'CAUTION ASBESTOS'. The area will then be inspected by a competent site supervisor. If any further ACM is identified, the above procedure will be repeated until the area is declared free of any ACM. In instances where the material is fibrous, friable, or asbestos fines, the area will remain cordoned off until a qualified environmental consultant has inspected the area.

If manual hand-picking is deemed unsafe due to large levels of contamination or other concerns, the area will be treated as asbestos-contaminated and barricaded off with adequate signage and barriers. The area will be sprayed with water and mechanically loaded directly onto a semi-tipper for transport to a licensed ACM facility for disposal.

Loading and transport will be in accordance with the *Code of Practice: How to Safely Remove Asbestos* (WHSC, 2022). Once the material has been removed, the area will then be inspected, and the process repeated until the area is deemed ACM free. All employees involved in this process will be suitably qualified and utilising all appropriate PPE and RPE.

### 7.1 Storage and Removal of ACM

All ACM identified will be removed from site as soon as practicably possible in accordance with the *Code of Practice: How to Safely Remove Asbestos* (WHSC, 2022). This will involve disposal of the ACM at a suitable licensed landfill facility as per the health (Asbestos) Regulations 1992. The nearest landfill site licensed to accept ACM in the area include:

- Walyunga Landfill Walyunga Road, Bullsbrook

In instances where it cannot be removed immediately, it will be stored in a dedicated ACM skip bin, lined with heavy duty plastic sheeting, and kept damp until a time it can be safely removed from the site.

### 7.2 Decontamination

Once all the ACM has been removed, employees shall instigate the following procedure:

- All visible asbestos dust/residue is removed from the disposable protective clothing by wet wiping all clothing.
- The disposable protective clothing is taken off (while still wearing a respirator) and placed in an asbestos bag.
- Clothing and footwear worn during the removal shall be vacuumed using an asbestos vacuum cleaner and then the footwear shall be wet wiped
- Disposable respirators shall then be discarded as asbestos waste.
- Workers shall wash their face and hands, paying particular attention to their fingernails.
- All bagged PPE and RPE materials shall be disposed of as asbestos waste.

## 8 Sampling and Monitoring

A risk assessment should be undertaken before any sampling of asbestos containing material (ACM) is commenced and only competent persons should carry out work with ACM. Risk assessment can be generic in nature however the assessment must be a true reflection of the task to be performed. If it is not, a new or revised risk assessment must be undertaken. You cannot tell whether a material contains asbestos simply by looking at it unless it is labelled. If in doubt, treat the material as if it does contain asbestos.

The objective of this is to protect workers who come into contact with any form of asbestos and limit their exposure.

### 8.1 Sampling and Analysis

Field and laboratory sampling and testing of all material <40mm onsite will occur at the minimum rate of 40 locations per 4000t, or 14 samples per 1000m<sup>3</sup> of product in accordance with *the Guidelines for managing asbestos at construction and demolition waste recycling facilities* (DWER April 2021) & *Guidelines for the Assessment, Remediation and Management of Contaminated Sites in Western Australia* (DoH, 2021).

The oversized aggregate (>40mm) will undergo visual inspection within the field. If asbestos is identified, the product shall be decontaminated as per section 7 or transported to the appropriately licenced facility for disposal. If the product is identified as asbestos-free, the product shall be transported to a recycling facility for further processing or will be put into the marketplace.

Product within the soils and aggregate stockpile (<40mm), however, shall be sampled and analysed at a NATA accredited laboratory. The location of each sample taken will be recorded to ensure the location of any positive reading returned. The stockpile will not be moved until the laboratory test results have been returned. The volume of processed throughput shall be recorded weekly, and this data retained and made available for inspection by the authorities.

All samples shall be sent to NATA accredited laboratory for analysis. All analytical results shall be retained and made available for inspection by DWER and other relevant parties.

The criteria applied for free-fibre materials (fibrous asbestos, free-fibres, and asbestos fines <40mm will be an asbestos content of 0.001% w/w in soil on a weight for weight (w/w) basis (DoH, 2021).

Samples shall be a minimum of 500ml and will be analysed using Polarised Light Microscopy (PLM) techniques, including Dispersion Staining, in order to achieve a reporting limit of 0.01g/kg. A weight of evidence approach will be adopted to determine if the positive results is an isolated incident or if it represents a more serious contamination of the stockpile. Where this can be seen that the contamination of the stockpile is an isolated occurrence the affected portion of the stockpile will be removed from the stockpile and disposed of within the appropriately licenced facility. Sufficient material will be removed from the areas surrounding the contaminated sample location to ensure that the ACM has been effectively disposed of. Further samples will be taken and analysed in accordance with AS4964-2004 and NEPM. If this sample indicated that ACM is still present in the stockpile, remedial action will take place to remove the whole stockpile within the appropriately licenced facility.

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## 8.2 Qualitative Monitoring

All employees will conduct visual assessments for the presence of asbestos or excess airborne dust. This will be conducted at all stages of the solid waste depot operation. A record will be kept of any additional visual inspections and any incident of asbestos identification will be recorded using the incident record form.

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## 9 Unexpected Finds Protocol

Where suspected ACM is discovered unexpectedly onsite by any person, the following steps should be undertaken.

- All works in the immediate area are to be ceased.
- All Staff / workers should leave the area and alert nearby workers (within 10 metres) of identified hazard. The person controlling the workplace should establish a suitable exclusion zone (minimum of 10 metres) using barricades and warning signs to restrict access. The size of the zone should be re-assessed by the Site Supervisor and be based upon on the nature of the disturbance. The incident should be reported to the relevant manager or Safety Manager;
- Workers or the person controlling the workplace who believe a worker or workers have or may have been exposed to asbestos or ACM must be decontaminated as soon as possible;
- Clothing must be treated as asbestos waste and disposed of in the asbestos waste bags with any disposable PPE and the wet wipes used for decontamination. Any item that can't be decontaminated such as socks must also be disposed of as asbestos waste.
- Workers suspected of being exposed to asbestos or ACM should undertake a baseline medical examination as soon as practicable following an assessment of likely exposure by the Manager, Risk and Compliance and/or the Qualified Consultant.
- Consult a Licensed Asbestos Assessor (LAA), occupational hygienist or competent person for advice should access within the exclusion zone be unavoidable (for example for essential maintenance), prior to entering the exclusion zone;
- Workers must wear minimum PPE of P2 respirator (P3 preferred), disposable coveralls and boot covers should emergency access to the exclusion zone be required.
- Asbestos warning signs must be positioned at all points of entry to the contaminated area;
- If no warning signs are onsite, use danger flags or normal warning signs as a temporary measure.
- If asbestos is assumed or confirmed, warning signs should be obtained for future use when asbestos or ACM is being removed or used in the case of an unexpected find;
- Engage a LAA, occupational hygienist or competent person who will inspect, test and assess the area and the material and provide advice for remediation/decontamination; and
- Engage a licensed asbestos removalist to safely remove the asbestos and decontaminate the area in accordance with regulations.
- Air monitoring where required should be conducted by a LAA, occupational hygienist or competent person with the analysis conducted by a NATA accredited testing facility.
- NO UNPROTECTED PERSONS are permitted into the affected area (except asbestos removalists) prior to a clearance certificate being issued; and
- After decontamination and air monitoring has been completed (if deemed necessary) a LAA, occupational hygienist or competent person can conduct a clearance inspection and issue a clearance certificate prior to reoccupation.

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## 10 Safe Work Method Statements

Prior to any removal works being undertaken, the nominated removalist shall provide Safe Work Method Statements (SWMS) to be reviewed detailing risks, risk ratings and mitigation measures for the works to be undertaken.

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## 11 References

Work Health and Safety Act, 2020 (Western Australia)

Work Health and Safety (General) Regulations 2022 (Western Australia) Code of Practice: How to Safety Remove Asbestos (WHSC, 2022)

Code of Practice: How to Manage and Control Asbestos in the Workplace (WHSC, 2022)

Department of Health, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia 2021*, Government of Western Australia, Perth, WA.

Department of Water and Environmental Regulation. *Managing Asbestos at Construction and Demolition Waste Recycling Facilities. (2021)*

enHealth, 2005. *Management of Asbestos in the Non-Occupational Environment*, Commonwealth of Australia, Canberra, ACT.

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## Appendix A - Health Risks and Health Effects Associated with Exposure to Asbestos

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## About Asbestos

Asbestos was commonly used in:

- cement sheeting (fibro);
- Drainage and flue pipes;
- Roofing, guttering and flexible building boards (e.g. Villaboard, Hardiflex, etc.). Similar cement sheeting products are used today, but are 'asbestos free'; and
- Brakes, clutches and gaskets.

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## How can asbestos affect my health?

Breathing in asbestos fibres can cause asbestosis, lung cancer and mesothelioma. The risk of contracting these diseases increases with the number of fibres inhaled and the risk of lung cancer from inhaling asbestos fibres is also greater if you smoke. People who get health problems from inhaling asbestos have usually been exposed to high levels of asbestos for a long time. The symptoms of these diseases do not usually appear until about 20 to 30 years after the first exposure to asbestos.

## When does asbestos pose a risk to health?

Asbestos fibres can pose a risk to health if airborne, as inhalation is the main way that asbestos enters the body. Small quantities of asbestos fibres are present in the air at all times and are being breathed by everyone without any ill effects. Most people are exposed to very small amounts of asbestos as they go about their daily lives and do not develop asbestos-related health problems. Finding that your home or workplace is made from fibro products does not mean your health is at risk. Studies have shown that these products, if in sound condition and left undisturbed, are not a significant health risk. If the asbestos fibres remain firmly bound in cement, generally you do not need to remove the fibro. People who have suffered health effects from exposure to asbestos have generally worked in either the asbestos mining or milling industry, worked in industries involved in making or installing asbestos products, or are from the immediate families of these people. In all of these situations there was exposure to high levels of airborne dust, from either the processes involved or from the clothes of the workers.

## Different forms of asbestos material, different risk levels

If asbestos fibres are in a stable material such as bonded in asbestos-cement sheeting such as fibro and in good condition they pose little health risk. However, where fibro or other bonded asbestos sheeting is broken, damaged or mishandled fibres can become loose and airborne posing a risk to health. Disturbing or removing it unsafely can create a hazard.

In materials such as pipe lagging and sprayed roof insulation asbestos fibres are not bound in a matrix. High concentrations of fibres are much more likely to be released into the atmosphere when these materials are disturbed or removed.