EXCAVATION and REHABILITATION

MANAGEMENT PLAN.

LOT 668 Mogumber – Yarrawindah rd, Mogumber

Rev 1 8 February 2017
SUMMARY

Menzies Quarries Pty Ltd (Menzies) proposes to develop a

- Gravel Extraction Quarry,
- Construction And Demolition Waste Recycling Facility, and
- Composting Facility,

at Lot 668 Mogumber-Yarrawindah Rd, Mogumber. As a result of the gravel extraction process, quantity of waste material proposed to be handled on site and processing of materials, it is necessary that Planning Approval, Works Approval, Clearing Permit and Licences are obtained.

The proposed site is Zoned Rural and located in the Shire of Victoria Plains. The area is currently utilised as broad acre grazing and also continues to be used by the Shire of Victoria Plains to extract gravel from an existing quarry as required. The surrounding land uses continues to be broad acre grazing and cropping. The activities are performed to not affect the use of the remainder of the property and adjacent properties. The operations have been designed to minimise visual impact, noise and dust impacts.

This document provides the information for the management of the extraction of material from the Quarry Area and subsequent rehabilitation requirements.

Gravel has been excavated from the quarry area for many years by the Shire of Victoria Plains (the Shire) and the Shire will continue to have access to the material as per the “Agreement for the Provision of Gravel between the Shire of Victoria plains and Menzies Quarries Pty Ltd”, yet to be finalised. The agreement is in line with clause 2.4.1 ‘gravel Supply Agreements’ of the Shire of Victoria Plains policy manual. The agreement will be reviewed as required and this document amended if required.

The Quarry Area is the only known location where the presence of suitable gravel is readily available in the region at suitable commercial quantities while meeting all technical and environmental requirements.

A vegetation study was completed and shows that the site is covered by pasture degraded and grazing, with a small area (1.7ha) of scattered native bushland. The bushland to be cleared within the quarry area has been evaluated as 6 on the Keighery vegetation scale.

A die back assessment has been performed and has concluded that the site and surrounds are excluded. Controls are in place to ensure dieback does no become introduced into the area through the operations of Menzies.

The useable gravel reserve occupies an area of about 46 hectares and extends to an average depth of 25 metres. Excavation will commence from the existing excavated area and progress in a south easterly direction commencing from the existing level of 265 mAHDL with a 1:100 gradient south to north to capture storm water and sediment for treatment and
reuse on site. Minimal topsoil is present. Overburden is captured during the gravel screening process and stockpiled along the perimeter of the quarry to reduce the handling requirements during rehabilitation.

Water levels taken from historical data at Woury Pool indicate a maximum winter water level of 178 mAHD (1999). Excavation works occur well above the winter ground water level.

The closest dwelling to the Quarry Area is located on Lot 668 Mogumber – Yarrawindah rd and is approximately 900 meters from the existing quarry with the remainder of the sensitive receptors being greater than 1.6km away.

The site is zoned Rural under the Shire of Victoria Plains Town Planning Scheme. The Local Planning Policy #10, “Basic Raw materials and Extractive Industries” has the following objectives:

- To manage the extraction of basic raw materials within the rural zones in accordance with best industry practices including consideration of end use and rehabilitation at time of decommission;

- To ensure appropriate buffer areas are applied to protect the extractive operations as well as the living or agricultural environment in nearby areas.

The proposed excavation has been designed to enable rural activities to continue and thrive once the site is no longer utilised for extractive purposes.
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction</td>
<td>7</td>
</tr>
<tr>
<td>1.1. General Description of Proposal</td>
<td>7</td>
</tr>
<tr>
<td>1.2. Proponent details</td>
<td>7</td>
</tr>
<tr>
<td>1.3. Site Location Property Location</td>
<td>9</td>
</tr>
<tr>
<td>1.4. Property Description:</td>
<td>9</td>
</tr>
<tr>
<td>1.5. Lease Area</td>
<td>9</td>
</tr>
<tr>
<td>1.6. Description of the resource</td>
<td>9</td>
</tr>
<tr>
<td>1.7. Proof of Applicant status</td>
<td>9</td>
</tr>
<tr>
<td>1.8. Facility Categories - Department of Environment Regulation</td>
<td>12</td>
</tr>
<tr>
<td>1.9. Material Quantities</td>
<td>13</td>
</tr>
<tr>
<td>1.10. Facility Operating Hours</td>
<td>13</td>
</tr>
<tr>
<td>1.11. Map 1 – Property, Map view – 668 Mogumber – Yarrawindah rd</td>
<td>14</td>
</tr>
<tr>
<td>2. Planning Issues</td>
<td>18</td>
</tr>
<tr>
<td>2.1. District Context</td>
<td>18</td>
</tr>
<tr>
<td>2.2. Zoning</td>
<td>18</td>
</tr>
<tr>
<td>2.3. Buffer Area</td>
<td>20</td>
</tr>
<tr>
<td>2.4. End Use</td>
<td>21</td>
</tr>
<tr>
<td>2.5. Community Consultation</td>
<td>21</td>
</tr>
<tr>
<td>2.6. Compliance and other Legislation</td>
<td>22</td>
</tr>
<tr>
<td>2.7. Map 5 – Sensitive Receptor Separation Distance – Aerial View</td>
<td>25</td>
</tr>
<tr>
<td>2.8. Map 6 – Sensitive Receptor Separation Distance – Map View</td>
<td>26</td>
</tr>
<tr>
<td>2.9. Map 7 – Road Separation Distance – Aerial View</td>
<td>27</td>
</tr>
<tr>
<td>2.10. Map 8 – Road Separation Distance – Map View</td>
<td>28</td>
</tr>
<tr>
<td>2.11. Menzies Community Consultation documents</td>
<td>29</td>
</tr>
<tr>
<td>2.11.1. Menzies Proposal Document to sensitive receptors</td>
<td>29</td>
</tr>
<tr>
<td>2.11.2. Signed “Menzies Quarries Proposal Acceptance” – landowner</td>
<td>40</td>
</tr>
<tr>
<td>2.11.3. Signed “Menzies Quarries Proposal Acceptance” – sensitive receptors</td>
<td>41</td>
</tr>
<tr>
<td>2.12. Figure 1 – Ortho photo – Quarry Area</td>
<td>45</td>
</tr>
</tbody>
</table>
2.13. Figure 2 – Existing Elevations – Quarry Area ................................................................. 46

3. Existing Environment ........................................................................................................... 47

3.1. Topography ..................................................................................................................... 47

3.2. Geology ........................................................................................................................... 47

3.3. Climate ............................................................................................................................. 47

3.3.1. Figure 3 – New Norcia rainfall graph. ...................................................................... 48

3.3.2. Figure 4 – Wongan Hills Maximum temperatures ....................................................... 48

3.3.3. Figure 5 – Wongan Hills wind rose – 9am .................................................................. 49

3.3.4. Figure 6 – Wongan Hills wind rose – 3pm ................................................................. 50

3.4. Soils ................................................................................................................................. 51

3.5. Hydrology ...................................................................................................................... 51

3.6. Figure 7 - Woury Pool historical Water Levels .............................................................. 52

3.7. Flora ................................................................................................................................. 52

3.7.1. Dieback assessment report. ....................................................................................... 53

3.8. Fauna ............................................................................................................................... 62

3.9. Aboriginal heritage ....................................................................................................... 62


3.11. Map 10 – Separation from Moore River East, Aerial view – 668 Mogumber – Yarrawindah rd... 64

4. Excavation Programme ....................................................................................................... 65

4.1. Facility Operating Hours ............................................................................................... 65

4.2. Material Quantities ......................................................................................................... 65

4.3. Extraction and Processing of the Resource ................................................................... 65

4.4. Final Contours ................................................................................................................ 67

4.5. Map 11 – Simple layout of the prescribed area – 668 Mogumber – Yarrawindah rd......... 68

4.6. Map 12 – Excavation Stages over 20 years @ 500,000 tpa .............................................. 69

4.7. Map 13 – Final Contours .............................................................................................. 70

4.8. Map 14 – Area to be cleared. ......................................................................................... 71

5. Environmental management, reporting and monitoring ..................................................... 72

5.1. Air Emissions ................................................................................................................... 72

5.2. Dust Emissions ............................................................................................................... 72

5.3. Asbestos Management ................................................................................................. 75

5.4. Table 1 – Dust Management Risk Assessment .............................................................. 77

5.5. Odour Emissions ............................................................................................................ 81

5.6. Noise Emissions ............................................................................................................. 81
5.6.1. Noise Treatment Methodology: ................................................................. 82
5.7. Litter Emissions .......................................................................................... 83
5.8. Light Emissions ........................................................................................... 84
5.9. Discharge to Water ...................................................................................... 84
5.10. Discharge to Land ...................................................................................... 84
5.11. Vermin Management ................................................................................ 85
5.12. Native Vegetation, Flora and Fauna ........................................................... 85
5.13. Fire Management ...................................................................................... 86
5.13.1. Bushfire Attack Level – South – Upslope .............................................. 86
5.13.2. Bushfire Attack Level – West and North – Downslope ......................... 87
5.13.3. Bushfire Attack Level – East – Upslope ................................................ 88
5.14. Solid/Liquid Waste .................................................................................... 89
5.14.1. Solid Waste .......................................................................................... 89
5.14.2. Liquid Waste ......................................................................................... 89
5.15. Hydrocarbon / Chemical Storage ............................................................. 90
5.15.1. Hydrocarbon Storage ......................................................................... 90
5.15.2. Chemical Storage ............................................................................... 90
5.16. Contaminated Site Identification ............................................................... 90
5.17. Surface Water Management .................................................................... 91
5.18. Groundwater Management ..................................................................... 91
5.19. Reporting requirements .......................................................................... 91
6. Rehabilitation Program ................................................................................ 92
1. Introduction

1.1. General Description of Proposal

The property is leased by the Landowner predominately for grazing purposes, with a portion leased to Menzies for three activities being, Extraction, C&D Recycling and Composting.

The services and products to be developed are to be utilised by Menzies and its related projects, and are commercially available to bulk customers. The site is not open for ad hoc (walk-in) customers.

**Extraction;** Menzies excavates, screens and crushes the extracted material and exports the recovered gravel and sand products from its operations to supply to off takers for incorporation into civil and landscaping works.

As part of the excavation activities, a section of native vegetation (1.7 hectares) will be required to be cleared and a Clearing Permit obtained.

**Recycling C&D;** Menzies receives, screens and crushes clean Construction and Demolition (C&D) waste to develop saleable and re-useable products including sand, road base, manufactured fill and other Waste Derived Materials (WDM) as defined and approved by the Department of Environment Regulation (DER).

*No WDM will be utilised or moved of site until these products are defined and approved for use by the DER which is expected to occur middle 2017.*

**Composting;** Menzies composts source separated clean organic waste streams to produce compost that meets Australian Standard AS4454 -12.

1.2. Proponent details

The Proponent for this proposed development is Menzies Quarries Pty Ltd:

12 Taylor st White Gum Valley, 6162, WA
Certificate of Registration of a Company

This is to certify that

MENZIES QUARRIES PTY LTD
Australian Company Number 615 428 245

is a registered company under the Corporations Act 2001 and
is taken to be registered in Western Australia.

The company is limited by shares.

The company is a proprietary company.

The day of commencement of registration is
the nineteenth day of October 2016.

Issued by the
Australian Securities and Investments Commission
on this nineteenth day of October, 2018.

Greg Medcraft
Chairman
1.3. Site Location Property Location:

Lot 668 Mogumber-Yarrawindah Rd, Mogumber, Map 1,2.

1.4. Property Description:

Lot 668 Mogumber- Yarrawindah Rd, Mogumber, Western Australia being Lot 127, on deposited plan 35464. Zoned ‘Rural’ within Shire of Victoria Plains - Town Planning Scheme No. 5. Property area is 6.85M m² (685 hectares)

1.5. Lease Area

Part of Lot 668 Mogumber-Yarrawindah Rd, Mogumber, Western Australia being part of Lot 127, on deposited plan 35464, within GIS coordinates (elevations);

E416299 N6565645 (289m), E416134 N655214 (266m), E415815 N6566521 (235m),
E416365 N6566817 (270m), E416942 N 6566821 (220m), E417618 N6565645 (240m).

Prescribed Premises area is 1.35M m². The Prescribed Premises boundary is the lease area, Map 3.

1.6. Description of the resource

Within the prescribed premises, the Menzies Quarry Area occupies 460,000 m² (46 hectares) over its expected lifespan of 20 years. The resource to be extracted is gravel. The useable gravel reserve extends to an average depth of 25 metres.

Excavation will commence from the existing excavated area and progress in a south easterly direction commencing from the existing level of 265 mAH. Volume available for extraction, including screened overburden, is approximately 16M m³.

1.7. Proof of Applicant status

Menzies has a ‘Lease and Gravel Quarrying Agreement’ with the Land Owner for the use of the prescribed premises, landowner being Mr Montrose Matinus Driessen.
Lease and gravel quarrying agreement

668 Mogumber – Yarrawindah Road, Mogumber

Montrose Marinus Driessen
Menzies Civil Australia Pty Ltd
Execution

Executed as deed

Date: 6-9-2016 2016

Signed by
Montrose Marinus Driessen
in the presence of:

Witness:

Signature:  
Full Name: SUZANNE MARGARET CARTER
Address: 133 Gray Bindoorn WA 6502
Occupation: MANAGER BINDOON POST OFFICE

Executed by
Menzies Civil Australia Pty Ltd
ACN 610 994 575
in accordance with section 127 of
the Corporations Act 2001 (Cth) by:

Signature of sole Director and Secretary

Dylan Menzies-Elliott
Name of sole Director and Secretary
1.8. Facility Categories - Department of Environment Regulation

Based on the proposed activities, the following facility environmental categories are relevant:

**Extraction**

DER Category 12 – ‘Screening etc. of material (50,000 tonnes or more per year)’

*Premises (other than premises within category 5 and 8) on which material extracted from the ground is screened, washed, crushed, ground, milled sized or separated.*

**Recycling C & D**

- DER Category 13 – Crushing of building material (1,000 tonnes per year)

*Premises on which waste building or demolition material (for example, bricks, stones, or concrete) is crushed or cleaned.*

- DER Category 62 - Solid waste depot (500 tonnes or more per year)

*Premises on which waste is stored, or sorted, pending final disposal or re-use.*

**Composting**

- DER Category 62 - Solid waste depot (500 tonnes or more per year)

*Premises on which waste is stored, or sorted, pending final disposal or re-use.*

- DER Category 67A - Compost manufacturing and soil blending (1,000 tonnes or more per year)

*Premises on which organic material (excluding silage) or waste is stored pending processing, mixing, drying or composting to produce commercial quantities of compost or blended soils*

- DER Category 61 - Liquid waste facility (1,000 tonnes or more per year)

*Premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.*

Requested for the acceptance of sub categories;

- ‘K110 - Grease Trap Waste’

- ‘K130 – Sewage waste from the reticulated sewage system (Biosolids). No other liquid waste accepted on site.’
• **NOTE**: all liquid waste received is transferred directly to a sealed liquid storage tank and only removed when mixed with green waste for immediate aeration. This practice is common in the composting industry and has been shown to produce no offsite odours when properly mixed and actively aerated.

1.9. **Material Quantities**

The estimated breakdown of the material types includes:

- Gravel extraction – up to 500,000 tonnes / year to meet demand for Great Northern highway works,
  - Typical extraction will not exceed 250,000 tonnes / year
- C&D waste received and processed – up to 150,000 tonnes / year,
  - Expected production of 100,000 tonnes/year, and
- Compost produced – up to 35,000 tonnes / year.

1.10. **Facility Operating Hours**

The facility will operate during the following hours:

- Monday to Saturday – 6.00 am to 5.00 pm;
  - with no machinery operating before 7am;
- Sundays and Public Holidays – Closed.

The extraction and C&D processing activities are expected to be performed on an ‘as required’ basis. Composting is a continuous batch process requiring regular monitoring.
1.11. Map 1 – Property, Map view – 668 Mogumber – Yarrawindah rd

This map is a user-generated static output from an internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

![Map 4 – Prescribed Premises, Aerial View – 668 Mogumber – Yarrawindah rd](image)
2. Planning Issues

2.1. District Context

The quarry area leased by Menzies is currently utilised for pasture and grazing purposes. The adjacent lots and regional area are also utilised for pasture and grazing purposes.

The prescribed premises has been utilised by the Shire for the extraction of Gravel in the past. Gravel has been excavated from the quarry area for many years and has been shown to be of a suitable standard requiring minimal to no processing post extraction. Menzies will enable the Shire to continue to have access to the material as per the “Agreement for the Provision of Gravel between the Shire of Victoria plains and Menzies Quarries Pty Ltd”, yet to be finalised.

The agreement is in line with clause 2.4.1 ‘Gravel Supply Agreements’ of the Shire of Victoria Plains Policy Manual. The agreement will be reviewed as required and this document amended if required.

2.2. Zoning

The site is zoned Rural under the Shire of Victoria Plains Local Planning Scheme No. 5.

The zoning objectives are;

“• To provide for a range of rural pursuits which are compatible with the capability of the land and retain the rural character and amenity of the locality.

• To protect land from urban uses that may jeopardise the future use of that land for other planned purposes that are compatible with the zoning.

• To protect the land from closer development which would detract from the rural character and amenity of the area.

• To prevent any development which may affect the viability of a holding.”

The proposed excavation has been designed to comply with these objectives following cessation of the excavation activities and completion of the rehabilitation program. In addition, Menzies also proposes to operate a Composting facility on site.
Compost produced on site will be specifically tailored with assistance from agronomists to improve the structure and composition of the soil within the quarry area. Adjacent landholders have also expressed a desire to utilise the compost and soil conditioners produced on site. This commitment will enable the excavated area to be returned to a more productive state than it currently is in.

The Zoning table, Table 1 within the Shire of Victoria Plains Local Planning Scheme No. 5 states that “Industry Extractive” is classified as ‘D’ – “the use is not permitted unless the local government has exercised its discretion by granting planning approval”.

The State Gravel Supply Policy, 1998, now terminated, also recognised the need to ensure that sources of gravel are available for construction and road making. Statement of Planning Policies are also required to be considered under the Local Authority Town Planning Schemes.

“In December 2012 the Minister for Transport approved the termination of the original SGSS initiative but endorsed ongoing meetings of the Management Group to address outstanding and emerging issues related to road construction materials. The Minister for the Environment was provided a copy of this approval.

Implementation of the SGSS was originally focussed on the needs of Main Roads and Local Governments as the principal public road construction agencies. However in recent years, the use of contractors and private industry partners to Government has blurred the boundaries of responsibilities for construction and maintenance. And the DEC public road system is now seeing increasing traffic and requires greater attention. Also, because of the increasing restrictions on access to land to obtain materials by environmental, aboriginal and competing mining interests, more strategic planning is now required to ensure materials can be accessible into the future. To cater for these changes, further work and collaboration is required between Main Roads, local governments, DOP, DMP, DEC, Aboriginal groups and Aboriginal related agencies.

The initial focus of the strategy was naturally occurring road building materials needing minimum processing for use as road pavement materials. However as sources of these materials inevitably become more difficult to obtain, more processed materials such as crushed hard rock will need to be considered. In addition, materials for other uses, not just roads, could also be considered in the future. DMP and DOP are already working on a broader view of needs and sources in developing strategic mapping around major centres.”

Statement of Planning Policy 2.4 – Basic Raw Materials, supports the principle that basic raw materials should be taken before they become sterilised by development, and that they should be protected for future use. It provides guidelines to local government to recognise the importance of not permitting conflicting land uses to impinge on the operation of resource extraction.
Statement of Planning Policy 2.5 – Agricultural and Rural Land Use Planning, makes provision for the extraction of basic raw materials. Point 9 states that;

"The location of rural residential and rural small holdings should avoid unacceptable impacts on, or sterilisation, of natural primary resources including prospective areas for mineralisation and basic raw materials ".

Statement of Planning Policy 2 - Environmental and Natural Resources Policy, Section 5.7 deals with Basic Raw Materials. Part of Section 5.7 states;

“Basic raw materials include sand, clay, hard rock, limestone and gravel together with other construction and road building requirements. A ready supply of basic raw materials close to development areas is required in order to keep down the cost of land development and the price of housing.

Planning strategies, schemes and decision making should:

ii. Identify and protect important basic raw materials and provide for their extraction and use in accordance with Statement of Planning Policy No 10 (2.5); Basic Raw Materials.

iii. Support sequencing of uses where appropriate to maximise options and resultant benefits to community and the environment.”

The objectives outlined by relevant state and local planning policies are met by this proposal and Menzies is committed to returning the Quarry area into an improved state suitable for rural activities approved by the Shire.

2.3. Buffer Area

The closest dwelling to the Quarry Area is located on Lot 668 Mogumber – Yarrawindah rd itself and is approximately 900 meters from the existing quarry with the remainder of the sensitive receptors being greater than 1.6km away as shown on Map 5 – 6.

EPA guidance "Draft Separation Distances between Industrial and Sensitive Land Uses", June 2005 lists the generic buffers for Extractive Industries with no blasting as 500 - 1000 meters. The DER "Draft Separation Distances, Division 3, Part V, Environmental Protection Act 1986" states a separation distance of 1000m for category 12 activities described as;

Screening etc. of material (50,000 tonnes or more per year) Premises (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated.
Mogumber – Yarrawindah rd is located 1km away at it closest in a north westerly direction from the Quarry area, Map 7 – 8. Great Northern Highway and Brand highway are both approximately 7.5 km to the east and west respectively. Access to each highway is via Mogumber – Yarrawindah rd which is an approved transport route as per the Shire of Victoria plains Policy Manual_june_2016 section 2.1.5, Permitted Road Table.

Buffer vegetation surrounding the Quarry area on the north, west and east are to remain untouched. The adjacent boundary to the south is to be planted with replacement vegetation to match those removed from the 1.7ha to be cleared within the middle of the quarry area reducing visual impact to the south. In addition, it is proposed to locate the Composting facility along the southern portion of the quarry area and as such, no extractive works will occur within 200m of the southern boundary.

Excavation is performed at an elevated level surrounded by natural vegetation and worked from north-west to south-east. With the surrounding sensitive receptors and Mogumber – Yarrawindah rd being located well below the quarry level, visual impact is not considered an issue as no line of sight is possible. The recommended 20 metre buffer zones are exceeded along the perimeter boundaries of the site, to the south, with a road buffer of 1000 metres.

2.4. End Use

It is planned to return the excavated areas to include a farm dam with battered slopes covered by pasture. As there will be material removed from site, and the overburden is not very thick, there will be less material available for rehabilitation and a void will be left. The void will contain a dam with sloping pasture back up to natural land surface to the east, west and adjacent property to the south.

The land surface will be contoured to be compatible with the existing landform of the area and be reformed as a gently undulating surface draining towards the farm dam. The end use will be pasture augmented with agronomist support to guide the application of compost produced on site. Significant crop yield should be realised as soil within the area is of a poor quality.

2.5. Community Consultation

Menzies has presented to the Shire and visited the close sensitive receptors to outline all activities proposed. A summary of the proposal was provided in hard copy and an opportunity to ask questions was offered. All landowners and farm operators had no objection to the proposed activities and signed consent forms. In addition all expressed a desire to utilise the services and products available, particularly the compost produced on site to utilise on pasture to increase crop yields and reduce chemical fertiliser use. See section 2.11.
2.6. **Compliance and other Legislation**

State and Local Government authorities are responsible for overseeing the safety and management of the proposed activities. Other authorities have an interest in the proposal but may not hold any responsibility.

A number of local and state authorities are responsible for excavation of this type or have an interest in its operation.

The Department of Environment and Regulation requires works approval and licensing of the proposed facilities at prescribed throughput levels and issues clearing permits.

Based on all the proposed activities, the following facility environmental categories are relevant:

**Extraction**

DER Category 12 – ‘Screening etc. of material (50,000 tonnes or more per year)

*Premises (other than premises within category 5 and 8) on which material extracted from the ground is screened, washed, crushed, ground, milled sized or separated.*

**Recycling C & D**

- DER Category 13 – Crushing of building material (1,000 tonnes per year)

*Premises on which waste building or demolition material (for example, bricks, stones, or concrete) is crushed or cleaned.*

- DER Category 62 - Solid waste depot (500 tonnes or more per year)

*Premises on which waste is stored, or sorted, pending final disposal or re-use.*

**Composting**

- DER Category 62 - Solid waste depot (500 tonnes or more per year)

*Premises on which waste is stored, or sorted, pending final disposal or re-use.*

- DER Category 67A - Compost manufacturing and soil blending (1,000 tonnes or more per year)
Premises on which organic material (excluding silage) or waste is stored pending processing, mixing, drying or composting to produce commercial quantities of compost or blended soils

- DER Category 61 - Liquid waste facility (1,000 tonnes or more per year)

Premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.

Requested for the acceptance of sub categories;

- ‘K110 - Grease Trap Waste’
- ‘K130 – Sewage waste from the reticulated sewage system (Biosolids). No other liquid waste accepted on site.
- **NOTE**: all liquid waste received is transferred directly to a sealed liquid storage tank and only removed when mixed with green waste for immediate aeration. This practice is common in the composting industry and has been shown to produce no offsite odours when properly mixed and actively aerated.

Shire of Victoria Plains

Planning Consent under the Local Planning Scheme No. 5 and Policy Manual that defines;

- Land zonings, uses and strategies in conjunction with the Western Australian Planning Commission through the Local Planning Scheme.
- Extractive Industry Licences for quarries.
- Has an interest in transport along local roads.
- Controls the measures used to prevent bush fires.

Department of Mines and Petroleum

- Covers the health and safety of workers.
- Identifies and maps basic raw materials.
- **Note**: the extraction of gravel is not controlled by the Department of Mines and Petroleum, however, the extraction process to be performed will align with the
prescribed requirements.

Western Australian Planning Commission

- Prepares strategic planning policies and provides Statements of Planning Policy.
- Defines land zonings and strategies in conjunction with the local authority.
- Responsible of State Planning Policies such as SPP 2.4 Basic Raw Materials.

Department of Water

- Publishes guidelines for water quality management for extractive industries.
- Controls the management of ground and surface water.

All statutory requirements will be met through appropriate management plans and procedures including this document.
2.7. Map 5 – Sensitive Receptor Separation Distance – Aerial View
2.8. Map 6 – Sensitive Receptor Separation Distance – Map View

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2.9. Map 7 – Road Separation Distance – Aerial View
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2.11. Menzies Community Consultation documents

2.11.1. Menzies Proposal Document to sensitive receptors
Introduction

Menzies Quarries Pty Ltd (Menzies) proposes to develop a

- Gravel Extraction Quarry,
- Construction And Demolition Waste Recycling Facility, and
- Composting Facility,

at Lot 668 Mogumber-Yarrawindah Rd, Mogumber. As a result of the gravel extraction process, quantity of waste material proposed to be handled on site and processing of materials, it is necessary that a Works Approval, Clearing Permit and Licences are obtained.

The proposed site is Zoned Rural and located in the Shire of Victoria Plains. The area is currently utilised as broad acre pasture/ grazing and also continues to be used by the Shire of Victoria Plains to extract gravel from an existing quarry as required.

Menzies has a ‘Lease and Gravel Quarrying Agreement’ with the Land Owner, Mr Montrose Matinus Unessen, for the use of the prescribed premises.

This proposal is considered to be a long-term site utilisation as the lease over the property is 10 + 10 years to align with the volume of materials to be extracted. As a result of the nature of the activities, most infrastructure developed by Menzies is considered as temporary (transportable offices and amenities, shipping containers, arched tarpaulin covers). Composting hardstand and associated leachate control may be relocated into excavated area after approximately 20 years operation. A new works approval will be sought as required.

Menzies is providing this summary to adjacent landowners to inform, seek feedback and ultimately receive approval to perform these activities. Menzies is committed to working with the community and believes the project will have minimal impact and provide valuable opportunities to the Shire and its residents such as the provision of materials (gravel, recycled roadbase and compost), services (disposal of construction and green waste) and local jobs.

Site Operating Structure

The property is leased by the Landowner for grazing purposes, with a portion leased to Menzies for three activities, Extraction, C&D Recycling and Composting.

The services and products to be developed are to be utilised by Menzies and its related projects, and are commercially available to bulk customers. The site is not
open for ad hoc (walk-in) customers.

Extraction: Menzies excavates, screens and crushes extracted material and exports the recovered gravel and sand products from its operations to supply to off-takers for incorporation into civil and landscaping works.

As part of the excavation activities, a section of native vegetation will be required to be cleared and a Clearing Permit obtained. An Excavation Management Plan outlines the extraction and rehabilitation processes and measures to be undertaken.

Recycling C&D: Menzies receives, screens and crushes clean Construction and Demolition (C&D) waste to develop saleable and re-useable products including sand, road base, manufactured fill and other Waste Derived Materials (WDM) as defined and approved by the Department of Environment Regulation (DER).

Composting: Menzies composts source separated clean organic waste streams to produce compost that meets Australian Standard AS4454-12.

Facility Categories - Department of Environment Regulation

Based on the proposed activities, the following facility environmental categories are relevant:

Extraction

DER Category 12 – ‘Screening etc. of material (50,000 tonnes or more per year)

Premises (other than premises within category 5 and 8) on which material extracted from the ground is screened, washed, crushed, ground, milled sized or separated.

Recycling C & D

- DER Category 13 – Crushing of building material (1,000 tonnes per year)

Premises on which waste building or demolition material (for example, bricks, stones, or concrete) is crushed or cleaned.

- DER Category 62 - Solid waste depot (500 tonnes or more per year)

Premises on which waste is stored, or sorted, pending final disposal or re-use.

Composting
• DER Category 62 - Solid waste depot (500 tonnes or more per year)

Premises on which waste is stored, or sorted, pending final disposal or re-use.

• DER Category 67A - Compost manufacturing and soil blending (1,000 tonnes or more per year)

Premises on which organic material (excluding silage) or waste is stored pending processing, mixing, drying or composting to produce commercial quantities of compost or blended soils.

• DER Category 61 - Liquid waste facility (1,000 tonnes or more per year)

Premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.

Requested for the acceptance of sub categories;

• ‘K110 - Grease Trap Waste’

• ‘K130 – Sewage waste from the reticulated sewage system (Biosolids). No other liquid waste accepted on site.

NOTE: all liquid waste received is transferred directly to a sealed liquid storage tank and only removed when mixed with greenwaste for immediate aeration. This practice is common in the composting industry and has been shown to produce no offsite odours when properly mixed and actively aerated. More details below.


Material Quantities

The estimated breakdown of the material types includes:

• Gravel extraction – up to 500,000 tonnes / year, and

• C&D waste received and processed – up to 150,000 tonnes / year.

• Compost produced – up to 35,000 tonnes / year

Facility Operating Hours

The facility will operate during the following hours:

• Monday to Saturday – 6.00 am to 5.00 pm;
  - with no machinery operating before 7am;
Sundays and Public Holidays – Closed.

The extraction and C&D processing activities are expected to be performed on an ‘as required’ basis. Composting is a continuous batch process requiring regular monitoring.

Operating Methodology

Environmental issues including odour, dust, noise and traffic will be managed to minimise any potential impact on the local community. Dust and noise will be contained by the methods of extraction and processing to be used and the control measures which will be put into place. Measures to protect the site and minimise the other environmental factors are addressed under Environmental Management.

Extraction and Processing of the Resource

Excavation is conducted in line with the Mines Safety and Inspection Act and Regulations.

Excavation Methods

The gravel and sand resources will be progressively extracted in a sequence starting with the removal and storage of topsoil and overburden, the extraction of gravel and sand, and lastly the rehabilitation of the land surface.

a) The resource will be excavated in stages across the excavation area on an as required basis.

b) All trees are cleared in accordance with a relevant Clearing Permit. If further clearing is required, the appropriate clearing permit will be sought from the DER, as required by the Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

- Vegetation removed is replaced on a minimum of a one for one basis and located predominately on the southern border of the quarry area to also provide additional screening of activities, figure b.

c) Topsoil is removed by scraping from the resource and pushing to the perimeter to form a 1 to 2 meter bund at the perimeter of the existing extraction area to provide screening and reduce handling for later use in rehabilitation. The topsoil may also be directly transferred to a prior extraction point being rehabilitated.

d) Overburden is removed by scraping from the resource and captured through the gravel screening process. The overburden is pushed or delivered by loader to form a 1 to 2 meter bund on the perimeter of the existing extraction area providing screening and reducing handling for later use in rehabilitation.
The Overburden may also be directly transferred to a prior extraction point being rehabilitated.

e) Storage bunds follow the excavation of the resource as indicated in Figure 5. Topsoil and Overburden storage locations shown in figure 1.

f) Excavations commence in the North Western corner at the existing quarry and progress in a South Easterly direction.

g) The depth of the excavation will align with the existing quarry elevation of 265m. A fall of 1:100 will be developed during the excavation to direct water to the catchment pond in the west.

C & D Operating Methodology

Menzies proposes to receive material predominantly from its own and related business activities (Menzies Civil Australia Pty Ltd).

The waste material will predominantly be from construction and demolition activities. There will be no municipal solid waste (residential kerbside collection waste) or commercial and industrial waste received on site.

The material will be received on site, inspected for conformance with standard operating procedures (no food waste, no asbestos, liquid waste or other problematic waste materials) and then processed to separate the material into reusable or recyclable material and waste residue.

The reusable or recyclable material is stored separately and subsequently removed to downstream off takers, while the waste residue is placed in waste bins or trucks and removed from site to the appropriate class landfill for final disposal.

The sorting activities used to separate the various materials include combinations of the following:

- Removal of larger items by mechanical equipment;
- Screening of bulk waste to remove smaller sand particles and road base;
- Post screening, removal of items with mechanical equipment;
- Hand sorting if required to remove specific items for reuse/recycling; and,
- Crushing of oversize concrete, bricks, etc for re screening.
Composting

The composting facility will be established at the southern end of the prescribed premises on an impermeable hardstand and screened from the adjacent property via a gravel bund and planted native vegetation, figure 1. Composting technology will involve windrows with forced aeration, Mobile Aerated Floor (MAF), supplied by CWISE, www.cwise.com.au.

Waste delivered onto the premises is inspected for conformance with standard operating procedures prior to acceptance. Accepted wastes include green-waste, clean food waste, grease trap waste and Sewage waste from the reticulated sewage system (biosolids).

Organic waste accepted will be blended with liquid waste, captured compost leachate and storm water before placement on the MAF system. The MAF system consists of 15m long pipes that periodically supply air to the pile to ensure the composting process is active.

Historically, compost windrows were turned using a windrow turner to aerate the pile daily which resulted in the release of odours due to a lack of oxygen and daily disturbance of the material.

The MAF system maintains oxygen to the pile which reduces the composting time from 12 weeks to 8 weeks. Odour is insignificant due to the active composting process and the requirement to move the pile only 4 times as opposed to daily turning.

The composted material is screened and stockpiled following the eight week process.

Environmental management

Dust Management

All activities on site will be subject to misting as required to ensure no dust crosses the prescribed premises boundary. Static misters and a water cart are available to ensure all activities comply with DER requirements.

Noise Management

All equipment on site will be maintained in good working order to ensure noise levels remain within prescribed limits. The location of the site makes it unlikely that noise produced on site will reach any sensitive receptors. All operations will occur during prescribed operating hours with the main noise producing activities (Excavation and C&D recycling) occurring within the quarry itself, further reducing the possibility of noise emissions.
Odour Management

The use of the MAF system has been proven to minimise odours related to composting. All odorous waste received is either stored in the liquid tanker or immediately blended with greenwaste and placed onto the MAF system and always covered with a layer of compost which actively assists in the removal of any odour, (a biofilter). The blending pad is washed down at the end of each day.

During the composting process, aerobic conditions are maintained using a periodic low flow of air to maintain oxygen levels and maximise expelled air residence time in the activated compost outer layer.

Process conditions (temperature, pH, Oxygen % and moisture) are actively monitored to ensure the rapid decomposition of organics.

Vermin management

The operation of the composting facility is such that no attractive waste will remain uncovered after hours. If vermin are noted as an issue, it is planned that the composting batch will be covered by a 200mm blanket of oversize screened compost to limit access to fresh material.

Traffic Management

Menzies, in conjunction with the Shire of Victoria plains is proposing to move the access from Mogumber – Yarrawindah rd to increase line of site and install ‘Entering Traffic’ signs an appropriate distance either side of the entrance. In addition, Menzies is discussing road maintenance provisions with the Shire to ensure Mogumber – Yarrawindah road is maintained in a safe state.

Next Steps

The Shire and DER require community consultation to be completed prior to submission of applications. Menzies representative can be contacted on the below number if further information or a site visit is required.

Sean Sciberras 0487 636 466

If there is no objection to the proposed activities, please complete the attached form and return to Menzies via either:

Email – sean@menziescivil.com, Mail – 12 Taylor Street, White Gum Valley, 6162, WA;

or return to Mr Montrose Matinus Driessen.
Figure 1 – Separation Distances – Composting facility to sensitive receptors
Figure 2 – Prescribed premises layout.
**Menzies Quarries Proposal Acceptance Letter**

Name:

Address:

Phone:

I have read and understood the Menzies Quarry Pty Ltd Proposal Summary and do not oppose the application for the establishment of:

1. Gravel Quarry,
2. C & D Recycling Facility, and
3. Composting Facility,

at the prescribed premises within Lot 668 Mogumber – Yarrawindah Rd, Mogumber.

Signed:

Date:
2.11.2. Signed “Menzies Quarries Proposal Acceptance” – landowner

Menzies Quarries Proposal Acceptance Letter.

Name: 
Address: 614 Wood Rd, Wanneroo 6065 
Phone: 96559023

I have read and understood the Menzies Quarry Pty Ltd Proposal Summary and do not oppose the application for the establishment of a

1. Gravel Quarry,
2. C & D Recycling Facility, and
3. Composting Facility,

at the prescribed premises within Lot 668 Mogumber – Yarrawindah rd, Mogumber.

Signed: 
Date: 5-1-2017
2.11.3. Signed “Menzies Quarries Proposal Acceptance” – sensitive receptors.

Menzies Quarries Proposal Acceptance Letter.

Name: Robert Harridge, R.B. & C.M. Harridge.
Address: 1148 Yarrawindah Rd, New Norcia.
Phone: 08 96 5180 55.

I have read and understood the Menzies Quarry Pty Ltd Proposal Summary and do not oppose the application for the establishment of a

1. Gravel Quarry, ☑
2. C & D Recycling Facility, ☑
3. Composting Facility, ☑

at the prescribed premises within Lot 668 Mogumber – Yarrawindah rd, Mogumber.

Signed: [Signature]
Date: 30th Nov. 2016
Menzies Quarries Proposal Acceptance Letter.

Name: William Cocking
Address: PO Box 30 Mogumber
Phone: 96574061

I have read and understood the Menzies Quarry Pty Ltd Proposal Summary and do not oppose the application for the establishment of a

1. Gravel Quarry,
2. C & D Recycling Facility, and
3. Composting Facility,

at the prescribed premises within Lot 668 Mogumber – Yarrawindah rd, Mogumber.

Signed: [Signature]
Date: 12/12/2016
Menzies Quarries Proposal Acceptance Letter.

Name: Leon Couling
Address: 180 Couling Road, Mogumber
Phone: 0429 519 015

I have read and understood the Menzies Quarry Pty Ltd Proposal Summary and do not oppose the application for the establishment of:

1. Gravel Quarry,
2. C & D Recycling Facility, and
3. Composting Facility,

at the prescribed premises within Lot 668 Mogumber – Yarrawindah rd, Mogumber.

Signed: [Signature]
Date: 31.11.2016
Menzies Quarries Proposal Acceptance Letter.

Name: Virginia LINKE
Address: 571 MOGUMBER YARRAWINDAH RD
Phone: 08 9651 9063

I have read and understood the Menzies Quarry Pty Ltd Proposal Summary and do not oppose the application for the establishment of a

1. Gravel Quarry,
2. C & D Recycling Facility, and
3. Composting Facility,

at the prescribed premises within Lot 668 Mogumber – Yarrawindah rd, Mogumber.

Signed: Virginia LINKE
Date: 30-11-2016
2.12. Figure 1 – Ortho photo - Quarry Area

![Ortho photo - Quarry Area](image-url)

- **Existing Quarry**: Located within the current operating area.
- **Proposed Quarry**: Slightly south of the existing quarry, with an area of 463.235.3 square meters.

The orthophoto clearly shows the boundary between the existing and proposed quarry areas.
2.13. Figure 2 – Existing Elevations – Quarry Area
3. Existing Environment

3.1. Topography

The gravel resource is located on a plateau 1km south of Mogumber – Yarrawindah rd. Further to the south the elevation increases slightly before returning to undulating levels. To the east and west of the quarry area, the ground level also falls, Figure 2.

The quarry area is to be excavated to a depth of 265m AHD with the majority of the area being 290mAHD and the peak of the area being 312.5mAHD.

3.2. Geology

Preliminary testing of the quarry area shows it is made up mostly of loose and clumped gravel, with portions of sand and clay present as overburden. The sand and clay become more predominant as the elevation of 265mAHD is neared. This can be seen at the existing excavated area where clay becomes visible.

3.3. Climate

The climate of the area is categorized as Mediterranean, with hot dry Summers and wet cool Winters.

Climatic rainfall data is recorded at New Norcia, station number 009033, 11 km to the north east of the prescribed premises. Precipitation is 514.5 mm per annum, with approximately 90% falls in the months April to October inclusive, figure 3. Evaporation exceeds rainfall in all but the four wettest winter months.

Utilising the closest historical data, being Wongan Hills, station number 008137, the highest monthly mean temperatures at Mogumber reach 37 degrees Celsius for the hottest months, January and February and 19.8 degrees Celsius in July. Lowest monthly mean temperatures for the coldest month July, is 15 degrees Celsius.

The climate data for Mogumber shows that the predominant winds are from the east to southeast at 9.00 am and from the south west at 3.00 pm during the summer months.
3.3.1. **Figure 3 – New Norcia rainfall graph.**

![New Norcia rainfall graph](image1)

Note: Data may not have completed quality control

3.3.2. **Figure 4 – Wongan Hills Maximum temperatures**

![Wongan Hills temperature graph](image2)

Note: Data may not have completed quality control

Observations made before 1910 may have used non-standard equipment
3.3.3. Figure 5 – Wongan Hills wind rose – 9am

Rose of Wind direction versus Wind speed in km/h (01 Jan 1966 to 30 Sep 2010)
Custom times selected, refer to attached note for details

WONGAN HILLS
Site No: 908137 • Opened Jan 1907 • Still Open • Latitude: -30.8917° • Longitude: 116.7186° • Elevation 283m
An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.

9 am Jan
1322 Total Observations

Calm 3%
3.3.4. **Figure 6 – Wongan Hills wind rose – 3pm**

Rose of Wind direction versus Wind speed in km/h (01 Jan 1966 to 30 Sep 2010)

Custom times selected, refer to attached note for details.

**WONGAN HILLS**

Site No: 908137 • Opened Jan 1907 • Still Open • Latitude: -30.8817° • Longitude: 116.7189° • Elevation 283m

An asterisk (*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.

3 pm Jan
1316 Total Observations

Calm 3%
3.4. Soils

There is minimal topsoil present on site and overburden is also expected to be minimal and consist of gravel sand with small amounts of clay becoming detected towards the lower level of the excavation, 265mAH.

The release of WAPC Planning Bulletin 64 has resulted in an increased awareness in acid sulphate soils. There is no geological risk or evidence of acid sulphate on the prescribed premises.

Typically, acid sulphate conditions exist when the soils and rocks are under reducing conditions, or have been under reducing conditions. The type of oxidation minerals present can be used to provide a highly definitive method of identifying materials at risk. Materials at risk under reducing conditions have been noted as being grey in colour or have been grey with no brown or red brown iron oxides. Where exposed to the atmosphere there is a change to brown iron oxides, with yellow jarosite and other alteration minerals that are distinctive.

The quarry area has been found to not be consistent with indications that acid sulphate soils are present. Testing is normally only required if “at risk” materials are noted and to be disturbed.

During excavation the topsoil and overburden are stockpiled separately for later use in rehabilitation of the land surface. The manufactured soils utilised in the rehabilitation of the quarry will be a mixture of gravelly sand and compost as specified within an agronomist report to be conducted on the finished quarry, prior to rehabilitation.

3.5. Hydrology

The prescribed area has no watercourses or wetlands and is a significant elevation above the maximum winter water table, being situated at an elevated height to the surroundings.

Water levels taken from historical data at Woury Pool, 1.1 km to the north of the quarry area indicate a maximum winter water level of 178 mAH (1999), figure 7. Excavation works occur well above the winter ground water level with the maximum excavation depth being 265mAH.

The Moore River East is located >1km to the north of the quarry area and is not affected by the proposed facilities, Map 9 – 10. As part of the works approval process, it is anticipated that bores will be required to monitor leachate associated with the composting operations to be established at the southern end of the quarry area.

All water required for site operations will be supplied from dams currently located on the property utilised to capture storm water run-off. A sediment and water trapping basin will be constructed in the north east of the operations at the existing quarried area prior to commencement of commercial extraction activities for supply of gravel outside the Shire as
approved by the DER. This collects the surface water from disturbed land on site. The water storage is used for wetting down and dust suppression.

3.6. Figure 7 - Woury Pool historical Water Levels

3.7. Flora

The majority of the quarry area, 44.3 ha from 46 ha, is cleared pasture with only 1.7ha of native bushland within the central portion.

A vegetation study was performed as part of the Dieback assessment of the 1.7ha to be cleared. No noxious weeds, rare flora or dieback has been reported.

Upon receipt of a clearing permit, all native vegetation will be replaced primarily along the southern border of the prescribed premises to act as a visual barrier and replace natural habitat.
3.7.1. **Dieback assessment report.**

Lot 668 Mogumber-Yarrawindah Road
Mogumber

*Phytophthora Dieback Assessment Report*

---

**Author/Interpreter:**
Gavin Clapperton

**Assessment Area:** Part of Lot 688 Mogumber-Yarrawindah Road Mogumber

**Proposed Plot Size:** 47.50 hectares

**Assessment Date:**
23rd December 2016
Contents

1 Introduction ........................................................................................................................................ 2
  1.1 Background ................................................................................................................................. 2
  1.2 Location and Size and Historical Land Use Information .............................................................. 2

2 Methods ............................................................................................................................................... 2
  2.1 Interpretation................................................................................................................................. 2
  2.2 Vegetation Condition .................................................................................................................. 3
  2.3 Mapping ....................................................................................................................................... 3

3 Results .............................................................................................................................................. 3
  3.1 Assessment Results ...................................................................................................................... 3
  3.2 Vegetation Condition .................................................................................................................. 3

4 Conclusion ....................................................................................................................................... 3

5 Disease Hygiene Management ....................................................................................................... 4

6 References ....................................................................................................................................... 4

7 Appendices ..................................................................................................................................... 5
  7.1 Appendix 1 – Dieback Occurrence Map ...................................................................................... 5
  7.2 Appendix 2 – Keighery Rating Scale ............................................................................................. 6
  7.3 Appendix 3 – Native Plant Species List ....................................................................................... 7
  7.4 Appendix 4 – Glossary of Terms ................................................................................................. 8

DIEBACK MAPPING & MANAGEMENT

January 2017
1. Introduction

1.1 Background

Dieback disease caused by the pathogen *Phytophthora cinnamomi* is a major threat to the biodiversity of south-western Australia. The spread of this water mould is facilitated by the movement of soil infested with spores, particularly under warm, moist conditions. Consequently, a major component for the prevention of spread is the strategy to constrain this disease which involves managing access and soil-disturbance activities within native vegetation. Knowledge of the occurrence of the disease in the landscape is therefore an essential prerequisite to formulating suitable hygiene management practices.

NPC Consulting has been requested by Menzies Quarries to assess the possibility of the occurrence of *Phytophthora cinnamomi* within a remnant bushland area within the property of Lot 668 Mogumber-Yarrawindah Road (the Site) east of Mogumber for the purpose of a proposed gravel pit. The assessment was carried out on the 23rd December 2016.

1.2 Location, Size and Historical Land Use Information

The Site is located within property 668 Mogumber-Yarrawindah Road which is 685 hectares in size. The address is approximately 7 kilometres east of Mogumber and 16 kilometres west of the great Northern Highway. Mogumber-Yarrawindah Road intersection with Gt. Northern Highway is 5 kilometres south of the town of New Norcia.

Site including the proposed gravel pit is 47.50 hectares in size. The property is predominantly used for agriculture in the form of wheat and sheep. The property currently has an existing gravel pit further down slope from the proposed pit which is to be located on and around the ridge of the property.

2. Methods

2.1 Interpretation

Field interpretation followed the standard methods and operating procedures described in the documents Department of Parks and Wildlife (DPaW), *Phytophthora Dieback Interpreter Procedures: for lands managed by the department* (DPaW March 2015) for Dieback mapping.

2.2 Vegetation Condition

The condition of the vegetation within the site that had experienced disturbance historically in one form or another was assessed. The vegetation condition was assessed
using methods based upon the condition scale from Keighery B J (1994; Appendix 2). These methods are described in Bush Forever Vol. 2 – Directory of Bush Forever Sites.

2.3 Mapping

The field observations, boundaries, waypoints and survey data were downloaded into a Geographic Information System (GIS) from a GPS to generate a map of the assessment area.

3 Results

3.1 Assessment Results

The Site was of an area of Wandoo (Eucalyptus wandoo) with no under or mid storey and is less than 2 hectares in size. The surrounding area is of cleared land for wheat and sheep farming. As a result, the entire Site including the proposed gravel pit is excluded. The excluded category means there is insufficient vegetation present in order to determine the presence or absence of the disease (see Appendix 1).

3.2 Vegetation

Observations were made during the assessment of the types of plant species that are present in and around the property. It is recommended that these plant species be used if rehabilitation of the Site and adjacent land be undertaken in the future (see Appendix 3).

3.3 Vegetation Condition

The area of Wandoo forest area and cleared paddock areas of the Site are highly degraded and considered a 6 on the Keighery vegetation scale (see Appendix 2).

4 Conclusion

A brief Dieback assessment was carried out on the Site within Lot 668 Mogumber Yarrawindah Road in Mogumber on the 23rd December 2016. The purpose of the assessment was to establish disease categories prior to gravel being extracted from this part of the property. The proposed gravel pit area is approximately 47.50 hectares in size.

The assessment concluded that the Site and surrounds are excluded. This was due to a complete lack of native vegetation, with the exception of a small area of Wandoo trees on the ridge, which had been historically cleared for wheat and sheep farming. The Site is also un-protectable.

January 2017
5 Disease Hygiene Management

The disease hygiene management recommendations for the Site and for the use of Basic Raw Material (BRM) from the proposed gravel pit are as follows:

- Excluded areas are un-protectable. This means there are no protectable values of the proposed pit and remnant vegetation areas and therefore no restrictions on clearing and BRM removal.
- BRM (gravel), vegetative matter and soil must not be used on areas adjacent to known or potentially protectable sites. A protectable site would normally include native vegetation and would require a Dieback assessment prior to using BRM in that area.
- BRM may be used on other excluded sites which are removed of native vegetation including road upgrade as well as on known infested sites.

There are no other Dieback recommendations for this Site or for the use of the gravel extracted from the Site.

6 References

Department of Parks and Wildlife (DPaW), Phytophthora Dieback Interpreter Procedures: for lands managed by the department* (DPaW March 2015).

Department of Conservation and Land Management (2001) Phytophthora cinnamomi and disease caused by it. Volume I Management Guidelines


7 Appendices

7.1 Appendix 1 – Dieback Protectable Areas Map
### 7.2 Appendix 2 – Keighery Vegetation Rating Scale

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pristine (1)</td>
<td>Pristine or nearly so, no obvious signs of disturbance.</td>
</tr>
<tr>
<td>Excellent (2)</td>
<td>Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.</td>
</tr>
<tr>
<td>Very Good (3)</td>
<td>Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.</td>
</tr>
<tr>
<td>Good (4)</td>
<td>Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.</td>
</tr>
<tr>
<td>Degraded (5)</td>
<td>Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.</td>
</tr>
<tr>
<td>Completely Degraded (6)</td>
<td>The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as ‘parkland cleared’ with the flora comprising weed or crop species with isolated native trees or shrubs.</td>
</tr>
</tbody>
</table>
### 7.3 Appendix 3 - Native Plant Species List

The following is a list of plant species that are native to the area of Mogumber/New Norcia and surrounds. These species may be used for the rehabilitation of used gravel pits, quarries or other cleared areas of the Site.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Botanical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trees</strong></td>
<td></td>
</tr>
<tr>
<td>Coastal Blackbutt</td>
<td><em>Eucalyptus todiiana</em></td>
</tr>
<tr>
<td>Silver Mallee</td>
<td><em>Eucalyptus falcata</em></td>
</tr>
<tr>
<td>Rock Sheoak</td>
<td><em>Allocasuarina huegeliana</em></td>
</tr>
<tr>
<td><strong>Shrubs</strong></td>
<td></td>
</tr>
<tr>
<td>Dwarf Sheoak</td>
<td>* Allocasuarina humilis</td>
</tr>
<tr>
<td>Parrot Bush</td>
<td><em>Banksia sessilis</em></td>
</tr>
<tr>
<td>Pingle</td>
<td><em>Banksia squarrosa</em></td>
</tr>
<tr>
<td>Fox Banksia</td>
<td><em>Banksia sphaeracarpa</em></td>
</tr>
<tr>
<td>Grevillea</td>
<td><em>Grevillea florida</em></td>
</tr>
<tr>
<td>Prickly Moses</td>
<td><em>Acacia pulchella</em></td>
</tr>
<tr>
<td>Two Leaf Hakea</td>
<td><em>Hakea trifurcata</em></td>
</tr>
<tr>
<td>Honeybush</td>
<td><em>Hakea lissocarpha</em></td>
</tr>
</tbody>
</table>
7.4 Appendix 4 - Glossary of Terms

**Phytophthora Dieback;** is the name given to the disease that is caused by the pathogen. There are multiple species of Phytophthora in the south west however it is *Phytophthora cinnamomi* that causes significant destruction in naturally vegetated areas.

**Infested;** areas that have been deemed by a registered and qualified interpreter person to have plant disease symptoms consistent with Phytophthora Dieback.

**Uninfested;** areas that have been deemed by a registered and qualified interpreter person to be free of any visible plant disease symptoms consistent with Phytophthora Dieback.

**Uninterpretable;** areas that do not contain plant species that are susceptible to *Phytophthora cinnamomi*, therefore not allowing the presence or absence of the disease to be determined.

**Temporary Uninterpretable;** includes areas or recent disturbance where by the structure of the vegetation has been altered resulting in an inability to determine presence or absence of the disease. This may include areas recently burnt or harvested areas.

**Excluded;** an area of high disturbance where natural vegetation is unlikely to recover. This applies to areas like paddocks, existing gravel pits and other cleared areas.

**Protectable Area;** are areas of native vegetation that are uninfested or possibly uninterpretable, of a certain size or that will not become infested in the short to midterm. Protectable areas may be smaller in size but have other values to protect.

**Un-protectable Area;** a disease free area that is likely to become infested in a short period of time. May also be uninterpretable or excluded areas with no protectable values (i.e. paddocks, highly degraded vegetation)

**Phytophthora Protectable Areas Map;** is the map produced by the Dieback interpreter (surveyor/assessor) which indicates the boundaries of the categories of Dieback identified in the field and determines which areas are protectable or not.
3.8. Fauna

The excavation area is covered by pasture but surrounded on three sides by natural bushland. The 1.7 ha of natural vegetation will contain some fauna however no significant nesting or activity was noted within the 1.7ha proposed to be cleared. No evidence of nesting locations utilised by the Caranby Cockatoo were noted on inspection.

It is proposed to clear the resource areas gradually to enable any fauna to relocate to the perimeter of the quarry area. In addition, replacement of the cleared area along the southern border of the prescribed premises will enable any fauna to utilise a bushland corridor from east to west which is currently not available.

3.9. Aboriginal heritage

The Department of Indigenous Affairs database has no record of any aboriginal sites on the subject land which has been utilised for pasture and grazing for many years. Should any indications of significance be noted during excavations, operations will be ceased pending evaluation by an accredited consultant.
3.10. **Map 9 - Separation from Moore River East, Map view – 668 Mogumber – Yarrawindah rd**

![Map of Quarry Separation Distance - Moore River East](image)

**Legend**

- **Existing Quarry**
- **Proposed Quarry**

Notes:

- This map is a user-generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
- **This Map is Not to Be Used for Navigation**

1: 39,771
4. Excavation Programme

Environmental issues including odour, dust, noise and traffic will be managed to minimise any potential impact on the local community. Dust and noise will be contained by the methods of extraction and processing to be used and the control measures which will be put into place. Measures to protect the site and minimise the other environmental factors are addressed under Environmental Management, section 5.

4.1. Facility Operating Hours

The facility will operate during the following hours:

- Monday to Saturday – 6.00 am to 5.00 pm;
  - with no machinery operating before 7am;
- Sundays and Public Holidays – Closed.

The extraction and C&D processing activities are expected to be performed on an 'as required' basis. Composting is a continuous batch process requiring regular monitoring.

4.2. Material Quantities

The estimated breakdown of the material types includes:

- Gravel extraction – up to 500,000 tonnes / year to meet demand for Great Northern highway works,
  - Typical extraction will not exceed 250,000 tonnes / year
- C&D waste received and processed – up to 150,000 tonnes / year,
  - Expected production of 100,000 tonnes/year, and
- Compost produced – up to 35,000 tonnes / year.

4.3. Extraction and Processing of the Resource

Excavation is conducted in line with the Mines Safety and Inspection Act and Regulations.

The gravel and sand resources will be progressively extracted in a sequence starting with the removal and storage of topsoil and overburden, the extraction and screening of gravel and sand, and lastly the rehabilitation of the land surface. Simple layout of the prescribed area is shown in map 11.
a) The resource will be excavated in stages across the excavation area (Map 12) on an as required basis.

b) All trees are cleared in accordance with a relevant Clearing Permit. If further clearing is required, the appropriate clearing permit will be sought from the DER. as required by the Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

- Map 14 shows area proposed to be cleared.
- Vegetation removed is replaced on a minimum of a one for one basis and located predominately on the southern border of the quarry area to also provide additional screening of activities.

c) Topsoil is removed by scraping from the resource and pushing to the perimeter to form a 1 to 2 meter bund at the perimeter of the existing extraction area to provide screening and reduce handling for later use in rehabilitation. The Topsoil may also be directly transferred to a prior extraction point being rehabilitated.

d) Overburden is removed by scraping from the resource and captured through the gravel screening process. The overburden is pushed or delivered by loader to form a 1 to 2 meter bund on the perimeter of the existing extraction area providing screening and reducing handling for later use in rehabilitation. The Overburden may also be directly transferred to a prior extraction point being rehabilitated.

e) Topsoil and Overburden storage locations follow the excavation of the resource as indicated in Map 11.

f) Excavations commence in the North Western corner at the existing quarry and progress in a South Easterly direction, map 12. The quarry is expected to have a life span of over twenty (20) years subject to market demands.

g) The depth of the excavation will align with the existing quarry elevation of 265m. A fall of 1 :100 will be developed during the excavation to direct water to the catchment pond in the north east of the existing quarry.

h) The excavation is performed by a number of mobile plant depending on the nature of the material and the design of the pit. Typically a bulldozer is used to extract the material. Where this is not the safest option an excavator is utilised. Mobile plant will commence excavations commencing from the existing quarry in the North and progress to the east and west boundary of the quarry. Bulldozers are also used to push the material for subsequent loading, processing and stockpiling of the finished products.

i) A low bund and/or drain will be located upslope, to the south of the active extraction face, to divert stormwater from the areas yet to be excavated away from the active pit and towards the water storage dams utilising the current east – west gradient of the land.

j) Small bunds and contours are developed within the working pit as required to direct
water to the sumps and storage areas and prevent runoff from the disturbed areas. All storage ponds are sufficiently sized to retain all water from 1:20 year storm events.

k) The quarry site contains large gravel rocks within the East which will require crushing and screening while the west side of the quarry area predominately consists of loose gravel typically only requiring screening. The two types of material are stockpiled separately for processing and blending. Each product type produced post processing is then stored in separate stockpiles. The locations of these stockpiles will change from time to time as the excavations progress.

l) The locations of stockpiles are such that they are screened via the elevations and native vegetation on all sides.

m) Collection of material from the stockpiles will be performed using a loader or excavator loading the final products directly into trucks for transport to off takers.

n) Rehabilitation of the excavated area will predominately be carried out using a bulldozer. An excavator may also be used to distribute the topsoil and overburden. Rehabilitation will progressively follow excavation where future disturbance can be avoided. The proposed additional use of the quarry as a C&D processing site means that there will be little benefit in rehabilitating the operational land until the life of the quarry is nearing completion.

- No WDM will be utilised in the rehabilitation of the quarry without specific approval from the DER following clarification of the definition and permitted uses of these materials.

4.4. Final Contours

The land surface will be contoured to match the existing landform of the area. The elevation will be formed into a self-draining landform that drains to a dam to be located on the northern portion of the quarry area, currently occupied by the existing quarried area.

a) The depth of the dam will be 5 metres with a safe and stable batter slope to be established to maximise the volume and minimise the surface area to reduce evaporation effects.

b) By determining the runoff from the catchment area it can be assured that all storm water is contained within the depression.

c) During operations and upon completion, the land surface is to be graded down to the dam at the north eastern portion of the quarry. The east, west and south slopes will be made to match the existing gradient beyond the extents of the quarry area and will be 1:3 to 1:2, vertical to horizontal.

d) The Concept Final Contours show the land elevation ranging from 265meters AHD in the north to 275 metres AHD in the south with the water level in the proposed dam filling to an elevation of about 260mAHD, map 13.
4.6. Map 12 – Excavation Stages over 20 years @ 500,000 tpa
4.7. Map 13 – Final Contours
4.8. Map 14 – Area to be cleared.
5. Environmental management, reporting and monitoring

5.1. Air Emissions

There are no air emissions associated with the proposed activities.

Composition and Quantity – Nil.
Variability of Emissions – Nil.
Treatment Methodology – Nil.
Monitoring – Nil.
Contingency Plans – Nil.
Environmental Receptors – Nil.
Fugitive Emissions – Nil.
Cumulative Impact – Nil.
Targets and Limits – Nil.
Environmental Risk – Nil.

5.2. Dust Emissions

As a result of the temporary nature of the infrastructure within the lease area, all materials handling activities occur out in the open. Due to the nature of some of the activities on site, there is the potential to generate dust; however, there are management options available to control dust such that there will be no off-site impact.

A Dust Management Plan has been developed to provide guidance on how to manage dust.

Potential sources of dust emissions include:

- Dust from extraction of material – moderate consideration
- Particularly dusty individual C&D loads – minor consideration;
- Generally dusty waste loads - minor consideration;
- The mobile equipment sorting and moving materials - minor consideration;
- Materials screening operations - minor consideration;
- Stored material - minor consideration;
- Bin/vehicle loading with fine screened material - minor consideration; and,
- Vehicle wheels spreading dirt around the site - minor consideration.

Variability of Emissions – There is the potential for variable emissions, which will depend of the following:

- Material type;
- Material quantities;
- Ambient weather conditions; and,
- Facility housekeeping.

Treatment Methodology – The following are the suite of preventative measures available:

- Water cart wetting down the internal access roads and lease area;
- Should particularly dusty loads be identified these loads will be barred from being delivered to the site unless the load is able to be delivered in such a manner that reduces or prevents dust emissions;
- Dust suppression systems, consisting of sprinklers installed along lease boundary fences and within the lease area. The dust suppression system comprises the following:
  - Piped reticulation systems strung along the lease perimeter boundary; and,
  - Piped reticulation systems of sprinklers strategically placed to cover dust generating operations and material stockpiles.
- Dust suppression systems are standard, factory-fitted installations on screening and stacking equipment to control dust generation. The equipment utilised on site will come fitted with standard, factory installed dust suppression system or if not, dust suppression systems will be installed on the equipment. The systems will be utilised in accordance with the manufacturer's
recommendations and in accordance with environmental requirements. The systems typically operate at 30 L/min at 200 kpa;

- Screening and stacking will only be carried out when weather conditions permit. No screening or stacking will take place when the wind conditions cause excessive dust generation; and,

- Material handling areas will have sprinkler systems installed to enable the adequate wetting down of the Receiving, sorting and storage of material to ensure appropriate dust control.

Monitoring – Dust emissions will be monitored on a continuous basis by lease area operations staff. The Proponent will also maintain a comprehensive complaints register, which will be used as a gauge of success with regards to dust emissions management. In the event that there are dust emissions issues identified, formal dust monitoring will be undertaken by an independent third party to determine the extent of the problem and to propose appropriate improved dust management solutions.

Contingency Plans - If unacceptable dust emissions are identified onsite, the following contingency plans are available to improve dust management:

- Increased coverage by sprinkler system.
- Slow vehicles down by traffic calming methods (speed humps);
- Restrict dust generating activities to the appropriate time of day to reduce dust generation (weather dependent);
- Reject or restrict excessively dusty loads; and,
- Utilisation of chemical dust suppressants.

Environmental Receptors - Environmental receptors include the lease area operations staff, customers depositing and collecting materials at lease areas, neighbouring lease areas and neighbouring properties.

Cumulative Impact – With there being similar activities on the site to the south of the prescribed premises, there is the possibility that there could be a cumulative impact with regards to dust generation. The consequence of this will be highly dependent on the type of activity and the quantity of dust being generated. As there are preventative measures that can be applied (primarily, temporally ceasing some operations due to excessive wind), the impact on receptors will be controlled.
Targets and Limits – No dust emissions beyond the prescribed boundary and nil community complaints.

Environmental Risk – A risk assessment of all identified potential environmental risks associated with the management of dust has been undertaken. The primary consideration being the prevention of dust emissions beyond the prescribed boundary.

The emissions and discharge risk assessment framework has been taken from the *DER Corporate Policy Statement No. 07 – Operational Risk Management.*

Emissions Risk Matrix utilised in the risk assessment is based on the following:

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Insignificant</td>
</tr>
<tr>
<td>Almost Certain</td>
<td>Moderate</td>
</tr>
<tr>
<td>Likely</td>
<td>Moderate</td>
</tr>
<tr>
<td>Possible</td>
<td>Low</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Low</td>
</tr>
<tr>
<td>Rare</td>
<td>Low</td>
</tr>
</tbody>
</table>

The outcome of the risk assessment is that there is a low risk of dust emissions beyond the site boundary and hence, a low impact on any neighbouring receptors as a result of the proposed activities.

**Table 1 – Dust Management Risk Assessment** provides the detail of the risk assessment.

### 5.3. Asbestos Management

The site will NOT be licensed to accept asbestos and this material will not be intentionally delivered or accepted on site. There is however the potential to inadvertently receive this waste type at some of the proposed site operations.

The following processes will be put into place to manage this occurrence:

- Customers will be advised that asbestos products are not accepted on
• Appropriate signage will be erected at the site entrance notifying customers that asbestos is not accepted on site.

• Staff working at the facility will be trained to ensure that they are able to recognize asbestos containing material and are aware of the protocols to be followed if it is identified.

• Upon arrival at the facility, the incoming waste will be inspected and sorted into recyclable components and residual waste. If at any stage asbestos is identified, the load will either be rejected (if the delivery vehicle is still on site) or the asbestos containing material will be separated and placed in a waste bin for immediate removal (at least within 24 hours).

• Sand and rubble products will be managed in accordance with the most recent DER Asbestos Management Guidelines, 18 December 2012.

All relevant activities will be carried out in accordance with a site Asbestos Management Plan, which has been developed to comply with the DER Asbestos Management Guidelines, 18 December 2012.
### 5.4. Table 1 - Dust Management Risk Assessment

<table>
<thead>
<tr>
<th>Emission Source Description</th>
<th>Environmental Impact Risk</th>
<th>Management Tools and Mitigation Options/Factors</th>
<th>Activation Trigger and Corrective Action</th>
<th>Monitoring of Corrective Action Efficiency</th>
<th>Contingency Action if Corrective Action is Ineffective</th>
<th>Likelihood &amp; Consequence</th>
<th>Risk Level</th>
</tr>
</thead>
</table>
| Construction activities – vehicle movements. | Vehicle movements around site resulting in dust emissions beyond the Prescribed premises | Minimal construction activity required; hence, minimum dust generated. Only minimal vehicle movements and over short distances; hence slow movements. Minimum 100 m buffer distance from the construction activities to the prescribed boundary provides an opportunity for dust emissions to settle. Contractor responsible for dust suppression (enforceable action). Water tanker used to wet down roads and working area. Short duration of the construction works. | Activation Trigger:  
- Excessive dust observed around the construction activities.  
- Dust observed blowing over the Prescribed Boundary.  
- Dust observed blowing over the Lot boundary.  
- A dust complaint is received.  

Corrective Action:  
- Instruct contractor to increase watering of access roads.  
- Instruct contractor to slow vehicles down.  
- Contractor instructed to change operations to undertake less dusty activities.  
- Cease dusty activities until weather conditions improve. | Undertake dust observation monitoring of the construction area immediately following the implementation of corrective actions by the contractor to determine the effectiveness of the actions. | Cease all construction activities if dust cannot be prevented from blowing over the Lot boundary. | Unlikely & Insignificant | Low |
<table>
<thead>
<tr>
<th>Vehicle movements during operations.</th>
<th>Vehicle movements on access road and within the lease area resulting in dust emissions beyond the Lot boundary.</th>
<th>The majority of the site including the access road is a significant distance from sensitive receptors and is compacted gravel road base; hence, reduces dust generation and increases the opportunity for dust to settle before it blows over the Lot boundary. Restricting vehicle speed to 20 km/hr. Water tanker used to wet down internal access roads as the primary dust suppression methodology. The use of dust suppression agents. (Dustex or similar) will be used, as a secondary methodology if using only water proves ineffective.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activation Trigger:</td>
<td></td>
<td>Undertake dust observation monitoring of the access roads immediately following the implementation of corrective actions to determine the effectiveness of the actions. If installed, check dust monitors for evidence of dust blowing over the site boundary.</td>
</tr>
<tr>
<td>- Excessive dust observed on the access roads.</td>
<td></td>
<td>Only essential vehicle movements along access roads where problematic dust emissions occur (these being primarily waste vehicles and water tanker).</td>
</tr>
<tr>
<td>- Dust observed blowing over the Lot boundary.</td>
<td></td>
<td>Unlikely &amp; Insignificant</td>
</tr>
<tr>
<td>- A dust complaint is received.</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Emission Source Description</td>
<td>Environmental Impact Risk</td>
<td>Management Tools and Mitigation Options/Factors</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Waste tipping and handling activities.                                                                                                             | Waste tipping, handling and sorting activities resulting in dust emissions beyond the Prescribed Boundary and potentially beyond the Lot boundary. | Minimum 900 m buffer distance from the Prescribed Boundary sensitive receptor boundary provides an opportunity for dust emissions to settle. Quarry area of 46ha allows activities to be positioned away from the Prescribed Premises Boundary. Incoming waste generally not dusty when being unloaded. Vehicles tipping as close to the sorting area as possible. If a dusty load is received during adverse weather conditions, it will be wet down and left until weather conditions improve before being sorted. Water sprinklers used to wet down tipping and sorting area as the primary dust suppression methodology. | Activation Trigger:  
  - Excessive dust observed around the active tipping and sorting area.  
  - Dust observed blowing over the Prescribed Boundary.  
  - Dust observed blowing over the Lot boundary.  
  - A dust complaint is received.  

Corrective Action:  
  - More regular wetting down of tipping and sorting area.  
  - If possible, move tipping and sorting area to be further from the affected Lot boundary. | Undertake dust observation monitoring immediately following the implementation of corrective actions to determine the effectiveness of the actions. If installed, check dust monitors for evidence of dust blowing over the site boundary. | Additional dust suppression via hand watering of loads before, during and after tipping. | Unlikely & Insignificant | Low |
| Material screening, shredding and stacking operation. | Screening, shredding and stacking of material resulting in dust emissions beyond the Prescribed Boundary and potentially beyond the Lot boundary. | Minimum 900 m buffer distance from the Prescribed Boundary to the sensitive receptor boundary provides an opportunity for dust emissions to settle. Quarry area of 46 ha allows activities to be positioned away from the Prescribed Premises Boundary. Water sprinklers mounted on the machines used to wet down the material during processing and stockpiling. Due care taken to place the material in the machines and not drop it from a height. Water sprinklers around the discharge conveyor and processed material stockpile. Low speed screening operations generates lower dust emissions. | Activation Trigger:  
- Excessive dust observed around the machines and conveyors.  
- Dust observed blowing over the Prescribed Boundary. Dust observed blowing over the Lot boundary.  
- A dust complaint is received.  
Corrective Action:  
- Delay activities until weather improves.  
- More regular wetting down of input and output material.  
- If possible, undertake operations further away from the Lot boundary.  
- Increase the number of sprinklers mounted on the machines.  
Undertake dust observation monitoring of the operation immediately following the implementation of corrective actions to determine the effectiveness of the actions. If installed, check dust monitors for evidence of dust blowing over the Lot boundary. | Cease activity if dust cannot be prevented from blowing over the Lot boundary. | Unlikely & Insignificant |
5.5. Odour Emissions

There are odour emissions possible associated with the operations of the composting facility only. The emissions are mitigated through the use of appropriate technologies and operating procedures.

Composition and Quantity – Odour from composting batches not operating correctly will be anaerobic in nature. To avoid the release anaerobic odours, the MAF system enables continuous or intermittent airflow to be set depending on the composting stage and material type.

Variability of Emissions – Emissions will vary with feedstock type received.

Treatment Methodology – Odorous material is directly mixed with clean greenwaste when received or stored in a liquid tank in preparation for blending. All odorous waste is delivered with prior notification to ensure the site has sufficient means to control odours. The facility has a stage 0 batch to aerate material until the batch volume has reached sufficient size to move to stage 1 of the composting process, or if stage 1 area is not available. Particularly odorous batches will be covered with a biofilter crust at a minimum thickness of 200mm consisting of the oversized fraction of screened compost. Process covers will also be available to further trap odours and allow the biofilter layer to absorb odours present.

Monitoring – process monitoring for moisture, pH and Oxygen ensures the composting process is active, minimising the possibility of odour production.

Contingency Plans – In the event of malfunction of the MAF system, generators and additional blowers can be delivered within 24 hrs. during which time the affected batch will remain covered.

Environmental Receptors – Environmental receptors include the lease area operations staff, customers depositing and collecting materials, other site users and neighbouring properties.

Cumulative Impact – Surrounding properties utilise biosolids and manures from time to time for direct application to land.

Targets and Limits – No odour complaints

Environmental Risk – The environmental risk on site and to neighbouring properties is considered to be low.

5.6. Noise Emissions

Noise management is a consideration during the operations on site. The Environmental Protection (Noise) Regulations 1997 have restrictions on noise emissions during the period
7.00 pm to 7.00 am. Beyond this time restriction, normal noise regulations for industrial areas apply.

The site opens at 6:00am however screening activities on site commence at 7.00 am and finish by 5.00 pm; hence, these activities occur outside the restricted period. With the sorting activities occurring out in the open, the management of noise emissions is a high priority.

Potential sources of noise emissions include:

- Unloading of some material types;
- Mobile equipment operating on site; and,
- Sorting and screening equipment.

Composition and Quantity – The screening operations is the activity that is likely to generate the most noise and the most consistent noise source.

5.6.1. Noise Treatment Methodology:

Should there be noise emissions concerns, there are a number of actions that can be undertaken to further reduce noise emissions, and these include:

- Vehicle reversing beacon: Should the standard vehicle reversing beacons be identified as causing noise disturbance, the beacons will be changed to the "croaker or low frequency" type beacons which emit a lower sound level, but are still effective safety warning devices.

- Screening operations: These activities could occur behind other site infrastructure or materials stockpiles. The lease area is sufficiently large and the screening operations are located to ensure that the operations occur 900m from the nearest sensitive receptor (to the North west) with ~20m high quarry wall and native bushland between which would absorb any noise emissions and prevent excessive noise emissions reaching this receptor. In addition, with the site being located in an industrial area, quarries to the south and west and market gardens to the east, there are no neighbouring human receptors that would be negatively impacted by the screening operations.

- Staggered operations: Some site activities could be staggered to reduce the cumulative effect of multiple plant and equipment operating simultaneously.

If noise is identified as a problem during operations, noise monitors will be used to provide accurate information on the level of noise actually being generated and hence, if necessary, identify potential remedial actions.

The overriding consideration is that the Proponent, commits to ensuring that the all
lease area activities are carried out in accordance with the *Environmental Protection (Noise) Regulations 1997*. In the event of noise being identified as a problem, third-party independent specialists will be engaged to monitor noise emissions and where necessary recommend site improvements to reduce noise emissions. If it is not possible/feasible to reduce noise emission to below Noise Regulation requirements, then the offending operations will be discontinued.

Monitoring – Noise emissions will be monitored on a continuous basis by lease area operations staff.

Contingency Plans – Increased training of equipment operators to reduce operational noise, install noise abatement devices or change/cease specific activities.

Environmental Receptors – Environmental receptors include the lease area operations staff, customers depositing and collecting materials, other site users and neighbouring properties.

Cumulative Impact – A cumulative impact is not anticipated since the noise generated from the prescribed premises is low with no crushing to be performed.

Targets and Limits – As defined by the Environmental Protection (Noise) Regulations 1997 and nil complaints.

Environmental Risk – The environmental risk on site and to neighbouring properties is considered to be low.

### 5.7. Litter Emissions

There will be no litter emissions

Composition and Quantity – Nil.

Variability of Emissions – Nil.

Treatment Methodology – Nil.

Monitoring – Nil.

Contingency Plans – Nil.

Environmental Receptors – Nil.

Cumulative Impact – Nil

Targets and Limits – Not Applicable.

Environmental Risk – Nil.
5.8. **Light Emissions**

There are no light emissions associated with the proposed activities.

All light spills associated with security lighting will be contained within the property, in accordance with AS4282 - 1997 "Control of the Obtrusive Effects of Outdoor Lighting".

5.9. **Discharge to Water**

There will be no discharge to water.

Composition and Quantity – Nil.

Variability of Emissions – Nil.

Treatment Methodology – Nil.

Monitoring – Nil.

Contingency Plans – Nil.

Environmental Receptors – Nil.

Cumulative Impact – Nil

Targets and Limits – Not Applicable.

Environmental Risk – Nil.

5.10. **Discharge to Land**

The only discharge to land will be clean stormwater discharge to existing farm dams.

Composition and Quantity – Nil.

Variability of Emissions – Nil.

Treatment Methodology – Nil.

Monitoring – Nil.

Contingency Plans – Nil.
Environmental Receptors – Nil.

Cumulative Impact – Nil

Targets and Limits – Not Applicable.

Environmental Risk – Nil.

5.11. **Vermin Management**

Based on the type of materials being handled on site, there is minimal, if any food source for vermin; consequently, it is not anticipated that there will be a problem with vermin.

The potential sources of vermin include:

- Arriving in material being delivered to the facility; and,
- Living in and around the facility.

Preventative measures include:

- Should vermin be observed on site, the appropriate eradication procedures are to be undertaken, this will involve professional pest controllers being utilised to manage the situation. Typically, vermin could include rats, mice, cats, birds and cockroaches.
- On occasion both mouse and rat traps will be spread around the site even if vermin have not been identified. This will assist in identifying the presence of any rats or mice.

5.12. **Native Vegetation, Flora and Fauna**

The lease area has 1.7 ha of vegetation to be cleared and as such a clearing permit is required for this proposal. A Dieback study has been completed (section 3.7.1)

Neighbouring or Other Local Native Vegetation – Not to be affected by the proposal.

Flora and Fauna – No rare or threatened species have been identified in the area. Species of flora identified is listed within the Dieback assessment. No visible Carnaby Cockatoo nesting sites were identified.

Impacts on Land, Soil, Salinity and Waterways - Nil.

Sustainability – Flora removed as listed within the clearing area will be replanted like for like with new seedlings. The majority will be planted on the southern border to improve screening and stormwater management with the remainder planted around the perimeter of the quarry.
Exemptions and Permits – Nil.

Rehabilitation and Post Closure Management - The quarry area will be returned to rural use following closure of the quarry. Compost produced on site will be incorporated into the land through consultation with an agronomist to improve yield.

5.13. Fire Management

The Potential Fire Sources include:

- Unknown ignition sources from the incoming mixed material.
- Composting material

The Bushfire Prone Planning tool has classified the area as low to moderate risk as shown below.

5.13.1. Bushfire Attack Level – South – Upslope

<table>
<thead>
<tr>
<th>Vegetation Classification</th>
<th>Bushfire Attack Levels (BALs)</th>
<th>Distance (m) of the site to the predominant vegetation class</th>
<th>Upslope and flat land (0 degrees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grassland</td>
<td>BAL-FZ</td>
<td>BAL-40</td>
<td>BAL-29</td>
</tr>
<tr>
<td></td>
<td>&lt;6</td>
<td>6 - &lt;12</td>
<td>12 - &lt;17</td>
</tr>
</tbody>
</table>

The risk is considered to be EXTREME

Direct exposure to flames from the fire front, a heat flux of grassland max 60 kW/m² and ember attack

The risk is considered to be VERY HIGH

Increasing levels of ember attack and ignition of debris, a heat flux of up to 40 kW/m² and an increased likelihood of exposure to flames

The risk is considered to be HIGH

Increasing levels of ember attack and ignition of debris and a heat flux of up to 29 kW/m²

The risk is considered to be MODERATE

Increasing levels of ember attack and ignition of debris and a heat flux of up to 19 kW/m²

The risk is considered to be LOW

Ember attack with a heat flux of up to 12.5 kW/m²

Using the simplified method of AS3950;

At 40 m from the classified vegetation type of grassland (upslope and flat land), the relevant Bushfire Attack Level is BAL-12.5.

This is reflected in the extract of Table 2.4.3 - FDI 00 (1090 K) below.
5.13.2. Bushfire Attack Level – West and North – Downslope

Bushfire Attack Level lookup tool

Using the simplified method of AS3959;

At 25 m from the classified vegetation type of Shrubland (downslope >15 to 20 degrees), the relevant Bushfire Attack Level is BAL-19.

This is reflected in the extract of Table 2.4.3 – PDI 86 (1099 K) below.

<table>
<thead>
<tr>
<th>Vegetation Classification</th>
<th>BAL-FZ</th>
<th>BAL-40</th>
<th>BAL-29</th>
<th>BAL-19</th>
<th>BAL-12.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (m) of the site to the predominant vegetation class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downslope &gt;15 to 20 degrees</td>
<td>&lt;10</td>
<td>10 - &lt;15</td>
<td>15 - &lt;22</td>
<td>22 - &lt;31</td>
<td>31 - &lt;100</td>
</tr>
</tbody>
</table>

The risk is considered to be EXTREME

Direct exposure to flames from the fire front, a heat flux of greater than 48 kW/m² and ember attack

The risk is considered to be VERY HIGH

Increasing levels of ember attack and ignition of debris, a heat flux of up to 40 kW/m² and an increased likelihood of exposure to flames

The risk is considered to be HIGH

Increasing levels of ember attack and ignition of debris and a heat flux of up to 29 kW/m²

The risk is considered to be MODERATE

Increasing levels of ember attack and ignition of debris and a heat flux of up to 19 kW/m²

The risk is considered to be LOW

Ember attack with a heat flux of up to 12.5 kW/m²

Calculated December 2, 2016, 2:23 pm
5.13.3. Bushfire Attack Level – East – Upslope

Bushfire Attack Level lookup tool

Using the simplified method of AS3959.

At 25 m from the classified vegetation type of Shrubland (upslope and flat land), the relevant Bushfire Attack Level is BAL-12.5.

This is reflected in the extract of Table 3.4.3 – FDE 80 (1090 K) below.

<table>
<thead>
<tr>
<th>Vegetation Classification</th>
<th>Bushfire Attack Levels (BALs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BAL-FZ</td>
</tr>
<tr>
<td>Distance (m) of the site to the predominant vegetation class</td>
<td></td>
</tr>
<tr>
<td>Upslope and flat land (0 degrees)</td>
<td></td>
</tr>
<tr>
<td>Shrubland</td>
<td>&lt;7</td>
</tr>
</tbody>
</table>

The risk is considered to be **EXTREME**

Direct exposure to flames from the fire front, a heat flux of greater than 40 kW/m² and ember attack.

The risk is considered to be **VERY HIGH**

Increasing levels of ember attack and ignition of debris, a heat flux of up to 40 kW/m² and an increased likelihood of exposure to flames.

The risk is considered to be **HIGH**

Increasing levels of ember attack and ignition of debris and a heat flux of up to 20 kW/m².

The risk is considered to be **MODERATE**

Increasing levels of ember attack and ignition of debris and a heat flux of up to 10 kW/m².

The risk is considered to be **LOW**

Ember attack with a heat flux of up to 12.3 kW/m².

Management Measures include:

- Removal of flammable material from site as soon as possible after sorting.
- Compost controls ensure that the pile is always within operational specifications to ensure temperatures are not exceeded or the pile becomes to dry.
- During operating hours lease area operations staff are to immediately take action to extinguish any fires if safe to do so and call local fire station.
- Afterhours security is to call out the local fire station.
- The lease area has a supply of water for site usage. This water can be used to extinguish small fires. An onsite water truck maintains all stockpiles in a damp state and is available to suppress fire when safe to do so.
5.14. **Solid/Liquid Waste**

5.14.1. **Solid Waste**

There is minimal solid waste produced by the site operations. This is primarily waste material generated by the site operations staff via crib rooms and amenities. This waste is simply disposed of in waste bins and removed from site.

Composition and Quantity – Insignificant (typically domestic waste).

Variability of Emissions – Nil.

Treatment Method – Disposed of in waste bins and removed from site.

Controlled Waste Tracking – Not applicable.

Contingency Plans – Nil.

Environmental Receptors – Nil.

Comparison Against Relevant Standards – Nil.

Cumulative Impact – Nil.

Waste Reuse – Nil.

Environmental Risk - Nil.

5.14.2. **Liquid Waste**

There is minimal liquid waste produced by the site operations. This is primarily liquid waste generated in ablutions, which are contained in portable chemical toilets.

Composition and Quantity – Insignificant.

Variability of Emissions – Nil.

Treatment Method – Storage and removed from site.

Controlled Waste Tracking – Not applicable.

Contingency Plans – Nil.

Environmental Receptors – Nil.
Comparison Against Relevant Standards – Nil.

Cumulative Impact – Nil.

Waste Reuse – Nil.

Environmental Risk - Nil.

5.15. **Hydrocarbon / Chemical Storage**

5.15.1. **Hydrocarbon Storage**

Quantity and Type – Bulk hydrocarbon (diesel) for mobile vehicle and equipment refuelling will either be delivered to site on an as required basis via mobile refuelling tanker or be stored on site. If on site storage is utilised, the hydrocarbon will be stored in a purpose built, self-bunded fuel dispensing container (typically up to 20,000 litres). These units come with self-contained fuel pump, bowser and spill kit.

There will also be limited quantities of oils and greases stored on site for regular maintenance of mobile equipment. These hydrocarbons will typically be contained in small quantities of up to 5 litres, but occasionally in 25 litre drums. All of these hydrocarbons will be stored undercover (in shipping containers).

5.15.2. **Chemical Storage**

Quantity and Type – There will be limited quantities of chemicals stored on site as part of the regular site activities. These chemicals are typically domestic cleaning products and will generally be up to a maximum of 5L containers, but more typically small containers and spray cans of detergents and pesticides.

5.16. **Contaminated Site Identification**

A review of the DER Contaminated Sites Data Base ([https://secure.dec.wa.gov.au/idelve/css/](https://secure.dec.wa.gov.au/idelve/css/)) has indicated that the site is not a registered Contaminated Site.

Due to there being no known site contamination, the site will not be registered as a Contaminated Site.
5.17. **Surface Water Management**

All surface water generated on any part of the site yet to be excavated or not involved in composting activities is diverted from east to west where the water is captured in a stormwater basin running beyond the western boundary of the Quarry Area, from where it is captured in existing dams or soaks into the ground.

Surface water collected within the active quarry area is collected within a sediment dam to be located at the northern end of the existing quarry.

Surface water collected within the composting area is diverted to and collected within the leachate dam. No water from outside the composting area can enter the area via the installation of swales surrounding the site.

5.18. **Groundwater Management**

There is no groundwater impact as a result of the proposed Excavation and C&D processing facilities; hence, there is no requirement for any groundwater management from these activities.

The composting facility will contain all leachate and stormwater within the composting area leachate dam. As per the Composting standard draft, a minimum of three bores will most likely be required to determine baseline levels and effectiveness of liquid containment features and processes.

5.19. **Reporting requirements**

As the site requires DER approval, all activities and impacts are required to be reported annually to the DER to maintain compliance. A copy of the report will be provided to the Shire as required.
6. Rehabilitation Program

The site is zoned Rural under the Shire of Victoria Plains Town Planning Scheme. The Local Planning Policy #10, “Basic Raw materials and Extractive Industries” has the following objectives:

- To manage the extraction of basic raw materials within the rural zones in accordance with best industry practices including consideration of end use and rehabilitation at time of decommission;

- To ensure appropriate buffer areas are applied to protect the extractive operations as well as the living or agricultural environment in nearby areas.

The proposed excavation has been designed to enable rural activities to continue and thrive once the site is no longer utilised for extractive purposes.

The site will be contoured to provide a usable surface to enable cropping to occur and a quarry sediment dam will be in place as shown in Map 11.

The topsoil will be augmented with compost thorough the assistance of agronomists to improve the yield of the land prior to returning it to rural use.