



**EXTRACTIVE INDUSTRY APPLICATION  
&  
ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

**LOT 13 ON DEPOSITED PLAN 87525,  
(324 HORTON ROAD), WOTTATING**

September 2020

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# Extractive Industries Licence Application and Environmental Management Plan

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LOT 13 ON DEPOSITED PLAN 87525,  
(324 HORTON ROAD), WOOTTATING



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(324 Horton Road) Woottating

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# 1 INTRODUCTION

## 1.1 GENERAL DESCRIPTION OF THE PROPOSAL

The purpose of this report is to provide all the necessary information required in support of a Development Approval (DA) application and an Extractive Industries Licence (EIL) (Appendix 1) by the proponent, B & J Catalano Pty Ltd for 324 Horton Road, Woottating, Shire of Northam.

The report sets out the details for the extraction of laterite gravel within an area of 12.2ha on the property. It also provides an environmental assessment of the proposal and the proposed rehabilitation plan for the site.

## 1.2 PROPERTY DESCRIPTION, OWNERSHIP AND LOCALITY

Land Description:	Lot 13 on Deposited Plan 87525
Volume:	2026
Folio:	553
Area:	133ha
Ownership:	Paul Guy Curtis & Sean Thadeus Curtis

The property is located approximately 54 km north-east of the Perth Central District and 5 km north-east of the Lakes. It is accessed from Horton Road off the Great Southern Highway.

Figure 1 shows the regional location of the property.

A letter of authorisation from the landowners is included in Appendix 2.

## 2 PLANNING ISSUES

### 2.1 PRESENT LAND USE

Lot 13 on Horton Road consists of remnant native vegetation after being cleared for presumably grazing purposes in the early 1980s. Remnants of native vegetation in the cleared paddocks and parts of proposed extraction area have persisted on the site since the initial clearing. The property has been used for grazing.

A 26ha portion of the property, as described on its Certificate of Title, was registered as Memorial Land on 30/4/1999 under Memorial H094865 (attached in Appendix 2) under the Soil and Land Conservation Act 1945 Section 30B. The covenant stipulates that the proprietors of the property recognise the value of sound land management and the value of protecting areas within the land described in Memorial H094865. Under this agreement, parts of this property (totalling 26ha) are to be retained and protected as native vegetation and adequately fenced to exclude all access of livestock by 28 February 2002 to promote growth of native vegetation.

These pockets of land on the property described by Document Memorial H094865 are not part of the application area (Figure 2). In accordance with the Shire's guideline sets out in the Local Planning Scheme No 6, Local Planning Policy No.21, the proposed extraction area also has a separation distance of 50m from the nearest pocket of land covenanted by the Document on the east side of the Property.

A compost manufacturing company (River Nominees Pty Ltd, trading as Purearth Composting) is operating on the southeast part of Lot 13 under Department of Water and Environmental Regulation (DWER) Licence number L8769/2013/1. Surrounding land uses comprise rural lots and extractive industries. A basic raw material screening facility owned by Fairfield Holding Pty Ltd / TA Capital Recycling with a Licence Number L8797 / L9251 is operating immediately adjacent to the northern Lot boundary. Voyager II Quarry of BGC Quarries Pty Ltd is situated approximately 1100 m southwest of the Lot boundary.

Lot 13 does not fall within the Environmentally Sensitive Areas under DWER-046 (Landgate 2020). The property lies within a "Rural" zone as defined by the Shire of Northam's Town Planning Scheme No. 6. Figure 2 shows the site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

## 3 EXISTING ENVIRONMENT

### 3.1 CLIMATE

The proposed extraction area is located within the Shire of Northam which experiences a mild, temperate climate with hot, dry summers and cool, wet winters.

The most recent data from the Bureau of Meteorology (BoM) Bakers Hill weather station and the BoM York weather station have been reviewed for this report. The mean 9 am wind speed for the area with the most recent data available from 1971 to 1985 shows that strong wind conditions of 22-27 knots on the Beaufort Scale may occur in January and February. Over the other months of the year, the mean wind speeds record light or moderate conditions. In the afternoon, the wind is lighter with maximum mean 3 pm windspeed of between 13-14 knots during the summer months. The winds are predominantly east to south-east in the mornings and switching to west in the afternoons.

Rainfall data collected from 1964 to 2019 by shows the highest rainfall occurs in July and is generally higher during the months of May to August.

### 3.2 TOPOGRAPHY AND DRAINAGE

The majority of the property comprises of very gentle to medium slopes of between 3% to 8% with the proposed extraction area having gentle slopes between 6% to 8%. The elevation within Lot 13 ranges between 275m AHD and 305m AHD with the proposed extraction area varying between 295m AHD and 275m AHD. Drainage on the property flows towards the north. Surface runoff management is discussed in section 5.5 of this document.

Two minor ephemeral watercourses flow northward through Lot 13. One is located approximately 450m west of the proposed extraction area, and the other is approximately between 80 to 150 m northeast of it.

The majority of the property lies within the Worooloo sub catchment of the Swan Avon – Lower Swan hydrographic catchment in the Swan Coastal Basin. The property falls within Surface Water and Groundwater Proclamation Areas under the *Rights in Water and Irrigation Act 1914* (RIWI). The property does not fall within a Public Drinking Water Source Area (NationalMap, 2020).

No Environment Protection Policy (EPP) wetlands or lakes exist within the site or within 1000m of the proposed extraction operations (WALIS 2020). The Worooloo Brook, formed from the confluence of the two minor ephemeral watercourses that flow through the Lot is located approximately 400m north of proposed extraction area.

There are five dams on Lot 13, three are within the compost manufacturing facilities of Purearth and two are located southwest and west of the proposed extraction area, along the western creek.



### 3.3 GEOLOGY AND SOILS

Geologically, the western side of the Shire of Northam consists of laterites of the Darling Scarp overlying granites of the Yilgarn Block. The area from Northam to York consist of Archaean granites, gneisses and migmites with some meta-sediments and volcanic areas (McArthur, 1991).

The soil on the site has been mapped and described in the Yalanbee Subsystem (Ya) as 235WnYa which is described as residual plateau at the top of the landscape shallowly dissected by Pindalup valleys. The soils are predominantly pisolitic gravelly, yellowish brown soils that vary in texture from loamy sands to clays, with pockets of pale sands and areas of outcropping laterite (Northam Land Resources Survey).

### 3.4 GROUNDWATER AND HYDROLOGY

There are no wetlands within the proposed extraction area.

Depth to groundwater information of Lot 13 has been obtained from three monitoring bores located on the property (Table 1). These three groundwater bores were installed to monitor any possible changes in groundwater quality and levels associated with the neighbouring compost manufacturing operations. The groundwater intercepted by these bores is described as a seasonal perched aquifer above the pallid clay zone of the laterite profile. The perched aquifer is reported to be dry during summer and, when present, is between 1m and 3m in thick. The depth to the perched groundwater across the South-eastern part of the Lot ranges from approximately 3.5m to 9m below ground level (mgl) (DWER, 2020).

**Table 1. Monitoring bores on Lot 13 Horton Road**

Bore	GIS Coordinates	AHD Levels
Bore 1	439463.48E 6475992.95N	290.99RL ground 291.24RL top of casing
Bore 2	439370.92E 6475948.63N	287.19RL ground 287.52 RL top of casing
Bore 3	439395.05E 6475861.91N	289.15RL ground 289.64RL top of casing

Source: DWER, 200

Depth to the regional groundwater table is approximately 20 mbgl-25 mbgl and its flow is inferred to be north-northeast with a shallow gradient of 0.002. Regional groundwater occurs in a low yielding, fractured rock aquifer located between the pallid clay zone and granite bedrock (DWER, 2020).

Since the groundwater table generally follows the elevation contours of the area, and utilising data from Bore 1, the closest bore to the proposed EIL area, it can be assumed that the highest groundwater levels within the extraction area occur at approximately 3.5m below ground level (for the seasonal perched aquifer) and 20m below ground level (for the regional groundwater table).

Groundwater will not be intercepted by the proposed gravel extraction as mining will only lower the ground level by 1m to 1.5m. The proposed operations will be at least 2m above the highest seasonal water table.

### 3.5 WETLANDS

There is no wetland within nor adjacent to the Property.

### 3.6 VEGETATION

A flora, vegetation and Black Cockatoo habitat assessment was conducted on the proposed extraction area in 2019 (PGV Environmental, 2019). According to search results from DBCA Naturemap Database, there are no threatened ecological communities within a radius of 10km. A search using the Commonwealth Government's Protected Matters Search Tool also resulted in no threatened flora identified as occurring within 5 km of the site.

Native vegetation on the proposed extraction area has been cleared extensively for grazing purposes in the early 1980s. Remnants of native vegetation in the cleared paddocks have persisted.

The property contains stands of trees over weeds and does not contain any areas of good quality native vegetation. As a result, native vegetation condition over the property is rated as 'completely degraded' according to the Keighery scale of Vegetation Condition Rating (Keighery, 1994). The property was severely burnt in May 2019. The fire did not impact on the presence or condition of understory vegetation as there was no native understory present before the fire.

The proposed extraction is mapped as the Murray 2 Vegetation Complex of the Darling Plateau (National Map 2019). This complex is described as: "Open forest of *Eucalyptus marginata* subsp. *thalassica*-*Corymbia calophylla*-*Eucalyptus patens* and woodland of *Eucalyptus wandoo* with some *Eucalyptus accedens* on valley slopes to woodland of *Eucalyptus rudis* and *Melaleuca raphiophylla* on the valley floors in semiarid and arid zones" (Shepherd et al., 2001).

There is a small area in the southern part of the property that is mapped in the Yalanbee, Y5 complex, described as "a mixture of open forest of *Eucalyptus marginata* subsp. *Thalassica-Corymbia calophylla* and woodland of *Eucalyptus wandoo* on lateritic uplands in semiarid to perarid zones" (Shepherd et al., 2001)

Lot 13 does not fall within any Environmentally Sensitive Areas under DWER-046 (Landgate 2020). The remnant trees on the site are not considered representative of any intact vegetation complexes. No intact native vegetation occurs on the site. The remnant trees on the site are predominantly Marri (*Corymbia calophylla*) and a few scattered Jarrah (*Eucalyptus marginata*) with two Wandoo trees (*Eucalyptus wandoo*) close to a creek line situated 45m east/west/ of the proposed extraction area. The only other native species recorded on the site was Harsh Hakea (*Hakea prostrata*).

A clearing permit was submitted to the Department of Water and Environmental Regulation (DWER) on 11/08/2020.

### **3.7 FAUNA**

A search of the EPBC Protected Matters Database identified the area as potential (unconfirmed) breeding habitat for *Calyptorhynchus latirostris* (Carnaby's Black-Cockatoo) (DoEE 2019). It is not within the confirmed or unconfirmed roosting areas for Carnaby's Black Cockatoo. The Black Cockatoo habitat assessment conducted in 2019 showed that the property contained four species of foraging habitat trees for Black Cockatoo, with an estimated total canopy coverage of 2.6ha (PGV Environmental, 2019). However, there was no evidence of trees being utilised as roosting by Black Cockatoos. The nearest recorded roosting sites are reported to be around 2.6km to the south west (National Map, 2019).

### **3.8 DIEBACK DISEASE**

The area does not fall within forest disease risk area. Dieback mapping has not been undertaken for the site. Due to the large areas of cleared land within the proposed extraction area, the site should be classified as uninterpretable and managed as such.

### **3.9 CURRENT ZONING**

The area is zoned as "Rural Areas" in accordance with the Shire of Northam Town Planning Scheme No.6.

### **3.10 EXISTING INFRASTRUCTURE ON THE SITE**

Lot 13 is accessed by Horton Road which is a partly sealed public road. Internal roads are unsealed. Some internal roads are utilised by the compost manufacturing company (Purearth) operating in the southern section of the property, adjacent to the proposed extraction area. The composting operation has a couple of structures on site, one is utilised as an admin building with toilet facilities, and the other is a shed for compost mixing. The operation also has 3 dams to manage its effluent.

The property boundary is fenced for cattle grazing. The areas covenanted under Memorial H094865 are also fenced. An internal fence line separates the composting facilities from the proposed extraction area.

## 4 THE DEVELOPMENT PROPOSAL

### 4.1 EXISTING DEVELOPMENT

There has been no previous mining operations on Lot 13.

### 4.2 PROPOSED EXTRACTION ACTIVITIES

It is proposed to extract approximately 207,000 tonnes of gravel from an area totalling 12.2ha in three stages over a period of 5 years using an average gravel thickness of 1m and a specific gravity of 1.7tonnes per m<sup>3</sup>. The first stage will cover an area of 3.5, the second 5ha, and the third 3.7ha. While acknowledging the Shire's guideline to restrict the open pit to 2 hectares (Shire of Northam, 2019), the Proponent proposes to extract from an area larger than 2 ha in each stage because the capacity of equipment used by the Proponent will not efficiently fit into a 2ha plan. The use of larger capacity equipment will shorten the extraction and disturbance times that will enable rehabilitation programs to commence sooner.

An extractive industries licence is required for the purpose of commencing the following activities on the site:

- Extraction of gravel from an area of 12.2ha as shown in Figures 3. Stage 1, 2 and 3 will involve extraction of approximately 207,000 tonnes of gravel.
- Topsoil will be removed from the extraction area prior to the commencement of each stage, with only the area targeted for immediate extraction being open. Topsoil will be stockpiled separately along the edges of the extraction area, with stockpiles being no higher than two metres.
- A bulldozer will rip and blade gravel into stockpiles. A mobile crushing and screening plant will be used on site for approximately four weeks per year, dependent on the size of the campaign. Trucks will enter the excavation area via Horton Road off Great Southern Highway and be loaded from product stockpiles by a front-end loader.
- Excavation will result in a reduction in ground level of between 1m to 1.5m.
- Topsoil will be replaced over exhausted stages of the excavation and seeded with pasture species on a progressive basis prior to the commencement of winter.
- Ongoing monitoring and maintenance will be undertaken until the rehabilitation completion criteria have been met.

Table 2 summarises the stages of the extraction operation and the estimated timeframes for the associated activities.

**Table 2. Stages of the Extraction Operation and Estimated Timeframes**

Action	2020		2021		2022		2023		2024		2025	
Clearing – stages 1 -3												
Mining – stages 1 -3												
Landscape Recontouring – stages 1 -3												
Progressive revegetation												
Monitoring and maintenance												

### 4.3 SITE ACCESS AND EGRESS ROADS

It is proposed to access the site from Horton Road off Great Southern Highway. Existing formed roads (which have been previously used for the transport of compost within the property) will provide access to the proposed extraction areas.

### 4.4 PROPOSED INFRASTRUCTURE

A weighbridge and staff/contractor's car park will be located immediately south west of the proposed extraction area (Figure 2).

No onsite book-keeping will be performed, therefore site office will not be built nor power supply for office be required. The only power supply required is for the crushers when in operation and this will be supplied by mobile generators.

Existing ablution and water closet facilities situated within Purearth Composting Site will be utilised.

Although there are two dams along the creek on the western part of the Lot, water for dust suppression will not be sourced from these dams. Water for dust suppression will be outsourced from other commercially available sources.

No fuel or lubricant storage will occur on the site. Refuelling will take place using a mobile refuelling vehicle which is equipped with a "snap-on snap-off, fast-fill and auto shut-off" facility. Plant will be refuelled each morning, leaving the vehicles almost empty overnight. No major servicing, which could lead to fuel and oil spills, will take place on the site.

### 4.5 ESTIMATED TRAFFIC TO BE GENERATED

The following estimates are made for extraction areas stage 1 to 3:

Total annual gravel removal:	69,000 tonnes
Number of working days per month:	22 days
Vehicle payloads (GAVs <sup>1</sup> ):	Truck and Dog (40 tonnes) Road Train (50 tonnes)
Proportional use:	40 tonners (50%) and 50 tonners (50%)

The above factors suggest a maximum of 8 loaded truck movements per day, but this will be dependent on demand. Operating times will be Monday to Friday 0700 hours to 1800 hours and Saturdays 0700 hours to 1200 hours.

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<sup>1</sup> General Access Vehicle (*Road Traffic Rules and Regulations 2002*)

## 5 POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

Short term negative environmental impacts are to be expected in the process of all mining actions. However, these can largely be mitigated over the medium to long term provided that operating procedures are in accordance with acceptable standards and that environmental management measures are implemented. The following listed potential impacts are used as a check list to ensure that all potential major impacts are addressed.

### 5.1 FLORA AND FAUNA

Since the majority of the area has been cleared and the site is devoid of intact native vegetation, there will be no significant impact to indigenous flora and fauna. The proposed extraction area boundaries have been planned to avoid stands of trees and remnant vegetation on the property. This includes a separation distance of 50m between the proposed extraction area and the Memorial Land on the east side of the property to further protect remnant native vegetation on the pocket of land.

An investigation of FloraBase showed that there are no known records of flora species protected under the EPBC Act identified as having the potential to occur within the proposed extraction area.

Of the fauna species identified from the EPBC Protected Matters Search Tool (DoEE 2019) as having the potential to occur within the proposed extraction area, only one species, Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) may use the area as potential foraging and breeding habitat. A targeted Black Cockatoo survey was undertaken for the proposed extraction area in 2019 (PGV Environmental, 2019). Results from the survey indicated that mining will not have a significant impact on the Carnaby Black Cockatoo or the Baudin's Black Cockatoo.

### 5.2 WEEDS

A weed management plan will be implemented as described in Appendix 3 of this report.

### 5.3 ALTERATION OF THE LAND SURFACE

No steep slopes will remain after extraction and this will ensure that the extraction area will blend into the surrounding landscape. The final land surface will be between 1 to 1.5 metres below the original ground level and the edges will be battered back to a gradient of 1:6.

### 5.4 VISUAL IMPACT

Being 700m-900m away from the nearest public road (Horton Road) and situated on the other side of the ridge and a pocket of land with protected remnant native vegetation, the proposed activities will hardly be visible from Horton Road. A portion of the proposed extraction area will be visible for a short stretch along the Lot border to the north. However, this will be significantly less than the existing visual impact created by the Voyager II Quarry south of the Lot boundary.

It is thus concluded that whilst some visual impact will be occurred, this will be acceptable due to the nature of current land uses in the area.

Once rehabilitation has been completed in these areas and pastures established, there will be little evidence that extraction has taken place. Existing remnant vegetation along fence lines in the west and north will be retained to provide an element of screening for the proposed extraction.

## **5.5 WATER**

In all extraction operations, the potential exists for impacts to be incurred on surrounding water resources, or by stormwater erosion of exposed areas. This is dependent on the slopes associated with the site, the nature of the ground materials and the proximity of the site to sensitive receptors such as aquifers, wetlands, lakes or rivers.

Management measures to mitigate potential impacts to or from water are contained in the Water Management Plan included as Appendix 4 and summarised below.

### **5.5.1 Water Management**

#### **5.5.1.1 Surface Water Management**

Surface drainage within the proposed EIL area is to the north towards Chinganning Gully which drains into Worooloo Brook.

There are drainage lines near the EIL area (Figure 3). One dam is located to the west and one to the south-west of the EIL area, along the drainage lines. In accordance with the Shire's guideline sets out in the Local Planning Scheme No 6, Local Planning Policy No.21, the boundaries of the proposed extraction area also have a separation distance of between 80 to 150 m from the nearest water course on the east and north of the property.

The proposed extraction area does not intercept any expressions of surface water such as lakes, wetlands, dams, rivers or creeks, and no surface drainage lines have been identified within the proposed extraction areas.

#### **5.5.1.2 Stormwater Management**

Stormwater at this site is not expected to pose a risk of impact to the environment. The pit will be 1 to 1.5 metres below ground level and combined with the gentle slopes of the proposed extraction area, most stormwater will naturally be retained within the pit.

The management of stormwater on this site will be as follows:

- Any surface runoff from unmined areas outside the proposed extraction area will be diverted around the workings by means of topsoil stockpiles placed along the boundaries of the stages acting as diversion banks.



- The runoff generated by direct rainfall onto the working stage will be managed by:
  - Stormwater detention ponds constructed in each stage whilst it is being worked, with all stormwater generated from the active cell being directed to ponds by contour banks. The ponds will serve as effective silt traps in times of high surface runoff.
  - Strategically placed stockpiles to reduce water flow within the extraction area.
- On completion of the extraction stage, contour banks will be constructed across the final landform with an average fall of 0.2% and within a range of 0.1 and 0.4%. The contour banks will be spaced approximately 30m apart.

### 5.5.1.3 Groundwater Management

The project does not involve abstracting groundwater for operational purposes. No groundwater will be exposed by this development since extraction will only lower the ground level by 1m to 1.5m and depth to the nearest perched groundwater is approximately between 3.5-9 mbgl. The regional groundwater is approximately between 20 mbgl-25 mbgl (See Water Management Plan in Appendix 4).

Due to the low scale nature of the operations, no groundwater contamination is anticipated. Since no fuel or lubricant storage, refuelling nor major servicing will occur on the site, fuel or oil spills are not anticipated.

Contaminated material resulting from any minor spills will be extracted and disposed of offsite at an appropriate landfill facility.

## 5.6 NOISE

The proposed development will generate some operational noise during periods of stripping, crushing and screening, but this will be limited to approximately to four weeks per year. Mitigation measures will be implemented which will limit the impact of operational noise.

The site is surrounded by farming land, extractive industry operations and rural small holdings. The closest noise sensitive premises are the compost manufacturing office / facilities located within the Lot, approximately 265m south and southwest of the proposed extraction area. Three residential dwellings are located within the Lot, approximately between 650 – 740m southwest and west of the closet point of the proposed extraction area. These dwellings are not occupied. Two other dwellings within 1000m of the proposed operations are an office and a structure used by the basic raw material screening operation located on 366 Horton Road (Capital Recycling), immediately north of the Lot. Since the dwellings within the 1000m radius of the proposed extraction area are either vacant or parts of rural or extractive industry operations, it can be inferred that the environmental impacts of noise on these premises will be low.

The closest residences to the outer boundaries of the extraction areas are summarised in Table 3 and illustrated on Figure 2.

Three closest dwellings beyond 1000m of the proposed operations are located approximately 1500 m to the west, southwest and southeast of the proposed extraction area. These premises are located outside of the prescribed 1000m buffer required for Category 12 operation (Environmental Protection Authority, 2005).

The following management measures will be implemented to mitigate potential noise impacts:

- Hours of operation will be restricted to between 0700 hours and 1800 hours on weekdays and between 0700 hours to 1200 hours on Saturdays.
- Late model equipment will be utilised with reduced noise level outputs.
- Broad-band reversing warning devices (croakers) will be utilised on heavy machinery and trucks.
- During mining, topsoil will be pushed up in bunds along the edges of the pit and these will serve to attenuate the noise.
- During crushing and screening, gravel stockpiles will be placed around the plant and this will act as an additional buffer
- The crushed material will be stockpiled in a manner that will maximize the buffering of noise that might occur from the loading of trucks after mining operations have ceased
- A complaints register will to be used, with all complaints being formally recorded
- The signage on the gate will include the contact telephone number of the quarry manager to allow for quick reaction to any complaints that might arise.

Table 3. Structures within 1000m of the Proposed Extraction Area

Reference No on Figure 2	Structure Location	Type of Structure	Distance	Direction
S1	324 Horton Road, Woottating	Office	273m	SW
S2	324 Horton Road, Woottating	Compost Mixing Shed	265m	SW
S3	324 Horton Road, Woottating	House	650m	SW
S4	324 Horton Road, Woottating	House	665m	W
S5	324 Horton Road, Woottating	House	734m	W
S6	366 Horton Road, Woottating	House	700m	W
S7	366 Horton Road, Woottating	Basic Raw Material Screening Facilities	450m	NW

## 5.7 DUST

There is potential for dust to be generated from active working areas, stockpiles and unsealed roads under dry, windy conditions. A Dust Management Plan has been prepared to address dust management during the operational and rehabilitation stages of the extraction project and is included in Appendix 5.

A summary of dust control measures to be implemented for the extraction project are given in Table 4.

**Table 4. Summary of Dust Control Measures to be implemented for the Extraction Project**

Activity	Action	Control measure	Result
<b>Daily</b>			
Vegetation clearing and topsoil stripping	Timing of earthworks.	The timing of clearing and stripping will align to periods of high soil moisture and low wind.	Reduced dust generation.
Gravel extraction and product loading.	Visual inspection of site and access road for dust generation that is moving off site.	Water cart application over dust prone areas to reduce dust lift off.	Reduced dust generation.
Product transport.	All loads covered before leaving the property.	Cover loads.	Reduced dust generation from product transport.
<b>As Required</b>			
Training.	Induct all employees and contractors working on site.	Site induction includes awareness of dust generation and management measures to be utilised by all personnel on site.	Activities undertaken to minimise dust generation on site.
Progressive rehabilitation / stabilisation of completed areas.	Undertake progressive rehabilitation to stabilise soil.	Progressive rehabilitation to be undertaken as per Section 6 of this report.	Reduced dust generation from the property.
Dust complaints.	Provide a contact number for any complaints on access signage.	Undertake review of potential complaints and implement appropriate action to reduce dust generation from site.	Reduced dust generation from the property.

## 5.8 DIEBACK

Since the majority of the area to be extracted is cleared, it is not possible to ascertain the dieback status of the area. The area should thus be classified as “uninterpretable” and managed as per the guidelines applicable for this classification (Dieback Working Group 2010).

### 5.8.1 Dieback Management

The following management measures will be put in place to minimise future spread of dieback:

- The site will be fenced at all times.

- Access to the site will be via a single entrance gate.
- All machinery, trucks and other vehicles will arrive in a clean condition free of soil and organic matter that may contain dieback fungus.
- Any soil or plant material brought to site for rehabilitation purposes should be free from dieback sources.
- Employees and contractors working on the site will be informed of the purpose of the above measures and their responsibilities in relation to dieback prevention.
- The site will not be worked during extremely wet periods.

B&J Catalano Pty Ltd has a guideline to manage dieback on its sites. The guideline was developed following the Best Practice set out by the Dieback Working Group (Appendix 6).

## **5.9 HERITAGE SITES**

A search of the Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry System (AHIS) shows no registered sites or other heritage places on Lot 13. If during the works, an Aboriginal cultural heritage site is discovered, the Proponent will immediately advise the Department of Aboriginal Affairs and abide by the *Aboriginal Heritage Act 1972*.

## **5.10 ACID SULPHATE SOILS**

A search of the CSIRO's Australian Soil Resource Information System (ASRIS) database determined there were no acid sulphate soil (ASS) sites identified in the vicinity of the proposed EIL area with the area being classified as having an 'Extremely Low Probability of Occurrence' of ASS (CSIRO 2020). Therefore, the risk of exposing potentially ASS soils to the atmosphere is inferred to be very unlikely. The proposed extraction area is not associated with wetland environments.

## 6 REHABILITATION

### 6.1 PROPOSED REHABILITATION MEASURES

Rehabilitation of the completed areas will be progressive with most of the area being returned to pastures. The following steps will be implemented:

- Topsoil and overburden will be stripped at the commencement of each extraction stage and will be stored in stockpiles placed along the edges of the operational areas to be used during rehabilitation.
- Areas where compaction has occurred will be ripped.
- Batters will be smoothed to 1:6 and the base of the pit levelled out.
- Stockpiled topsoil and overburden will be spread over the completed areas.
- The area will be planted with pasture species and native vegetation as required by the conditions of the clearing permit.
- Contour banks with an average fall of 0.2% and within a range of 0.1% and 0.4% will be constructed at elevation intervals of approximately four metres.
- Monitoring and maintenance of rehabilitated areas.

The final rehabilitated surface is estimated to be approximately 0.8m lower than the original ground level and blended into the surrounds. This post rehabilitation floor level will result in a separation distance greater than the minimum 0.5m above the historical maximum winter groundwater level recommended by DWER for future land use of pastures (DWER 2019).

Native revegetation will be undertaken in accordance with any clearing permit conditions. A separate management plan for rehabilitation will be prepared once the conditions have been granted

## 6.2 MONITORING AND MAINTENANCE

Monitoring will be carried out on an annual basis to assess:

- the physical stability of the landform in the rehabilitated areas.
- the success of germination of pasture grasses.
- the emergence of weeds.

Monitoring will continue until the completion criteria presented in Section 6.3 have been fulfilled.

Maintenance procedures will be carried out where necessary and will include:

- repair of any erosion damage.
- replanting/seeding areas that may not have regenerated.
- weed control.

## 6.3 COMPLETION CRITERIA

Completion criteria should be set at a high enough standard to ensure that the overall objectives of the rehabilitation have been met. These criteria should allow for efficient reporting and auditing so that rehabilitation works can be tracked and finalised within an appropriate timeframe.

The completion criteria proposed for extractive operations on Lot 13 on Deposited Plan 87525 are presented in Table 5.

**Table 5: Closure Criteria and Interim Targets**

Criteria	Objective	Interim Targets
1. Safety	The site is safe to humans.	The site is safe to humans during operations
2. Sustainability	The site is sustainable in the long term without additional management inputs.	N/A
3. Suitability	The site is suitable for agricultural purposes.	N/A
4. Visual amenity and heritage	The rehabilitated extraction area blends into the surrounding environment.	N/A
5. Off-site impacts	Significant adverse off-site impacts are prevented.	N/A

Criteria	Objective	Interim Targets
6. Hydrology	<ul style="list-style-type: none"> <li>• Site hydrology does not prevent the establishment of desired vegetation.</li> <li>• Site hydrology does not reduce the stability of the landform.</li> <li>• Stormwater is contained within the site.</li> </ul>	<ul style="list-style-type: none"> <li>• Stormwater is contained within the site during operations.</li> <li>• Identification and mitigation of any hydrology related issues during operations.</li> </ul>
7. Soils and stability	<ul style="list-style-type: none"> <li>• Soil profiles and structures are sufficient to ensure vegetation establishment.</li> <li>• The landform is stable.</li> </ul>	<ul style="list-style-type: none"> <li>• Topsoil is respread in all rehabilitation areas.</li> <li>• Identification and mitigation of potential erosion scars and scours during operations.</li> </ul>
8. Vegetation	<ul style="list-style-type: none"> <li>• Pasture grasses cover the entire targeted area.</li> <li>• Pasture grass cover is sufficiently resilient to sustain grazing pressure.</li> <li>• Successful regeneration of native vegetation over the required area.</li> <li>• Native species survival rates to be 1 per 8m<sup>2</sup>.</li> <li>• Monitoring will be conducted on an annual basis just prior to the wet season and will include plant survival rates and stability of the constructed batters.</li> <li>• Maintenance will include the replacement of plants in all areas that do not meet the interim targets</li> </ul>	<ul style="list-style-type: none"> <li>• After one-year pasture grasses cover 30% of target area increasing by 20% per annum thereafter.</li> <li>• After the first season at least 50% survival rate of native plants after the following dry season.</li> <li>• Successful establishment of 70% of plants after 1 year, 80% by year 3 and 100% by year 7.</li> <li>• The existence of at least 1 tree or shrub stem per 8m<sup>2</sup> (on average) after a period of 7 years</li> </ul>
9. Weed	<ul style="list-style-type: none"> <li>• Declared pest weeds are absent.</li> <li>• The level of weed species should not be detrimental to the pasture grasses.</li> </ul>	<ul style="list-style-type: none"> <li>• Weed species removed systematically during operations.</li> </ul>

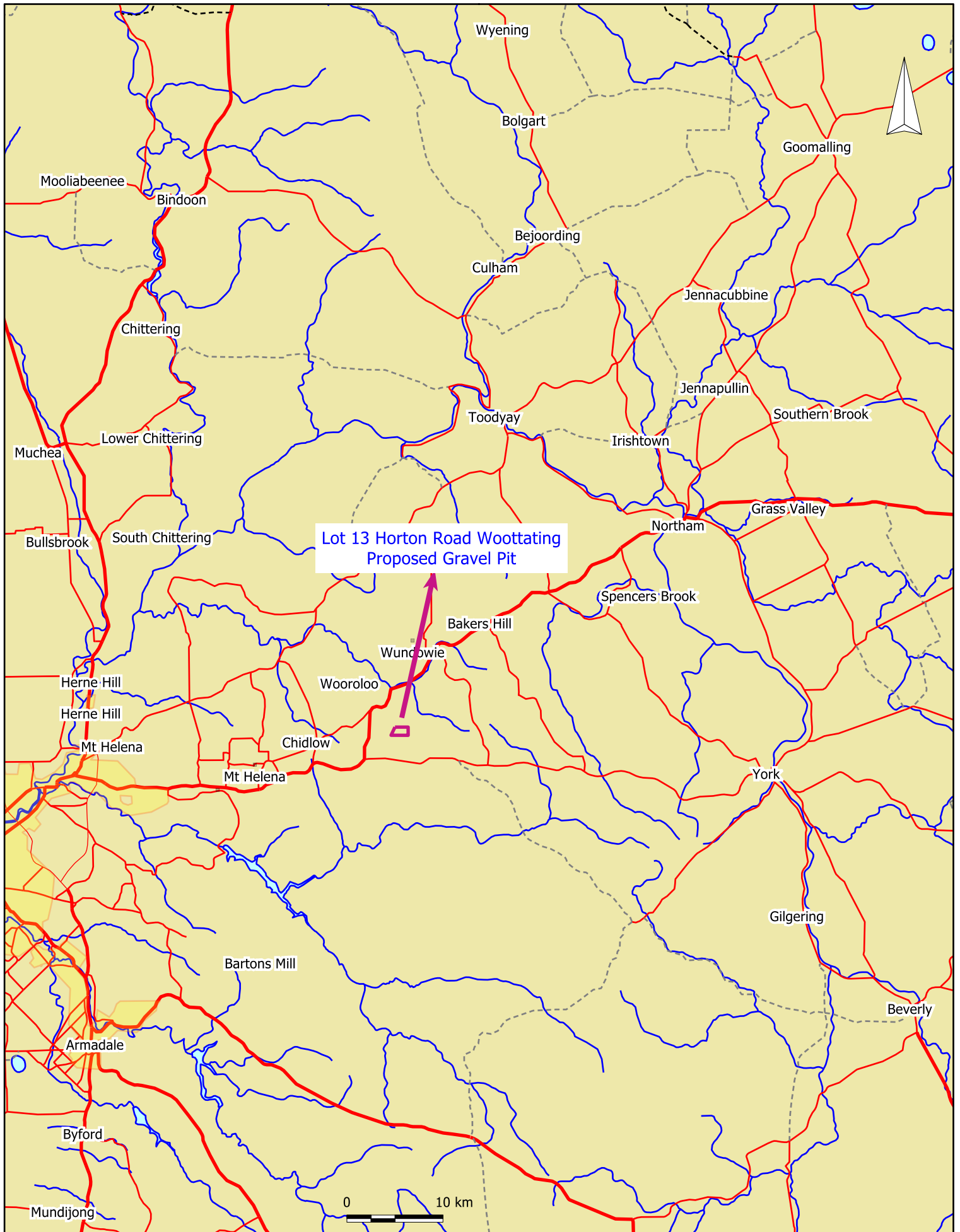
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## **FIGURES**



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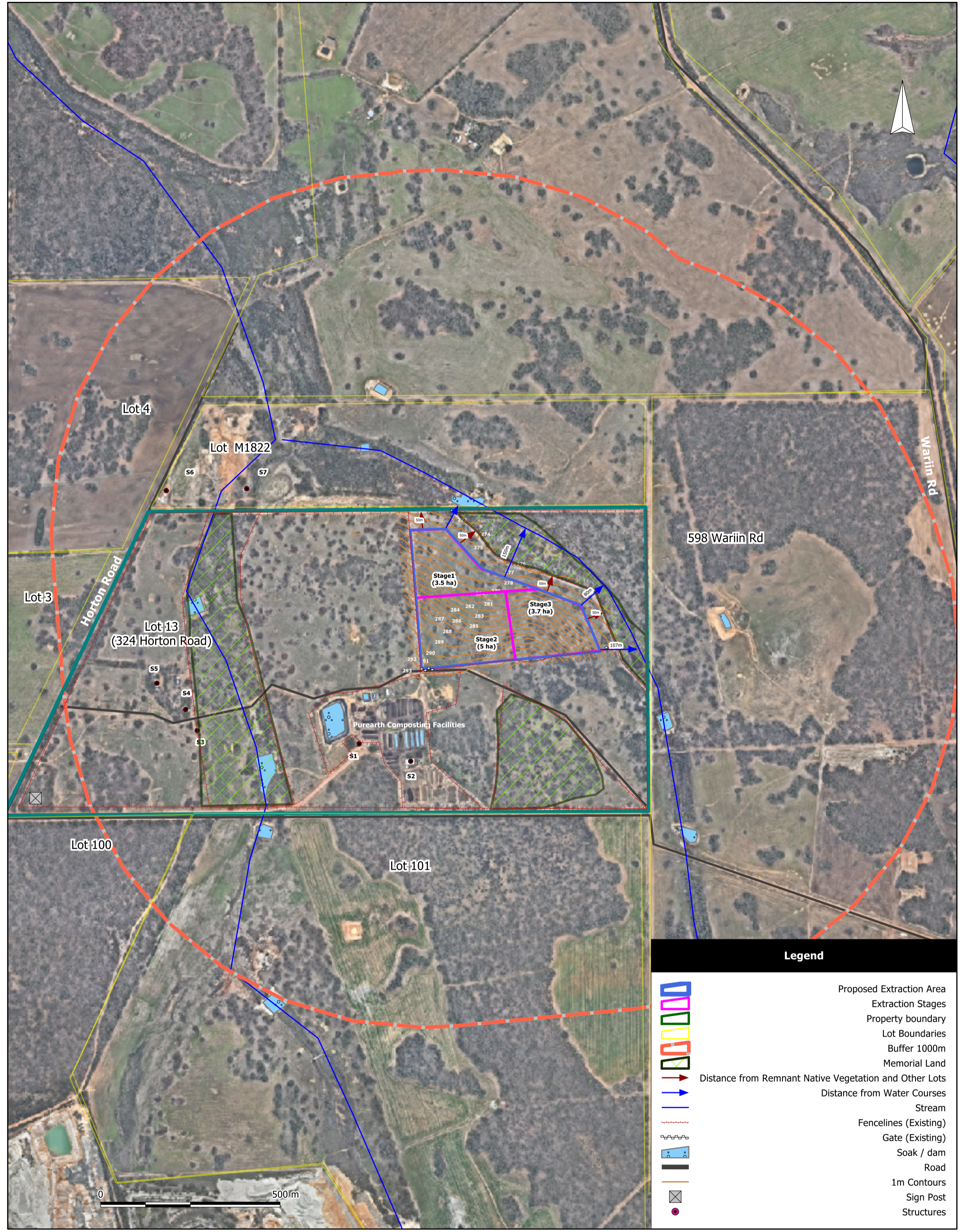


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Scale: 1:500000  
Original Size: A4  
Datum: GDA94  
Projection: Australia MGA94 (50)

Client: B & J Catalano  
Project: Gravel Extraction  
Location: Lot 13, Horton Road  
Woottating

**Figure 1:  
Locality Plan**



**Legend**

- Proposed Extraction Area
- Extraction Stages
- Property boundary
- Lot Boundaries
- Buffer 1000m
- Memorial Land
- Distance from Remnant Native Vegetation and Other Lots
- Distance from Water Courses
- Stream
- Fencelines (Existing)
- Gate (Existing)
- Soak / dam
- Road
- 1m Contours
- Sign Post
- Structures



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Projection: Australia MGA94 (50)

Client: B & J Catalano  
Project: Gravel Extraction  
Location: 324 Horton Road, Woottating,  
Shire of Northam, WA

**Figure 2:**  
**Site and Surround**



-  Proposed Extraction Area
-  Proposed Extraction Stages
-  Property Boundary
-  Crushers
-  Topsoil and Overburden Stockpile
-  Product Stockpile
-  Proposed Access Road
-  Existing Road
-  Parking Lot
-  Fence line
-  Gate
-  Stream

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 Project: Gravel Extraction  
 Location: 324 Horton Road, Woottating,  
 Shire of Northam, WA

**Figure 3:  
 Proposed Extraction Area**

## **APPENDIX 1**

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Northam

# **EXTRACTIVE INDUSTRY LICENCE AND DEVELOPMENT APPROVAL APPLICATION FORMS AND CERTIFICATE OF TITLE**

## **APPENDIX 2**

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## **LANDOWNER LETTER OF AUTHORISATION**

**APPENDIX 3**  
**WEED MANAGEMENT PLAN**





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## WEED MANAGEMENT PLAN

Prepared for B&J Catalano Pty Ltd  
Lot 13 on Deposited Plan 87525 (324 Horton Road),  
Woottating, Shire of Northam

### 1. INTRODUCTION

This Weed Management Plan (WMP) has been prepared in accordance with guidelines published by the Department of Agriculture and Food (DAF) (DAF 2014). This WMP should be read in conjunction with the report entitled *“Extractive Industries Licence Application and Environmental Management Plan (EMP) Lot 13 on Plan 87525, 324 Horton Road, Woottating, Shire of Northam, September 2020, prepared for B&J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.*

#### 1.1 locality and ownership

Locality: Lot 13 on Deposited Plan 87525, 324 Horton Road, Shire of Northam  
Ownership: Paul Guy Curtis & Sean Thadeus Curtis

#### 1.2 The development proposal

B&J Catalano Pty Ltd intend to extract 207,000 tonnes of gravel from an area totalling 12.2ha in three stages over a period of 5 years using an average gravel thickness of 1m and a specific gravity of 1.7tonnes per m<sup>3</sup>. The first stage will cover an area of 3.5, the second 5ha, and the third 3.7ha and it is intended to rehabilitate the area back to pastures.

### 2. RESPONSIBILITIES

B&J Catalano Pty Ltd accepts responsibility for weed management within Zones A and B (as identified in 6.1 of this report) and any areas identified within the conditions of approval set by the Shire of Northam.

### 3. CURRENT WEED STATUS OF THE PROPERTY

No declared weeds or weeds of local or regional significance are currently present on the properties. It is acknowledged that the proposed ground disturbance will result in the germination of certain weeds, but the species will not be known until emergence.

### 4. PROPOSED WEED MANAGEMENT ACTIONS

The following is a general description of the actions that will be implemented by B&J Catalano Pty Ltd for weed management:

#### **4.1 Weed Management Zones on the Subject Land**

For the purpose of this WMP, the subject land has been allocated zones as follows:

Zone A: This is all the land within the quarry and includes the base of the excavation, roadways and stockpiles of topsoil, overburden and all product stockpiles.

Zone B: This is all land that is at natural level and which extends 100 meters beyond the perimeter of the quarry and includes any stockpiles of soil or overburden created by the excavation and throughout the rehabilitated areas.

#### **4.2 Weed Emergence Monitoring**

Monitoring of the emergence of weeds in Zones A and B will be undertaken by an experienced and licenced weed management contractor on a six-monthly basis i.e. after the first seasonal rains and at the end of spring. In addition, B&J Catalano personnel on the site will be instructed to report any infestations that may occur on other occasions. Based on the type of weed that emerges, a control plan will be formulated by the licenced weed management contractor.

#### **4.3 Import and Export of Weeds**

B&J Catalano will ensure that all plant and equipment is clean and free of any soil when moving any equipment to or from the site. B&J Catalano will also ensure that any quarry products imported to the site will be free of weeds.

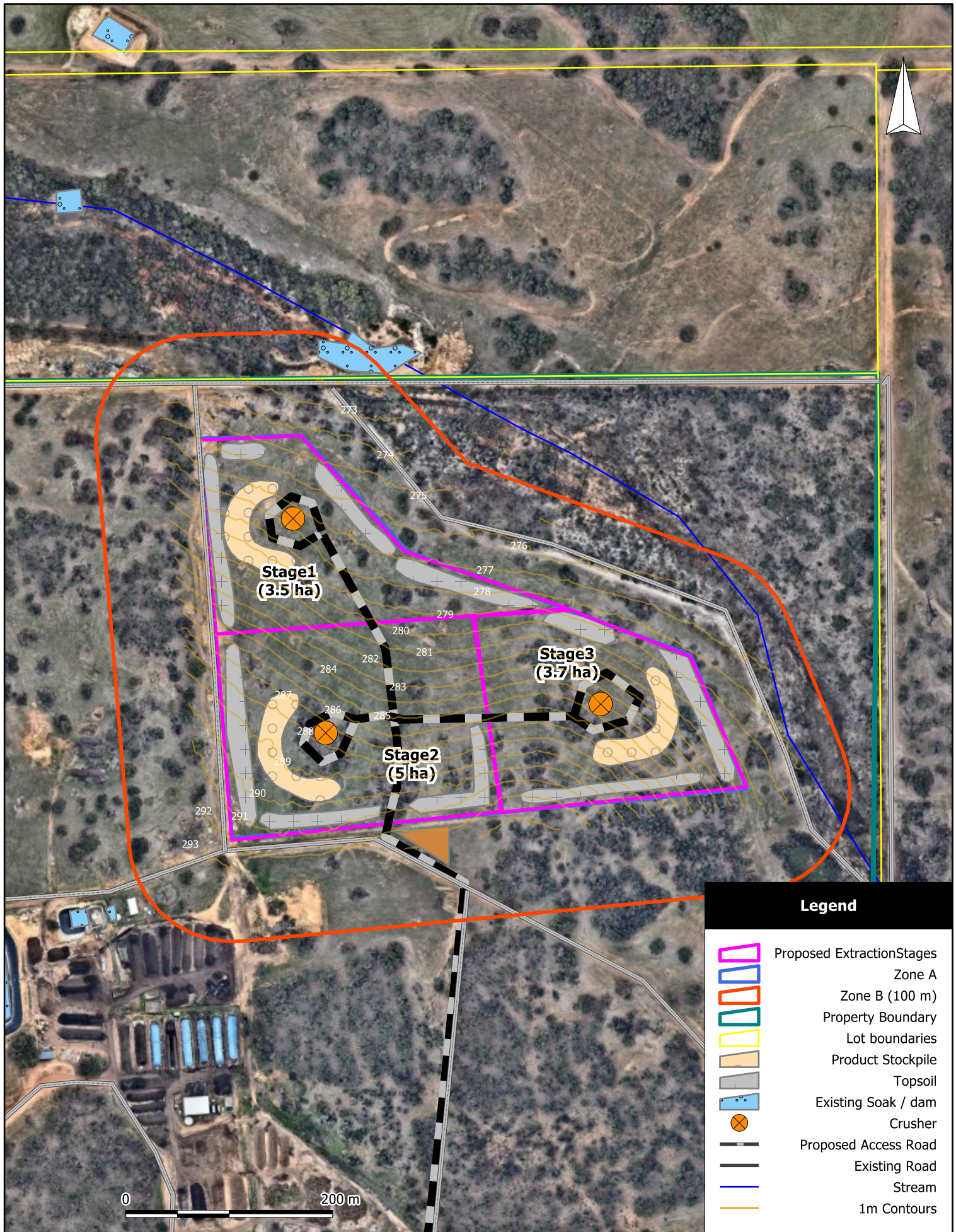
#### **4.4 Weed Control Program**

If a weed infestation occurs within Zones A or B, the licenced weed management contractor will apply the appropriate method of control, in accordance with the guidelines published by the DAF, whether chemical or mechanical, at the appropriate time. The weed management contractor will keep a record of all treatments.

### **5. REFERENCES**

Department of Agriculture and Food (DAF) (2014). Department of Agriculture and Food WA guidelines for weed control procedures for extractive industries licence.

**FIGURE**



**Legend**

- Proposed Extraction Stages
- Zone A
- Zone B (100 m)
- Property Boundary
- Lot boundaries
- Product Stockpile
- Topsoil
- Existing Soak / dam
- Crusher
- Proposed Access Road
- Existing Road
- Stream
- 1m Contours



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 Air Photo Source: Nearmap June 2020  
 Datum: GDA94  
 Projection: Australia MGA94 (50)

Client: B & J Catalano

Project: Gravel Extraction

Location: 324 Horton Road, Woottating, Shire of Northam, WA

**Figure 1:**  
**Weed Management Plan**

**APPENDIX 4**  
**WATER MANAGEMENT PLAN**

# WATER MANAGEMENT PLAN

LOT 13 ON DEPOSITED PLAN 87525,  
(324 HORTON ROAD), WOOTTATING,  
SHIRE OF NORTHAM

PREPARED FOR

**B & J CATALANO PTY LTD**



BY

**LUNDSTROM ENVIRONMENTAL CONSULTANTS PTY LTD**

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**SEPTEMBER 2020**

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Table 3:	Surface Water Management Areas and Runoff Volumes

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Figure 2:	Proposed Stormwater Management

## ANNEXURES

Annexure 1:	Hydrocarbon Spill Response
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# 1. INTRODUCTION

This Water Management Plan (WMP) relates to an Extractive Industries Licence (EIL) application for gravel extraction on Lot 13 on Plan 87525, 324 Horton Road, Woottating, Shire of Northam and should be read in conjunction with the report entitled *“Extractive Industries Licence Application and Environmental Management Plan (EMP) Lot 13 on Plan 87525 324 Horton Road, Woottating, Shire of Northam, September 2020”* prepared for B & J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

This report provides the following information:

- A description of the property and surrounds indicating the current contours
- A description of the proposed extraction program
- Stormwater and erosion management measures
- A description of the groundwater hydrology in the area
- A description of the proposed final land use after extraction has been completed
- A description of the potential for acid sulphate soil impacts



## 2. PROPERTY DESCRIPTION, OWNERSHIP AND LOCALITY

Property Description:	Lot 13 on Deposited Plan 87525
Volume:	2026
Folio:	553
Area:	133ha
Ownership:	Paul Guy Curtis & Sean Thadeus Curtis

The property is located approximately 54 km north-east of the Perth Central District, 5 km north-east of the Lakes

Figure 1 shows the Proposed Extractive Industry area and surrounding land

## 3. BACKGROUND

### 3.1 PRESENT LAND USE

Lot 13 on Horton Road consists of remnant native vegetation after being cleared for presumably grazing purposes in the early 1980s. Remnants of native vegetation in the cleared paddocks and parts of proposed extraction area have been retained on the site since the initial clearing.

Portion of the Property (26ha) as described in its Certificate of Title was registered as Memorial Land on 30/4/1999 (Document Memorial H094865). As per the Covenant of the Certificate, pockets of lands on the property have been and will be retained and protected as native vegetation.

A compost manufacturing company (River Nominees Pty Ltd, traded as Purearth) is operating on the southeast part the of the Lot with a Licence number L8769/2013/1. The surrounding area comprises of rural lots and extractive industries. A basic raw material screening facility is operating immediately adjacent to the northern Lot boundary. Voyager II Quarry of BGC Quarries Pty Ltd is situated approximately 1100 m southwest of the Lot boundary.

It does not fall within the Environmentally Sensitive Areas under DWER-046 (Landgate 2020). The property lies within a "Rural" zone as defined by the Shire of Northam's Town Planning Scheme No. 6. Figure 1 shows the site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application. There may be some requirements for revegetation associated with the clearing permit.

### 3.2 TOPOGRAPHY AND DRAINAGE

The majority of the property comprises of very gentle to medium slopes of between 3% to 8% with the proposed extraction area having gentle slopes between 6% to 8%. The elevation within Lot 13 ranges between 275m AHD and 305m AHD with the proposed extraction area varying between 293m AHD and 277m AHD. Drainage on the property flows towards the north. Surface runoff management is discussed in section 5.5 of this document.

Two minor ephemeral watercourses flow northward through Lot 13. One is located approximately 450m west of the proposed extraction area, and the other is approximately 100m east of it.

The majority of the property lies within the Worooloo sub catchment of the Swan Avon – Lower Swan hydrographic catchment in the Swan Coastal Basin. The property falls within Surface Water and Groundwater Proclamation Areas under the *Rights in Water and Irrigation Act 1914* (RIWI). The property does not fall within a Public Drinking Water Source Area (NationalMap, 2020).

No Environment Protection Policy (EPP) wetlands or lakes exist within the site or within 1000m of the proposed extraction operations (WALIS 2020). The Worooloo Brook, formed from the confluence of the two minor ephemeral watercourses that flow through the Lot is located approximately 250m north of the Lot boundary and 400m northwest of the proposed extraction area.

There are five dams on Lot 13, three are within the compost manufacturing facilities of Purearth and two are located west and southwest of the proposed extraction area.

### 3.3 GEOLOGY AND SOILS

Geologically, the western side of the Shire of Northam consists of laterites of the Darling Scarp overlying granites of the Yilgarn Block. The Northam-York consist of Archaean granites, gneisses and migmites with some meta-sediments and volcanic areas (McArthur, 1991).

The soil on the site has been mapped and described in the Yalanbee Subsystem (Ya) as 235WnYa which is described as residual plateau at the top of the landscape shallowly dissected by Pindalup valleys. The soils are predominantly pisolitic gravelly, yellowish brown soils that vary in texture from loamy sands to clays, with pockets of pale sands and areas of outcropping laterite (Northam Land Resources Survey).

### 3.4 GROUNDWATER HYDROLOGY

Depth to groundwater information of the Lot has been obtained from three monitoring bores located on the property (Table 1). These groundwater bores were installed to monitor any possible changes in groundwater quality and depth associated with the compost manufacturing operations being undertaken in the south-eastern region of this property. The groundwater resources are described as a seasonal perched unit above the pallid clay zone of the laterite profile. The thickness of the perched aquifer, when present, is expected to range between <1-3 m. The depth to the perched groundwater table across the South-eastern part of the Lot ranges from approximately 3,5 to 9 mbgl (DWER, 2020).

**Table 1. Private bores on the property and their location**

Bore	GIS Coordinates	AHD Levels
Bore 1	439463.48E 6475992.95N	290.99RL ground 291.24RL top of casing
Bore 2	439370.92E 6475948.63N	287.19RL ground 287.52 RL top of casing
Bore 3	439395.05E 6475861.91N	289.15RL ground 289.64RL top of casing

Source: DWER, 2020

Depth to the regional groundwater table is approximately 20 mbgl-25 mbgl and its flow is inferred to be north-northeast with a shallow gradient of 0.002. It is reported that regional groundwater occurs in a low yielding, fractured rock aquifer located between the pallid clay zone and granite bedrock.

Since the groundwater table generally follows the elevation contours of the area and utilising data from Bore 1 (closest bore to the proposed EIL), it can be assumed the highest groundwater levels within the extraction area occurred at approximately 3.5 m below ground level (for perched groundwater) and 20 m below ground level (for regional groundwater table).

No groundwater will be exposed by this development since mining will only lower the ground level by 1 to 2 metres and the depth to the superficial (perched) groundwater is between 3.5-9 mbgl and the regional ground water depth is between 20 mbgl-25 mbgl (based on the three bores on the property). The proposed operations will be well above the highest seasonal water table.

### 3.5 RAINFALL

The closest rainfall recording station is Bakers Hill located approximately 15 km north west of the Lot and data from this station has been downloaded from the Bureau of Meteorology (BoM). Table 2 shows the average monthly rainfall, and a mean annual rainfall of 597.2 mm for Bakers Hill for the period of 1964 to 2019 (BoM 2020). The wettest months are June, July and August and the driest months are December, February and March. The highest recorded annual rainfall was 790 mm in 2016 and the lowest was 345.7 mm in 1969.

**Table 2: Mean Rainfall Data (mm) for Bakers Hill for Period 1964 to 2019**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
20.5	15.6	18.8	30.3	69.1	102.8	110.4	88.7	62.2	33.4	19.8	11.3	597.2

For the design of stormwater management, rainfall intensity has been calculated using the BoM's Intensity Frequency Duration (IFD) data system (BoM 2020), which yields the 2-hour 10% Annual Exceedance Probability (AEP) rainfall event for the property as 31.5mm/hr. The DWER recommends that surface water runoff produced within the mined area from this rainfall event should be contained within the pit (DWER 2019). This aspect is discussed in section 5.2 of this document.

## 4. THE DEVELOPMENT PROPOSAL

B & J Catalano Pty Ltd intends to extract approximately 207,000 tonnes of gravel over 12.2ha in three stages over a period of 5 years using an average gravel thickness of 1m and a specific gravity of 1.7tonnes per m<sup>3</sup>. The first stage will cover an area of 3.5, the second 5ha, and the third 3.7ha.

Proposed mining actions are as follows:

- The extraction of gravel from an area of 15ha in three stages as shown on Figure 2.
- Prior to extraction taking place, removal of approximately 3ha of native vegetation using mechanical means. Cleared vegetation will be windrowed and redistributed over the cleared area as part of the rehabilitation process.
- Topsoil and overburden will be removed from the extraction area and stockpiled separately along the edges of the extraction area, with stockpiles being no higher than 2m.
- Extraction activity will result in the lowering of the ground level by approximately 1m.
- Crushing and screening will be undertaken in three stages of approximately 69,000 tonnes in each stage, over a period of 5 years.
- There will be no blasting.
- Undertaking rehabilitation in accordance with a revegetation plan which will be prepared in accordance with the Clearing Permit conditions.

Dust management will be undertaken by the use of a water cart to damp down areas that may generate dust from time to time. This will be the only water requirement for the operation, and it is proposed to source the water from commercially available sources.

### 4.1 REHABILITATION AND FINAL LAND SURFACE LEVELS

Rehabilitation of the completed areas will be progressive with the majority of the area being returned to pastures. The following steps will be implemented:

- Topsoil and overburden will be stockpiled separately on the site to be used during rehabilitation.
- Within the extraction area, all slopes behind the active working face will be contoured to achieve a slope of no more than 1:6 vertical to horizontal. In so doing, care will be taken not to impact fringing vegetation.
- Stockpiled topsoil/overburden will be respread over completed areas.
- The pit floor will be ripped along the contour, at 6m intervals, to a depth of 0.5m to 1m to relieve compaction, improve infiltration, attenuate stormwater runoff and facilitate rapid root penetration.
- Stormwater attenuation embankments will be constructed as discussed in Section 5.2.

- Rehabilitation work will only be carried out just prior to or during the wet season.
- Regular monitoring and maintenance will be undertaken over the licence period.

The post rehabilitation floor level is estimated to be approximately 0.8m lower than the original ground level. This post rehabilitation floor level will result in a separation distance greater than the minimum 0.5m above the historical maximum winter groundwater level recommended by DWER for future land use of pastures (DWER 2019).

## 5. WATER MANAGEMENT

In all mining operations the potential exists for impacts to be incurred on surrounding water resources, or by stormwater erosion of exposed areas. The water management strategies outlined below will ensure the mitigation of potential impacts.

### 5.1 SURFACE WATER MANAGEMENT

At the closest point, the Wooroloo Brook is approximately 400m northwest of Stage 1 of the proposed extraction area on the eastern side of Horton Road (Figure 1). The DWER guidelines recommend no works to be permitted within the floodplain of a catchment system (DWER 2019). A search using the Floodplain Mapping Tool of DWER shows that no floodplain information was available for the area.

The stormwater management measures described below will ensure that runoff up to and including a 10%, 2 hour duration rainfall event will be contained within the operating stage and not run into the Wooroloo Brook or into the riparian vegetation area associated with the Wooroloo Brook foreshore.

### 5.2 STORMWATER MANAGEMENT

Runoff generated within the extraction areas for the 2-hour 10% Annual Exceedance Probability (AEP) Design Storm<sup>1</sup> has been calculated using the Rational Method with a 2-hour 10% rainfall of 31.5mm/hr obtained from the BoM website (BOM 2020). The runoff coefficient used for the calculation is 0.8 for disturbed areas (DWER 2019). The runoff calculated over the total EIL area over the 2-hour period of the recommended design storm is detailed in Table 3.

**Table 3: Surface Water Management Areas and Runoff Volumes**

Sub-catchments (Stages)	Extraction Area (ha)	Design Storm Runoff* (m <sup>3</sup> )
1	3.5	882
2	5.0	1,260
3	3.7	932.4
<b>TOTAL</b>	<b>12.2</b>	<b>3,074.4</b>

\* Runoff calculated by Rational Method using a 2-hour rainfall with a 10% Annual Exceedance Probability (AEP) = 31.5mm/2 hour, obtained from Bureau of Meteorology (BOM, August 2020). Runoff coefficients used for Rational Method calculations are 0.8 for disturbed/mined areas and 0.3 for undisturbed/vegetated areas.

Stormwater management structures will be designed to manage this runoff. A single detention pond will be constructed for each of Stage 1, 2 and 3 as shown in Figure 2. The detention ponds will be an average of 2m deep and contour bunds will ensure all runoff is diverted into the ponds. These will serve as effective silt traps in times of high surface runoff. Where possible, topsoil and overburden stockpiles will be used to control stormwater runoff during these periods.

The DWER recommends that runoff from undisturbed areas is diverted away from disturbed areas<sup>1</sup>. Diversion bunds will be constructed along the western and southern boundaries of the extraction boundary to prevent any external run-off from entering the Pits (Figure 2).

<sup>1</sup> As recommended by the DWER Water Quality Protection Note no. 15 (DWER 2019)

No unmanaged surface water runoff from the excavation area, produced by the 2-hour 10% AEP storm, will be allowed to flow into the creeks on the Lot or associated riparian vegetation.

After completion of the extraction phase, the base of the pit will be deep ripped along the contour and the low mounds that this creates will be retained after seeding to serve as erosion control. Surface water detention ponds and cut-off drains will be retained until regenerated vegetation ground cover is sufficient to stabilise the ground surface and prevent erosion.

### **5.2.1 Contour Bank Design**

Basic design parameters for the contour banks to be used for stormwater management on this property have been taken from the Queensland Department of Environment and Resource Management guideline (2004).

Contour bank design is dependent on the following factors:

- Land-use after rehabilitation
- Slope
- Soil erodibility

In this case, post extraction land-use will be pastures and further cultivation is unlikely. The most suitable contour bank type in this situation is "narrow-based" i.e. approximately 4m across.

Slopes range from 6% to 8% throughout the extraction area and it is recommended that contour banks are spaced approximately 45m apart in this situation, with an average fall of 0.2%.

## **5.3 GROUNDWATER MANAGEMENT**

No dewatering activities will be undertaken. No groundwater will be exposed by this development since mining will proceed to 2.5 m above the maximum winter high groundwater level, and the final rehabilitated land surface will be 2.7m above the maximum winter high groundwater level. These separation distances are greater than required by the DWER guidelines (DWER 2019).

Furthermore, it is most likely that water tables at the proposed EIL area are at least greater than 3m below the surface in the summer months (from December until commencement of the rains in winter) and hence, well below any excavation levels.

Due to the low scale nature of the operations, no groundwater contamination is anticipated. No fuel or lubricant storage will occur on the site. Refuelling will take place using a mobile refuelling vehicle which is equipped with a "snap-on snap-off, fast-fill and auto shut-off" facility. Additionally, a Fuel Spill kit will be available on site at all times. The plant will be refuelled each morning, leaving the vehicles almost empty overnight. No major servicing, which could lead to fuel and oil spills, will take place on the site.

B & J Catalano Pty Ltd has a Hydrocarbon Spill Management Plan outlining their procedures for controlling, recovering, treating and reporting hydrocarbon spills (Annexure 2) and this will be implemented in the unlikely event of a spill occurring.



The use of fertilisers will be necessary during the rehabilitation process. At this time, the Department of Agriculture and Food will be consulted as to the appropriate levels of fertiliser requirement. The correct application of these products will serve to control leaching of nutrients into the groundwater.

Herbicides will be used only to establish vegetation. Their use is expected to reduce as vegetation is established. In choosing herbicides, preference will be given to substances that strongly adsorb to soil and have a low potential for leaching into groundwater.

#### **5.4 MONITORING AND MANAGEMENT MEASURES**

During the extraction and early rehabilitation phase, the pit will be inspected after every significant rainfall event to check erosion damage. If any repairs are required, this will be attended to immediately.

After pit closure and rehabilitation, monitoring of rehabilitated areas will ensure that any areas requiring remedial work are identified. Monitoring will be carried out on an annual basis to assess:

- The physical stability of the landform in the rehabilitated areas.
- The success of the sown pasture grasses.
- The emergence of weeds.

A more detailed monitoring and maintenance program will be provided in the revegetation plan for the native rehabilitation which will be required as a condition of the clearing permit.

Monitoring will continue until the completion criteria have been fulfilled. Maintenance procedures will be carried out where necessary and may include:

- Repair of any erosion damage.
- Replanting/seeding areas that may not have regenerated.
- Weed control.

## 6. ACID SULPHATE SOILS

ASS and potential acid sulphate soils (PASS) require the oxidation (or presence) of organically deposited pyrite ( $\text{FeS}_2$ ), which is generated in past wetland conditions, these conditions occur in soil types which are peaty, boggy or clayey and have a tendency to be poorly drained. Since the area to be mined is not within a previously wet area, it is unlikely that acid sulphate soils will be encountered.

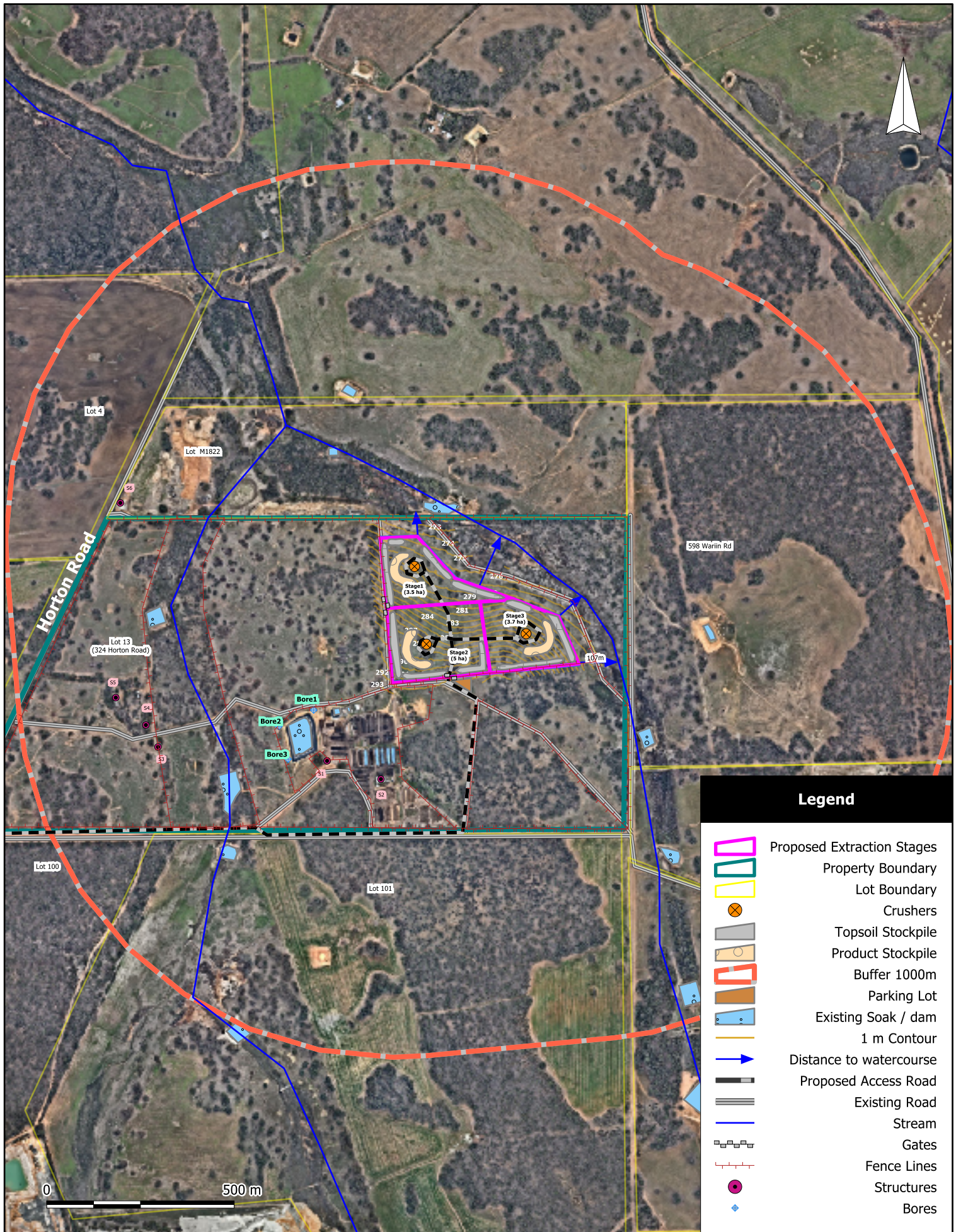
The CSIRO's Australian Soil Resource Information System (ASRIS) database contains Acid Sulphate Soil (ASS) risk mapping. A search of the database confirmed there were no acid sulphate soil (ASS) sites identified in the vicinity of the proposed EIL area with the area being classified as having an 'Extremely Low Probability of Occurrence' of ASS (CSIRO 2020).

Therefore, the risk of exposing potentially ASS soils to the atmosphere is inferred to be very unlikely. Furthermore, excavations will only be one meter deep and no groundwater will be exposed.

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## **FIGURES**



**Legend**

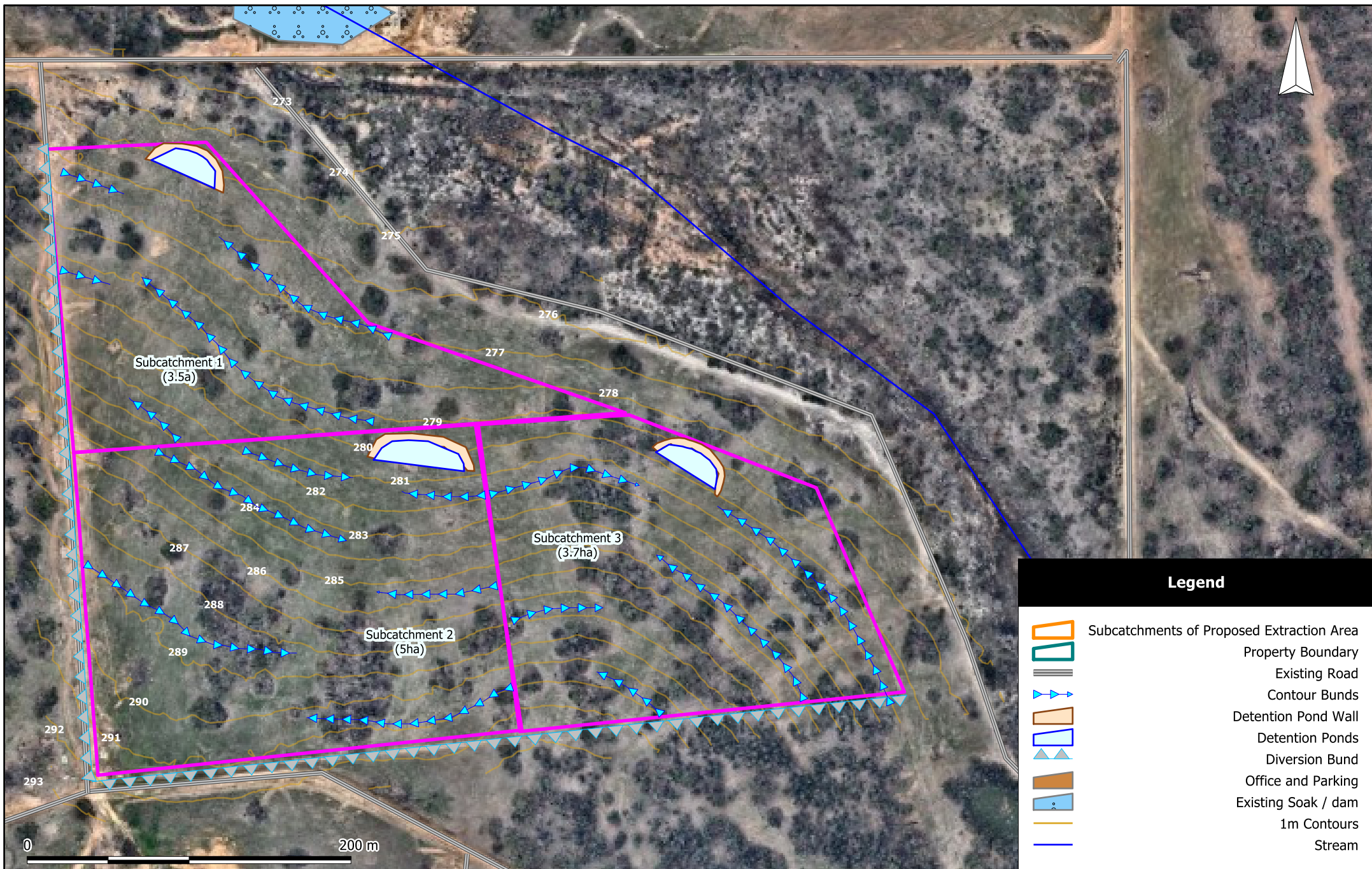
- Proposed Extraction Stages
- Property Boundary
- Lot Boundary
- Crushers
- Topsoil Stockpile
- Product Stockpile
- Buffer 1000m
- Parking Lot
- Existing Soak / dam
- 1 m Contour
- Distance to watercourse
- Proposed Access Road
- Existing Road
- Stream
- Gates
- Fence Lines
- Structures
- Bores

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Scale: 1:13000  
 Original Size: A4  
 Air Photo Source: Nearmap June 2020  
 Datum: GDA94  
 Projection: Australia MGA94 (50)

Client: B & J Catalano  
 Project: Gravel Extraction  
 Location: 324 Horton Road, Woottating, Shire of Northam, WA

**Figure 1:**  
**Site and Surrounds**



**Legend**

-  Subcatchments of Proposed Extraction Area
-  Property Boundary
-  Existing Road
-  Contour Bunds
-  Detention Pond Wall
-  Detention Ponds
-  Diversion Bund
-  Office and Parking
-  Existing Soak / dam
-  1m Contours
-  Stream



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Scale: 1:3000  
 Original Size: A4  
 Air Photo Source: Nearmap June 2020  
 Datum: GDA94  
 Projection: Australia MGA94 (50)

Client: **B & J Catalano**  
 Project: **Gravel Extraction**  
 Location: 324 Horton Road, Woottating,  
 Shire of Northam, WA

**Figure 2:  
Water Management Plan**

## **ANNEXURE 1**

### **Hydrocarbon Spill Management Plan**

## Safety Practice

### SAF-SP-029 HYDROCARBON SPILL RESPONSE

#### PURPOSE

This procedure summarises the safety practice of B & J Catalano to control the personal and environmental hazard posed by hydrocarbon spills. It outlines the correct procedure for controlling, recovering and reporting hydrocarbon spills to ensure compliance with West Australian legislative requirements.

#### SCOPE

This safety practice will apply to all B & J Catalano areas and employees.

#### DEFINITIONS

**MSDS:** Material Safety Data Sheet - A document which describes the properties and use of a substance, i.e., its identity, chemical and physical properties, health hazard information, precautions for use and safe handling information.

**Hydrocarbon:** An organic compound containing only carbon and hydrogen including diesel, oil, petrol, grease, solvent-based degreasers, hydraulic fluids and transformer oils.

**Hydrocarbon Spill:** Any uncontrolled release of hydrocarbon products.

**Bund:** An embankment or wall that may form part or the entire perimeter of a compound. Usually made of concrete, bunds are placed around storage tanks to contain spills.

#### INFORMATION

Under the general and specific provision of duty of care an employer shall, so far as is practicable, provide and maintain a working environment in which his employees are not exposed to hazards existing in the workplace. This requirement includes the hazards associated with hydrocarbons spills.

It is the responsibility of ALL employees and contractors to manage hydrocarbon spills as they occur. Supervisors are accountable if their immediate areas are found to have poor hydrocarbon management practices (this includes the clean-up of minor spills).

Spills involving hydrocarbons have the potential to produce adverse consequences to human health and/or the environment. Environmental spills can lead to contamination of water (both surface and aquifers), soil and habitats. The effect is higher closure costs, loss of a potable resource, death of flora and fauna, requirement for remediation, classification into Western Australia's Contaminated Sites database and prosecution by the Department of Environment and Conservation (DEC).

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This safety practise outlines:

- Action required when a spill is identified
- Techniques to restrict the extent of the contamination
- Techniques to collect spilled material
- Techniques to collect and dispose of contaminated material
- Techniques to treat soils contaminated by hydrocarbon
- Reporting requirements in regard to hydrocarbon spills

## REQUIREMENTS

### 1 Action required when a spill is identified

- 1.1 Isolate the spill area
- 1.2 Identify the spilt substance
- 1.3 Identify hazards and PPE requirements – consult the appropriate MSDS.
- 1.4 If safe to do so, the source of the spill should be restricted or stopped (i.e. shutdown machinery, switch off pumps, close valves).
- 1.5 If suitable equipment is readily available and can be operated in a safe manner, the extent of the spill is to be contained.
- 1.6 Contact immediate Supervisor as soon as possible and advise of spill.

### 2 Techniques to restrict the extent of the contamination

- 2.1 If possible restrict the source of the spill to ensure the flow of hydrocarbon is stopped.
- 2.2 If the spill is occurring outside a containment bund, use earthmoving equipment to construct additional earthen bunds to contain the extent of the flow.
- 2.3 Isolate drains.
- 2.4 On advice of Environmental Department, pump source material from either or both of the source container or the bunded containment into a safe container.

### 3 Techniques to collect spilled hydrocarbon

- 3.1 On advice of Environmental Department, pump source material from either or both of the source container or the bunded containment into a safe container.
- 3.2 Use absorbent materials to soak up residual hydrocarbon.
- 3.3 If the spill occurs in an area where a water body has become contaminated, use mini air booms to contain the spread of hydrocarbon on the surface of the water.
- 3.4 Use a skimmer to collect contained hydrocarbon in a triple oil separator or retain on the surface of the water body and pump to a waste oil tank or other safe container.
- 3.5 Hydrocarbon absorbents are to be collected and disposed of as decided by the Environmental Department and according to site requirements.

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SAF-SP-29	SAF	May 2011	1.0	May 2012	2 of 4

## RELATED DOCUMENTS

- a. B&J Catalano Incident Report Form

## REFERENCES

- a. Occupational Safety and Health Act (WA) 1984
- b. Occupational Safety and Health Regulations (WA) 1996
- c. Mines Safety and Inspections Act (WA) 1994
- d. Mines Safety and Inspections Regulations (WA) 1995
- e. Environmental Protection Act 1986
- f. Environmental Protection (Unauthorised Discharges) Regulations 2004
- g. AS 1940 : 2004 Storage and handling of flammable and combustible liquids

## DOCUMENT CONTROL

Approval			
Role	Name	Date	
General Manager	Nunzio Giunta	Sept 2011	
HSE/HR Manager	Doriann Walls	Sept 2011	
Revision Events			
Rev.	Author	Changes	Date
1.0	Nic Henley		May 2011
2.0	Ian Prosser	Definitions / Table 1	March 2012

Document No.	Doc Type	Approved	Rev. No.	Rev. Date	Page
SAF-SP-29	SAF	May 2011	1.0	May 2012	4 of 4

**APPENDIX 5**  
**DUST MANAGEMENT PLAN**



## DUST MANAGEMENT PLAN

Prepared for B&J Catalano Pty Ltd  
Lot 13 on Deposited Plan 87525 (324 Horton Road),  
Woottating, Shire of Northam

### 1. INTRODUCTION

This Dust Management Plan (DMP) has been prepared in accordance with guidelines published by the Department of Environment and Conservation (DEC) (Jan. 2011). This DMP should be read in conjunction with the report entitled *“Extractive Industries Licence Application and Environmental Management Plan (EMP) Lot 13 on Plan 87525, 324 Horton Road, Woottating, Shire of Northam, September 2020, prepared for B&J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.*

The requirement for this DMP is derived from the City of Busselton’s District Local Planning Scheme No.21. with specific reference to Section 5 “Rural Areas Land Use and Development Policy”.

The objectives of this DMP are as follows:

- To describe the nature of the proposed operation
- To identify any sources of dust that might arise from these operations
- To identify the proximity of any sensitive premises in this regard
- To identify measures that will limit the generation of dust from the operations
- To identify measures that will limit the impact of dust on sensitive premises

### 2. SITE BACKGROUND

Locality: Lot 13 on Deposited Plan 87525, 324 Horton Road, Shire of Northam

Ownership: Paul Guy Curtis & Sean Thadeus Curtis

Figure 1 is a recent aerial photograph showing the property and its surrounds. Figure 2 indicates the proposed extraction area covered by this Extractive Industries Licence (EIL) application.

#### 2.1 Land Use

The property has previously been used for cattle grazing. A compost manufacturing company (River Nominees Pty Ltd, traded as Purearth) is operating on the southeast part the of the Lot with a Licence number L8769/2013/1. The surrounding area comprises of rural lots and extractive industries. A basic raw material screening facility is operating immediately adjacent to the northern Lot boundary. Voyager II Quarry of BGC Quarries Pty Ltd is situated approximately 1100 m southwest of the Lot boundary.

## 2.2 Geology and Soils

Geologically, the western side of the Shire of Northam consists of laterites of the Darling Scarp overlying granites of the Yilgarn Block. The Northam-York consist of Archaean granites, gneisses and migmites with some meta-sediments and volcanic areas (McArthur, 1991).

The soil on the site has been mapped and described in the Yalanbee Subsystem (Ya) as 235WnYa which is described as residual plateau at the top of the landscape shallowly dissected by Pindalup valleys. The soils are predominantly pisolitic gravelly, yellowish brown soils that vary in texture from loamy sands to clays, with pockets of pale sands and areas of outcropping laterite (Northam Land Resources Survey).

Although there will be some uplift of the finer particle components of this soil during stripping and stockpiling operations, this will be limited due to the low proportion of fines. During strong winds the potential exists for fine particles to become airborne especially when they are disturbed by excavation activities and further discussion on mitigation measures in this regard is contained in Section 4 below.

In its in-situ state, the laterite is a cemented, pisolitic material and has no loose fines. However, during the crushing operation very fine particles of less than PM<sub>50</sub> are produced as fugitive dust and require suppression as discussed in Section 4. A particle size analysis for crushed laterite from a quarry in the area (Chittering) is as follows:

Gravel (>2.0mm):	58%
Sand (0.063<2.0mm):	33%
Fines (Silt & Clay; <0.063mm):	9%

(The Particle size analysis laboratory report is included as Annexure 1)

Whilst the analysis presented above does not determine the quantity of PM<sub>50</sub> particles, it is estimated that the potential for total suspended particles (TSP) less than PM<sub>50</sub> is approximately 1%. Mitigation measures to reduce dust emissions are discussed in Section 4.

## 2.3 Potentially Sensitive Receptors

### 2.3.1 Residential Dwellings

The closest dwellings to the outer boundaries of the extraction areas are identified in Table 1 and mapped on Figure 1.

**Table 1: Residential Dwellings within 1000m of the extraction area**

Reference No on Figure 1	Structure Location	Type of Structure	Distance	Direction
S1	324 Horton Road, Woottating	Office	273m	SW
S2	324 Horton Road, Woottating	Compost Mixing Shed	265m	SW
S3	324 Horton Road, Woottating	House	650m	SW

Reference No on Figure 1	Structure Location	Type of Structure	Distance	Direction
S4	324 Horton Road, Woottating	House	665m	W
S5	324 Horton Road, Woottating	House	734m	W
S6	366 Horton Road, Woottating	House	700m	W
S7	366 Horton Road, Woottating	Basic Material Screening Facilities	450m	NW

There are seven dwellings (marked as Struc 1 to Struc 7 on Figure 1) within 1000m of the proposed extraction area (measured from the closest point). The closest dwellings, Structure 1 and 2, located between 265m to 273 m from the closest point of the proposed extraction area (Stage 2), are the office and compost mixing shed of Purearth Pty Ltd. Structure 2, 3 and 4 are located within the Lot, between 650m to 740m south west and west of the proposed extraction area. These three properties are unoccupied farmhouses on the Lot, screened by belts of remnant vegetation including those on the Memorial Land. Structure 6 and 7 are located 450m North west and 700m West of the proposed extraction area respectively. These two structures are part of the basic material screening operation located immediately north of the Property.

## 2.4 Prevailing Winds

The most recent data from the Bureau of Meteorology (BoM) Bakers Hill weather station and the BoM York weather station have been reviewed for this report. The mean 9 am wind speed for the area with the most recent data available from 1971 to 1985 shows that strong wind conditions of 22-27 knots on the Beaufort Scale may occur in January and February. Over the other months of the year, the mean win speeds record light or moderate conditions. In the afternoon, the wind is lighter with maximum mean 3 pm windspeed of between 13-14 knots during the summer months. The winds are predominantly east to south-east in the mornings and switching to west in the afternoons.

Mean 9 am wind speed data and wind roses for Bakers Hill BoM Station and that of 3 pm for York BoM are included in Annexure 2 (Bureau of Meteorology 2020).

The wind data indicates that the closest dwellings that are mostly located on the west, southwest and northwest of the proposed extraction area are not expected to be significantly impacted by the dust emissions in the afternoon. Moreover, the operational activities will be conducted on a campaign basis, mostly occurring in the winter months when wind speed is low. During periods of strong winds careful attention will be paid to dust management actions as described in Section 4 of this report.

### 3. PROPOSED WORKS AND POTENTIAL IMPACTS

B & J Catalano Pty Ltd intends to extract approximately 207,000 tonnes of gravel from an area totaling 12.2ha in three stages over a period of 5 years using a front-end loader, bulldozer and crushing/screening plant. The first stage will cover an area of 3.5, the second 5ha, and the third 3.7ha.

Table 2 provides a description of all activities, their duration, aspect and an assessment of potential for dust impacts.

**Table 2: Aspects and Impacts of Dust Generating Activities**

Activity	Duration	Aspect	Impact
Topsoil Stripping and stockpiling	3 weeks each year in 2021 and 2023	Disturbance of grass and soil exposes ground to wind erosion	Dust may create an amenity issue with nearby residents
Rip and blade laterite to crusher site	3 weeks each year in 2021 and 2023	Actions may release dust into the atmosphere	Fine red dust may create an amenity issue with nearby residents
Crushing, screening and stockpiling of gravel	6 weeks each year in 2021 and 2023	Crushing and screening actions may release dust into the atmosphere	Fine red dust may create an amenity issue with nearby residents
Rehabilitation of area	2 weeks each year between 2022 and 2026	Disturbance of topsoil could release dust into the atmosphere	Dust may create an amenity issue with nearby residents
Loading of trucks from stockpiles	5 years at an average of 9 truck movements per day	Loading of gravel may release dust into the atmosphere	Fine red dust may create an amenity issue with nearby residents
Transport of gravel from site	5 years	Dust could escape from the truck in transit	Amenity, health or traffic safety issue

#### 3.1 Plant and Equipment to be used

The list of Equipment to be used is as follows:

D10 Bulldozer  
 Caterpillar 980 and 950 front end loaders  
 Parker 4230 Crusher (SN1325)  
 Finlay Screen 693  
 Striker 25m Stacker  
 Caterpillar generator set  
 Caterpillar 322 Excavator

#### 3.2 Summary of Mining Actions

Proposed mining actions are as follows:

- The extraction of gravel from an area of 12.2h in three stages as shown on Figure 2.
- Prior to extraction taking place, removal of approximately 3ha of native vegetation using mechanical means. Cleared vegetation will be windrowed and redistributed over the cleared area as part of the rehabilitation process.

- Topsoil and overburden will be removed from the extraction area and stockpiled separately along the edges of the extraction area, with stockpiles being no higher than 2m as shown in Figure 2.
- Extraction activity will result in the lowering of the ground level by approximately 1m.
- Crushing and screening will be undertaken in three stages of approximately 85,000 tonnes in each stage, over a period of 5 years.
- There will be no blasting.
- Undertaking rehabilitation in accordance with a revegetation plan which will be prepared in accordance with the Clearing Permit conditions.

Dust management will be undertaken by the use of a water cart to damp down areas that may generate dust from time to time. It is proposed to source the water from commercially available sources.

### **3.3 Site Risk Assessment and Classification**

The site risk assessment is based on the format provided in the Appendices of the DEC guideline document referred to in this DMP. Based on the risk assessment conducted (Annexure 3), the classification derived is Classification 3 (Medium Risk). Measures for managing dust impacts are discussed in Section 4 below.

## **4. MEASURES PROPOSED FOR MANAGING DUST**

This report has identified the potential dust generating activities associated with the proposed development and has also identified the potentially sensitive receptors. The measures that are proposed to manage dust impacts are listed below:

- A 15kl water cart will be on site during all periods when earth is being moved or crushing is being conducted. If and when dust is caused to occur during these periods, the water cart will be employed to damp down the areas of concern. During crushing a spray bar is employed at all times.
- If the wind is blowing strongly in the direction of the closest residences and conditions are dusty, then operations will be stopped until such time as adequate wetting down has occurred.
- Crushing and stockpiling activities will be located in topographic low points with raw and processed stockpiles arranged such that windbreaks are created to further shield sensitive receptors from fugitive dust.
- A polymer based spray-on soil stabilizer will be applied to topsoil and overburden stockpiles if they do not stabilize by crusting and grass regrowth.
- Internal roads will be surfaced with gravel.
- Traffic speed will be restricted to 30km on site, reducing dust lift-off from trucks.
- Truck loads will always be covered so that no dust is generated in transit.
- Employees and contractors working on site will be provided with information on how to minimise dust emissions.
- A complaints system will be put in place and these will be recorded by the Quarry Manager and acted on promptly.
- A notice will be erected at the front gate and this will provide emergency contact details for the Quarry Manager.



Given the small scale of the proposed operations, it is not envisaged that dust will be a problem once the proposed mitigation measures are employed. Should the operation produce significant and frequent dust, the dust will be monitored to ensure the maximum atmospheric dust concentration does not exceed the National Environment Protection Measure (NEPM) limits for ambient air quality.

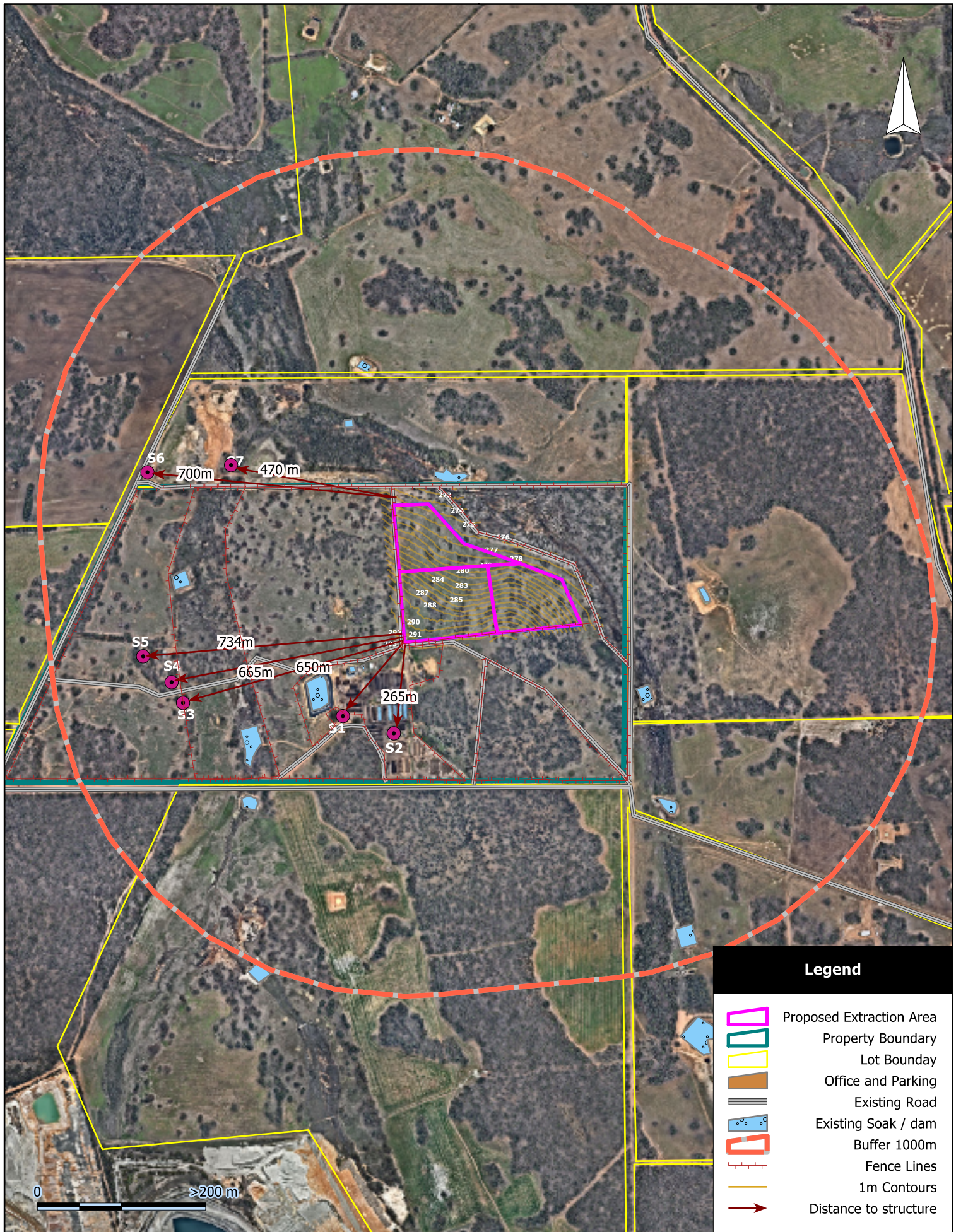
## **5. REFERENCES**

Bureau of Meteorology (BOM) (2020). Wind roses for Bakers Hill. (Accessed from [www.bom.gov.au](http://www.bom.gov.au)).

Bureau of Meteorology (BOM) (2020). Mean wind speed for Bakers Hill. (Accessed from [www.bom.gov.au](http://www.bom.gov.au)).

Department of Environment and Conservation (DEC) (2011). A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.

## FIGURES



**Legend**

- Proposed Extraction Area
- Property Boundary
- Lot Boundary
- Office and Parking
- Existing Road
- Existing Soak / dam
- Buffer 1000m
- Fence Lines
- 1m Contours
- Distance to structure

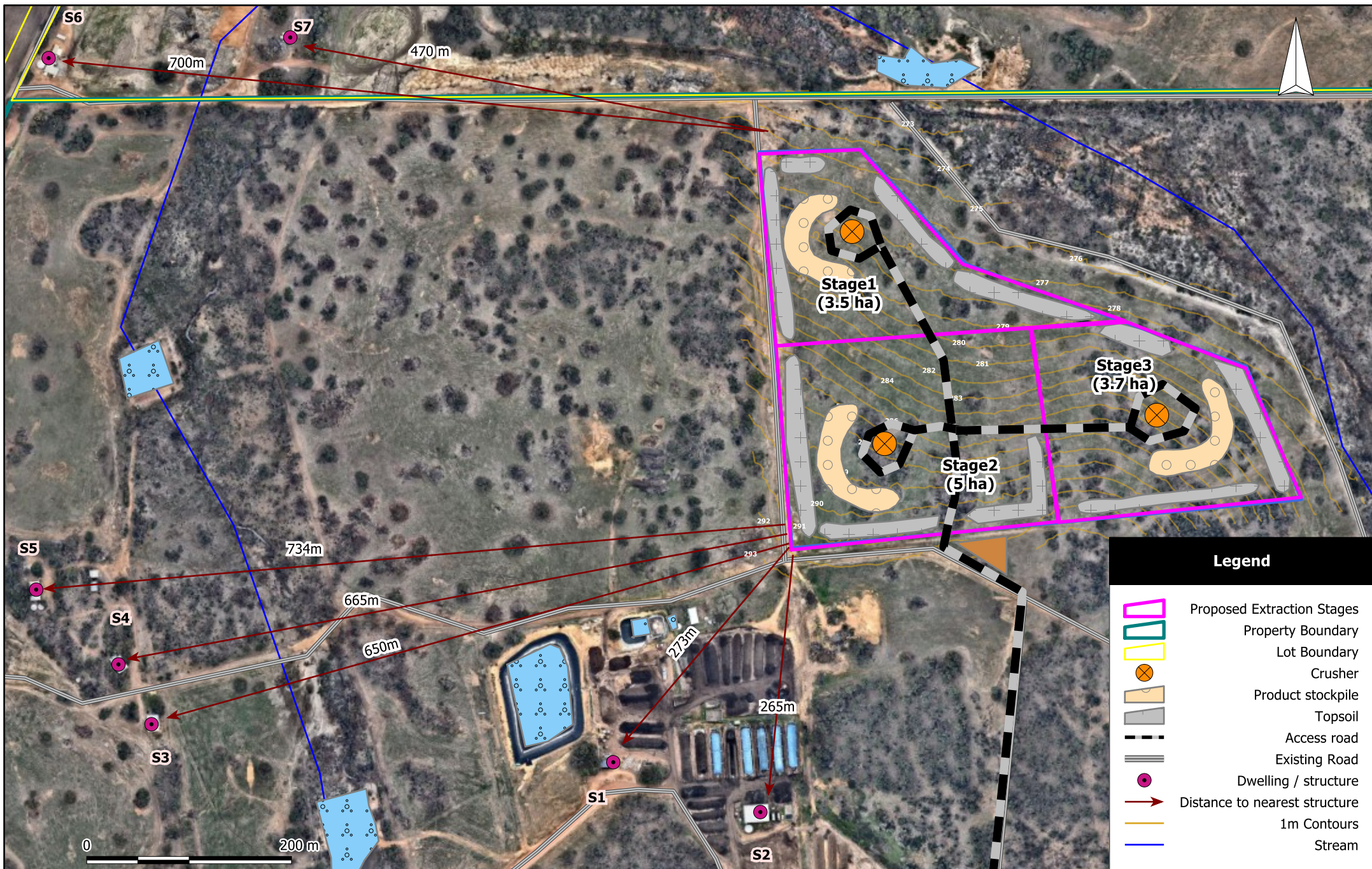
**Lundstrom Environmental Consultants Pty Ltd**

Leeming WA 6149  
 Mob: 0417934863  
 mikelund1@bigpond.com

Scale: 1:13000  
 Original Size: A4  
 Air Photo Source: Nearmap June 2020  
 Datum: GDA94  
 Projection: Australia MGA94 (50)

Client: B & J Catalano  
 Project: Gravel Extraction  
 Location: 324 Horton Road, Woottating, Shire of Northam, WA

**Figure 1:**  
 Site and surrounds



**Lundstrom Environmental  
Consultants Pty Ltd**  
Leeming WA 6149  
Mob: 0417934863  
mikelund1@bigpond.com

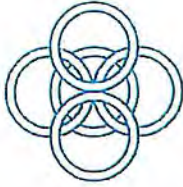
Scale: 1:4700  
Original Size: A4  
Air Photo Source: Nearmap June 2020  
Datum: GDA94  
Projection: Australia MGA94 (50)

Client: B & J Catalano  
Project: Gravel Extraction  
Location: 324 Horton Road, Woottating,  
Shire of Northam, WA

**Figure 2**  
**Dust Management Plan**

# **ANNEXURE 1**

## **Particle Size Analysis for Crushed Gravel**



# MATERIALS CONSULTANTS PTY. LTD.

INDEPENDENT TESTING LABORATORIES: NATA ACCREDITATION No 1763 : ABN 67 126 947 386

72 COLLINGWOOD STREET, OSBORNE PARK WA 6017 TELEPHONE: (08) 9244 3080 FACSIMILE: (08) 9446 6753  
Email : admin@matcons.com.au

## TEST CERTIFICATE

### FLAKINESS INDEX: WA 216.1

CLIENT: B & J Catalano Pty Ltd, Lot 27 Bushmead Road, Hazelmere  
JOB NO.: 636\_249  
SAMPLE NO.: 636  
DATE TESTED: 02.04.2015  
CLIENT REFERENCE: SP 130  
SAMPLE DESCRIPTION: Ferricrete  
PROJECT: Quality Control -

FLAKINESS INDEX 2.9 %

Sampling Procedures: Tested as received.

Remarks: 50% of sample passing 4.75mm sieve.

WA 216.1 requires not more than 5% passing the 4.75mm test sieve for a standard test.



Accredited for  
compliance with  
ISO/IEC 17025

ACCREDITED FOR  
**TECHNICAL  
COMPETENCE**

Approved :

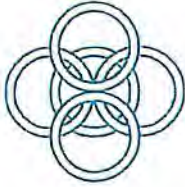
M Snow, Signatory

Date:

02.04.2015

CERTIFICATE NO. MC 636\_249\_4

ISSUE 1



# MATERIALS CONSULTANTS PTY. LTD.

INDEPENDENT TESTING LABORATORIES: NATA ACCREDITATION No 1763 : ABN 67 126 947 386

72 COLLINGWOOD STREET, OSBORNE PARK WA 6017 TELEPHONE: (08) 9244 3080 FACSIMILE: (08) 9446 6753  
Email : admin@matecons.com.au

## TEST CERTIFICATE

### CALIFORNIA BEARING RATIO : WA 141.1

CLIENT: B & J Catalano Pty Ltd, Lot 27 Bushmead Road, Hazelmere  
 JOB NO.: 636\_249  
 SAMPLE NO.: 636  
 CLIENT REFERENCE: SP 130  
 DATE TESTED: 08.04.2015  
 SAMPLE DESCRIPTION: Ferricrete  
 FEATURE: -  
 PROJECT: Quality Control -

### TEST CONDITIONS OF SPECIMEN

PERIOD OF SOAKING 4 days  
 SURCHARGING OF SPECIMEN 4.50 kg  
 COMPACTIVE EFFORT USED IN MOULDING SPECIMEN: 22 blows, 5 layers using a modified hammer with Rammer Mass of 4.9kg

### TEST RESULTS

**MAXIMUM DRY DENSITY** 2.18 t/m<sup>3</sup>  
**OPTIMUM MOISTURE CONTENT** 8.0 %  
**PERCENTAGE RETAINED 19.0mm SIEVE** 6 %

#### DRY DENSITY

SPECIMEN BEFORE SOAKING 2.09 t/m<sup>3</sup>  
 SPECIMEN AFTER SOAKING 2.09 t/m<sup>3</sup>

#### DRY DENSITY RATIO

SPECIMEN BEFORE SOAKING 96.0 %  
 SPECIMEN AFTER SOAKING 96.0 %

#### MOISTURE CONTENT

SPECIMEN AT COMPACTION 8.1 %  
 SPECIMEN AFTER SOAKING 10.3 %  
 TOP 30 mm LAYER OF SPECIMEN AFTER PENETRATION 9.2 %  
 REMAINING DEPTH OF SPECIMEN AFTER PENETRATION 8.7 %

#### MOISTURE RATIO

SPECIMEN AT COMPACTION 99.5 %  
 SPECIMEN AFTER SOAKING 127.5 %  
 TOP 30 mm LAYER OF SPECIMEN AFTER PENETRATION 114.0 %  
 REMAINING DEPTH OF SPECIMEN AFTER PENETRATION 107.0 %  
 SPECIMEN SWELL 0.0 %

**CALIFORNIA BEARING RATIO** 170 % AT 2.50mm PENETRATION

**CALIFORNIA BEARING RATIO** 170 % AT 5.00mm PENETRATION

REMARKS: Tested as received.



Accredited for compliance with ISO/IEC 17025

ACCREDITED FOR TECHNICAL COMPETENCE

APPROVED

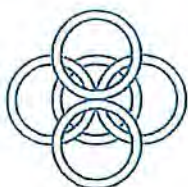
M Snow, Signatory

DATE

08.04.2015

CERTIFICATE NO. MC 636\_249\_1

ISSUE 1



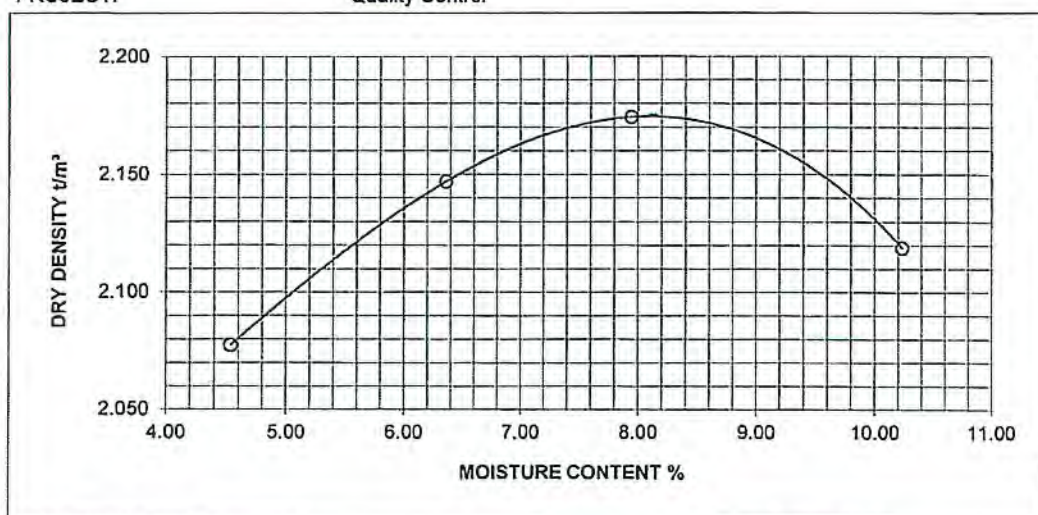
# MATERIALS CONSULTANTS PTY. LTD.

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72 COLLINGWOOD STREET, OSBORNE PARK WA 6017 TELEPHONE: (08) 9244 3080 FACSIMILE: (08) 9446 6753  
Email : admin@matcons.com.au

## TEST CERTIFICATE DRY DENSITY/MOISTURE CONTENT RELATIONSHIP : MODIFIED COMPACTION FINE AND MEDIUM GRAINED SOILS : WA 133.1

CLIENT: B & J Catalano Pty Ltd, Lot 27 Bushmead Road, Hazelmere  
JOB NO.: 636\_249  
SAMPLE NO.: 636  
DATE TESTED: 02.04.2015  
CLIENT REFERENCE: SP 130  
SAMPLE DESCRIPTION: Ferricrete  
FEATURE: -  
PROJECT: Quality Control



MAXIMUM DRY DENSITY **2.175 t/m<sup>3</sup>**  
OPTIMUM MOISTURE CONTENT **8.1 %**  
PERCENTAGE RETAINED 19.0mm SIEVE **6 %**  
PERCENTAGE RETAINED 37.5mm SIEVE **Not determined**

SAMPLING PROCEDURE: Tested as received.

REMARKS:



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ACCREDITED FOR TECHNICAL COMPETENCE

APPROVED :

M Snow, Signatory

DATE :

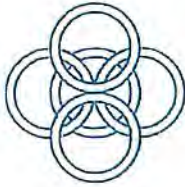
07.04.2015

CERTIFICATE NO. MC 636\_249\_2

ISSUE

1





# MATERIALS CONSULTANTS PTY. LTD.

INDEPENDENT TESTING LABORATORIES: NATA ACCREDITATION No 1763 : ABN 67 126 947 386

72 COLLINGWOOD STREET, OSBORNE PARK WA 6017 TELEPHONE: (08) 9244 3080 FACSIMILE: (08) 9446 6753  
Email : admin@matcons.com.au

## TEST CERTIFICATE

CLIENT: B & J Catalano Pty Ltd, Lot 27 Bushmead Road, Hazelmere  
 JOB NO.: 636\_249  
 SAMPLE NO.: 636  
 CLIENT REFERENCE: SP 130  
 DATE TESTED: PSD tested 31.03.2015, Consistency Limit tested 01.04.2015  
 SAMPLE DESCRIPTION: Ferricrete  
 PROJECT: Quality Control

PARTICLE SIZE DISTRIBUTION : SIEVING & DECANTATION METHOD - WA 115.1	
PERCENTAGE RETAINED ON 37.50mm SIEVE : 0%	
SIEVE SIZE (mm)	PERCENT PASSING
26.5	100 %
19.0	94 %
13.2	81 %
9.50	68 %
6.70	57 %
4.75	50 %
2.36	42 %
1.18	34 %
0.600	29 %
0.425	25 %
0.300	19 %
0.150	12 %
0.075	9 %
0.0135	6 %
CONSISTENCY LIMIT - CONE PENETROMETER APPARATUS	
LIQUID LIMIT WA 120.2	23.2%
PLASTIC LIMIT WA 121.1	Non Plastic
PLASTICITY INDEX WA 122.1	Non Plastic
LINEAR SHRINKAGE WA 123.1	0.4 %

SAMPLING PROCEDURES: Tested as received.  
 REMARKS:



Accredited for compliance with ISO/IEC 17025

ACCREDITED FOR TECHNICAL COMPETENCE

APPROVED:

M Snow, Signatory

DATE: 02.04.2015

CERTIFICATE NO. MC 636\_249\_3

ISSUE 1

## **ANNEXURE 2**

**9am (Bakers Hill) and 3 pm (York) Mean Wind Speed and Wind Roses**

#### 4 Techniques to treat soils contaminated by hydrocarbon

- 4.1 Dependent on site requirements and on advice from the Environmental Department, contaminated soils may be treated in the following ways:
- Collected and disposed of
  - Encapsulated in the waste dump
  - Collected or remain in situ and treated by bioremediation to breakdown the hydrocarbon.
- 4.2 On completion of the rehabilitation program the Environmental Department must inspect and verify that the spill has been successfully remediated.

#### 5 Reporting requirements in regard to hydrocarbon spills

- 5.1 All incidents of hydrocarbon spills are to be reported to the immediate Supervisor as soon as possible and followed up with the completion of the B&J Catalano Incident Report Form which requires an incident investigation to determine root cause and assists in the prevention of a reoccurrence.
- 5.2.1 The immediate Supervisor must then report the incident to the Environmental Department to determine what reporting to external departments is required i.e. Department of Conservation.

**Table 1: Suggested Spill Equipment**

Type of Spill	Recommended Spill Equipment
Spill on rocks / dirt	<ul style="list-style-type: none"> <li>• Use earthen bunds or booms to contain spill</li> <li>• Polypropylene pads to mop up excess oil at the outset</li> <li>• Global Peat or Enretec to treat contaminated soil in-situ</li> </ul>
Spill on concrete / hardstand area e.g. workshop	<ul style="list-style-type: none"> <li>• Polypropylene pads (easiest and quickest)</li> <li>• Floorsorb / kitty litter if pads not available (this must be swept up and disposed of in hydrocarbon bins immediately, as these products are not hydrophobic and will not contain the spill if they become wet)</li> </ul>
Spill in containment bund	<ul style="list-style-type: none"> <li>• Polypropylene pads or pillows</li> <li>• Bund can be drained or sucked out to waste oil receptacle if the spill is large</li> </ul>
Spill occurs when raining or on a water body	<ul style="list-style-type: none"> <li>• Polypropylene pads</li> </ul>

Document No.	Doc Type	Approved	Rev. No.	Rev. Date	Page
SAF-SP-29	SAF	May 2011	1.0	May 2012	3 of 4

# Rose of Wind direction versus Wind speed in km/h (01 Jan 1965 to 30 Jun 1985)

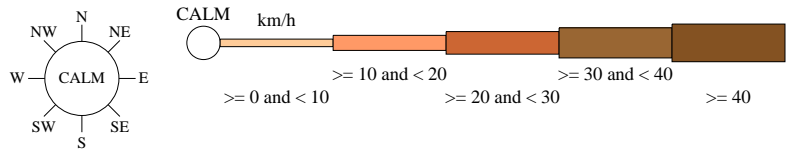
Custom times selected, refer to attached note for details

## BAKERS HILL

Site No: 010244 • Opened May 1964 • Still Open • Latitude: -31.7469° • Longitude: 116.4561° • Elevation 330m

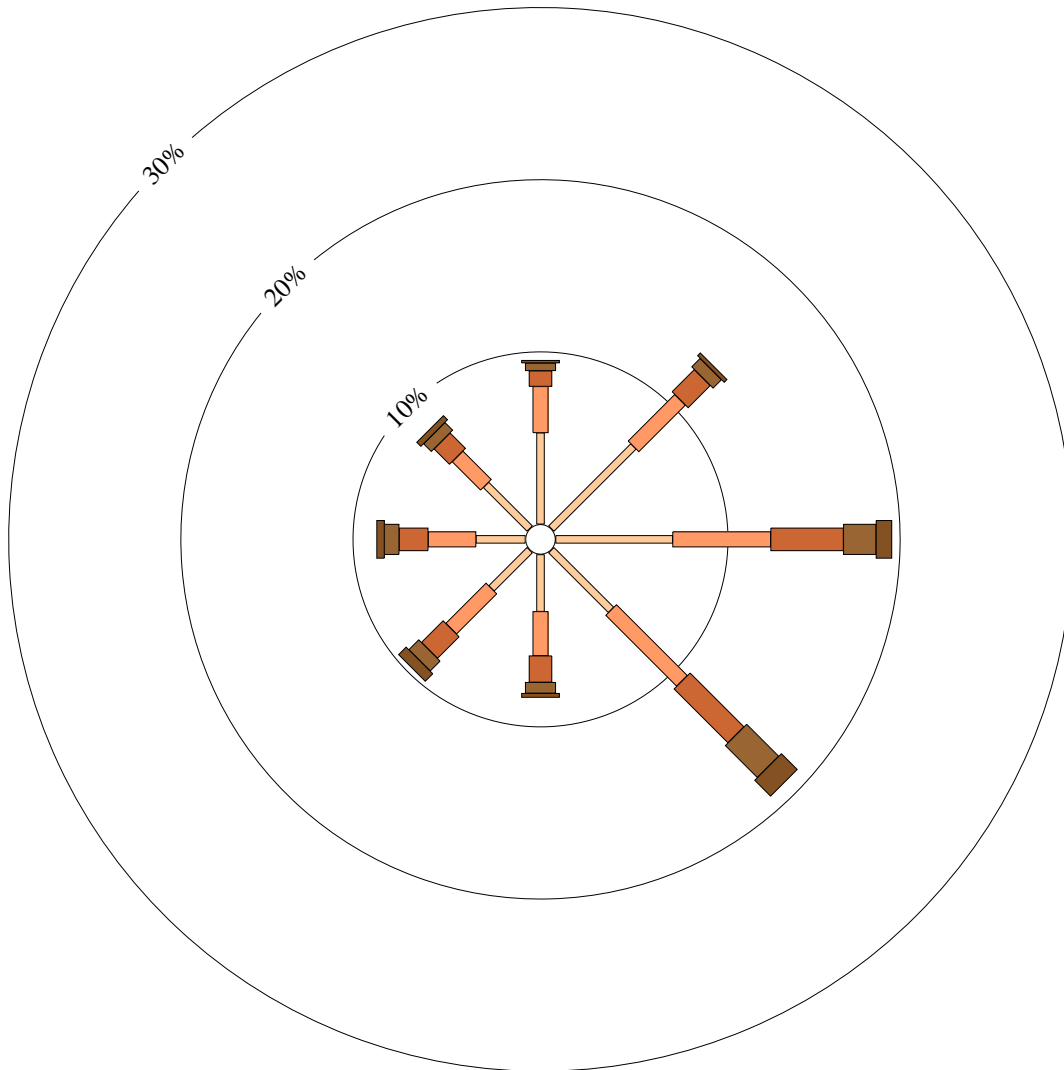
An asterisk (\*) indicates that calm is less than 0.5%.

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



9 am  
7473 Total Observations

Calm 4%



# Rose of Wind direction versus Wind speed in km/h (13 May 1996 to 11 Aug 2020)

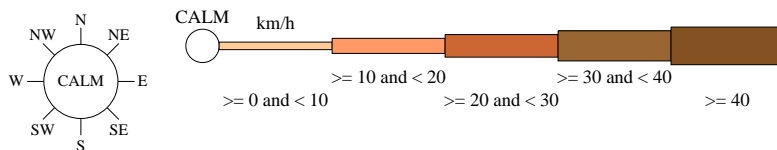
Custom times selected, refer to attached note for details

## YORK

Site No: 010311 • Opened Apr 1996 • Still Open • Latitude: -31.8997° • Longitude: 116.765° • Elevation 179m

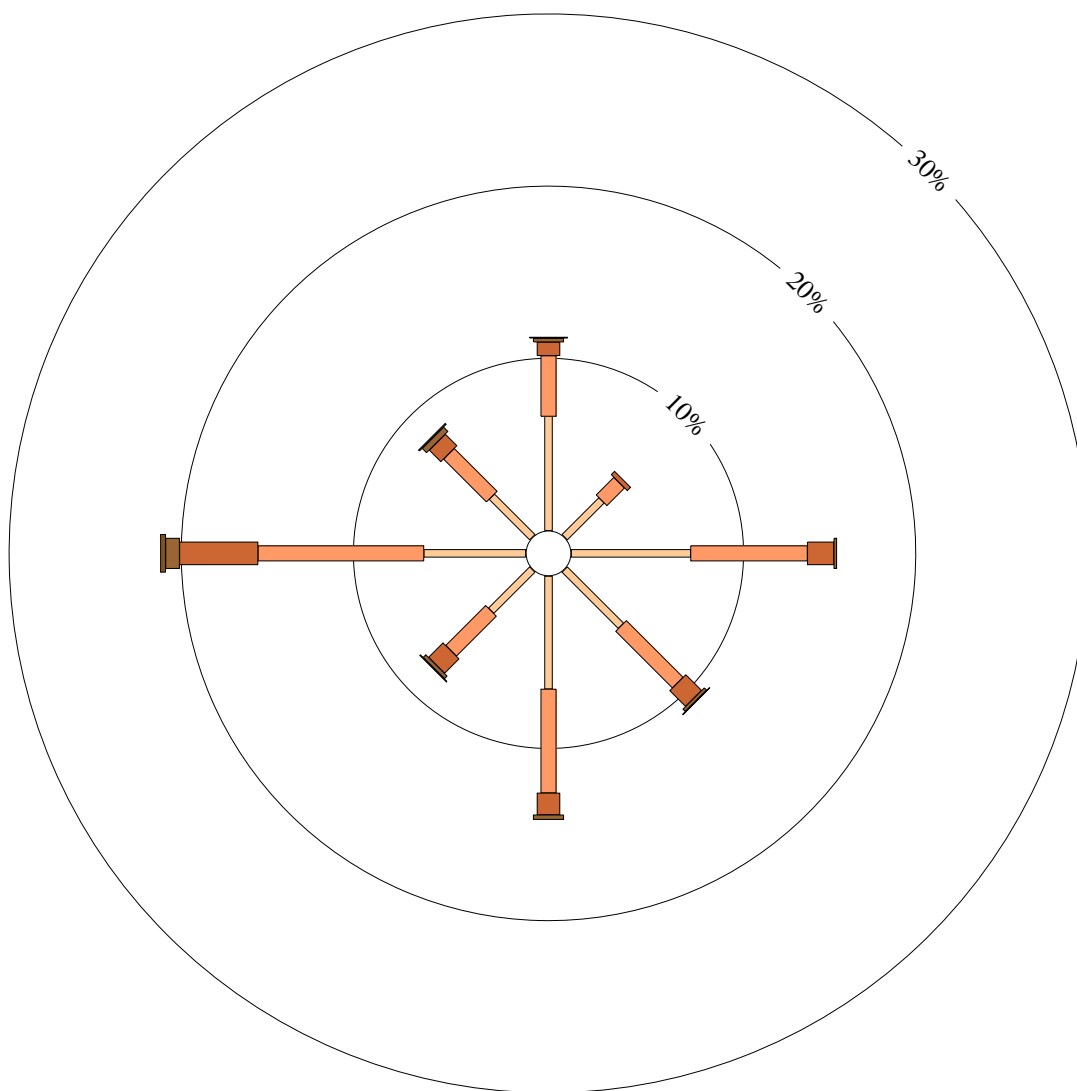
An asterisk (\*) indicates that calm is less than 0.5%.

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

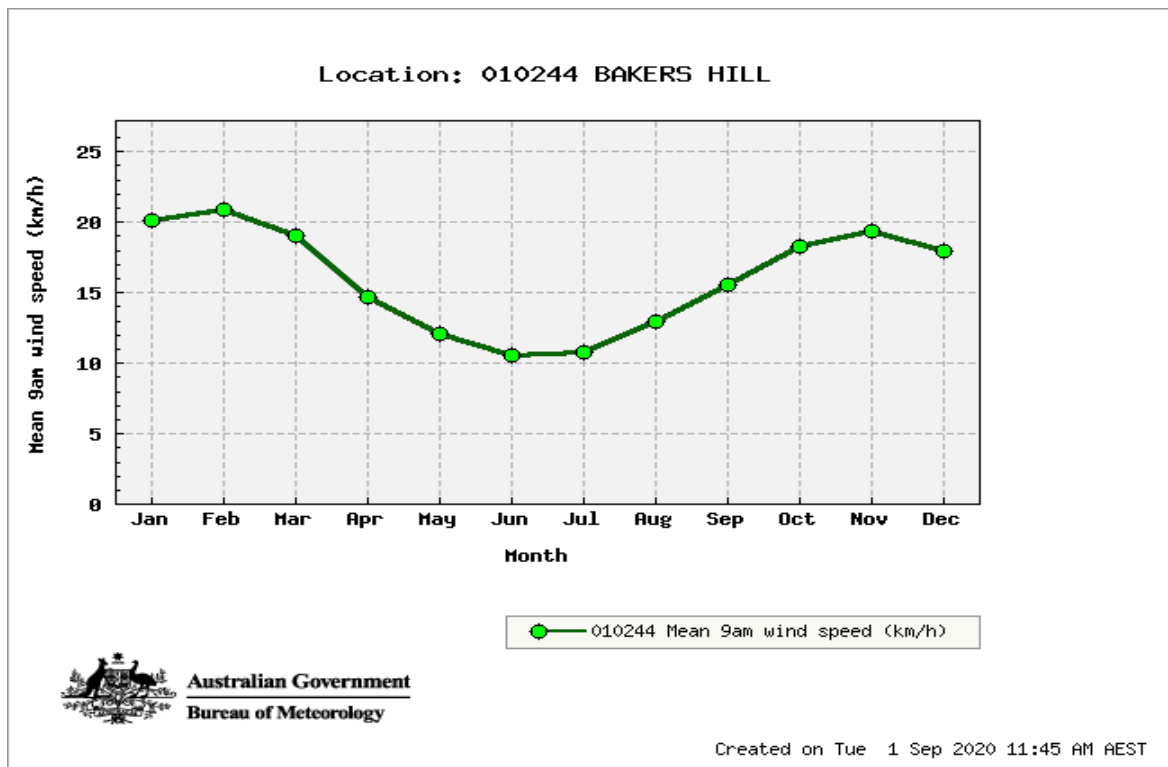


3 pm  
6692 Total Observations

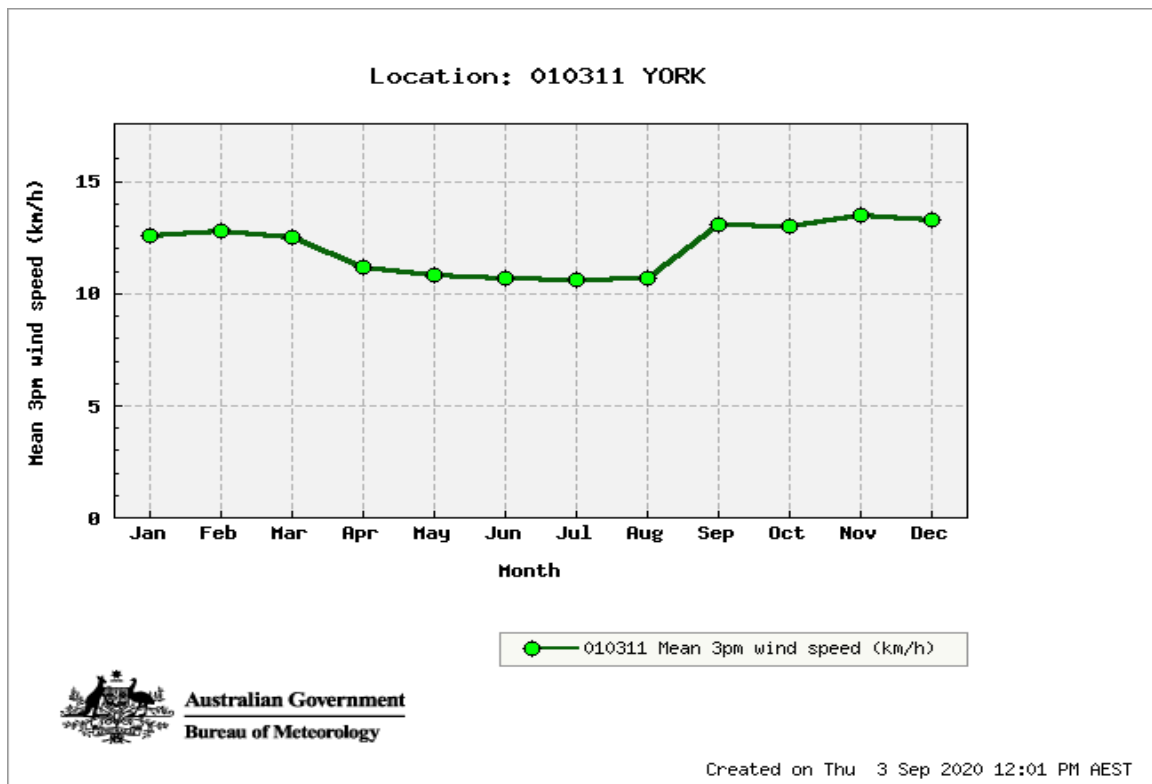
Calm 6%



## Mean 9 am wind speed (km/h) at Bakers Hill BoM Station (1971 – 1985)



## Mean 3 pm wind speed (km/h) at YorkBoM Station (1996– 2020)



## **ANNEXURE 3**

### **Site Classification Assessment Chart**

### Annexure3: Site risk assessment/classification for activities generating uncontaminated dust

#### Sheet 1: Site classification assessment chart

##### Part A. Nature of site

Item	Score options				Allocated score
1. Nuisance potential of soil. when disturbed	Very low ..... 1	Low.....2	Medium.....4	High.....6	2
2. Topography and protection provided by undisturbed vegetation	Sheltered and screened..... 1	Medium screening....6	Little screening.....12	Exposed and wind prone.....18	6
3. Area of site disturbed by the works	Less than 1ha ..... 1	Between 1 and 5ha..3	Between 5 and 10ha.....6	More than 10ha.....9	9
4. Type of work being done	Roads or shallow trenches..... 1	Roads, drains and medium depth sewers.....3	Roads, drains, sewers and partial earthworks.....6	Bulk earthworks and deep trenches.....9	9
<b>TOTAL score for Part A</b>					<b>26</b>

##### Part B. Proximity of site to other land uses

Item	Score options				Allocated score
1. Distance of other land uses from site	More than 1km.....1	Between 1km and 500m.....6	Between 100m and 500m.....12	Less than 100m.....18	12
2. Effect of prevailing wind direction (at time of construction) on other land uses	Not affected.....1	Isolated land uses affected by one wind direction.....6	Dense land uses affected by one wind direction.....12	Dense/ sensitive land uses highly affected by prevailing winds.....18	6
<b>TOTAL score for Part B</b>					<b>18</b>

**SITE CLASSIFICATION SCORE (A X B) = 468**



### Sheet 3: Notes relating to 'site assessment classification chart'

1. The site assessment chart is used to differentiate between Classifications 1, 2, 3 and 4, as defined within these guidelines. Classifications 2 and 3 are subject to Note 4, below.
2. Sites may be divided into two or more classifications depending mainly on the proximity of existing land uses.
3. In assessing the relevant score level, the 'effect of prevailing winds' must be carefully considered. While houses, commercial areas, market gardens, schools and factories have high sensitivity ratings, roads, parks and recreational areas have lower sensitivity ratings.
4. Construction during dry period (1 October — 31 March).
  - (a) Where other land uses are within 100 metres of the site:
    - (i) sites assessed as Class 3 will automatically become Class 4, and
    - (ii) sites assessed as Class 2 will automatically become Class 3.
  - (b) Where other land uses are situated between 100 metres and 500 metres from the site, an on-site re-evaluation of Class 3 sites shall be conducted by the engineer for the developer, the local government or the DEC to determine the extent of additional Class 4 requirements considered necessary (if any).

## Sheet 4: Dust management and monitoring requirements for each site classification score

Based on the total score obtained from the 'SITE CLASSIFICATION ASSESSMENT CHART' and notwithstanding any allowance for special site conditions during the dry period. (refer to Note 4. Appendix 1) the following site classification will apply:

**Site classification 1** — under 199; **Site classification 2** — 200 to 399; **Site classification 3** — 400 to 799; and **Site classification 4** — over 800.

### Note:

- Unique sites may need special assessment
- It is essential that any contracts for construction work on site include the relevant contingency arrangements appropriate for the site classification

### Classification 1 (score under 199, considered negligible risk)

#### Provisions:

- None required.

#### Contingency arrangements:

- None required.

### Classification 2 (score between 200 and 399, considered low risk)

#### Provisions:

- The developer shall supply a contingency plan to the local government, which shall detail the activities to be undertaken should dust impacts occur.

#### Contingency arrangements:

- Include an allowance for water-cart operation, wind fencing and surface stabilisation during the construction period for the purposes of dust suppression.
- All areas of disturbed land should be stabilised to ensure that the disturbed area exposed at any time is kept to a practical minimum.

#### Monitoring requirements:

- Complaints management system in place (complaints recorded and acted on promptly).
- Notice to be erected at the site, providing contact details of the person to be contacted and works.

### **Classification 3 (score between 400 and 799, considered medium risk)**

#### Provisions:

- Appropriate wind fencing of a length specified in the air quality management programme needs to be stored on site or available within one hour of being required by the engineer for the developer/local government/DEC.
- All areas of disturbed land should be stabilised to ensure that the disturbed area exposed at any time is kept to a practical minimum to prevent exceedence of dust standards (see Section 4.4.2).
- The engineer for the developer shall maintain close control of works with dust creating potential (for example. allowable length of open trenching).
- After all siteworks are completed, and before the contractor has vacated the site, the developer should ensure that the entire site is stable. The developer then retains responsibility for site stability until change of ownership/control takes place. After the change of ownership/control has taken place, the new owner or controlling party will inherit responsibility for site stabilisation.

#### Contingency arrangements:

- Suitable water-carts in good working condition and of not less than 10.000 litres capacity per 7.5 hectares of disturbed site, or other suitable alternatives, shall be available to commence watering on the site within 18 hours of being required to do so by the engineer for the developer/local government/DEC.
- Surface stabilisation equipment shall be available to commence operation on site within 48 hours of being required to do so by the engineer for the developer/local government/DEC and with sufficient capacity to cover the disturbed site area within a further 48 hours.
- Wind fencing shall be erected within 18 hours of the contractor being required to do so by the engineer for the developer/local government/DEC. Dust generating works on the site shall cease in the interim.
- If dust-related complaints are generated due to activities on the site, the developer may be required by the local government or an authorised DEC officer to distribute advisory notices to adjoining land occupiers within 48 hours. A notice form is provided in Sheet 5 of Appendix 1.
- If dust-related complaints are generated due to material which has been excavated for trenching, the developer shall ensure this material is stabilised within 48 hours of being requested to do so by the engineer for the developer, local government or an authorised DEC officer.
- Include an allowance for water-cart operation, wind fencing and surface stabilisation during the construction period for the purposes of dust and wind-borne material suppression.
- Include an allowance for surface stabilisation for the purposes of dust and wind-borne material suppression to be maintained after the construction period and until change of ownership/control takes place.

#### Monitoring requirements

- Site dust management system in place.
- On-site dust monitoring against short term criteria.
- Off-site (compliance) dust monitoring at site boundary (if close to sensitive receptors) or at sensitive receptors. See Section 4 and Appendix 4.
- Complaints management system in place (complaints recorded and acted on promptly).
- Exceedences to be reported to the relevant authority — DEC. Local Government or DOH.
- Notice to be erected at the site, providing contact details of the person to be contacted regarding the works.

#### **Classification 4 (score over 800, considered high risk)**

##### Provisions:

- Advisory notices shall be issued to adjoining land occupiers, the local government and the DEC at least 48 hours before site works commence. The notices shall include the name of the developer, engineer for the developer, Contractor/s, contract period, contact telephone numbers of the site engineer and local government environmental health officer as detailed in Sheet 5 of Appendix 1.
- Fencing to the extent and in locations agreed to by the developer and local government shall be erected before any part of the site surface is disturbed.

**Note: This provision does not necessarily mean that the total site boundary is to be fenced. The fence is to be installed to an extent which will protect adjacent land uses and in most cases should be erected on the edge of the area which will be disturbed rather than on the site boundary.**

- An amount of wind fencing of a length specified in the air quality management programme needs to be stored on site or available within one hour of being required by the engineer for the developer/local government/DEC.
- The nominated wind fencing is to remain in position until the disturbed surface is stable.
- Surface stabilisation is to be applied to the disturbed area of each section of the site upon completion of the works in that section.
- The engineer for the developer shall maintain strict control of works with dust-creating potential. Material which has been excavated for trenching shall be stabilised if the trench is to be left exposed for longer than 72 hours.
- After all siteworks are completed, and before the contractor has vacated the site, the developer should ensure that the entire site is stable. The developer then retains responsibility for site stability until change of ownership/control takes place. After the change of ownership/control has taken place, the new owner or controlling party will inherit responsibility for site stabilisation.

##### Contingency arrangements:

- Suitable water-carts in good working condition and of not less than 10 000 litres capacity per 5 hectares of disturbed site, or an appropriate alternative, shall be available to commence immediate watering on the site.
- Surface stabilisation equipment shall be available to commence operation on site within 48 hours of being required to do so by the engineer for the developer/local government/DEC and with sufficient capacity to cover the disturbed site area within a further 48 hours.
- Additional wind fencing shall be erected within 18 hours of the contractor being required to do so by the engineer for the developer/local government/DEC. Dust generating works on the site shall cease in the interim.
- Include an allowance for water-cart operation, wind fencing and surface stabilisation during the construction period for the purposes of dust and wind-borne material suppression.
- Include an allowance for surface stabilisation for the purposes of dust and wind-borne material suppression to be maintained after the construction period and until change of ownership/control takes place.

##### Monitoring requirements

As for Classification 3.

**APPENDIX 6**  
**DIEBACK MANAGEMENT GUIDELINE**

# **PHYTOPHTHORA DIEBACK AND EXTRACTIVE INDUSTRIES INFORMATION BROCHURE**

for



Staff, Customers and Clients

## **What is *Phytophthora (cinnamomi)* Dieback?**

*Phytophthora* dieback is a soil-borne fungal pathogen that kills a wide range of plant species in the southwest of WA by destroying their root systems. There are over fifty species of *Phytophthora* that occur worldwide. Although most *Phytophthora* species can cause plant disease, *Phytophthora cinnamomi* is the most frequently isolated *Phytophthora* species from native plant communities in WA' south west.

## **Impact of *Phytophthora* Dieback**

*Phytophthora* Dieback occurs in all Southern Australian States and has had a significant impact on the biodiversity of native plants and animals from WA. It sometimes occurs in the nursery, mining, and forestry industries in WA.

According to CALM (2003), a conservative estimate places approximately 15-20% of the Jarrah forest as infested by *Phytophthora cinnamomi*. Furthermore, approximately 60% of the shrubland, *Banksia* woodland and Mallee woodland in the Stirling Range National Park are infected by the pathogen. Similarly, 70% of the Shannon and D'Entrecasteaux National Parks are also affected by *Phytophthora cinnamomi*.

## **Managing *Phytophthora* Dieback**

The movement of large volumes of soil is a significant risk in terms of spreading *Phytophthora cinnamomi*. The extractive industry has the opportunity to reduce the rate of spread of *Phytophthora cinnamomi* by taking steps to minimise the accidental spread of the pathogen, with extraction in the >400 mm rainfall zone at greatest risk of spreading the pathogen.

In particular, operations occurring near native plant communities dominated with *Banksia* species and other Proteaceae may be at high risk. Different types of extracted materials have their different levels of inherent risk with regards to the likelihood of being infested with *Phytophthora* Dieback and therefore these differences need to be taken into account. For example, sand and gravel which carries organic matter or topsoil can be infested with *Phytophthora*, whereas limestone and hard rock are normally always dieback free.



## **Plants Susceptible to *Phytophthora* Dieback**

*Banksias*, *Adenanthos* and other Proteaceae, *Grass Trees (Xanthorrhoea)*, *Lomandra*, *Hibbertia*, *Dasypogon*, *Patersonia*, Jarrah (*Eucalyptus marginata*) are highly susceptible to *Phytophthora* impacts, as are 2,300 native plant and some exotic plants (Shearer 2004). The Dieback Working Group site provides a list of susceptible species. On the other hand species such as Marri (*Corymbia calophylla*) are not affected.

Disturbed native vegetation, farmland, urban and other similar areas are not normally able to be assessed for *Phytophthora*.

Should you have concerns with the use of particular gravels next to or high quality native vegetation please contact B & J Catalano for further advice or view

<https://www.dwg.org.au>.

## Best Practice Management Techniques

are described by the Dieback Working Group<sup>1</sup> and these are used by B & J Catalano to minimise the risk of their operations in acting as a vector for the transfer of the pathogen. The techniques described in this document are by no means all-encompassing but provide a summary.

B & J Catalano choose resources that are elevated, dieback free or have species not favoured by *Phytophthora* such as blue gum plantations and pasture, where best practice is possible. Resources are extracted, processed managed and tested to provide the lowest possible *Phytophthora* Risk.



### Summary of Best Practice Guidelines for a site entirely infested with *Phytophthora* Dieback

- Entirely dieback infested sites are only used to supply to similarly infested sites.

#### Guidelines for *Phytophthora* free, excluded from assessment or partially impacted sites.

- Training of staff on *Phytophthora* Dieback and management.
- No unauthorised entry is permitted.
- Vehicles must be “clean on entry”
- Areas are identified as follows:
  - Extraction and processing areas
  - Roads, including haul roads
  - Turn around points
  - Hygiene – quarantine points
  - Storage and stockpile areas
  - Water sources
- Surface water is contained on site.
- Stockpile areas are hard and well drained.
- All vehicles are clean on exit.
- The site and activities are secured by fencing, Signage, training and other methods.
- Separate excavation and loading areas.
- Signs illustrate the status and measures required are used as applicable.
- Dieback free water is used.
- Customers are notified of the Dieback status of the site and the resource.
- Stockpiles are regularly checked for organic matter or topsoil contamination.
- Product is regularly tested for *Phytophthora*.



South Western Highway Brunswick 6224  
PH: 08 9726 8120  
admin@catalano.com.au



INFORMATION FOR THIS BROCHURE  
HAS BEEN OBTAINED FROM:

<sup>1</sup>Dieback Working Group, 2019.  
Management of *Phytophthora* Dieback  
in Extractive Industries.