



**DEVELOPMENT SERVICES ATTACHMENTS
ORDINARY MEETING OF COUNCIL
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**EXTRACTIVE INDUSTRY APPLICATION
&
ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

**LOT 41 ON DEPOSITED PLAN 410793,
(5030 GREAT NORTHERN HIGHWAY), CHITTERING**

PREPARED BY LUNDSTROM ENVIRONMENTAL CONSULTANTS

April 2020

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Location: Lot 41 on Deposited Plan 410794
(5030 Great Northern Highway)
Chittering

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Management Plan (EMP)

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INTRODUCTION

1.1 GENERAL DESCRIPTION OF THE PROPOSAL

The purpose of this report is to provide all the necessary information in support of an extractive industries licence (EIL) application by the Proponent, B & J Catalano Pty Ltd. Information contained in this report is also aimed at fulfilling the requirements for Town Planning Consent.

The report sets out the details for the extraction of laterite gravel within two stages in an area of approximately 11.8 ha on the property. It also provides an environmental assessment of the proposal and a rehabilitation plan.

1.2 PROPERTY DESCRIPTION, OWNERSHIP AND LOCALITY

Land Description:	Lot 41 on Deposited Plan 410793
Volume:	2929
Folio:	43
Area:	136.0729 ha
Ownership:	Austral Bricks (WA) Pty Ltd (formerly Bristile Operations Pty Ltd)

The property is located approximately 20km north of Bullsbrook town site and directly south-east of the Chittering Roadhouse and is accessed directly from Great Northern Highway.

Figure 1 shows the regional location of the property.

A letter of authorisation from the landowner is included in Appendix 1, together with the Development Approval and Extractive Industry Licence application forms.

2 PLANNING ISSUES

2.1 PRESENT LAND USE

Lot 41 on Great Northern Highway consists of cleared grazing land, areas of remnant native vegetation, clay pits and associated detention ponds from previous clay extraction operations. The surrounding area comprises farming land, tree plantations, extractive industries and rural lots.

The property lies within an “Agricultural Resource” zone as defined by the Shire of Chittering’s Town Planning Scheme No. 6. It is anticipated that the extraction area will be returned to grazing on completion of extraction. There may be some requirements for revegetation associated with the clearing permit.

Extraction of gravel has previously been undertaken directly east of the proposed extraction area, prior to 1996.

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 Chittering which experiences a mild, temperate climate with hot, dry summers and cool, wet winters.

3.2 TOPOGRAPHY AND DRAINAGE

The property comprises very gentle to gentle slopes of between 1% and 10% with the proposed extraction area having gentle slopes averaging 10%. The proposed extraction has an elevation of between 200m AHD and 227m AHD. The drainage is towards the east, via a minor tributary which ends up in Toodyay Creek.

Much of the property lies within the Brockman River sub-catchment of the Swan Avon – Lower Swan hydrographic catchment, with a small section in the south-west of the property (outside of the proposed extraction area) lying within the Ellenbrook sub-catchment.

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 (Landgate 2019).

3.3 GEOLOGY AND SOILS

The proposed extraction area is located within the southern section of the Dandaragan Plateau.

The Dandaragan Plateau to the west of the Darling Fault is a wedge-shaped erosion remnant of the Perth Basin with sediments covered by recent deposits of sand and laterite (Wilde and Low 1978).

The soils are predominantly light grey or pale brown deep sands of colluvial origin with outcropping laterite areas on higher ground.

The site is underlain by South West Terrane greenstones as bedrock.

3.4 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 (associated with previous wetland environments) identified in the proposed EIL area and the area is classified as having an 'Extremely Low Probability of Occurrence' of ASS (ASRIS 2019).

Acid sulphate seepage and drainage problems are known to occur in the north-west of the southern adjacent property along the Great Northern Highway. These are related to geological formations at depths greater than those associated with the proposed extraction

operations. No acid sulphate soils have been encountered in the clay extraction operations on the same property.

3.5 GROUNDWATER AND HYDROLOGY

A groundwater level taken in Winter 2017 for a monitoring bore located approximately 300m west of Stage 1, gave a reading of 14.96m depth to water. This bore is located in a similar hydrogeological position to the proposed extraction area and as such, the depth to groundwater below these stages can be assumed to be at least 15m and will not be impacted by the shallow gravel extraction operations.

Furthermore, an Acid Sulfate Soil and Drainage Management Plan compiled by GHD for Bristle Pty Ltd (GHD 2003) included a hydrogeological survey of the adjacent property (Lot 42) and concluded that the regional groundwater table is likely to be encountered at depths of 15m. This finding correlates with the groundwater level observed in the monitoring bore.

An Acid Sulfate Soil investigation undertaken by Lundstrom Environmental Consultants (LEC) prior to commencement of extraction within the adjacent Lot 42, as required by the Shire of Chittering, sampled to depths of up to 6m, with no water being encountered.

3.6 WETLANDS

The Brockman River is classified as a Multiple Use Palusplain Wetland. It is located approximately 4km east of the proposed extraction area and will not be directly impacted by the proposed extraction activities.

3.7 VEGETATION

The native vegetation on this property has been cleared extensively. The proposed extraction area has been mapped as the Yalanbee 6 Vegetation Complex in the Uplands and the Coolakin Vegetation Complex in the lower regions / valleys (Mattiske and Havel, 2000). The vegetation of the Yalanbee 6 complex is described as “Woodland of *Eucalyptus wandoo*-*Eucalyptus accedens*, less consistently open forest of *Eucalyptus marginata* fs24 subsp. *thalassica*-*Corymbia calophylla* on lateritic uplands and breakaway landscapes in arid and perarid zones”. The Coolakin vegetation complex is described as “Woodland of *Eucalyptus wandoo* with mixtures of *Eucalyptus patens*, *Eucalyptus marginata* subsp. *thalassica* and *Corymbia calophylla* on the valley slopes in arid and perarid zones”. The majority of the proposed extraction area has been cleared. The understorey consists of pasture grasses. The condition of the vegetation in this area can be described as “parkland cleared” and hence classified as being ‘completely degraded’ (Keighery 1994).

There are no threatened ecological communities, nor are there any threatened flora within the proposed extraction area.

The ‘Banksia Woodlands of the Swan Coastal Plain’ TEC has been identified as likely to occur within the area (DoEE 2019). However, due to the fragmented nature of the remnant

vegetation and lack of understorey, even if Banksia species occurred in the proposed extraction area, they would not meet the criteria of this TEC.

A clearing permit has been applied for with the Department of Water and Environmental Regulation (DWER). Clearing will be undertaken using mechanical means.

3.8 FAUNA

A search of the EPBC Protected Matters Database identified the area as potential breeding habitat for *Calyptorhynchus latirostris* (Carnaby's Black-Cockatoo) (DoEE 2019). A fauna assessment undertaken in the proposed extraction area identified a couple of potential cockatoo habit trees with hollows suitable for Black Cockatoos. The remaining trees within the proposed clearing area either have small hollows not suitable for black cockatoos or no hollows at all. The Cockatoo Habitat Assessment report is provided in Appendix 2.

3.9 DIEBACK DISEASE

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. Methods to manage dieback on this site are discussed in Section 5.8 of this report.

3.10 CURRENT ZONING

The area is zoned as "Agricultural Resource" in accordance with the Shire of Chittering Town Planning Scheme No.6.

3.11 EXISTING INFRASTRUCTURE ON THE SITE

Clay extraction has been undertaken in the western section of Lot 41, adjacent to the proposed extraction area, between mid-2013 and 2018 by Austral Bricks (WA). Gravel extraction has previously been undertaken in the eastern section of this area prior to 1996. Gravel extraction has been undertaken on Lot 42 immediately south of Lot 41, during the period 2016-2019. There is currently a weighbridge, product stockpiles and stormwater detention ponds associated with this extraction operation on the boundary of Lot 42 and Lot 41.

3.12 ABORIGINAL HERITAGE SITES

A search of the Department of Aboriginal Affairs Aboriginal Heritage Inquiry System (AHIS) did not identify any sites of Aboriginal significance on Lot 41. In the event that during the course of mining 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*.

4 THE DEVELOPMENT PROPOSAL

4.1 EXISTING DEVELOPMENT

Extraction of clay was previously undertaken in the western section of the property between 2013 and 2018. A partially rehabilitated clay pit lies immediately to the west of the proposed gravel extraction area (Figure 2).

Prior to 1996, gravel extraction operations were undertaken in Lot 41, to the east of the proposed extraction area.

4.2 PROPOSED EXTRACTION ACTIVITIES

It is proposed to extract gravel from the 11.8ha site in two stages using a front-end loader and bulldozer. This will result in the extraction of approximately 230,000 tonnes of material in total.

The proposed new extraction licence is required for the purpose of commencing the following activities on the site:

- Extraction of gravel from an area of 11.8 ha in two stages as shown in Figure 3.
- Approximately 50mm of topsoil and overburden will be removed from the extraction area prior to the commencement of each stage, with only the area targeted for immediate extraction being open. The overburden and topsoil will be stockpiled separately along the edges of the extraction area, with stockpiles being no higher than two metres.
- Within the current stage of extraction, a bulldozer will rip and blade material to a stockpile. 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 pit via an unsealed, existing access road off Great Northern Highway and be loaded from the stockpile by a front-end loader.
- Crusher and stockpile positions have been identified by the proponent for each stage, and are illustrated in Figure 3.
- Excavation will proceed until the laterite has been removed, resulting in a reduction in ground level of between 1 to 1.5 m.
- Where possible, topsoil will be replaced and seeded with pastures on a progressive basis, in fully extracted areas, prior to the commencement of winter.

Table 1 summarises the stages of the extraction operation and an estimated timeframe for associated activities.

Table 1. Stages of the extraction operation and estimated timeframe

Stage	Action	2020		2021		2022		2023		2024		2025		2026	
1	Strip, crush and stockpile 140,000 tonnes	■	■	■											
1	Load and truck out 140,000 tonnes	■	■	■											
1	Progressive rehabilitation of 7.0ha				■	■	■								
2	Strip, crush and stockpile 100,000 tonnes				■	■									
2	Load and truck out 100,000 tonnes				■	■									
2	Progressive rehabilitation of 4.8ha						■	■	■						
Stages 1 and 2	Monitoring and Maintenance of 11.8ha				■	■	■	■	■	■	■	■	■	■	■

4.3 SITE ACCESS AND EGRESS ROADS

It is proposed to access the site from Great Northern Highway. An existing formed, unsealed property road (which has been previously used for transport of clay from within the property) will initially provide access to the proposed extraction area. Once the Great Northern Highway upgrade is complete, an alternative unsealed road between the weighbridge and Great Northern Highway will be utilised (Figure 2).

4.4 PROPOSED INFRASTRUCTURE

A temporary site office, water closet facilities, weighbridge and staff/contractors car park will be located in the southern section of the property and has been used for the current gravel extraction operation on the adjacent Lot 42 (Figure 2).

4.5 ESTIMATED TRAFFIC TO BE GENERATED

The following estimates are made for extraction stages 1 and 2:

Total annual gravel removal:	100,000 tonnes
Number of working days per month:	22 days
Vehicle payloads (GAVs ¹):	Road Train (55 tonnes)
Proportional use:	100%

The above factors suggest a maximum of 7 loaded truck movements per day, but this will be dependent on demand. If the demand for material was great, the whole area could be extracted in one year, hence the maximum number of loaded trucks would increase to 14.

The trucks will either move north along Great Northern Highway, if gravel is required for future expansion of the Highway under the Northlink Project or south along Great Northern Highway, if gravel is to be used for the RAAF Pearce landing strip. This will be dependent on tenders acquired.

Operating times will be Monday to Friday 0700 to 1800 and Saturdays 0700 to 1200.

¹ General Access Vehicle (in terms of 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, providing operating procedures are in accordance with acceptable standards and that rehabilitation measures are implemented, as proposed. 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 is already cleared, there will be no significant impact to indigenous flora and fauna. An investigation of NatureMap (DBCA 2019) showed that there are no known records of flora species protected under the EPBC Act which were identified as having the potential to occur within 1km of the proposed extraction area.

Of the fauna species identified from the EPBC Protected Matters Search (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 has been undertaken for the proposed extraction area (Appendix 2). A few trees within the proposed extraction area were identified as potential Black Cockatoo breeding habitat trees, on the basis of their size and presence of suitably sized hollows.

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 m below the original ground level and the edges will be battered back to a gradient of 1:6. It is very difficult to depict the final contours for a 1m excavation on a plan, hence a final land surface figure will not be produced for this site.

5.4 VISUAL IMPACT

The proposed extraction area is unlikely to have a significant impact on visual amenity. Stockpiles may be visible from the roadhouse laydown area for a short period of time. However, due to the ongoing North Link road construction in the area, additional construction should be acceptable, given the limited timeframe of activity.

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 east and the west will be retained to provide an element of screening for the proposed extraction.

A 4m high bund will be constructed on the eastern edge of the extraction area from topsoil to provide a visual amenity barrier from Maddern Road. This barrier will naturally stabilise with pasture / grasses from the topsoil or it will be seeded with pasture species to provide an aesthetically pleasing “green” appearance.

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 productive 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 east towards Toodyay Creek, which drains into the Brockman River, located 4km from the proposed extraction area. A drainage line lies immediately south of the EIL area (Figure 2). A soak dam is located east of the EIL area on the eastern side of Maddern Rd, along a drainage line.

The proposed extraction site does not include 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 area.

5.5.1.2 Stormwater Management

Stormwater management at this site is not expected to be an issue. The pit will be 1 to 1.5 metres below ground level and combined with the gentle slopes of the EIL 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 EIL area will be diverted around the workings by means of topsoil stockpiles placed along the eastern boundary of Stage 1 and northern boundary of Stage 2.
- The runoff generated by direct rainfall onto the working stage will be managed through the use of a number of measures which include:
 - Two stormwater detention ponds will be constructed in each stage whilst it is being worked, with all stormwater generated from the active cell being directed

to them by the use of contour banks. These will serve as effective silt traps in times of high surface runoff.

- Strategically placed stockpiles to reduce water flow within the extraction area.
 - Contour banks to direct any surface runoff to the detention basins.
- On completion of the extraction stage, contour banks will be constructed 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 1 to 1.5 metres and depth to groundwater has been calculated as approximately 15m (See Water Management Plan in Appendix 4).

A groundwater level taken in winter 2017 at a monitoring bore directly west of the partially rehabilitated clay pit (Figure 2), gave a reading of 14.96m depth to water. This monitoring bore is located at a slightly lower elevation in the landscape than the proposed extraction area and it can be assumed that the depth to water in the extraction area would be in excess of 15m.

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. 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.

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 eight 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 premise is a residential dwelling located approximately 75 m north-west of stage 1 (on the eastern side of the Chittering Roadhouse) boundary and 510m from the crusher location (Figure 2). Three noise bunds are constructed in stage 1 of extraction area to minimise noise levels received by residence 4. Clay extraction operations have previously been undertaken in close proximity to this residence with no impact to the residents.

Several other dwellings are located within 1000 m of the proposed operations. Remnant vegetation in the north-east and south-east corners of Lot 41 and adjacent lots will help to mitigate any potential noise from the operations to the residents on Maddern Road.

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

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

- Hours of operation will be restricted to between 0700 and 1800 on weekdays and between 0700 to 1200 on Saturdays.
- Late model equipment will be utilised with reduced noise level outputs.
- The crushing and screening plant in each extraction stage will be positioned such that the topsoil and product stockpiles will provide noise attenuation.
- Only broad-band reversing warning devices (croakers) will be utilised on all heavy machinery and trucks.

Table 2. Structures within 1000m of the extraction area.

Reference No on Figure 2	Structure Location	Type of Structure	Distance	Direction
S1	L232 (H 732) Maddern Road, Chittering	House	545m	E
S2	L233 (H 670) Maddern Road, Chittering	House	736m	SE
S3	L230 (H 618) Maddern Road, Chittering	House	878m	SE
S4	L1 (H5066) Great Northern Highway, Chittering	House	75m	NW
S5	L512 Maddern Road	House	535m	NE

A noise management plan is included as Appendix 5.

5.7 DUST

There is potential for dust to be generated from active working areas, stockpiles and unsealed access 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 6.

A summary of dust control measures to be implemented for the extraction project are given in Table 3.

Table 3. Summary of Dust Control Measures to be implemented for the Extraction Project

Activity	Action	Control measure	Result
Daily			
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. No dust leaving the property.
Product transport.	All loads covered before leaving the property.	Cover loads.	Reduced dust generation from product transport.
As Required			
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 using pasture species on completed areas.	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 dust complaints.	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 wet periods.

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 using a front-end loader.
- The area will be fertilised and seeded with pasture species.
- 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 will be between 1 and 1.5 meters below the original surface and blended into the surrounds.

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

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 41 on Deposited Plan 410793 are presented in Table 4.

Table 4. 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
6. Hydrology	<ul style="list-style-type: none"> Site hydrology does not prevent the establishment of desired vegetation. Site hydrology does not reduce the stability of the landform. Stormwater is contained within the site. 	<ul style="list-style-type: none"> Stormwater is contained within the site during operations. Identification and mitigation of any hydrology related issues during operations.
7. Soils and stability	<ul style="list-style-type: none"> Soil profiles and structures are sufficient to ensure vegetation establishment. The landform is stable. 	<ul style="list-style-type: none"> Topsoil is respread in all rehabilitation areas. Identification and mitigation of potential erosion scars and scours during operations.

Criteria	Objective	Interim Targets
8. Vegetation	<ul style="list-style-type: none"> • Pasture grasses cover the entire targeted area. • Pasture grass cover is sufficiently resilient to sustain grazing pressure. • Monitoring will be conducted on an annual basis just prior to the wet season and will include pasture grass cover and stability of the constructed batters. 	<ul style="list-style-type: none"> • After one-year pasture grasses cover 30% of target area increasing by 20% per annum thereafter.
9. Weed	<ul style="list-style-type: none"> • Declared pest weeds are absent. • The level of weed species should not be detrimental to the pasture grasses. 	<ul style="list-style-type: none"> • Weed species removed systematically during operations.

8 REFERENCES

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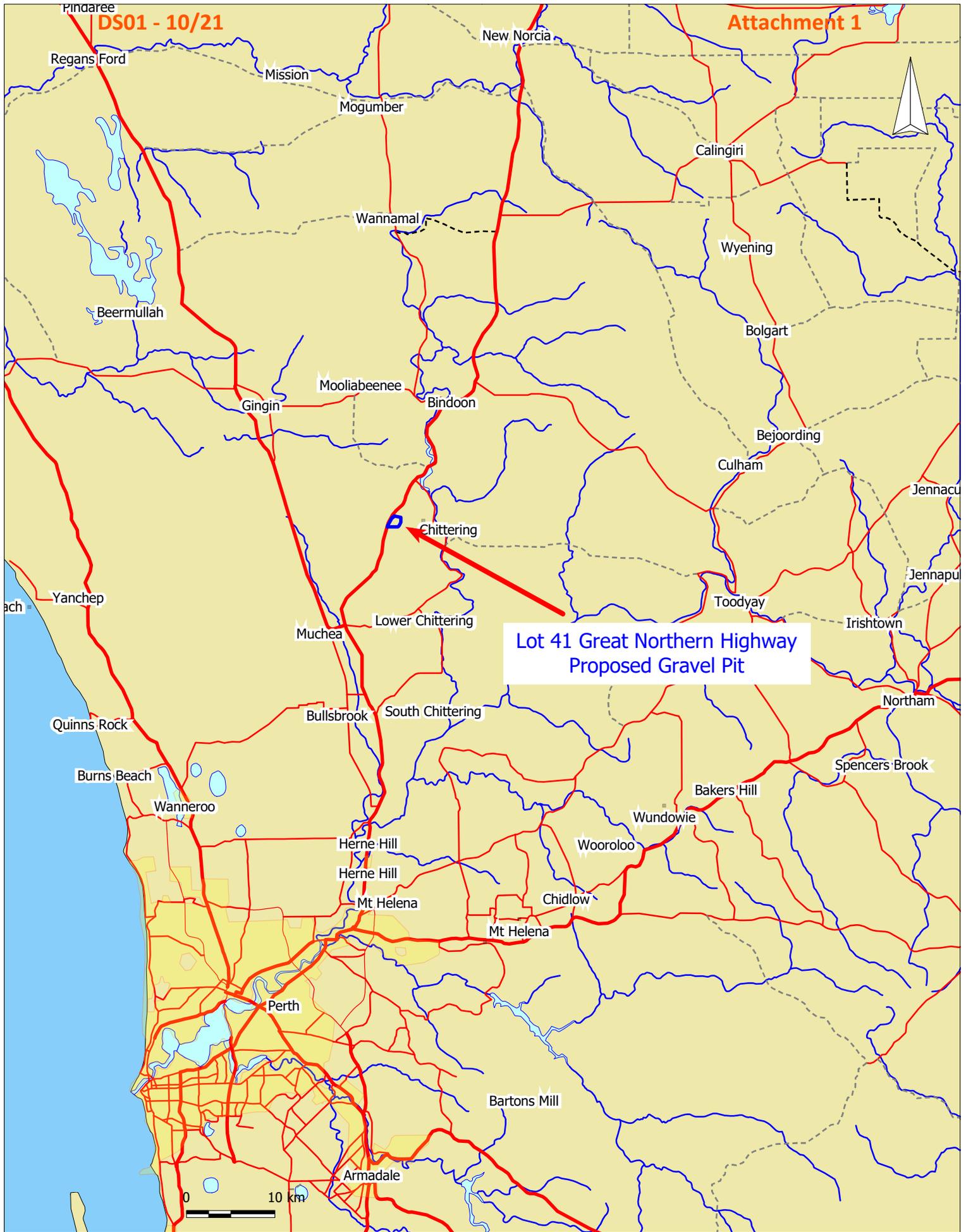
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FIGURES



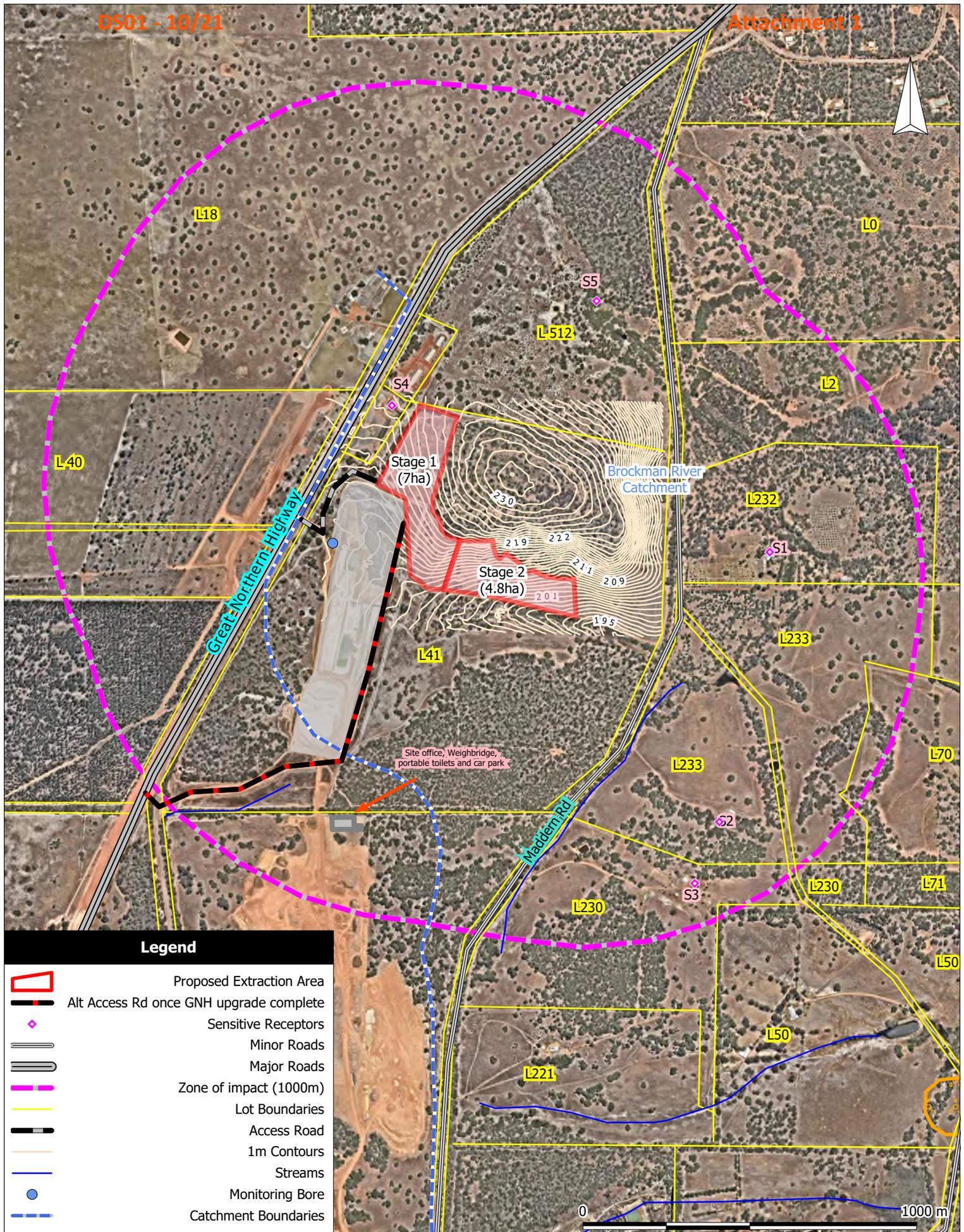
**Lundstrom Environmental
Consultants Pty Ltd**

Leeming WA 6149
Mob: 0417934863
mikelund1@bigpond.com

Scale: 1:540000
Original Size: A4
Datum: GDA94
Projection: Australia MGA94 (50)

Client: B & J Catalano
Project: Gravel Extraction
Location: 5030 Great Northern Hwy
Chittering

Figure 1:
Locality Plan
24



Legend

-  Proposed Extraction Area
-  Alt Access Rd once GNH upgrade complete
-  Sensitive Receptors
-  Minor Roads
-  Major Roads
-  Zone of impact (1000m)
-  Lot Boundaries
-  Access Road
-  1m Contours
-  Streams
-  Monitoring Bore
-  Catchment Boundaries

**Lundstrom Environmental
Consultants Pty Ltd**

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Original Size: A4
Air Photo Source: Nearmap Sep 2019
Datum: GDA94
Projection: Australia MGA94 (50)

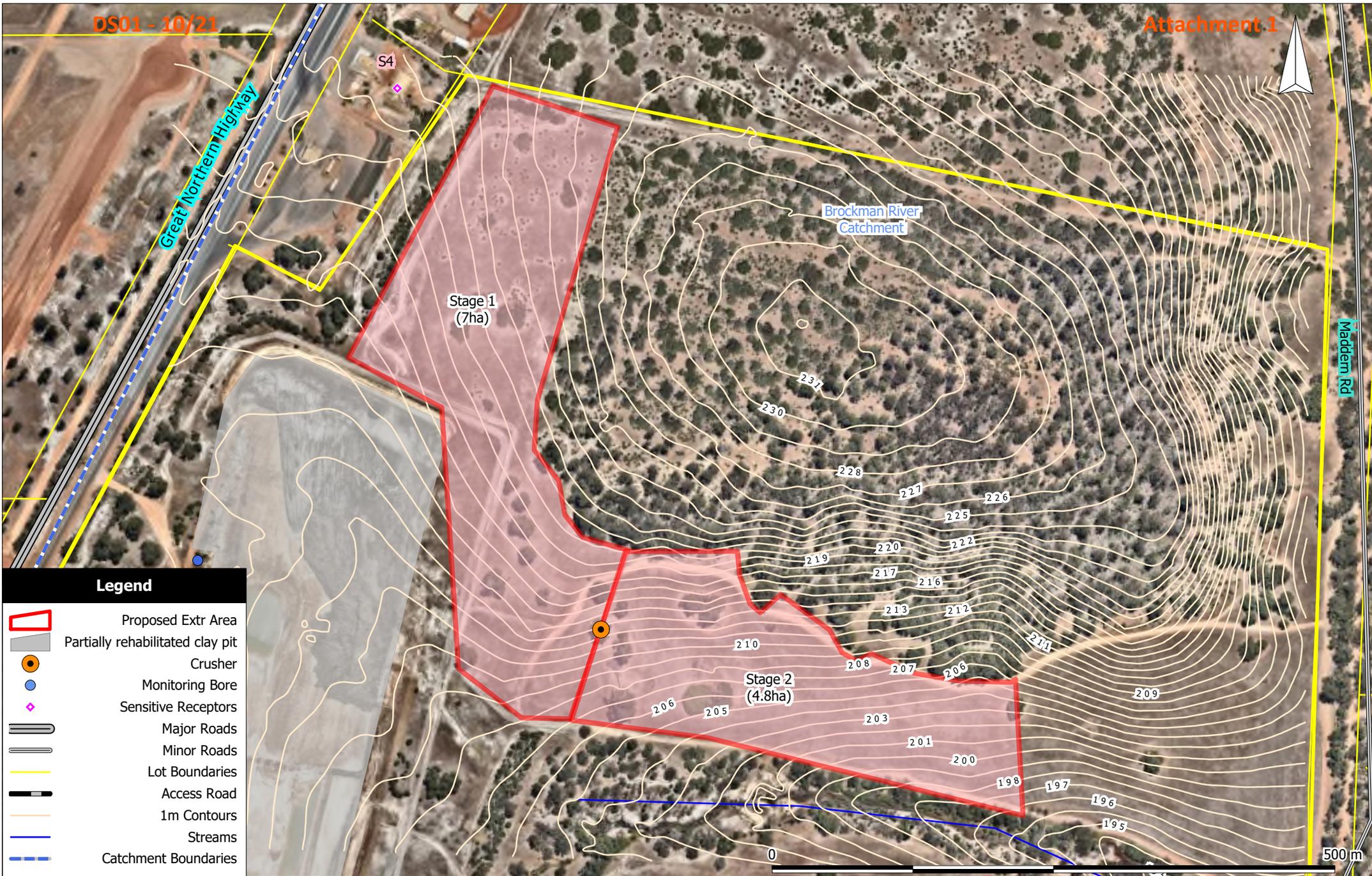
Client: B & J Catalano

Project: Gravel Extraction

Location: Lot 41 Great Northern Hwy
Chittering

Figure 2

Site and Surrounds
25



Legend

- Proposed Extr Area
- Partially rehabilitated clay pit
- Crusher
- Monitoring Bore
- Sensitive Receptors
- Major Roads
- Minor Roads
- Lot Boundaries
- Access Road
- 1m Contours
- Streams
- Catchment Boundaries



**Lundstrom Environmental
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Scale: 1:4300
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: Lot 41 Great Northern Hwy
 Chittering

Figure 3
Extraction Area

APPENDIX 1

DEVELOPMENT APPROVAL AND EXTRACTIVE INDUSTRIES LICENCE APPLICATION FORMS AND LANDOWNER LETTER OF AUTHORISATION

APPLICATION FOR DEVELOPMENT APPROVAL



6177 Great Northern Highway
PO Box 70
BINDOON WA 6502

(08) 9576 4600

chatter@chittering.wa.gov.au
www.chittering.wa.gov.au

Office Hours
8:30am - 4:30pm
Monday to Friday

This application is to be submitted with at least two copies of all plans which are no larger than A3 in size.
A separate application is required for a Building Permit.

Owner/s Details			
Name	Austral Bricks (WA) Pty Ltd		
Address	Harper Street, Caversham WA 6055		
ABN (if applicable)	ACN: 079 711 063		
Contact Numbers	Home	Work	9250 0530
	Mobile	0404817773	Fax
	Email	matthew.gordon@australbricks.com.au	
Contact Person	Matthew Gordon		
Owners Signature			Date
Owners Signature			Date
<i>The signature of the owner(s) is required on all applications. This application will not proceed without that signature. For the purposes of signing this application an owner includes the persons referred to in the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 clause 62(2).</i>			
Applicant Details			
Name	B&J Catalano Pty Ltd		
Address	Lot 27 Bushmead Way, Hazelmere WA		
Contact Numbers	Home	Work	
	Mobile	0407857026	Fax
	Email	peterbennett@catalano.com.au	
Contact Person	Peter Bennett		
<i>The information and plans provided with this application may be made available by the local government for public viewing in connection with the application.</i> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Applicants Signature			Date
Property Details			
Lot No	41	House/Street No	Location No
Diagram/Plan No	410793	Cert. of Title Vol. No	2929
Title encumbrances (easements, restrictive covenants etc)		Folio	43
Street name	Great Northern Highway		Suburb Chittering
Nearest Street Intersection			
Proposed Development			
Nature of development	<input checked="" type="checkbox"/> Works	<input type="checkbox"/> Use	<input type="checkbox"/> Works & Use
Is an exemption from development claimed for part of the development?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes - Please specify: <input type="checkbox"/> Works <input type="checkbox"/> Use	
Description of proposed development works and/or land use	Gravel Extraction		
Description of exemption claimed (if relevant)	N/A		
Nature of any existing buildings and/or use	N/A		
Approximate cost of proposed development (ex GST)	\$ N/A	Estimated date of completion	
OFFICE USE ONLY			
Officer Initials	Date Received	LGA Reference #	

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Information Sheet

Every application for Development Approval shall be accompanied by:

1. Development Application Form

Page 1 of this document (see reverse)

2. The Correct Fees

Please see attached for Schedule of Fees as outlined in the Planning Development Regulations 2009. For credit card payment, please fill out the form below.

3. Two (2) copies of plans to scale on paper no larger than A3 size.

Please refer to our checklist on our website:

[Development Application Checklist - Planning, Health and Building](#)

OPTIONAL:

If applying for **advertisement signage**, an additional form 'Additional Information For Development Approval For Advertisements' must be completed.

Credit Card Payments

Card Type:	[]		[]	
Cardholders Name:				
Card Number:				
Expiry Date:				
Security Code:				
Signature:				
Amount:				

APPLICATION FOR DEVELOPMENT APPROVAL

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Office Hours
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Monday to Friday

Schedule of Fees

Item	Description	Fee
1.	Determining a development application (other than for an extractive industry) where the development has not commenced or been carried out and the estimated cost of the development is	
	(a) not more than \$50 000	\$147.00
	(b) more than \$50 000 but not more than \$500 000	0.32% of the estimated cost of development
	(c) more than \$500 000 but not more than \$2.5 million	\$1,700.00 + 0.257% for every \$1 in excess of \$500,000.00
	(d) more than \$2.5 million but not more than \$5 million	\$7,161.00 + 0.206% for every \$1 in excess of \$2.5 million
	(e) more than \$5 million but not more than \$21.5 million	\$12,633.00 + 0.123% for every \$1 in excess of \$5 million
	(f) more than \$21.5 million	\$34,196.00
2.	Determining a development application (other than for an extractive industry) where the development has commenced or been carried out	The fee in item 1 plus, by way of penalty, twice that fee
3.	Determining a development application for an extractive industry where the development has not commenced or been carried out	\$739.00
4.	Determining a development application for an extractive industry where the development has commenced or been carried out	The fee in item 3 plus, by way of penalty, twice that fee
5A.	Determining an application to amend or cancel development approval	\$295.00
5.	Providing a subdivision clearance for –	
	(a) not more than 5 lots	\$73.00 per lot
	(b) more than 5 lots but not more than 195 lots	\$73.00 per lot for the first 5 lots and then \$35.00 per lot
	(c) more than 195 lots	\$7,393.00
6.	Determining an initial application for approval of a home occupation where the home occupation has not commenced	\$222.00
7.	Determining an initial application for approval of a home occupation where the home occupation has commenced	The fee in item 6 plus, by way of penalty, twice that fee
8.	Determining an application for the renewal of an approval of a home occupation where the application is made before the approval expires	\$73.00
9.	Determining an application for the renewal of an approval of home occupation where the application is made after the approval has expired	The fee in item 8 plus, by way of penalty, twice that fee
10.	Determining an application for a change of use or for an alteration or extension or change of a non-conforming use to which item 1 does not apply, where the change or the alteration, extension or change has not commenced or been carried out	\$295.00
11.	Determining an application for a change of use or for an alteration or extension or change of a non-conforming use to which item 2 does not apply, where the change or the alteration, extension or change has commenced or been carried out	The fee in item 10 plus, by way of penalty, twice that fee
12.	Providing a zoning certificate	\$73.00
13.	Replying to a property settlement questionnaire	\$73.00
14.	Providing written planning advice	\$73.00

EXTRACTIVE INDUSTRY LICENCE APPLICATION



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chatter@chittering.wa.gov.au
www.chittering.wa.gov.au

Office Hours
8:30am - 4:30pm
Monday to Friday

OWNER(S) DETAILS			
Name of owner (1)	Austral Bricks (WA) Pty Ltd		
Name of owner (2)			
Residential Address	Harper Street, Caversham WA 6055		
Postal Address	Locked Bag 100, Midland WA 6936		
Email	matthew.gordon@australbricks.com.au		
Telephone	9250 0530	Mobile	0404817773
APPLICANT DETAILS			
Name/Company	B&J Catalano Pty Ltd		
Residential Address			
Postal Address	Lot 27 Bushmead Rd, Hazelmere		
Email	peterbennett@catalano.com.au		
Telephone	92747676	Mobile	0407857026 (Peter Bennett)
PROPOSED EXCAVATION SITE			
Lot	41	Location	Plan or Diagram No 410793
Certificate of Title Volume	2929	Folio	43
Street and Locality	Great Northern Highway, Shire of Chittering		
Materials to be excavated	Gravel		
If the application covers land that is the subject of an existing licence:			
Date of issue of that licence		Date of expiration of that licence	
Term of licence sought			
<p>The applicant applies for a licence in respect of the proposed excavation site in accordance with and subject to the Shire of Chittering Extractive Industries Local Law 2014.</p> <p>The applicant has provided a form of payment to pay the prescribed fee, submitted all documentation in accordance with Part 2.2 of the Shire of Chittering Extractive Industries Local Law 2014 (outlined on page 2 and 3) and will meet all relevant conditions of any Development Approval issued.</p>			
Signature of owner (1)	<i>[Signature]</i> Director	Date	14/2/20
Signature of owner (2)	<i>[Signature]</i> Company Secretary	Date	14/2/20
Signature of applicant	X <i>[Signature]</i>	Date	
Signature of existing licensee (if applicable)	X <i>[Signature]</i>	Date	
CREDIT CARD DETAILS			
Cardholder Name		Visa <input type="checkbox"/>	Mastercard <input type="checkbox"/>
Credit Card Number		Expiry	
Signature		CCV	
Extractive Industry Licence Fee	\$2,200.00		

EXTRACTIVE INDUSTRY LICENCE APPLICATION

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Office Hours
8:30am – 4:30pm
Monday to Friday

2.2 APPLICATION FOR LICENCE

(1) A person seeking the issue of a licence in respect of any land must apply in the form determined by the local government from time to time and must forward the application duly completed and signed by each of the applicants, the owner of the land and any occupier of the land to the CEO together with—

(a) 3 copies of a plan of the excavation site to a scale of between 1:500 and 1:2000 showing—

- (i) the existing and proposed land contours based on the Australian Height Datum and plotted at 1 metre contour intervals;
- (ii) the land on which the excavation site is to be located;
- (iii) the external surface dimensions of the land;
- (iv) the location and depth of the existing and proposed excavation of the land;
- (v) the location of existing and proposed thoroughfares or other means of vehicle access to and egress from the land and to public thoroughfares in the vicinity of the land;
- (vi) the location of buildings, treatment plant, tanks and other improvements and developments existing on, approved for or proposed in respect of the land;
- (vii) the location of existing power lines, telephone cables and any associated poles or pylons, sewers, pipelines, reserves, bridges, railway lines and registered grants of easement or other encumbrances over, on, under or adjacent to or in the vicinity of the land;
- (viii) the location of all existing dams, watercourses, drains or sumps on or adjacent to the land;
- (ix) the location and description of existing and proposed fences, gates and warning signs around the land; and
- (x) the location of the areas proposed to be used for stockpiling excavated material, treated material, overburden and soil storage on the land and elsewhere;

(b) 3 copies of a works and excavation programme containing—

- (i) the nature and estimated duration of the proposed excavation for which the licence is applied;
- (ii) the stages and the timing of the stages in which it is proposed to carry out the excavation;
- (iii) details of the methods to be employed in the proposed excavation and a description of any on-site processing works;
- (iv) details of the depth and extent of the existing and proposed excavation of the site;
- (v) an estimate of the depth of and description of the nature and quantity of the overburden to be removed;
- (vi) a description of the methods by which existing vegetation is to be cleared and topsoil and overburden removed or stockpiled;
- (vii) a description of the means of access to the excavation site and the types of thoroughfares to be constructed;
- (viii) details of the proposed number and size of trucks entering and leaving the site each day and the route or routes to be taken by those vehicles;
- (ix) a description of any proposed buildings, water supply, treatment plant, tanks and other improvements;
- (x) details of drainage conditions applicable to the land and methods by which the excavation site is to be kept drained;
- (xi) a description of the measures to be taken to minimise sand drift, dust nuisance, erosion, watercourse siltation and dangers to the general public;
- (xii) a description of the measures to be taken to comply with the Environmental Protection (Noise) Regulations 1997; 4146 GOVERNMENT GAZETTE, WA 24 October 2014
- (xiii) a description of the existing site environment and a report on the anticipated effect that the proposed excavation will have on the environment in the vicinity of the land to be prepared by a suitably qualified industry consultant;
- (xiv) a description of the measures to be taken to minimise the destruction of existing vegetation; and
- (xv) a description of the measures to be taken in screening the excavation site, or otherwise minimising adverse visual impacts, from nearby thoroughfares or other areas;

EXTRACTIVE INDUSTRY LICENCE APPLICATION

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- (c) 3 copies of a rehabilitation and decommissioning programme indicating—**
- (i) the objectives of the programme, having due regard to the nature of the surrounding area and the proposed end-use of the excavation site;
 - (ii) whether restoration and reinstatement of the excavation site is to be undertaken progressively or upon completion of excavation operations;
 - (iii) the method by which topsoil is to be replaced and revegetated;
 - (iv) the numbers and types of trees and shrubs to be planted and other landscaping features to be developed; (v) how rehabilitated areas are to be maintained;
 - (vi) the programme for the removal of buildings, plant, waste and final site clean-up; and
 - (vii) how any face is to be made safe and batters sloped;
- (d) evidence that a datum peg has been established on the land related to a point approved by the local government on the surface of a constructed public thoroughfare or such other land in the vicinity;**
- (e) a certificate from a licensed surveyor certifying—**
- (i) the extent of any existing excavation on the proposed excavation site; and (ii) the correctness of the plan referred to in paragraph (a) and the datum peg and related point referred to in paragraph (d);
- (f) copies of all land use planning approvals required under any planning legislation;**
- (g) the consent in writing to the application from the owner of the excavation site;**
- (h) any other information that the local government may reasonably require;**
- (i) the licence application fee specified by the local government from time to time;**
- (j) copies of any environmental approval required under any environmental legislation; and**
- (k) copies of any geotechnical information relating to the excavation site.**

(2) All survey data supplied by an applicant for the purpose of subclause (1) must comply with Australian Height Datum and Australian Map Grid standards.



13 December 2019

Austral Bricks (WA) Pty Ltd
Locked Bag 100
MIDLAND WA 6936

To whom it may concern

Austral Bricks (WA) Pty Ltd of Harper Street, Caversham WA 6055, the registered owner of Lot 41 on Plan 410793, Great Northern Highway, Chittering WA 6084, hereby grant permission for B&J Catalano Pty Ltd to make applications for all the necessary licences and permits and authorise them to access and clear native vegetation and extract gravel on the property.

Yours faithfully

Matthew Gordon

Resources and Transport Manager

Austral Bricks (WA) Pty Ltd
ABN 34 079 711 603

Harper Street, Caversham WA 6055
Locked Bag 100, Midland WA 6936

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info@australbricks.com.au
australbricks.com.au

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APPENDIX 2
BLACK COCKATOO HABITAT ASSESSMENT REPORT

Western Wildlife

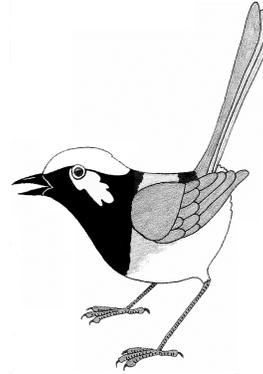
www.westernwildlife.com.au

Jennifer Wilcox
8 Ridgeway Place
Mahogany Creek WA 6072

Mob: 0427 510 934

E-mail: jen@westernwildlife.com.au

ABN: 36 296 431 194



To: Michael Lundstrom
Lundstrom Environmental Consultants

Date: 12 – 03 – 2020

RE: Donningtons Quarry, Chittering – black-cockatoo habitat tree survey on part Lot 41 Great Northern Hwy.

Introduction

The Donningtons Gravel Quarry is located on the Great Northern Hwy, Chittering. It is proposed to extend the existing quarry onto Lot 41, and the proposed clearing area is about 11.4ha. The proposed clearing area is open paddock with scattered remnant native trees, regrowth native trees and planted non-native trees. On behalf of B & J Catalano, Lundstrom Environmental Consultants commissioned Western Wildlife to conduct a targeted black-cockatoo habitat tree survey in the proposed clearing area (Figure 1). The main aim of the survey was to search for habitat trees that maybe used for breeding by the following Threatened species:

- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) - Vulnerable
- Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) - Endangered

Baudin's Black-Cockatoo (*Calyptorhynchus baudinii*) may occur as a foraging visitor to the region, but only breeds further to the south.

Methods

The proposed clearing area was visited by Ms Jenny Wilcox on 6th December 2019. The diameter at breast height (DBH) was recorded for all Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) trees with a DBH \geq 50cm and all Wandoo (*Eucalyptus wandoo*) with a DBH \geq 30cm. Trees were examined from the ground for the presence of existing hollows. Hollows were classified as 'large' if they had some potential to support black-cockatoo breeding and 'small' if considered too small for black-cockatoos, but of potential use for other bird species such as parrots and pardalotes, or by bats or arboreal reptiles. All trees identified were recorded with a GPS location. Any evidence of hollow use by cockatoos, the presence of feral bees (*Apis mellifera*) in hollows, signs of foraging or sightings of black-cockatoos were also noted.

Results

Habitat trees

A total of 20 trees with a DBH \geq 50cm were recorded in, or on the boundary of, the proposed clearing area (Figure 1, Table 1). Two trees with large existing hollows were recorded, but no evidence of chewing by cockatoos was present (Plate 1). The remaining trees had small hollows or no visible hollows. The trees in the northern section of the proposed clearing area were all regrowth Marri with low-branching multi-trunked stems and narrow upper branches.

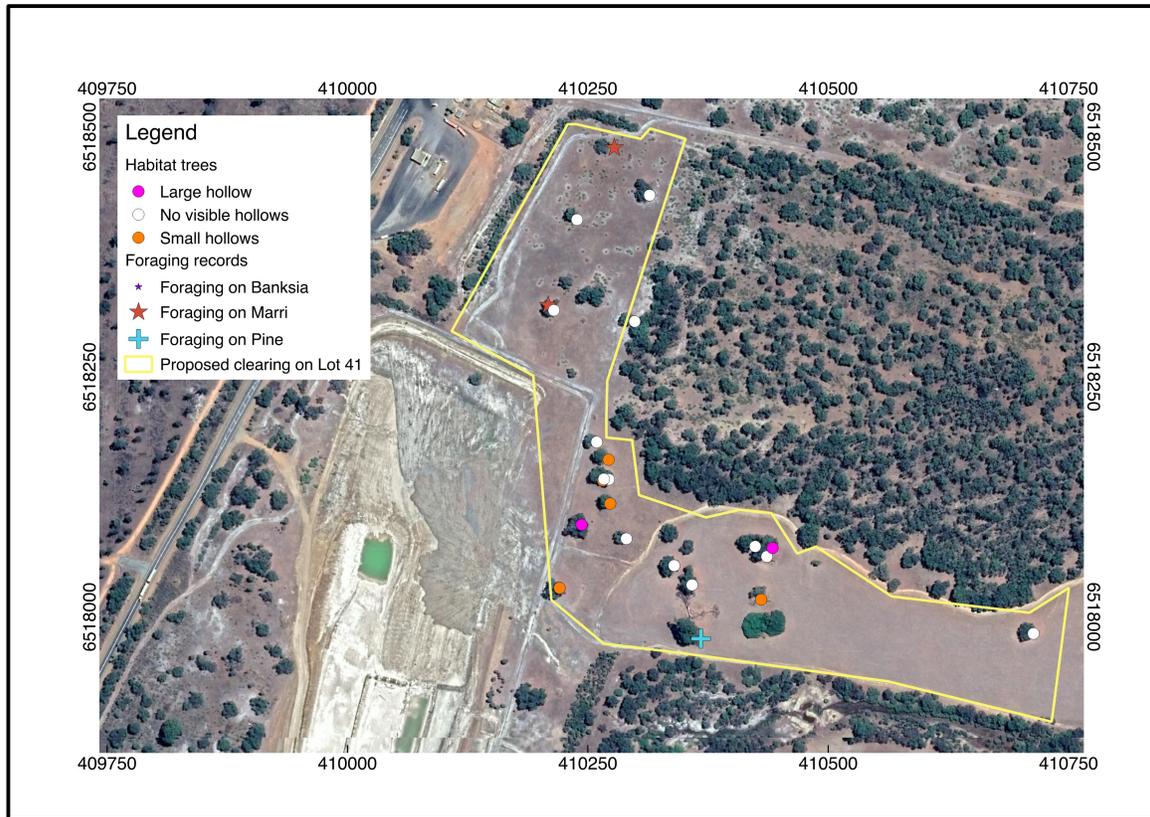


Figure 1: Habitat tree locations.

Foraging habitat

Most of the remnant trees are potential foraging habitat (Plate 2), and evidence of Carnaby's Black-Cockatoo foraging on Marri and introduced pine trees was recorded in the proposed clearing area during the site visit. The key foraging plant species present were Marri and pine. Wandoo may be used for foraging but is of lesser importance. Marri was common, but only a single pair of pine trees was present.



Plate 1. Mature trees bearing potential large (left) and small (right) hollows.



Plate 2. Evidence of cockatoo foraging on Marri (left) and pine (right).

Roosting habitat

The proposed clearing area is unlikely to be of particular importance for roosting, as it is not near water.

Conclusions

Although Carnaby's Black-Cockatoo and the Forest Red-tailed Black-Cockatoo are known to breed in the region, the likelihood of these species currently breeding in the proposed clearing area is low, as only two large hollows were recorded, and no evidence of use by cockatoos was observed. Black-cockatoos may occur as foraging visitors to the proposed clearing area, and evidence of foraging by Carnaby's Black-Cockatoos were recorded during the site visit. It is likely that cockatoos breed nearby, and the foraging habitat in the proposed clearing area may potentially be used by breeding birds.

Table 1. Trees with a DBH \geq 50cm.

Name	Easting	Northing	DBH (cm)	Tree Species	Hollows	Tree Status	Feral Bees	Notes
B001	410213	6518025	100	Marri	Small hollows	Live	No	
B002	410236	6518090	170	Marri	Large hollow	Live	No	
B003	410265	6518112	80	Wandoo	Small hollows	Live	No	
B004	410264	6518136	80	Marri	No visible hollows	Live	No	
B005	410264	6518157	80	Wandoo	Small hollows	Live	No	
B006	410251	6518175	110	Jarrah	No visible hollows	Live	No	
B007	410258	6518135	75	Wandoo	Small hollows	Live	No	
B008	410259	6518137	35	Wandoo	No visible hollows	Live	No	Leaning tree
B009	410207	6518311	60	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B010	410290	6518299	35	Wandoo	No visible hollows	Live	No	Tree branches low, upper branches small
B011	410306	6518429	70	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B012	410231	6518404	65	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B013	410282	6518075	50	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B014	410331	6518048	115	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B015	410349	6518028	100	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B017	410426	6518057	100	Marri	No visible hollows	Live	No	
B018	410432	6518066	90	Wandoo	Large hollow	Live	No	Terminal hollow at about 6m.
B019	410414	6518067	45	Wandoo	No visible hollows	Live	No	
B020	410420	6518013	100	Jarrah	Small hollows	Live	No	
B021	410700	6517978	70	Marri	No visible hollows	Live	No	

APPENDIX 3
WEED MANAGEMENT PLAN



LUNDSTROM ENVIRONMENTAL CONSULTANTS
Pty Ltd
ACN 600 398 945

21 Sellen Court
LEEMING WA 6149

MOB:0417934863
email: mikelund1@bigpond.com
www.Lundstrom-Environmental.com.au

WEED MANAGEMENT PLAN

Prepared for B&J Catalano Pty Ltd
For Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway)
Shire of Chittering

1. INTRODUCTION

This Weed Management Plan (Weed MP) has been prepared in accordance with guidelines published by the Department of Agriculture and Food (DAF) (DAF, 2014). This Weed MP should be read in conjunction with the report entitled “Extractive Industries Licence Application and Environmental Management Plan (EMP), Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway), Shire of Chittering”, prepared for B & J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

2. LOCALITY AND OWNERSHIP

Locality: Lot 41 (5030) Great Northern Highway, Shire of Chittering
Ownership: Austral Bricks (WA) Pty Ltd

The property is located approximately 20km north of the Bullsbrook town site and directly south-east of the Chittering Roadhouse and is accessed directly from Great Northern Highway.

Figure 1 shows the site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

3. THE DEVELOPMENT PROPOSAL

Under the proposed EIL, B&J Catalano Pty Ltd intend to extract 200,000 tonnes of gravel from a 12ha site (Figure 1) over a period of five years from 2020 dependent on demand. The area will be rehabilitated back to pastures once extraction in each stage is complete.

4. RESPONSIBILITIES

B & J Catalano Pty Ltd accepts responsibility for weed management within the present extraction areas and any areas identified within the conditions of approval set by the Shire of Chittering. All other areas on the property will remain the responsibility of the landowner.

5. CURRENT WEED STATUS OF THE PROPERTY

Based on a field visit conducted in December 2019, no declared weeds were identified within the proposed extraction area.

6. 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:

6.1 Weed Management Zones on the Subject Land

For the purpose of this Weed MP, 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 metres beyond the perimeter of the quarry and includes any stockpiles of soil or overburden created by the excavation.

6.2 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 6 monthly basis i.e. after the first seasonal rains and at the end of Spring. In addition, B & J Catalano personnel on site will be instructed to report any weed 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.

6.3 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 or exported from the site will be free of weeds.

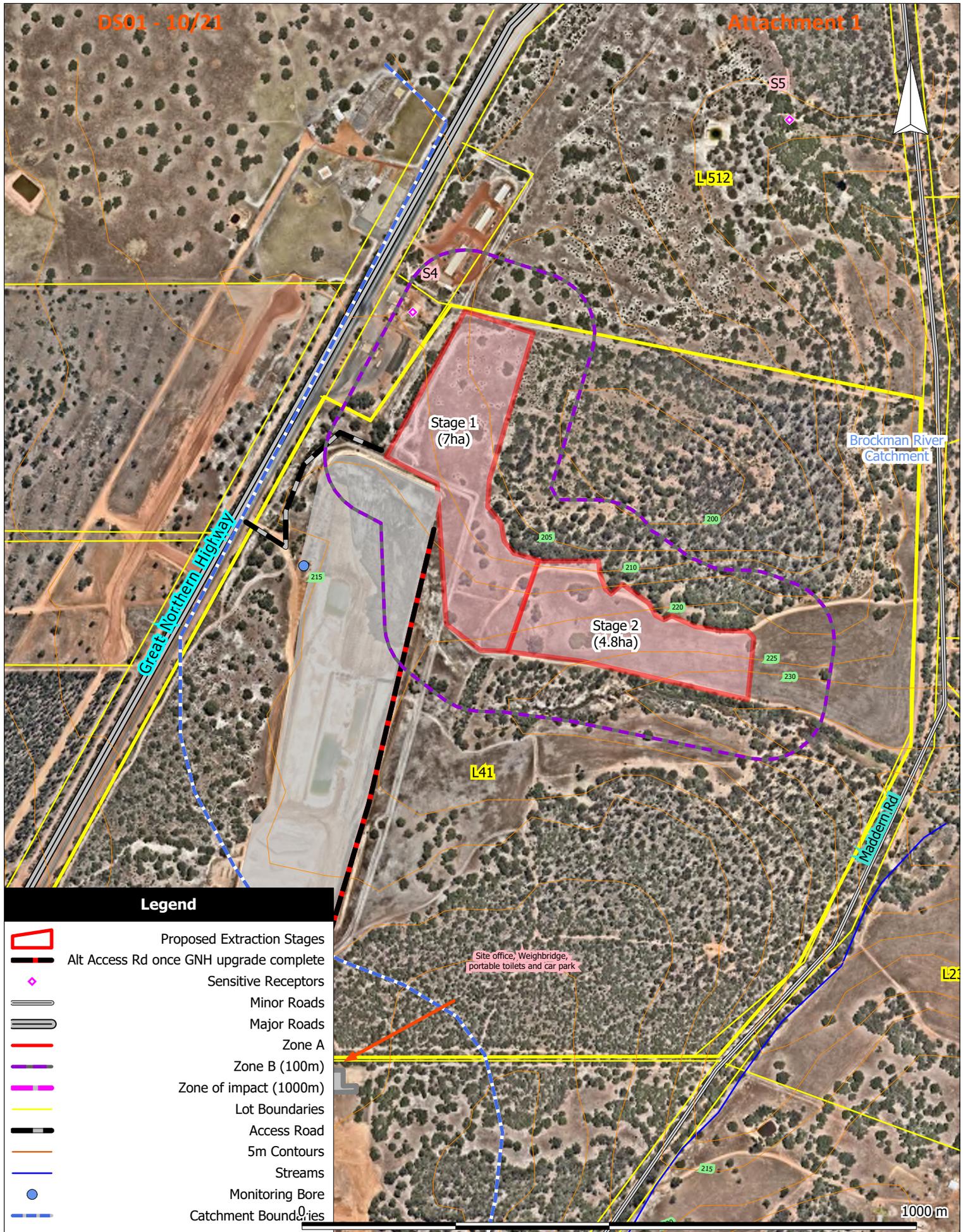
6.4 Weed Control Program

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.

7. REFERENCES

DAF (2014). Department of Agriculture and Food Guidelines for weed control procedures for extractive industries licences.

FIGURES



Legend

- Proposed Extraction Stages
- Alt Access Rd once GNH upgrade complete
- Sensitive Receptors
- Minor Roads
- Major Roads
- Zone A
- Zone B (100m)
- Zone of impact (1000m)
- Lot Boundaries
- Access Road
- 5m Contours
- Streams
- Monitoring Bore
- Catchment Boundaries

Site office, Weighbridge, portable toilets and car park

1000m

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Scale: 1:7800
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: Lot 41 Great Northern Hwy Chittering

Figure 1
Weed Management Plan - Zones and Site Surrounds

APPENDIX 4
WATER MANAGEMENT PLAN



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WATER MANAGEMENT PLAN

Prepared for B&J Catalano Pty Ltd

For Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway)
Shire of Chittering

1. INTRODUCTION

This Water Management Plan (WMP) has been prepared to describe the measures that will be undertaken to achieve compliance with surface water and groundwater management requirements across the proposed Extractive Industries Licence (EIL) operations on Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway). This WMP should be read in conjunction with the report entitled "Extractive Industries Licence Application and Environmental Management Plan (EMP); Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway)", prepared for B&J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

1.1 Property Locality, Area and Ownership

Locality: Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway)
Ownership: Austral Bricks (WA) Pty Ltd

Figure 1 shows the property site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

1.2 Historic and Present Land Use

Lot 41 consists of cleared grazing land, areas of remnant native vegetation, partially rehabilitated clay pit and associated detention ponds from a previous clay extraction operation. The surrounding area comprises farming land, tree plantations, extractive industries and rural lots.

The property lies within an "Agricultural Resource" zone as defined by the Shire of Chittering's Town Planning Scheme No. 6. It is anticipated that the extraction area will be returned to grazing on completion of extraction.

Previous extraction of clay was undertaken in the western section of the property between 2013 and 2018. Prior to 1996, gravel extraction operations were undertaken in Lot 41 to the east of the proposed extraction area.

1.3 Proposed Extraction Activities

It is proposed to extract gravel from a total area of 11.8ha site in two stages using a front-end loader and bulldozer. This equates to extraction of approximately 240,000 tonnes of gravel in total.

A summary of the actions that are to take place on the property within the licence period is given below:

- Topsoil and overburden 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 and over-burden will be stockpiled separately along the edges of the extraction area, with stockpiles being no higher than two metres.
- Within the current stage of extraction, a bulldozer will rip and blade material to a stockpile. A mobile crushing and screening plant will be used on site for approximately one to four weeks per year, dependent on the size of the campaign. Trucks will enter the pit via an unsealed, existing access road off Great Northern Highway and be loaded from the stockpile by a front-end loader.
- Crusher and stockpile positions have been identified by the proponent for each stage, and are illustrated in Figure 2.
- Excavation will proceed until the laterite has been removed, resulting in a reduction in ground level of between 1 and 1.5 metres.
- Where possible, topsoil will be replaced and seeded with pastures on a progressive basis, in fully extracted areas, prior to the commencement of winter.

2. EXISTING ENVIRONMENT

2.1 Topography, Drainage and Wetlands

The majority of the property lies within the Brockman River sub-catchment of the Swan Avon – Lower Swan hydrographic catchment, with a small section in the south-west of the property (outside of the proposed extraction area) lying within the Ellenbrook sub-catchment.

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 (Landgate 2019).

The property comprises very gentle to gentle slopes of between 1% and 10% with the proposed extraction area having gentle slopes averaging 10%. The proposed extraction has an elevation of between 200m AHD and 227 m AHD. The drainage is towards the east, via a minor tributary which ends up in Toodyay Creek.

The Brockman River is classified as a Multiple Use Palusplain Wetland. It is located approximately 4km east of the proposed extraction area and will not be directly impacted by the proposed extraction activities.

2.2 Geology and Soils

The proposed extraction area is located within the southern section of the Dandaragan Plateau.

The Dandaragan Plateau to the west of the Darling Fault is a wedge-shaped erosion remnant of the Perth Basin with sediments covered by recent deposits of sand and laterite (Wilde and Low 1978).

The soils are predominantly light grey or pale brown deep sands of colluvial origin with outcropping laterite areas on higher ground.

The site is underlain by South West Terrane greenstones as bedrock.

2.3 Groundwater and Hydrology

A groundwater level taken in Winter 2017 for a monitoring bore located approximately 300m west of Stage 1, gave a reading of 14.96m depth to water. This bore is located in a similar hydrogeological position to the proposed extraction area and as such, the depth to groundwater below these stages can be assumed to be at least 15m and will not be impacted by the shallow gravel extraction operations.

Furthermore, an Acid Sulfate Soil and Drainage Management Plan compiled by GHD for Bristile Pty Ltd (GHD 2003) included a hydrogeological survey of the adjacent property, Lot 42, and concluded that the regional groundwater table is likely to be encountered at depths of 15m. This finding correlates with the groundwater level observed in the monitoring bore.

An Acid Sulfate Soil investigation undertaken by Lundstrom Environmental Consultants (LEC) prior to commencement of extraction within the adjacent Lot 42, as required by the Shire of Chittering, sampled to depths of up to 6m, with no water being encountered.

2.4 Climate and Rainfall

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

One of the closest rainfall recording station is Marbling (Station 9024) and it has a mean annual rainfall of 758.9 mm. The wettest months are June, July and August and the driest months are December, January and February. The highest recorded annual rainfall was 1185.7mm in 1955 and the lowest was 408.8mm in 2010.

Table 1 shows the average monthly and annual rainfall for Marbling.

Table 1: Mean Rainfall Data (mm) for Marbling (Station 9024) for Period 1943 to 2019 (BOM, 2019a)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
13.6	16.0	17.6	38.8	92.5	144.5	150.5	119.6	75.0	45.8	24.9	12.7	758.9

Rainfall intensity has been calculated using the Bureau of Meteorology (BoM) Rainfall Intensity-Frequency-Duration (IFD) data system (BoM 2019b), which yields the 2hr 10% Annual Exceedance Probability (AEP) (33.7mm). 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 3.2 of this document.

3. WATER MANAGEMENT

The property is located in an area identified as prone to erosion by Water and Rivers Commission (2002). Areas prone to water erosion are the scarp face, steep slopes of the plateau and the banks of waterways, but firebreaks, roads and tracks are also of concern (Water and Rivers Commission 2002). Lack of vegetation is the primary cause of erosion.

Erosion issues will be mitigated by the proposed stormwater management (see Section 3.2) and proposed rehabilitation plan as outlined in the EIL Application and Environmental Management Plan for this project.

3.1 Surface Water Management

Two surface water management areas (sub-catchments 1 and 2) have been defined within the proposed extraction areas (Figure 3). Runoff generated within each sub-catchment for the 2hr 10% Annual Exceedance Probability (AEP) rainfall event has been calculated using the Rational Method as detailed in Table 2. Storm-water management infrastructure (detention ponds and contour banks) will be designed to manage at minimum this runoff. Runoff from areas outside the defined sub-catchments will be diverted away using diversion banks.

Table 2: Surface Water Management Areas (Sub-catchments) and Runoff Volumes

EIL Stages incorporated	Sub-catchment	Total Area (ha)	Extraction Area (ha)	Design Storm Runoff* (m ³ x 10 ³)
1	1	7	7	1.88
2	2	4.8	4.8	1.29
TOTAL		11.8	11.8	3.17

Based on the calculated storm design runoff shown in Table 3, the following measures will be used to achieve comprehensive onsite management of surface water runoff from the proposed EIL workings:

- Stormwater detention ponds with the capacity to hold at least a 2hr 10% AEP storm event as detailed in Section 3.2.
- As each extraction area is completed, narrow-based contour banks will be constructed to a grade of between 0.1 and 0.4%. Contour bund design methodology is discussed further in Section 3.2.2.
- Cut-off banks will be formed along the eastern boundary of stage 1 and the northern boundary of stage 2 to prevent runoff entering and leaving mined areas (Figure 3).
- As part of the rehabilitation process, the ground will be ripped along the contour at six metre intervals prior to fertilisation and seeding. This leaves a depression and low bund which will attenuate surface water flows and prevent rill erosion during the period that pasture grasses are becoming established. Surface water detention ponds and cut-off banks will be retained until vegetation ground cover is sufficient to stabilise the ground surface and prevent erosion.
- Regular monitoring of the erosion control measures will be undertaken, and repairs implemented where necessary throughout the licence period or longer if necessary.

3.2 Stormwater Management

3.2.1 Detention Ponds

As each extraction stage is opened, a stormwater detention pond will be excavated below the workings (but within the extraction area) with the capacity to hold at least the a 2hr 10% AEP storm event. The positions of these detention ponds are shown on Figure 3 and the storage capacities listed in Table 3.

Table 3: Stormwater Detention Pond Capacity

Subcatchment	Detention Pond No.	Detention Pond Storage (m ³ x 10 ³)
1	1	0.941
1	2	0.941
2	3	0.645
2	4	0.645
TOTAL		3.172

3.2.2 Contour Bank Design

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

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 no further cultivation will take place after the final rehabilitation of the land and planting of trees and pastures. The most suitable contour bank type in this situation is "narrow-based" i.e. approximately 4m across.

Slopes are approximately 5% and it is recommended that contour banks are spaced approximately 30m apart in this situation, and with an average fall of 0.2% and within a range of 0.1 and 0.4%.

3.3 Groundwater Management

No dewatering activities will be undertaken. The project does not involve abstracting groundwater for operational purposes, thereby minimising potential impacts on groundwater levels in the areas. No groundwater will be exposed by this development since mining will only lower the ground level by 1 to 1.5 metres and the depth to groundwater has been calculated as approximately 15m. The proposed operations will hence result in a depth to groundwater of approximately 13.5m, which is well within the DWER recommended minimum 0.3m depth to the maximum winter groundwater level from the pit floor (Brendan Kelly, pers. comm. September, 2019).

Furthermore, Bristile's clay extraction operations within the western section of the property have lowered the ground level by approximately eight metres, and groundwater has not been encountered in their excavations.

Potential salinity issues, primarily caused by clearing of native vegetation, which can result in rising groundwater levels, are not expected from the proposed operations. There will be minimal clearing associated with this proposed extraction operation. Groundwater level data for previous clay extraction operations in the adjacent Lot 42, showed a decrease in groundwater level from 2008 until 2014 for both bores, suggesting that the vegetation clearing and extractive industry which occurred on the property did not result in raising the groundwater table. Furthermore, salinity data monitored during the extraction period at Lot 42, showed there was no increase in salinity levels during the six years of records. This suggests the proposed extractive operations are unlikely to have an impact on salinity levels.

Predicted water supply requirements are minor and restricted to localised dust suppression. Any water required will be sourced from water captured in the stormwater management detention ponds.

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 always be available on site.

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. Such servicing will be undertaken at the Proponent’s workshop in Hazelmere. B & J Catalano have a Hydrocarbon Spill Management Plan outlining their procedures for controlling, recovering, treating and reporting hydrocarbon spills (Annexure 1) 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 as required and 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 low potential to leach into groundwater.

3.4 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 and native trees.
- The emergence of weeds.
- 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.

4. ACID SULFATE SOILS

A search of the CSIRO's Australian Soil Resource Information System (ASRIS) database determined there were no acid sulfate soil (ASS) sites (associated with previous wetland environments) identified in the proposed EIL area with the area being classified as having an 'Extremely Low Probability of Occurrence' of ASS (CSIRO 2015).

Acid sulfate seepage and drainage problems are known to occur in the north-west of the adjacent southern property, Lot 42 and south-west of the proposed EIL, along the Great Northern Highway. These are related to geological formations at depths greater than those associated with the proposed extraction operations. Due to this occurrence several Acid Sulfate Soil investigations have been undertaken as described below:

Bristile Pty Ltd contracted GHD in 2003 to develop an Acid Sulfate Soil and Drainage Management Plan (ASSMP) for their clay extraction operations within Lot 42 (GHD 2003). The ASSMP did not conclusively determine the cause of the acid-sulfate problems, but suggested:

"The cause of the acidic drainage has to-date not been fully investigated or proven. Landform Research (2003a, 2003b) provide a conceptual hydrogeologic model for the area, which indicates that near-horizontal layers containing pyrite could have become exposed to the surface by stream erosion immediately upslope of the Great Northern Highway. The pyrite in these layers is now oxidising causing sulphidic discharges. The 'flocs' along the creekline and in the dam and the dark red staining of creek water also indicates the release of mainly iron (Fe) and aluminium (Al) into the surface water environment."

The ASSMP also suggested:

"The reason for the acid-sulphate problems occurring along the border between the Northern Section and the Great Northern Highway cannot conclusively be determined from the water quality information alone. The presence of artesian bores in the area could also point to a more complex model than simple exposure of pyrite-bearing formations from drainage erosion and scouring to expose pyrite-bearing formations."

The review of the geological data for the site indicates that a major fault zone, the 'Clay-Zone' transects the investigation sites from North to South, 'joining' the Great Northern Highway where the acid sulphate problems occur. Interpretations of possible faults in the area by GHD also identified that the acid sulphate problems appear where two faults cross the Clay Zone. As these are the only known occurrences of acid sulphate problems in the area it may be that these faults are boundary faults for a small 'Horst' block. Consequently, pyrite-bearing formations within the block may be shallower than the surrounding areas and this is why they have become exposed by drainage erosion and scouring. This model could potentially also explain the artesian groundwater conditions within the 'block' as the Clay Zone may form a regional barrier to groundwater flow forcing groundwater to daylight in the area."

From the ASSMP it can be concluded that the cause of the acid sulfate seepage is natural and has not been caused by any of the operations on the property.

The ASSMP found no evidence of acid-sulfate problems occurring on the southern part of the property where Bristile's clay extraction operations were eventually located. However, ASS is a pertinent issue for Bristile's clay extraction operations because of the material excavated and depth of the excavations but is not expected to be an issue for the proposed gravel extraction.

Lundstrom Environmental Consultants were contracted by B&J Catalano in 2016 to assess the occurrence of acid sulfate soils within the proposed gravel extraction areas on Lot 42 (LEC 2016). This assessment involved the drilling of 24 holes across the property to depths of between 2.4 and 6 metres, with field testing done at 1 metre intervals. Follow-up laboratory testing was undertaken on selected samples. The conclusions of this report are as follows:

“The laboratory analyses undertaken found the net acidity of the five samples tested to be less than the Action Criteria for ASS (DER 2015) suggesting that there is no potential for acid mine drainage at depths at which the gravel will be extracted.

This result has thus proven the original conclusion made in regard to this site, that the lateritic material (gravel) exists in an oxidized state and hence there is no threat of the occurrence of Acid Sulfate or potentially Acid Sulfate Soils. Furthermore, this result shows that it will be unnecessary to undertake the monitoring of stockpiles for the risk of acidity. ”

The proposed extraction operation in Lot 41 will only disturb the top 1 to 1.5m of laterite caprock and gravel and will not go below the water table, nor involve dewatering. Therefore, the risk of exposing potentially ASS soils to the atmosphere is very unlikely.

Furthermore, good stormwater management (see Section 3.2) will ensure there is no unmanaged surface water runoff from the proposed operations. It is therefore unlikely that the proposed operations will affect the existing acid-sulfate problems present to the south-west of the proposed EIL area.

5. REFERENCES

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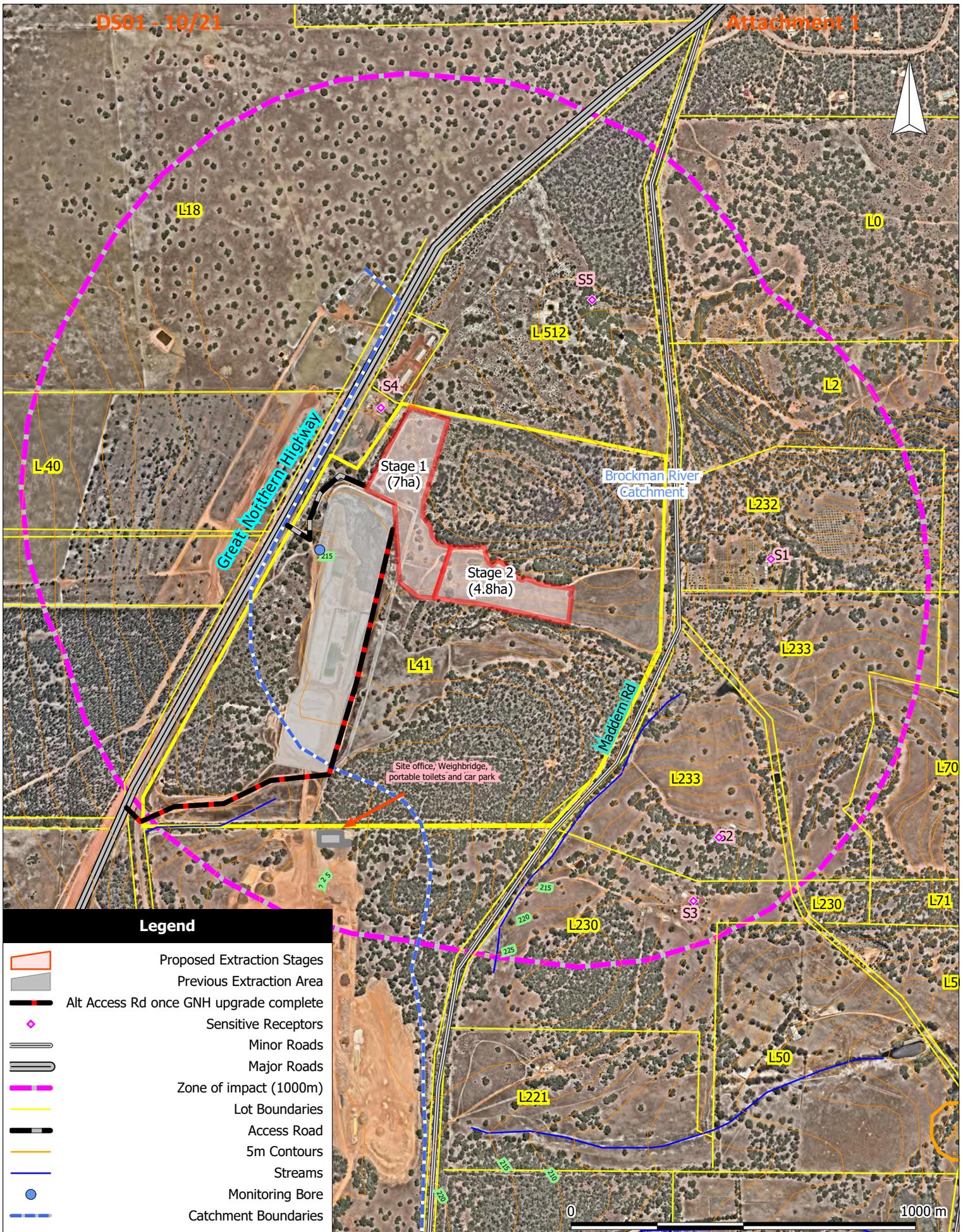
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Landgate (2019). Locate V5. [Online] <https://maps.slip.wa.gov.au/landgate/locate/>. Accessed: December 2019.

LEC (2016). Acid Sulphate Soil Assessment, prepared for B & J Catalano Pty Ltd for Lot 83 on Deposited Plan 28306 (4884 Great Northern Highway), Shire of Chittering.

Wilde SA and Low GH (1978). Perth: Western Australia Sheet SH/50-14: Western Australia Geological Survey, 1:250,000 Geological Series Explanatory Notes.

FIGURES



Legend

- Proposed Extraction Stages
- Previous Extraction Area
- Alt Access Rd once GNH upgrade complete
- Sensitive Receptors
- Minor Roads
- Major Roads
- Zone of impact (1000m)
- Lot Boundaries
- Access Road
- 5m Contours
- Streams
- Monitoring Bore
- Catchment Boundaries

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Original Size: A4
Air Photo Source: Nearmap Sep 2019
Datum: GDA94
Projection: Australia MGA94 (50)

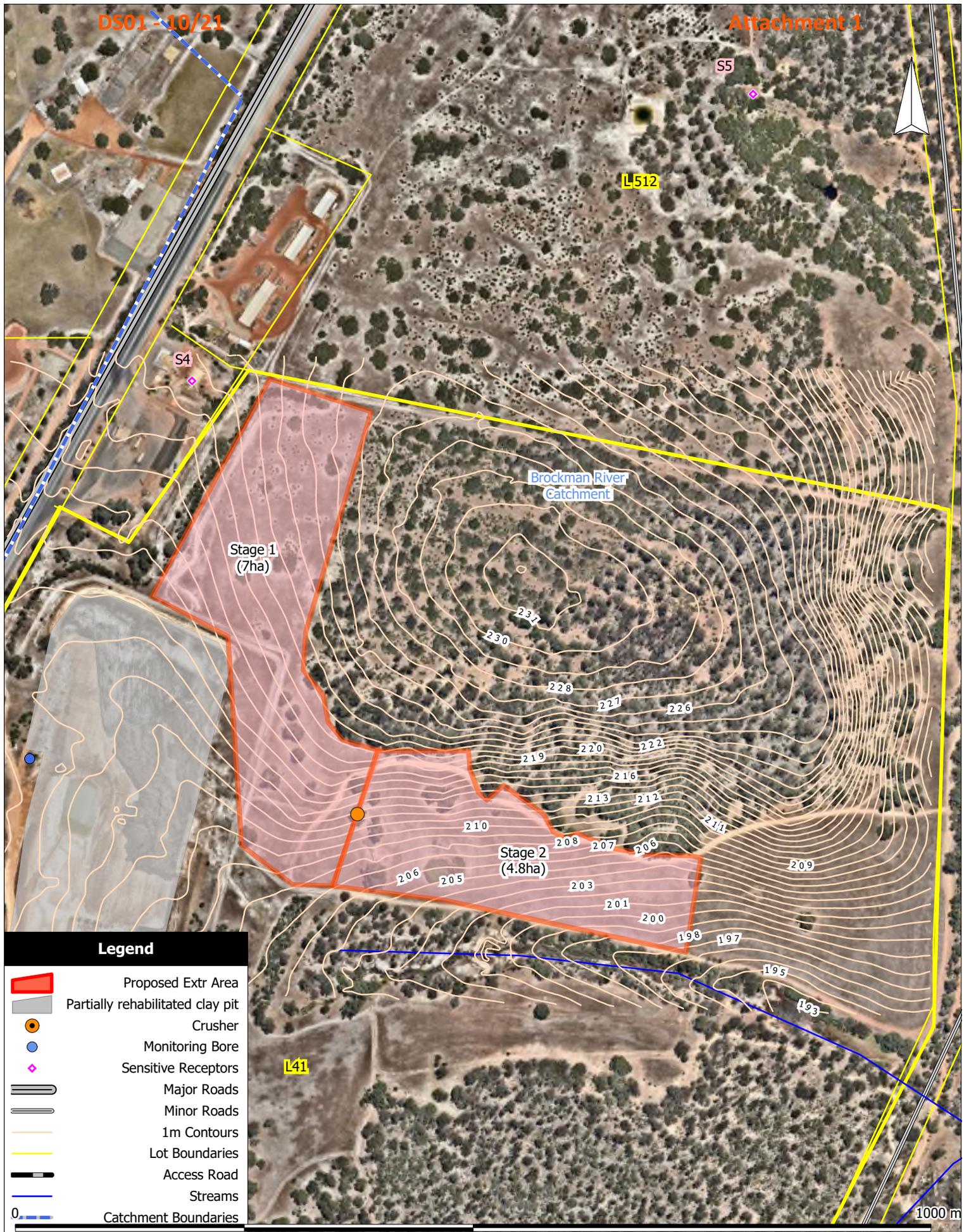
Client: B & J Catalano

Project: Gravel Extraction

Location: Lot 41 Great Northern Hwy
Chittering

Figure 1

Site and Surrounds
55



Legend

- Proposed Extr Area
- Partially rehabilitated clay pit
- Crusher
- Monitoring Bore
- Sensitive Receptors
- Major Roads
- Minor Roads
- 1m Contours
- Lot Boundaries
- Access Road
- Streams
- Catchment Boundaries

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Projection: Australia MGA94 (50)

Client: B & J Catalano
Project: Gravel Extraction
Location: Lot 41 Great Northern Hwy
Chittering

Figure 2:
Extraction Area
56



Legend

-  Proposed Extraction Stages
-  Detention Ponds
-  Contour Bunds
-  Diversion Bunds
-  Monitoring Bore
-  Lot Boundaries
-  5m Contours
-  Catchment Boundaries
-  Stream
-  Previous Extraction Area



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 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: Lot 41 (5030) GNH
 Chittering

Figure 3
Water Management
Plan

ANNEXURE 1
Hydrocarbon Spill Response Procedure

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).

Document No.	Doc Type	Approved	Rev. No.	Rev. Date	Page
SAF-SP-29	SAF	May 2011	1.0	May 2012	1 of 4

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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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"> • Use earthen bunds or booms to contain spill • Polypropylene pads to mop up excess oil at the outset • Global Peat or Enretec to treat contaminated soil in-situ
Spill on concrete / hardstand area e.g. workshop	<ul style="list-style-type: none"> • Polypropylene pads (easiest and quickest) • 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)
Spill in containment bund	<ul style="list-style-type: none"> • Polypropylene pads or pillows • Bund can be drained or sucked out to waste oil receptacle if the spill is large
Spill occurs when raining or on a water body	<ul style="list-style-type: none"> • Polypropylene pads

Document No.	Doc Type	Approved	Rev. No.	Rev. Date	Page
SAF-SP-29	SAF	May 2011	1.0	May 2012	3 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
NOISE MANAGEMENT PLAN



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NOISE MANAGEMENT PLAN

Prepared for B&J Catalano Pty Ltd

For Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway)
Shire of Chittering

1. INTRODUCTION

This Noise Management Plan (NMP) has been prepared in accordance with guidelines published by Department of Environmental Protection, Government of Western Australia *Environmental Protection (Noise) Regulations 1997*. This NMP should be read in conjunction with the report entitled “*Extractive Industries Licence Application and Environmental Management Plan (EMP); Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway), Shire of Chittering*”, prepared for B & J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

2. LOCALITY AND OWNERSHIP

Locality: Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway)
Ownership: Austral Bricks (WA) Pty Ltd

Figure 1 shows the property site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

3. CRITERIA

3.1 The Regulations

Environmental noise is governed in Western Australia by the *Environmental Protection (Noise) Regulations 1997* (the Regulations). The Regulations set noise standards to ensure that noise from other premises is kept to assigned noise levels as follows:

- “7. (1) Noise emitted from any premises or public place when received at other premises —
- (a) must not cause, or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind; and
 - (b) must be free of —
 - i. tonality; and
 - ii. impulsiveness; and
 - iii. modulation”

“9. (3) Noise is taken to be free of the characteristics of tonality, impulsiveness and modulation if —

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

Table 1: Adjustments for intrusive characteristics

Adjustment where noise emission is not music		
Tonality	Modulation	Impulsiveness
+5 dB	+5 dB	+10 dB

3.2 Assigned Noise Levels

The Regulation 8 describes assigned levels for sensitive areas for day and night time as follows:

Table 2: Assigned noise levels

Type of premises receiving noise	Time of day	Assigned level (dB)		
		L _{A10}	L _{A1}	L _{A MAX}
Noise sensitive premises: highly sensitive area	0700 to 1900 hours Monday to Saturday	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holiday	35 + influencing factor	45 + influencing factor	55 + influencing factor
Noise sensitive premises: any other are other than highly sensitive area	All hours	60	75	80
Commercial premises	All hours	60	75	80
Industrial and utility premises	All hours	65	80	90

Influencing factor in this case could be tonality and is assumed to be 0 dB.

4. METHODOLOGY

4.1 Software

To assess noise levels in surrounds a software Sound Plan Essential ver. 4.0 has been used. The software is a version of Sound Plan which can be used for acoustic modelling and simulations for small projects.

4.2 Modelling assumptions and input data

- Outdoor noise propagation has been modelled using international standard ISO 9613-2 model. The model includes the influence of meteorological information.
- The ground surface was developed using contour lines at 5m intervals.
- Due to rural location, the ground surface was assumed to be acoustically absorptive.
- Source sound power levels from manufacturers' data or from previous experience have been used.
- For modelling purposes, it has been assumed that all equipment works simultaneously to show the worst-case scenario.

5. PROPOSED WORKS AND POTENTIAL IMPACTS

5.1 Proposed Mining Actions

B&J Catalano Pty Ltd intends to extract gravel from a total area of 11.8ha site in two stages using a front-end loader and bulldozer. This equates to extraction of approximately 230,000 tonnes of gravel in total over five years from 2020, dependent on demand.

Table 3 provides a description of all activities, their duration and an assessment of potential for noise impacts.

Table 3: Summary of Noise Generating Activities

Activity	Duration	Equipment to be used	Comments
Strip and stack topsoil. Excavate gravel to processing site.	1 week per year from 2020	D10 Bulldozer CAT 980 front end loader (FEL)	No impact as specified by Noise Regulations to closest residents
Screening and stockpiling of gravel.	4 weeks per annum in each stage	Finlay Screen 693 Striker 25m Stacker	No impact as specified by Noise Regulations to closest residents
Loading of trucks from stockpiles.	Up to 5 years at an average of 7 trucks per day, dependent of demand.	Single Semi-loader (24 tonnes) CAT 980 FEL	No impact as specified by Noise Regulations to closest residents
Rehabilitation of completed stages.	2 weeks per year from 2021 to 2023	D8 Bulldozer CAT 980 FEL	No impact as specified by Noise Regulations to closest residents

5.2 Plant and Equipment to be used

Equipment to be used and the estimated maximum sound pressure of the equipment are summarized in Table 4.

Table 4: Equipment used on Site and source sound power levels

Equipment	Sound Power Level dB(A)
D10 Bulldozer ¹	111
CAT 980 Front End Loader (FEL) ¹	111
Mobile Finlay Screen/Crusher 683 ²	113
Mobile Stacker ²	100
Truck ¹	100

X¹ manufacturers noise data

X² noise data estimated from previous experience

5.3 Potentially Sensitive Receptors

5.3.1 Residential Dwellings

The site is surrounded by farming land, extractive industry operations, and rural small holdings with surrounding remnant vegetation. The closest sensitive premises (S4) is a residential dwelling located approximately 75m west of Stage 1, within the Chittering Roadhouse complex. To reduce the noise level received by resident 4, three different noise bunds with a height of four meters will be constructed to the west of the crusher and south west of the bulldozer.

The remaining sensitive premises (S1, S2, S3 and S5) are residential dwellings located at distances greater than 500m from the proposed operations and are within the acceptable noise level. Noise management measures will be implemented throughout the operation.

Noise received at the five residences will be as shown in Table 5 and are illustrated in Figure 2.

Table 5: Dwellings within 1500 m of the extraction area

Reference No. on Figure 1	Structure Location	Distance to closest area of pit (metres)	LA10 (dB)
S1	Lot 232 (H 732) Maddern Road, Chittering)	545	31.2
S2	Lot 233 (H 670) Maddern Road, Chittering	736	34.8
S3	Lot 230 (H 618) Maddern Road, Chittering	878	35.1
S4	Lot 1 (H5066) Great Northern Highway, Chittering	75	44.6
S5	L512 Maddern Road	535	33.6

6. NOISE ASSESSMENT

Based on the noise contours from the modelling, there will be no noise impacts associated with this project to residents 1,2,3 and 5. Resident 4 is located in proximity to the proposed extraction area and during the times bulldozer is operating in the southern part of the extraction area, it was assumed that residence 4 will be impacted.

Running soundPLAN with three noise bunds surrounding the bulldozer located in the southern part (stage 1) of the extraction area, it was confirmed there will be no impact to residence 4 given noise bunds are appropriately constructed with a height of four meters as illustrated in Figure 2. All residents are receiving noise levels which are compliant with noise regulations.

Noise attenuation measures will be implemented as mentioned below:

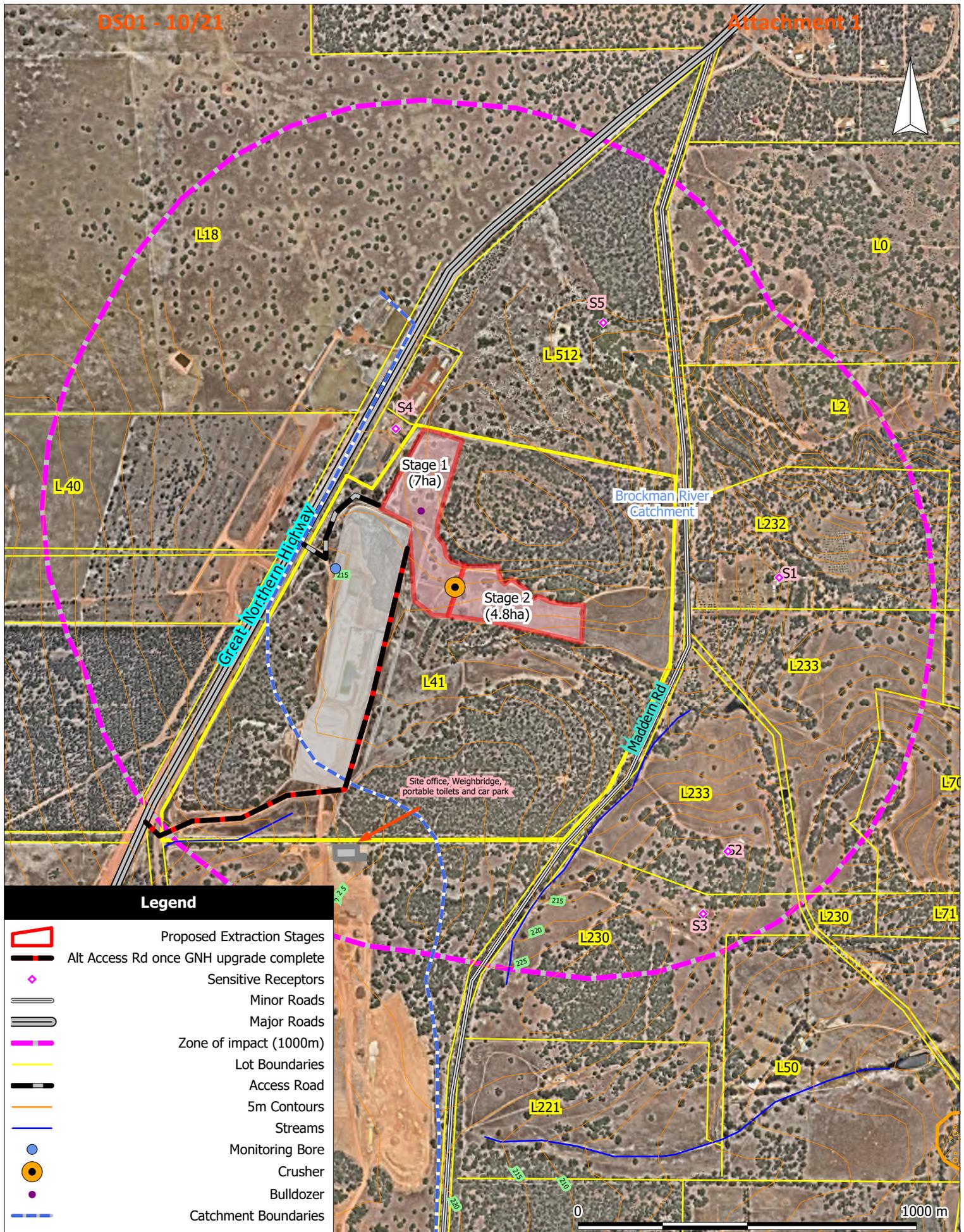
- Hours of operation will be restricted to between 0700 and 1800 on weekdays and between 0700 and 1200 on Saturdays.
- Late model equipment will be utilised with reduced noise level outputs.

- The crushing and screening plant in each extraction stage will be positioned such that the topsoil and product stockpiles will provide noise attenuation.
- Only broad-band reversing warning devices (croakers) will be utilised.
- The D10 dozer is to be fitted with CAT noise suppression.
- A complaints register will be implemented, with any complaints being formally recorded.
- The signage on the gate will include the contact telephone number of the site supervisor to allow for quick reaction to any complaints that may arise.

7. REFERENCES

Department of Environmental Protection, Government of Western Australia. *Environmental Protection (Noise) Regulations 1997*.

FIGURES



Legend

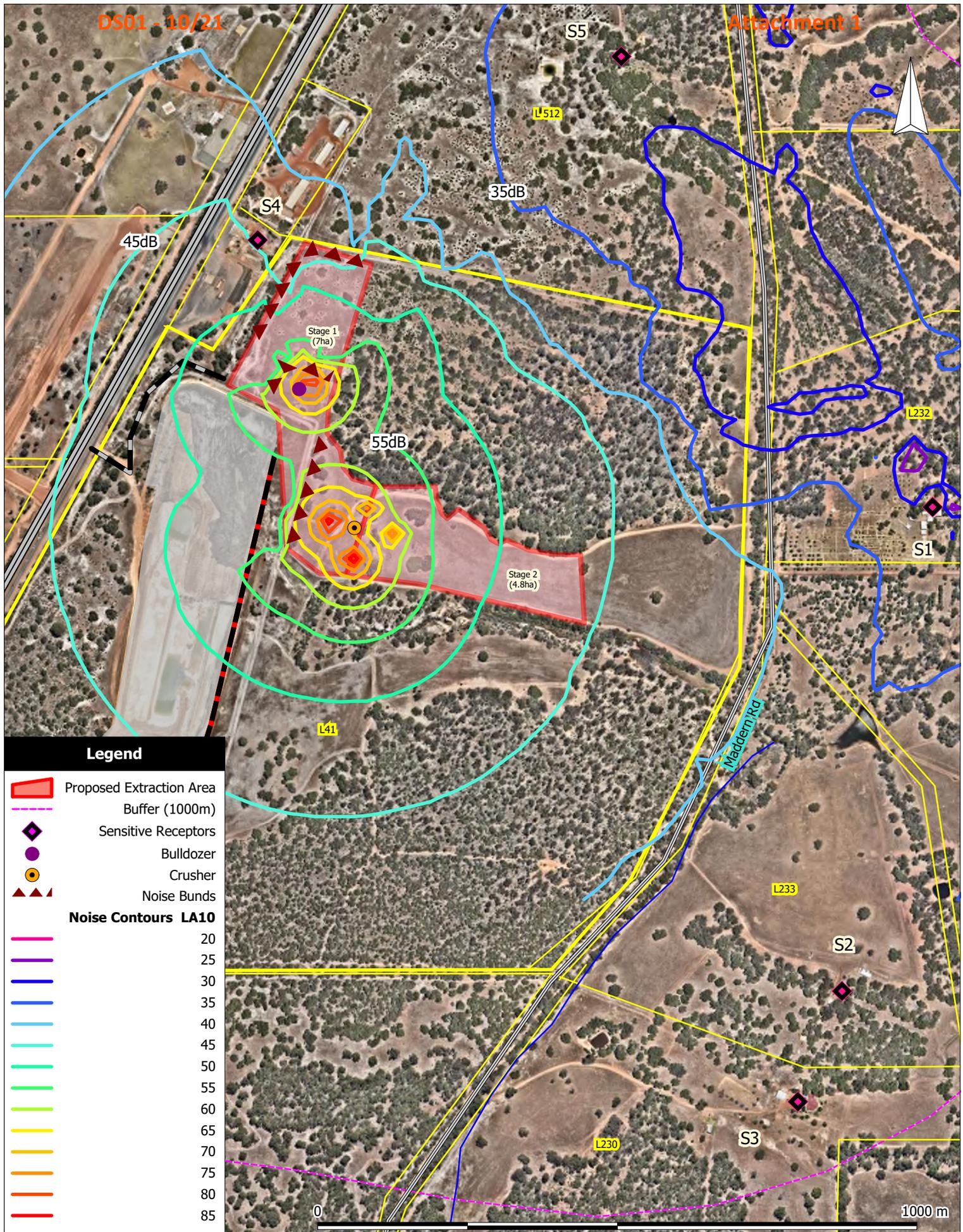
- Proposed Extraction Stages
- Alt Access Rd once GNH upgrade complete
- Sensitive Receptors
- Minor Roads
- Major Roads
- Zone of impact (1000m)
- Lot Boundaries
- Access Road
- 5m Contours
- Streams
- Monitoring Bore
- Crusher
- Bulldozer
- Catchment Boundaries

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Scale: 1:14000
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: Lot 41 Great Northern Hwy Chittering

Figure 1
Site and Surrounds
 70



Legend

- Proposed Extraction Area
 - Buffer (1000m)
 - Sensitive Receptors
 - Bulldozer
 - Crusher
 - Noise Bunds
- Noise Contours LA10**
- 20
 - 25
 - 30
 - 35
 - 40
 - 45
 - 50
 - 55
 - 60
 - 65
 - 70
 - 75
 - 80
 - 85

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Scale: 1:8000
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: Lot 41 Great Northern Hwy Chittering

Figure 2
Noise Contour Map
 71

APPENDIX 6
DUST MANAGEMENT PLAN



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DUST MANAGEMENT PLAN

Prepared for B & J Catalano Pty Ltd

For Lot 41 on Deposited plan 410793 (5030 Great Northern Highway)
Shire of Chittering

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), now the Department of Environment Regulation (DER). This DMP should be read in conjunction with the report entitled "*Extractive Industries Licence Application and Environmental Management Plan (EMP) Lot 41 on Deposited Plan 410793 (5030 Great Northern Highway), Shire of Chittering*", prepared for B & J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

The requirement for this DMP is derived from the Shire of Chittering Town Planning Scheme No. 6 2007 and *Mines Safety and Inspection Act 1994* and *Mines Safety and Inspection Regulations 1995*.

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

2.1 Locality and Ownership

Locality: Lot 41 (5030) Great Northern Highway, Shire of Chittering

Ownership: Austral Bricks (WA) Pty Ltd (formerly Bristile Operations Pty Ltd)

The property is located approximately 20km north of Bullsbrook town site and directly south-east of the Chittering Roadhouse and is accessed directly from Great Northern Highway.

Figure 1 shows the site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

2.2 Land Use

Lot 41 consists of cleared grazing land, areas of remnant native vegetation, partially rehabilitated clay pit and associated detention ponds from previous clay extraction operations. The surrounding area comprises farming land, extractive industries and rural lots.

The property lies within an “Agricultural Resource” zone as defined by the Shire of Chittering’s Town Planning Scheme No. 6. It is anticipated that the extraction area will be returned to pastures for animal grazing on completion of extraction.

Previous extraction of clay was undertaken in the western section of the property between 2013 and 2018. Prior to 1996, gravel extraction operations were undertaken in Lot 41 to the east of the proposed extraction area.

2.2 Geology and Soils

The proposed extraction area is located within the southern section of the Dandaragan Plateau. The Dandaragan Plateau to the west of the Darling Fault is a wedge-shaped erosion remnant of the Perth Basin with sediments covered by recent deposits of sand and laterite (Wilde and Low 1978). The soils are predominantly light grey or pale brown deep sands of colluvial origin with outcropping laterite areas on higher ground. A thin veneer of topsoil overlies approximately one to two metres of laterite caprock and gravel.

The crushed material texture is predominantly gravel with moderate amounts of sand and small amounts of fines (clays and silts), with grain size distribution (ISO 14688-1) being approximately as follows:

Gravel (>2.0mm):	62%
Sand (0.063<2.0mm):	31%
Fines (Silt & Clay; <0.063mm):	7%

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

Although there will be some uplift of the finer particle component 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 (including fine sand) 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 PM₅₀ (particulate matter with diameter 50 micrometers) are produced as fugitive dust and require suppression as is discussed in Section 4 below.

Whilst the analysis presented above does not determine the quantity of PM₅₀ particles, it is estimated that the potential for total suspended particles (TSP) less than PM₅₀ is approximately 7.5%. Mitigation measures are discussed in Section 4 below.

Potentially significant sources of airborne particulates from the site have been assessed as being limited to:

- Dust lift-off from exposed extraction areas or rehabilitated surfaces.
- Dust lift-off from stockpiles (topsoil and extracted product).
- Dust lift-off from haul roads and tracks resulting from light vehicle and heavy earthmoving traffic.
- Dust generation from crushing and screening processes, loading and transportation of extracted material.

The majority of airborne particulates from the site are likely to be visible dust.

3. PROPOSED WORKS AND POTENTIAL IMPACTS

3.1 Proposed Extraction Activities

B & J Catalano Pty Ltd intend to extract approximately 230,000 tonnes of gravel from an area of 12ha as indicated in Figure 1 over a period of 5 years from 2020 dependent on demand. Rehabilitation of the extracted area will commence once extraction in both stages is complete.

Equipment to be used in these operations includes:

- D10/D9 Bulldozer
- CAT 980 Front End Loader (FEL)
- Striker 1320 Crusher
- Finlay Screen 693
- Striker 25m Stacker
- Truck and Dog (40 tonnes)
- Road Train (50 tonnes)

Extractive operations within the stages will include topsoil removal, ripping, blading, crushing and stockpiling of gravel, truck loading of gravel and rehabilitation of the extraction area.

Stripped topsoil from each stage will be placed in windrows along the edges of the working area to serve as noise, stormwater and visual barriers.

A bulldozer will rip the laterite and then blade it into the crusher sites until a large raw material stockpile has accumulated. It is anticipated that the ripping and blading phase of the operation will be undertaken for approximately one week per each stage.

Once all the raw material has been stockpiled, a crusher, screen and stacker unit will be deployed for a period of approximately four weeks per year. At the end of this period all material will be processed and ready for use. Trucks, as required, will enter and cart material out of the site over the next two and a half years.

After extraction, the land surface will be between 1 and 1.5 metres lower than the original height, apart from the batters which will be at a maximum gradient of 1:6.

The first stage of rehabilitation is topsoil replacement and contour ripping. This will be conducted immediately after completion of extraction in the stages.

Table 1 provides a description of all activities, their duration, aspect and an assessment of potential for dust impacts.

Table 1: Aspects and Impacts of Dust Generating Activities

Activity	Duration	Aspect	Impact
Topsoil Stripping and stockpiling	Up to 1 week per annum in each stage	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	Up to 1 week per annum in each stage	Actions may release dust into the atmosphere	Fine red dust may create an amenity issue with nearby residents
Crushing, screening and stockpiling of gravel	Up to 4 weeks per annum in each stage.	Crushing and screening actions may release dust into the atmosphere	Fine red dust may create an amenity issue with nearby residents
Loading of trucks from stockpiles	Up to 5 years, dependent on demand.	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	Up to 5 years, dependent on demand.	Dust could escape from trucks in transit	Amenity, health or traffic safety issue
Rehabilitation of completed stages	Up to 2 weeks per year from mid 2021 to end 2023.	Disturbance of topsoil could release dust into the atmosphere	Dust may create an amenity issue with nearby residents

3.3 Potential Sensitive Receptors

The following areas have been identified as sensitive receptors in the receiving environment, relevant to the extraction operations.

3.3.1 Residential Dwellings

There are five individual, external dwellings within 1000m of the proposed extraction area.

The details of the closest dwellings are presented in Table 2 along with locations shown on Figure 1.

Table 2: Structures within 1000m of the proposed Extraction Area

Reference No on Figure 2	Structure Location	Type of Structure	Distance	Direction
S1	L232 (H 732) Maddern Road, Chittering)	House	545m	E
S2	L233 (H 670) Maddern Road, Chittering	House	736m	SE
S3	L230 (H 618) Maddern Road, Chittering	House	878m	SE
S4	L1 (H5066) Great Northern Highway, Chittering	House	75m	NW
S5	L512 Maddern Road	House	535m	NE

The site is surrounded by farming land, extractive industry operations, and rural small holdings with surrounding remnant vegetation. The closest sensitive premises (S4) is a residential dwelling located approximately 75m west of Stage 1, within the Chittering Roadhouse complex. Recent clay pit extraction operations have been undertaken in close proximity to this residence with no impact to the resident.

The remaining sensitive premises (S1, S2, S3 and S5) are residential dwellings located at distances greater than 500m from the proposed operations. Surrounding native vegetation and dust management measures to be implemented should provide adequate screening from dust emissions during site operational hours.

3.2 Prevailing Winds

The nearest weather station to the property is RAAF Pearce. Wind speed data has been obtained for 9 am and 3 pm.

The prevailing winds in the drier months from December to April are predominantly from the east in the morning and from the south-west in the afternoon. There should be minimal impact on the external residences to the north (S5) and south-east (S2, S3) of the proposed extraction area due to the presence of vegetation buffers between the proposed operations and these residences.

Particular care will need to be undertaken with dust management to ensure S4 (directly west of the proposed extraction area) is not affected by dust in the mornings and S1 (slightly NE of the proposed operations) is not affected by dust in the afternoons.

Wind roses for RAAF Pearce have been included in Annexure 2 (Bureau of Meteorology 2019).

3.4 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 “medium risk” (Classification 3). Measures for managing dust impacts are discussed in Section 4.

4. MEASURES PROPOSED FOR MANAGING DUST

The measures that are proposed to manage dust impacts are summarized in Table 3.

Table 3. Management Actions for Dust

Parameter	Action	Timing
Induction	Inductions for all employees will include information on: <ul style="list-style-type: none"> Potential sources of dust Speed limits onsite 	Induction
Windy Conditions	A 15KL water cart will be on site during all periods when earth is being moved or crushing is being undertaken. If dust is a problem, operations will cease until such time as adequate wetting down has occurred.	Ongoing
Traffic	Adhere to 30 km/hr speed limit and use designated roads.	Ongoing
Open Area	Minimise open areas exposed to wind as much as practical by completing progressive rehabilitation as extracted areas are completed.	Winter
	Existing remnant vegetation buffers will be maintained along the northern, western and southern boundaries of the site, to assist with containing dust lift-off from open areas.	Ongoing
	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.	Ongoing
Dust Suppression	Operate a water cart during dry, windy conditions and during earthmoving and crushing periods (when required) to apply water to unsealed operational areas.	Ongoing
	Internal roads will be surfaced with gravel to minimize dust lift-off from vehicle movement.	Ongoing
	A polymer based spray-on soil stabilizer will be applied to topsoil stockpiles if they do not stabilize by crusting and grass regrowth.	Post stripping
Transportation	Truck loads will be covered to ensure no dust is generated during transport.	Ongoing

During windy conditions, it is possible that dust emissions may still be generated from site. The following management actions will be taken to ensure that dust levels generated by the extraction activities do not create unacceptable impacts:

- All site staff will be responsible for reporting high or abnormally dusty conditions to the Site Superintendent or Quarry Manager as soon as is reasonably practicable.
- If an activity is creating high or abnormally dusty conditions (as determined by visual assessment), the activity will cease until weather conditions change or appropriate dust controls are put in place to ameliorate the dust emissions.
- A notice will be erected at the front gate and this will provide emergency contact details for the Quarry Manager.

A complaints system will be implemented for any dust incidences and any complaint will be investigated and followed up promptly by the Quarry Manager.

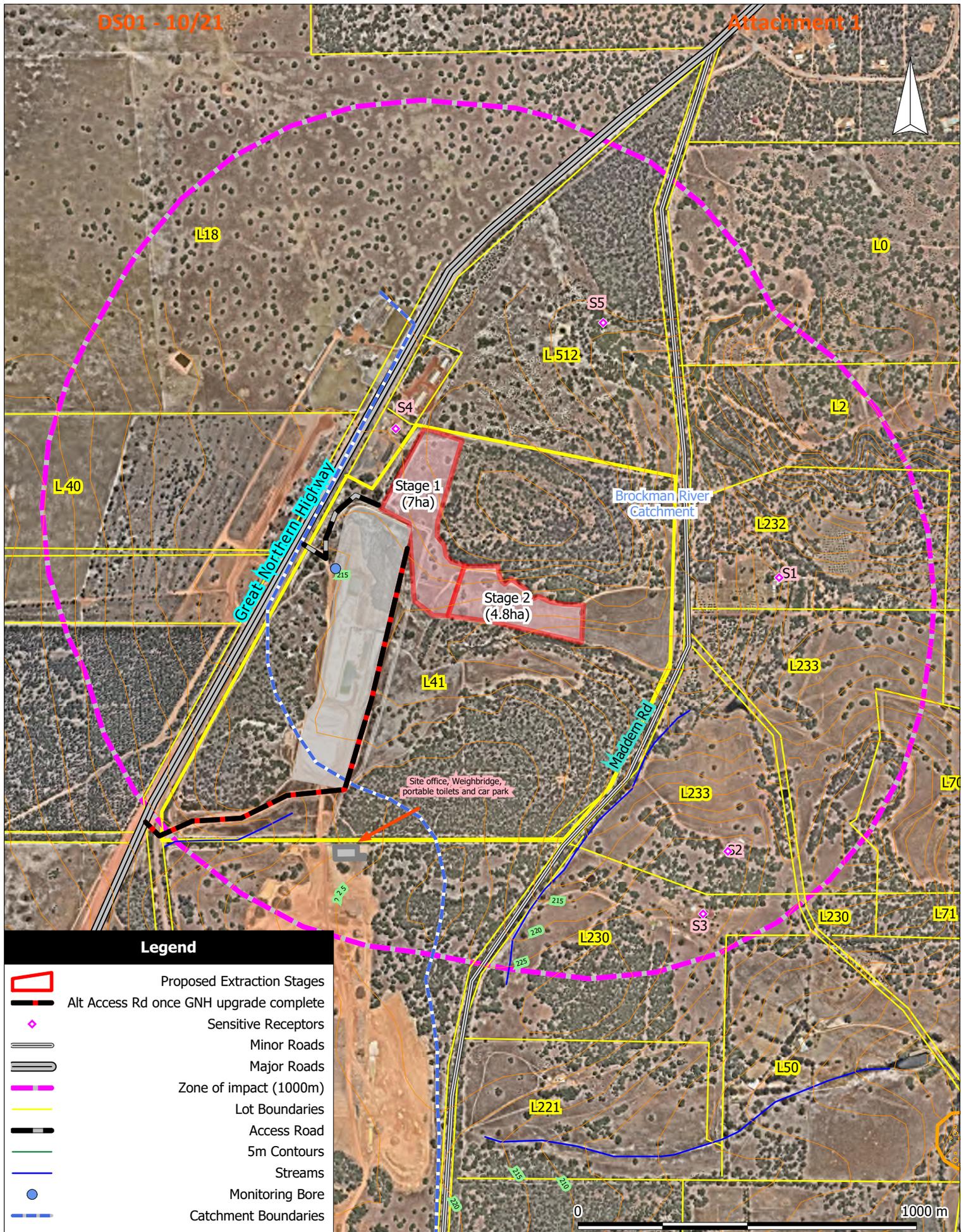
5. REFERENCES

Bureau of Meteorology (BOM) 2019. Wind roses for Pearce RAAF. Accessed December 2019 from 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.

Wilde, S. A. & Low, G. H. 1978. Explanatory Notes Perth, Western Australia. 1: 250,000 Geological Map Series SH/50-14. Geological Survey of Western Australia. Perth, Western Australia.

FIGURES



Legend

-  Proposed Extraction Stages
-  Alt Access Rd once GNH upgrade complete
-  Sensitive Receptors
-  Minor Roads
-  Major Roads
-  Zone of impact (1000m)
-  Lot Boundaries
-  Access Road
-  5m Contours
-  Streams
-  Monitoring Bore
-  Catchment Boundaries

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Scale: 1:14000
Original Size: A4
Air Photo Source: Nearmap Sep 2019
Datum: GDA94
Projection: Australia MGA94 (50)

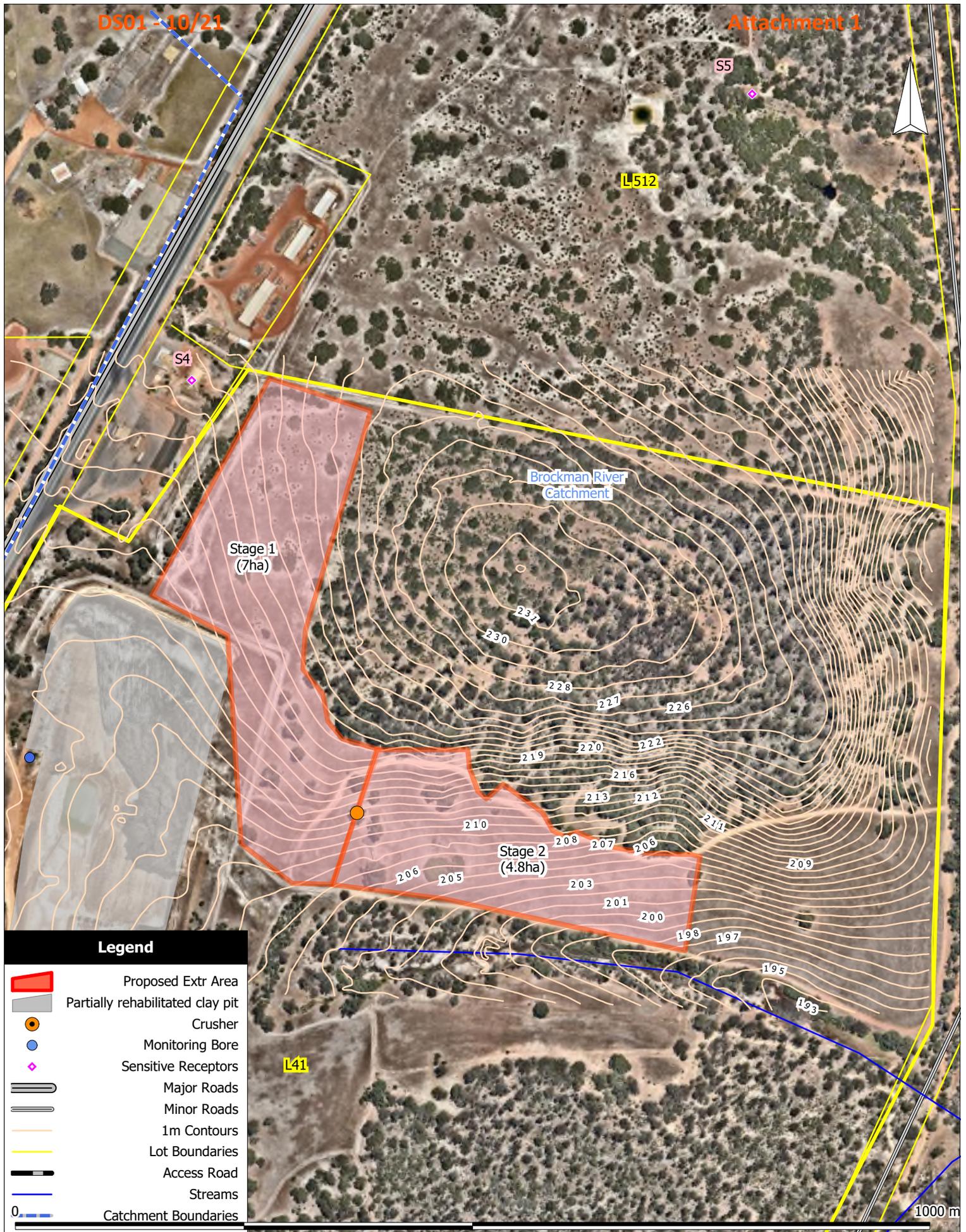
Client: B & J Catalano

Project: Gravel Extraction

Location: Lot 41 Great Northern Hwy
Chittering

Figure 1

**Dust Management
80 Plan**



Legend

- Proposed Extr Area
- Partially rehabilitated clay pit
- Crusher
- Monitoring Bore
- Sensitive Receptors
- Major Roads
- Minor Roads
- 1m Contours
- Lot Boundaries
- Access Road
- Streams
- Catchment Boundaries

**Lundstrom Environmental
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Scale: 1:5300
Original Size: A4
Air Photo Source: Nearmap Sep 2019
Datum: GDA94
Projection: Australia MGA94 (50)

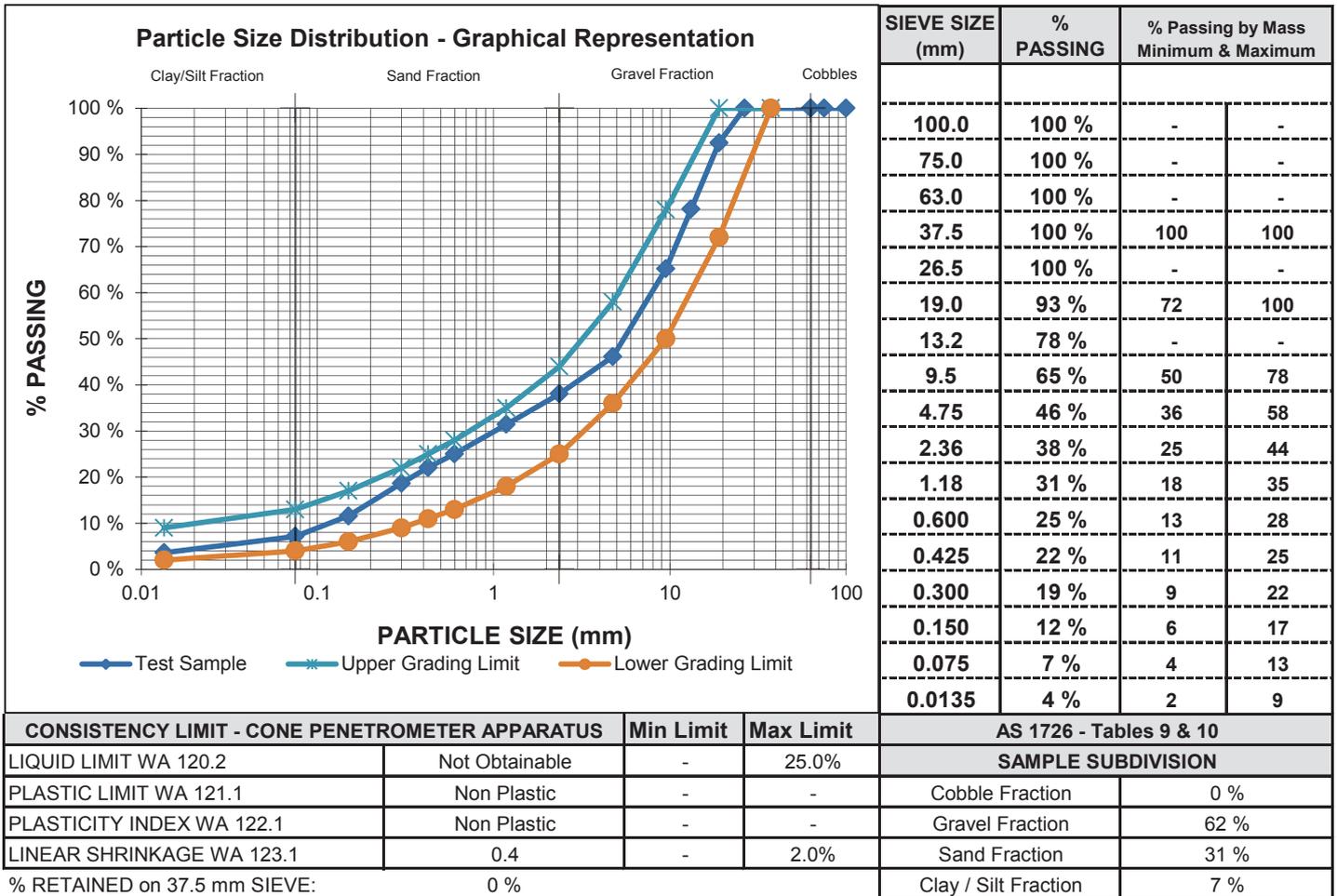
Client: B & J Catalano
Project: Gravel Extraction
Location: Lot 41 Great Northern Hwy
Chittering

Figure 2:
Extraction Area
81

ANNEXURE 1
Particle Size Analysis for Crushed Gravel

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION OF A SOIL :
SIEVING AND DECANTATION METHOD : WA 115.1

CLIENT B & J Catalano Pty Ltd, Lot 27 Bushmead Road, Hazelmere
 JOB NO. 636_395
 SAMPLE NO. 849
 CLIENT REFERENCE SP27 - Sample 3
 DATE SAMPLED 30.01.2019
 DATE TESTED PSD tested 12.02.2019 & 16.02.2019 Consistency Limit tested 18.02.2019
 SAMPLE DESCRIPTION Ferricrete
 FEATURE -
 PROJECT Quality Control - Donnington Pit



Specification 501 Pavements - 04/10110-04 issued 22/03/2017 - Table 501.07 & 501.09

SAMPLING PROCEDURE: Tested as received		ACCREDITED FOR COMPLIANCE WITH ISO/IEC 17025 - TESTING
REMARKS: Linear Shrinkage has been conducted at 21.88% Moisture Content in accordance with WA 110.1.		
Report No:	MC 636_395_10	APPROVED L Greaves, Signatory DATE : 01.03.2019
Issue No:	1	
Doc Name:	PSDPI Rev 017 Date 29.01.2019	
File name:	636_395psdpi849.xlsm	

This document shall not be reproduced except in full without approval of the laboratory. Results relate only to the items tested.

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INDEPENDENT TESTING LABORATORIES NATA ACCREDITATION NUMBER 1763 ABN: 67 126 947 386

ANNEXURE 2
Wind-Roses for Pearce RAAF

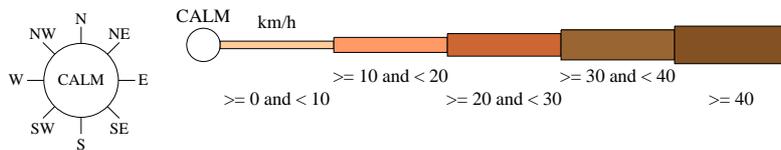
Rose of Wind direction versus Wind speed in km/h (02 Nov 1940 to 11 Aug 2019)

Custom times selected. See to-attached note for details

PEARCE RAAF

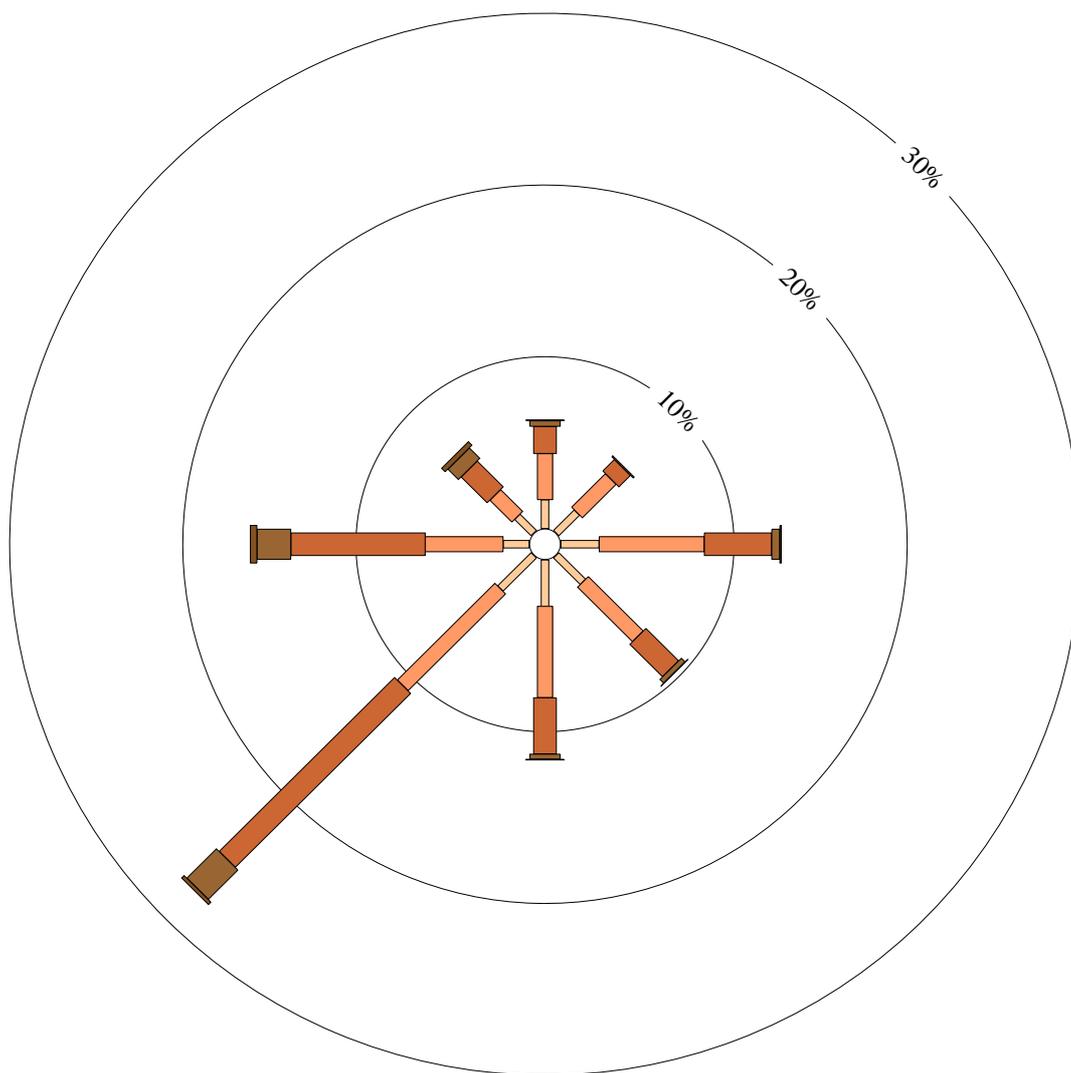
Site No: 009053 • Opened Jan 1937 • Still Open • Latitude: -31.6669° • Longitude: 116.0189° • Elevation 40m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



3 pm
17806 Total Observations

Calm 4%



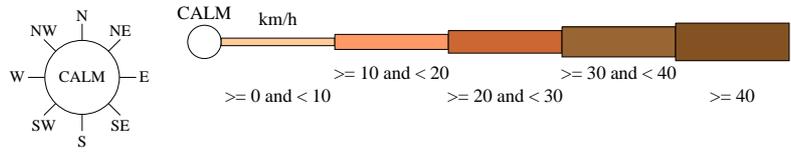
Rose of Wind direction versus Wind speed in km/h (02 Nov 1940 to 11 Aug 2019)

Custom times selected. Use the to-attached note for details

PEARCE RAAF

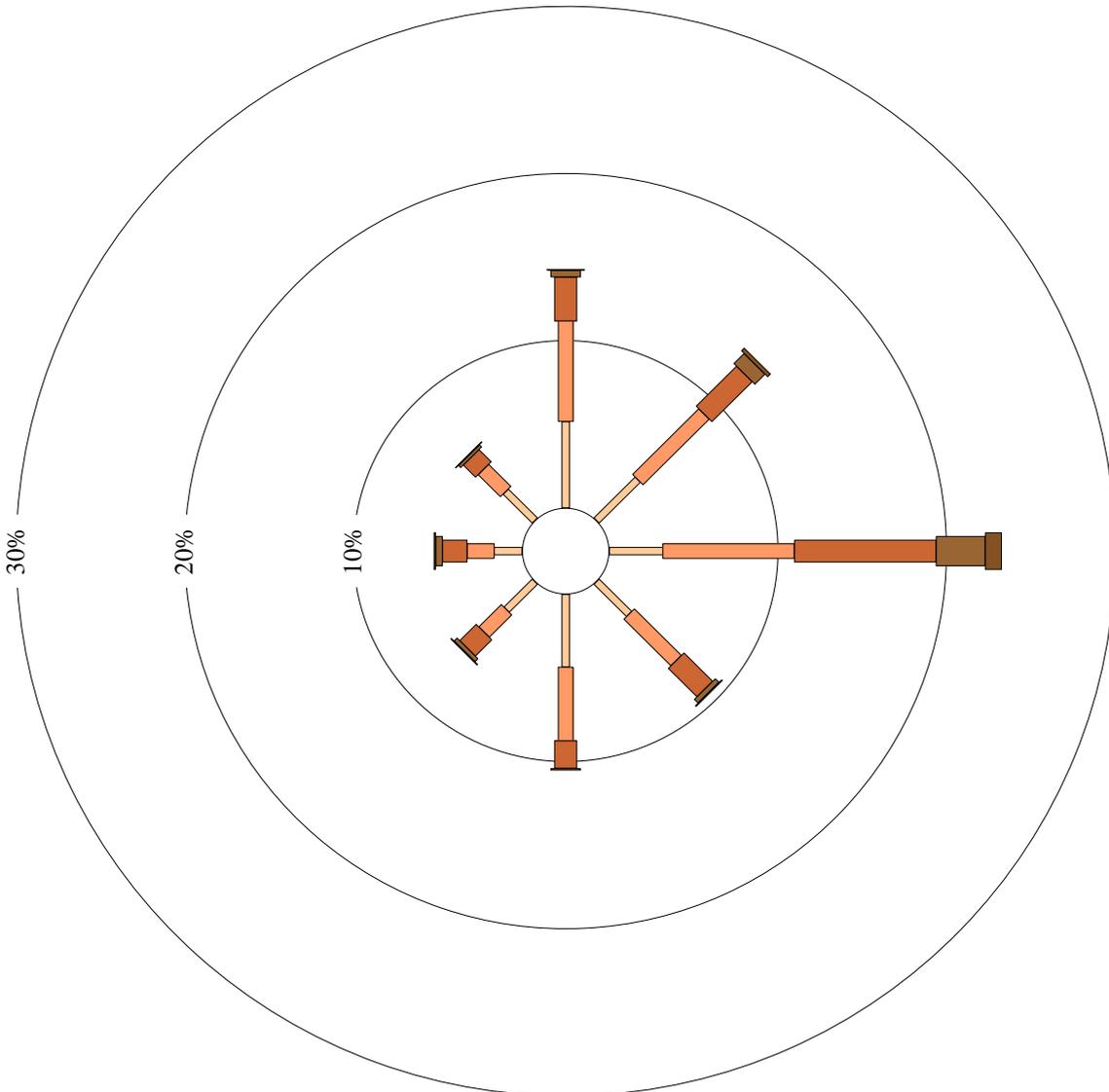
Site No: 009053 • Opened Jan 1937 • Still Open • Latitude: -31.6669° • Longitude: 116.0189° • Elevation 40m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



9 am
18928 Total Observations

Calm 13%



ANNEXURE 3
Site Classification Assessment Chart

ADDENDUM

The Department of Environment and Conservation (DEC) released an updated dust guideline in January 2011, “A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities, January 2011”. An error was identified in Appendix 1 on page 35. This error has since been corrected (See below). This document is the corrected version published in March 2011.

Appendix 1: Site risk assessment/classification for activities generating uncontaminated dust

Sheet 1: Site classification assessment chart

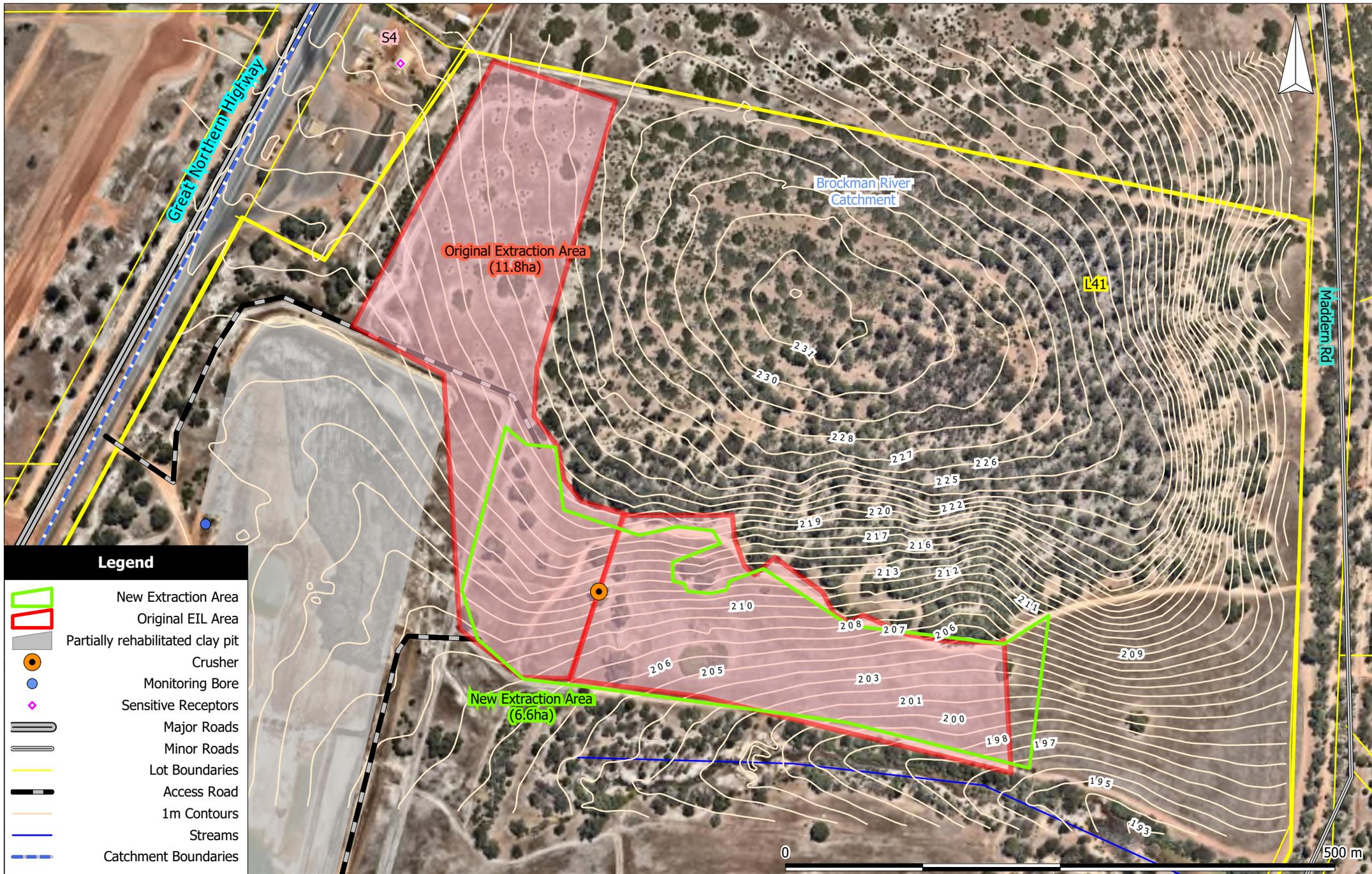
Part A. Nature of site

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
TOTAL score for Part A					26

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.....9	Dense/sensitive land uses highly affected by prevailing winds.....12	6
TOTAL score for Part B					18

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



Legend

- New Extraction Area
- Original EIL Area
- Partially rehabilitated clay pit
- Crusher
- Monitoring Bore
- ◆ Sensitive Receptors
- Major Roads
- Minor Roads
- Lot Boundaries
- Access Road
- 1m Contours
- Streams
- Catchment Boundaries



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

Scale: 1:4400
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: Lot 41 Great Northern Hwy
 Chittering

Figure 3
Extraction Area

Western Wildlife

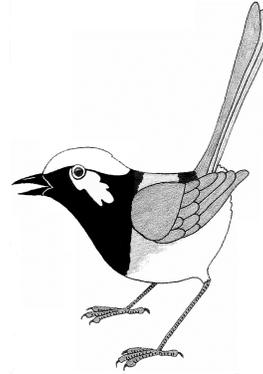
www.westernwildlife.com.au

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ABN: 36 296 431 194



To: Michael Lundstrom
Lundstrom Environmental Consultants

Date: 12 – 03 – 2020

RE: Donningtons Quarry, Chittering – black-cockatoo habitat tree survey on part Lot 41 Great Northern Hwy.

Introduction

The Donningtons Gravel Quarry is located on the Great Northern Hwy, Chittering. It is proposed to extend the existing quarry onto Lot 41, and the proposed clearing area is about 11.4ha. The proposed clearing area is open paddock with scattered remnant native trees, regrowth native trees and planted non-native trees. On behalf of B & J Catalano, Lundstrom Environmental Consultants commissioned Western Wildlife to conduct a targeted black-cockatoo habitat tree survey in the proposed clearing area (Figure 1). The main aim of the survey was to search for habitat trees that maybe used for breeding by the following Threatened species:

- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) - Vulnerable
- Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) - Endangered

Baudin's Black-Cockatoo (*Calyptorhynchus baudinii*) may occur as a foraging visitor to the region, but only breeds further to the south.

Methods

The proposed clearing area was visited by Ms Jenny Wilcox on 6th December 2019. The diameter at breast height (DBH) was recorded for all Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) trees with a DBH \geq 50cm and all Wandoo (*Eucalyptus wandoo*) with a DBH \geq 30cm. Trees were examined from the ground for the presence of existing hollows. Hollows were classified as 'large' if they had some potential to support black-cockatoo breeding and 'small' if considered too small for black-cockatoos, but of potential use for other bird species such as parrots and pardalotes, or by bats or arboreal reptiles. All trees identified were recorded with a GPS location. Any evidence of hollow use by cockatoos, the presence of feral bees (*Apis mellifera*) in hollows, signs of foraging or sightings of black-cockatoos were also noted.

Results

Habitat trees

A total of 20 trees with a DBH \geq 50cm were recorded in, or on the boundary of, the proposed clearing area (Figure 1, Table 1). Two trees with large existing hollows were recorded, but no evidence of chewing by cockatoos was present (Plate 1). The remaining trees had small hollows or no visible hollows. The trees in the northern section of the proposed clearing area were all regrowth Marri with low-branching multi-trunked stems and narrow upper branches.

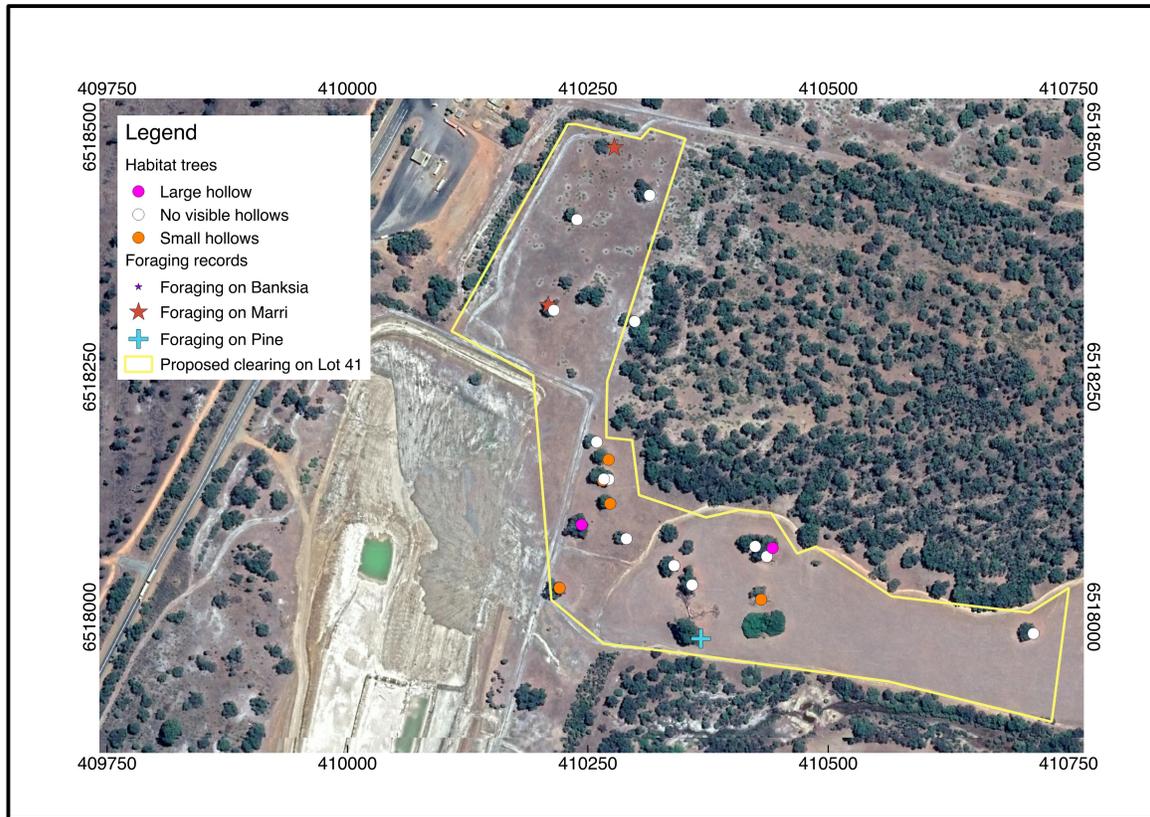


Figure 1: Habitat tree locations.

Foraging habitat

Most of the remnant trees are potential foraging habitat (Plate 2), and evidence of Carnaby's Black-Cockatoo foraging on Marri and introduced pine trees was recorded in the proposed clearing area during the site visit. The key foraging plant species present were Marri and pine. Wandoo may be used for foraging but is of lesser importance. Marri was common, but only a single pair of pine trees was present.



Plate 1. Mature trees bearing potential large (left) and small (right) hollows.



Plate 2. Evidence of cockatoo foraging on Marri (left) and pine (right).

Roosting habitat

The proposed clearing area is unlikely to be of particular importance for roosting, as it is not near water.

Conclusions

Although Carnaby's Black-Cockatoo and the Forest Red-tailed Black-Cockatoo are known to breed in the region, the likelihood of these species currently breeding in the proposed clearing area is low, as only two large hollows were recorded, and no evidence of use by cockatoos was observed. Black-cockatoos may occur as foraging visitors to the proposed clearing area, and evidence of foraging by Carnaby's Black-Cockatoos were recorded during the site visit. It is likely that cockatoos breed nearby, and the foraging habitat in the proposed clearing area may potentially be used by breeding birds.

Table 1. Trees with a DBH \geq 50cm.

Name	Easting	Northing	DBH (cm)	Tree Species	Hollows	Tree Status	Feral Bees	Notes
B001	410213	6518025	100	Marri	Small hollows	Live	No	
B002	410236	6518090	170	Marri	Large hollow	Live	No	
B003	410265	6518112	80	Wandoo	Small hollows	Live	No	
B004	410264	6518136	80	Marri	No visible hollows	Live	No	
B005	410264	6518157	80	Wandoo	Small hollows	Live	No	
B006	410251	6518175	110	Jarrah	No visible hollows	Live	No	
B007	410258	6518135	75	Wandoo	Small hollows	Live	No	
B008	410259	6518137	35	Wandoo	No visible hollows	Live	No	Leaning tree
B009	410207	6518311	60	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B010	410290	6518299	35	Wandoo	No visible hollows	Live	No	Tree branches low, upper branches small
B011	410306	6518429	70	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B012	410231	6518404	65	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B013	410282	6518075	50	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B014	410331	6518048	115	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B015	410349	6518028	100	Marri	No visible hollows	Live	No	Tree branches low, upper branches small
B017	410426	6518057	100	Marri	No visible hollows	Live	No	
B018	410432	6518066	90	Wandoo	Large hollow	Live	No	Terminal hollow at about 6m.
B019	410414	6518067	45	Wandoo	No visible hollows	Live	No	
B020	410420	6518013	100	Jarrah	Small hollows	Live	No	
B021	410700	6517978	70	Marri	No visible hollows	Live	No	

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 41 (RN 5030) GREAT NORTHERN HIGHWAY, CHITTERING

AGENCY SUBMISSIONS									
Submitter	Comment	Proponent Response	Shire Officer Response						
Department of Water & Environmental Regulation	<p><u>Industry Regulation Advice</u></p> <p>The Department regulates emissions and discharges from the construction and operation of prescribed premises through a works approval and licensing process, under Part V of the Environmental Protection Act 1986 (EP Act). The categories of Prescribed Premises are outlined in Schedule 1 of the Environmental Protection Regulations 1987. The EP Act requires a works approval to be obtained before constructing a prescribed premises and makes it an offence to cause an emission or discharge unless a licence or registration is held for the premises. The development and extractive industry licence (EIL) application request was reviewed in relation to works approval and licence requirements under Part V Division 3 of the EP Act. Based on the information provided, the proposed operations may be categorised as prescribed premises under Schedule 1 of the Environmental Protection Regulations 1987 for the following categories:</p> <table border="0"> <tr> <td style="padding-left: 40px;">12</td> <td style="padding-left: 40px;">Screening, etc. of material: premises (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated</td> <td style="padding-left: 40px;">50000 tonnes or more per year</td> </tr> <tr> <td style="padding-left: 40px;">70</td> <td style="padding-left: 40px;">Screening, etc. of material: premises on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated</td> <td style="padding-left: 40px;">More than 5000 but less than 50000 tonnes per year</td> </tr> </table> <p>Crushing and screening equipment with a design capacity* (when operated 24/7 or at a capacity limited by a planning approval) that enables operation at a rate that meets or exceeds the specified production* or design capacity of the relevant category under Schedule 1 of the Environmental Protection Regulations 1986 may cause the premises to become prescribed for the purposes of Part V Division 3 of the EP Act. The applicant can be advised that they may meet the requirement for prescribed premises and as such, will require a works approval to construct/install the equipment (mobile or otherwise) and a licence or registration to operate. It should be noted that the Department’s determination of production or design capacity may be influenced by a planning approval that restricts capacity (such as constraining hours of operation).</p> <p>The purpose of a works approval is to allow the Department to assess the environmental acceptability of a proposal’s potential to cause emissions and discharges during construction and operation. Note that any works approval or licence issued under Part V of the EP Act will only regulate emissions associated with the crushing and screening operation (such as dust, noise and contaminated stormwater). It does not extend to the environmental impacts of extracting the material from the ground or transport off-site.</p> <p>The Department has no record of this premises and has not received any applications relating to this proposal. The applicant is therefore advised to refer to the information and Industry Regulation Guide to Licensing available at http://www.der.wa.gov.au/our-work/licences-and-works-approvals and / or if they have queries relating to works approvals and licences to contact the Department at info@dwer.wa.gov.au or 6364 7000.</p> <p>The application will also need to demonstrate compliance with the general provisions of the EP Act and Environmental Protection (Noise) Regulations 1997 and Environmental Protection (Unauthorised Discharges) Regulations 2004.</p>	12	Screening, etc. of material: premises (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated	50000 tonnes or more per year	70	Screening, etc. of material: premises on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated	More than 5000 but less than 50000 tonnes per year	<p>On behalf of B&J Catalano, Lundstrom Environmental Consultants (LEC) will be submitting a works approval application and an application for a licence to Department of Water and Environmental Regulations (DWER) as required by Part V of the <i>Environmental Protection Act 1986</i>.</p> <p>This works approval application will include extraction activities within two different lots (Lot 41 and Lot 42 Eatha Road, Chittering). The management and monitoring strategies of dust and noise from the activities within the quarry will be clearly outlined on the application form and management plans will be submitted as attachments. Any equipment that may produce dust and noise will be listed for DWER assessment. LEC understand the works approval will allow the applicant to construct/install the equipment and a licence will allow the applicant to operate within the site.</p> <p>Product capacity and design capacity will be included within the works approval application.</p>	<p>It is acknowledged that there is a requirement for the proponent to obtain a Works Approval for the crushing and screening activities associated with the proposal. If approved, an advice note can be included on any development approval issued advising the proponent of such requirement.</p>
12	Screening, etc. of material: premises (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated	50000 tonnes or more per year							
70	Screening, etc. of material: premises on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated	More than 5000 but less than 50000 tonnes per year							

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 41 (RN 5030) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>Please note that this advice is provided based on information provided. Should this information change, the works approval and/or licensing requirements may also change. Applicants are encouraged to contact the Department at the above contact details to clarify requirements, should there be changes to information.</p> <p>*'Production capacity' and 'design capacity'</p> <ul style="list-style-type: none"> • The production capacity is the rate at which a product is produced as relevant to the description of the prescribed premises category; and • design capacity is the maximum capacity/capability for which the facility or equipment is designed to receive, handle, process, contain or emit, as relevant to the description of the prescribed premises category. <p>For further advice relating to industry regulation matters, please contact Neville Welsh on 9726 4106.</p> <p><u>Native Vegetation Clearing Advice</u></p> <p>Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations).</p> <p>Based on the information provided, no exemption applies to the proposed clearing and a clearing permit is required.</p> <p>The Department received a Clearing Permit application (CPS 8701/1) on 26 September 2019 from B&J Catalano Pty Ltd to clear 7.99 hectares of native vegetation at this location for the purposes of gravel extraction. The extent of the clearing specified in the clearing permit application appears to be consistent with the clearing proposed in the development and EIL application. This application is currently undergoing environmental impact assessment.</p>	<p>LEC and the applicant, B&J Catalano understand the Clearing Permit application (CPS 8701/1) is still under assessment. We will provide DWER with all requested further information during the assessment of this application.</p>	<p>It is acknowledged that the proponent is required to obtain a clearing permit for the removal of native vegetation. If approved, an advice note can be included on a development approval advising the proponent of such requirement.</p>
<p>Department of Biodiversity, Conservation & Attractions</p>	<p>Threatened Fauna Species</p> <p>The department has records of Baudin's cockatoo (<i>Calyptorhynchus baudinii</i>), Carnaby's cockatoo (<i>C. latirostris</i>) and forest red-tailed black cockatoo (<i>C. banksii naso</i>) within a 10km radius of the subject lot, which are protected under both the Biodiversity Conservation Act 2016 and the Environment Protection and Biodiversity Conservation Act 1999. The targeted black cockatoo habitat tree survey of the proposed clearing area undertaken by Western Wildlife (2020) identified the presence of a total of 20 trees with a DBH ≥ 50cm in, or on the boundary of, the proposed clearing area. It is noted that two trees with large existing hollows were recorded, but no evidence of chewing by cockatoos was present.</p> <p>The proponent should be made aware that the clearing of native vegetation in Western Australia is prohibited, unless the clearing is authorised by a clearing permit obtained from the Department of Water and Environmental Regulation (DWER) or is of a kind that is exempt in accordance with Schedule 6 of the Environmental Protection Act 1986 or Environmental Protection (Clearing of Native Vegetation) Regulations 2004. It is recommended that the application be referred to DWER to determine if a clearing permit is required.</p>	<p>B& J Catalano understand the need for a clearing permit to clear native vegetation in Western Australia. An application is under assessment by Department of Water and Environmental Regulations (DWER) to allow clearing within proposed Lot 41 extraction area (CPS 8701/1). As part of the assessment process, the clearing footprint on Lot 41 has been reduced to 0.5ha, and a revegetation offset area of 4.74ha is proposed for both Lot 41 and 42 combined proposed clearing of 2.39ha.</p> <p>B&J Catalano has no objection towards Department of Biodiversity, Conservations & Attractions comments.</p>	<p>The application was referred to DWER for comment. An application to clear native vegetation will need to be lodged with DWER by the proponent to consider the appropriateness of clearing native vegetation and any measures necessary for the protection of black cockatoos.</p> <p>The recommendation for a buffer to be provided to nearby vegetation outside of the extraction area is noted. If approved, a condition can be imposed that requires a revised extraction plan to be drafted illustrating a minimum 10m setback from the drip zone of all vegetation outside of the extraction area, and requiring demarcation of this area to reduce the risk of these trees being damaged during excavation activities.</p>

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 41 (RN 5030) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>Approved clearing of potential black cockatoo habitat trees should be undertaken outside of the annual breeding season (October to May). If approved clearing of potential black cockatoo habitat trees is to occur during the annual breeding season, all trees containing suitable hollows should be assessed by a suitably qualified person to determine if any trees contain nesting black cockatoos.</p> <p>The department recommends that a buffer from the proposed extraction area boundaries be provided to protect the nearby, and retained, remnant vegetation and black cockatoo habitat trees, from impacts associated with the proposed extraction activities.</p> <p>Potential impacts include reduced tree root zone moisture levels due to hydrological alterations resulting from the proposed extraction activities. The trees are also at risk from accidental machinery damage and the trees have an increased risk of being blown over. The department recommends that no extraction should occur within 10 m of any native tree crown drip zones along the boundaries of the proposed extraction area and that a suitable temporary demarcation barrier be erected 10m from the crown drip zone of trees to extraction area boundaries, to protect the trees and root systems from accidental machinery damage.</p>		
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PUBLIC SUBMISSIONS

Submitter	Comment	Proponent Response	Shire Officer Response
<p>OPPOSE Dr. Juerg Hauser, Chittering</p>	<p>1) Noise and dust pollution on my property Maddern Rd 792</p> <p>2) Further destruction of natural environment and habitats</p>	<p>1) B&J Catalano understand some noise and dust will occur as part of the extraction activities within Lot 41. B&J Catalano have reduced the proposed footprint of the Lot 41 extraction area from 11.8ha to 6.6ha to remove most of the northern Stage 1 area due to it's proximity to residence S4 (L1 (H5066) Great Northern Highway), which now has a separation distance from the closest point to the extraction area of approximately 360m, and residence S5 (L512 Maddern Road) separation distance has also increased to 815m. Distances to the crushing site are greater than these.</p> <p>The residence on Maddern Road 792 is more than 1,000m from the closest point of the extraction area and over 1,500m to the crushing site. It is unlikely there will be any noise or dust impacts from the proposed operations with these separation distances.</p> <p>B&J Catalano will implement dust and noise management plans, which have been submitted as part of the proposal. As part of the noise management plan, three different noise bunds with a height of four meters will be constructed around the crusher site to reduce noise impacts. Product stockpiles will also be strategically utilized as noise bunds to minimise noise impacts. To manage dust, a water cart will be on site during all periods when earth is being moved or crushing is being undertaken. All impacts are of short duration as crushing campaigns last approximately 4 weeks per year and the extraction is approximately 2 weeks per year. The full impact assessment and list of management measures is included in the management plans provided as part of the proposal application.</p> <p>Furthermore, as part of licencing from both the Shire and Department of Water and Environmental Regulations (DWER), conditions will be placed on the operations in regard to dust and noise emissions, monitoring, management and reporting.</p>	<p>Noise management and dust management plans have been submitted with the application detailing measures to mitigate the impacts of those factors. Officers consider the content of those plans to be satisfactory to mitigate those impacts to acceptable levels. If approved, conditions can be imposed that requires the constant application of the measures within those plans by the proponent, with enforcement opportunities available to the Shire if non-compliance occurs.</p> <p>The removal of native vegetation and the environmental impacts caused by such will be assessed by DWER during the clearing permit application process. Furthermore, while the extractive industry will devoid the extraction area of all natural vegetation, a rehabilitation plan has been submitted with the application to return the land to a more natural state of pasture land. If approved, a condition can be imposed that requires the successful rehabilitation of the land, guaranteed through the requirement for a rehabilitation bond.</p>

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 41 (RN 5030) GREAT NORTHERN HIGHWAY, CHITTERING

		<p>Controlling of dust and noise emissions, combined with the large separation distances, will result in negligible impacts on the property Maddern Road 792.</p> <p>2) B&J Catalano has undertaken all necessary flora and fauna assessments to ensure there are no significant impacts to the natural environment and habitats as part of clearing the native vegetation on Lot 41. The proposed clearing area has been reduced significantly, with 0.5ha of clearing proposed on Lot 41. The cleared area will be rehabilitated, and a revegetated offset area on Lot 42 is proposed to offset any impacts associated with the clearing. DWER will further impose conditions on the clearing permit to ensure minimal residual impacts to the natural environment.</p>	
<p>OPPOSE Kim & Anna Larsen</p>	<p>Brockman River Catchment: The map included with this proposal clearly shows it will affect the Brockman River Catchment. Council must clearly reject this proposal as a 1.5m excavation depth will obviously prevent water flow into the Brock River from this area.</p> <p>Council Approval Process: The aerial photo provided leaves ratepayers in no doubt that your Council’s previous approvals for claypits and gravel removal has left this large property as eyesore and scarred landscape forever. In whose benefit are Council’s resources being used to investigate and fund this proposal and how do all ratepayers benefit from this decision.</p>	<p>Surface drainage within the proposed EIL area is to the south and south east towards a minor drainage line, which drains into Toodyay Creek, which runs into the Brockman River, located 4km from the proposed extraction area.</p> <p>B&J Catalano have reduced the proposed footprint of the Lot 41 extraction area from 11.8ha to 6.6ha to remove most of the northern Stage 1 area (only one stage is now proposed). This will reduce any potential surface water impacts from the proposed operations.</p> <p>During operations surface water will be directed around the excavation with diversion bunds, but will still flow towards Toodyay Creek and the Brockman River. Surface water from within the extraction area will be controlled with contour bunds and detained in detention ponds with capacity for the 2hr 10% AEP storm event as per Department of Water and Environmental Regulations (DWER) recommendations.</p> <p>As part of the rehabilitation of the extraction area, batters will be smoothed to 1:6 and the base of the pit levelled out, with the final rehabilitated surface between 1 and 1.5 meters below the original surface and blended into the surrounds. The minor depression created by the extractive activities will not prevent water flow into the Brockman River from this area, and will not affect the Brockman River Catchment. While there will be very minor localised changes to the water flow from the extraction area into the minor drainage line, water will still flow with gravity towards the minor drainage line, including shallow subsurface flow.</p> <p>The proposed rehabilitation of the extraction area is outlined in the Environmental Management Report and the Water Management Plan outlines the water management measures to be implemented for the proposed operations. These measures will ensure minimal impacts to the Brockman River Catchment.</p>	<p>The removal of native vegetation and the environmental impacts caused by such will be assessed by DWER during the clearing permit application process.</p> <p>The existing clay extraction site is subject to a separate development approval, and can be subject to compliance action from the Shire if conditions are not adhered to, including any rehabilitation requirements.</p> <p>The subject application attracted an application fee which is intended to recover the costs of officer’s time to assess and report on the application. The extraction of basic raw materials is an important industry that is necessary for various infrastructure projects such as road construction, which has obvious benefits to the broader community.</p>
<p>OPPOSE Christine Hume</p>	<p>Catalano have not kept to conditions of stage one</p> <p>Horrendous noise when crushing dust</p>	<p>B&J Catalano understand some noise and dust will occur as part of the extraction activities within Lot 41. B&J Catalano have reduced the proposed footprint of the Lot 41 extraction area from 11.8ha to 6.6ha to</p>	<p>The enforcement of conditions on previous development approvals is a compliance matter which cannot influence the decision making for the subject</p>

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 41 (RN 5030) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>Mounds of gravel already meters high</p> <p>Have not adhered to times</p> <p>Where is stage 3 going to encroach</p>	<p>remove most of the northern Stage 1 area (only one stage is now proposed) due to it's proximity to residence S4 (L1 (H5066) Great Northern Highway), which now has a separation distance from the closest point to the extraction area of approximately 360m, and residence S5 (L512 Maddern Road) separation distance has also increased to 815m. Distances to the crushing site are greater than these.</p> <p>B&J Catalano will implement dust and noise management plans, which have been submitted as part of the proposal. As part of the noise management plan, three different noise bunds with a height of four meters will be constructed around the crusher site to reduce noise impacts. Product stockpiles will also be strategically utilized as noise bunds to minimise noise impacts. To manage dust, a water cart will be on site during all periods when earth is being moved or crushing is being undertaken. All impacts are of short duration as crushing campaigns last approximately 4 weeks per year and the extraction is approximately 2 weeks per year. The full impact assessment and list of management measures is included in the management plans provided as part of the proposal application.</p> <p>Furthermore, as part of licencing from both the Shire of Chittering (Shire) and Department of Water and Environmental Regulations (DWER), conditions will be placed on the operations in regard to dust and noise emissions, monitoring, management and reporting.</p> <p>B&J Catalano have submitted Annual Compliance Reports for the Lot 42 operations to both the Shire and DWER. These reports outline compliance status, evidence, and described the findings and provide recommended actions for the annual reporting period. Any complaints from the Lot 42 operations have been dealt with promptly by B&J Catalano.</p> <p>Controlling of dust and noise emissions as per the management plans submitted, combined with the reduced footprint, will result in minimising impacts to all nearby residences.</p> <p>B&J Catalano commit to adhere to times stated on the EIL application to the Shire of Chittering:</p> <ul style="list-style-type: none"> Operating times will be Monday to Friday 0700 to 1800 and Saturdays 0700 to 1200. <p>The height of product stockpiles from the Lot 42 operations are in compliance with B&J Catalano's operating licences.</p> <p>No stage 2 or 3 is currently proposed on Lot 41.</p>	<p>application. If conditions of a development approval are not adhered to, the Shire can take compliance action against the proponent and landowner for those breaches.</p> <p>A Noise Management Plan has been submitted with the subject application which indicates that compliance with the <i>Environmental Protection (Noise) Regulations 1997</i>. Notwithstanding the measures within this Plan, the Noise Regulations operate independent of any development approval issued and as such, if breaches of the Noise Regulations occur, the Shire can take enforcement action and can infringe the operator if necessary.</p> <p>The application included extraction plans that illustrate the extraction area boundaries. It is unclear what the submitter is referring to when referencing 'Stage 3'.</p>
<p>SUPPORT Mr. Van Dongen</p>	<p>I support this application.</p>	<p>Thank you Mr. Van Dongen for supporting the application.</p>	<p>Noted.</p>

*Note: Comments are as per original submission received by the Shire.

Department of
PlanningWestern
Australian
Planning
Commission

BASIC RAW MATERIALS

Page 1

FACT SHEET

This fact sheet outlines a range of land use planning considerations relevant to the establishment, expansion or modification of basic raw material operations in Western Australia.

This fact sheet has been prepared to assist planners implement [State Planning Policy 2.5: Rural Planning](#).

What are basic raw materials?

Basic raw materials (BRM) include sand (including silica sand), clay, hard rock, limestone (including metallurgical limestone), gravel and other construction and road building materials. It also includes material such as limesand and gypsum, used to ameliorate agricultural land.

BRM proposals fall under the provisions of the [Planning and Development Act 2005](#) when extraction occurs on private (freehold) land.

The Western Australian Planning Commission (WAPC)'s [State Planning Policy 2.4: Basic Raw Materials](#) (SPP 2.4) and [BRM Applicants' Manual](#) are available to assist applicants and planning officers.

Design and operation

BRM operations include, but are not limited to:

- clearing and stockpiling vegetation, top soil and overburden;
- pit creation and dewatering;
- staged excavation of BRM;
- processing of BRM including crushing, screening, washing, blending or grading;
- wastewater treatment;
- an average of 2-6 truck movements per hour, depending on the scale of the operation;
- refuelling, cleaning and servicing of vehicles and machinery;
- warehousing and/or stockpiling of BRM; and
- rehabilitation of closed pits.

Lifespan of a project: All BRM operations have an estimated lifespan based on the amount of BRM available and the proposed rate of extraction. Decision-makers need to be aware of the life of the operation, and the proposed extraction rate per year.

Operating hours: Operating hours of a BRM site will vary, but operations generally occur between 5am and 5pm, 6 days a week. Major infrastructure projects may result in operations on Sunday and/or increased truck movements. Operating hours may be a condition of approval.

Pit design: BRM proposals may include plans for several pits staged over the lifespan of the operation. Smaller pits may achieve better environmental outcomes as the removed top soil is returned within a shorter time period. Pit rehabilitation generally follows excavation, however decision-makers need to be aware of the proposed arrangements.

The Department of Parks and Wildlife (DPAW) has produced [Guidelines for the Management and Rehabilitation of Basic Raw Material Pits 2008](#).

Planning context

In determining proposals for an extractive industry, consider:

- management of air, water, noise and visual impacts;
- location and stability of excavations, stock piles and overburden dumps;
- amenity of adjacent land uses in the local community; and
- rehabilitation of the land consistent with its long-term future use.

Conservation values: BRM operations have the potential to disturb native vegetation, including Declared Rare Flora (DRF) and priority flora, as well as threatened and priority fauna species. Clause 51C of the [Environmental Protection Act 1986](#) outlines circumstances when the clearing of native vegetation is permitted.

Water and availability: Water is needed for cleaning machinery and trucks, domestic uses and in processing. Access to scheme water is usually required. BRM operations may impact on nearby surface water and groundwater resources.

[Water Quality Protection Note 15](#), produced by the Department of Water (DoW), contains information on operations near sensitive water resources.

Dewatering may be included in the proposal. DoW's [Water Quality Protection Note 13](#) provides best management practices for the dewatering of soils. A licence to dewater or to gain access to water may be required under the [Rights in Water and Irrigation Act 1914](#).

Department of
Planning

BASIC RAW MATERIALS

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FACT SHEET

Buffers: Buffer distances are influenced by: site characteristics; the proposed location of infrastructure, access routes, pits and stockpiles; and the extraction method.

Guidance Statement: Separation Distances (2015), produced by the Department of Environmental Regulation (DER), and the Environmental Protection Authority's *Guidance for the Assessment of Environmental Factors: Separation Distances between Industrial and Sensitive Land Uses (2005)* include recommendations for separation distances from sensitive land uses.

Buffers are also required to protect water quality in nearby waterways and wetlands. The buffer will depend on the design and layout of the premises, the risk of water contamination, and the technology and management measures used to protect the waterway or wetland.

Further information on how to determine a buffer can be found in *State Planning Policy 2.5: Rural Planning*.

Transport management: Extractive industries have the potential to impact on the road network and its users. Consider the following:

- Is the road suitable to support the number of truck movements?
- Is the proposal's access located on a straight section of a road with sufficient sight distance either side?
- Will trucks be able to cross the road safely?
- Does the road require upgrading?

Visual impacts: Preserving existing vegetation can assist in minimising impacts on views from roads, adjoining properties and other key viewing locations. DPaW recommends a vegetative screen of at least 150m between adjoining roads and pits. The WAPC's

Visual Landscape Planning in WA (2007) contains detailed guidance on addressing visual impacts, including ways to minimise the visibility of operations.

Noise and vibration: Noise from BRM extraction is subject to the *Environmental Protection Act 1986* and the *Environmental Protection (Noise) Regulations 1997*. As excavation work may require blasting, the consideration of blasting areas will assist in defining appropriate buffers to reduce disturbance to any neighbouring sensitive land uses.

Dust: Dust can be generated in a number of ways including:

- blasting and extraction
- stockpiling of material
- transport movements
- soil erosion

Impacts to sensitive land uses can be reduced through vegetation screens, 'best practice' site management practices, and appropriate buffers.

Management plans: A management plan may accompany a BRM proposal and would typically address:

- site description and analysis;
- consideration of statutory and strategic planning;
- management and operations of the proposal;
- consideration and management of impacts on amenity;
- biosecurity measures to prevent the spread of weeds and diseases; and
- environmental impact assessment and management.

Critical elements of management plans may also be addressed as conditions of approval.

Environmental licensing and works approval: Under sections 52 and 53 of the *Environmental Protection Act 1986* a works approval is required for the construction of prescribed premises or to carry out certain work on existing prescribed premises.

BRM extraction is not listed in *Schedule 1* of the *Environmental Protection Regulations 1987*. However some associated operations (e.g. screening, washing, crushing grinding, sizing or separation of material) may be prescribed and require authorisation under Part 3 Division 2 of the *Environmental Protection Act 1986*.

In *Guidance Statement: Land Use Planning (2015)*, DER outlines its policy of assessing applications under Part V Division 3 of the *Environmental Protection Act 1986* concurrently with applications for planning approval and making a determination once relevant planning decisions have been made.



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

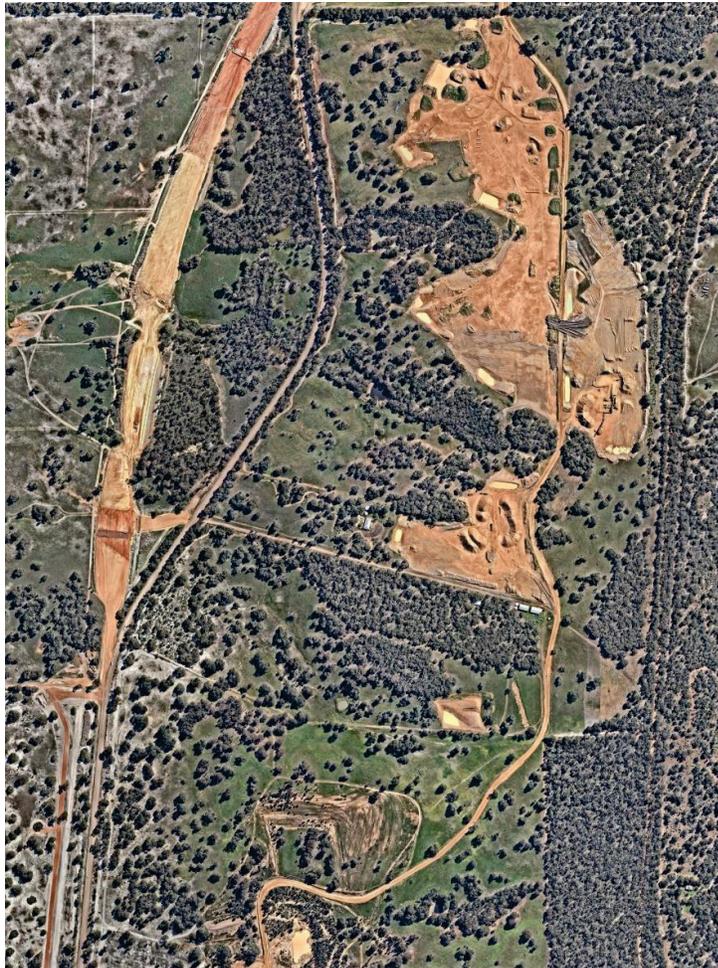
LOT 42 ON DEPOSITED PLAN 410794,
(4884 GREAT NORTHERN HIGHWAY), CHITTERING**

January 2020

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Extractive Industries Licence Application and Environmental Management Plan

LOT 42 ON DEPOSITED PLAN 410794,
(4884 GREAT NORTHERN HIGHWAY), CHITTERING



REPORT PREPARED BY
LUNDSTROM ENVIRONMENTAL CONSULTANTS PTY LTD

Location: Lot 42 on Deposited Plan 410794
(4884 Great Northern Highway)
Chittering

Report type: Extractive industries Licence Application and Environmental
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Front cover image: *Landgate Image of the extraction area, September 2019*

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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 an Extractive Industries Licence (EIL) application and a Development Approval (DA) application (Appendix 1) by the Proponent, B & J Catalano Pty Ltd for 4884 Great Northern Highway, Chittering, Shire of Chittering.

The report sets out the details for the extraction of laterite gravel within two stages in an area of approximately 18.2ha on the property. It also provides an environmental assessment of the proposal and a rehabilitation plan.

1.2 PROPERTY DESCRIPTION, OWNERSHIP AND LOCALITY

Land Description:	Lot 42 on Deposited Plan 410794
Volume:	2929
Folio:	44
Area:	304.67 ha
Ownership:	Austral Bricks (WA) Pty Ltd (formerly Bristile Operations Pty Ltd)

The property is located approximately 18km north of Bullsbrook town site and 4km south of the Chittering Roadhouse and is accessed directly from Great Northern Highway.

Figure 1 shows the regional location of the property.

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

2 PLANNING ISSUES

2.1 PRESENT LAND USE

Lot 42 on Great Northern Highway consists of cleared grazing land, areas of remnant native vegetation, remnant pine plantations, rehabilitated clay pits and associated detention ponds from previous clay extraction operations. The surrounding area comprises farming land, tree plantations, extractive industries and rural lots.

The property lies within an “Agricultural Resource” zone as defined by the Shire of Chittering’s Town Planning Scheme No. 6. It is anticipated that the extraction area will be returned to grazing on completion of extraction. There may be some requirements for revegetation associated with the clearing permit.

Extraction of clay was previously undertaken in the southern section of the property between 2003 and 2013. Extraction of gravel has been undertaken on this site between 2016 and 2019.

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 Chittering which experiences a mild, temperate climate with hot, dry summers and cool, wet winters.

3.2 TOPOGRAPHY AND DRAINAGE

The majority of the property comprises of very gentle to medium slopes of between 1% and 12% with the proposed extraction area (stage 9) having very gentle slopes averaging 6% and the proposed extraction area (stage 10) having very gentle slopes averaging 4%. The proposed extraction area (stage 9) has an elevation of between 185 and 215 m AHD and extraction area (stage 10) has an elevation of between 200 and 220 m AHD. The drainage is towards the west with a two of the gullies having soak dams.

The majority of the property lies within the Ellenbrook sub-catchment of the Swan Avon – Lower Swan hydrographic catchment, with a small section in the north east of the property (outside of the proposed extraction area) lying within the Brockman River sub-catchment. 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 (Landgate 2019).

3.3 GEOLOGY AND SOILS

The proposed extraction area is located within the southern section of the Dandaragan Plateau.

The Dandaragan Plateau to the west of the Darling Fault is a wedge-shaped erosion remnant of the Perth Basin with sediments covered by recent deposits of sand and laterite (Wilde and Low 1978).

The soils are predominantly light grey or pale brown deep sands of colluvial origin with outcropping laterite areas on higher ground.

On the western sector of the site, a thin veneer of topsoil overlies approximately 1 to 1.5 metres of laterite caprock and gravel. The gravels are underlain by sedimentary kaolin rich clays and siltstones of marine origin (Coolyena Group), which abut against a deeply weathered granite and gneiss bedrock (Yilgarn Group) in the middle of the site, which then in turn abuts into South West Terrane greenstones to the east of the site.

3.4 GROUNDWATER AND HYDROLOGY

Depth to groundwater information, beneath the proposed operations area, has been obtained from two monitoring bores located on the property. These two groundwater bores were installed in 2008 to monitor any possible changes in groundwater quality and depth associated with clay extraction operations being undertaken in the southern region of this property. Since the groundwater table

generally follows the elevation contours of the area, and utilising data from East Bore 2 (closest bore to the proposed EIL) it can be assumed the highest groundwater level within the extraction area occurred at approximately 12.4m below ground level.

No groundwater will be exposed by this development since mining will only lower the ground level by 1 to 1.5 metres and the depth to groundwater has been calculated as approximately 12.4m (from East Bore 2 data, see section 2.3 of the Water Management Plan). The proposed operations will be well above the highest seasonal water table.

3.5 WETLANDS

There is a sumpland resource enhancement wetland located approximately 1300m to the west of the proposed extraction area stage 10 and 1200m to the north west of stage 9. The wetland is located on the other side of Great Northern Highway. This wetland will not be impacted by the proposed extraction activities.

3.6 VEGETATION

The native vegetation on this property has been cleared extensively. The proposed extraction area has been mapped as the Murray 2 Vegetation Complex (Mattiske and Havel, 2000). The vegetation within 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*-*Melaleuca raphiophylla* on the valley floors in semiarid and arid zones. The understorey consists of pasture grasses. The condition of the vegetation in this area can be described as "parkland cleared" and hence classified as being 'completely degraded' (Keighery 1994).

A clearing permit has been applied for with the Department of Water and Environmental Regulation (DWER).

There are no threatened ecological communities, nor are there any threatened flora within the proposed extraction area.

- Few trees still retain some structure with native shrubs and herbs in the understorey. The remnants are combinations of either some or all of *Eucalyptus wandoo*/*Eucalyptus accedens*/*Eucalyptus marginata*/*Corymbia calophylla* woodlands (wandoo/ powderbark/ jarrah/ marri).
- The remnant vegetation within stage 9 is classified mainly as Degraded to Good condition (Keighery 1994), with one site in Excellent condition. The latter patch was a *Eucalyptus accedens* / *Corymbia calophylla* woodland over *Xanthorrhoea preissii*.
- Stage 10 remnants are mainly Completely Degraded, with only the tree layer remaining, with one site in a Very Good condition. This patch was dominated by *Eucalyptus marginata* (with the other 3 tree species sub-dominant).

3.7 FAUNA

A search of the EPBC Protected Matters Database identified the area as potential breeding habitat for *Calyptorhynchus latirostris* (Carnaby's Black-Cockatoo) (DoEE 2019). A fauna assessment is in the process of being completed for this project and will be sent to the Shire when completed.

3.8 DIEBACK DISEASE

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. Methods to manage dieback on this site are discussed in Section 5.8 of this report.

3.9 CURRENT ZONING

The area is zoned as "Agricultural Resource" in accordance with the Shire of Chittering Town Planning Scheme No.6.

3.10 EXISTING INFRASTRUCTURE ON THE SITE

Clay extraction was undertaken in the southern section of Lot 42 between 2003 and 2013, under previously approved EILs. There is no infrastructure located on site associated with this previous operation. Gravel extraction has been undertaken on this site between 2016 and 2019. There is currently a weighbridge, product stockpiles and stormwater detention ponds associated with this extraction operation.

4 THE DEVELOPMENT PROPOSAL

4.1 EXISTING DEVELOPMENT

Extraction of clay was previously undertaken in the southern section of the property between 2003 and 2013. Extraction of gravel has been undertaken on this site between 2016 and 2019. Gravel extraction operations are still being undertaken on site.

4.2 PROPOSED EXTRACTION ACTIVITIES

It is proposed to extract gravel from the 18.2ha site in two stages using a front-end loader and bulldozer. This will result in the extraction of approximately 330,000 tonnes of material in total.

The proposed new extraction licence is required for the purpose of commencing the following activities on the site:

- Extraction of gravel from an area of 18.2ha in two stages as shown in Figures 3a and 3b. Stage 9 and stage 10 will involve extraction of 330,000 tonnes of gravel in total but will be dependent on demand.
- 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.
- Within the current stage of extraction, a bulldozer will rip and blade material to a stockpile. A mobile crushing and screening plant will be used on site for approximately one to four weeks per year, dependent on the size of the campaign. Trucks will enter the pit via an unsealed, existing access road off Great Northern Highway and be loaded from the stockpile by a front-end loader.
- Crusher and stockpile positions have been identified by the proponent for each stage, and are illustrated in Figures 3a and 3b.
- Excavation will proceed until the laterite has been removed, resulting in a reduction in ground level of between 1 to 1.5 metres.
- Where possible, topsoil will be replaced and seeded with pastures on a progressive basis, in fully extracted areas, prior to the commencement of winter.

Table 1 summarises the stages of the extraction operation and an estimated timeframe for associated activities.

Table 1. Stages of the Extraction Operation and Estimated Timeframe

Stage	Action	2020	2021	2022	2023	2024	2025	2026
9	Strip, crush and stockpile 270,000 tonnes							
9	Load and truck out 270,000 tonnes							
9	Progressive rehabilitation of 14.8 ha							
10	Strip, crush and stockpile 60,000 tonnes							
10	Load and truck out 60,000 tonnes							
10	Progressive rehabilitation of 3.4ha							
Stages 9 and 10	Monitoring and Maintenance of 18.3							

4.3 SITE ACCESS AND EGRESS ROADS

It is proposed to access the site from Great Northern Highway. An existing formed, unsealed property road (which has been previously used for transport of clay from within the property) will provide access to the proposed extraction area.

4.4 PROPOSED INFRASTRUCTURE

A temporary site office, water closet facilities, weighbridge and staff/contractor's car park will be located in the Northern section of the property and has been current operation (Figure 2).

4.5 ESTIMATED TRAFFIC TO BE GENERATED

The following estimates are made for extraction areas stage 9 and stage 10:

Total annual gravel removal:	130,000 tonnes
Number of working days per month:	22 days
Vehicle payloads (GAVs ¹):	Truck and Dog (40 tonnes) Road Train (50 tonnes)
Proportional use:	40 tonners (50%) and 50 tonners (50%)
Number of trucks required:	12

The above factors suggest a maximum of 12 loaded truck movements per day, but this will be dependent on demand. Operating times will be Monday to Friday 0700 to 1800 and Saturdays 0700 to 1200.

¹ General Access Vehicle (in terms of *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 rehabilitation measures are implemented as proposed. 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 is already cleared, there will be no significant impact to indigenous flora and fauna. An investigation of FloraBase showed that there are no known records of flora species protected under the EPBC Act which were identified as having the potential to occur within the proposed extraction area.

Of the fauna species identified from the EPBC Protected Matters Search (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 has been undertaken for the proposed extraction area and results will be forwarded onto the Shire once the report is available.

The proposed extraction area has been planned to avoid the larger stands of trees and remnant forest on the property.

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 stopes 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

A portion of Stage 10 of the proposed extraction area will be visible for a short stretch along Great Northern Highway. However, this will be no more of a visual impact than the existing visual impact created by the alteration of the centreline to Great Northern Highway. The quarried materials are destined for use in the Great Northern Highway upgrade and also will not be unrehabilitated for an extended period due to the demand for gravel from this source.

It is thus concluded that whilst some visual impact will be occurred, this will be acceptable due to the nature of land use changes 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 productive 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 west towards Yal Brook, which drains into the Ellen Brook. There are drainage lines near the EIL area (Figure 3a and 3b) with one being immediately north of stage 9. A number of soak dams are located west of the EIL area, along drainage lines.

The proposed extraction site does not include 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 management at this site is not expected to be an issue. The pit will be 1 to 1.5 metres below ground level and combined with the gentle slopes of the EIL 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 EIL area will be diverted around the workings by means of stockpiles placed along the eastern boundaries of each stage acting as diversion banks.
- The runoff generated by direct rainfall onto the working stage will be managed through the use of a number of measures which include:
 - Stormwater detention ponds will be constructed in each stage whilst it is being worked, with all stormwater generated from the active cell being directed to them by the use of banks. These will serve as effective silt traps in times of high surface runoff.
 - Strategically placed stockpiles to reduce water flow within the extraction area.
 - Contour banks to direct any surface runoff to the detention basins.
- On completion of the extraction stage, contour banks will be constructed 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 1 to 1.5 metres and depth to groundwater has been calculated as approximately 12.4m (See Water Management Plan in Appendix 4).

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. 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.

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 one to four weeks per year. Mitigation measures will be implemented which will limit the impact of operational noise. A Noise Management Plan has been prepared and is included as Appendix 5 of this report. An assessment of noise emissions associated with the extraction, crushing, screening and loading of gravel for the currently operating extraction was undertaken by Lloyd George Acoustics (2015). Computer modelling was used to predict the noise levels, under worst case conditions, to each of the external sensitive receiver locations.

This proposed operation is being undertaken at distances greater than those modelled previously and hence noise should not impact the sensitive premises.

The site is surrounded by farming land, extractive industry operations, tree plantations and rural small holdings. The closest noise sensitive premise is a residential dwelling located approximately 500m north of stages 9 and just under 1000m south of stage 10 of the proposed extraction area. This property is currently occupied by a tenant of Austral Bricks (WA) Pty Ltd. Current extraction operations have been undertaken in close proximity to this residence with no impact to the resident. Operation are undertaken during the day when the resident is not located on the premises.

The nearest external noise sensitive premise is a residential dwelling located at 165 Blue Plains Road, Chittering, approximately 500m to the east of the closest point of the proposed operations. Several other dwellings are located within 1000 m of the proposed operations but the topography of the area which comprises a series of ridges will isolate the operations from residents in Maddern Road and from the rural small holdings further east along Blue Plains Road. Remnant vegetation in the south east corner of Lot 42 and adjacent lots will help to mitigate any potential noise from the operations.

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

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

- Hours of operation will be restricted to between 0700 and 1800 on weekdays and between 0700 to 1200 on Saturdays.
- Late model equipment will be utilised with reduced noise level outputs.
- The crushing and screening plant in each extraction stage will be positioned such that the topsoil and product stockpiles will provide noise attenuation.
- Only broad-band reversing warning devices (croakers) will be utilised on all heavy machinery and trucks.

Table 2. Structures within 1000m of Stage 9 Extraction Area.

Reference No on Figure 2	Structure Location	Type of Structure	Distance	Direction
A – Internal Residence	4884 Great Northern Highway, Chittering (Site Property)	House	480m	N
S1	165 Blue Plains Road, Chittering	House	504m	E
S2	470 Maddern Road, Chittering	House	615m	NE
S3	470 Maddern Road, Chittering	House	615m	NE
S4	370 Blue Plains Road	Houses	870m	SE

Table 3. Structures within 1000m of Stage 10 Extraction Area.

Reference No on Figure 2	Structure Location	Type of Structure	Distance	Direction
A – Internal Residence	4884 Great Northern Highway, Chittering (Site Property)	House	980m	S

5.7 DUST

There is potential for dust to be generated from active working areas, stockpiles and unsealed access 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 6.

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
Daily			
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. No dust leaving the property.
Product transport.	All loads covered before leaving the property.	Cover loads.	Reduced dust generation from product transport.
As Required			
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 using pasture species on completed areas.	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 dust complaints.	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 wet periods.

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 42. 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 (associated with previous wetland environments) 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 2019).

Acid sulphate seepage and drainage problems are known to occur in the north-west of the property and to the west of the proposed EIL, along the Great Northern Highway. These are related to geological formations at depths greater than those associated with the proposed extraction operations (GHD 2003).

No acid sulphate soils were encountered during the Bristle clay extraction operations in the south of the property in which depths of up to eight metres were reached. The proposed extraction operation will only disturb the top 1 to 1.5 metres of laterite caprock and gravel and therefore will not go below the water table nor involve dewatering. Therefore, the risk of exposing potentially ASS soils to the atmosphere is very unlikely. An ASS investigation undertaken in 2015 prior to the commencement of the current gravel extraction operation, confirmed that no ASS soils were present at the depth associated with extraction (LEC 2016).

6 FIRE MANAGEMENT

In accordance with the Shire of Chittering's Guidelines for an Excavation Management Plan, a Fire Management Plan has been developed for the proposed operations and included as Appendix 7.

7 REHABILITATION

7.1 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 will be between 1 and 1.5 meters below the original surface and blended into the surrounds.

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.

7.2 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.

7.3 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 42 on Deposited Plan 410794 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
6. Hydrology	<ul style="list-style-type: none"> Site hydrology does not prevent the establishment of desired vegetation. Site hydrology does not reduce the stability of the landform. Stormwater is contained within the site. 	<ul style="list-style-type: none"> Stormwater is contained within the site during operations. Identification and mitigation of any hydrology related issues during operations.
7. Soils and stability	<ul style="list-style-type: none"> Soil profiles and structures are sufficient to ensure vegetation establishment. The landform is stable. 	<ul style="list-style-type: none"> Topsoil is respread in all rehabilitation areas. Identification and mitigation of potential erosion scars and scours during operations.

Criteria	Objective	Interim Targets
8. Vegetation	<ul style="list-style-type: none"> • Pasture grasses cover the entire targeted area. • Pasture grass cover is sufficiently resilient to sustain grazing pressure. • Successful regeneration of native vegetation over the required area. • Native species survival rates to be 1 per 8m². • 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. • Maintenance will include the replacement of plants in all areas that do not meet the interim targets 	<ul style="list-style-type: none"> • After one-year pasture grasses cover 30% of target area increasing by 20% per annum thereafter. • After the first season at least 50% survival rate of native plants after the following dry season. • Successful establishment of 70% of plants after 1 year, 80% by year 3 and 100% by year 7. • The existence of at least 1 tree or shrub stem per 8m² (on average) after a period of 7 years
9. Weed	<ul style="list-style-type: none"> • Declared pest weeds are absent. • The level of weed species should not be detrimental to the pasture grasses. 	<ul style="list-style-type: none"> • Weed species removed systematically during operations.

8 REFERENCES

CSIRO (2019). Australian Soil Resource Information System (ASRIS). Website: <http://www.asris.csiro.au>. Accessed: December 2019.

Dieback Working Group (2010). Management of *Phytophthora* Dieback in Extractive Industries. Available on: www.dec.wa.gov.au/

Department of the Environment and Energy (DoEE) (2015). Protected Matters Search Tool. Website: <https://www.environment.gov.au/epbc/protected-matters-search-tool>. Accessed: December 2019.

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GHD (2003). Lot 83 Great Northern Highway Chittering. Acid Sulphate Soil and Drainage Management Plan.

Keighery, BJ (1994), Bushland plant survey: A Guide to Plant Community Survey for the Community, Wildflower Society of WA (inc), Nedlands, Western Australia.

Landgate (2019). Locate. Website: <https://maps.slip.wa.gov.au/landgate/locate/>. Accessed: December 2019.

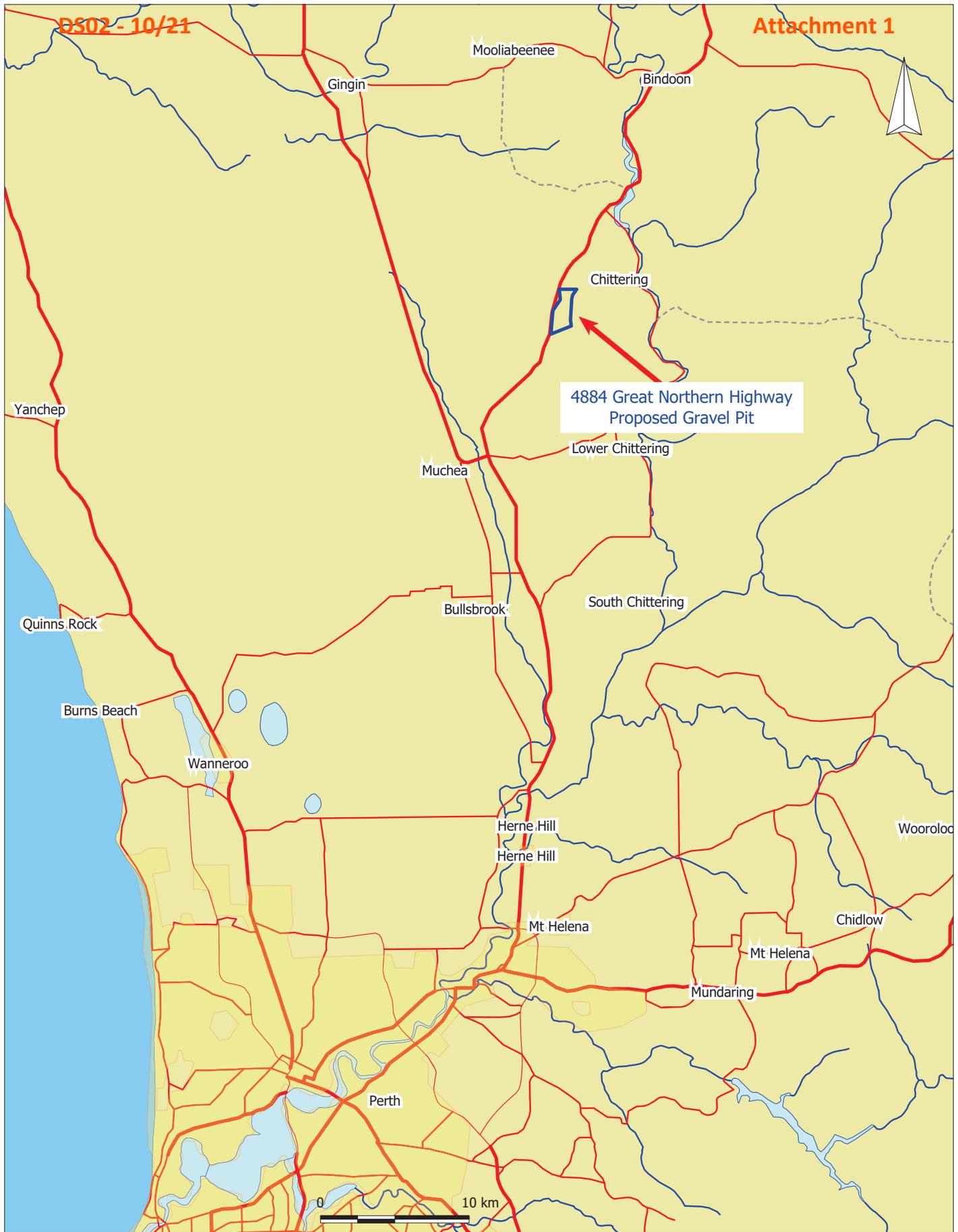
LEC (2016). Acid Sulphate Soil Assessment, prepared for B & J Catalano Pty Ltd for Lot 83 on Deposited Plan 28306 (4884 Great Northern Highway), Shire of Chittering.

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Mattiske and Havel (2000). Vegetation complex mapping for the South West Forest Region and for the Swan Coastal Plain in the Busselton area.

Wilde SA and Low GH (1978). Perth: Western Australia Sheet SH/50-14: Western Australia Geological Survey, 1:250,000 Geological Series Explanatory Notes

FIGURES



4884 Great Northern Highway
Proposed Gravel Pit

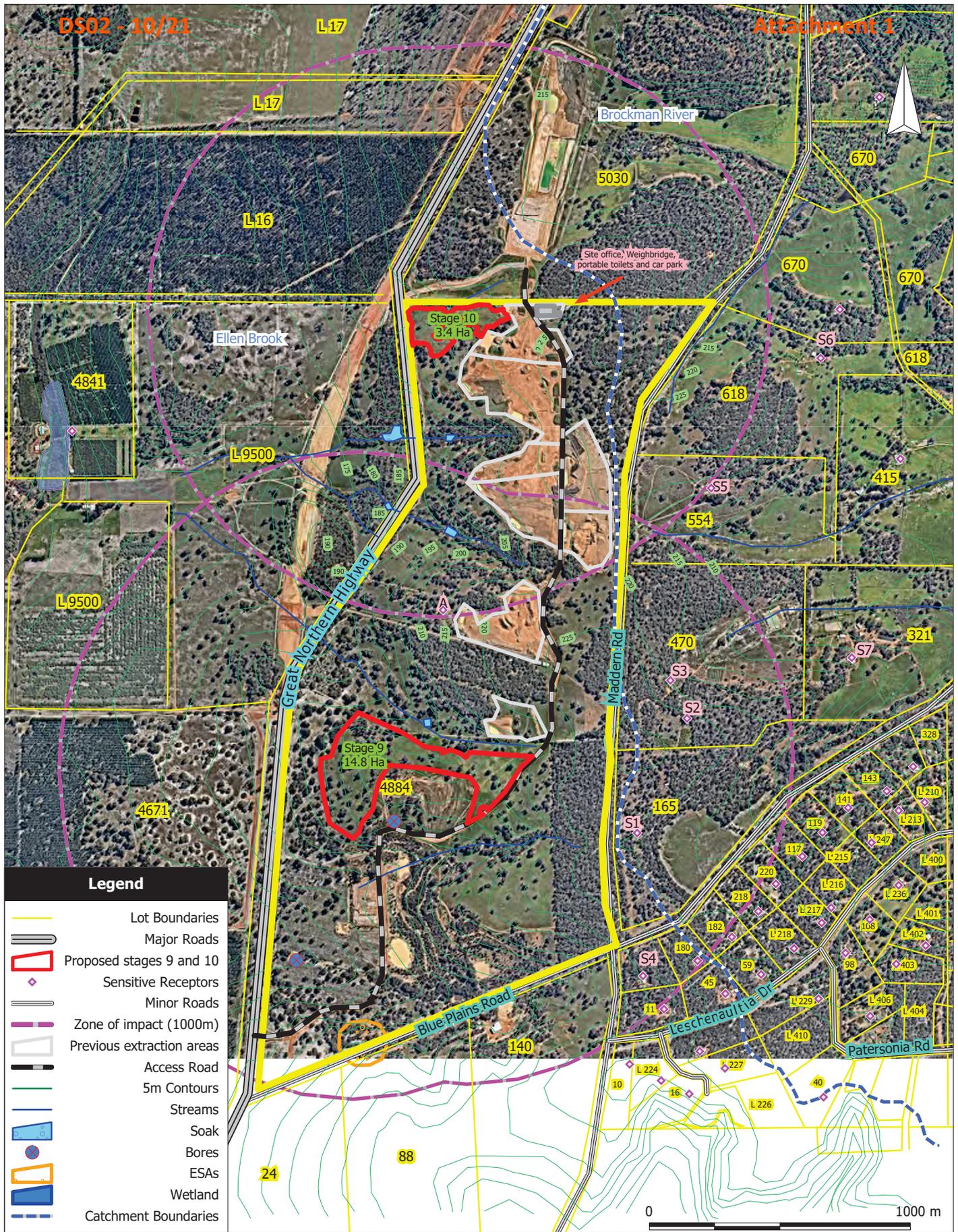


**Lundstrom Environmental
Consultants Pty Ltd**
 Leeming WA 6149
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 mikelund1@bigpond.com

Scale: 1:320000
 Original Size: A4
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: 4884 Great Northern H
 Chittering

Figure 1:
Locality Plan
 127



Lundstrom Environmental Consultants Pty Ltd

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Scale: 1:18000
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: 4884 Great Northern Hwy Chittering

Figure 2:
Site and Surrounds
 128



Figure 3a:
Proposed Extraction Area
Stage 9

Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Hwy, Chittering

Scale: 1:4200
Original Size: A4
Air Photo Source: Neamap Sep 2019
Datum: GDA94
Projection: Australia MGA94 (50)
 18/12/2019

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DS02 - 10/21

Attachment 1



Legend

- Proposed Extraction Area
- Previous Extraction Areas
- Access Road
- Topsoil Stockpile
- Product Stockpile
- Crusher Site
- Detention Ponds
- 5m Contours
- 1m Contours
- Streams

Figure 3b:
Proposed Extraction Area
Stage 10

Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Hwy, Chittering

Scale: 1:2400
Original Size: A4
Air Photo Source: Neamap Sep 2019
Datum: GDA94
Projection: Australia MGA94 (50)
 18/12/2019

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APPENDIX 1

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

EXTRACTIVE INDUSTRY LICENCE APPLICATION



6177 Great Northern Highway
PO Box 70
BINDOON WA 6502

(08) 9576 4600

chatter@chittering.wa.gov.au
www.chittering.wa.gov.au

Office Hours
8:30am – 4:30pm
Monday to Friday

OWNER(S) DETAILS			
Name of owner (1)	Austral Bricks (WA) Pty Ltd		
Name of owner (2)			
Residential Address	Locked Bag 100, Midland WA, 6936		
Postal Address	As above		
Email	Mattew.Gordon@Australbricks.com.au		
Telephone	Work: 92500544	Mobile	
APPLICANT DETAILS			
Name/Company	B & J Catalano Pty Ltd		
Residential Address	Lot 27 Bushmead Rd, Hazelmere		
Postal Address	As above		
Email	Peterbennett@catalano.com.au		
Telephone		Mobile	0407 857026
PROPOSED EXCAVATION SITE			
Lot	42	Location	Plan or Diagram No 410794
Certificate of Title Volume	2929	Folio 44	
Street and Locality	Great Northern Highway, Chittering		
Materials to be excavated	Gravel Extraction		
If the application covers land that is the subject of an existing licence:			
Date of issue of that licence	13 July 2016	Date of expiration of that licence	13 July 2021
Term of licence sought	5 Years		
<p>The applicant applies for a licence in respect of the proposed excavation site in accordance with and subject to the Shire of Chittering Extractive Industries Local Law 2014.</p> <p>The applicant has provided a form of payment to pay the prescribed fee, submitted all documentation in accordance with Part 2.2 of the Shire of Chittering Extractive Industries Local Law 2014 (outlined on page 2 and 3) and will meet all relevant conditions of any Development Approval issued.</p>			
Signature of owner (1)		Date	6-11-19
Signature of owner (2)		Date	
Signature of applicant		Date	25/11/19
Signature of existing licensee (if applicable)		Date	
CREDIT CARD DETAILS			
Cardholder Name		Visa <input type="checkbox"/>	Mastercard <input type="checkbox"/>
Credit Card Number		Expiry	
Signature		CCV	
Extractive Industry Licence Fee	\$2,200.00		

APPLICATION FOR DEVELOPMENT APPROVAL

6177 Great Northern Highway
PO Box 70
BINDOON WA 6502

(08) 9576 4600

chatter@chittering.wa.gov.au
www.chittering.wa.gov.au



Office Hours
8:30am – 4:30pm
Monday to Friday

This application is to be submitted with at least **two copies of all plans which are no larger than A3 in size.**
A separate application is required for a Building Permit.

Owner/s Details					
Name	Austral Bricks (WA) Pty Ltd				
Address	Locked Bag 100, Midland WA, 6936				
ABN (if applicable)					
Contact Numbers	Home		Work	92500544	
	Mobile		Fax	92500541	
	Email	Matthew.Gordon@Australbricks.com.au			
Contact Person	Matthew Gordon				
Owners Signature	<i>x [Signature]</i>			Date	<i>x 6-10-19</i>
Owners Signature				Date	
<i>The signature of the owner(s) is required on all applications. This application will not proceed without that signature. For the purposes of signing this application an owner includes the persons referred to in the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 clause 62(2).</i>					
Applicant Details					
Name	B & J Catalano Pty Ltd				
Address	Lot 27 Bushmead Rd, Hazelmere				
Contact Numbers	Home		Work		
	Mobile	0407 857026	Fax		
	Email	Peterbennett@catalano.com.au			
Contact Person	Peter Bennett				
<i>The information and plans provided with this application may be made available by the local government for public viewing in connection with the application. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</i>					
Applicants Signature	<i>[Signature]</i>			Date	<i>25/11/2019</i>
Property Details					
Lot No	42	House/Street No	4884	Location No	
Diagram/Plan No	410794	Cert. of Title Vol. No	2929	Folio	44
Title encumbrances (easements, restrictive covenants etc)					
Street name	Great Northern Highway		Suburb	Chittering	
Nearest Street Intersection	Blue Plains Rd				
Proposed Development					
Nature of development	<input type="checkbox"/> Works		<input checked="" type="checkbox"/> Use		<input type="checkbox"/> Works & Use
Is an exemption from development claimed for part of the development?	<input checked="" type="checkbox"/> No			<input type="checkbox"/> Yes – Please specify: <input type="checkbox"/> Works <input type="checkbox"/> Use	
Description of proposed development works and/or land use	Extraction of gravel for use in development within the metropolitan region				
Description of exemption claimed (if relevant)					
Nature of any existing buildings and/or use	N/A				
Approximate cost of proposed development (ex GST)	\$ 5000		Estimated date of completion	2026	
OFFICE USE ONLY					
Officer Initials		Date Received		LGA Reference #	

WESTERN



AUSTRALIA

REGISTER NUMBER	
42/DP410794	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	N/A

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME 2929 FOLIO 44

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.



REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 42 ON DEPOSITED PLAN 410794

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

BRISTILE OPERATIONS PTY LTD OF HARPER STREET, CAVERSHAM

(AF N651310) REGISTERED 20/6/2017

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *EXCEPT AND RESERVING METALS, MINERALS, GEMS AND MINERAL OIL SPECIFIED IN TRANSFER 9347/1956.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP410794
PREVIOUS TITLE: 1540-958
PROPERTY STREET ADDRESS: 4884 GREAT NORTHERN HWY, CHITTERING.
LOCAL GOVERNMENT AUTHORITY: SHIRE OF CHITTERING

NOTE 1: N651310 THIS LOT/TITLE CREATED AFTER PORTION OF THE LAND TAKEN FROM THE FORMER LOT WITHOUT PRODUCTION OF THE DUPLICATE TITLE BY TAKING ORDER N651310. CURRENT DUPLICATE FOR THE WITHIN LAND IS STILL VOL1540 FOL958 EDITION 1.

APPENDIX 2
LANDOWNER LETTER OF AUTHORISATION



26 November 2019

To whom it may concern,

Bristle Operations Pty Ltd of Harper Street, Caversham WA 6055, the registered owner of Lot 42 on Deposited Plan 410794 and H 4884, Great Northern Highway, Chittering WA 6084, hereby grant permission for B & J Catalano Pty Ltd and their consultant, Lundstrom Environmental Consultants Pty Ltd to make applications for all the necessary licences and permits and authorise them to access and clear native vegetation and extract gravel and sand on this property.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "M. Gordon", is written over a faint, larger version of the signature.

Matthew Gordon
Resources and Transport Manager

APPENDIX 3
WEED MANAGEMENT PLAN



LUNDSTROM ENVIRONMENTAL CONSULTANTS
Pty Ltd
ACN 600 398 945

21 Sellen Court
LEEMING WA 6149

MOB:0417934863
email: mikelund1@bigpond.com
www.Lundstrom-Environmental.com.au

WEED MANAGEMENT PLAN

Prepared for B&J Catalano Pty Ltd
For Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway)
Shire of Chittering

1. INTRODUCTION

This Weed Management Plan (Weed MP) has been prepared in accordance with guidelines published by the Department of Agriculture and Food (DAF) (DAF, 2014). This Weed MP should be read in conjunction with the report entitled "Extractive Industries Licence Application and Environmental Management Plan (EMP), Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway), Shire of Chittering", prepared for B & J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

2. LOCALITY AND OWNERSHIP

Locality: Lot 42 (4884) Great Northern Highway, Shire of Chittering
Ownership: Austral Bricks (WA) Pty Ltd

The property is located approximately 18km north of the Bullsbrook town site and 4km south of the Chittering Roadhouse and is accessed directly from Great Northern Highway.

Figure 1 shows the site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

3. THE DEVELOPMENT PROPOSAL

Under the proposed EIL, B&J Catalano Pty Ltd intend to extract 330,000 tonnes of gravel from a 18.2ha site (Figure 1) over a period of two and a half years from 2020 to mid-2022, with the areas being progressively rehabilitated back to pastures until mid-2024. Monitoring of the rehabilitation will occur until 2026.

4. RESPONSIBILITIES

B & J Catalano Pty Ltd accepts responsibility for weed management within the present extraction areas and any areas identified within the conditions of approval set by the Shire of Chittering. All other areas on the property will remain the responsibility of the landowner.

5. CURRENT WEED STATUS OF THE PROPERTY

Based on a field visit conducted in June 2015, no declared weeds were identified within the proposed extraction area.

6. 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:

6.1 Weed Management Zones on the Subject Land

For the purpose of this Weed MP, 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 metres beyond the perimeter of the quarry and includes any stockpiles of soil or overburden created by the excavation.

6.2 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 6 monthly basis i.e. after the first seasonal rains and at the end of Spring. In addition, B & J Catalano personnel on site will be instructed to report any weed 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.

6.3 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 or exported from the site will be free of weeds.

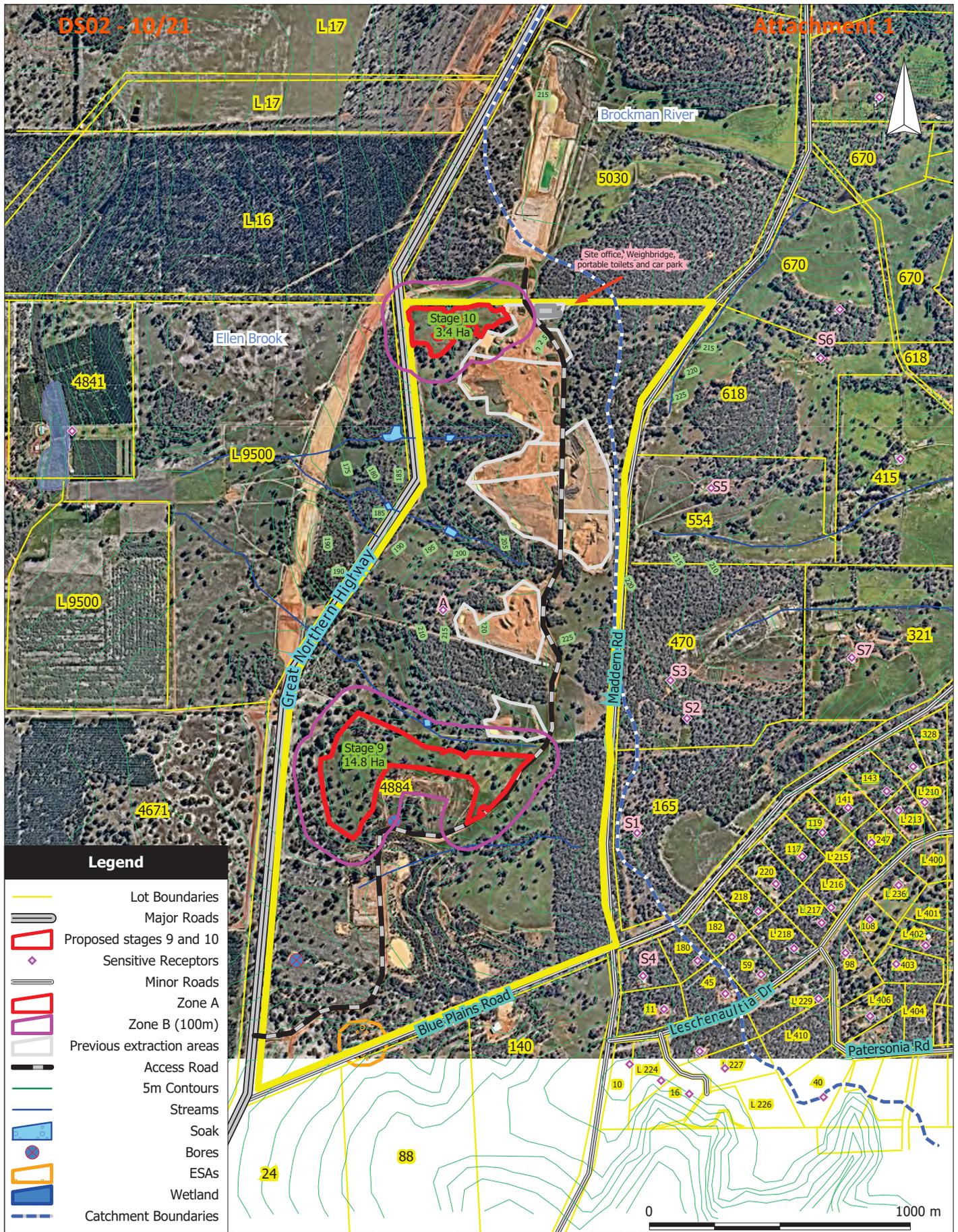
6.4 Weed Control Program

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.

7. REFERENCES

DAF (2014). Department of Agriculture and Food Guidelines for weed control procedures for extractive industries licences.

FIGURES



Lundstrom Environmental Consultants Pty Ltd

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 mikelund1@bigpond.com

Scale: 1:18000
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: 4884 Great Northern Hwy Chittering

Figure 1:
Site and Surrounds
 142

APPENDIX 4
WATER MANAGEMENT PLAN



LUNDSTROM ENVIRONMENTAL CONSULTANTS Pty Ltd

ACN 600 398 945

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LEEMING
WA 6149

Tel 08 9310 3297 MOB:0417934863
email: mikelund1@bigpond.com
www.Lundstrom-Environmental.com.au

WATER MANAGEMENT PLAN

Prepared for B&J Catalano Pty Ltd

For Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway)
Shire of Chittering

1. INTRODUCTION

This Water Management Plan (WMP) has been prepared to describe the measures that will be undertaken to achieve compliance with surface water and groundwater management requirements across the proposed Extractive Industries Licence (EIL) operations on Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway). This WMP should be read in conjunction with the report entitled “Extractive Industries Licence Application and Environmental Management Plan (EMP); Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway),”, prepared for B&J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

1.1 Property Locality, Area and Ownership

Locality: Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway)
Area: 304.67 ha
Ownership: Austral Bricks (WA) Pty Ltd

Figure 1 shows the property site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

1.2 Historic and Present Land Use

Lot 42 consists of cleared grazing land, areas of remnant native vegetation, remnant pine plantations, rehabilitated clay pits and associated detention ponds from previous clay operations. The surrounding area comprises farming land, tree plantations, extractive industries and rural lots.

The property lies within an “Agricultural Resource” zone as defined by the Shire of Chittering’s Town Planning Scheme No. 6. It is anticipated that the extraction area will be returned to grazing on completion of extraction.

Clay extraction was undertaken in the southern section of Lot 42 between 2003 and 2013, under previously approved EILs. There is no infrastructure located on site associated with this previous operation.

1.3 Proposed Extraction Activities

It is proposed to extract gravel from a total area of 18.2ha site in two stages using a front-end loader and bulldozer. Annual extraction of gravel is estimated to be approximately 130,000 tonnes/year, dependent on demand.

A summary of the actions that are to take place on the property the licence period is given below:

- Topsoil and overburden 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 and over-burden will be stockpiled separately along the edges of the extraction area, with stockpiles being no higher than two metres.
- Within the current stage of extraction, a bulldozer will rip and blade material to a stockpile. A mobile crushing and screening plant will be used on site for approximately one to four weeks per year, dependent on the size of the campaign. Trucks will enter the pit via an unsealed, existing access road off Great Northern Highway and be loaded from the stockpile by a front-end loader.
- Crusher and stockpile positions have been identified by the proponent for each stage and are illustrated in Figures 2a and 2b.
- Excavation will proceed until the laterite has been removed, resulting in a reduction in ground level of between 1 and 1.5 metres.
- Where possible, topsoil will be replaced and seeded with pastures on a progressive basis, in fully extracted areas, prior to the commencement of winter.

2. EXISTING ENVIRONMENT

2.1 Topography, Drainage and Wetlands

The majority of the property lies in the Ellen Brook sub-catchment of the Swan Avon – Lower Swan hydrographic catchment, within the Swan Coastal basin. A small section in the north east of the property (outside of the proposed extraction area) lies within the Brockman River sub-catchment.

The property falls within Surface Water (Swan River System) and Groundwater (Gingin) Proclamation Areas under the *Rights in Water and Irrigation Act 1914* (RIWI). The property does not fall within a Public Drinking Water Source Area (Landgate 2019).

The majority of the property comprises gentle to medium slopes of between 1% and 12% with the proposed extraction area having very gentle slopes averaging 6%. The proposed extraction area (stage 9) has an elevation of between 185 and 215 m AHD and the extraction area (stage 10) has an elevation of between 200 and 220 m AHD. Surface drainage within the proposed EIL area is to the west towards Yal Yal Brook, which drains into the Ellen Brook. There are drainage lines near the EIL area (Figures 2a and 2b) with one being 90m south of Stage 10 and one being immediately north of stage 9. A number of soak dams are located west of the EIL area, along drainage lines.

There is a Sumpland Resource Enhancement wetland (part of the Swan Coastal Plain wetlands) located approximately 1380m to the west of the proposed extraction area stage 10 and approximately 1,300m north west of stage 9. The wetland is located on the other side of Great Northern Highway. This wetland will not be impacted by the proposed extraction activities. There are no Conservation or RAMSAR wetlands or Environment Protection Policy (EPP) lakes or wetlands within the site or within 1,500 m of the proposed extractive operations (Landgate 2019).

2.2 Geology and Soils

The proposed extraction area is located within the southern section of the Dandaragan Plateau, next to the Darling Scarp.

The Dandaragan Plateau to the west of the Darling Fault is a wedge-shaped erosion remnant of the Perth Basin with sediments covered by recent deposits of sand and laterite (Wilde and Low 1978).

The soils are predominantly light grey or pale brown deep sands of colluvial origin with outcropping laterite areas on higher ground.

A thin veneer of topsoil overlies approximately 1 to 1.5 metres of laterite caprock and gravel. The gravels are underlain by sedimentary kaolin rich clays and siltstones of marine origin, which abut against a deeply weathered granite and gneiss bedrock to the east of the site along the western edge of the Darling Plateau.

2.3 Groundwater Hydrology

Two monitor bores, East Bore 2 and West Bore 1, are located within the property, 90m and 380m south of the proposed EIL area stage 9, respectively (Figure 1). Their elevations are approximately 200m and 165m AHD for East Bore 2 and West Bore 1, respectively. Groundwater physico-chemical testing and groundwater level data has been collected at regular intervals by the environmental consultancy RPS at Austral Bricks (WA)'s request. The parameters recorded were appearance, colour, temperature, pH, EC (electrical conductivity), REDOX and D.O. (dissolved oxygen) (Annexure 1).

Table 1 shows the groundwater level data collected for both bores. The highest groundwater levels recorded for West Bore 1 and East Bore 2 were 14.459 and 12.432m (depth to groundwater) on 21 June 2010 and 11 December 2008, respectively. Groundwater levels at East Bore 2 are on average 2.3 metres higher than West Bore 1.

Table 1: Depth to groundwater (m) for Bores West 1 and East 2

Date	West Bore 1	East Bore 2
11/12/2008	11.127*	12.432
21/06/2010	14.459	12.505
22/12/2010	14.775	12.512
23/06/2011	15.168	12.782
8/12/2011	8.215*	12.847
11/06/2012	15.253	12.950
27/06/2013	16.027	13.383
8/10/2013	6.689*	13.370
5/06/2014	16.185	13.592
11/12/2014	15.522	13.546

* These measurements are anomalies (outliers) and likely to be erroneous, hence they have not been included in calculating highest groundwater level.

Since the groundwater table generally follows the elevation contours of the area, and utilising data from East Bore 2 (closest bore to the proposed EIL) it can be assumed the highest groundwater level within the extraction area occurred at approximately 12.4m depth.

Furthermore, an Acid Sulfate Soil and Drainage Management Plan compiled by GHD for Bristle Pty Ltd (2003) included a hydrogeological survey of the property and concluded that the regional groundwater table is likely to be encountered at depths of 15m. This finding correlates with the groundwater level calculated at the extraction area (GHD 2003).

There is minimal variation between high and low water tables over the period of records for East Bore 2. However, it should be noted that most groundwater level records were taken in June or December while maximum and minimum levels are generally expected in September/October and April/May respectively.

2.4 Climate and Rainfall

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

One of the closest rainfall recording station is Marbling (Station 9024) and it has a mean annual rainfall of 758.9 mm. The wettest months are June, July and August and the driest months are December, January and February. The highest recorded annual rainfall was 1185.7mm in 1955 and the lowest was 408.8mm in 2010.

Table 2 shows the average monthly and annual rainfall for Marbling.

Table 2: Mean Rainfall Data (mm) for Marbling (Station 9024) for Period 1943 to 2019 (BOM, 2019a)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
13.6	16.0	17.6	38.8	92.5	144.5	150.5	119.6	75.0	45.8	24.9	12.7	758.9

Rainfall intensity has been calculated using the Bureau of Meteorology (BoM) Rainfall Intensity-Frequency-Duration (IFD) data system (BoM 2019b), which yields the 2hr 10% Annual Exceedance Probability (AEP) (33.7mm). 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 3.2 of this document.

3. WATER MANAGEMENT

While Land Monitor salinity mapping (Land Monitor Project Map Service 2015) shows no recorded salinity issue on the property, East Bore 2 salinity data has indicated brackish water quality from this bore (Annexure 1). However, West Bore 1 data shows this bore to be of freshwater quality. The cause of the variation in water quality between the bores is unknown, with numerous factors such as current or former landuse, soil type and hydraulic conductivity able to contribute to the variations. However, the salinity data shows there has been no significant increase in salinity levels in either bore during the six years of records. The potential for salinity issues from the proposed operations are discussed in the Groundwater Management Section (Section 3.3).

The property is also located in an area identified as prone to erosion by Water and Rivers Commission (2002). Areas prone to water erosion are the scarp face, steep slopes of the plateau and the banks of waterways, but firebreaks, roads and tracks are also of concern (Water and Rivers Commission 2002). Lack of vegetation is the primary cause of erosion.

Erosion issues will be mitigated by the proposed stormwater management (see Section 3.2) and proposed rehabilitation plan as outlined in the EIL Application and Environmental Management Plan for this project.

3.1 Surface Water Management

Five surface water management areas (sub-catchments 9a, 9b, 9c, 9d and 10) have been defined within the two extraction areas (Figures 3a and 3b). Runoff generated within each sub-catchment for the 2hr 10% Annual Exceedance Probability (AEP) rainfall event has been calculated using the Rational Method as detailed in Table 3. Storm-water management infrastructure (detention ponds and contour banks) will be designed to manage at minimum this runoff. Runoff from areas outside the defined sub-catchments will be diverted away using diversion banks.

Table 3: Surface Water Management Areas (Sub-catchments) and Runoff Volumes

EIL Stages incorporated	Sub-catchment	Total Area (ha)	Extraction Area (ha)	Design Storm Runoff* (m ³ x 10 ³)
9	9a	4.06	6.03	1.095
9	9b	4.08	9.54	1.099
9	9c	3.16	9.62	0.853
9	9d	3.44	5.18	0.928
10	10b	3.38	4.55	0.911
TOTAL		18.12	34.9	4.886

Based on the calculated storm design runoff shown in Table 3, the following measures will be used to achieve comprehensive onsite management of surface water runoff from the proposed EIL workings:

- Stormwater detention ponds with the capacity to hold at least a 2hr 10% AEP storm event as detailed in Section 3.2.
- As each extraction area is completed, narrow-based contour banks will be constructed to a grade of between 0.1 and 0.4%. Contour bund design methodology is discussed further in Section 3.2.2.
- Cut-off banks will be formed along the southern edge of stage 9 and the eastern and northern edge of stage 10 to prevent runoff entering and leaving mined areas (Figures 3a and 3b).
- As part of the rehabilitation process, the ground will be ripped along the contour at six metre intervals prior to fertilisation and seeding. This leaves a depression and low bund which will attenuate surface water flows and prevent rill erosion during the period that pasture grasses are becoming established. Surface water detention ponds and cut-off banks will be retained until vegetation ground cover is sufficient to stabilise the ground surface and prevent erosion.
- Regular monitoring of the erosion control measures will be undertaken, and repairs implemented where necessary throughout the licence period or longer if necessary.

3.2 Stormwater Management

3.2.1 Detention Ponds

As each extraction stage is opened, a stormwater detention pond will be excavated below the workings (but within the extraction area) with the capacity to hold at least the a 2hr 10% AEP storm event. The positions of these detention ponds are shown on Figures 3a and 3b and the storage capacities listed in Table 4.

Table 4: Stormwater Detention Pond Capacity

Subcatchment	Detention Pond No.	Detention Pond Storage (m ³ x 10 ³)
9a	9a1	1.096
9b	9b-1	0.636
9b	9b-2	0.464
9c	9c1	0.853
9d	9d	0.928
10	10	0.912
TOTAL		4.889

3.2.2 Contour Bank Design

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

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 no further cultivation will take place after the final rehabilitation of the land and planting of trees and pastures. The most suitable contour bank type in this situation is "narrow-based" i.e. approximately 4m across.

Slopes are approximately 6% and it is recommended that contour banks are spaced approximately 30m apart in this situation, and with an average fall of 0.2% and within a range of 0.1 and 0.4%.

3.3 Groundwater Management

No dewatering activities will be undertaken. The project does not involve abstracting groundwater for operational purposes, thereby minimising potential impacts on groundwater levels in the areas. No groundwater will be exposed by this development since mining will only lower the ground level by 1 to 1.5 metres and the depth to groundwater has been calculated as approximately 12.4m (from East Bore 2 data, see Section 2.3). The proposed operations will hence result in a depth to groundwater of approximately 9.4

to 10.4m, which is well within the DWER recommended minimum 0.3m depth to the maximum winter groundwater level from the pit floor (Brendan Kelly, pers. comm. September, 2019).

Furthermore, Bristile's clay extraction operations within the property (south of the proposed EIL area), which have lowered the ground level by approximately eight metres, have not encountered any groundwater in their excavations (Land Insights 2008).

Potential salinity issues, primarily caused by clearing of native vegetation, which can result in rising groundwater levels, are not expected from the proposed operations. Groundwater level data (Table 1) shows a decrease in groundwater level from 2008 until present for both bores, suggesting that the vegetation clearing and extractive industry occurring on the property has not resulted in raising the groundwater table. Furthermore, the salinity data shows there has been no increase in salinity levels during the six years of records (Annexure 1). This suggests the proposed extractive operations are unlikely to have an impact on salinity levels.

Predicted water supply requirements are minor and restricted to localised dust suppression. Any water required will be sourced from water captured in the pits.

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 always be available on site.

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. Such servicing will be undertaken at the Proponent's workshop in Hazelmere. B & J Catalano have 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 as required and 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 low potential to leach into groundwater.

3.4 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 and native trees.
- The emergence of weeds.
- 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.

4. ACID SULFATE SOILS

A search of the CSIRO's Australian Soil Resource Information System (ASRIS) database determined there were no acid sulfate soil (ASS) sites (associated with previous wetland environments) identified in the proposed EIL area with the area being classified as having an 'Extremely Low Probability of Occurrence' of ASS (CSIRO 2015).

Acid sulfate seepage and drainage problems are known to occur in the north-west of the property and to the west of the proposed EIL, along the Great Northern Highway. These are related to geological formations at depths greater than those associated with the proposed extraction operations. Due to this occurrence several Acid Sulfate Soil investigations have been undertaken as described below:

Bristile Pty Ltd contracted GHD in 2003 to develop an Acid Sulfate Soil and Drainage Management Plan (ASSMP) for their clay extraction operations within the property (GHD 2003). The ASSMP did not conclusively determine the cause of the acid-sulfate problems, but suggested:

"The cause of the acidic drainage has to-date not been fully investigated or proven. Landform Research (2003a, 2003b) provide a conceptual hydrogeologic model for the area, which indicates that near-horizontal layers containing pyrite could have become exposed to the surface by stream erosion immediately upslope of the Great Northern Highway. The pyrite in these layers is now oxidising causing sulphidic discharges. The 'flocs' along the creekline and in the dam and the dark red staining of creek water also indicates the release of mainly iron (Fe) and aluminium (Al) into the surface water environment."

The ASSMP also suggested:

"The reason for the acid-sulphate problems occurring along the border between the Northern Section and the Great Northern Highway cannot conclusively be determined from the water quality information alone. The presence of artesian bores in the area could also point to a more complex model than simple exposure of pyrite-bearing formations from drainage erosion and scouring to expose pyrite-bearing formations."

The review of the geological data for the site indicates that a major fault zone, the 'Clay-Zone' transects the investigation sites from North to South, 'joining' the Great Northern Highway where the acid sulphate problems occur. Interpretations of possible faults in the area by GHD also identified that the acid sulphate problems appear where two faults cross the Clay Zone. As these are the only known occurrences of acid sulphate problems in the area it may be that these faults are boundary faults for a small 'Horst' block. Consequently, pyrite-bearing formations within the block may be shallower than the surrounding areas and this is why they have become exposed by drainage erosion and scouring. This model could potentially also explain the artesian groundwater conditions within the 'block' as the Clay Zone may form a regional barrier to groundwater flow forcing groundwater to daylight in the area."

From the ASSMP it can be concluded that the cause of the acid sulfate seepage is natural and has not been caused by any of the operations on the property.

The ASSMP found no evidence of acid-sulfate problems occurring on the southern part of the property where Bristile's clay extraction operations were eventually located. However, ASS is a pertinent issue for

Bristle's clay extraction operations because of the material excavated and depth of the excavations but is not expected to be an issue for the proposed gravel extraction.

Lundstrom Environmental Consultants were contracted by B&J Catalano in 2016 to assess the occurrence of acid sulfate soils within the gravel extraction areas previously quarried on this site (LEC 2016). This assessment involved the drilling of 24 holes across the property to depths of between 2.4 and 6 metres, with field testing done at 1 metre intervals. Follow-up laboratory testing was undertaken on selected samples. The conclusions of this report are as follows:

"The laboratory analyses undertaken found the net acidity of the five samples tested to be less than the Action Criteria for ASS (DER 2015) suggesting that there is no potential for acid mine drainage at depths at which the gravel will be extracted.

This result has thus proven the original conclusion made in regard to this site, that the lateritic material (Gravel) exists in an oxidized state and hence there is no threat of the occurrence of Acid Sulfate or potentially Acid Sulfate Soils. Furthermore, this result shows that it will be unnecessary to undertake the monitoring of stockpiles for the risk of acidity. "

The proposed extraction operation will only disturb the 1 to 1.5m of laterite caprock and gravel and therefore will not go below the water table nor involve dewatering. Therefore, the risk of exposing potentially ASS soils to the atmosphere is very unlikely.

Furthermore, good stormwater management (see Section 3.2) will ensure there is no unmanaged surface water runoff from the proposed operations. It is therefore unlikely that the proposed operations will affect the existing acid-sulfate problems present to the west of the proposed EIL area.

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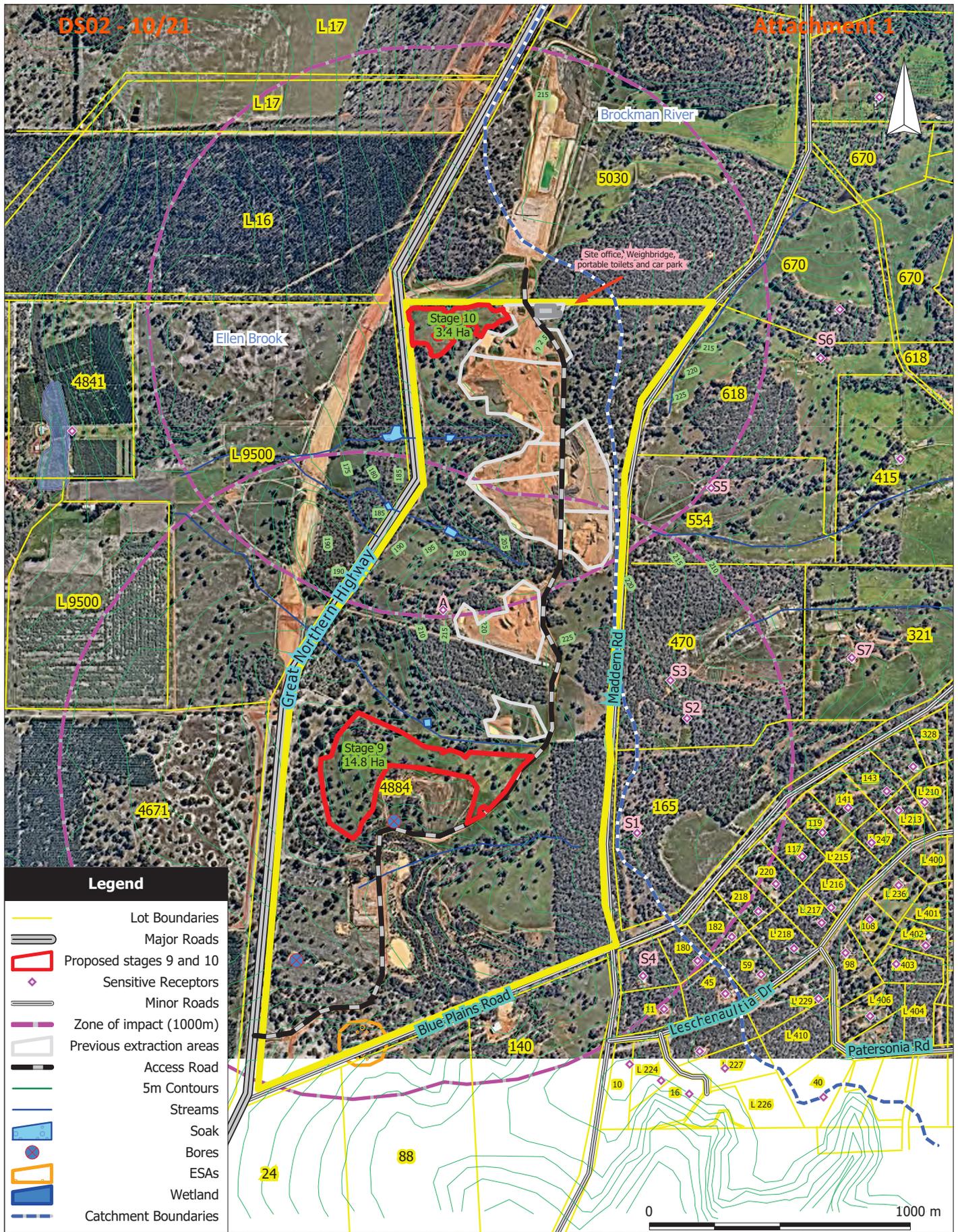
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FIGURES



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Scale: 1:18000
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: 4884 Great Northern Hwy Chittering

Figure 1:
Site and Surrounds
 155



Figure 2a:
Proposed Extraction Area
Stage 9

Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Hwy, Chittering

Scale: 1:4200
Original Size: A4
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Legend

- Proposed Extraction Area
- Previous Extraction Areas
- Access Road
- Topsoil Stockpile
- Product Stockpile
- Crusher Site
- Detention Ponds
- 5m Contours
- 1m Contours
- Streams

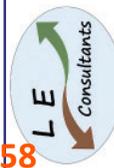
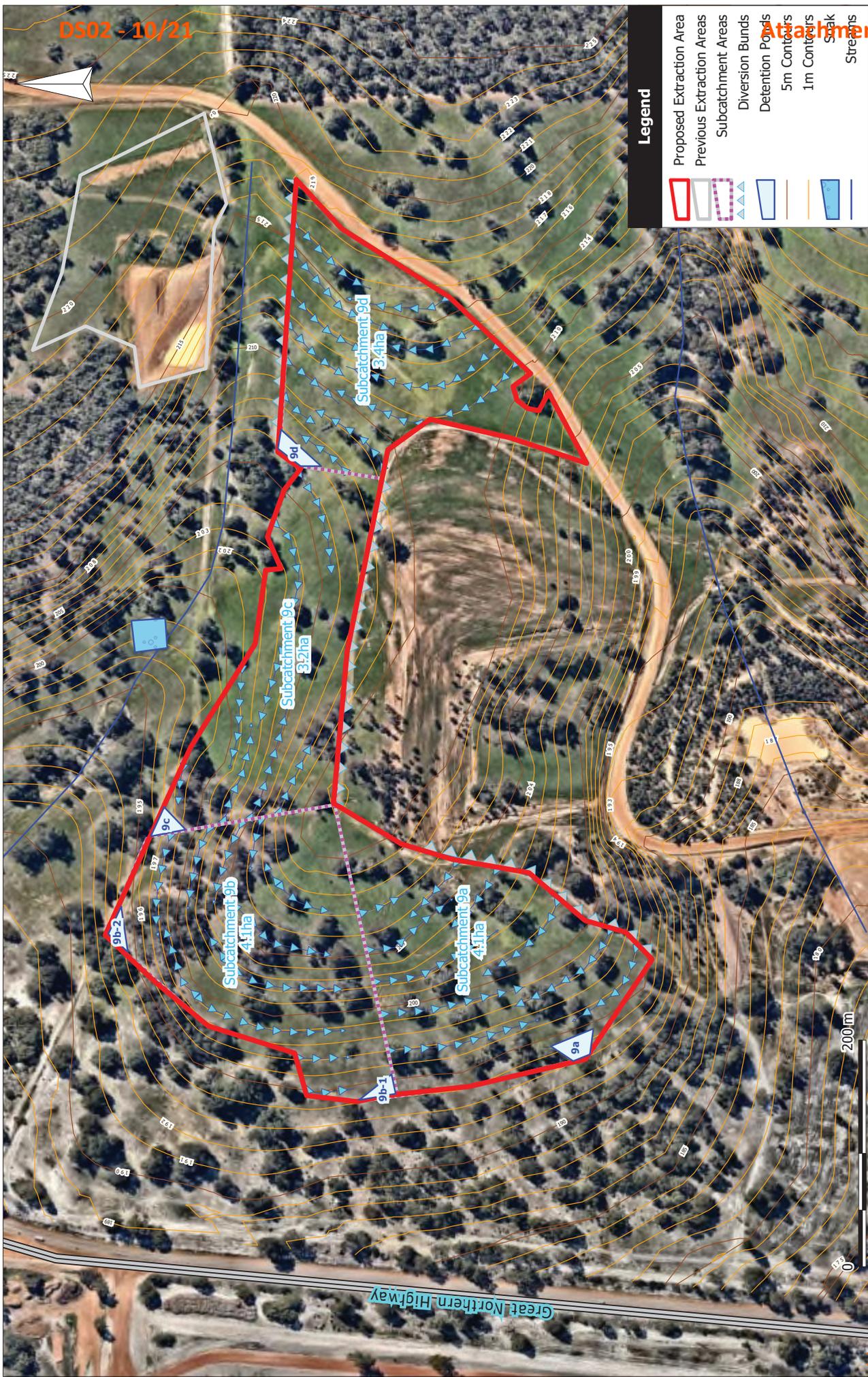
Figure 2b:
Proposed Extraction Area
Stage 10

Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Hwy, Chittering

Scale: 1:2400
 Original Size: A4
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 Projection: Australia MGA94 (50)

Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Hwy, Chittering

management plan.map
 11/12/2019

Figure 3a:
Water Management
Stage 9



Figure 3b:
Water Management
Stage 10

Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Hwy, Chittering

Scale: 1:2400
Original Size: A4
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Datum: GDA94
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ANNEXURE 1

Groundwater Physico-Chemical Data for Bores West 1 and East 2

Groundwater data collected by RPS Environment and Planning Pty Ltd for Austral Bricks under the Donnington Springs Groundwater Testing project.

Table 1: West Bore 1 - Physico-chemical Parameters

Date	Appearance	Colour	Temp (°C)	pH	EC (µS/cm)	REDOX (mV)	D.O. (ppm)
11/06/2009	Clear	Colourless	20.7	6.57	433	67	5.83
11/06/2010	Clear	Colourless	21.1	6.44	392	104	4.57
22/12/2010	Clear	Colourless	21.1	6.39	419	156	5.28
23/06/2011	Clear	Colourless	20.3	6.00	1143	212	3.91
08/12/2011	V.S. Turbid	Pale Brown	21.1	6.12	356	49.4	3.05
11/06/2012	V.S. Turbid	Pale Brown	19.7	5.88	416	114	3.90
12/12/2012	V.S Turbid	Pale Brown	20.8	6.36	537	175	3.18
27/06/2013	Slightly Turbid	Pale Brown	20.2	5.62	3500	114	3.49
08/10/2013	Clear	Colourless	18.4	6.13	412	175	7.02
12/12/2013	Slightly Turbid	Pale Brown	23.1	6.41	278	104	6.13
05/06/2014	Slightly Turbid	Pale Brown	20.6	6.10	327	145	2.04
11/12/2014	Turbid	Pale Brown	20.7	6.31	408	103	4.76

Table 2: East Bore 2 - Physico-chemical Parameters

Date	Appearance	Colour	Temp (°C)	pH	EC (µS/cm)	REDOX (mV)	D.O. (ppm)
11/06/2009	Slightly Turbid	Pale Brown	20.8	5.55	2460	51	0.56
11/06/2010	Clear	Colourless	21.6	4.18	2470	268	1.95
22/12/2010	Clear	Colourless	21.3	4.60	2610	283	6.15
23/06/2011	Clear	Colourless	20.9	4.30	2620	317	3.41
08/12/2011	V.S. Turbid	Pale Brown	21.5	5.65	2555	75.7	2.63
11/06/2012	V.S. Turbid	Pale Brown	20.0	5.66	2700	29	2.30
12/12/2012	V.S. Turbid	Pale Brown	21.0	5.78	2540	47	2.35
27/06/2013	Slightly Turbid	Pale Brown	20.8	5.51	2480	53	1.48
08/10/2013	Slightly Turbid	V. Pale Brown	20.9	5.66	2560	76	1.67
12/12/2013	Turbid	Pale Brown	23.2	5.89	2490	55	2.43
05/06/2014	Clear	Colourless	21.1	5.62	2770	41	1.07
11/12/2014	Slightly Turbid	Pale Brown	21.2	5.55	2600	37	3.63

ANNEXURE 2
Hydrocarbon Spill Response Procedure

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).

Document No.	Doc Type	Approved	Rev. No.	Rev. Date	Page
SAF-SP-29	SAF	May 2011	1.0	May 2012	1 of 4

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.

Document No.	Doc Type	Approved	Rev. No.	Rev. Date	Page
SAF-SP-29	SAF	May 2011	1.0	May 2012	2 of 4

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"> • Use earthen bunds or booms to contain spill • Polypropylene pads to mop up excess oil at the outset • Global Peat or Enretec to treat contaminated soil in-situ
Spill on concrete / hardstand area e.g. workshop	<ul style="list-style-type: none"> • Polypropylene pads (easiest and quickest) • 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)
Spill in containment bund	<ul style="list-style-type: none"> • Polypropylene pads or pillows • Bund can be drained or sucked out to waste oil receptacle if the spill is large
Spill occurs when raining or on a water body	<ul style="list-style-type: none"> • Polypropylene pads

Document No.	Doc Type	Approved	Rev. No.	Rev. Date	Page
SAF-SP-29	SAF	May 2011	1.0	May 2012	3 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
NOISE MANAGEMENT PLAN



LUNDSTROM ENVIRONMENTAL CONSULTANTS Pty Ltd

ACN 600 398 945

21 Sellen Court
LEEMING
WA 6149

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NOISE MANAGEMENT PLAN

Prepared for B & J Catalano Pty Ltd
For Lot 42 on Deposited plan 410794 (4884 Great Northern Highway)
Shire of Chittering

1. INTRODUCTION

This Noise Management Plan (NMP) has been prepared in accordance with guidelines published by the Environmental Protection Authority (EPA 2007). Noise will be managed under Part V of the *Environmental Protection Act 1986* (EP Act) and subsidiary regulations, including *Environmental Protection (Noise) Regulations 1997*.

This NMP should be read in conjunction with the report entitled "*Extractive Industries Licence Application and Environmental Management Plan (EMP) Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway), Shire of Chittering*", prepared for B & J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

The objectives of this NMP are as follows:

- To describe the nature of the proposed operation;
- To identify any sources of noise 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 noise from the operations;
- To identify measures that will limit the impact of noise on sensitive premises.

2. SITE BACKGROUND

2.1 Locality and Ownership

Locality: Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway)
Ownership: Austral Bricks (WA) Pty Ltd

The property is located approximately 18km north of Bullsbrook town site and 4km south of the Chittering Roadhouse and is accessed directly from Great Northern Highway.

Figure 1 shows the site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

2.2 Land Use

Lot 42 consists of cleared grazing land, areas of remnant native vegetation, remnant pine plantations, rehabilitated clay pits and associated detention ponds from previous clay extraction operations. The surrounding area comprises farming land, tree plantations, extractive industries and rural lots.

The property lies within an "Agricultural Resource" zone as defined by the Shire of Chittering's Town Planning Scheme No. 6. It is anticipated that the extraction area will be returned to grazing on completion of extraction.

Previous extraction of clay was undertaken in the southern section of the property between 2020 and 2026.

3. PROPOSED WORKS AND POTENTIAL IMPACTS

3.1 Proposed Extraction Activities

B & J Catalano intend to extract 330,000 tonnes of gravel from a 18.2ha site (Figure 1) over a period of two and a half years from 2020 to mid 2022, with the areas being progressively rehabilitated back to pastures until mid 2024. Monitoring of the rehabilitation will occur until 2026.

The proposed extraction licence is required for the purpose of undertaking the following activities on the site:

- Extraction of gravel from an area of 18.2ha in two stages as shown in Figure 1. Stage 9 and stage 10 will involve extraction of 330, 000 tonnes of gravel in total, but will be dependent on demand.
- 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 along the edges of the extraction area, with stockpiles being no higher than two metres.
- Within the current stage of extraction, a bulldozer will rip and blade material to a stockpile. A mobile crushing and screening plant will be used on site for approximately one to four weeks per year, dependent on the size of the campaign. Trucks will enter the pit via an unsealed, existing access road off Great Northern Highway and be loaded from the stockpile by a front-end loader.
- Crusher and stockpile positions have been identified by the proponent for each stage and are illustrated in Figures 2a and 2b.
- Excavation will proceed until the laterite has been removed, resulting in a reduction in ground level of between 1 to 1.5 meters.
- Where possible, topsoil will be replaced and seeded with pastures on a progressive basis, in fully extracted areas, prior to the commencement of winter.

Table 1 provides a description of all activities, their duration, aspect and an assessment of potential for noise impacts.

Table 1: Summary of Noise Generating Activities

Activity	Duration	Equipment to be used	Comments
Strip and stack topsoil. Rip and blade laterite to crusher sites.	Stage 9 - Up to 3 weeks per annum in 2 stages – 2020 and 2021. Stage 10 – Up to 2 weeks per annum in 1 stage - 2022.	D10 Bulldozer CAT 980 front end loader (FEL)	Topography of the area and remnant vegetation will isolate the operations from nearby residences. Hours of operation will be restricted to 7am to 6pm weekdays and 7am to 12pm on Saturdays.
Crushing, screening and stockpiling of gravel	Stage 9 – Up to 4 weeks per annum in 2 stages – 2020 and 2021. Stage 10 – Up to 1 week per annum in 1 stage - 2022.	Finlay Screen 693 Striker 1320 Crusher Striker 25m Stacker	The crushing and screening plant will be surrounded by the product stockpiles, thereby, attenuating noise from the plant. Late model equipment will be utilised with reduced noise level outputs.
Loading of trucks from stockpiles.	Stage 9- 2 years at a maximum of 12 loaded trucks per day. Stage 10 – 0.5 years at a maximum of 12 loaded trucks per day.	Truck and dog (40 tonnes) Road train (50 tonnes) CAT 980 FEL	Loading area surrounded by stockpiles. Machine reverse alarms with lower frequency output units will be utilized.
Rehabilitation of completed stages.	Up to 2 weeks per year from mid 2021 to mid 2024.	D9/D10 Bulldozer CAT 980 FEL	Moderate noise levels for limited period.

3.3 Potential Sensitive Receptors

3.3.1 Residential Dwellings

The details of the closest dwellings are presented in Table 2 and Table 3 along with locations shown on Figure 1.

Table 2: Structures within 1000m of the Extraction Area stage 9

Reference No on Figure 1	Structure Location	Type of Structure	Distance	Direction
A – Internal Residence	4884 Great Northern Highway, Chittering (Site Property)	House	480m	N
S1	165 Blue Plains Road, Chittering	House	504m	E
S2	470 Maddern Road, Chittering	House	615m	NE
S3	470 Maddern Road, Chittering	House	615m	NE
S4	370 Blue Plains Road	Houses	870m	SE

Table 3: Structures within 1000m of the Extraction Area stage 10

Reference No on Figure 1	Structure Location	Type of Structure	Distance	Direction
A – Internal Residence	4884 Great Northern Highway, Chittering (Site Property)	House	980m	S

The site is surrounded by farming land, extractive industry operations, tree plantations and rural small holdings. The closest noise sensitive premise is a residential dwelling located approximately 500m North of Stage 9 and just under 1000m South of stage 10 of the proposed extraction areas. Current extraction operations have been undertaken in close proximity to this residence with no impact to the resident. Operations are undertaken during the day when the resident is not located on the premises.

The nearest external noise sensitive premises (S1) is a residential dwelling located at 165 Blue Plains Road, Chittering, approximately 500m to the east of the closest point of the proposed operations. Several other dwellings are located within 1000 m of the proposed operations. The topography of the area, which comprises a series of ridges, will help to isolate the operations from residents in Maddern Road and from the rural small holdings further east along Blue Plains Road. Remnant vegetation in the south east corner of Lot 42 and adjacent lots will also help to mitigate any potential noise from the operations.

4. NOISE ASSESSMENT

An assessment of noise emissions associated with the extraction, crushing, screening and loading of gravel for the currently operating extraction was undertaken by Lloyd George Acoustics (2015). Computer modelling was used to predict the noise levels, under worst case conditions, to each of the external sensitive receiver locations.

This proposed operation is being undertaken at distances greater than those modelled previously and hence noise should not impact the sensitive premises.

Noise attenuation measures will be implemented as mentioned below:

- Hours of operation will be restricted to between 0700 and 1800 on weekdays and between 0700 and 1200 on Saturdays.
- Late model equipment will be utilised with reduced noise level outputs.
- The crushing and screening plant in each extraction stage will be positioned such that the topsoil and product stockpiles will provide noise attenuation.
- Only broad-band reversing warning devices (croakers) will be utilised.
- If a D10 dozer is to be used for the operations, it is to be fitted with CAT noise suppression.
- A complaints register will be implemented, with any complaints being formally recorded.
- The signage on the gate will include the contact telephone number of the site supervisor to allow for quick reaction to any complaints that may arise.

5. REFERENCES

Lloyd George Acoustics, 2015. Environmental Noise Assessment report for Gravel Extraction Pit, Lot 83, 4884 Great Northern Highway, Chittering. Prepared for B&J Catalano reference 15083297-01.

FIGURES

APPENDIX 6
DUST MANAGEMENT PLAN



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DUST MANAGEMENT PLAN
Prepared for B & J Catalano Pty Ltd
For Lot 42 on Deposited plan 410794 (4884 Great Northern Highway)
Shire of Chittering

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), now the Department of Environment Regulation (DER). This DMP should be read in conjunction with the report entitled “*Extractive Industries Licence Application and Environmental Management Plan (EMP) Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway), Shire of Chittering*”, prepared for B & J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

The requirement for this DMP is derived from the Shire of Chittering Town Planning Scheme No. 6 2007 and *Mines Safety and Inspection Act 1994* and *Mines Safety and Inspection Regulations 1995*.

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

2.1 Locality and Ownership

Locality: Lot 42 (4884) Great Northern Highway, Shire of Chittering
Ownership: Austral Bricks (WA) Pty Ltd

The property is located approximately 18km north of Bullsbrook town site and 4km south of the Chittering Roadhouse and is accessed directly from Great Northern Highway.

Figure 1 shows the site and surrounds and indicates the proposed Extractive Industries Licence (EIL) area covered by this application.

2.2 Land Use

Lot 42 consists of cleared grazing land, areas of remnant native vegetation, remnant pine plantations, rehabilitated clay pits and associated detention ponds from previous clay extraction operations. The surrounding area comprises farming land, tree plantations, extractive industries and rural lots.

The property lies within an "Agricultural Resource" zone as defined by the Shire of Chittering's Town Planning Scheme No. 6. It is anticipated that the extraction area will be returned to pastures for animal grazing on completion of extraction.

Previous extraction of clay was undertaken in the southern section of the property between 2003 and 2013.

2.2 Geology and Soils

The proposed extraction area is located within the southern section of the Dandaragan Plateau. The Dandaragan Plateau to the west of the Darling Fault is a wedge shaped erosion remnant of the Perth Basin with sediments covered by recent deposits of sand and laterite (Wilde and Low 1978). The soils are predominantly light grey or pale brown deep sands of colluvial origin with outcropping laterite areas on higher ground. A thin veneer of topsoil overlies approximately two to three metres of laterite caprock and gravel.

The crushed material texture is predominantly gravel with moderate amounts of sand and small amounts of fines (clays and silts), with grain size distribution (ISO 14688-1) being approximately 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)

Although there will be some uplift of the finer particle component 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 (including fine sand) 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 PM₅₀ (particular matter with diameter 50 micrometers) are produced as fugitive dust and require suppression as is discussed in Section 4 below.

Whilst the analysis presented above does not determine the quantity of PM₅₀ particles, it is estimated that the potential for total suspended particles (TSP) less than PM₅₀ is approximately 7.5%. Mitigation measures are discussed in Section 4 below.

Potentially significant sources of airborne particulates from the site have been assessed as being limited to:

- Dust lift-off from exposed extraction areas or rehabilitated surfaces.
- Dust lift-off from stockpiles (topsoil and extracted product).
- Dust lift-off from haul roads and tracks resulting from light vehicle and heavy earthmoving traffic.
- Dust generation from crushing and screening processes, loading and transportation of extracted material.

The majority of airborne particulates from the site are likely to be visible dust.

3. PROPOSED WORKS AND POTENTIAL IMPACTS

3.1 Proposed Extraction Activities

B & J Catalano Pty Ltd intend to extract approximately 330,000 tonnes of gravel from an area of 18.2ha as indicated in Figure 1 over a period of 2.5 years from 2020 to mid 2022 and shall consist of two stages of extraction. Progressive rehabilitation and monitoring of the rehabilitation will occur until the end of 2026.

Equipment to be used in these operations includes:

- D10/D9 Bulldozer
- CAT 980 Front End Loader (FEL)
- Striker 1320 Crusher
- Finlay Screen 693
- Striker 25m Stacker
- Truck and Dog (40 tonnes)
- Road Train (50 tonnes)

Extractive operations within the stages will include topsoil removal, ripping, blading, crushing and stockpiling of gravel, truck loading of gravel and rehabilitation of the extraction area.

Stripped topsoil from each stage will be placed in windrows along the edges of the working area to serve as noise, stormwater and visual barriers.

A bulldozer will rip the laterite and then blade it into the crusher sites until a large raw material stockpile has accumulated. It is anticipated that the ripping and blading phase of the operation will be undertaken for approximately one week per each stage.

Once all the raw material has been stockpiled, a crusher, screen and stacker unit will be deployed for a period of approximately one to four weeks per year. At the end of this period all material will be processed and ready for use. Trucks, as required, will enter and cart material out of the site over the next two and a half years.

After extraction, the land surface will be between 1 and 1.5 metres lower than the original height, apart from the batters which will be at a maximum gradient of 1:6.

The first stage of rehabilitation is topsoil replacement and contour ripping. This will be conducted immediately after completion of extraction in each stage.

Rehabilitation will be done in progressive stages until approximately mid 2024.

Table 1 provides a description of all activities, their duration, aspect and an assessment of potential for dust impacts.

Table 1: Aspects and Impacts of Dust Generating Activities

Activity	Duration	Aspect	Impact
Topsoil Stripping and stockpiling	Stage 9 - Up to 1 week per annum in 2 stages. Stage 10 – Up to 1 week per annum in 1 stage.	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	Stage 9 - Up to 2 weeks per annum in 2 stages – 2020 and 2021. Stage 10 – Up to 1 week per annum in 1 stage - 2022.	Actions may release dust into the atmosphere	Fine red dust may create an amenity issue with nearby residents
Crushing, screening and stockpiling of gravel	Stage 9 – Up to 4 weeks per annum in 2 stages – 2020 and 2021. Stage 10 – Up to 1 week per annum in 1 stage - 2022.	Crushing and screening actions may release dust into the atmosphere	Fine red dust may create an amenity issue with nearby residents
Loading of trucks from stockpiles	Stage 9- 2 years at a maximum of 12 loaded trucks per day. Stage 10 – 0.5 years at a maximum of 12 loaded trucks 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	Stage 9- 2 years at a maximum of 12 loaded trucks per day. Stage 10 – 0.5 years at a maximum of 12 loaded trucks per day.	Dust could escape from trucks in transit	Amenity, health or traffic safety issue
Rehabilitation of completed stages	Up to 2 weeks per year from mid 2021 to mid 2024.	Disturbance of topsoil could release dust into the atmosphere	Dust may create an amenity issue with nearby residents

3.2 Prevailing Winds

The nearest weather station to the property is RAAF Pearce. Wind speed data has been obtained for 9 am and 3 pm.

The prevailing winds in the drier months from December to April are predominantly from the east in the morning and from the south-west in the afternoon. There should be minimal impact on the external residences to the east (S1), north east (S2, S3) and south-east (S4) of the proposed extraction area 9 and south-east (S5) of proposed extraction area 10 due to the presence of vegetation buffers between the proposed operations and these residences.

Wind roses for RAAF Pearce have been included in Annexure 2 (Bureau of Meteorology 2015).

3.3 Potential Sensitive Receptors

The following areas have been identified as sensitive receptors in the receiving environment, relevant to the extraction operations.

3.3.1 Residential Dwellings

There are four individual external dwellings within 1000m of the proposed extraction area stage 9 and no external dwellings within 1000m of the proposed extraction area stage 10.

The details of the closest dwellings are presented in Table 2 and Table 3 along with locations shown on Figure 1.

Table 2: Structures within 1000m of the Extraction Area stage 9

Reference No on Figure 1	Structure Location	Type of Structure	Distance	Direction
A – Internal Residence	4884 Great Northern Highway, Chittering (Site Property)	House	480m	N
S1	165 Blue Plains Road, Chittering	House	504m	E
S2	470 Maddern Road, Chittering	House	615m	NE
S3	470 Maddern Road, Chittering	House	615m	NE
S4	370 Blue Plains Road	Houses	870m	SE

Table 3: Structures within 1000m of the Extraction Area stage 10

Reference No on Figure 1	Structure Location	Type of Structure	Distance	Direction
A – Internal Residence	4884 Great Northern Highway, Chittering (Site Property)	House	980m	S

The site is surrounded by farming land, extractive industry operations, tree plantations and rural small holdings with surrounding remnant vegetation. The closest sensitive premise is a residential dwelling located approximately 500m North of Stage 9 and just under 1000m South of stage 10 of the proposed extraction areas. Current extraction operations have been undertaken in close proximity to this residence with no impact to the resident. Operation are undertaken during the day when the resident is not located on the premises.

The nearest external dust sensitive premises (S1) is a residential dwelling located at 165 Blue Plains Road, Chittering, approximately 500m to the east of the closest point of the proposed operations. Several other dwellings are located within 1000m of the proposed operations (Figure 1) but the surrounding native vegetation and dust management measures to be implemented should provide adequate screening from dust emissions during site operational hours.

3.3.2 Great Northern Highway

The potential risk of fugitive dust from extractive operations to traffic along Great Northern Highway would be low in the mornings, when the wind is blowing from the east. The closest distance between the extraction area and Great Northern Highway is approximately 50m from 10. There are adequate buffers provided by a roadside vegetation belt and an existing remnant vegetation tree belt on the property. In addition, dust suppression measures will be employed and strictly adhered to, as outlined in Table 4.

3.4 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 “low risk” (Classification 2). Measures for managing dust impacts are discussed in Section 4.

4. MEASURES PROPOSED FOR MANAGING DUST

The measures that are proposed to manage dust impacts are summarized in Table 4.

Table 4. Management Actions for Dust

Parameter	Action	Timing
Induction	Inductions for all employees will include information on: <ul style="list-style-type: none"> • Potential sources of dust • Speed limits onsite 	Induction
Windy Conditions	A 15kL water cart will be on site during all periods when earth is being moved or crushing is being undertaken. If dust is a problem, operations will cease until such time as adequate wetting down has occurred.	Ongoing
Traffic	Adhere to 30 km/hr speed limit and use designated roads.	Ongoing
Open Area	Minimise open areas exposed to wind as much as practical by completing progressive rehabilitation as extracted areas are completed.	Winter
	Existing remnant vegetation buffers will be maintained along the western boundary of the site, to assist with containing dust lift-off from open areas.	Ongoing
	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.	Ongoing
Dust Suppression	Operate a water cart during dry, windy conditions and during earthmoving and crushing periods (when required) to apply water to unsealed operational areas.	Ongoing
	Internal roads will be surfaced with gravel to minimize dust lift-off from vehicle movement.	Ongoing
	A polymer based spray-on soil stabilizer will be applied to topsoil stockpiles if they do not stabilize by crusting and grass regrowth.	Post stripping
Transportation	Truck loads will be covered to ensure no dust is generated during transport.	Ongoing

During windy conditions, it is possible that dust emissions may still be generated from site. The following management actions will be taken to ensure that dust levels generated by the extraction activities do not create unacceptable impacts:

- All site staff will be responsible for reporting high or abnormally dusty conditions to the Site Superintendent or Quarry Manager as soon as is reasonably practicable.
- If an activity is creating high or abnormally dusty conditions (as determined by visual assessment), the activity will cease until weather conditions change or appropriate dust controls are put in place to ameliorate the dust emissions.
- A notice will be erected at the front gate and this will provide emergency contact details for the Quarry Manager.

A complaints system will be implemented for any dust incidences and any complaint will be investigated and followed up promptly by the Quarry Manager.

5. REFERENCES

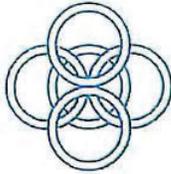
Bureau of Meteorology (BOM) 2015. Wind roses for Pearce RAAF. Accessed June 2015 from www.bom.gov.au

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.

Wilde, S. A. & Low, G. H. 1978. Explanatory Notes Perth, Western Australia. 1: 250,000 Geological Map Series SH/50-14. Geological Survey of Western Australia. Perth, Western Australia.

FIGURES

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

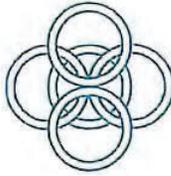
ACCREDITED FOR **TECHNICAL COMPETENCE**

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@matcons.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/m³
OPTIMUM MOISTURE CONTENT 8.0 %
PERCENTAGE RETAINED 19.0mm SIEVE 6 %

DRY DENSITY

SPECIMEN BEFORE SOAKING 2.09 t/m³
 SPECIMEN AFTER SOAKING 2.09 t/m³

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

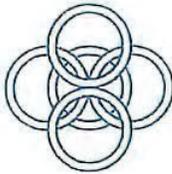
APPROVED

M Snow, Signatory
08.04.2015

DATE

ISSUE 1

CERTIFICATE NO. MC 636_249_1



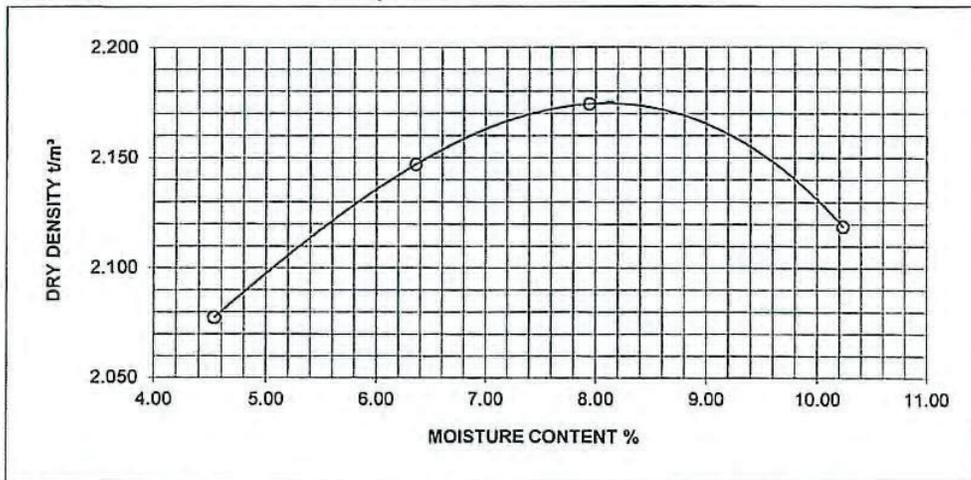
MATERIALS CONSULTANTS PTY. LTD.

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
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/m³**
 OPTIMUM MOISTURE CONTENT **8.1 %**
 PERCENTAGE RETAINED 19.0mm SIEVE **6 %**
 PERCENTAGE RETAINED 37.5mm SIEVE **Not determined**
 SAMPLING PROCEDURE: Tested as received.
 REMARKS:



Accredited for compliance with ISO/IEC 17025
 ACCREDITED FOR **TECHNICAL COMPETENCE**

APPROVED :

M Snow, Signatory

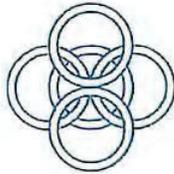
DATE :

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@matecons.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
Wind-Roses for Pearce RAAF

Rose of Wind direction versus Wind speed in km/h (02 Nov 1940 to 31 Oct 2011)

Custom time period: 02/11/1940 to 31/10/2011, refer to attached note for details

DS02-10/21

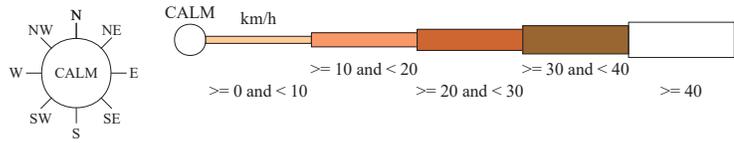
Attachment 1

PEARCE RAAF

Site No: 009053 • Opened Jan 1937 • Still Open • Latitude: -31.6669° • Longitude: 116.0189° • Elevation 40m

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

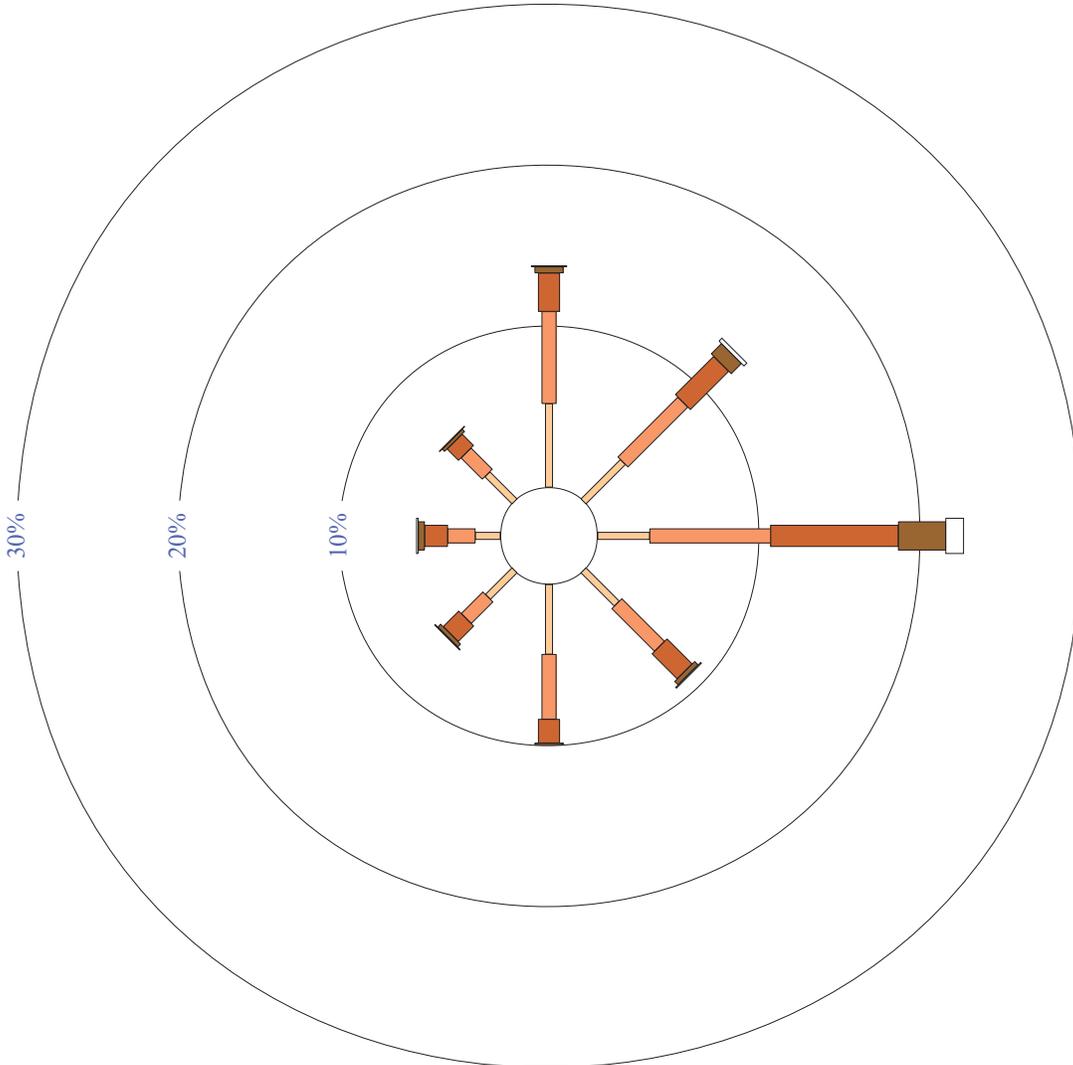
Other important info about this analysis is available in the accompanying notes.



9 am

15689 Total Observations

Calm 15%



Rose of Wind direction versus Wind speed in km/h (02 Nov 1940 to 31 Oct 2011)

Custom time period 02/11/1940 to 31/10/2011, refer to attached note for details

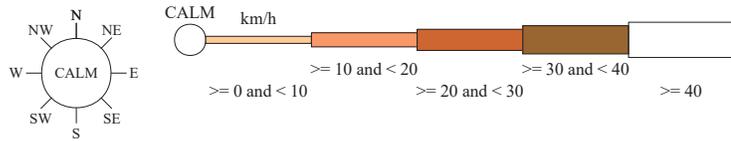
DS02 10/21

PEARCE RAAF

Site No: 009053 • Opened Jan 1937 • Still Open • Latitude: -31.6669° • Longitude: 116.0189° • Elevation 40m

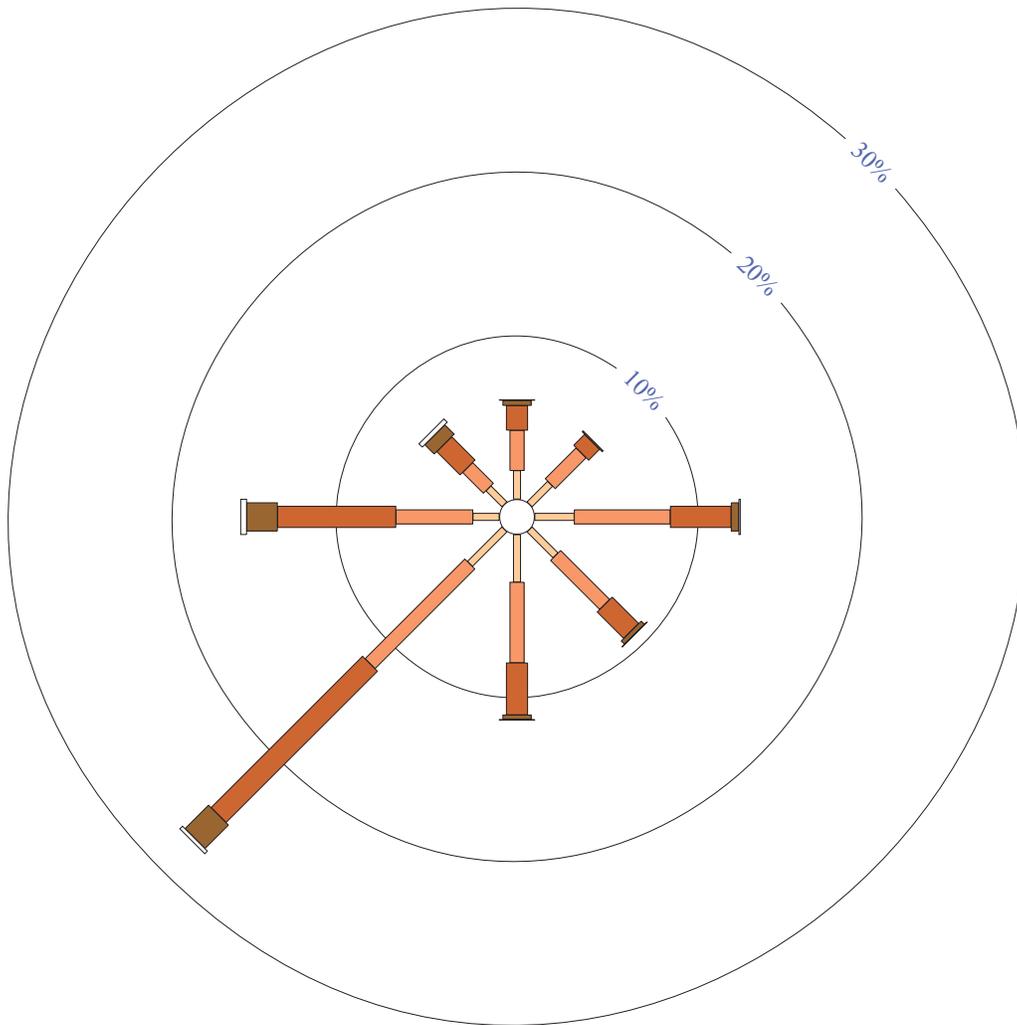
An asterisk (*) indicates that calm is less than 0.5%.

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



3 pm
14582 Total Observations

Calm 5%



ANNEXURE 3
Site Classification Assessment Chart

Appendix 1: 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
	Very low.....	Low.....	Medium.....	
1. Nuisance potential of soil, when disturbed	1	2	4	6
2. Topography and protection provided by undisturbed vegetation	1	6	12	18
3. Area of site disturbed by the works	1	3	6	9
4. Type of work being done	1	3	6	9
TOTAL score for Part A				18

Part B. Proximity of site to other land uses

Item	Score options			Allocated score
	More than 1km.....	Between 1km and 500m.....	Between 100m and 500m.....	
1. Distance of other land uses from site	1	6	12	18
2. Effect of prevailing wind direction (at time of construction) on other land uses	1	6	12	18
TOTAL score for Part B				18

SITE CLASSIFICATION SCORE (A X B) =	324
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A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.

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.

APPENDIX 7
FIRE MANAGEMENT PLAN



LUNDSTROM ENVIRONMENTAL CONSULTANTS Pty Ltd

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FIRE MANAGEMENT PLAN

Prepared for B & J Catalano Pty Ltd

For Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway)
Shire of Chittering

1. INTRODUCTION

This Fire Management Plan (Fire MP) details the Fire Management methods and requirements that will be implemented within the gravel pit operations at Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway), and has taken into account the guidelines provided in the Shire of Chittering Local Planning Policy No. 21 - Fire Management Plans (Shire of Chittering 2007). This Fire MP should be read in conjunction with the report entitled "Extractive Industries Licence Application, Lot 42 on Deposited Plan 410794, Great Northern Highway", prepared for B & J Catalano Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

1.1. LOCALITY AND OWNERSHIP

Locality: Lot 42 on Deposited Plan 410794 (4884 Great Northern Highway), Shire of Chittering
Ownership: Austral Bricks (WA) Pty Ltd

The property is located approximately 18km north of the Bullsbrook town site and 4km south of the Chittering Roadhouse and is accessed directly from Great Northern Highway.

Figure 1 shows the site and surrounds and indicates the proposed area covered by this application.

1.2. STATUTORY CONDITIONS

The Shire of Chittering requires the preparation of a 'Fire Management Plan' in accordance with Local Planning Policy No. 21 (Shire of Chittering 2007), as a condition of the Extractive Industry Licence application. This document has been prepared to satisfy that requirement.

As fire management strategies may require altering to meet changing climate, weather patterns, environmental and land use needs, provisions of the *Bush Fires Act 1954* may still be enforced in addition to this Fire Management Plan.

2. SITE DETAILS

The majority of the property comprises very gentle to medium slopes of between 1% and 12% with the proposed extraction area (stage 9) having very gentle slopes averaging 6% and the proposed extraction area (stage 10) having very gentle slopes averaging 4%. The proposed extraction area (stage 9) has an elevation of between 185 and 215 m AHD and extraction area (stage 10) has an elevation of between 200 and 220 m AHD. The drainage is towards the west with a couple of the gullies having soak dams.

The majority of the property lies within the Ellenbrook sub-catchment of the Swan Avon – Lower Swan hydrographic catchment, with a small section in the north east of the property (outside of the proposed extraction area) lying within the Brockman River sub-catchment. The property falls within Surface Water and Groundwater Proclamation Areas under the *Rights in Water Irrigation Act 1914* (RIWI). The property does not fall within a Public Drinking Water Source Area (Landgate 2019).

The proposed extraction area is located within the southern section of the Dandaragan Plateau. The Dandaragan Plateau to the west of the Darling Fault is a wedge shaped erosion remnant of the Perth Basin with sediments covered by recent deposits of sand and laterite (Wilde and Low 1978).

The soils are predominantly light grey or pale brown deep sands of colluvial origin with outcropping laterite areas on higher ground. A thin veneer of topsoil overlies approximately two to three metres of laterite caprock and gravel.

Lot 42 consists of cleared grazing land, areas of remnant native vegetation, remnant pine plantations, rehabilitated clay pits and associated detention ponds from previous clay extraction operations. The surrounding area comprises farming land, tree plantations, extractive industries and rural lots.

The property lies within an “Agricultural Resource” zone as defined by the Shire of Chittering’s Town Planning Scheme No. 6. It is anticipated that the extraction area will be returned to grazing and pastures on completion of extraction.

Previous extraction of clay was undertaken in the southern section of the property between 2003 and 2013.

3. THE DEVELOPMENT PROPOSAL

B & J Catalano Pty Ltd intend to extract gravel from the area indicated in Figure 1 in two stages over a period of two and a half years from 2020 to mid-2022. The total area to be extracted is 18.2ha and it is intended to progressively rehabilitate the area back to pastures. Rehabilitation works are scheduled to finish in mid 2024 and will be monitored until 2026.

4. FIRE RISK

The rainfall pattern for the area is such that the majority of the rain falls in late autumn to early spring. This rainfall supports substantial vegetation growth which dries off in summer/early autumn.

Bush fires in the area are generally fast moving, with many fires running up the trees into the canopy, sending out embers to start spot fires ahead of the main ground fire, making suppression and containment difficult. Smoke is a major hindrance to fire fighters in such fast moving fires.

Fire risk assessment for the proposed development will take into account existing site conditions (WA Planning Commission & FESA 2010), which include:

- Topography and slope with reference to accessibility
- Remnant vegetation cover and likely revegetation
- Surrounding land use patterns

The bush fire risk level for the proposed development area is *Extreme* in remnant vegetation, and *Low-Medium* in the remainder of the site. The bush fire risk levels for the adjoining lots are rated as *Extreme* in

remnant vegetation and *Low-Medium* in cleared areas. Figure 2 illustrates the relative fire hazards within the property and its immediate surrounds.

5. PROPERTY LAYOUT AND CIRCULATION PATTERN

Firebreaks are located along the boundary of the property and further firebreaks will be installed along the boundary of the extraction area (see 6.2 of this report for details). Emergency assembly areas will be determined based on the extraction stages and will be communicated as required to all operational staff on site.

6. FIRE MANAGEMENT PLAN

It is generally recognized that bush fires are an inevitable occurrence in the spring, summer and autumn months in the south west.

The aim of this Fire MP is to reduce the threat to life, property and the environment in the event of a bush fire within or near the site.

This Fire MP is designed to take into account fire protection measures including access roads, firebreaks, equipment on site, water supplies, fire contacts, action in the event of a bush fire on site and brigade familiarization of site, which are detailed below.

6.1 Access Roads

The main access to the site is via double locked gates off Great Northern Highway, approximately 0.5km from the southern boundary of the property. Several other access routes exist, two access roads on Great Northern Highway approximately 1km and 2km after the turn off to Blue Plains Road, one off Blue Plains Road - approximately 0.6km from the intersection off Great Northern Highway, and a fourth access route via Maddern Road, approximately 1km from the Blue Plains/Maddern Road intersection (Figure 2).

The gates for the main site access are locked with company locks and it is a requirement that Shire of Chittering standard locks are fitted to enable the Fire Services to enter the site after hours, in the event of a bush fire. Bush Fire Brigades have keys for Shire standard locks. B & J Catalano Pty Ltd should contact the Ranger services at the Shire of Chittering office to obtain the required locks.

6.2 Firebreaks

The gravel extraction area is separate from the remainder of Lot 42.

Strategic firebreaks are to be installed and maintained around the boundary of the extraction area with a width of 3m and a minimum vertical clearance of 4m height, in order to allow access for fire appliances. See Figure 3 for firebreak locations.

The extraction area and the remainder of Lot 42 are to comply with the Shire of Chittering Firebreak Notice 2014/15.

6.3 Equipment on Site

When operations are carried out, the following equipment is generally present/used on site:

- D10/D9 Bulldozer
- CAT 980 Front End Loader (FEL)
- Striker 1320 Crusher
- Finlay Screen 693
- Striker 25m Stacker
- Truck and Dog (40 tonnes)
- Road Train (50 tonnes)
- Water Carts
- Amenities building with generator
- A mobile refueling vehicle will refuel all machinery on a daily basis. No fuel or lubricant storage will occur on the site.

6.4 Water Supplies

A couple of stormwater detention ponds will be constructed in each stage whilst it is being worked, with all stormwater generated from the active cell being directed to them by the use of banks. These will serve as effective silt traps in times of high surface runoff.

A water tanker is available for firefighting operations off site when bush fires are close by and availability is at the discretion of B& J Catalano's management.

6.5 Contacts

The Site Supervisor will be the main point of contact for any fire related queries. The Supervisor's contact number will be displayed on the sign at the main access gate.

6.6 Action in the Event of a Bush Fire on Site

The following actions will be taken in the event of a bush fire.

- All personnel on site to be notified immediately of fire.
- Report fire to FESA Operations by ringing '000' and providing all known details on the fire including location, type of vegetation burning, intensity, smoke level.
- If safe to do so, onsite personnel and equipment to be used to extinguish the fire using fire extinguishers, water cart, plant and equipment.
- Relocate personnel and equipment to a safe area.
- Create a fire break around the fire if possible, only if it is safe to do so. Do not put any personnel or equipment at risk.
- On arrival of Fire Brigade, site supervisor to take directions from the most senior Brigade Officer (Incident Controller) on site. B&J Catalano personnel to follow their own chain of command (site supervisor/team leader).
- Communications on all plant and equipment is UHF Radio Channel 30.
- Mobile phones are to be available to most operators.
- Fire extinguishers are to be fitted to all plants.
- The water cart is to be fitted with a fire hose facility.

6.7 Brigade Familiarization of Site

Each year prior to summer wildfire season (approximately September/October). B&J Catalano should familiarize the local Bush Fire Brigade of site access, firebreaks, water supplies, equipment available on site

and contact details of authorized personnel for the site. This will enable the Brigade to plan their actions in the event of a fire on site, as well as provide them with enough background information in the event of a wildfire on or near the site.

7. SHIRE FIRE PROTECTION PLAN

The Chittering Fire Service has five volunteer fire brigades and an incident support brigade, which provides fire prevention and suppression service for the Shire of Chittering, with the exception of land under the care and control of the Department of Parks and Wildlife (DPaW), and the gazetted fire districts controlled by the WA Fire and Rescue Service (Shire of Chittering 2015). Currently, during an emergency the Shire of Chittering liaises with the community via incoming phone calls and through their Facebook page. The Shire website also provides important information on bush fire safety, which is updated regularly as required.

The Shire of Chittering shall develop and maintain district firefighting facilities under their control and where necessary provide advice on appropriate techniques to achieve bushfire hazard reduction for individual properties. The Shire of Chittering shall also ensure annual compliance with their firebreak notice and the bush fire management plan and shall maintain in good order the condition of the district water tanks, hydrants and apparatus for firefighting purposes, as well as public emergency access ways and strategic firebreaks within the district.

Extractive industry licence holders should seek clarification from the Shire of Chittering if they have any uncertainties in regard to their responsibilities and the requirements contained within their Fire Management Plan, as well as the Firebreak Notice published on the Shire of Chittering website (Firebreak Notice 2014/15).

8. EMERGENCY PROCEDURES

In the event of a fire on site, emergency procedures shall be followed as outlined in 6.6 of this Fire MP.

9. MAINTENANCE

All equipment used on site (as listed under 6.3 of this document) will be maintained and serviced on a regular basis. This will ensure that there will be no fire threats from equipment malfunctions due to lack of maintenance.

All responsible personnel on site will be trained on fire drill procedures and on how to respond in the event of a fire. Regular fire drills will be carried out on site to ensure that all ground staff are familiar with the emergency assembly procedure and the chain of command to be followed.

All fire breaks around the site will be maintained by clearing all flammable material from fire breaks, at not less than 3m width and 4m vertically, immediately inside all external boundaries of the site, as per the Shire of Chittering's Firebreak Notice (Shire of Chittering Firebreak Notice 2014/15).

10. SUMMARY

10.1 Overall Fire Threat

The bush fire risk level for the proposed development area is *Extreme* in remnant vegetation, and *Low-Medium* in the remainder of the site.

10.2 Fire Management Plan

This Fire MP lists all fire protection measures that will be undertaken by B&J Catalano to reduce the threat to workers and fire fighters in the event of a bush fire within or near the site.

10.3 B& J Catalano's Responsibility

B&J Catalano shall implement all fire protection requirements as outlined in sections 6.1 – 6.7 of this Fire MP, while carrying out gravel extraction operations on site.

10.4 Shire's Responsibility

The Shire of Chittering shall develop and maintain district firefighting facilities under their authority and shall ensure that property owners and operators shall maintain compliance of their Fire Management Plans.

11. REFERENCES

Bush Fires Act 1954. Version 09-d0-00. As at 27 Apr 2015. Available from:

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<http://www.chittering.wa.gov.au/emergency-services/firebreak-notice-2014-2015.aspx>

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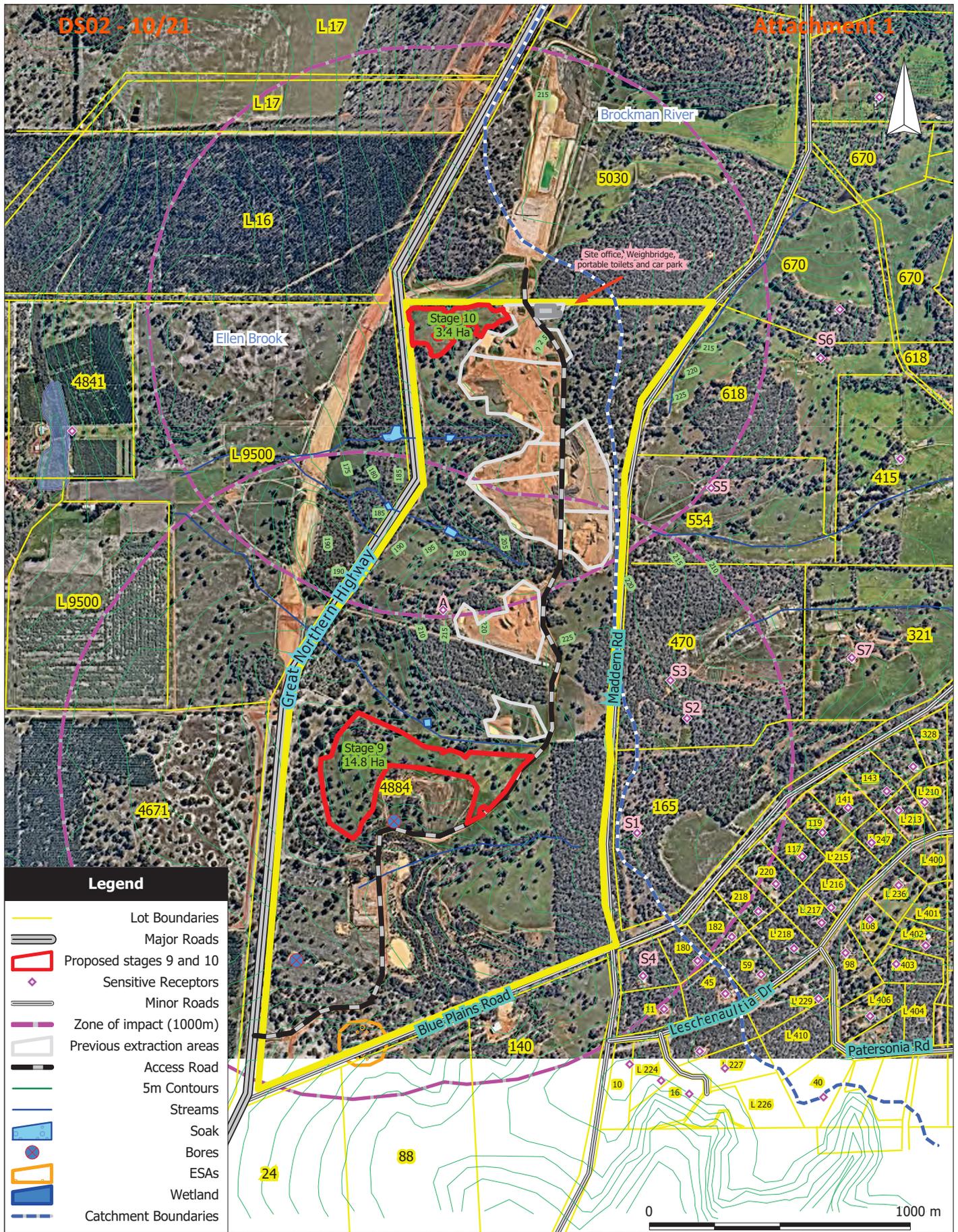
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Western

Wilde, S. A. & Low, G. H. 1978. Explanatory Notes Perth, Western Australia. 1: 250,000 Geological Map Series SH/50-14. Geological Survey of Western Australia. Perth, Western Australia

FIGURES



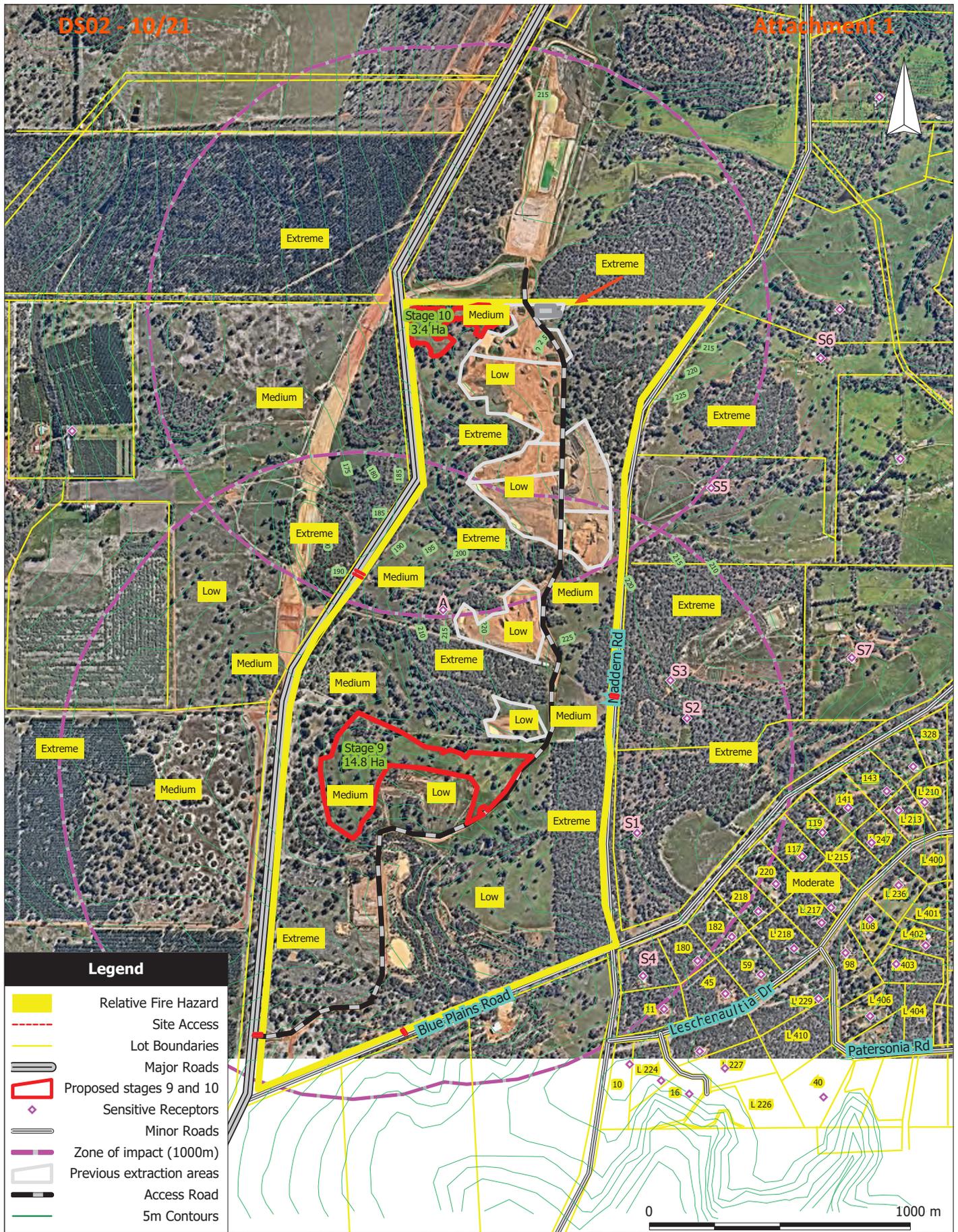
Lundstrom Environmental Consultants Pty Ltd

Leeming WA 6149
 Mob: 0417934863
 mikelund1@bigpond.com

Scale: 1:18000
 Original Size: A4
 Air Photo Source: Nearmap Sep 2019
 Datum: GDA94
 Projection: Australia MGA94 (50)

Client: B & J Catalano
 Project: Gravel Extraction
 Location: 4884 Great Northern Hwy Chittering

Figure 1:
Site and Surrounds
 205

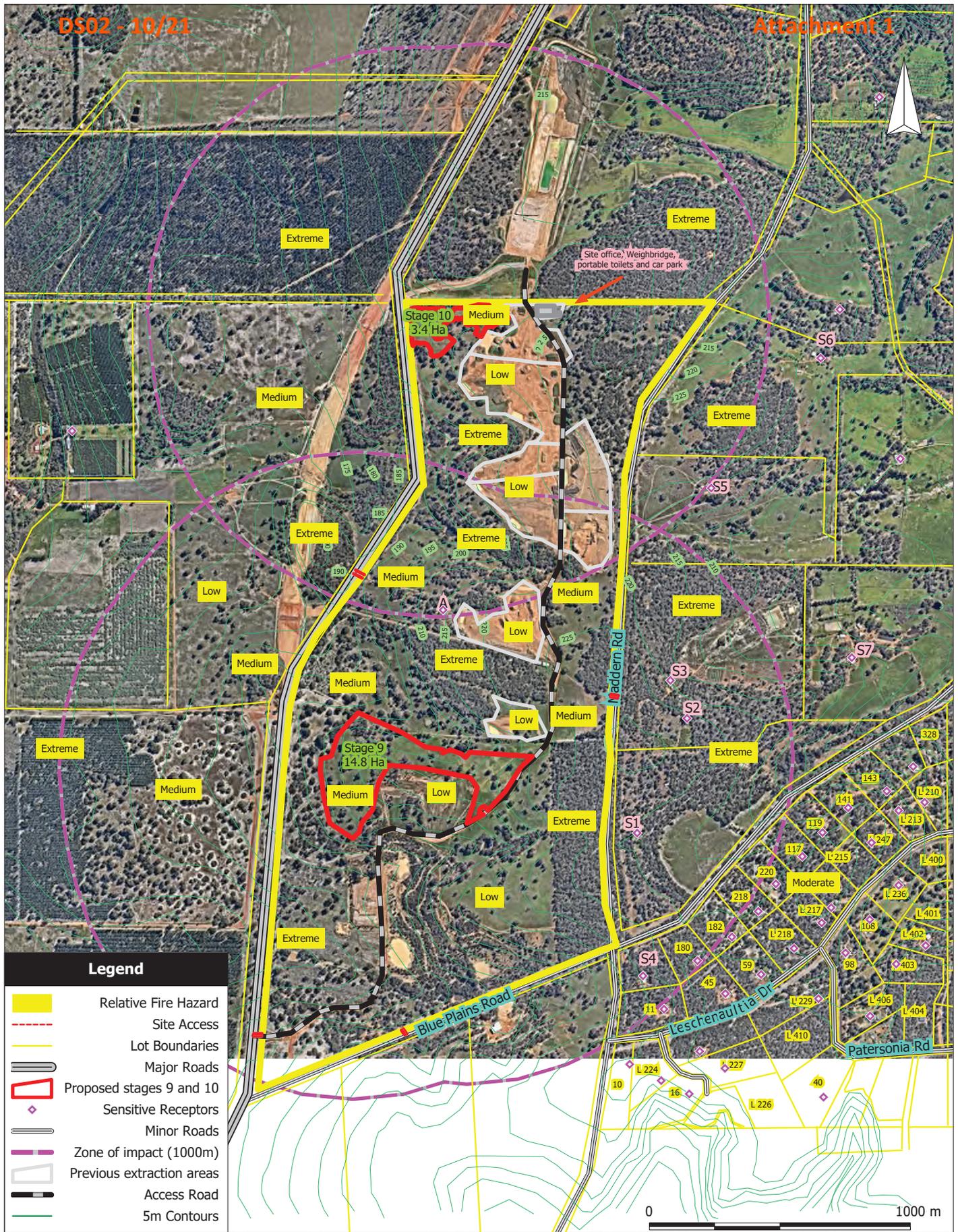


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Figure 2:
Bush Fire Hazard Assessment



Legend

- Relative Fire Hazard
- Site Access
- Lot Boundaries
- Major Roads
- Proposed stages 9 and 10
- Sensitive Receptors
- Minor Roads
- Zone of impact (1000m)
- Previous extraction areas
- Access Road
- 5m Contours

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 Projection: Australia MGA94 (50)

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 Project: Gravel Extraction
 Location: 4884 Great Northern Hwy Chittering

Figure 2:
Bush Fire Hazard Assessment

ENDORSEMENT PAGE

Fire Management Plan

*Northern Section of Lot 83 on Deposited Plan 28306 (4884 Great Northern Highway)
Shire of Chittering*

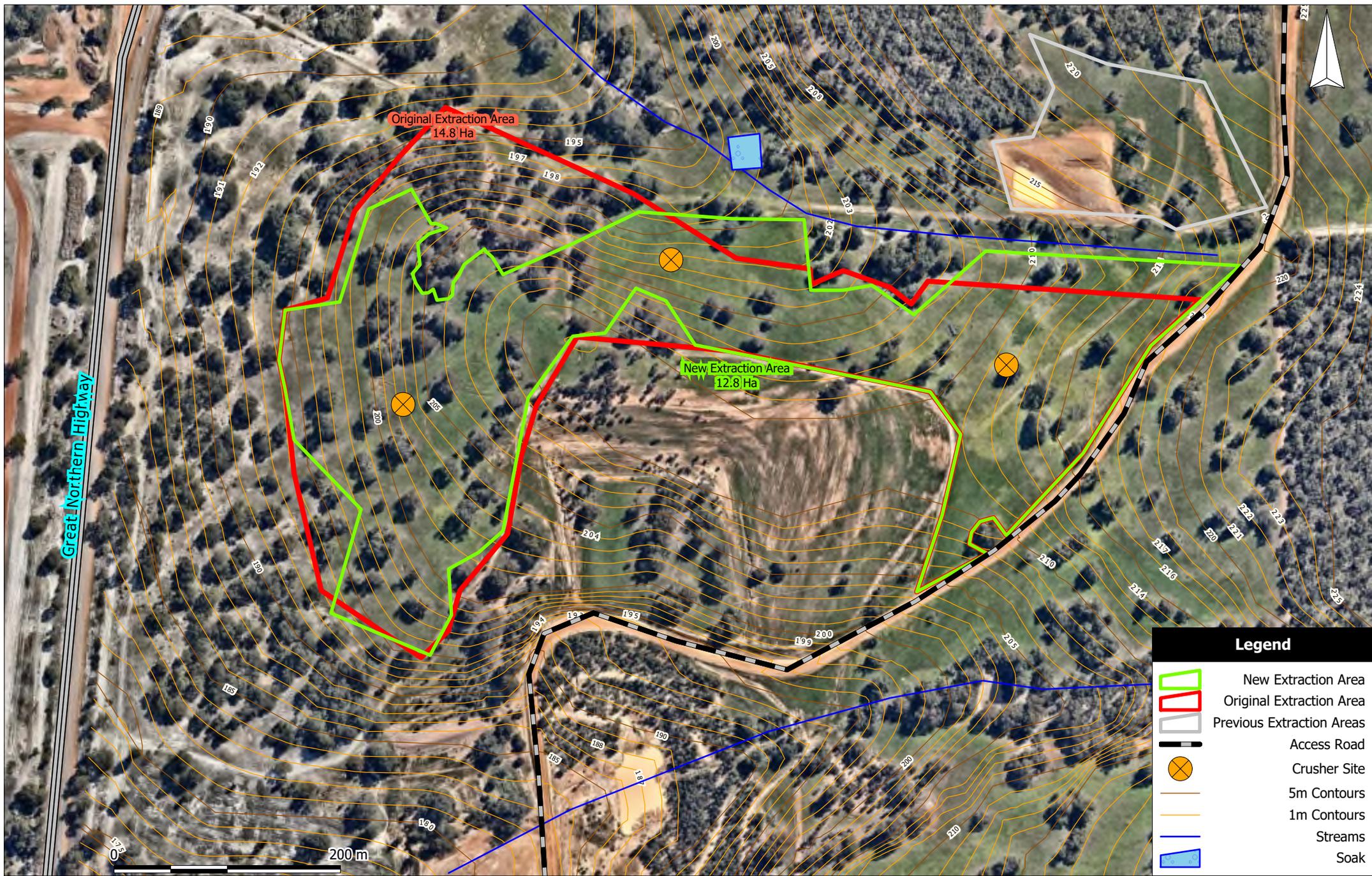
Endorsement

Shire Planner
Name Signature

Executive Manager Strategic and
Community Services or nominee Name Signature

Chittering Fire Services
Chief Bush Fire Control Officer Name Signature

Dated this day of 200...



**Lundstrom Environmental
Consultants Pty Ltd**

Leeming WA 6149
Mob: 0417934863, mikelund1@bigpond.com

Scale: 1:4200
Original Size: A4
Air Photo Source: Nearmap Sep 2019
Datum: GDA94
Projection: Australia MGA94 (50)

Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Hwy, Chittering

Figure 3a:
Proposed Extraction Area
Stage 9

21 December 2020

Peter Bennett
B & J Catalano Pty Ltd
South West Highway
Brunswick Junction, WA 6224

Dear Peter,

Plantecology Consulting was commissioned by B & J Catalano to undertake a reconnaissance vegetation survey at the Donnington Quarry, 4884 Gt Northern Highway, Chittering, which is bounded by Great Northern Highway, Maddern Rd and Blue Plains Rd (the site), in the Shire of Chittering (Figure 1). The site consisted of two separate areas for assessment:

- Stage 9 comprising 14.8 ha is located in the south-central area of Lot 42 on Deposited Plan 410794, Chittering; and
- Stage 10 comprises 3.4 ha in the north western corner of Lot 42 on Deposited Plan 410794, Chittering.

An Application to Clear Native Vegetation under the Environmental Protection Act 1986 has been submitted and the Department of Water and Environmental Regulation has requested additional information regarding the potential for Threatened or Priority Flora to occur in the application area, specifically:

“A number of threatened and priority flora taxa are known to occur within the local area and there is a reasonable probability that these may occur in the application area. This presumption is based on the similarities shared between the soil and vegetation types in habitats for these flora taxa and within the application area.

Specifically, three species listed as ‘threatened’ under the *Biodiversity Conservation Act 2016* (WA), including Star Orchid (*Thelymitra stellata*), *Hypocalymma sylvestre* and *Grevillea corrugata* are known to occur within 0.7 kilometres, 2.8 kilometres and 2.7 kilometres of the application area, respectively. These species are also listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Additionally, priority flora species, *Adenanthos cygnorum* subsp. *chamaephyton* (Priority 3), *Drosera sewelliae* (Priority 2), *Gastrolobium nudum* (Priority 2), *Hypolaena robusta* (Priority 4), *Millotia tenuifolia* var. *laevis* (Priority 2), *Tetradthea pilifera* (Priority 3) and *Verticordia serrata* var. *linearis* (Priority 3), are also known to occur within 3.2 kilometres to 5.9 kilometres from the application area. “

The purpose of the survey was, therefore, to conduct a targeted search of the site in accordance with EPA *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (2016) for flora of conservation concern. This letter outlines the results of that survey.

1 Introduction

The survey area is located on the west facing scarp and ridgetop at the interface between the Swan Coastal Plain and the Dandaragan Plateau. A search of the Department of Biodiversity, Conservation and Attractions (DBCA) databases of Threatened and Priority Ecological Communities (TECs and PECs) identified two conservation-coded community types and two sub-types with the potential to occur within the site. These were:

- *Banksia attenuata* woodlands over species rich dense shrublands (floristic community type SCP 20a), listed as an Endangered TEC; and
- Banksia-dominated woodlands of the Swan Coastal Plain IBRA region, listed as Endangered under Commonwealth legislation and includes the State-listed PECS:
 - Swan Coastal Plain *Banksia attenuata* – *Banksia menziesii* woodlands (FCT 23b); and
 - Banksia woodland of the Gingin area restricted to soils dominated by yellow to orange sands.

A search of the DBCA database of Threatened and Priority Flora returned a list of 29 taxa with the potential to occur within the site (Table 1).

2 Methods

2.1 Field Survey

The field survey was conducted by a botanist from Plantecology Consulting over one day on the 13th November 2020. The timing of the survey was chosen to coincide with the usual flowering period for the Threatened Flora *Thelymitra stellata*, the most significant annual species on the list and which has been recorded less than 1 km from the site. A search for priority flora was conducted by traversing on foot all native vegetation remnants, including beneath all paddock trees within the site along with an assessment of vegetation condition.

Table 1: Threatened and Priority Flora potentially occurring within the site.

Taxa	DEC Rating	EPBC Act Category
<i>Acacia anomala</i>	T	VU
<i>Acacia cummingiana</i>	3	
<i>Acacia drummondii</i> subsp. <i>affinis</i>	3	
<i>Acacia pulchella</i> var. <i>reflexa</i> acuminate bracteole variant (R.J. Cumming 882)	3	
<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i>	3	
<i>Anigozanthos humilis</i> subsp. <i>chrysanthus</i>	4	
<i>Caustis gigas</i>	2	
<i>Chamelaucium</i> sp. Gingin (N.G. Marchant 6)	T	VU
<i>Drosera sewelliae</i>	2	
<i>Eryngium pinnatifidum</i> subsp. <i>palustre</i>	3	
<i>Gastrolobium crispatum</i>	1	
<i>Gastrolobium nudum</i>	2	
<i>Grevillea althoferorum</i> subsp. <i>fragilis</i>	T	CR
<i>Grevillea candolleana</i>	2	
<i>Grevillea corrugata</i>	T	EN
<i>Hibbertia glomerata</i> subsp. <i>ginginensis</i>	2	
<i>Hypocalymma sylvestre</i>	T	EN
<i>Hypolaena robusta</i>	4	
<i>Millotia tenuifolia</i> var. <i>laevis</i>	2	
<i>Oxymyrrhine coronata</i>	4	
<i>Schoenus griffinianus</i>	3	
<i>Stylidium squamellosum</i>	2	
<i>Tetraria</i> sp. Chandala (G.J. Keighery 17055)	2	
<i>Tetrateca pilifera</i>	3	
<i>Thelymitra stellata</i>	T	EN
<i>Thysanotus</i> sp. Badgingarra (E.A. Griffin 2511)	2	
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>	4	
<i>Verticordia rutilastra</i>	3	
<i>Verticordia serrata</i> var. <i>linearis</i>	3	

3 Results

3.1 Flora

No Priority or Threatened Flora were recorded in the vegetation remnants within Stages 9 or 10.

3.2 Vegetation

The site has previously been largely cleared for pasture with some remnants of native vegetation and paddock trees, largely *Corymbia calophylla* and *Eucalyptus accedens*. The remnants are mostly smaller than one hectare and range in condition from 'Completely Degraded' where only paddock trees remain or where the native understorey has been removed, to 'Good - Very Good' where some of the original vegetation structure remains intact and few weeds have established (Plate 1).

3.2.1 Stage 9

The north west corner of Stage 9 contains the only intact native remnants in the site consisting of a *Eucalyptus accedens* and *Corymbia calophylla* open woodland over an open shrubland of *Xanthorrhoea preissii* and *Hakea lissocarpha* over *Lepidosperma pubisquameum*, *Lomandra sericea* and *Haemodorum venosum* in loamy sands on exposed laterite (Plate 1 and Figure 2). The native remnants with some original structure still evident comprise less than 1 ha in total, with the remaining native vegetation comprising paddock trees.

3.2.2 Stage 10

Stage 10 is 'Completely Degraded' and only retains two paddock trees (Plates 2 – 4). A search beneath these trees did not find any of the targeted species present.

4 Discussion

None of the target plant taxa were recorded during the survey. The remnant stands of native vegetation are open to the adjacent pastured areas and have evidently previously been grazed and trafficked by farm stock. Although the soil of gravelly loams beneath the remnant stands would be suitable for species such as *Thelymitra stellata* that have been recorded in the local vicinity, the access by farm stock and consequent impact on the understorey significantly reduces the suitability of the site for those species. This result is consistent with prior surveys of pastured areas adjacent to the site that also did not find any Threatened or Priority Flora present.

Vegetation complex mapping for the southwest forests indicates the site is adjacent to, and likely a continuation of, the Yalanbee 6 vegetation complex. The South West Vegetation Complex Statistics Report (Webb *et al.* 2016) states that over 92 800 ha of the Yalanbee 6 complex remains, representing over 52% of its original pre-European extent. Therefore, the remnant vegetation within the site represents a vegetation type with more than 30% of its original extent remaining. Although the site is situated in a landscape fragmented by rural activity, the mostly diminished condition of the native vegetation remnants means they are unlikely to be considered a critical asset.

5 Conclusion

None of the targeted Threatened or Priority Flora were observed during the survey, nor were any other taxa of conservation concern recorded within the site. The native remnants within the site are unlikely to be considered critical assets.

Should you require any further information or have any other queries, please feel free to contact me.

Sincerely yours,



Dr. Shane Chalwell

Plantecology Consulting

5 References

- Webb, A., Kinloch, J., Keighery, G. & Pitt, G. (2016) *The extension of vegetation complex mapping to landform boundaries within the Swan Coastal Plain landform and forested region of south-west Western Australia*, Department of Biodiversity, Conservation and Attractions, Kensington
- Keighery, BJ (1994), *Bushland plant survey: A Guide to Plant Community Survey for the Community*, Wildflower Society of WA (inc), Nedlands, Western Australia.

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Figures



D502 - 10/21

Attachment 3

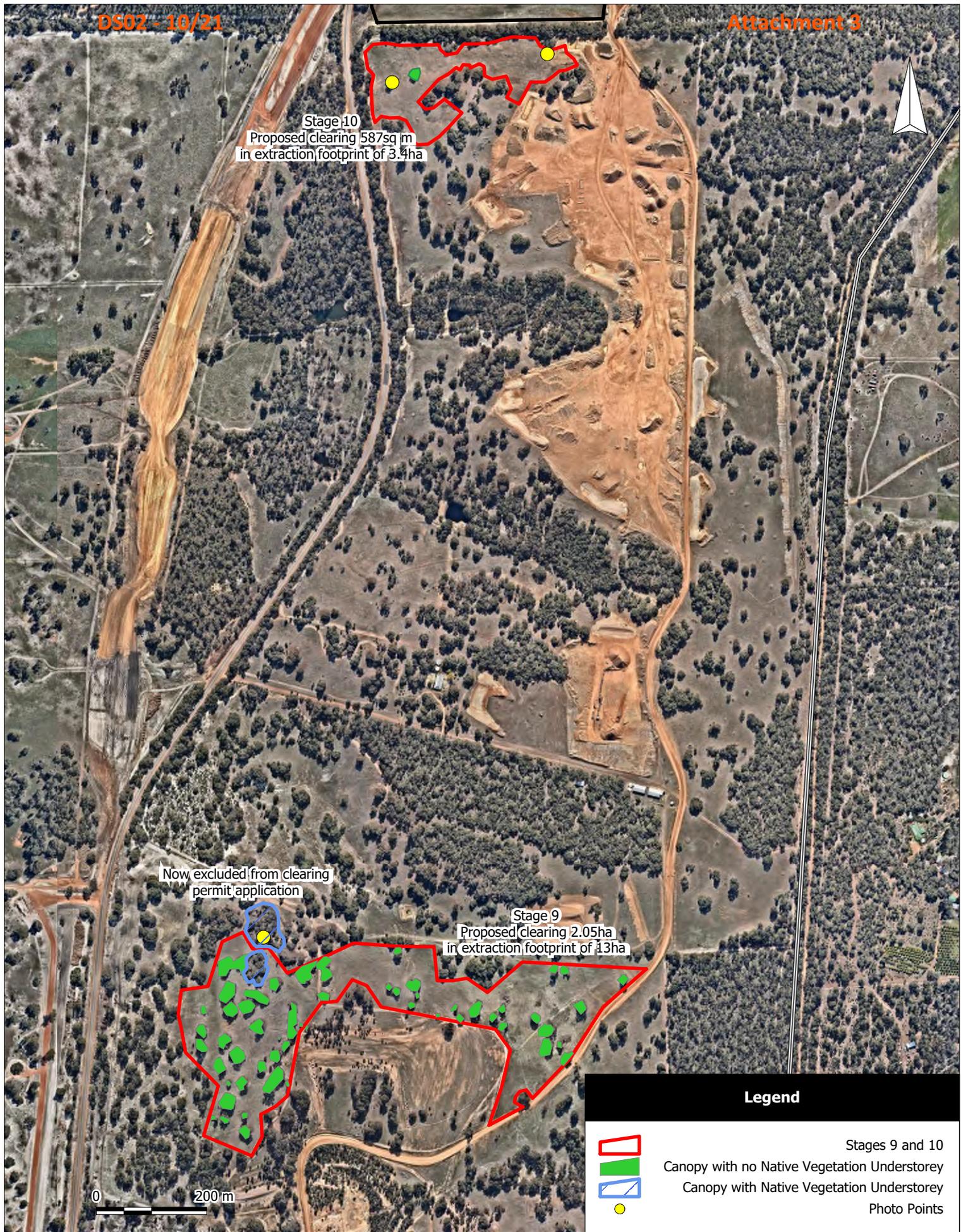
4884 Great Northern Highway
Proposed Gravel Pit

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

Scale: 1:320000
Original Size: A4
Datum: GDA94
Projection: Australia MGA94 (50)

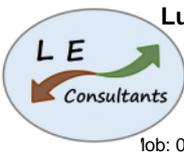
Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Highway
Chittering

Figure 1:
Locality Plan
217



Legend

- Stages 9 and 10
- Canopy with no Native Vegetation Understorey
- Canopy with Native Vegetation Understorey
- Photo Points



**Lundstrom Environmental
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Leeming WA 6149
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Scale: 1:8700
Original Size: A4
Air Photo Source: Nearmap Sep 2019
Datum: GDA94
Projection: Australia MGA94 (50)

Client: B & J Catalano
Project: Gravel Extraction
Location: 4884 Great Northern Highway Chittering

Figure 2:
Site Plan
218

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Plates



Plate 1: View of *Corymbia calophylla* - *Eucalyptus accedens* woodland within Stage 9.



Plate 2: View of *Eucalyptus accedens* paddock tree within Stage 10.



Plate 3: View of western part of Stage 10, looking North East in 'Completely Degraded' condition.



Plate 4: View of eastern part of Stage 10, looking west, in 'Completely Degraded' condition

Appendix A

Vegetation Condition Scale (Keighery 1994)

Vegetation Condition	Definition
Pristine (1)	Pristine or nearly so, no obvious signs of disturbance.
Excellent (2)	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Donningtons Gravel Quarry, Chittering

Targeted Black-Cockatoo Survey



Vegetation in the study area.

Prepared for: B&J Catalano

Prepared by: Western Wildlife
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November 2019

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1. Introduction

B & J Catalano currently operate Donningtons Gravel Quarry on 4884 Great Northern Hwy, Chittering. As part of investigating potential new areas for gravel extraction, a targeted black-cockatoo survey was required across six key areas (Figure 1). On behalf of the B & J Catalano, Lundstrom Environmental Consultants commissioned Western Wildlife to conduct a targeted black-cockatoo survey. The aim of the survey was to search the survey area for habitat that may be used by black-cockatoos for roosting, foraging or breeding.

2. Methods

The proposed extraction area on 4884 Great Northern Hwy, Chittering (the 'survey area') was visited on the 12th, 14th, 18th, 21st and 22nd November 2019 by Ms Jenny Wilcox of Western Wildlife (Figure 1). The vegetated parts of the survey area were walked, and assessed for the potential to support one or both of the following species:

- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*)
- Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*)

Baudin's Black-Cockatoo (*Calyptorhynchus baudinii*) is unlikely to occur in the study area, as it is outside of the known distribution of this species according to DSEWPaC (2012). The study area was examined for the presence of vegetation types or plant species known to constitute black-cockatoo foraging habitat and any evidence of foraging such as chewed fruits or flowers.

The diameter at breast height (DBH) was recorded for all Wandoo (*Eucalyptus Wandoo*), Powderbark Wandoo (*Eucalyptus accedens*), Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) trees that had a DBH \geq 50cm (Marri and Jarrah) or a DBH \geq 30cm (Wandoo or Powderbark Wandoo). These trees are considered to have a high potential to have or develop hollows and support the breeding of black-cockatoos in the long term (DSEWPaC 2012). Trees were also examined from the ground for the presence of existing hollows. Hollows were classified as 'large' if they had some potential to support black-cockatoo breeding and 'small' if considered too small for black-cockatoos, but of potential use for other bird species such as parrots and pardalotes, or by bats or arboreal reptiles. All trees identified were recorded with a GPS location. Any evidence of hollow use (e.g. chewing around the entrance of the hollow) was also recorded, as were the presence of Feral Bees (*Apis mellifera*)

In addition, all other native vertebrate fauna encountered were recorded.

An extract of confirmed and potential cockatoo breeding records held by the Department of Biodiversity, Conservation and Attractions (DBCA) was obtained for the 15km surrounding the survey area, as were any records of black-cockatoo sightings.

2.1 Limitations

The brief site visit allowed for a survey of the potential habitat values of the study area. The purpose of the survey was not to observe cockatoos. Even in areas where cockatoos are present, they are not necessarily present all day or in every season. Although tree hollows were recorded, these were observed from the ground and the depth of the hollow was unknown. The survey was undertaken by personnel experienced in cockatoo habitat surveys and sufficient time was allowed to visit all trees and vegetated areas in the survey area.

Legend
Survey Areas

6517000

6517000

6516000

6516000

6515000

6515000



Figure 1. Donningtons Gravel Quarry, 4884 Great Northern Hwy, Chittering – survey areas

409000

410000

3. Background on black-cockatoo species

3.1 Forest Red-tailed Black-Cockatoo

The Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) is listed as Vulnerable under the *Western Australian Biodiversity Conservation Act 2016* and as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Forest Red-tailed Black-Cockatoo is endemic to the southwest of Western Australia. It occurs in Jarrah, Marri and Karri forests between about Gingin to the north, Albany to the south, and east to Mt Helena, North Bannister and Rocky Gully (Johnstone and Storr 1998). This species also ranges irregularly onto the Swan Coastal Plain to feed on the seeds of the introduced Cape Lilac (*Melia azerdarach*). It is patchily distributed through its range (Johnstone and Storr 1998). The population size is estimated to be 15,000 birds (Johnstone and Kirkby 1999, DoEE 2019).

The Forest Red-tailed Black-Cockatoo inhabits the Jarrah, Marri and Karri forests of the southwest, where the annual rainfall is on average 600mm or more. It may also occur in other woodlands, including Tuart, Wandoo and Flooded Gum (*Eucalyptus rudis*). Groups of up to 50 birds roost in trees overnight, dispersing into smaller flocks when ranging out to forage during the day. Roosts may be on roadsides, paddocks or forested areas (Johnstone and Kirkby 1999).

Forest Red-tailed Black Cockatoos feed primarily on the seeds of Marri and Jarrah, but also feed on the seeds of Blackbutt (*Eucalyptus patens*), Forest Sheoak (*Allocasuarina fraseriana*), Snottygobble (*Persoonia longifolia*) and Cape Lilac (Johnstone and Storr 1998).

Unlike Carnaby's Black-Cockatoo, the Forest Red-tailed Black-Cockatoo does not undertake regular seasonal movements. Instead, this species exhibits irregular population fluctuations, perhaps as a response to food availability.

The Forest Red-tailed Black Cockatoo nests in hollows in Karri (*Eucalyptus diversicolor*), Marri, Jarrah, Bullich (*Eucalyptus megacarpa*) and Wandoo (*Eucalyptus wandoo*) (Johnstone and Storr 1998, DSEWPaC 2012). However, they have generally been found to prefer nesting in large (mean DBH of 90cm) Marri trees (Johnstone *et al.* 2013). Eggs are laid in October and November (Johnstone and Storr 1998).

The main threats to the Forest Red-tailed Black-Cockatoo include habitat loss, nest hollow shortage, Feral Honeybees, illegal shooting and fire (DoEE 2019).

3.2 Carnaby's Black-Cockatoo

Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) is listed as Endangered under the *Western Australian Biodiversity Conservation Act 2016* and as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999*.

Carnaby's Black-Cockatoo is endemic to the southwest of Western Australia, occurring mostly in the wheatbelt but also on the Swan Coastal Plain and wetter southwest (Johnstone and Storr 1998). The population size is estimated to be 40,000 birds, though it may be >10,000 - 60,000 birds (Garnett *et al.* 2011).

Typically, Carnaby's Black-Cockatoo breeds in the wheatbelt region of Western Australia, nesting in large hollows in smooth-barked eucalypts such as the Salmon Gum (*Eucalyptus salmonophloia*) and Wandoo (*Eucalyptus wandoo*). However, it has started breeding in areas further west and south than its traditional breeding range, including areas in the Darling Range and on the Swan Coastal Plain (Johnstone *et al.* 2005, Johnstone *et al.* 2011). Breeding has been recorded from areas such as Baldy, Lake Clifton, Yanchep and near Bunbury, with these nests always in Tuart (*Eucalyptus gomphocephala*) (Johnstone *et al.* 2011). Eggs are laid from early July to mid-October (Johnstone and Storr 1998).

Some of the Carnaby's Black-Cockatoo population is resident (particularly in wetter areas) and some of the population moves west and south towards the coast after breeding (Johnstone and Storr 1998). Between February and September, large flocks of birds aggregate in feeding flocks on the northern Swan Coastal Plain (Johnstone *et al.* 2011). These birds are foraging mainly in heaths, *Banksia* woodlands and pine plantations, and can be in large numbers of up to 7,000 birds (Johnstone *et al.* 2011). On the southern Swan Coastal Plain flocks are smaller (200 – 1,200 birds) and these birds forage on vegetation over a wide area (Johnstone *et al.* 2011).

Vegetation on the Swan Coastal Plain and adjacent escarpment is an important resource, with 8,000 – 10,000 birds estimated to use the area during the non-breeding season (Burnham *et al.* 2010). Carnaby's Black-Cockatoo forage on the seeds of a range of plant species, but are particularly attracted to proteaceous heaths, *Banksia* and *Eucalyptus* woodlands and pine plantations (Johnstone and Storr 1998). On the Swan Coastal Plain, important food plants include *Banksia attenuata*, *B. menziesii*, *B. grandis*, *B. ilicifolia*, *B. sessilis*, *B. prionotes*, Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) (Shah 2006). In breeding areas it is important to have sufficient foraging resources in close proximity to nest hollows.

Carnaby's Black-Cockatoo generally roosts in tall native or introduced eucalypts or pines in riparian habitats or near permanent water (DSEWPaC 2012, DoEE 2019). Shah (2006) found that of 16 Carnaby's Black-Cockatoo roost sites she identified on the Swan Coastal Plain, all but one were in *Pinus* or *Eucalyptus* species. In 2010, it was similarly found that at 29 roosts for which the tree species were recorded were in *Pinus* or *Eucalyptus* species (Burnham *et al.* 2010).

The main threats to Carnaby's Black-Cockatoos are habitat loss, competition for nesting hollows, habitat degradation and illegal trade in eggs and nestlings (DSEWPaC 2012). Habitat loss is the primary cause of the decline of this species, with much of its wheatbelt habitat cleared or fragmented, and the clearing of heathland around breeding sites has reduced the foraging opportunities for birds raising young (Cale 2003). Within remnant wheatbelt woodlands there is little regeneration of eucalypts and the remaining hollows are deteriorating (Cale 2003). Carnaby's Black-Cockatoo may face competition for remaining hollows from other bird species and feral bees (*Apis mellifera*) (DSEWPaC 2012, Cale 2003).

4. Results and discussion

The study area is within the range of both the Forest Red-tailed Black-Cockatoo and Carnaby's Black-Cockatoo, according to distribution maps published by DSEWPaC (2012). The Forest Red-tailed Black-Cockatoo is at the northern limit of its range in the vicinity of the study area. Several native fauna species were recorded during the site visit, including Carnaby's Black-Cockatoo (Appendix 1).

4.1 Black-cockatoo foraging habitat

The vegetation varies across the site, and includes:

- scattered trees in paddocks
- small stands of trees with little or no native understorey
- small or large patches of remnant forest or woodlands with native understorey.

The canopy consists mainly of Jarrah, Marri, Wandoo and Powderbark Wandoo (Plates 1 – 5). All vegetation has been accessible to livestock, but in the larger areas of vegetation (in Area 1 and Area 2) the impacts are generally restricted to the edges and the native understorey is retained in the centre.

Evidence of cockatoo foraging (chewed Marri and Banksia nuts) was observed during the site visit (Figure 2, Plate 6). In the survey area, important food plants for Carnaby's Black-Cockatoo are the Marri and Banksia, and to a lesser extent, scattered low *Hakea spp.* in the understorey. Important food plants for the Forest Red-tailed Black-Cockatoo are the Jarrah and Marri. Pasture has negligible value as black-cockatoo foraging habitat, however, even single trees within the pasture have value as foraging habitat.

The relative value of each survey area for foraging black-cockatoos is given in Table 1. The higher value areas are generally those with a greater proportion of Marri, as this is the most common food plant present.

Table 1. Foraging habitat in each survey area.

Survey Area (see Figure 1)	Area (ha)	Value as foraging habitat
1	35.8	High – the southern part of this area is parkland cleared, but is of high value as it contains a large proportion of Marri.
2	17.9	High – this area is partly parkland cleared, but includes a large proportion of Marri trees.
3	36.6	High – this area is parkland cleared but includes a large proportion of Marri trees and a small stand of <i>Banksia attenuata</i> .
4	17.7	Low – this area contains few trees overall, and more of the trees are Wandoo rather than Marri.
5	8.5	Low - this area is mostly pasture with few trees present. Most of the trees are Wandoo rather than Marri.
6	23.4	Moderate – this area is mostly pasture and more of the trees are Wandoo rather than Marri.



Plate 1. Pasture with scattered trees.



Plate 2. Small stands of trees with little or no native understorey.



Plate 3. Wandoo woodland with a sparse native understorey.



Plate 4. Jarrah / Marri forest with a native understorey.

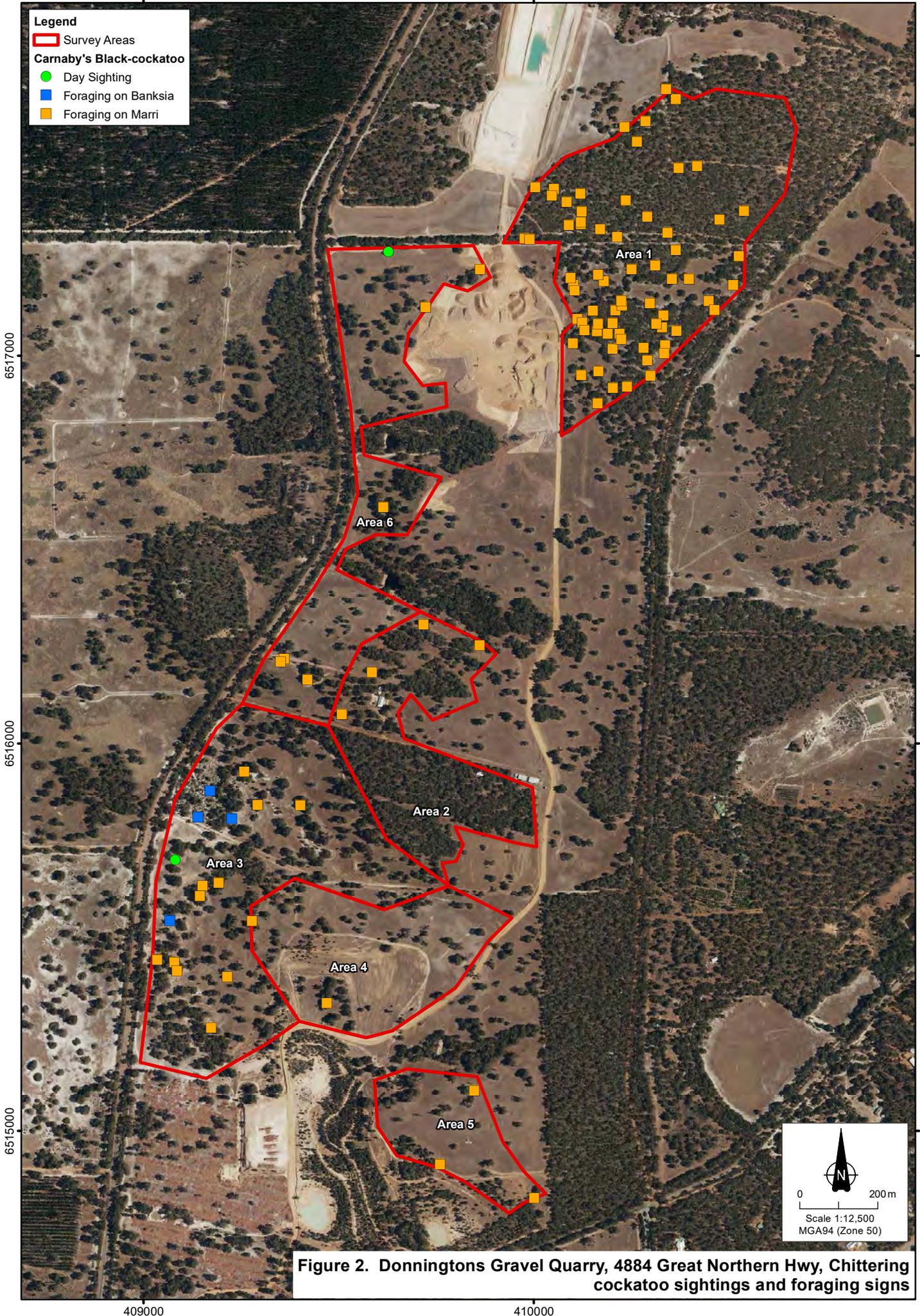


Plate 5. Regrowth forest with windrows of historically cleared trees.



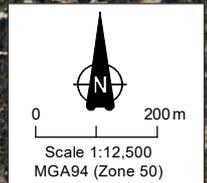
Plate 6. Cockatoo foraging signs on *Banksia* (left) and Marri (right).

- Legend**
- Survey Areas
 - Carnaby's Black-cockatoo**
 - Day Sighting
 - Foraging on Banksia
 - Foraging on Marri



Drawn: CAD Resources ~ Tel 9246 3242 ~ URL: www.cadresources.com.au ~ November 2019 ~ A4 ~ Rev. A ~ CAD Ref: a2326fa002 ~ Imagery: Landgate (Dec 2017)

Figure 2. Donningtons Gravel Quarry, 4884 Great Northern Hwy, Chittering cockatoo sightings and foraging signs



4.2 Black-cockatoo roosting habitat

Black-cockatoos are known to roost in pines and tall eucalypts, often near riparian environments (DSEWPaC 2014, Shah 2006, Burnham *et al.* 2010). The survey area includes tall eucalypts, and is adjacent to several farm dams.

Although no evidence of roosting by black-cockatoos (e.g. feathers, scats) was recorded during the site visit, Carnaby's Black-Cockatoo is a seasonal migrant and is not present in an area year-round. Birds may roost nearby when foraging in the area, then move on. If Carnaby's Black-Cockatoos roost in the study area, the most likely locations are in taller trees near the farm dams, which are outside but adjacent to the survey area. The Forest Red-tailed Black-Cockatoo may roost in eucalypts on the edges of the pasture, for which there are many potentially suitable locations, but this species is unlikely to be common in the area.

It is unlikely that the survey area is of particular significance for roosting black-cockatoos, through birds may roost there on occasion.

4.3 Black-cockatoo breeding habitat

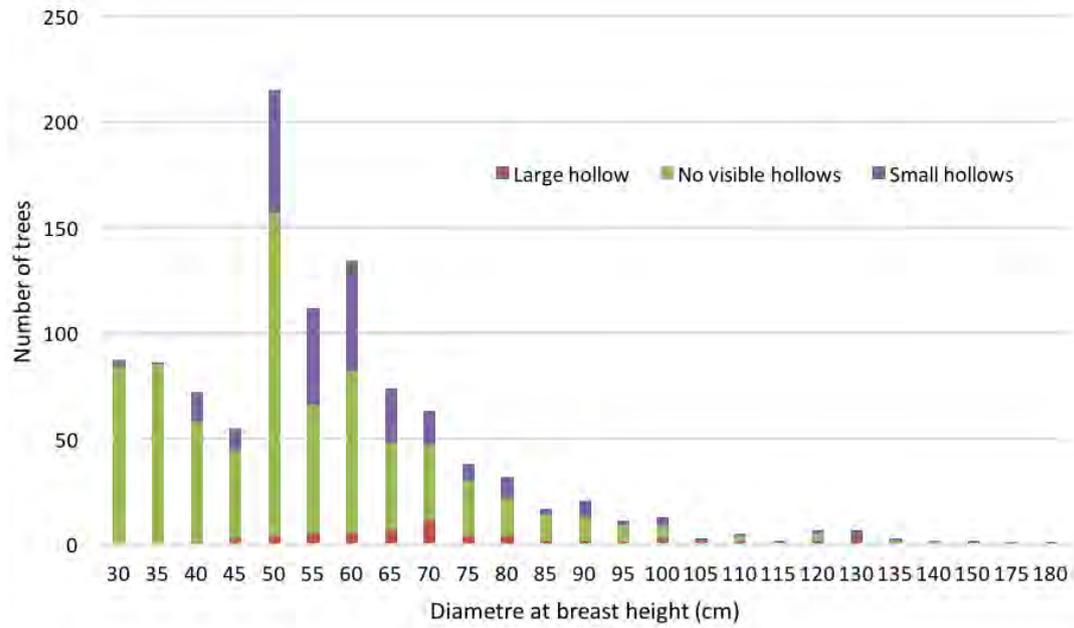
The survey area is within the known or predicted breeding range of Carnaby's Black-Cockatoo (DSEWPaC 2012). In the study area, Carnaby's Black-cockatoo may potentially use Wandoo, Powderbark Wandoo, Jarrah or Marri trees for breeding. Though they favour smooth-barked eucalypts such as Wandoo, they may potentially use any suitably-sized hollow (Johnstone and Storr 1998, DSEWPaC 2012). The Forest Red-tailed Black-Cockatoo favours hollows in large, old Marri trees, but may also use Jarrah on occasion (Johnstone and Storr 1998). However, as the Forest Red-tailed Black-Cockatoo is on the northern edge of its range in the area, it is unlikely to breed in the survey area.

A total of 1,063 trees were identified that demonstrated a DBH \geq 50cm (in Jarrah or Marri) or DBH \geq 30cm (Wandoo) (Table 2, Figure 3, Plate 7). Of these, 40 were outside (but adjacent to) the survey area, leaving 1,023 identified within the survey areas. The majority of trees recorded were Wandoo (496 trees), followed by Marri (295 trees) and Jarrah (272 trees).

Sixty-three of these trees, (25 Jarrah, 20 Wandoo and 18 Marri), appeared to have at least one large existing hollow potentially suitable for black-cockatoos, although four of these were rendered unsuitable by feral bees (Table 2, Figure 3). There were potential small hollows present in 274 of the trees and the remaining 726 trees had no visible hollows. The majority of the trees measured had a DBH of less than 60cm (Graph 1), but 46 trees were measured with a DBH \geq 100cm (Figures 3). Some of the stands of trees contained no large trees (Figure 3), instead dominated by younger trees. Many of the trees also branch low on the trunk, so while the DBH may be sufficiently large, the width of the upper branches is much smaller, requiring a long time for large hollows to form.

It should be noted that 'potential' hollows may not be very deep, or actually suitable for use by black-cockatoos, though this is not possible to ascertain from the ground. Conversely, some hollows are not visible from the ground, hence the approach of recording tree DBH.

The survey area is potential breeding habitat for Carnaby's Black-Cockatoo, and three hollows with possible evidence of breeding (chewing around the hollow) was noted on three hollows, one each in Areas 1, 2 and 6. Carnaby's Black-Cockatoo is known to breed within 15km of the survey area (Figure 4). The Forest Red-tailed Black-Cockatoo is less likely to nest in the area as its core range is further south.



Graph 1. Habitat trees in the survey area.



Plate 7. Examples of hollow-bearing trees in the survey area.

Table 2. Habitat trees recorded in each survey area.

Survey Area	Tree Species	Large Hollow	No Visible Hollows	Small Hollows	Total
1	Jarrah	12	31	49	92
	Marri	7	48	11	66
	Wandoo	4	28	6	38
	Total:	23	107	66	196
2	Jarrah	8	42	37	87
	Marri	7	31	17	55
	Wandoo	4	41	4	49
	Total:	19	114	58	191
3	Jarrah	4	41	16	61
	Marri	2	104	9	115
	Wandoo	4	93	46	143
	Total:	10	238	71	319
4	Jarrah		3	1	4
	Marri	2	22	2	24
	Wandoo		66	17	85
	Total:	2	91	20	113
5	Jarrah		4		4
	Marri		4	1	5
	Wandoo		23	8	31
	Total:	0	31	9	40
6	Jarrah	1	10	2	13
	Marri	2	13	3	18
	Wandoo	6	97	30	133
	Total:	9	120	35	164
Outside	Jarrah		5	6	11
	Marri		10	2	12
	Wandoo		10	7	17
	Total:	0	25	15	40
Total:		63	726	274	1063

Legend

- Survey
- Trees with a DBH of 50cm or more (Jarrah and Marri) or 30cm or more (Wandoo and Powderbark Wandoo)
- Large hollow
- Small hollows
- No visible hollows
- Trees with DBH of 1m or more

6517000

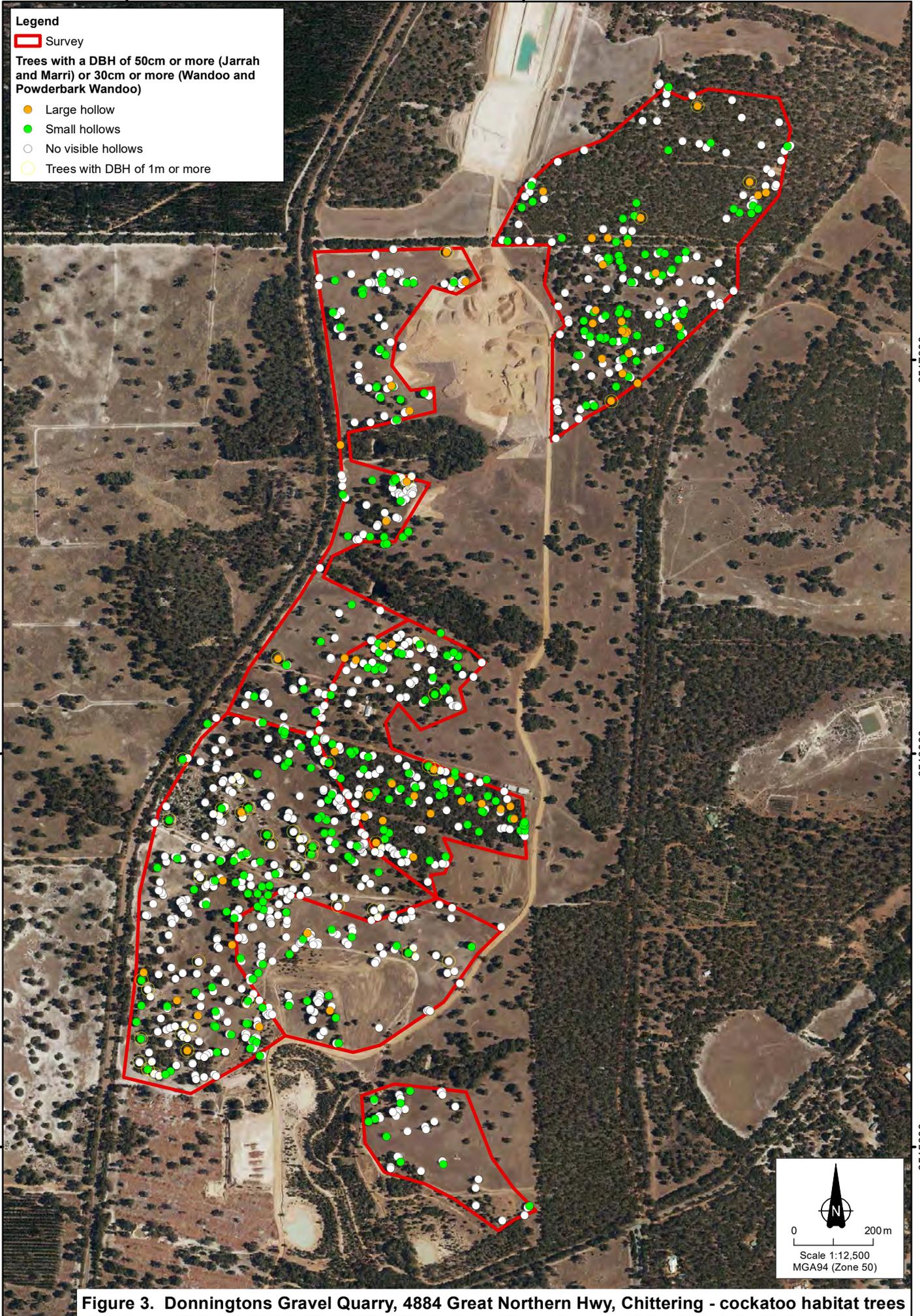
6517000

6516000

6516000

6515000

6515000



A north arrow pointing upwards is located in the bottom right corner. Below it is a scale bar showing a distance of 200 meters. The text below the scale bar reads "Scale 1:12,500 MGA94 (Zone 50)".

Figure 3. Donningtons Gravel Quarry, 4884 Great Northern Hwy, Chittering - cockatoo habitat trees

409000

410000

Legend

- Survey Areas
- DBCA Search Area
- Roost Areas Unconfirmed - Buffered 6kms
- Roost Areas Confirmed - Buffered 6kms
- Breeding Area - Possible
- Breeding Area - Confirmed

Fauna Records

- Carnaby's cockatoo
- Forest red-tailed black cockatoo
- White-tailed black cockatoo

0 3 km
Scale 1:200,000
MGA94 (Zone 50)

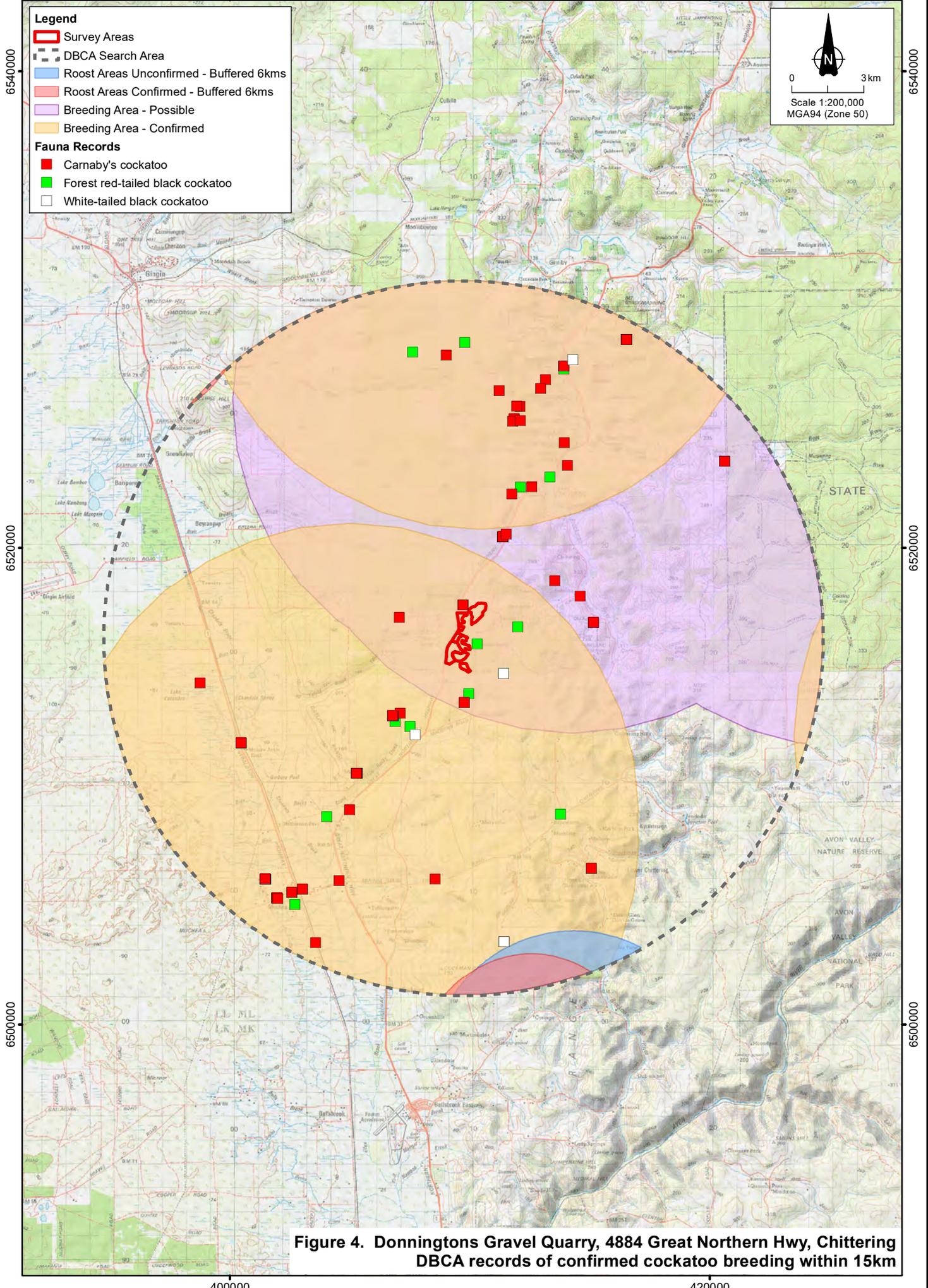


Figure 4. Donningtons Gravel Quarry, 4884 Great Northern Hwy, Chittering DBCA records of confirmed cockatoo breeding within 15km

Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ December 2019 ~ A4 ~ Rev. A ~ CAD Ref. a2326fa004 ~ Imagery: Landgate (Dec 2017)

5. Summary and Conclusions

Carnaby's Black-Cockatoo was recorded in the survey area. The Forest Red-tailed Black-Cockatoo potentially occurs in the survey area, and although it is on the edge of its range in the area, there are nearby records of the species (Figure 4).

Evidence of foraging by Carnaby's Black-Cockatoo was recorded in the survey area. Areas of Jarrah, Marri and Banksia are foraging habitat for black-cockatoos. Areas 1, 2 and 3 are high value foraging habitat, mainly due to the presence of Marri, an important food plant. As the survey area is within 12km of known breeding sites of Carnaby's Black-Cockatoo, the foraging habitat is likely to be important for supporting breeding birds.

Although no definitive evidence of roosting was recorded, when present in the area, Carnaby's Black-Cockatoos may roost adjacent to the survey area, in the taller trees around dams. The Forest Red-tailed Black-Cockatoo may roost in larger trees along the edge of the pasture.

The survey area is potential breeding habitat for Carnaby's Black-Cockatoo, as it contains tree species of suitable species and size within the known breeding range of this species. Possible evidence of nesting (chewed hollows) was noted during the site visit and 63 potential nesting hollows appeared to be present. The Forest Red-tailed Black-Cockatoo is unlikely to breed in the area, as the study area is on the edge of its range.

6. References

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Appendix 1. Opportunistic records of fauna and cockatoo foraging in the study area.

Zone	Easting	Northing	Taxon Name	Common Name	Status	ObsType
50	409580	6516200	<i>Tiliqua rugosa</i>	Bobtail		Day sighting
50	409580	6516200	<i>Cryptoblepharus buchannanii</i>	Fence Skink		Day sighting
50	409580	6516200	<i>Smicrornis brevirostris</i>	Weebill		Day sighting
50	409580	6516200	<i>Rhipidura albiscapa</i>	Grey Fantail		Day sighting
50	409580	6516200	<i>Cracticus tibicen</i>	Australian Magpie		Day sighting
50	409580	6516200	<i>Platycercus zonarius</i>	Australian Ringneck		Day sighting
50	409580	6516200	<i>Platycercus spurius</i>	Red-capped Parrot		Day sighting
50	409081	6515699	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Day sighting
50	409580	6516200	<i>Corvus coronoides</i>	Australian Raven		Day sighting
50	409580	6516200	<i>Petroica boodang</i>	Scarlet Robin		Day sighting
50	409580	6516200	<i>Daphoenositta chrysoptera</i>	Varied Sittella		Day sighting
50	409580	6516200	<i>Gerygone fusca</i>	Western Gerygone		Day sighting
50	409580	6516200	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill		Day sighting
50	409580	6516200	<i>Petrochelidon nigricans</i>	Tree Martin		Day sighting
50	409580	6516200	<i>Pachycephala rufiventris</i>	Rufous Whistler		Day sighting
50	409580	6516200	<i>Lichmera indistincta</i>	Brown Honeyeater		Day sighting
50	409580	6516200	<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater		Day sighting
50	409580	6516200	<i>Tachyglossus aculeata</i>	Echidna		Digging
50	409580	6516200	<i>Macropus fuliginosus</i>	Western Grey Kangaroo		Day sighting
50	409580	6516200	<i>Dicaeum hirundinaceum</i>	Mistletoebird		Day sighting
50	409580	6516200	<i>Turnix varius</i>	Painted Button-quail		Day sighting
50	409580	6516200	<i>Phaps chalcoptera</i>	Common Bronzewing		Day sighting
50	409580	6516200	<i>Menetia greyii</i>	Dwarf Skink		Day sighting
50	409580	6516200	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		Day sighting
50	409580	6516200	<i>Acanthiza inornata</i>	Western Thornbill		Day sighting
50	409580	6516200	<i>Zosterops lateralis</i>	Silvereye		Day sighting
50	409580	6516200	<i>Cacatua roseicapilla</i>	Galah		Day sighting
50	409580	6516200	<i>Cracticus torquatus</i>	Grey Butcherbird		Day sighting
50	409580	6516200	<i>Dacelo novaeguineae</i>	Laughing Kookaburra		Day sighting
50	409580	6516200	<i>Malurus splendens</i>	Splendid Fairy-wren		Day sighting
50	409580	6516200	<i>Pardalotus striatus</i>	Striated Pardalote		Day sighting
50	409580	6516200	<i>Colluricincla harmonica</i>	Grey Shrike-thrush		Day sighting
50	409580	6516200	<i>Pogona minor</i>	Bearded Dragon		Day sighting
50	409067	6515543	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409226	6515805	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409170	6515877	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409139	6515809	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410291	6517359	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410371	6517484	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410264	6517552	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410202	6517018	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign

Zone	Easting	Northing	Taxon Name	Common Name	Status	ObsType
50	410234	6517590	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410102	6517182	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410221	6517057	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410120	6517418	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410189	6517057	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410123	6517372	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410162	6517063	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410121	6517339	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410165	6517082	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410091	6517338	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410152	6517116	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410085	6517396	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410210	6517117	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410052	6517431	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410226	6517129	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410046	6517413	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410224	6517142	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410004	6517435	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410180	6517192	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410419	6517490	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409977	6517302	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410165	6517209	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409990	6517301	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410105	6517169	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410251	6517223	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410214	6517306	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410364	6517273	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410365	6517662	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410355	6517199	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410312	6517232	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410398	6517199	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410298	6517135	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410333	6517105	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410449	6517142	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410464	6517118	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410477	6517351	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410337	6517027	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410335	6517005	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410113	6517095	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410367	6517064	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410330	6517074	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410314	6517082	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410202	6517084	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign

Zone	Easting	Northing	Taxon Name	Common Name	Status	ObsType
50	410225	6517043	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410282	6517021	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410291	6516988	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410300	6516949	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410540	6517373	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410239	6516920	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410204	6516917	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410526	6517256	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410512	6517182	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410094	6517200	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410125	6517087	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410344	6517317	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410130	6517066	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410340	6517687	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410101	6517032	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410287	6517605	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410122	6516950	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410237	6517400	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410164	6516878	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410170	6517327	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410166	6516960	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410121	6517344	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409173	6515266	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409079	6515434	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409085	6515412	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409034	6515442	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409151	6515632	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409614	6516610	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409144	6515606	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409192	6515640	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409862	6517222	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409847	6515104	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409722	6517126	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409278	6515541	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	410002	6514827	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409717	6516307	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409214	6515397	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409862	6516253	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409258	6515926	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409361	6516217	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409402	6515840	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409585	6516183	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409292	6515841	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign

Zone	Easting	Northing	Taxon Name	Common Name	Status	ObsType
50	409507	6516075	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409760	6514914	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409420	6516164	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409351	6516211	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409470	6515329	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Foraging sign
50	409628	6517268	<i>Calyptorhynchus latirostris</i>	Carnaby's Black-cockatoo	Vu	Day sighting

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

AGENCY SUBMISSIONS			
Submitter	Comment	Proponent Response	Shire Officer Response
<p>Department Mines, Industry Regulation & Safety</p>	<p>In 2001 (File No: A1225/200101), 2003 (File No: 0452/200301) and 2015 (File No: 0745/201501) the Department of Mines, Industry Regulation and Safety (DMIRS) reviewed proposals related to gravel extraction on Lot 42 and had no concerns.</p> <p>There are two mining tenements that overlie the proposed area – Stage 10 in the NW of Lot 42 is overlain by E70/4970 held by Australian Silica Pty Ltd and the eastern edge of Stage 9 in the south of Lot 42 is overlain by pending E70/5406 held by Australian Precious Minerals Pty Ltd. As gravel extraction is not likely to affect commodities targeted on either tenement and that this application is a renewal of an existing EIL there is unlikely to be any conflict of interest.</p> <p>Although Extractive Industry Licences fall outside the Mining Act 1978, information on mineral resources, including basic raw materials, is of importance to the Geoscience and Resource Strategy Division, within DMIRS. The information is used in our MINEDEX database, which is a source of information for our State-wide resource mapping system - GeoView. The locations and status of basic raw materials extraction sites are also valuable inputs to our resource assessment and land use planning role.</p> <p>Our aim is for the database to be a comprehensive and up-to-date source of information on all mining-related activities throughout the State. It is a database that is used to inform other government agencies, as well as the general public, of the location of mines and mineral resources. You are encouraged to use it whenever researching information on</p>	<p>NOTED</p>	<p>Noted.</p>

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>mineral or petroleum resources and including basic raw materials.</p> <p>Thank you for the opportunity to comment on this proposal. DMIRS has determined that this proposal raises no significant issues with respect to mineral and petroleum resources, geothermal energy, and basic raw materials.</p> <p>With respect to specific questions asked in the application:</p> <ul style="list-style-type: none"> • The Shire of Chittering is not lawfully obliged to use this response, • The proponent has responsibility to comply with the Mines Safety and Inspection Act 84, which is administered by DMIRS, • We do not propose any specific conditions. <p>It would be appreciated if DMIRS continues to be notified of all applications for Extractive Industry Licences in the Shire of Harvey and that all future correspondence is addressed to the Executive Director of the Geological Survey and Resource Strategy Division.</p>		
<p>Department of Health</p>	<p>The DOH has no objection provided the development addresses dust complaints promptly. In relation to the dust management plan, there is no detail on when immediate action to stop dust complaints may be necessary or instituted. It may be appropriate to detail such procedures, timeline for response and actions taken regarding complaints with sign-off by Quarry manager.</p>	<p>This aspect has been addressed in the dust management plan.</p>	<p>Officers are satisfied that the Dust Management Plan adequately addresses complaints received.</p>

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

<p>Department of Planning, Lands & Heritage</p>	<p>I refer to your correspondence dated 24 April 2020, inviting the Department of Planning, Lands and Heritage (DPLH) to comment on a development proposal to extract gravel at the above location. The DPLH does not have a role in determining development proposals, and advice is provided in relation to the Shire of Chittering Local Planning Scheme No.6 (Scheme) and Local Planning Strategy (LPS), State Planning Policy 2.5: Rural Planning (SPP 2.5), and the Western Australian Planning Commission’s (WAPC) Visual Landscape Planning Manual.</p> <p>Under the Scheme, Lot 42 is zoned Agricultural Resource, where development of an extractive industry may be permitted, subject to Council’s approval and the proposal being advertised. An objective for the Agricultural Resource zone is to allow for the extraction of basic raw materials where it is environmentally and socially acceptable. Council would need to be satisfied that the proposal is consistent with the requirements of Part 4.15 of the Scheme.</p> <p>Remnant vegetation on Lot 42 comprises Priority Ecological Communities and Commonwealth Threatened Ecological Communities. These ecological communities will not be directly impacted by the proposal as they are outside the proposed extraction areas. However, other vegetation on the site has been identified as being in excellent or good condition and is likely to provide habitat for the endangered Carnaby’s Black Cockatoo, which is listed as endangered under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.</p>	<p>Points 1 and 2: Clearing and proposed rehabilitation will be assessed by Department of Water and Environmental Regulation (DWER) as part of the clearing permit application (CPS 8701/1) and will be to DWER’s standards.</p> <p>Point 3: There are no waste dumps associated with the proposed operations on Lot 42. The proponent also operates on mine sites, and this is a reference to those operations.</p> <p>Points 4 and 5: NOTED</p>	<p>Relevant elements of the planning framework have been used to assess this application with that assessment detailed in the officer’s report.</p> <p>Environmental impacts of the development, particularly in association with the removal of native vegetation will be assessed by DWER as part of their clearing permit application process.</p>
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>In the LPS, Lot 42 is located within a significant viewshed from Great Northern Highway. Due to the realignment of Great Northern Highway further away from the Stage 10 extraction area, and the number of large trees between the Stage 9 extraction area and the highway, there are unlikely to be any visual impacts resulting from the proposal. As a general observation, it is recommended that if approved, all elements of the proposal which can be measured and quantified be specifically outlined as planning conditions. This would include matters such as hours of operation, site areas, staging, stockpiling, protection of remnant trees or bushland, rehabilitation etc. This will assist Council within ongoing management and compliance should it be required. Attachment 1 provides an outline of matters for further consideration. The WAPC’s Fact Sheet - Basic Raw Materials (attached) may also assist with the implementation of SPP 2.5.</p> <p><u>Attachment 1 - Matters for consideration</u></p> <p>1. Protection of remnant vegetation Remnant vegetation on Lot 42 comprises Priority Ecological Communities (PECs) and Commonwealth Threatened Ecological Communities (TECs). This vegetation has been avoided in siting the proposed extraction areas. However, a number of remnant trees located in pasture and some bushland areas would be impacted by the proposal, particularly in Stage 9. A portion of the vegetation in Stage 9 has been classified in the Environmental Management Plan as being in excellent condition, and a portion of Stage 10 is in very good condition. All remaining vegetation on the site, including individual trees, is important, as it is likely to</p>		<p>Officers have assessed the visual impacts of the proposed development on the public realm and consider that the location of the proposed extraction sites coupled with existing vegetation result in the proposed extraction having a low visual impact.</p> <p>A series of development approval conditions have been recommended as part of the officer recommended resolution. The conditions are supported by elements of the planning framework, with each achieving a specific planning purpose.</p> <p>Environmental impacts of the development, particularly in association with the removal of native vegetation will be assessed by DWER as part of their clearing permit application process.</p>
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>provide habitat for the endangered Carnaby’s Black Cockatoo as the proposed extraction areas are within a confirmed breeding habitat area for the species, which is listed endangered under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>.</p> <p>The boundaries of the extraction areas could be modified to exclude remnant bushland and individual remnant trees, in order to protect Carnaby’s Black Cockatoo habitat. The Department of Biodiversity, Conservation and Attractions may be able to advise on priorities in this regard.</p> <p>2. Rehabilitation</p> <p>The supporting Environmental Management Plan indicates that rehabilitation would be considered adequate if one new plant survived for every 8m² planted (page 18). This would appear to be a low figure, unless the plants are trees that will be useful as habitat for Carnaby’s Black Cockatoo, such as marri or local banksia species. Clarification should be sought on the interim plant survival target and the proponent could provide evidence of the success of rehabilitation following each stage.</p> <p>3. Waste dump</p> <p>The Hydrocarbon Spill Management Plan that supports the Water Management Plan refers to hydrocarbon spill material being taken to the waste dump. If this waste dump is to be located on Lot 42 it would be useful to identify it on a plan, and the risk that leakage from the waste dump may contaminate groundwater or surface water should be addressed.</p> <p>4. Visual impact</p> <p>As Lot 42 is identified in the Shire of Chittering Local Planning Strategy as located within a significant road</p>		<p>The revegetation requirements as imposed as an offset for the loss of native vegetation will be administered by DWER as part of their clearing permit application process. Rehabilitation of the extraction sites themselves will be back to usable pasture land for future agriculture.</p> <p>There are no waste dumps on the subject property that will be permitted for the dumping of hydrocarbon spill waste.</p> <p>Officers have assessed the visual impacts of the proposed development on the public</p>
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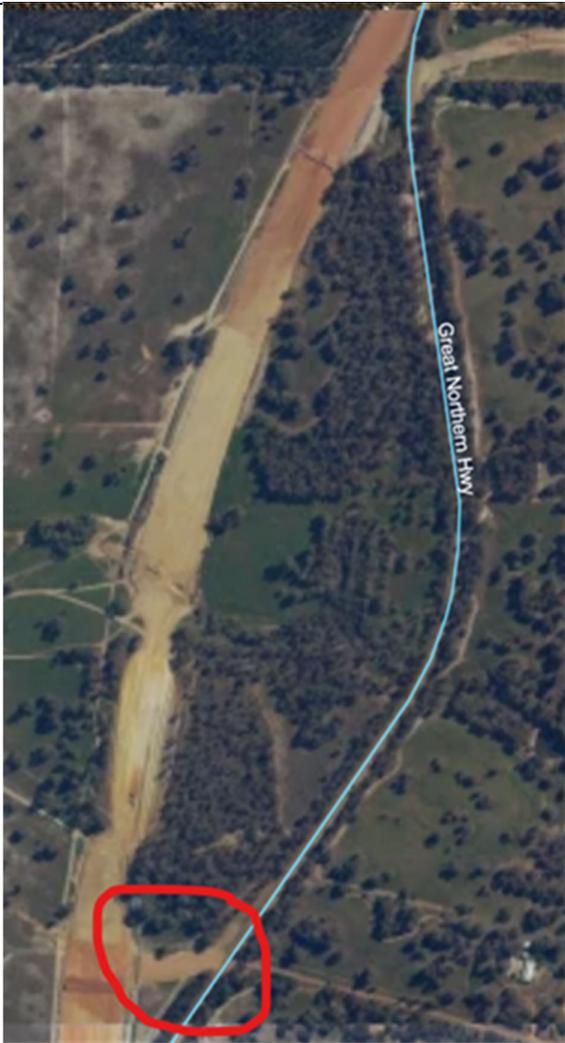
SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>viewshed from Great Northern Highway, it is appropriate to consider motorists’ view from the highway. It appears that the proposed Stage 10 extraction area would not be visible from the highway once the highway is realigned westward. In relation to the proposed Stage 9 extraction area, the remnant marri trees located amongst pasture between Stage 9 and the highway are likely to screen the proposal from the highway.</p> <p>Table 5 of the Environmental Management Plan states that the objective for visual amenity is that rehabilitated areas should blend into the surrounding environment. This objective could alternatively state that it should not be apparent that extraction has occurred.</p> <p>5. Dieback</p> <p>The Environmental Management Plan indicates that the potential for spread of dieback will be addressed by trucks and machinery arriving at the site clean. Because dieback spreads downhill and the proposed site is elevated and drains into several small tributaries of Ellen Brook, it will be important to ensure that the proponent’s commitments in this regard are adhered to. Requesting that dieback mapping be undertaken may assist with this.</p>		<p>realm and consider that the location of the proposed extractions sites coupled with existing vegetation result in the proposed extraction having a low visual impact.</p> <p>Officers consider the content of the rehabilitation measures suitable. The batter grades listed in the rehabilitation measures ensure that the extraction sites steeper batters are graded to a more natural contour.</p> <p>The subject application was referred to relevant environmental agencies (including DBCA) who did not raise issue with the dieback management measures contained within the application.</p>
<p>Main Roads WA</p>	<p>Thanks for the extra information. I discussed with our Network Manager who was able to confirm that the access for this operation is actually south of the location that you showed in the attachment. The cul-de-sac area is the northern most section of Great Northern Highway which has been replaced by a realignment. I understand that the old section of Great Northern Highway is becoming a local road and this operator will access their operations from the</p>	<p>NOTED</p>	<p>Noted.</p>

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>access I've circled in red below, then travel along the local road (former highway).</p> <p>Given the above and information that you've provided, Main Roads has no objection to the development application for extractive industry.</p>		
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	 An aerial photograph showing a rural landscape. A road, labeled 'Great Northern Hwy', runs vertically through the center. To the left of the road is a large, light-colored, cleared area, possibly a quarry or construction site. To the right is a dense forest. A red circle is drawn around a small area in the lower-left quadrant of the image, near the edge of the cleared area and the road.		
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

			
<p>Department of Primary Industries & Regional Development</p>	<p>DPIRD does not object to the proposal for the following reasons:</p> <ul style="list-style-type: none"> • The area is not identified as high quality agricultural land • A weed management plan is included, with surveys before, during and after extraction and ongoing monitoring during the life of the extraction activity • Biosecurity and disease hazard prevention are included in the plan • No hydrocarbon fuels are stored on site • Appropriate buffer zones are included • Dust and noise controls are considered • Water management to prevent on or offsite impacts of erosion is included • Site rehabilitation is planned after extraction completed, and monitoring to ensure success is planned. <p>DPIRD is providing these comments as advice to the Shire and the Shire is not lawfully obliged to incorporate these comments. DPIRD does not have any independent statutory</p>	<p>NOTED</p>	<p>Noted.</p>

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>approval or licence to grant and do not require any conditions on approval that require monitoring or enforcement.</p>		
<p>Department of Water & Environmental Regulation</p>	<p>The Department has identified that the proposed development has the potential to impact on environment and water values and management. Key issues and recommendations that should be addressed are provided below:</p> <p><u>Industry Regulation Advice</u></p> <p>The Department regulates emissions and discharges from the construction and operation of prescribed premises through a works approval and licensing process, under Part V Division 3 of the Environmental Protection Act 1986 (EP Act). The EP Act requires a works approval to be obtained before constructing a prescribed premises and makes it an offence to cause an emission or discharge unless a licence or registration is held for the premises. The categories of prescribed premises are outlined in Schedule 1 of the Environmental Protection Regulations 1987.</p> <p>The development and extractive industry licence application was reviewed in relation to works approval and licence requirements under Part V Division 3 of the EP Act.</p> <p>Based on the information provided, the proposed screening constitutes a change to the Prescribed Premise currently operated under L8988/2016/1, with works for preceding stages carried out under W5979/2016/1. This change would require a new works approval or amendment to W5979/2016/1, and an amendment to L8988/2016/1 for</p>	<p>This site has been licenced while operational, and an application for works approval and licencing will be submitted to the Department of Water and Environmental Regulation (DWER) for the new proposed extraction stages once Shire approvals are finalised.</p> <p>A Clearing Permit application has been submitted (CPS 8701/1) and is currently being assessed by DWER.</p>	<p>It is acknowledged that there is a requirement for the proponent to obtain a Works Approval for the crushing and screening activities associated with the proposal. If approved, an advice note can be included on any development approval issued advising the proponent of such requirement.</p>

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>the following category under Schedule 1 of the Environmental Protection Regulations 1987:</p> <p>12 Screening, etc. of material: premises 50000 (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated tonnes or more per year</p> <p>The granting of either a new works approval or works approval amendment and licence amendment would require an assessment of the environmental risk posed by any additional noise, dust or sediment discharge. In order to carry out this assessment the Department would require the following information;</p> <ul style="list-style-type: none"> • a description of any management controls that will be undertaken in relation to the control of emissions and discharges from the proposed activities, and; • a site plan showing the location of the proposed activities and any associated controls. <p>The application will need to demonstrate compliance with general provisions of the EP Act and the Environmental Protection (Noise) Regulations 1997. Further guidance on changes to prescribed premises can be found in the Department’s Industry Regulation Guide to Licensing which can be accessed at: https://www.der.wa.gov.au/our-work/licences-and-worksapprovals/540-guideline-industry-regulation-guide-to-licensing.</p> <p><u>Native Vegetation Clearing Advice</u></p>		
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations).</p> <p>Based on the information provided, no exemption applies to the proposed clearing and a clearing permit is required.</p> <p>The Department received a Clearing Permit application (CPS 8701/1) on 26 September 2019 from B&J Catalano Pty Ltd to clear 7.99 hectares of native vegetation at this location for the purposes of gravel extraction. This application is currently undergoing environmental impact assessment.</p> <p>The extent of the clearing specified in the clearing permit application appears to be consistent with the clearing proposed in the development and extractive industry licence application. To date, the applicant has not provided documentation that an extractive industry licence (EIL) has been obtained, however, the Shire has advised the applicant has applied for an EIL.</p>		<p>It is acknowledged that the proponent is required to obtain a clearing permit for the removal of native vegetation. If approved, an advice note can be included on a development approval advising the proponent of such requirement.</p>
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

<p>Ellen Brockman Integrated Catchment Group and Chittering Landcare Group</p>	<p>The Ellen Brockman Integrated Catchment Group and Chittering Landcare Group consider further gravel extraction from Lot 42 and the Donnington Springs property is inappropriate and further clearing of the remaining vegetation and mature trees on this property a risk downslope in the Yalyal catchment. Acidic saline groundwater is notoriously difficult to mitigate and control particularly when it is expressed at the ground surface lower in the catchment itself. The groups consider the Yalyal Brook and catchment to be a priority for protection within the Ellen Brook catchment, itself a priority catchment within the Swan Canning.</p> <p>Further clearing of mature trees and vegetation will affect the groundwater level downslope with the subsequent formation of salt seepages at the surface in the west of the catchment. This will now be exacerbated by the Perth Darwin Highway which passes to the west of the existing acid saline dams and will form a barrier to groundwater flow. It is also known that any offsite detrimental effects will not be evident for many years when the extractive industry has depleted the resource and left the property.</p> <p>Historically, the acid saline soils and formation of acid sulphate seepages to the west of the Great Northern Highway formed following removal of large eucalypt trees on Donnington Springs in the 1970s and 1980s when the property was owned by Mr Ross lightfoot. This was documented by the then Department of Agriculture and Mr Ken Angell when a salinity study in the Shire of Chittering was undertaken.</p>	<p>In 2019 B&J Catalano applied for clearing of 16.2ha on Lots 41 and 42 Great Northern Highway, Chittering in relation to proposed extractive industry on these properties. The clearing application (CPS 8701/1) then went through a process of minimisation and mitigation measures, resulting in a final clearing footprint of 2.39ha (agreed upon with DWER in March 2021). However, this is the combined clearing footprint for Lot 42 (Stages 9 and 10) and Lot 41. The clearing footprint on Lot 42 (Stage 9) has been reduced to 1.84ha.</p> <p>There has been a long process of minimisation and mitigation for the proposed clearing. During the validation stage of the application, the clearing footprint was amended several times, reducing the application area from 16.2ha to 7.99ha of native vegetation. The areas proposed to be cleared were selected from areas of degraded vegetation, and higher quality vegetation was avoided. Furthermore, many large trees</p>	<p>DWER are the lead agency for permitting native vegetation removal and offset plantings. It takes into consideration the environmental impacts of such removal and determines whether it is appropriate or not after considering a series of environmental factors. The Shire can take a level of comfort that DWER have assessed the environmental impacts of this proposal and are the regulatory agency that will enforce the proposed offset plantings. As such, officers consider that the level of native vegetation clearing proposed (1.84ha canopy cover) is acceptable given the revegetation offsets proposed and enforced through DWER’s clearing permit process.</p> <p>This concern is further addressed in officers reports.</p>
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>In addition, the documentation provided by Catalanos indicate</p> <ul style="list-style-type: none"> • A clearing permit is still to be granted. • Rehabilitation is only to be reestablishment of the top soil (if possible as stated in the document) and planted with pasture grasses. This will not replace the loss of mature trees. Even if revegetation with native tree species occur there will be a lag in time between establishment of the trees and their ability to reduce the degradation that will occur. • There is no mention of any revegetation with native species except to refer to the (possible) conditions in the Clearing Permit they hope to gain from DWER that may require them to establish native species somewhere. • All the groundwater data is old data supplied by Austral Brick in 2009 to 2014. It is obvious that Austral Brick no longer provide an annual report to the Shire as requested when they were granted approval to extract clay otherwise that data would surely have been included. • Other data provided is dated 2003. No new data is supplied by Catalanos. Is this acceptable? <p>The catchment groups have been working in this area since 1992 to remediate and improve the catchments, improve the productivity of already cleared land, protect and improve the water quality of the waterways and groundwater and have assisted in rehabilitation of the clay pits already on the property.</p>	<p>were excluded from within the application area as part of minimisation and mitigation measures.</p> <p>During the assessment of the revised application area (7.99ha) the followings concerns were raised:</p> <ul style="list-style-type: none"> • The proposed clearing (7.99ha) may provide foraging and breeding habitat for black cockatoos and still had the potential to result in significant impacts to fauna habitat. • Potential impact to conservation significant flora and remnant vegetation. <p>To address the above:</p> <ul style="list-style-type: none"> • A black cockatoo habitat assessment was undertaken to determine if the vegetation within the application area comprises significant breeding habitat; and • A flora and vegetation survey was undertaken 	
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

	<p>We recommend that no further excavation on the property takes place as offsets or rehabilitation after the fact will do nothing for the degradation that will occur and establishment of pasture grasses will not replace the ecosystem services of mature trees whether or not the vegetation is deemed degraded.</p>	<p>to determine the presence or absence of conservation significant flora within the application area.</p> <p>Once the surveys were undertaken and results were mapped, further minimisation and mitigation measures were undertaken to avoid trees with large hollows and canopy with native vegetation understorey. This resulted in a further reduction of the clearing footprints.</p> <p>The final clearing footprint agreed upon with DWER is 2.39ha and only one tree with a large hollow remains within the application footprint. Furthermore, the proponent has made a commitment to offset the impact of clearing by revegetating a 4.74ha area (double the clearing area) with native vegetation from a Degraded state to a Good state. This offset area is within Lot 42 and near the proposed Stage 9 extraction area, and also upslope of the Yalyal Brook catchment. It</p>	
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

		<p>is also proposed to covenant this revegetation area for perpetuity (currently being negotiated with the landowner). This is additional to the 2.7ha of revegetation that has already taken place on the property as part of commitments from the current extraction operations.</p> <p>As part of DWER’s assessment of clearing application CPS 8701/1, the affect that the proposed clearing may have on the groundwater level, and the potential for associated water quality issues, has been assessed. The information below in italics has been copied directly from DWER’s Preliminary Assessment Report (June 2020) of the initial revised application area (7.99ha), which found the application was not likely to be at variance with Clearing Principles (g) or (i) as follows:</p> <p>(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</p> <p>(i) Native vegetation should not be cleared if the clearing of the</p>	
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

		<p>vegetation is likely to cause deterioration in the quality of surface or underground water.</p> <p>Specifically, DWER has assessed whether the proposed clearing may contribute to higher groundwater level and associated water quality issues such as salinity, with advice from the Commissioner of Soils and Land Conservation (DPIRD) as follows:</p> <p><i>DPIRD (2020) assessed the potential for the proposed removal of native vegetation to contribute to a rise in the groundwater table, and salinity within and outside the application area. The assessment concluded that the proposed clearing is not expected to significantly impact salinity within the main waterways and the risk of the proposed clearing resulting in land degradation is low (DPIRD, 2020).</i></p> <p><i>DPIRD (2020) advised that changes to regional hydrology within the</i></p>	
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

		<p><i>area have been measured with incidents of acid groundwater, resulting from long term clearing practices for farming over thousands of hectares within the Shire of Chittering and the surrounding landscape. DPIRD (2020) concluded that further clearing of eight hectares of native vegetation proposed under the application will not be a measurable addition to this degradation process that has been ongoing for decades.</i></p> <p><i>As discussed under Principle (i), DPIRD (2020) advised that the proposed clearing is not likely to significantly impact salinity within main waterways. As discussed under Principle (g) and (i), the proposed clearing is not likely to cause deterioration in the quality of surface or underground water, or cause appreciable land degradation, as supported by advice provided by (DPIRD, 2020).</i></p> <p>Since this assessment by DWER, the clearing footprint has been reduced further by more than</p>	
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SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

		two thirds (from 7.99ha to 2.39ha).	
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*Note: Comments are as per original submission received by the Shire.

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING

Department of
PlanningWestern
Australian
Planning
Commission

BASIC RAW MATERIALS

Page 1

This fact sheet outlines a range of land use planning considerations relevant to the establishment, expansion or modification of basic raw material operations in Western Australia.

This fact sheet has been prepared to assist planners implement [State Planning Policy 2.5: Rural Planning](#).

What are basic raw materials?

Basic raw materials (BRM) include sand (including silica sand), clay, hard rock, limestone (including metallurgical limestone), gravel and other construction and road building materials. It also includes material such as limesand and gypsum, used to ameliorate agricultural land.

BRM proposals fall under the provisions of the [Planning and Development Act 2005](#) when extraction occurs on private (freehold) land.

The Western Australian Planning Commission (WAPC)'s [State Planning Policy 2.4: Basic Raw Materials](#) (SPP 2.4) and [BRM Applicants' Manual](#) are available to assist applicants and planning officers.

Design and operation

BRM operations include, but are not limited to:

- clearing and stockpiling vegetation, top soil and overburden;
- pit creation and dewatering;
- staged excavation of BRM;
- processing of BRM including crushing, screening, washing, blending or grading;
- wastewater treatment;
- an average of 2-6 truck movements per hour, depending on the scale of the operation;
- refuelling, cleaning and servicing of vehicles and machinery;
- warehousing and/or stockpiling of BRM; and
- rehabilitation of closed pits.

Lifespan of a project: All BRM operations have an estimated lifespan based on the amount of BRM available and the proposed rate of extraction. Decision-makers need to be aware of the life of the operation, and the proposed extraction rate per year.

Operating hours: Operating hours of a BRM site will vary, but operations generally occur between 5am and 5pm, 6 days a week. Major infrastructure projects may result in operations on Sunday and/or increased truck movements. Operating hours may be a condition of approval.

Pit design: BRM proposals may include plans for several pits staged over the lifespan of the operation. Smaller pits may achieve better environmental outcomes as the removed top soil is returned within a shorter time period. Pit rehabilitation generally follows excavation, however decision-makers need to be aware of the proposed arrangements.

The Department of Parks and Wildlife (DPaW) has produced [Guidelines for the Management and Rehabilitation of Basic Raw Material Pits 2008](#).

Planning context

In determining proposals for an extractive industry, consider:

- management of air, water, noise and visual impacts;
- location and stability of excavations, stock piles and overburden dumps;
- amenity of adjacent land uses in the local community; and
- rehabilitation of the land consistent with its long-term future use.

Conservation values: BRM operations have the potential to disturb native vegetation, including Declared Rare Flora (DRF) and priority flora, as well as threatened and priority fauna species. Clause 51C of the [Environmental Protection Act 1986](#) outlines circumstances when the clearing of native vegetation is permitted.

Water and availability: Water is needed for cleaning machinery and trucks, domestic uses and in processing. Access to scheme water is usually required. BRM operations may impact on nearby surface water and groundwater resources.

[Water Quality Protection Note 15](#), produced by the Department of Water (DoW), contains information on operations near sensitive water resources.

Dewatering may be included in the proposal. DoW's [Water Quality Protection Note 13](#) provides best management practices for the dewatering of soils. A licence to dewater or to gain access to water may be required under the [Rights in Water and Irrigation Act 1914](#).

SCHEDULE OF SUBMISSIONS – EXTRACTIVE INDUSTRY; LOT 42 (RN 4884) GREAT NORTHERN HIGHWAY, CHITTERING



BASIC RAW MATERIALS

Page 2

Buffers: Buffer distances are influenced by: site characteristics; the proposed location of infrastructure, access routes, pits and stockpiles; and the extraction method.

[Guidance Statement: Separation Distances \(2015\)](#), produced by the Department of Environmental Regulation (DER), and the Environmental Protection Authority's [Guidance for the Assessment of Environmental Factors: Separation Distances between Industrial and Sensitive Land Uses \(2005\)](#) include recommendations for separation distances from sensitive land uses.

Buffers are also required to protect water quality in nearby waterways and wetlands. The buffer will depend on the design and layout of the premises, the risk of water contamination, and the technology and management measures used to protect the waterway or wetland.

Further information on how to determine a buffer can be found in [State Planning Policy 2.5: Rural Planning](#).

Transport management: Extractive industries have the potential to impact on the road network and its users. Consider the following:

- Is the road suitable to support the number of truck movements?
- Is the proposal's access located on a straight section of a road with sufficient sight distance either side?
- Will trucks be able to cross the road safely?
- Does the road require upgrading?

Visual impacts: Preserving existing vegetation can assist in minimising impacts on views from roads, adjoining properties and other key viewing locations. DPaW recommends a vegetative screen of at least 150m between adjoining roads and pits. The WAPC's

[Visual Landscape Planning in WA \(2007\)](#) contains detailed guidance on addressing visual impacts, including ways to minimise the visibility of operations.

Noise and vibration: Noise from BRM extraction is subject to the [Environmental Protection Act 1986](#) and the [Environmental Protection \(Noise\) Regulations 1997](#). As excavation work may require blasting, the consideration of blasting areas will assist in defining appropriate buffers to reduce disturbance to any neighbouring sensitive land uses.

Dust: Dust can be generated in a number of ways including:

- blasting and extraction
- stockpiling of material
- transport movements
- soil erosion

Impacts to sensitive land uses can be reduced through vegetation screens, 'best practice' site management practices, and appropriate buffers.

Management plans: A management plan may accompany a BRM proposal and would typically address:

- site description and analysis;
- consideration of statutory and strategic planning;
- management and operations of the proposal;
- consideration and management of impacts on amenity;
- biosecurity measures to prevent the spread of weeds and diseases; and
- environmental impact assessment and management.

Critical elements of management plans may also be addressed as conditions of approval.

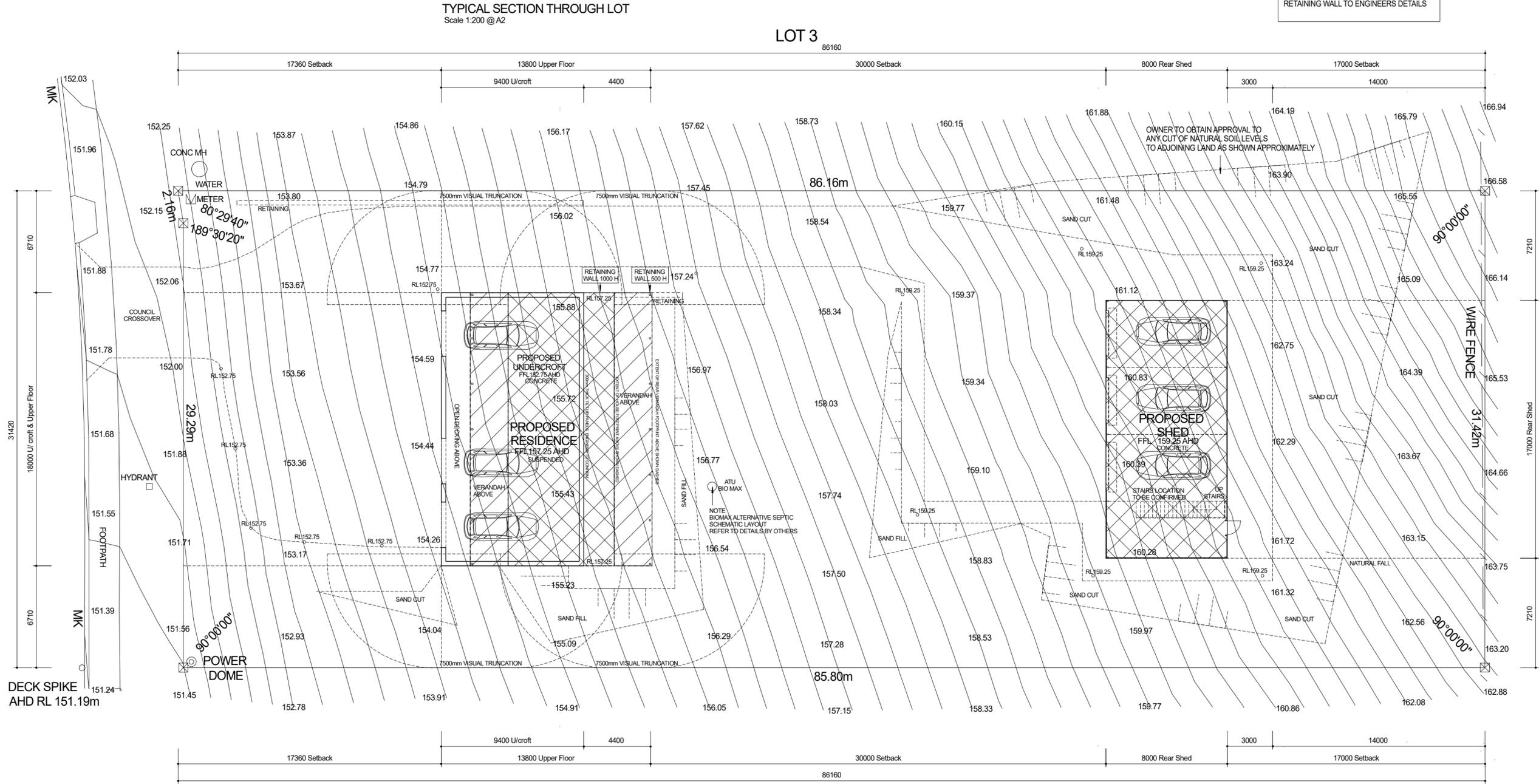
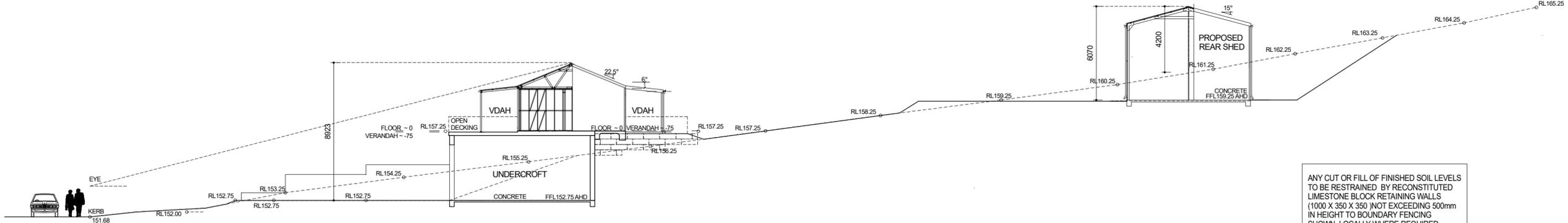
Environmental licensing and works approval: Under sections 52 and 53 of the [Environmental Protection Act 1986](#) a works approval is required for the construction of prescribed premises or to carry out certain work on existing prescribed premises.

BRM extraction is not listed in [Schedule 1](#) of the [Environmental Protection Regulations 1987](#). However some associated operations (e.g. screening, washing, crushing grinding, sizing or separation of material) may be prescribed and require authorisation under Part 3 Division 2 of the [Environmental Protection Act 1986](#).

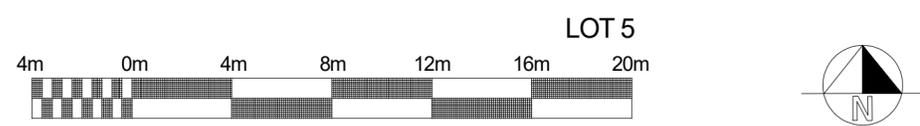
In [Guidance Statement: Land Use Planning \(2015\)](#), DER outlines its policy of assessing applications under Part V Division 3 of the [Environmental Protection Act 1986](#) concurrently with applications for planning approval and making a determination once relevant planning decisions have been made.

FEATURE SURVEY

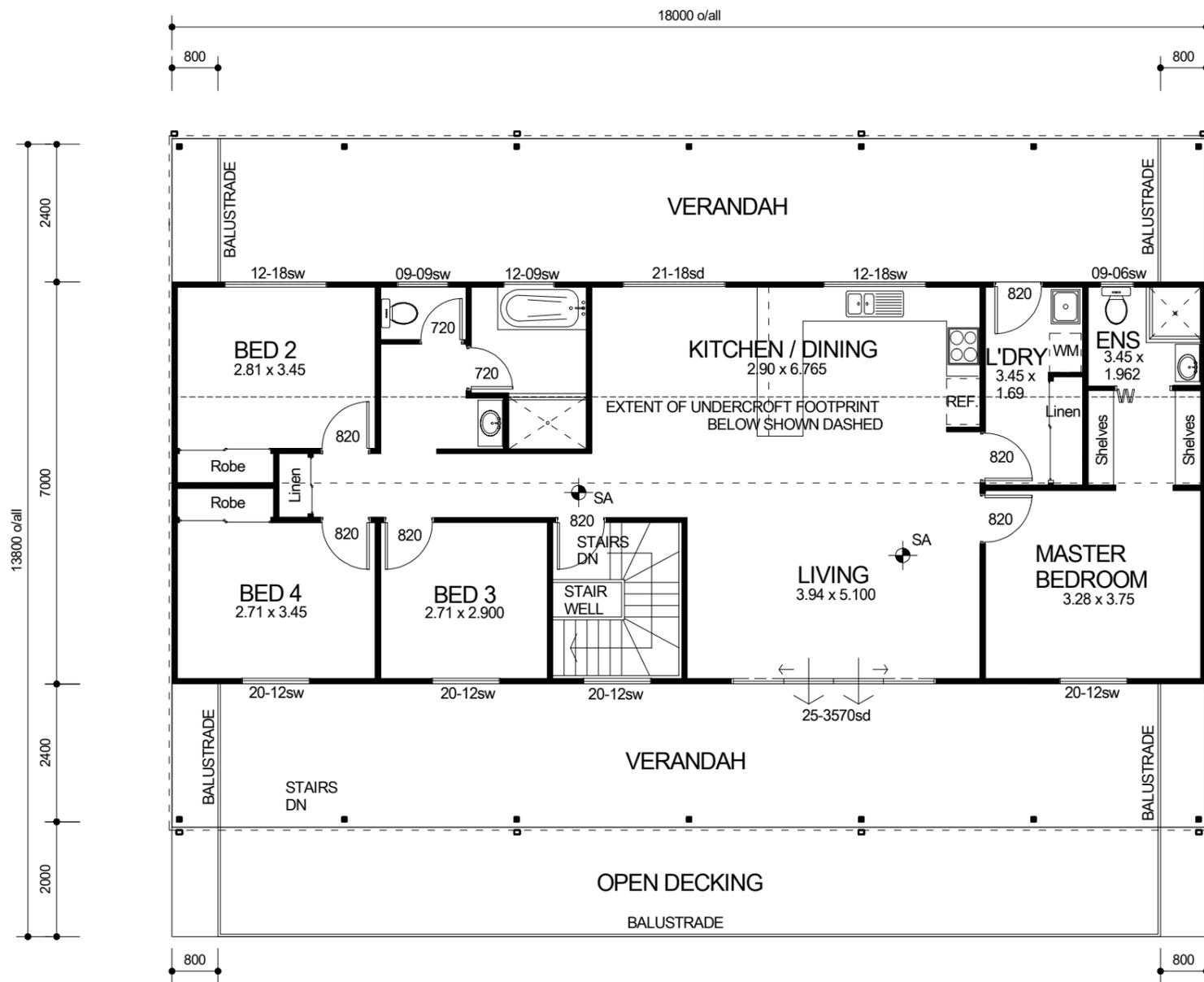
SITE LOCATION	
Lot No	4
Street	Myrtle Way
Suburb	Bindoon
Loc Auth	N/A
BUILDER	
RESIDENCE	
Surveyor	Peter Mataboni
Drawn	Todd James
P.R. MATABONI & CO LICENSED SURVEYOR	
LICENSED SURVEYOR: PETER MATABONI	
Mob: 0412 078 872	
Office Ph: (08) 9409 7682	
Email: pmsurvey@inet.net.au	
TITLE PARTICULARS	
Dist/Plan	N/A
Location	N/A
Volume	N/A
Folio	N/A
SERVICES AND DETAIL	
Electricity	Yes
Water	Yes
Sewerage	No
Gas	No
Comms	No
Footpath	Yes
Kerb	Yes
Fencing	Yes
Drainage	Yes
Improvements	N/A
Objectional Features	No
Re Peg Required	Yes
Date	01/02/21



DATUM	CO-ORD SYSTEM	SCALE
AHD	ASSUMBED	1:200 @ A2
Services to be confirmed with AUTHORITIES. All service may not be shown. Sewer / Drainage may vary from schematic presentation check minimum clearance. Retaining not included / in addition to contract remains owners responsibility. Site Survey only location of boundary pegs or fences in relation to the boundary is not guaranteed. For easements etc. Check Certificate of Title. The information shown on this drawing is current as at the date of the survey.		



OWNER / S: M & S SWAIN	
BUILDING ADDRESS: LOT 4 Myrtle Way, Bindoon	
PLANS 09-06-2021	
SHT No: (2) OF (8)	JOB No: 1541



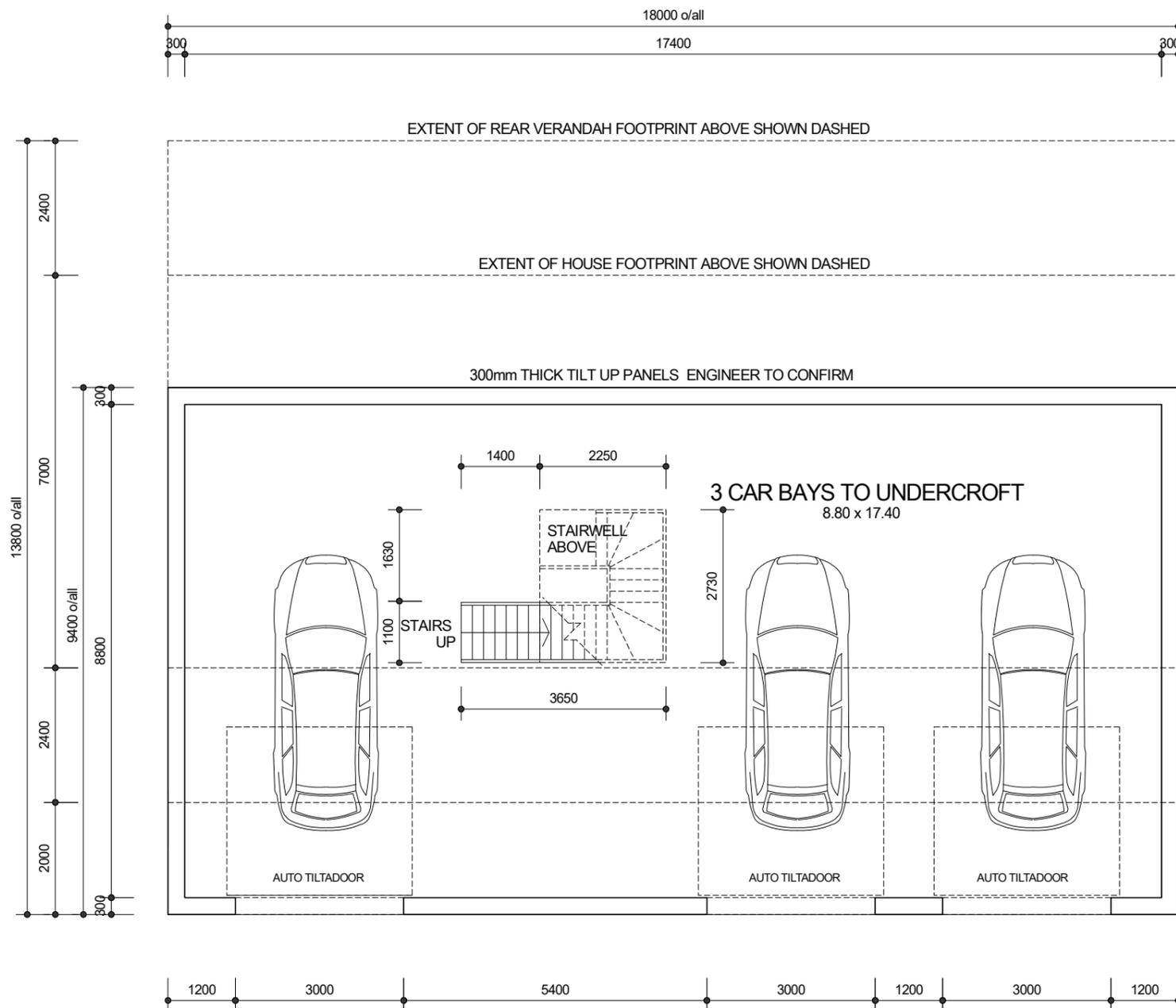
UPPER FLOOR PLAN

SCALE 1:100

AREA	126.00m ²
VERANDAH	86.40m ²
OPEN DECKING	36.00m ²
TOTAL	248.40m ²

PERIMETER 50.00m

OWNER /S :	M. & S SWAIN
BUILDING ADDRESS :	LOT 4 Myrtle Way, Bindoon
SKETCH PLANS 09-06-2021	SHT No: (4) OF (8)
	JOB No: 266 1541



UNDERCROFT FLOOR PLAN

SCALE 1:100

UNDERCROFT AREA 169.20m²

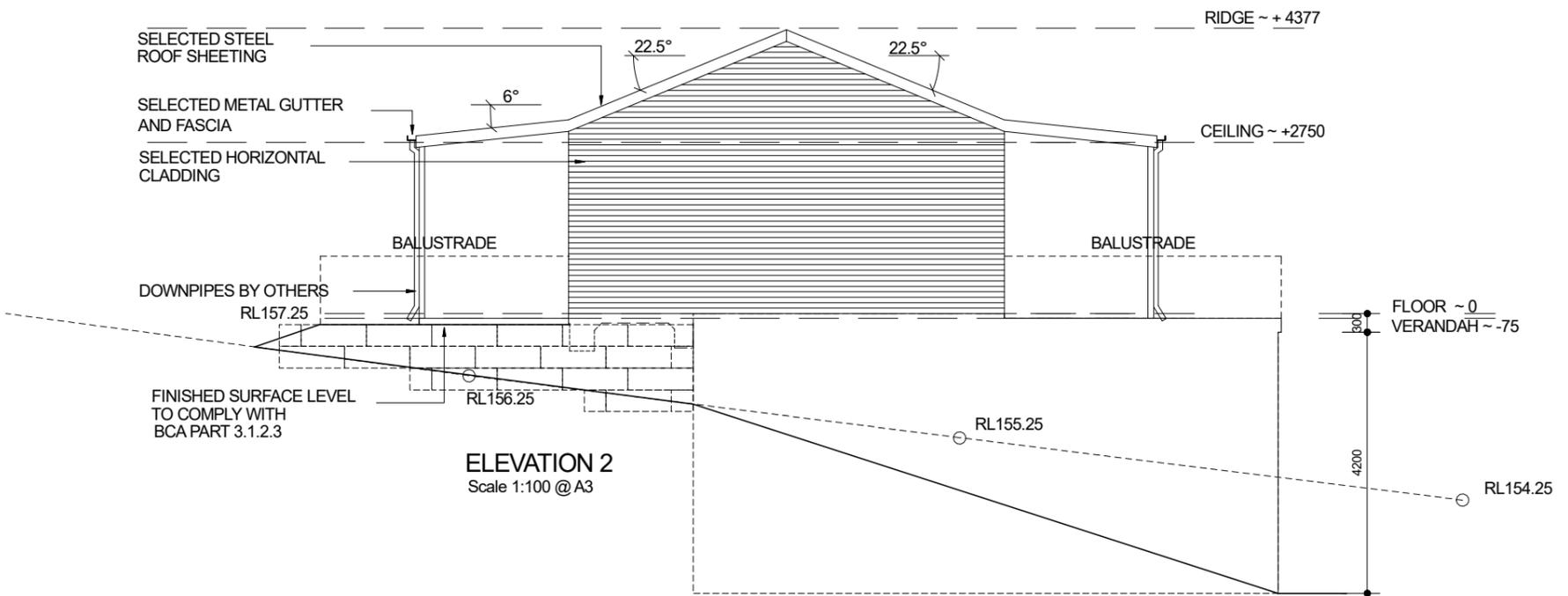
TOTAL 169.20m²

PERIMETER 54.80m

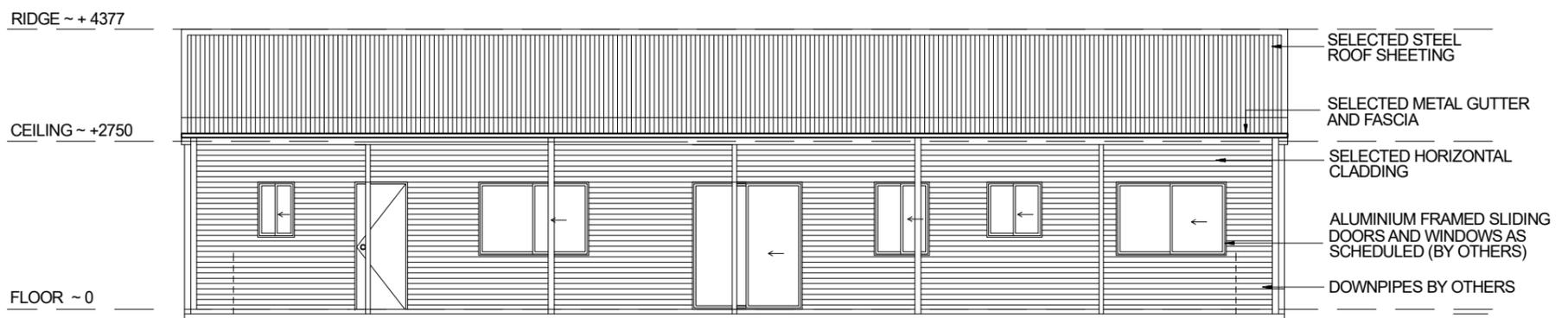
OWNER /S :	M. & S SWAIN
BUILDING ADDRESS :	LOT 4 Myrtle Way, Bindoon
SKETCH PLANS 09-06-2021	SHT No: 3 OF 8
	JOB No: 267 1541



ELEVATION 1
Scale 1:100 @ A3



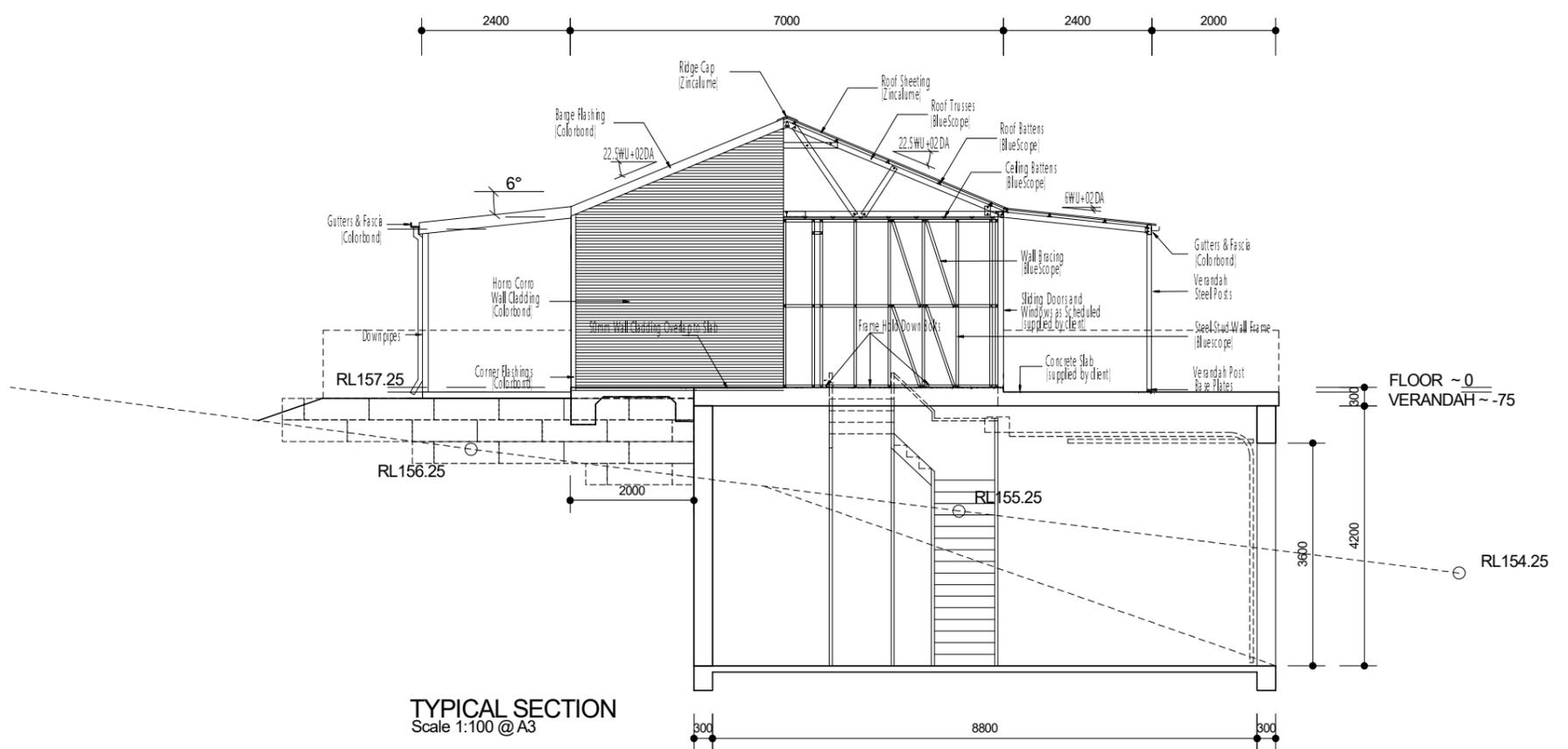
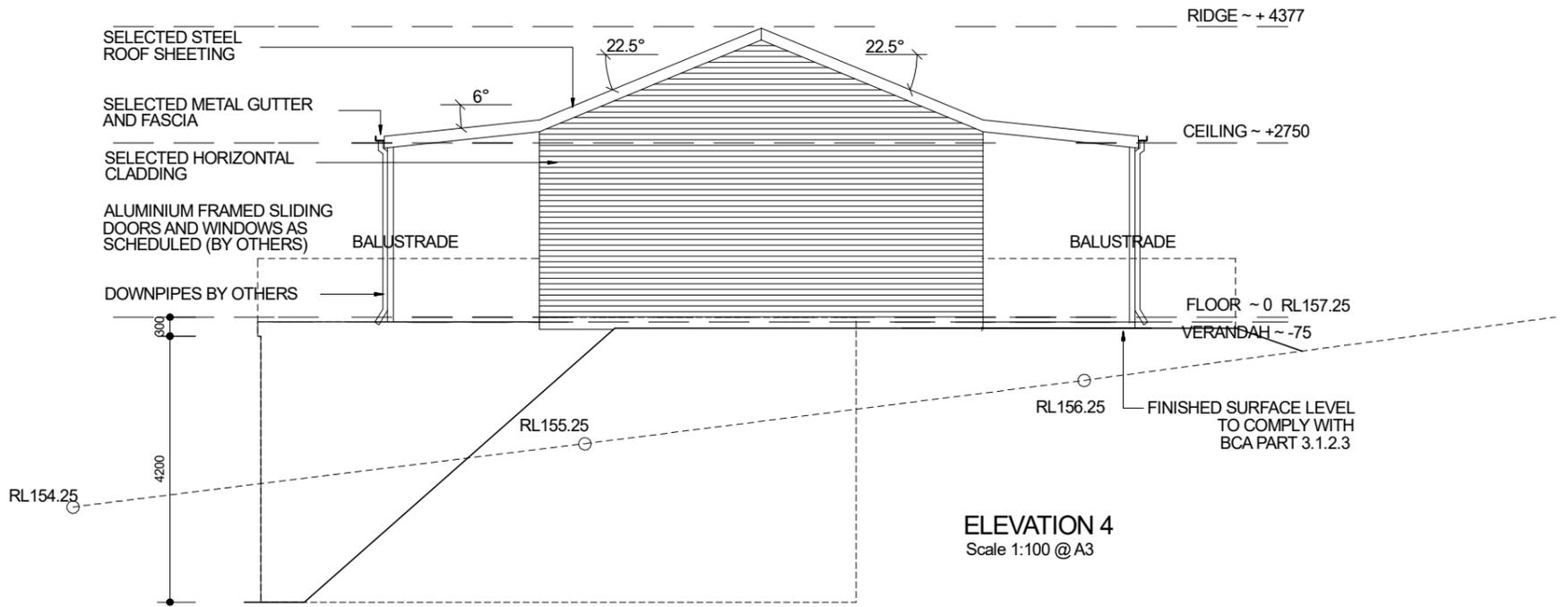
ELEVATION 2
Scale 1:100 @ A3



ELEVATION 3
Scale 1:100 @ A3

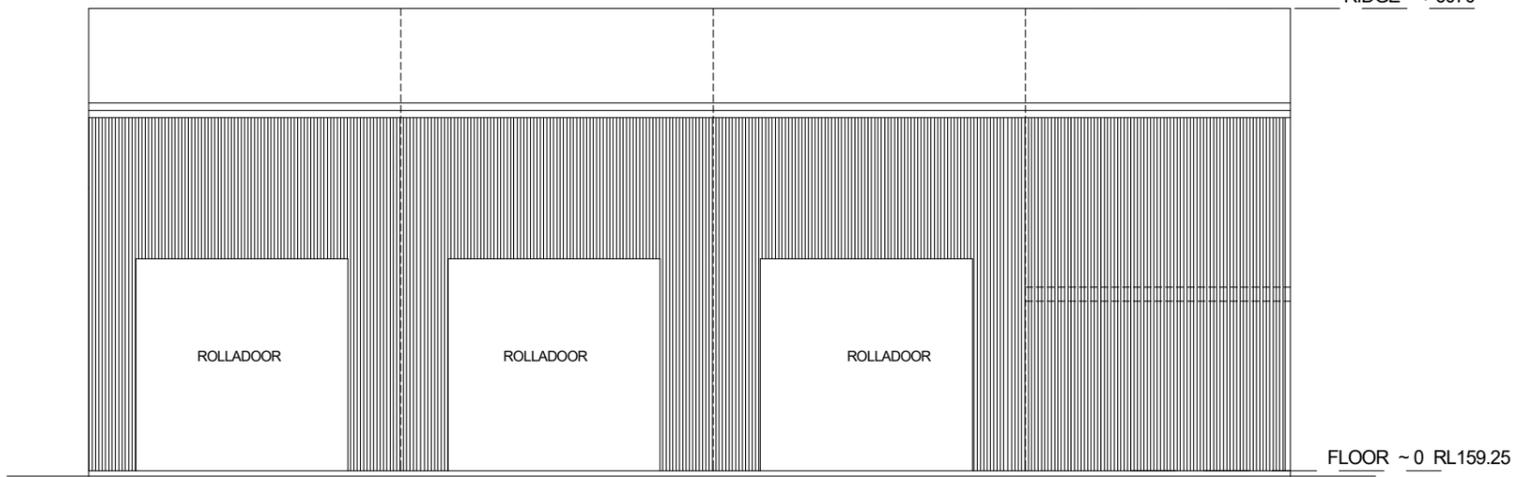
ELEVATIONS
SCALE 1:100

OWNER /S :	M. & S SWAIN
BUILDING ADDRESS :	LOT 4 Myrtle Way, Bindoon
SKETCH PLANS 09-06-2021	SHT No: 5 OF 8
	JOB No: 268 1541

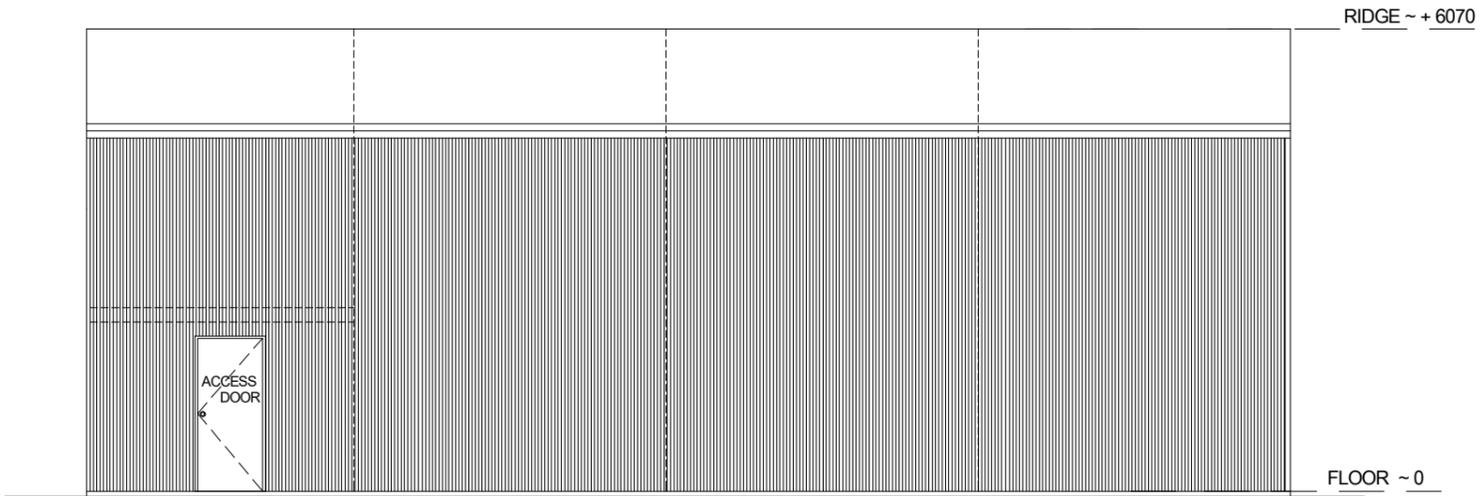


ELEVATIONS
SCALE 1:100

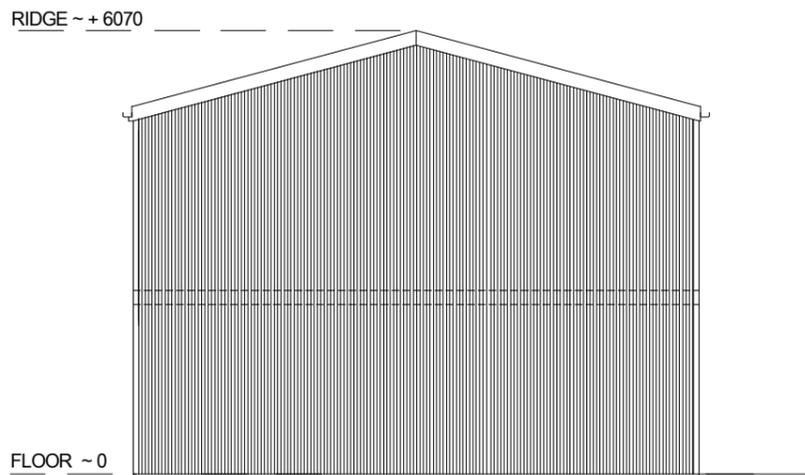
OWNER /S :	M. & S SWAIN
BUILDING ADDRESS :	LOT 4 Myrtle Way, Bindoon
SKETCH PLANS 09-06-2021	SHT No : 6 OF 8
	JOB No 269 1541



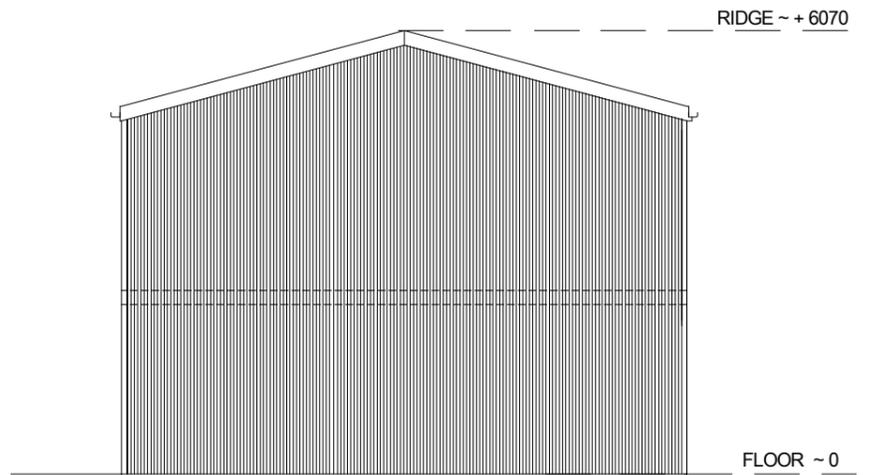
ELEVATION 1
Scale 1:100 @ A3



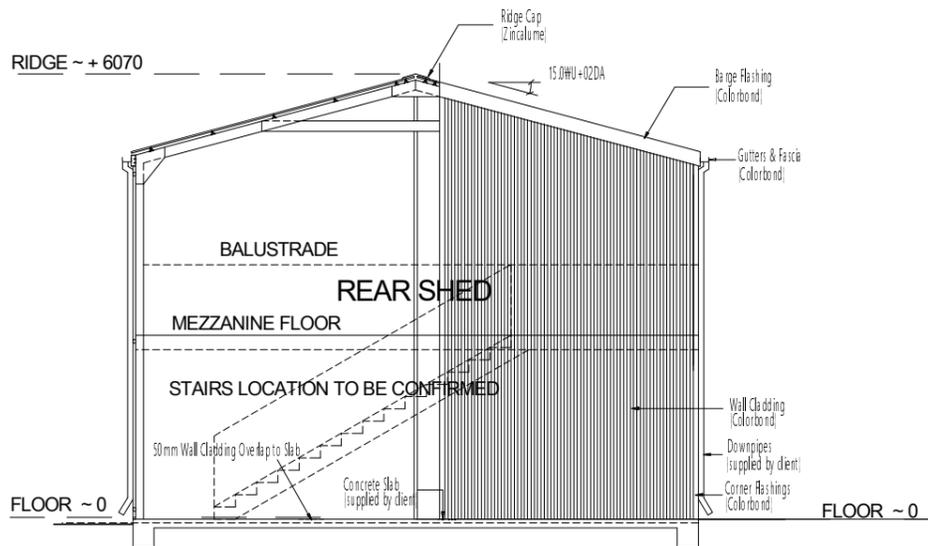
ELEVATION 3
Scale 1:100 @ A3



ELEVATION 2
Scale 1:100 @ A3



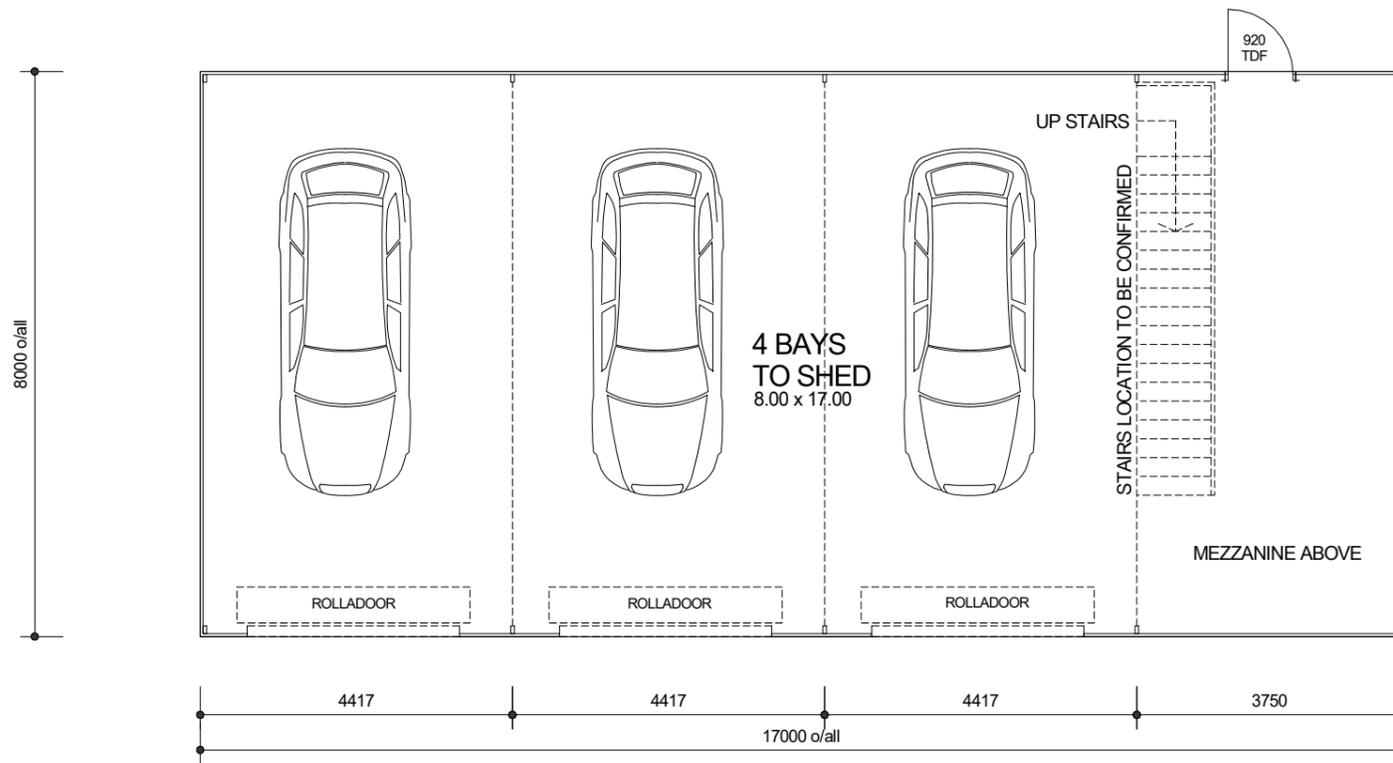
ELEVATION 4
Scale 1:100 @ A3



TYPICAL SECTION
Scale 1:100 @ A3

REAR SHED
ELEVATIONS
SCALE 1:100

OWNER /S :	M. & S SWAIN
BUILDING ADDRESS :	LOT 4 Myrtle Way, Bindoon
SKETCH PLANS 09-06-2021	SHT No: (8) OF (8)
	JOB No: 270 1541



REAR SHED FLOOR PLAN

SCALE 1:100
REAR SHED 136.00m²

TOTAL 136.00m²

PERIMETER 50.00m

OWNER /S :	M. & S SWAIN
BUILDING ADDRESS :	LOT 4 Myrtle Way, Bindoon
SKETCH PLANS 09-06-2021	SHT No: 7 OF 8
	JOB No: 271 1541

Shire of Chittering
Planning & Development Department.

To whom it may concern,

Justification for non –compliant shed

For storage for some of the below items.

The shed size 17 x 8 = 136 sqm as per plans

1 x motorhome size 6meters long x 2.5 wide 3.5 high, 1 x Boat 7 long 2.7 wide 3.5 high, 3 x motorbikes, 1 x collectable vehicle, 1 x 2 post hoist 3.5 wide by 4.1 high, 1 x office for work.

The shed is to store and keep all vehicle out of the elements and to maintain a clean and tidy property and for security of all items, along with this the shed will include an office for work. As this is a retirement home we will be traveling and need the shed for the security.

The shed will be sunken down to match the same roof height as house, and will not be seen from the street as it is behind the house, it will also be made from the same colour and material as the house, and will not be an eye sore for neighbours.

Michael & Susan Swain
Lot 4 Myrtle Way Bindoon Western Australia
M: 0419043437



Fri 17/09/2021 4:48 PM

DS03 - 10/21

Aswathy Raymond <aswathyraymond@gmail.com>

Attachment 2

I21129195 - Re: FW: I21129128 - Comment on proposed dwelling and oversized outbuilding Lot 4 Myrtle Way Bindoon

To Jake Whistler
Cc bloomyjacob@gmail.com; Sunil Joseph; shinosebastian@gmail.com; Joanna Jaic

If there are problems with how this message is displayed, click here to view it in a web browser.

image001.jpg .jpg File	image002.jpg .jpg File	image003.jpg .jpg File	image006.jpg .jpg File	image007.png .png File
image004.wmz .wmz File				

Thanks for your explanation.

We do not want to consent to any construction which do not comply to relevant standards in State and local planning policies.

Thanks & Regards

Aswathy Raymond