APPLICATION FOR AN EXTRACTIVE INDUSTRY LICENSE

LOT 3 ROWES RD YATHROO, SHIRE OF DANDARAGAN

Prepared for

JAV BROWN and SONS

by

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APPENDICES

TABLES

FIGURES

1.0 INTRODUCTION

1.1 Purpose of this Report

The purpose of this report is to provide the Shire of Dandaragan with the required information to support the accompanying application forms (Appendix A) for the extractive industry license and associated planning approval under Local Planning Scheme No 7.

1.2 Site Location and Background

The subject land represents the north-western portion of Lot 3 (No 620) Rowes Road in the Yathroo locality of the Shire of Dandaragan. Lot 3 is located approximately 26 km south-south-east from Dandaragan town-site, and 11 km north-east from Regans Ford on the Brand Highway.

Lot 3 comprises a total area of 1039.23 ha and is accessed via Rowes Rd to the north and Gillingarra Rd to the south (Figures 1 and 2). For the proposed gravel extraction from within the north-western portion of Lot 3, access and egress would be via Rowes Road, linking onto Dandaragan Road and then the Brand Highway near Regans Ford. This route, between Brand Highway and the entrance to the property is 16 km in length, all of which is sealed.

Lot 3 is part of a broad-acre farming property owned and managed by JAV Brown and Sons for livestock grazing and cropping. The north-western portion of Lot 3, nearest to Rowes Road, contains an existing shallow pit of approximately 2.9 ha in area that has been used on an irregular basis for gravel extraction by the Shire for road-making materials.

The gravel resource is considered sufficiently extensive to enable further extraction on a more regular basis without compromising the primary rural land use activity within the remainder of Lot 3. For this to occur, JAV Brown and Sons need planning approval and an extractive industry license.

Subject to gaining an extractive industry license, the intent is to enable extraction within an approximately 46.6 ha area of the local gravel resource. It is envisaged the gravel would be used as foundation material for road-making and in other infrastructure projects such as wind farms.

As owners of the land, and farmers in the Yathroo district, JAV Brown and Sons would enter into a commercial arrangement with a suitably experienced civil construction company / extractive industry operator to further develop the gravel resource, rather than undertake gravel extraction directly.

As holders of a granted license, JAV Brown and Sons understand they would be responsible for the adherence to proposed measures and commitments made within this document, and to any conditions of the license.

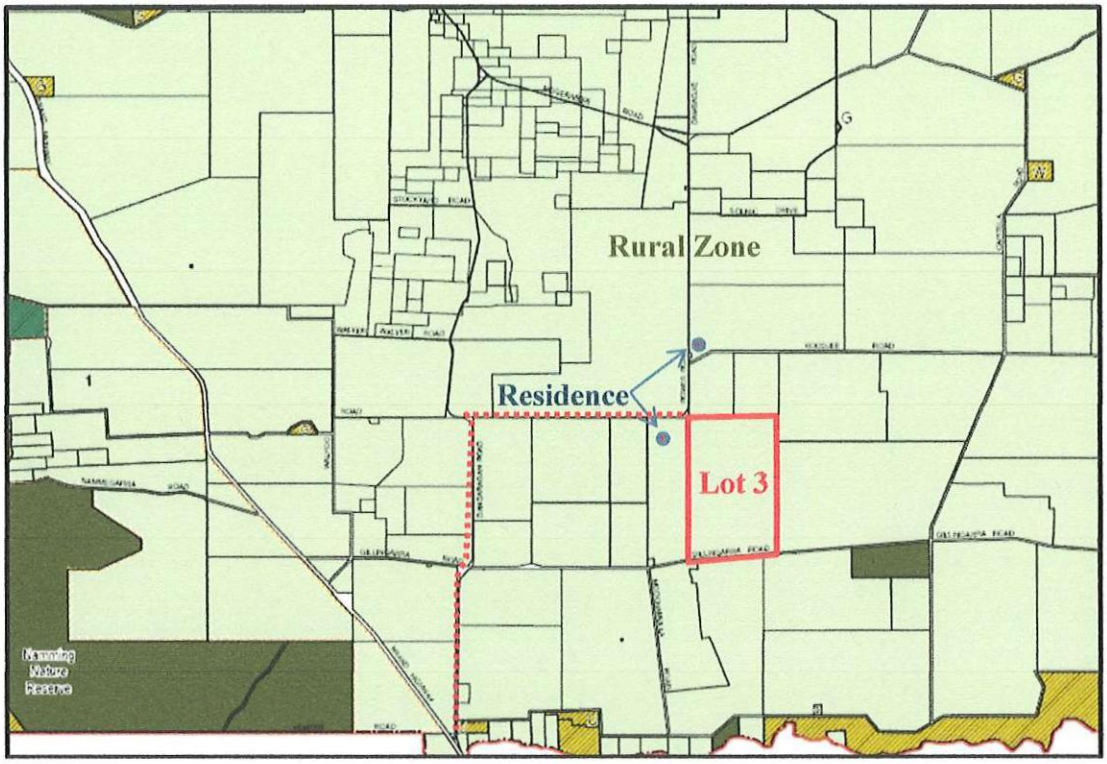

Figure 1: Location Map - Lot 3 (with nearest residences and traffic route).

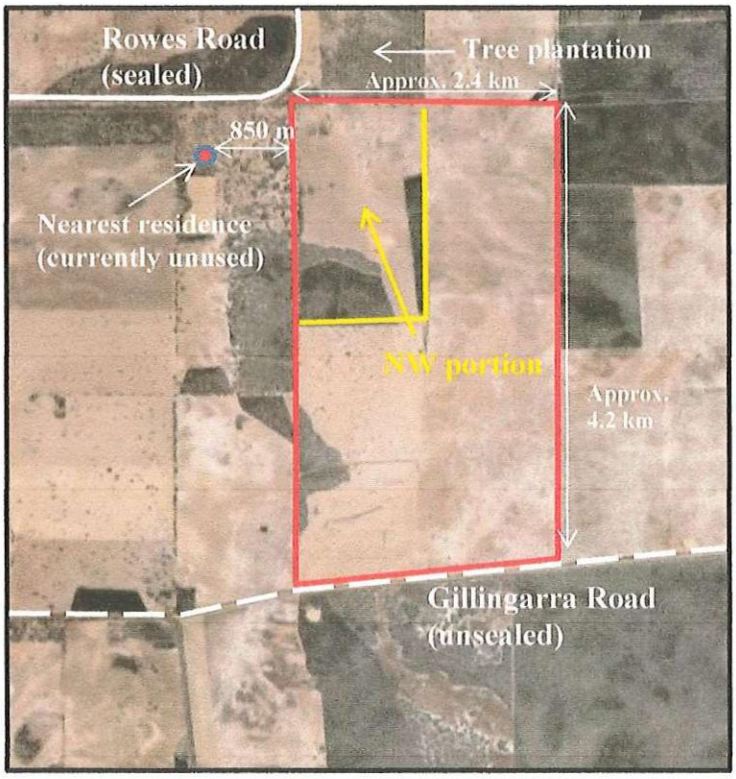

Figure 2: Aerial Image showing NW portion and adjacent land-use.

1.3 Planning Framework

Lot 3 is zoned 'Rural' under Local Planning Scheme No 7. Extractive Industry is an 'A' use within that zone. This means that extractive industry is not permitted unless the Shire of Dandaragan has exercised its discretion by granting planning approval after giving notice in accordance with 'advertising of applications' requirements of the scheme.

Proponents are required to obtain planning consent and an extractive industries license from the Shire of Dandaragan prior to the commencement of an extractive industry.

Proponents for extraction of basic raw materials need to address the requirements in Appendix 1 of the *Shire of Dandaragan Local Planning Strategy* (Landvision 2012), and the *Extractive Industry Information Package* (Shire of Dandaragan 2005). The issues and requirements outlined in the State Government's *Basic Raw Materials Applicants' Manual* (Western Australian Planning Commission 2009) are also relevant. These requirements address matters relating to;

- location and general suitability of the site for extractive industry
- proposed works and excavation activity, and
- measures to be undertaken to manage any environmental issues, including site rehabilitation.

As part of the Shire's Local Planning Strategy consideration is given to the nature and capability of the land to sustain various land uses. In this context the Shire is broadly divided into a number of 'land units' within which various land use management issues and opportunities are addressed.

Lot 3 occurs within the southern portion of the 'Dandaragan Land Unit' and the key points relevant to this application are;

- *The land is on the western edge of the Dandaragan Plateau where the soils are predominantly sandy with generally low clay content.*

- *Land management issues include wind erosion and rising water-tables.*

- *Much of the area has been farmed for many years and what little remnant bushland remains should be retained to reduce the potential for rising water-tables and salinity.*

- *Mineral resource development (including extractive industry) that is in accordance with relevant State Government Policies and Acts is considered to be consistent with the capability of the land and the ongoing sustainable operation of rural activities.*

In addition to addressing local planning requirements, the applicant needs to be cognisant of State Planning Policies 2.4 (*Basic Raw Materials*) and 4.1 (*State Industrial Buffer Policy*).

2.0 SITE CONDITIONS

2.1 Geology, Landform and Soils

Lot 3 occurs within the Dandaragan Plateau physiographic zone. This is a flat to gently undulating sand and laterite capped plateau standing some 200 – 300 m above sea level and overlying sediments (commonly sandstone) of Cretaceous age. The areas of surface laterite weather to produce ferruginous gravels, quartz sand and associated soils.

Soil - landscape mapping by the Department of Primary Industries and Regional Development (DPIRD) is available online and provides a basis for delineating the likely extent of the gravel resource within the north-western portion of Lot 3 where the extractive industry is proposed (see Figure 3 and Table 1).

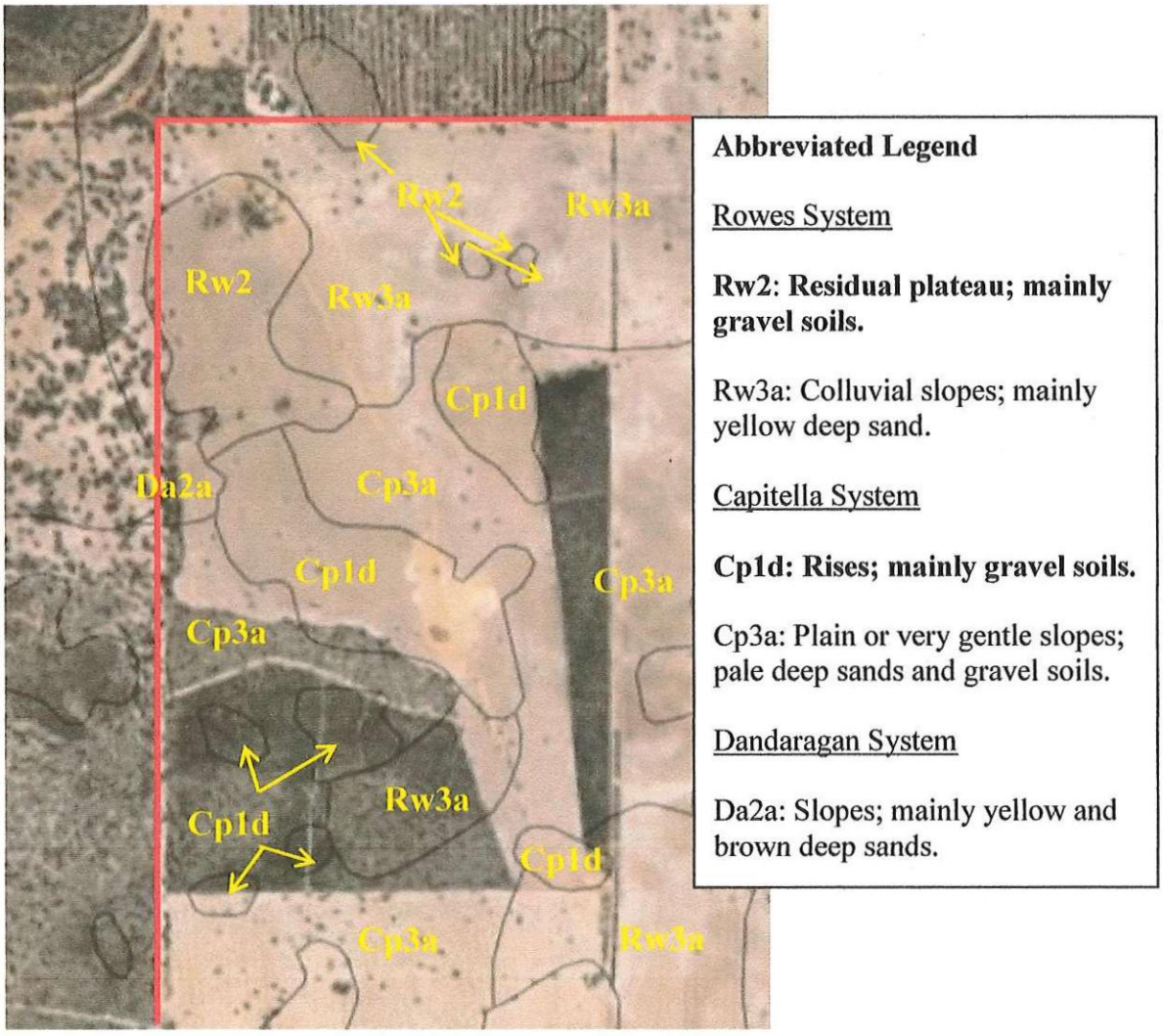

Figure 3: Soil-Landscape Mapping (north western portion of Lot 3)

Source: Griffin (unpublished): http://maps.,agric.wa.gov.au/nrminfo

Table 1: Soil – Landscape Mapping Units

Map Unit	Description	Agricultural Capability *	
		Cropping	Grazing
Rw2	Plateau residuals, hillcrests and very gently to gently inclined hillslopes; sandy gravels, gravelly pale deep sand, some duricrust.	B1	B2
Rw3a	Colluvial slopes, very gently to gently inclined hillslopes and sand filled minor valleys; yellow deep sand, some sandy earths.	B1	B1
Cp1d	Small to very small rises, dunes or sand-sheets common in vicinity; pale sandy gravels, gravelly pale deep sand.	B1	C1
Cp3a	Plain, very gently inclined slopes; pale deep and gravelly pale deep sand.	B1	B1
Da2a	Very gently to gently inclined hillslopes, some hillcrests and plateau remnants; yellow and brown deep sands, some sandy earths.	B1	B1

* DPIRD Agricultural land capability ratings indicating no area of highest capability (Category A) land which might otherwise be considered Priority Agricultural Land.

The topography of this area is broadly illustrated in Figure 4 overleaf. It ranges from broad upland areas of level to very gently inclined terrain around the existing gravel pit and adjacent sandplain, to gently inclined colluvial slopes (gradients of 3 – 10%) in lower portions to the north. The existing and proposed gravel extraction areas are not in a visually prominent location. More detailed information is provided by the recent 1 m contour interval topographic survey map in Appendix B.

2.2 Land Use and Surroundings

Lot 3 occurs in a broad-acre rural area where the Local Planning Strategy describes the main agricultural activities as livestock (sheep and cattle) grazing and grain production (wheat, oats, lupins, hay and standing feed). Within Lot 3 there is cropping of wheat, lupins, canola and some barley, along with grazing and areas of remnant vegetation.

There are no rural-residential areas within Yathroo locality. As shown in Figure 2 the nearest residence (currently unused) to the proposed gravel extraction area is approximately 850 m west of the boundary of Lot 3, and there is a tree plantation on the adjacent property to the north. The next closest residence is about 2.3 km further northwards (see Figure 1).

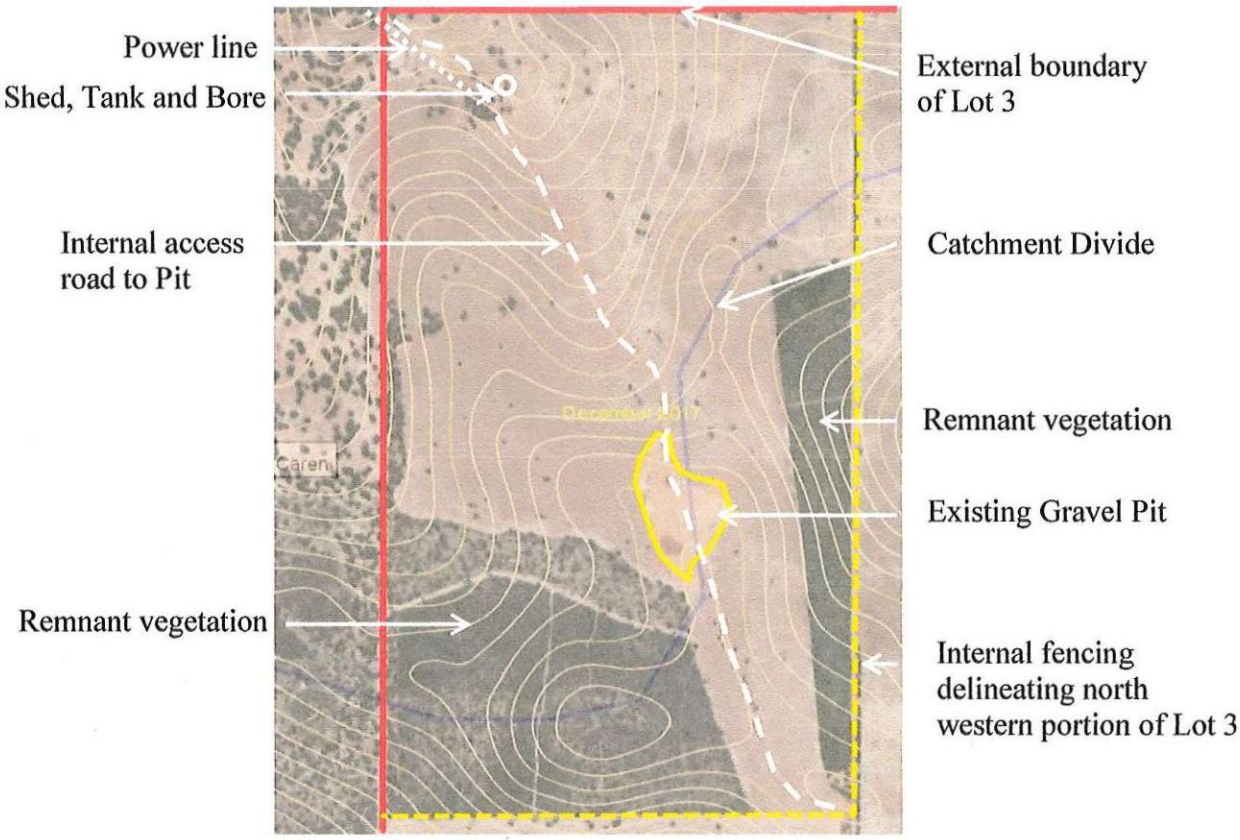

Figure 4: Topography* and Site Features (* 2m contour intervals)

2.3 Drainage and Water Resources

As shown in Figure 4, the existing gravel extraction area within the north-western portion of Lot 3 straddles a catchment divide, with land to the south draining towards Moore River, and land to the north draining towards Caren Brook. These watercourses are located 9 km south, and 14 km north-west, respectively from the centre of Lot 3. There are no other watercourses or wetland areas within, or in close proximity to, the subject land.

Groundwater resources in the Dandaragan-Moora area have been extensively studied as part of a Master of Science thesis (Kay 1999) supervised by the senior hydrogeologist of the then Water and Rivers Commission.

Figure 5 (adapted from Kay 1999) depicts the depth to water and water quality (salinity) status in the unconfined perched groundwater systems in the Yathroo locality. It shows groundwater in the vicinity of Lot 3 is of fresh quality (salinity, TSS < 500 mg/L) and generally occurs at greater than 5 m depth.

There is an existing bore and water storage tank near the shed in the north western corner near the entrance to the property from Rowes Road (Figure 4). This bore provides water for livestock. It has been sunk to approximately 30 m depth and yields about 1900 L per hour.

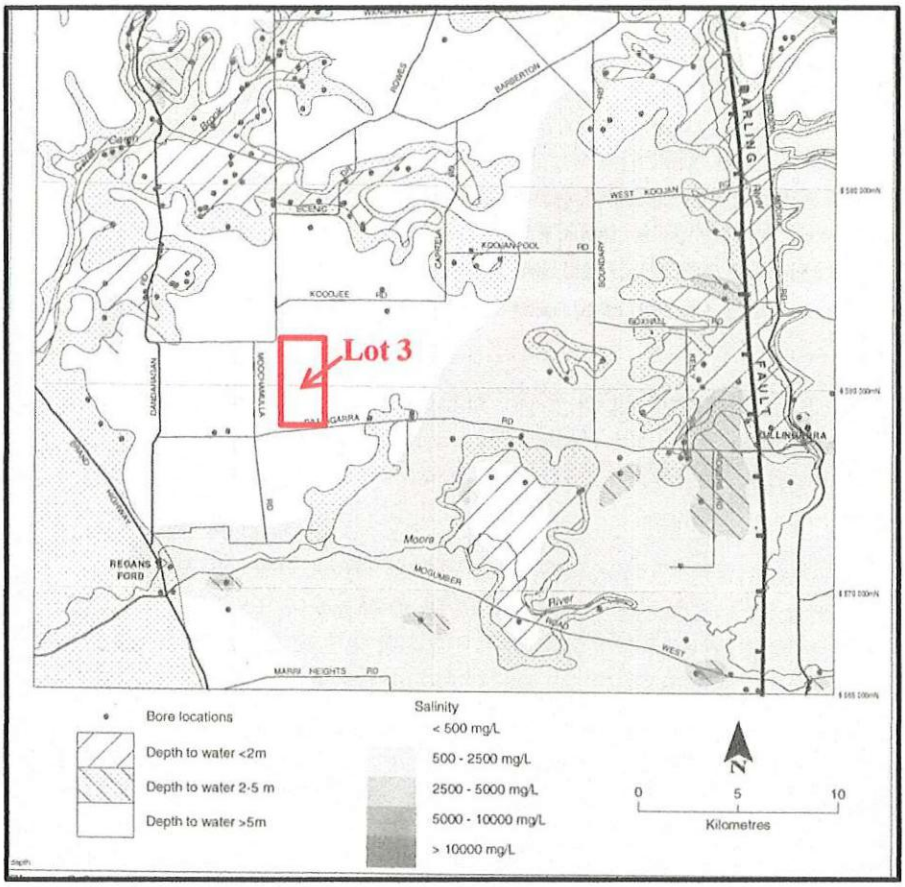

Figure 5: Depth to water and water quality in unconfined groundwater.

2.4 Vegetation and Important Flora

Lot 3 occurs within the Dandaragan vegetation system (Beard 1979) where the original native vegetation is broadly categorised as 'medium woodland; marri (*Corymbia calophylla*)'. On sandier portions it includes *Eucalyptus todtiana* (commonly referred to as Blackbutt or Pricklybark) and Banksia.

About 11% of the original extent of 'medium woodland; marri' remains intact within the Northern Agricultural Region (Richardson et al undated). Figures 2, 3 and 4 show the extent of vegetation remnants in Lot 3, all of which are outside the area proposed for gravel extraction.

The nearest conservation area is an un-named local reserve on the south side of Gillingarra Road about 6 km south east of the centre of Lot 3. The Namming Nature Reserve is a more significant conservation area occurring about 15 km west-south-west of Lot 3 and west of Brand Highway (Figure 1).

The results of an online search of 'NatureMap' (via the website of the Department of Biodiversity, Conservation and Attractions) are provided in Appendix C. They show there are records one Priority 2, and two Priority 3, plants within a 5 km radius of Lot 3. There is however no records of any threatened / priority flora or fauna species, or threatened ecological communities (TECs) within Lot 3.

2.5 Conclusion - Site Suitability

The *Basic Raw Materials Applicants Manual* (Western Australian Planning Commission 2009) requires applicants to address matters relating to the location and general suitability of the site for extractive industry. Table 2 below provides a response to the site selection considerations listed in the Manual as a checklist for applicants to consider when preparing and extractive industry proposal.

Table 2: Site Selection Considerations

Matters to Consider	Response
Site selection considerations	**Refer to**
Site location considerations	
• The site has safe access to major roads, and existing roads are in good condition. The access roads proposed are suitable for the volume of traffic and type of heavy vehicles.	**Footnote 1,** also Sections 1.2; 3.8, 3.9, Figs 1 & 2.
• The site is not in a visually significant location, such as on a ridge, or visible from major roads.	**Footnote 2,** also Sections 2.1, 4.5.
• The site is not situated within 500 metres to 1000 metres of any sensitive land uses, such as residential development, schools, and hospitals.	**Footnote 3,** also Figure 2, Sections 2.2, 4.6.
Environmental attributes	
• The site is not considered priority agricultural land.	**Footnote 4,** also Table 1.
• The proposal will not involve major disturbance of acid sulphate soils.	**Footnote 5.**
• The proposal will not involve significant clearing of native vegetation, that is, the site is bare of vegetation from previous uses or does not contain good quality bushland of significant quantity.	**Correct.** Sections 3.5, 4.4
• The site provides adequate setback to existing wetlands, water courses and drainage lines.	**Correct.** Sections 2.3, 4.1, 4.6.
• The site is not listed as a Bush Forever area.	**Correct.** Only applicable within Perth Metro Region.
Planning considerations	
• The nature of the proposed activity is consistent with the current zoning, and any proposed zoning.	**Correct.** Section 1.3
• The timeframe for the proposed activity takes into account the long-term impact on the local community.	**Correct**. Also, see Footnote 3
• The proposed activity is compatible with surrounding land uses.	**Correct**. Also, see Footnote 3.
• The proposed activity will not cause disturbance to the amenity of the area.	" "
• The site will not have a negative visual impact on major roads, scenic areas or adjoining properties.	**Correct**. Also, see Footnote 2 & Section, 4.5
• The site provides an adequate separation distance to any residential or special rural area, or existing dwelling in a rural area. Typically separation distances should be 500 metres to 1000 metres.	**Correct.** Section 4.6. Also, see Footnote 3.
• Operational issues such as hours of operation, noise and dust monitoring and site access are addressed with the view to minimising any potential noise or dust issues for surrounding sites.	**Correct.** Sections 4.2, 4.3, 4.6
• Other relevant state and local planning policies and strategies, including but not limited to the following have been addressed: • *State Planning Policy 2.4 Basic Raw Materials* • *State Planning Policy 4.1 State Industrial Buffer Policy* • extractive industry local laws • local planning scheme provisions • region scheme planning provisions	**Correct.** Sections 1.3, 4.6 **SEE FOOTNOTES OVERLEAF.**

Footnotes to Table 2

1. **Safe Access to Road**: Entry / exit point is on a sweeping 90 degree bend on Rowes Road. Appropriate hazard advice signage and removal of some roadside vegetation to improve sight lines, recommended.

2. **Visual Significance**: Not visually prominent from any major travel route or residence on any adjacent property. Tree filtered view to site occurs from small part of north-south aligned section of Rowes Road near intersection with Koodgee Road (see Appendix D photo 4).

3. **Separation from Sensitive Land Uses**: Nearest residence (currently unused) is located 850 m from boundary of Lot 3, and 950 m from the edge of the proposed excavation area. The Local Planning Strategy addresses future subdivision and development potential of rural land. Lot 3 occurs within a Planning Unit (3) where subdivision opportunities are limited to land in close proximity to existing settlements. As a result, there are no likely sensitive land uses such as rural-residential development, or potential for such, in the vicinity of Lot 3.

4. **Priority Agricultural Land:** Not designated as such within Shire's Local Planning Scheme or Strategy, and not supported by DPIRD land capability ratings (Table 1).

5. **Acid Sulfate Soils:** ASS are naturally occurring soils and sediments that are either acidic, or have the potential to become acidic, when exposed to air. They are predominantly found in coastal or estuarine areas and have the capacity to generate acidity due to the presence of iron sulfides (mainly pyrite).They are found in permanently waterlogged, frequently anoxic and submerged soil layers. These conditions do not occur within Lot 3 and the physiography and geology are not conducive to the presence of ASS.

The responses in Table 2 demonstrate the general suitability of the site for extractive industry.

3.0 WORKS AND EXCAVATION PROGRAM

3.1 Nature and Duration of Excavation

The existing 2.9 ha excavated area has provided the local government authority with a source of gravel material for road-making purposes. Subject to planning approval and licensing, JAV Brown and Sons intend selling an additional amount of the gravel resource from an expanded excavation area to civil construction / extractive industry companies. The gravel would be used in construction or infrastructure development projects.

Infrastructure projects include a large wind farm within the Shire of Dandaragan where there is currently an estimated requirement for 400,000 tonnes of gravel for foundation material and roads within 6 months of the start of development.

Figure 6 shows the nominated expanded gravel resource area within the north-western portion of Lot 3. It covers an area of 46.6 ha, within which pockets of excavation would occur following exploratory testing to confirm quality and quantity, and in response to specific demand requirements.

Excavation would not necessarily be undertaken over all portions of the nominated 46.6 ha area. It represents a maximum footprint for a long-term gravel resource. The initial (post licensing) activity is expected to be the extraction of approximately 400,000 tonnes of gravel within a 6 month period by the successful tenderer for earthworks associated with the wind farm project. Thereafter the gravel resource would be available to other operators for the duration of the landowner's license.

The current application is for a license for the next ten years, that is, to 2028. The permitted hours of operation for the site during this period are proposed to be between 6:30am and 5:30pm Mondays to Saturdays, with the site being closed on Sundays and Public Holidays.

3.2 Depth and Extent of Excavation

Appendix B contains a Plan of the Excavation Site produced by Survey Dynamics Pty Ltd and showing topographic contours at 1 m interval over the north western portion of Lot 3. In combination with Figure 6 and site photos 1 – 3, the plans in Appendix B show;

<u>Existing Excavation</u>

Area: 2.9 ha
Estimated average depth = 2.5 m

<u>Proposed Excavation</u>

Area: Maximum, in addition to above = 43.7 ha
Estimated average depth = 2.5 m

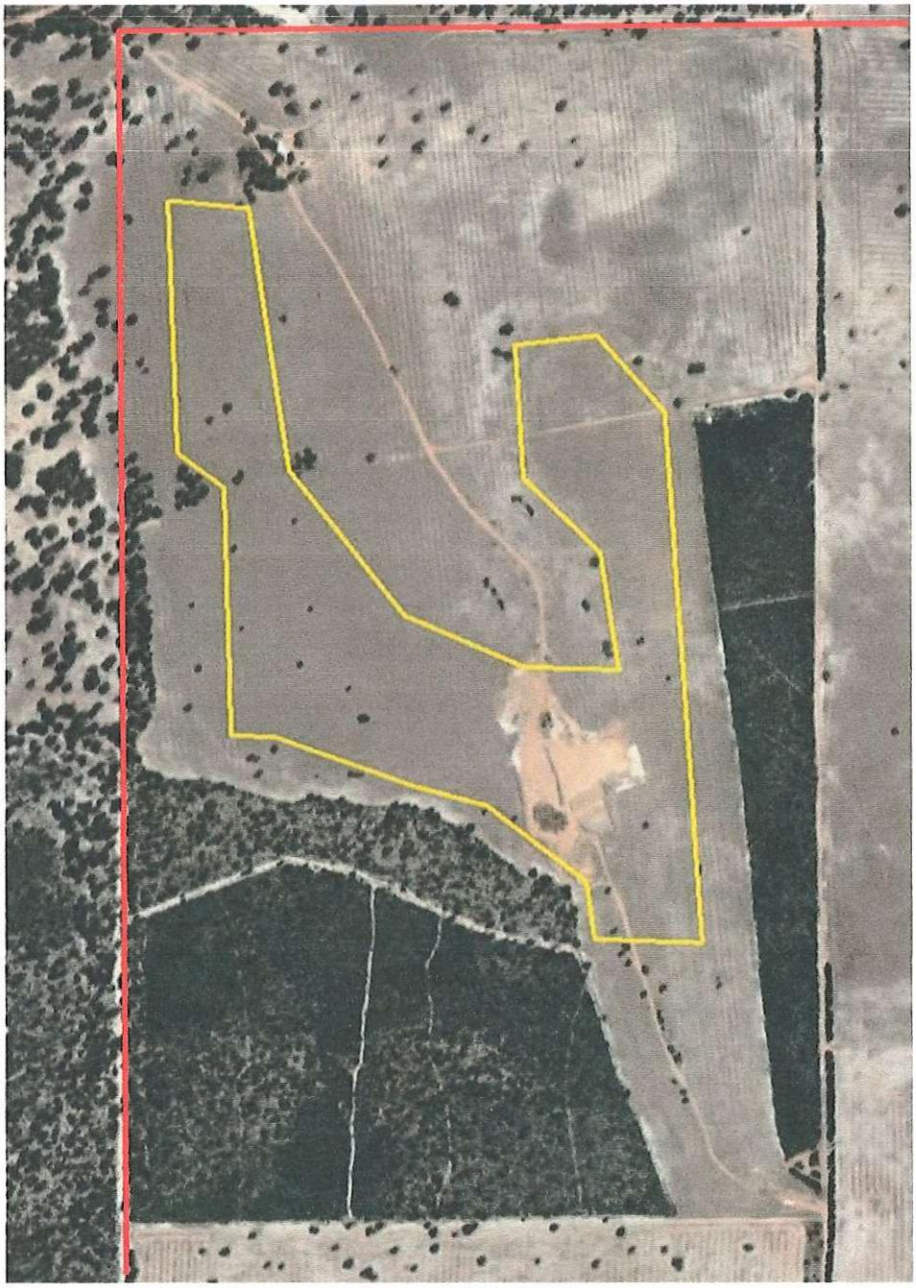

Figure 6: Proposed gravel extraction area – within NW portion of Lot 3.

3.3 Stages and Timing

It is most likely that excavation will continue from the margins of the existing excavation area. As gravel quality and quantity within the 'footprint area' will vary however, actual areas of excavation will be dictated by user requirements. For example, if a particular gravel product is required, excavation will occur where the appropriate grade of material or its components occur.

To enable sourcing and mixing of different grades of gravel material to meet user requirements, the total area proposed to be available for extraction activity during the next 10 year licence period is up to 46.6 ha as shown in Figure 6.

Following granting of a license, the initial stage of excavation is likely to be associated with the requirements for the wind farm and occur over a six month period. Thereafter gravel output from the site is likely to be more sporadic and unpredictable at this point in time.

3.4 Excavation Methods and Processing

The gravel is proposed to be extracted using one or more excavators and front-end loaders. Based on previous excavation activity within the site there is no need for the use of explosives.

Machinery associated with extractive industry and likely to be used within the site in the north western portion of Lot 3 include excavators, loaders, crushers, screeners and various trucks.

The extent of any on-site processing would be limited to the mixing of different grades of gravel to meet user requirements.

Areas for excavation would be selected on the basis of test hole (backhoe) inspections but are most likely to extend gradually outwards from the existing excavated area.

Preliminary site work would involve stripping of topsoil to approximately 0.3 m depth and stockpiling for future rehabilitation. Extraction of gravel and rock (laterite) would be undertaken using an excavator. The material would then be loaded into a pit truck and transported to a position near the crusher and unloaded.

A loader would then transfer the laterite rock into the crusher where it would be reduced to smaller sizes and transferred to an adjoining screener. The screener then sorts the gravel into various sizes for stockpiling. On an as-needed basis, gravel product would be loaded on to road trucks of various configurations for transport off-site.

The likely initial position of plant equipment (crushers, loaders and screeners) would be within the floor of the existing excavation area; although as such equipment is mobile it could subsequently be relocated when needed for more effective positioning in relation to areas of excavation.

3.5 Vegetation Clearing

Figure 6 shows the subject land is predominantly cleared of native vegetation. Within the proposed 'footprint area' for gravel exploration and extraction there are 16 individual remaining trees. Some of these might need to be cleared to enable gravel extraction in a practical manner and subsequent rehabilitation to a suitable landscape for pasture establishment (i.e. without creating elevated 'tree islands').

Should any clearing of the individual trees within the nominated ultimate excavation area of 46.6 ha be required, JAV Brown and Sons will apply for any necessary Clearing Permit. It is noted however that one of the exemptions for the necessity to apply for a clearing permit relates to the removal of single trees that are more than 50 m from any other native vegetation and are not located with a designated 'environmentally sensitive area'. (Department of Environment Regulation 2014).

The subject trees are predominantly either marri or prickly bark and would be removed with either a bulldozer or excavator.

3.6 Stockpiles

Topsoil would be stripped to approximately 0.3 m depth using a bulldozer and stockpiled on-site for future rehabilitation. No other overburden material needs to be removed and stockpiled to enable access to the gravel resource.

The existing excavation area provides an indication of the likely size of stockpiles, being generally less than 5 m high (see Appendix D photo 1).

The quantity of stockpiled topsoil at any time depends on the rate of extraction and removal from the property. It is anticipated that extracted material would be transported away from the property soon after, thus eliminating the need for any significant stockpiling.

3.7 Site Facilities and Infrastructure

As shown in Figure 4 (and Appendix D photos 9 and 10) there is an existing shed, above-ground power line and a water supply (bore and tank) near the entrance to the property from Rowes Road and outside the nominated area to contain the proposed excavation activity.

It is anticipated that there would be minimal additional site facilities associated with the extractive industry and located in proximity to the existing excavated area. They could include temporary portable buildings functioning as a site-supervisor's office, and a staff lunch room, and a product shelter. Examples of

such buildings (from another extractive industry operation) are provided in Appendix D photos 11 and 12.

As there would be no power lines or telephone cables to this area, the portable buildings would rely on power provided by a portable generator, and communications via CB radio and mobile phones.

The existing bore and water storage tank near the entrance to the property would be available as a source of water for dust suppression or fire management purposes if needed. Within the gravel operations area the limited on-site water requirements would be met by harvesting roof-top runoff from the temporary portable buildings.

3.8 Site Access

Vehicular access to the north-western portion of Lot 3 is from Rowes Road which extends off Dandaragan Road and the Brand Highway (as shown in Figure 1 and described in Section 1.2). Outside the property, this traffic route is sealed apart from an approximate 275 m section of slip road within the road reserve at the bend within Rowes Road.

Within the property the access road leading from the entrance gate to the centre of the existing excavation area is unsealed, but on stable well drained land. The existing entrance gate to the property would be appropriately secured and signposted for the extractive industry.

Any works required to maintain a year-round trafficable surface on the existing unsealed thoroughfare within the property, and the unsealed slip road within the adjacent road reserve, will be condition of the contractual arrangement/s between JAV Brown and Sons and the civil construction company / extractive industry operator.

Site access conditions are illustrated by photos 6 – 8, 13, 14 in Appendix D.

3.9 Truck Movements

The predicted number and size of trucks entering and leaving the site each day will vary with user demand for the site products.

Subject to the site being used by the successful tenderer to supply product for the wind farm project, it is anticipated during the initial 6 months of the license period, there would be up to 30 trucks leaving the site per day, each with a load of between 12 and 48 tonnes.

Thereafter, and on average, it is estimated that during the next 10 years there would be between 2 and 4 trucks leaving the site per day.

In relation to providing gravel product for the wind farm project, trucks leaving the property would travel in a westerly direction along Rowes Road and thereafter on Dandaragan Road to access the Brand Highway. In relation to

supplying product for subsequent projects or clients, it is expected that the majority of truck movements would continue to be along this route, all of which is sealed.

3.10 Public Safety Matters

The proposed hours of operation for the site are between 6:30am and 5:30pm Mondays to Saturdays with the site closed on Sundays and Public Holidays. Direct access into the property outside of operational times will be controlled by a locked steel gate. There will be no access to the general public as indicated by signage at this gate.

Access to the site from the entrance gates at both the north western corner near Rowes Road, and the south eastern corner (within the property) would be sign-posted with "No Un-Authorised Access", "Heavy Vehicles in Operation" and "Excavation in Process".

Any visitors to the gravel extraction area would be advised by signage at those points to contact loader drivers via CB Radio (Channel 18) or the Site Manager by mobile, and to report to site office.

In relation to truck movements in or out of the property, the entry / exit point is on a sweeping 90 degree bend on Rowes Road with relatively limited sight lines (see Appendix D photos 5, 6, 15 and 16). Even though this entry / exit point has been used on a number of previous occasions by trucks providing gravel for local authority needs, it is proposed that appropriate hazard advice signage be put in place, and some roadside shrub vegetation be removed to improve traffic safety.

4.0 ENVIRONMENTAL MANAGEMENT

4.1 Water Management

The area encompassing the proposed expanded excavation is inherently well drained due to the permeable, predominantly gravelly soils and low gradients (less than 8%).

Any runoff water generated within the existing excavation area is contained (see Appendix D photo 1). There is no risk of flooding of the excavation area with adequate capacity to retain stormwater generated from a 1 in 10 year storm event, prior to natural seepage into the soil regolith.

The same water management conditions apply to any further excavation within the nominated area shown in Figure 6, and therefore no potential for surface runoff to affect adjacent properties. There is also no risk of stream sedimentation or other adverse impacts of extraction activities on natural drainage systems due to the significant distance to the nearest watercourses.

The site is sufficiently elevated above the water-table to avoid any possibility of excavation adversely affecting groundwater systems.

In view of the above, there are no specific water management measures proposed for excavation within the site.

4.2 Dust Management

The *Extractive Industry Information Package* (Shire of Dandaragan 2005), and the *Basic Raw Materials Applicants' Manual* (Western Australian Planning Commission 2009) require consideration of the impact of dust associated with extraction activities on 'sensitive land uses' such as residences.

The nearest residence (currently unused) is located 850 m from boundary of Lot 3, and 950 m from the edge of the proposed excavation area.

In the *Draft Environmental Assessment Guideline for Separation distances between industrial and sensitive land uses* (EPA 2015) the recommended separation distance is 500 – 1000 m.

The potential for dust associated with extractive industry within the subject land is addressed as follows;

<u>During excavation and loading of gravel</u> - Dust generation is likely to have only a localised effect within the confines of the gravel operations area. This is because the relatively coarse particle size of gravel and its sandy soil matrix is not conducive to long distance transport by wind.

<u>During disturbance of topsoil</u> - Due to the finer particle size within topsoil, any expansion of excavation areas or reinstating of topsoil during rehabilitation

poses a slightly higher risk of dust generation. Where possible therefore, these activities should be confined to the wetter months, April to October, when the topsoil material would be less likely to be transported by wind due to its moisture content

During transport of gravel - Trucks entering or leaving the property would travel along Rowes Road which is sealed, and their loads would be covered with tarpaulins to prevent blowing or spillage of material.

4.3 Noise Management

The *Environmental Protection (Noise) Regulations 1997* require that sensitive premises, including dwellings in non-industrial areas, are not subjected to excessive noise levels. These are defined as noise exceeding 45 dBA for more than 10% of the time, 55 dBA for more than 1% of the time, and never exceeding 65 dBA during normal working hours. These noise limits will be complied with.

The impact of site operations on neighbouring properties would be minimal due to;

- no blasting activities
- operations only within the designated hours.
- use of modern equipment, and
- nearly 1 km to nearest residence.

4.4 Vegetation Protection

No specific protection measures are warranted for the small number of individual remaining trees and shrubs within the proposed maximum footprint area for gravel extraction. This is because they are isolated from the larger and potentially 'more viable' remnant areas within Lot 3 where conservation for biodiversity and habitat values is more likely to have effect.

4.5 Visual Amenity

The proposed maximum footprint area for gravel extraction is set within the property more than 350 m away from Rowes Road. The small portion of that area that has been excavated to date is a further 1 km from the road.

Most areas with potential for further excavation during the proposed license period are shielded from public view as a result of the nature of the topography and intervening remnant vegetation. A tree filtered view of the existing excavated area occurs from only a small part of north-south aligned section of Rowes Road approximately 2.5 km away near intersection with Koodgee Road (see Appendix D photo 4).

Further excavation would not significantly alter the existing visual appearance of the site from Rowes Road. Given this, no specific visual screening measures are considered necessary for the license period.

4.6 Buffer Requirements

The *Basic Raw Materials Applicants' Manual* (Western Australian Planning Commission 2009) indicates the applicant needs to be cognisant of State Planning Policies 2.4 (*Basic Raw Materials*) and 4.1 (*State Industrial Buffer Policy*).

The Shire of Dandaragan is however not included within the policy area for SPP 2.4, and although SPP 4.1 establishes objectives and principles relating to buffers it does not specify particular distances relating to extractive industries.

In relation to the management of both dust and noise issues for extractive industries where '*material is processed by grinding, milling or separated by sieving, aeration etc, but no blasting*' the Environmental Protection Authority guidelines (EPA 2005) suggest consideration of a separation distance from sensitive land-uses such as residential properties be on a case by case basis.

In its updated *Draft Environmental Assessment Guideline for Separation distances between industrial and sensitive land uses* (EPA 2015) the recommended separation distance is 500 – 1000 m. As shown in Figure 2 the nearest residence (currently unused) is located 850 m from boundary of Lot 3, however the distance to the actual nominated boundary for any gravel extraction is 950 m.

In the context of the site location within a rural zone where the Local Planning Strategy (Landvision 2012) considers mineral resource development (including extractive industry) to be '*consistent with the capability of the land and the ongoing sustainable operation of rural activities*' the separation distance / buffer from the nearest sensitive land use is more than adequate.

4.7 Rehabilitation and Decommissioning Program

Objective

The objective of rehabilitation will be to re-establish a farming landscape consistent with the previous use of the land - i.e. pasture with scattered trees. In this regard, and at the end of excavation, JAV Brown and Sons will require the extractive industry operator/s on its land to form a flat to gently sloping area rather than leave a depression or pit within the upper part of the landscape.

A modest cover of pasture and legume species will then need to be re-established to enable low intensity grazing activity and to visually conform to the general rural landscape in this part of the Shire.

Site Restoration and Reinstatement

Subject to approval of the license application, site rehabilitation is planned to be undertaken towards the proposed end of the license 2028, or upon completion of excavation (whichever comes sooner).

It is proposed that the allocation of areas for rehabilitation be considered annually, with re-establishment of a lightly pastured landscape occurring progressively during the license period.

Topsoil Replacement and Revegetation

Prior to gravel extraction it is proposed that topsoil be stripped to approximately 0.3 m depth and stockpiled on-site for later use in rehabilitation.

In areas where excavation is completed, and prior to the ultimate re-forming of the area for a subsequent return to farming use, slopes around the perimeter will be required to be re-contoured to achieve stable gradients (less than 1:4 vertical to horizontal) and the pit floor will have at least a 1:100 fall.

The final landform is anticipated to be a very gentle to gently sloping surface created by the gravel extraction 'scalping' the existing upland topography. The floor of the excavated areas, which generally bottoms out in clayey material, will be deep ripped to provide a base for seeding to pasture and the planting of scattered clumps of trees and shrubs to replicate the previous landscape.

Topsoil will then be respread and levelled to approximately 20 cm depth using front-end loaders and bulldozers prior to revegetation. The preferred method of revegetation is to use seed from within the stockpiled topsoil to provide pasture, however this may need to be supplemented by the scattering of additional pasture seeds during autumn / early winter.

To assist pasture establishment, fertiliser and / or poultry manure will be applied, and any weeds likely to impact on the rehabilitation will be sprayed with an appropriate herbicide or grubbed out.

To offset the limited number of cleared trees and shrubs, it is proposed to plant scattered portions of the site with a range of shrubs and trees endemic to the area.

Seeding / planting should occur in autumn. To assist survival rates for individual trees, tree guards would be used for protection against kangaroos. Furthermore, if planting did occur during a dry autumn period, a water / fire management truck could be used for watering if needed.

Removal of Facilities and Site Clean-up

All temporary buildings, machinery and waste materials will be removed from the site upon completion of excavation / expiry of license

4.8 Conclusion - Anticipated Environmental Impacts

The anticipated effect of the proposed extractive industry on the environment in the north western portion of Lot 3, and in the general vicinity, is minimal. This is because;

- the 'footprint area' for excavation does not require clearing of any significant remnant vegetation
- there are no records of any threatened or priority flora, or ecological communities of conservation significance, within Lot 3 or in close proximity to the proposed excavation area.
- the site topography enables any surface runoff to be contained and there is a significant distance from any watercourse or wetland area
- the site is located nearly 1000 m from the nearest residence and is not visually prominent from nearby roads.
- the site is sufficiently elevated above the water-table to avoid any effect on groundwater systems.

5.0 REFERENCES

Beard, J.S. (1979) *Vegetation Survey of Western Australia - The Vegetation of the Moora and Hill River Areas, Western Australia.* Map and Explanatory Memoir, 1:250 000 series. Vegmap Publications, Perth.

Department of Environment Regulation (2014). A Guide to the Exemptions and Regulations for Clearing Native Vegetation – under Part V of the Environmental Protection Act 1986.

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Western Australian Planning Commission (1997) *Statement of Planning Policy 4.1 - State Industrial Buffer Policy.*

WAPC (2000) *Statement of Planning Policy 2.4 - Basic Raw Materials.*

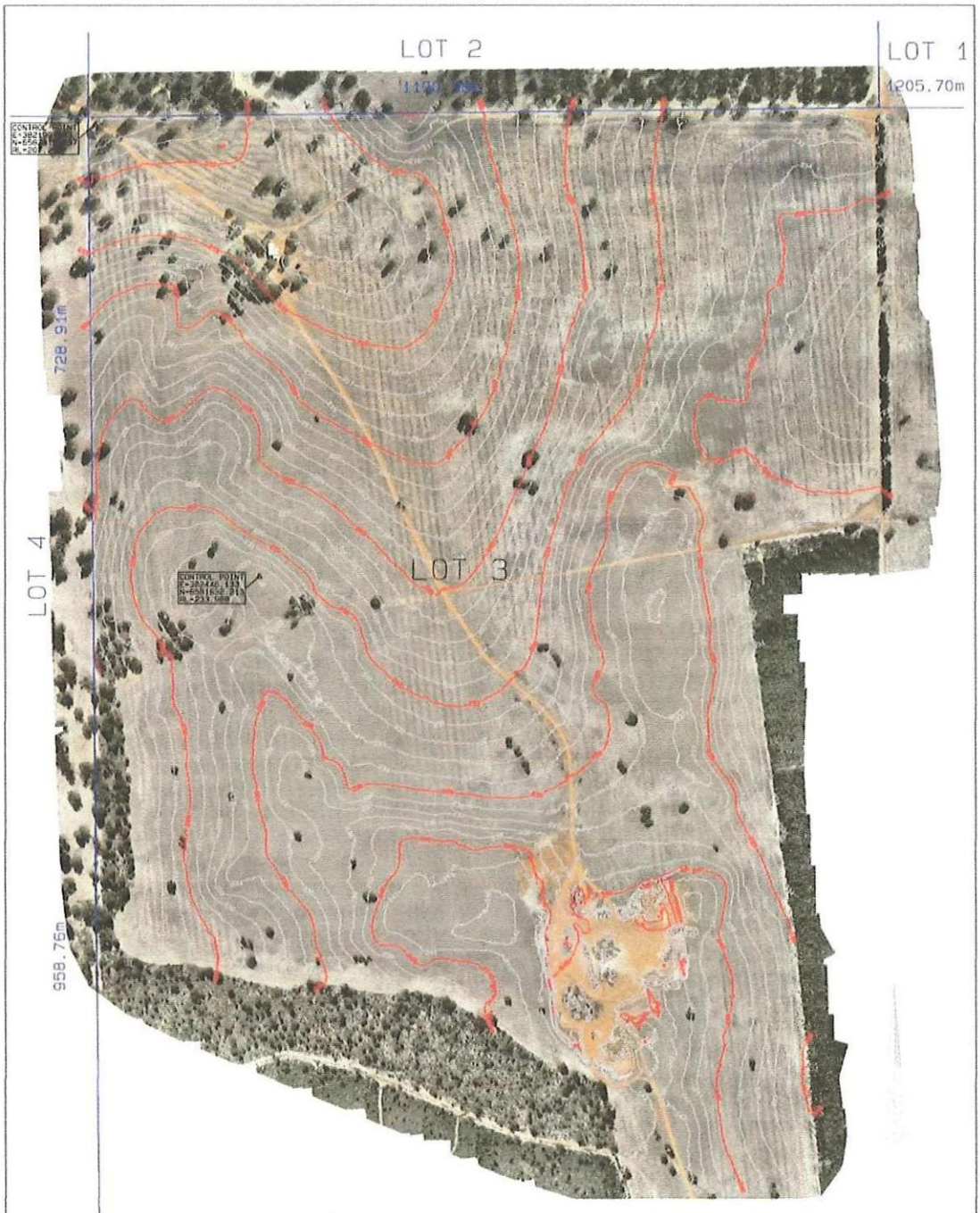
WAPC (2009). *Basic Raw Materials Applicants' Manual*

APPENDIX A

Application Forms

APPENDIX B

Plan of the Excavation Site



SURVEY DYNAMICS	Drawn	JOHN LONG	Job Name and Location
	Date	26/04/2018	UAV SURVEY 180417
	Hor Datum	MGA94	ROWES ROAD YATHROO, WA 6507
	Vert Datum	AHD71	
	Scale	1: 1500 A3	

Project Details	Drawing Title	Drawing No
1m CONTOUR INTERVAL	FEATURE SURVEY OF LOT 3 ROWES ROAD YATHROO SHIRE OF DANDARAGAN OWNERS: RICHARD BROWN	1 REV 0

APPENDIX C

NatureMap – Search Results

NatureMap

Mapping Western Australia's biodiversity

Lot 3 Rowes Rd NatureMap Search

Printed by Martin Wells on 27/6/2018

Query details : Current Names Only=Yes; Core Datasets Only=Yes; Method='By Circle'; Centre=115° 46' 25" E,30° 53' 39" S; Buffer=5km;

Search Results

Selected

- Selected Species

All Results

- Default
- Confirmed
- Corrected
- Reported

Reference Layers

State Borders

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Martin Wells on 27/06/2018

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 46' 25" E,30° 53' 39" S
Buffer 5km

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1.	3271	*Acacia costata*			
2.	3412	*Acacia latipes*			
3.	6339	*Astroloma xerophyllum*			
4.	45416	*Babingtonia grandiflora (Large-flowered Babingtonia)*			
5.	32556	*Banksia echinata*			
6.	32518	*Banksia hewardiana*			
7.	11714	*Banksia leptophylla var. leptophylla*			
8.	19309	*Calectasia narragara*			
9.	1125	*Centrolepis drummondiana*			
10.	1874	*Conospermum glumaceum (Hooded Smokebush)*			
11.	6348	*Conostephium pendulum (Pearl Flower)*			
12.	1435	*Conostylis hiemalis*			
13.	1437	*Conostylis latens*			
14.	11870	*Conostylis teretifolia subsp. teretifolia*			
15.	1458	*Conostylis teretiuscula*			
16.	7454	*Dampiera linearis (Common Dampiera)*			
17.	19747	*Daviesia decurrens subsp. decurrens*			
18.	12329	*Daviesia nudiflora subsp. hirtella*			
19.	42228	*Diuris septentrionalis*			
20.	3090	*Drosera barbigera*			
21.	5541	*Eremaea pauciflora*			
22.	12866	*Eucalyptus pluricaulis subsp. pluricaulis*			
23.	13900	*Grevillea uniformis*		P3	
24.	2143	*Hakea conchifolia (Shell-leaved Hakea)*			
25.	2175	*Hakea lissocarpha (Honey Bush)*			
26.	2179	*Hakea marginata*			
27.		*Hibbertia sp.*			
28.	3968	*Hovea trisperma (Common Hovea)*			
29.	5829	*Hypocalymma xanthopetalum*			
30.	2219	*Isopogon adenantholdes (Spider Coneflower)*			
31.	29775	*Isopogon drummondii*		P3	
32.	2232	*Isopogon linearis*			
33.	16317	*Isotropis cuneifolia subsp. glabra*		P2	
34.	15418	*Leptoceras menziesii*			
35.	20086	*Leucopogon sp. Northern Scarp (M. Hislop 2233)*			
36.	6444	*Leucopogon sprengelioides*			
37.	1243	*Lomandra sericea (Silky Mat Rush)*			
38.	34736	*Lysinema pentapetalum*			
39.	37580	*Melaleuca acutifolia*			
40.	14187	*Myriocephalus occidentalis*			
41.	1679	*Prasophyllum ovale (Little Leek Orchid)*			
42.	45343	*Pterostylis platypetala*			
43.	7603	*Scaevola canescens (Grey Scaevola)*			
44.	17617	*Schoenus insolitus*			
45.	14583	*Siloxerus multiflorus*			
46.	7719	*Stylidium ecorne (Foot Triggerplant)*			
47.	16882	*Synaphea aephynsa*			
48.	15532	*Synaphea spinulosa subsp. spinulosa*			
49.	1139	*Trithuria bibracteata*			
50.	12072	*Wurmbea dioica subsp. alba*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct

APPENDIX D

Photographs

Photo 1: Existing excavation area.

Photo 2: Proposed expansion area to the north west.

Photo 3: View towards proposed expansion area to the north east.

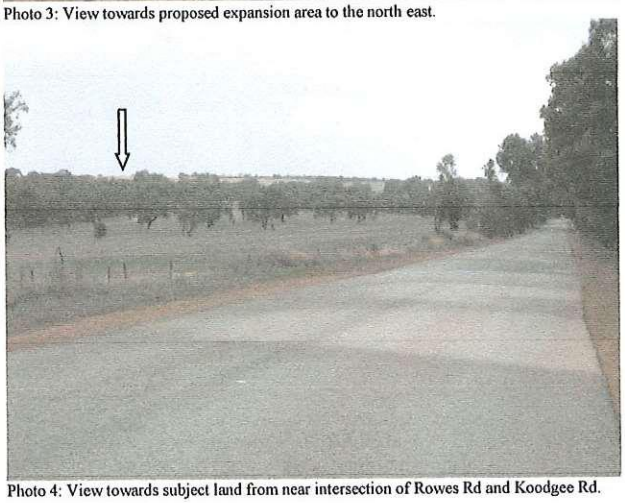


Photo 4: View towards subject land from near intersection of Rowes Rd and Koodgee Rd.

Photo 5: View towards bend from northern part of Rowes Rd with unsealed route to Lot 3 at left.

Photo 6: Slip road entrance (behind arrow sign) from western end of bend on Rowes Road.

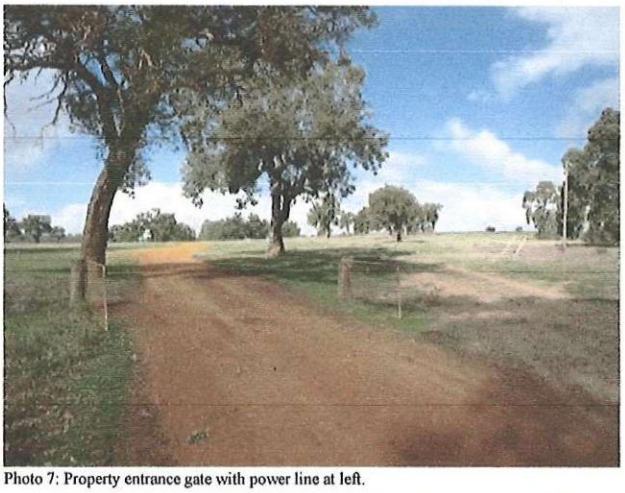


Photo 7: Property entrance gate with power line at left.

Photo 8: Internal access road to gravel extraction area.

Photo 9: Sheds near property entrance.

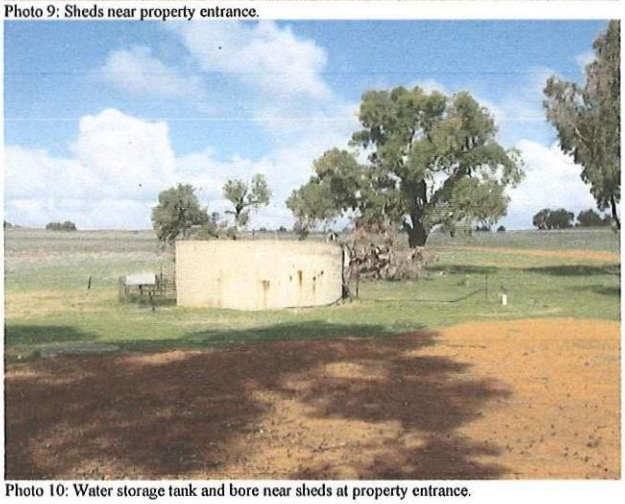


Photo 10: Water storage tank and bore near sheds at property entrance.

Photo 11: Example of portable site office facility likely to be used on subject land.

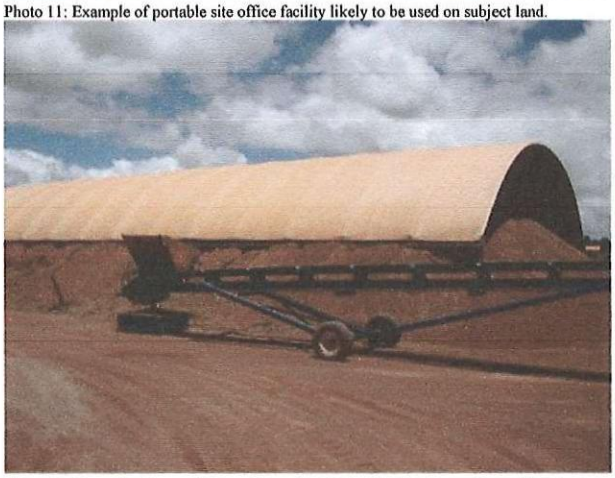


Photo 12: Example of a portable gravel product shelter likely to be used on subject land.

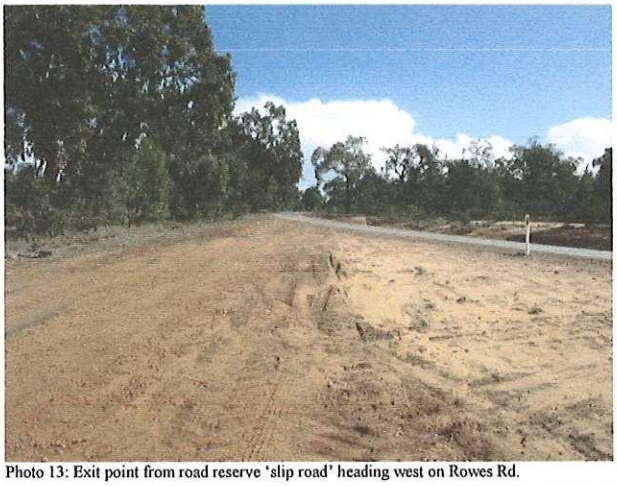


Photo 13: Exit point from road reserve 'slip road' heading west on Rowes Rd.

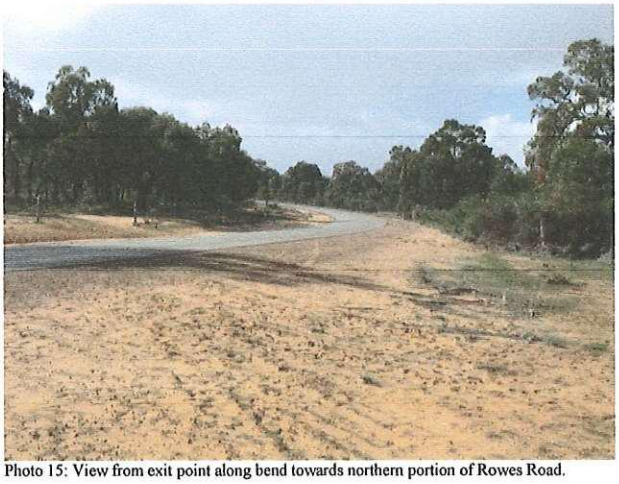


Photo 15: View from exit point along bend towards northern portion of Rowes Road.

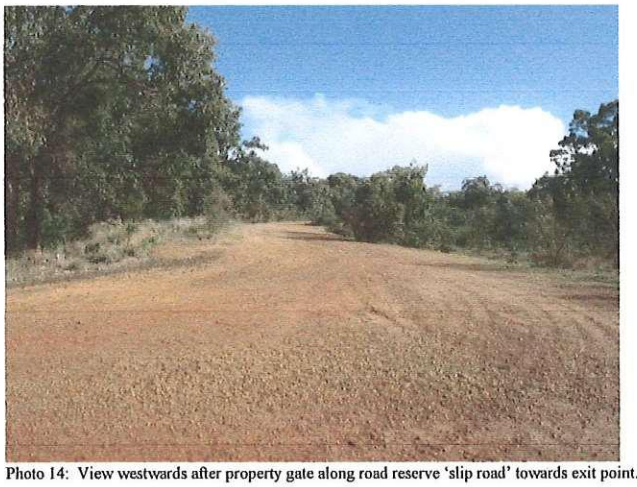


Photo 14: View westwards after property gate along road reserve 'slip road' towards exit point.

Photo 16: View from northern part of Rowes Road bend with shrubs obscuring exit point.

BE .....

APPLICATION NO:
DATE RECEIVED:
RECIEPT NO:

CLAUSE 9.1.1

SHIRE *of* DANDARAGAN

LOCAL PLANNING SCHEME NO.7
DISTRICT ZONING SCHEME
APPLICATION FOR PLANNING APPROVAL

Owner details:			
Name: Biggerabbie Development Company			
Address: Lot 3 Rowes Road Dandaragan.			Postcode: 6507
Phone Home: 96513027 Work: Mobile: 0428 513029	Fax: 96513025	Email: javbrown@esat.net.au	
Contact Person: Richard Brown			
Signature:		Date: 9.7.18.	
Signature:		Date:	
The signature of the owner(s) is required on all applications. This application will not proceed without that signature.			
Applicant details:			
Name: JAV Brown + Sons			
Address: 1263 Rowes Road Dandaragan			Postcode: 6507
Phone Home: 96513027 Work: Mobile: 0428513029	Fax: 96513025	Email: javbrown@esat.net.au	
Contact person for correspondence: Richard Brown.			
Signature:		Date: 9.7.18	
Property Details:			
Lot No: 3	House/Street No:	Location No:	
Diagram or Plan No:	Certificate of Title Vol. No:	Folio:	
Diagram or Plan No:	Certificate of Title Vol. No:	Folio:	
Title encumbrances (e.g. easements, restrictive covenants):			
Street Name: Rowes Road	Suburb: Dandaragan		
Nearest street intersection Dandaragan Road.			
Existing building/land use:			
Description of proposed development and/or use: Gravel extraction.			
Nature of any existing buildings and/or use:			
Approximate cost of proposed development: /			
Estimated time of Completion: /			

OFFICE USE ONLY	
Acceptance Officer's initials:	Date received:
Local Government Reference No:	

THIS FORM IS TO BE SUBMITTED IN DUPLICATE, TOGETHER WITH THREE COPIES OF PLANS COMPRISING THE INFORMATION SPECIFIED IN THE PARTICULARS REQUIRED WITH APPLICATION AS SHOWN BELOW.

THIS IS NOT AN APPLICATION FOR A BUILDING LICENCE.

Accompanying material

Unless the local government waives any particular requirement every application for planning approval is to be accompanied by —

(a) a plan or plans to a scale of not less than 1:500 showing —

(i) the location of the site including street names, lot numbers, north point and the dimensions of the site;

(ii) the existing and proposed ground levels over the whole of the land the subject of the application and the location, height and type of all existing structures, and structures and vegetation proposed to be removed;

(iii) the existing and proposed use of the site, including proposed hours of operation, and buildings and structures to be erected on the site;

(iv) the existing and proposed means of access for pedestrians and vehicles to and from the site;

(v) the location, number, dimensions and layout of all car parking spaces intended to be provided;

(vi) the location and dimensions of any area proposed to be provided for the loading and unloading of vehicles carrying goods or commodities to and from the site and the means of access to and from those areas;

(vii) the location, dimensions and design of any open storage or trade display area and particulars of the manner in which it is proposed to develop the same; and

(viii) the nature and extent of any open space and landscaping proposed for the site;

(b) plans, elevations and sections of any building proposed to be erected or altered and of any building it is intended to retain;

(c) any specialist studies that local government may require the applicant to undertake in support of the application such as traffic, heritage, environmental, engineering or urban design studies; and

(d) any other plan or information that the local government may require to enable the application to be determined.

The Council reserves the right to request an electronic version of the application to make a complete assessment of the development application.

SCHEDULE OF FEES

Development application where the estimated cost of the development is:	
▪ **$50,000**	**$147**
▪ **$50,000 - $500,000**	**0.32% of the estimated cost of the development**
▪ **More than $500,000 - $2,500,000**	**$1,700 + 0.257% for every $1 in excess of $500,000**
▪ **More than $2,500,000 -$5,000,000**	**$7,161 + 0.206% for every $1 in excess of $2,500,000**
▪ **More than $5,000,000 - $21,500,000**	**$12,633 + 0.123% for every $1 in excess of $5,000,000**
▪ **More than $21,500,000**	**$34,196**
	GST Exempt

Form 3
APPLICATION
FOR AN EXTRACTIVE INDUSTRY LICENSE

1. Name of Applicant ..... JAV BROWN + SONS. .....
2. Address of Applicant ..... 1263 ROWES ROAD DANDARAGAN .....
3. Telephone ..... 96513027 ..... Fax ..... 96513025. .....
4. Address and locality of proposed excavation site ..... Lot 3 ROWES ROAD DANDARAGAN .....
5. Lot No ..... 3 ..... 6. Location No .....
7. Plan or Diagram No .....
8. Certificate of Title Volume ..... Folio .....
9. Owner of the land ..... Bidgerabbie Development Co. .....
10. Address of the owner of the land ..... 1263 Rowes Road Dandaragan .....
11. Occupier of the land ..... Nil. .....
12. Material to be excavated ..... Gravel .....
13. If the application covers land that is the subject of an existing license:

    Date of issue of that license .....

    Date of expiration of that license .....

    Conditions applicable to that license .....

    .....

.....

.....

.....

14. Term of license sought ..... ongoing ... ≈ 10 years .....

15. Submitted with this application are –

(a) 3 copies of excavation site plans
(b) 3 copies of works and excavation program
(c) 3 copies of rehabilitation and decommissioning program
(d) datum peg evidence
(e) licensed surveyor's certificate certifying the correctness of (a) and (d)
(f) evidence of compliance with clause 2.2 (1) and (2)
(g) copies of all land use planning approvals
(h) copies of any environmental approval
(i) copies of any geotechnical information
(j) written consent of the owner of the excavation site
(k) evidence of notice of clearing to Department of Environment Regulation
(l) any other information that the local government has required
(m) license application fee in the sum of $ .....

The applicant applies for a license in respect of the proposed excavation site in accordance with and subject to the Shire of Dandaragan Local Law relating to Extractive Industries.

Date this ..... 10 ..... day of ..... July ..... 2018 ....

Richard Brown .....
Signature of Applicant

Richard Brown .....
Signature of Land Owner

.....
Signature of existing licensee
(if applicable)

.....
Signature of Occupier
(if not the applicant or the owner)