GOVERNMENT OF WESTERN AUSTRALIA

Environmental Protection Authority

EPA REFERRAL FORM PROPONENT

Referral of a Proposal by the Proponent to the Environmental Protection Authority under Section 38(1) of the *Environmental Protection Act 1986.*

PURPOSE OF THIS FORM

Section 38(1) of the *Environmental Protection Act 1986* (EP Act) provides that where a development proposal is likely to have a significant effect on the environment, a proponent may refer the proposal to the Environmental Protection Authority (EPA) for a decision on whether or not it requires assessment under the EP Act. This form sets out the information requirements for the referral of a proposal by a proponent.

Proponents are encouraged to familiarise themselves with the EPA's *General Guide on Referral of Proposals* [see Environmental Impact Assessment/Referral of Proposals and Schemes] before completing this form.

A referral under section 38(1) of the EP Act by a proponent to the EPA must be made on this form. A request to the EPA for a declaration under section 39B (derived proposal) must be made on this form. This form will be treated as a referral provided all information required by Part A has been included and all information requested by Part B has been provided to the extent that it is pertinent to the proposal being referred. Referral documents are to be submitted in two formats – hard copy and electronic copy. The electronic copy of the referral will be provided for public comment for a period of 7 days, prior to the EPA making its decision on whether or not to assess the proposal.

CHECKLIST

Before you submit this form, please check that you have:

	Yes	No
Completed all the questions in Part A (essential).	✓	
Completed all applicable questions in Part B.	✓	
Included Attachment 1 – location maps.	MP.	
Included Attachment 2 – additional document(s) the proponent wishes to provide (if applicable).	MP.	
Included Attachment 3 – confidential information (if applicable).		
Enclosed an electronic copy of all referral information, including spatial data and contextual mapping but excluding confidential information.		

Office of the Environmental Protection Authority
File:
13 JAN 2015
For Information
For Discussion
For Action
Response please:
GM Signature
Dir AI
Dir Bus Ops
Dir SPPD
Dir Strat Sup

Following a review of the information presented in this form, please consider the following question (a response is optional).

Do you consider the proposal requires formal environmental impact assessment?		
☐ Yes	☐ No	☐ Not sure
If yes, what level of assessment?		
☐ Assessment on Proponent Information	☐ Public Environmental Review	

PROPONENT DECLARATION (to be completed by the proponent)

I, Mick Guerinoni declare that I am authorised on behalf of JAB INDUSTRIES. (being the person responsible for the proposal) to submit this form and further declare that the information contained in this form is true and not misleading.

Signature	Name: Mick Guerinoni
Position: Director	Company: JAB INDUSTRIES
Date	9Th January 2015

PART A - PROPONENT AND PROPOSAL INFORMATION
(All fields of Part A must be completed for this document to be treated as a referral)

1 PROPONENT AND PROPOSAL INFORMATION

1.1 Proponent

Name	Mr Michael Guerinoni JAB Industries
Joint Venture parties (if applicable)	N/A
Australian Company Number (if applicable)	085 343 095
Postal Address (where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State)	PO Box 559 KUNUNURRA WA 6743
Key proponent contact for the proposal: • name • address • phone • email	Mr Michael Guerinoni PO Box 559 KUNUNURRA WA 6743 T: +61 8 9168 1943 JAB Industries F: +61 8 9168 1909 M: +61 (0) 417 966 168 E: jabind@bigpond.com
Consultant for the proposal (if applicable): • name • address • phone • email	Mr Colin Woolard WOOLARD CONSULTING – Environmental & Resource Consulting PO BOX 8068 Angelo Street South Perth WA 6151 T: 08 9368 5019 M: 0409 925 544 E:**colin@woolardconsulting.com.au**

1.2 Proposal

Title	Mining Proposal 29311- (Revised) to Recommence Quarrying – Pivot Hill - M80/618(P) & L80/63(P).
Description	The Pivot Hill Basalt Quarry was established prior to 1985 as a small scale quarry on the southern side of Pivot Hill to supply crushed rock for local construction use. The quarry is linked by a short section of unsealed mine access road to the Old Halls Creek Road that connects to the Shire-managed Parry Creek Road and the Great Northern Highway. The facility has, since its original establishment, been included in the Parry Lagoons Nature Reserve, although the active mining area is shielded from, and is located on elevated terrain some distance from the wetland. Existing mining disturbance covers 2.45ha. LOM mining will be 'side of hill' and conducted from a 2.2ha area centred on the existing quarry on M80/618(P) to a depth of up to 2m below the current ramp crest surface and always above the water table. Mining will involve limited vegetation clearing, drainage and run-off control, recovery of skeletal topsoil for rehabilitation use, campaign drill and blast, product crushing using a mobile Plant, screening, stockpiling and loadout. The basalt outcrops over the proposed quarry area and limited topsoil has been identified for recovery in this section of the quarry. Stockpiled rock product will be loaded onto road trucks (semi-trailers) for transport via existing access roads onto the public road network to development sites. Traffic movements will be dependent on demand and will vary. Water for dust suppression will be largely derived from offsite supplies. No permanent facilities are required for the site which is located within the

	southern part of the Parry Lagoons Nature Reserve 42155. The Reserve forms part of the Ord River Floodplain Ramsar site.
Extent (area) of proposed ground disturbance.	Existing disturbance covers 1.2 ha on M80/618(P) and 1.25ha on L80/63 for 2.45ha. Further clearing requirements for the project on M80/618(P) and L80/63(P) totals 4.4ha. Total disturbance for the project (inclusive of existing disturbance) is 6.85ha. Details are summarised in Table 1.2 in the Mining Proposal. Although it is not anticipated any clearing will be required on L80/63(P), which already carries an access road, some minor grading may be required for traffic safety and a clearing allowance is registered for planning purposes. A Native Vegetation Clearing Permit Application for 4.4ha will be lodged with the DER on receipt of advice that the Mining Lease applications have been accepted.
Timeframe in which the activity or development is proposed to occur (including start and finish dates where applicable).	LOM would be approximately 10 years although this is dependent on local supply and demand requirements. The project would commence on receipt of grant of tenure and all regulatory approvals.
Details of any staging of the proposal.	Subject to satisfactory compliance and acceptance by government it would be anticipated that approvals for extensions of operations will be sought
Is the proposal a strategic proposal?	JAB industries understand that the Department of Mines regards this proposal as being of strategic importance for provision of crushed basalt to the East Kimberly community.
Is the proponent requesting a declaration that the proposal is a derived proposal? If so, provide the following information on the strategic assessment within which the referred proposal was identified: • title of the strategic assessment; and • Ministerial Statement number.	N/A
Please indicate whether, and in what way, the proposal is related to other proposals in the region.	N/A
Does the proponent own the land on which the proposal is to be established? If not, what other arrangements have been established to access the land?	Applications lodged for M80/618 and L80/63
What is the current land use on the property, and the extent (area in hectares) of the property?	Parry Lagoon Nature Reserve which covers an area of 36,111ha. The Reserve is easily accessed by existing roads. The proposed reopening of the Pivot Hill Quarry is located on elevated terrain south of the floodplain and covers an area of 6.85ha which represents 0.02% of the current Reserve area.

1.3 Location

Name of the Shire in which the proposal is located.	Shire Wyndham and East Kimberley
For urban areas: •street address; •lot number; •suburb; and •nearest road intersection.	N/A
For remote localities: •nearest town; and • distance and direction from that town to the proposal site.	M80/618(P) is located in the Shire of Wyndham East Kimberley south of the Parry Creek-Kununurra Road, approximately 20km south-east of Wyndham (Figure 2.1) and 1.2km south west of the Parry Creek Farm – the nearest inhabited area. Access will be via the existing public road network and part of an existing road (Old Halls Creek Road) on L80/63(P), which is also under Miscellaneous Licence application by Mr Mick Guerinoni. Both M80/618(P) and L80/63(P) are located within the southern (non-wetland) part of the Parry Lagoons Nature Reserve (42155 - Conservation of Flora and Fauna) shown on Figure 2.2. In addition to its conservation base, the Reserve supports a range of current land use activities including recreation and tourism, (particularly bird watching), fishing and boating and cultural responsibilities exercised by traditional owners. Lands surrounding the Reserve are associated with pastoralism and agriculture associated with the Ord River Scheme. Tenure plans are referenced in Appendix F.
Electronic copy of spatial data - GIS or CAD, geo-referenced and conforming to the following parameters: • GIS: polygons representing all activities and named; • CAD: simple closed polygons representing all activities and named; • datum: GDA94; • projection: Geographic (latitude/longitude) or Map Grid of Australia (MGA); • format: Arcview shapefile, Arcinfo coverages, Microstation or AutoCAD.	

1.4 Confidential Information

Does the proponent wish to request the EPA to allow any part of the referral information to be treated as confidential?	No
If yes, is confidential information attached as a separate document in hard copy?	Yes / No

1.5 Government Approvals

Is rezoning of any land required before the proposal can be implemented? If yes, please provide details.		No	
Is approval required from any Commonwealth or State Government agency or Local Authority for any part of the proposal? If yes, please complete the table below.		Yes	
Agency/Authority	**Approval required**	**Application lodged Yes / No**	**Agency/Local Authority contact(s) for proposal**

Minister for Environment and Conservation Commission	Recommendation to Minister for Mines	Yes – This referral to the EPA is being submitted at the request of the Minister for Environment	Via Department of Mines
Department of the Environment (Commonwealth)	Referral under EPBC Act	No – awaiting grant of tenement prior to referral	
EPA / DMP	Native Vegetation clearing permit	No – awaiting grant of tenement prior to referral	

PART B - ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

2. ENVIRONMENTAL IMPACTS

Describe the impacts of the proposal on the following elements of the environment, by answering the questions contained in Sections 2.1-2.11:

2.1 flora and vegetation;

2.2 fauna;

2.3 rivers, creeks, wetlands and estuaries;

2.4 significant areas and/ or land features;

2.5 coastal zone areas;

2.6 marine areas and biota;

2.7 water supply and drainage catchments;

2.8 pollution;

2.9 greenhouse gas emissions;

2.10 contamination; and

2.11 social surroundings.

These features should be shown on the site plan, where appropriate.

For all information, please indicate:

(a) the source of the information; and

(b) the currency of the information.

2.1 Flora and Vegetation

2.1.1 Do you propose to clear any native flora and vegetation as a part of this proposal?

[A proposal to clear native vegetation may require a clearing permit under Part V of the EP Act (Environmental Protection (Clearing of Native Vegetation) Regulations 2004)]. Please contact the Department of Environment and Conservation (DEC) for more information.

(please tick) √ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section

2.1.2 How much vegetation are you proposing to clear (in hectares)?

Clearing of native vegetation for the site will be covered in a separate Clearing Permit Application that will be submitted to the Department of Environment Regulation following grant of tenure. The proposed quarry operations will generally occupy an operating area of less than 1.0ha at any one time. Topsoils and vegetation will be recovered when present and stockpiled in protected non-flow zones for rehabilitation use.

The following additional clearing on M80/618(P) is proposed over the first 10 years of operation (see Plan F-4 – Appendix F in the Mining Proposal). Minor clearing (0.4ha) has been scheduled for road works in L80/63(P) for planning purposes although it may not be required.

Of the threatened fauna likely to occur in the area as listed within the EPBC report and DEC Threatened Fauna search, three potentially match the habitat types within the mining tenement.

- Northern Quoll: During the day the Northern Quolls reputedly hide in hollow logs (none recorded on site), rock crevices (none on site), caves (none on site) and hollow trees (no hollow trees were observed). The two records listed on Naturemap (Department of Environment and Conservation, 2011) are from the Pivot Hill area but are from 1908.
- Australian Bustard: Inhabiting hummock and tussock grasslands, the Bustard also utilises grassy woodlands and low shrublands (Birdlife International , 2008). It has the potential to occur within the "Plain" vegetation community of the mining tenement but these areas are expected to be largely unaffected by the mining process. An increase in width of the access road may occur but is unlikely to cause significant impact to the larger grassland area. Very few shrubs occur within the grassland component at the site.
- Peregrine Falcon: Occurs across a huge variety of habitats throughout its range, although cliffs and more recently buildings/bridges are required for nesting (The Peregrine Fund, 2010) so although the Falcon may utilise the mining tenement it is unlikely to utilise it for breeding. Two results were returned on Naturemap (Department of Environment and Conservation, 2011) for the Peregrine Falcon in the broader Pivot Hill region.

Of the three threatened fauna likely to inhabit similar habitats to those identified on site, only the Australian bustard is likely to be present. The areas favoured by the bustard are unlikely to be disturbed by the mining process, although an obvious increase in traffic and activity may encourage the birds to utilise other areas of the nature reserve.

Overall the site does not appear to support likely habitats for threatened fauna nor threatened flora.

2.3 Rivers, Creeks, Wetlands and Estuaries

2.3.1 Will the development occur within 200 metres of a river, creek, wetland or estuary?

(please tick) √ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

2.3.2 Will the development result in the clearing of vegetation within the 200 metre zone?

☐ Yes √ No **If yes**, please describe the extent of the expected impact.

2.3.3 Will the development result in the filling or excavation of a river, creek, wetland or estuary?

☐ Yes √ No **If yes**, please describe the extent of the expected impact.

2.3.4 Will the development result in the impoundment of a river, creek, wetland or estuary?

☐ Yes √ No **If yes**, please describe the extent of the expected impact.

2.3.5 Will the development result in draining to a river, creek, wetland or estuary?

☐ Yes √ No **If yes**, please describe the extent of the expected impact.

2.3.6 Are you aware if the proposal will impact on a river, creek, wetland or estuary (or its buffer) within one of the following categories? (please tick)

Conservation Category Wetland	√ Yes	☐ No	☐ Unsure
Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998	☐ Yes	√ No	☐ Unsure
Perth's Bush Forever site	☐ Yes	√ No	☐ Unsure
Environmental Protection (Swan & Canning Rivers) Policy 1998	☐ Yes	√ No	☐ Unsure
The management area as defined in s4(1) of the *Swan River Trust Act 1988*	☐ Yes	√ No	☐ Unsure
Which is subject to an international agreement, because of the importance of the wetland for waterbirds and waterbird habitats (e.g. Ramsar, JAMBA, CAMBA)	√ Yes	☐ No	☐ Unsure

2.4 Significant Areas and/ or Land Features

2.4.1 Is the proposed development located within or adjacent to an existing or proposed National Park or Nature Reserve?

√ Yes ☐ No **If yes**, please provide details.

Both M80/618(P) and L80/63(P) are located within the southern (non-wetland) part of the Parry Lagoons Nature Reserve (42155 - Conservation of Flora and Fauna). The Reserve covers an area of 36,111ha (DEC 2012) and has the purpose of conservation of flora and fauna. The Reserve is easily accessed by existing roads and contains an internationally recognised Ramsar wetland and a range of natural terrestrial and marine and cultural values. The proposed reopening of the Pivot Hill Quarry is located on elevated terrain south of the floodplain and covers an area of 6.85ha which represents 0.02% of the current Reserve area. The nearest sensitive premise is the Parry Creek Farm, a former vegetable growing area now operating as a seasonal tourist resort. The facility is located 1.2km north east of the quarry.

In addition to its conservation base, the Reserve supports a range of current land use activities including recreation and tourism, (particularly bird watching), fishing and boating and cultural responsibilities exercised by traditional owners. Lands surrounding the Reserve are associated with pastoralism and agriculture associated with the Ord River Scheme

2.4.2 Are you aware of any Environmentally Sensitive Areas (as declared by the Minister under section 51B of the EP Act) that will be impacted by the proposed development?

√ Yes ☐ No **If yes**, please provide details.

As stated above both M80/618(P) and L80/63(P) are located within the southern (non-wetland) part of the Parry Lagoons Nature Reserve (42155 - Conservation of Flora and Fauna) which is classified as an ESA.

2.4.3 Are you aware of any significant natural land features (e.g. caves, ranges etc) that will be impacted by the proposed development?

☐ Yes √ No **If yes**, please provide details.

2.5 Coastal Zone Areas (Coastal Dunes and Beaches)

2.5.1 Will the development occur within 300metres of a coastal area?

(please tick) ☐ Yes **If yes**, complete the rest of this section.

√ No **If no**, go to the next section.

2.5.2 What is the expected setback of the development from the high tide level and from the primary dune?

2.5.3 Will the development impact on coastal areas with significant landforms including beach ridge plain, cuspate headland, coastal dunes or karst?

☐ Yes √ No **If yes**, please describe the extent of the expected impact.

2.5.4 Is the development likely to impact on mangroves?

☐ Yes √ No **If yes**, please describe the extent of the expected impact.

2.6 Marine Areas and Biota

2.6.1 Is the development likely to impact on an area of sensitive benthic communities, such as seagrasses, coral reefs or mangroves?

☐ Yes √ No **If yes**, please describe the extent of the expected impact.

2.6.2 Is the development likely to impact on marine conservation reserves or areas recommended for reservation (as described in *A Representative Marine Reserve System for Western Australia*, CALM, 1994)?

☐ Yes √ No **If yes**, please describe the extent of the expected impact.

2.6.3 Is the development likely to impact on marine areas used extensively for recreation or for commercial fishing activities?

☐ Yes √ No **If yes**, please describe the extent of the expected impact, and provide any written advice from relevant agencies (e.g. Fisheries WA).

2.7 Water Supply and Drainage Catchments

2.7.1 Are you in a proclaimed or proposed groundwater or surface water protection area?

(You may need to contact the Department of Water (DoW) for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

☐ Yes √ No **If yes**, please describe what category of area.

2.7.2 Are you in an existing or proposed Underground Water Supply and Pollution Control area?

(You may need to contact the DoW for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

☐ Yes √No **If yes**, please describe what category of area.

2.7.3 Are you in a Public Drinking Water Supply Area (PDWSA)?

(You may need to contact the DoW for more information or refer to the DoW website. A proposal to clear vegetation within a PDWSA requires approval from DoW.)

☐ Yes √ No **If yes**, please describe what category of area.

2.7.4 Is there sufficient water available for the proposal?

(Please consult with the DoW as to whether approvals are required to source water as you propose. Where necessary, please provide a letter of intent from the DoW)

√ Yes ☐ No (please tick)

2.7.5 Will the proposal require drainage of the land?

☐ Yes √ No **If yes**, how is the site to be drained and will the drainage be connected to an existing Local Authority or Water Corporation drainage system? Please provide details.

2.7.6 Is there a water requirement for the construction and/ or operation of this proposal?

(please tick) √ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

2.7.7 What is the water requirement for the construction and operation of this proposal, in kilolitres per year?

Dust suppression – rock drilling, tramming and processing, on access roads – up to 30kL/day.

2.7.8 What is the proposed source of water for the proposal? (e.g. dam, bore, surface water etc.)

No site groundwater identified, water will be trucked to site with some re-use of post wet season void capture

2.8 Pollution

2.8.1 Is there likely to be any discharge of pollutants from this development, such as noise, vibration, gaseous emissions, dust, liquid effluent, solid waste or other pollutants?

(please tick) √ Yes **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

2.8.2 Is the proposal a prescribed premise, under the Environmental Protection Regulations 1987?

(Refer to the EPA's *General Guide for Referral of Proposals to the EPA under section 38(1) of the EP Act 1986* for more information)

√ Yes ☐ No **If yes**, please describe what category of prescribed premise.

Schedule 1 – Prescribed Premises Category 13 – Crushing of building material: premises on which waste building or demolition material (for example bricks, stones or concrete) is crushed or cleaned at 1000 tonnes or more per year

The facility may require Prescribed Premises Licencing or registration as a Mobile Screening Plant (Category 70) as greater than 5,000t but less than 50,000t annual production is proposed.

2.8.3 Will the proposal result in gaseous emissions to air?

☐ Yes √ No **If yes**, please briefly describe.

2.8.4 Have you done any modelling or analysis to demonstrate that air quality standards will be met, including consideration of cumulative impacts from other emission sources?

☐ Yes √ No **If yes**, please briefly describe.

2.8.5 Will the proposal result in liquid effluent discharge?

☐ Yes √ No **If yes**, please briefly describe the nature, concentrations and receiving environment.

2.8.6 If there is likely to be discharges to a watercourse or marine environment, has any analysis been done to demonstrate that the State Water Quality Management Strategy or other appropriate standards will be able to be met?

☐ Yes √ No **If yes**, please describe.

2.8.7 Will the proposal produce or result in solid wastes?

☐ Yes √ No **If yes**, please briefly describe the nature, concentrations and disposal location/ method.

Since there are no permanent facilities on site, solid waste management simply requires removal each operational day of minor volumes of domestic waste. Any industrial waste generated at the site from activities such as equipment repairs will be returned to the proponent's workshop in Kununurra for proper disposal. Biowastes (portaloo) will be managed as part of campaign operations. Inspection of the site on several occasions by the Proponent has not identified any site contamination from previous quarrying activities. The proposed non-storage of hydrocarbons and hazardous goods on site during the proposed operations will result in a very low risk to the environment from spillage or malfunction.

2.8.8 Will the proposal result in significant off-site noise emissions?

√ Yes ☐ No **If yes**, please briefly describe.

Atmospheric noise emissions will result from intermittent blasting, materials handling, crushing and transport. No impacts from light dispersal will occur as the operation will only be conducted during daylight hours. Noise emissions could result in impacts to site personnel, ambiance impacts to visitors at the Parry Creek Farm and native wildlife during peak noise activities.

With the closest residence 1.2km away, noise is unlikely to be a significant amenity issue except during short blasting periods and possibly during transport (engine breaking) at the entrance to the Parry Creek Road. Blasting will be undertaken at specified times during the day, avoided where possible during periods of low overcast and unstable atmospheric conditions, and regular consultation will be maintained with the nearby tourist farm to provide timely warning of blasts.

Given the site's remote location, and the type and scale of the quarry, the proposed operation is not expected to result in excessive levels of nuisance noise at sensitive receiving premises (Parry Creek Farm), due to prevailing wind conditions, location in a void and the noise attenuation due to distance and the barrier provided by the bulk of Pivot Hill.

2.8.9 Will the development be subject to the Environmental Protection (Noise) Regulations 1997?

√ Yes ☐ No **If yes**, has any analysis been carried out to demonstrate that the proposal will comply with the Regulations?

Please attach the analysis.

The plant is required to operate in accordance with the Environmental Protection (Noise) Regulations (1997), Australian Standards and in accordance with Guidelines defined by Section 4(1) of the Mine Safety and Inspection Act (1994). Noise will arise from the normal plant and transport operations including mobile equipment reversing alarms. Operations will comply with regulatory requirements in respect to these activities. Vibration and damage to offsite structures was raised in stakeholder consultation. No evidence has been provided of impacts from vibration from previous

operations at the quarry site and blasting techniques will be designed in conjunction with the licenced shotfirer to minimize transient blasting noise and vibration.

2.8.10 Does the proposal have the potential to generate off-site, air quality impacts, dust, odour or another pollutant that may affect the amenity of residents and other "sensitive premises" such as schools and hospitals (proposals in this category may include intensive agriculture, aquaculture, marinas, mines and quarries etc.)?

☐ Yes √ No **If yes**, please describe and provide the distance to residences and other "sensitive premises".

With the closest inhabitant 1.2km away, noise is unlikely to be a significant amenity issue except during short blasting periods and possibly during transport (engine breaking) at the entrance to the Parry Creek Road. Blasting will be undertaken at specified times during the day, avoided where possible during periods of low overcast and unstable atmospheric conditions, and regular consultation will be maintained with the nearby tourist farm to provide timely warning of blasts.

Given the site's remote location, and the type and scale of the quarry, the proposed operation is not expected to result in excessive levels of nuisance noise at sensitive receiving premises (Parry Creek Farm), due to prevailing wind conditions, location in a void and the noise attenuation due to distance and the barrier provided by the bulk of Pivot Hill.

2.8.11 If the proposal has a residential component or involves "sensitive premises", is it located near a land use that may discharge a pollutant?

☐ Yes ☐ No √ Not Applicable

If yes, please describe and provide the distance to the potential pollution source

2.9 Greenhouse Gas Emissions

2.9.1 Is this proposal likely to result in substantial greenhouse gas emissions (greater than 100 000 tonnes per annum of carbon dioxide equivalent emissions)?

☐ Yes √ No **If yes**, please provide an estimate of the annual gross emissions in absolute and in carbon dioxide equivalent figures.

2.9.2 Further, if yes, please describe proposed measures to minimise emissions, and any sink enhancement actions proposed to offset emissions.

2.10 Contamination

2.10.1 Has the property on which the proposal is to be located been used in the past for activities which may have caused soil or groundwater contamination?

☐ Yes √ No ☐ Unsure **If yes**, please describe.

2.10.2 Has any assessment been done for soil or groundwater contamination on the site?

√ Yes ☐ No **If yes**, please describe.

While information on the occurrence of groundwater in the broader region has been documented in several studies and summarised in WRC (2001), no bore data for the Pivot Hill area was found in the DOW online Hydrogeological Atlas. Unweathered heterogeneous basalts typically yield low sustainable volumes, in unconfined aquifers and are often associated with localised fractured rocks at the base of flows. Limited recharge may occur by vertical infiltration, although no evidence of basal seepage is evident in the existing quarry.

The depth to groundwater is unknown but, given the elevation of the mineable basalt resource at 10-30m above the surrounding terrain and the absence of extensive weathering in the quarry area, the water table, if present, is below proposed mining depth. No groundwater bores are known to exist within 3km of the project site, but the Parry Farm located 1.2km to the north-east may operate bores in a different hydrogeological environment. There is no evidence that the proposed mining operations will directly or indirectly impact the hydrogeological or ecological wetland values of the Parry Lagoons Nature Reserve, since the mining area is elevated above the wetland ecosystems that represent the essential conservation values of the reserve. Water for dust suppression in excess of that captured in the quarry void will be trucked to site storage as required – no groundwater abstraction is proposed.

Acid sulphate leaching has been considered – refer to Mining Proposal chemical analysis.

2.10.3 Has the site been registered as a contaminated site under the *Contaminated Sites Act 2003*? (on finalisation of the CS Regulations and proclamation of the CS Act)

☐ Yes √ No **If yes**, please describe.

2.11 Social Surroundings

2.11.1 Is the proposal on a property which contains or is near a site of Aboriginal ethnographic or archaeological significance that may be disturbed?

☐ Yes √ No ☐ Unsure **If yes**, please describe.

A search of the AHIS was conducted to determine the presence of items or sites of state, national or Aboriginal heritage significance within the Pivot Hill Quarry tenements M80/618(P) and L80/63(P). The search report, referenced in Appendix D in the Mining Proposal, did not locate any Aboriginal sites. Based on the risk assessment tool and AHIS search, no further assessment is deemed necessary.

As part of the stakeholder consultation process, the proponent has made further contact with the Guda Guda Community and sought advice on heritage matters associated with the site and proposed

resumption of quarry activities. Correspondence is referenced in Appendices B and D of the Mining Proposal

2.11.2 Is the proposal on a property which contains or is near a site of high public interest (e.g. a major recreation area or natural scenic feature)?

☐ Yes √ No **If yes**, please describe.

2.11.3 Will the proposal result in or require substantial transport of goods, which may affect the amenity of the local area?

☐ Yes √ No **If yes**, please describe.

Road trains (two trailers) will exit the site via the Old Halls Creek Road, turn west onto the Parry Creek Road and then onto the Great Northern Highway. Traffic movements will be variable depending on product demand and destination. For planning purposes, maximum annual traffic (truck) movements are estimated at 500 for transport of 45,000t of product calculated on the basis of four trips per day for 125 days per year. In addition to the minor maintenance of the gravel road section in the Miscellaneous Licence for the site, road maintenance works including dust suppression watering are required in accordance with SWEK correspondence of 18 March 2013 and extensive consultation with personnel from the Department of Main Roads. Copies of the correspondence are referenced in Appendix B of the Mining Proposal

3. PROPOSED MANAGEMENT

3.1 Principles of Environmental Protection

3.1.1 Have you considered how your project gives attention to the following Principles, as set out in section 4A of the EP Act? (For information on the Principles of Environmental Protection, please see EPA Position Statement No. 7, available on the EPA website)

1. The precautionary principle.	√ Yes	☐ No
2. The principle of intergenerational equity.	√ Yes	☐ No
3. The principle of the conservation of biological diversity and ecological integrity.	√ Yes	☐ No
4. Principles relating to improved valuation, pricing and incentive mechanisms.	√ Yes	☐ No
5. The principle of waste minimisation.	√ Yes	☐ No

3.1.2 Is the proposal consistent with the EPA's Environmental Protection Bulletins/Position Statements and Environmental Assessment Guidelines/Guidance Statements (available on the EPA website)?

√ Yes ☐ No

3.2 Consultation

3.2.1 Has public consultation taken place (such as with other government agencies, community groups or neighbours), or is it intended that consultation shall take place?

√ Yes ☐ No **If yes**, please list those consulted and attach comments or summarise response on a separate sheet.

CORRESPONDENCE AND CONSULTATION

- Shire of Wyndham, East Kimberley
- Dept of Regional Development and Lands
- Guda Guda Community
- Joorook Ngarmi Aboriginal Corporation
- Main Roads WA
- Parry Creek Farm

Table B-1 – Summary of Consultation Appendix B in Mining Proposal Plan

Type of Disturbance	Area (ha)
Quarry void, expansion of stockpile and laydown areas	2.6 (0.26ha/annum for 10years LOM)
Mine water storage	0.04
Topsoil stockpile and miscellaneous disturbance#	1.2
Access road*	0.16
Total	**4.0**

the small amount of topsoil will be temporarily stockpiled on the edge of the work area.
* Access road will be progressively developed over mined-out areas.

It is not anticipated that clearing will be required within L80/63(P), although the existing track will likely require periodic grading.

2.1.3 Have you submitted an application to clear native vegetation to the DEC (unless you are exempt from such a requirement)?

☐ Yes √ No **If yes**, on what date and to which office was the application submitted of the DEC?

Clearing Permit Application that will be submitted to the Department of Environment Regulation following grant of tenure

2.1.4 Are you aware of any recent flora surveys carried out over the area to be disturbed by this proposal?

√ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey(s).

If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.

Botanical North was commissioned by JAB Industries to carry out a detailed Level 2 Flora survey and Level 1 Fauna assessment within the 16 hectare Mining Tenement M80/618, located at Pivot Hill within the Parry Lagoons Nature Reserve, WA

See attachment

2.1.5 Has a search of DEC records for known occurrences of rare or priority flora or threatened ecological communities been conducted for the site?

√ Yes ☐ No If you are proposing to clear native vegetation for any part of your proposal, a search of DEC records of known occurrences of rare or priority flora and threatened ecological communities will be required. Please contact DEC for more information.

2.1.6 Are there any known occurrences of rare or priority flora or threatened ecological communities on the site?

☐ Yes √ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

A total of 100 plant species, from 38 families were recorded within the tenement and along the access road verge (Botanical North 2012). Some species were not identifiable to species level due to the lack of the reproductive material. Species are listed in Appendix E of the Mining Proposal. No declared weeds were recorded during the survey. Nine introduced species were recorded. Fabaceae (Pea family) and Poaceae (grasses) were the co-dominant families located within the site, each with 15 species. Malvaceae was the next most prominent family, with seven taxa.

No threatened flora was recorded within the mining tenement or along the access track. A single individual of Brachychiton tridentatus (Priority 3) was recorded on the hillcrest, approximately 100 metres east of the eastern tenement boundary. Identification was based upon leaf shape only as fruits or flowers were absent.

With the exception of the previously mined portion of this mining tenement, vegetation in the surrounding area remains similar to pre-European vegetation (Beeston, Hopkins, & Shepherd, 2002; Australian Government, 2002). Actual determination of the pre-European vegetation upon Pivot Hill was not assessable due to the area being too finer scale for comparison with the publically available data.

2.1.7 If located within the Perth Metropolitan Region, is the proposed development within or adjacent to a listed Bush Forever Site? (You will need to contact the Bush Forever Office, at the Department for Planning and Infrastructure)

☐ Yes √ No **If yes**, please indicate which Bush Forever Site is affected (site number and name of site where appropriate).

2.1.8 What is the condition of the vegetation at the site?

The overall health rating of "Excellent" according to the Keighery Scale was assessed for the hillcrest and hillslope open woodland communities within the site. There were very few weeds on the hillcrest (one species) or hillslope (three species), and none in any great density. With the exception of the obvious quarry pits (where a rating of "Degraded" applies), there was little disturbance to the remaining vegetation.

The footslope open woodland and the very open woodland (plain) were rated "Very Good". Tracks bisected the footslope and there was evidence of manual manipulation of the environment (rocks were stockpiled, although largely now covered in vegetation). Seven weed species were detected on the footslope but actually densities were low. Three species of weed were present within the plain, with the grass Chloris barbata occurring in densities between 10 and 20% along Old Halls Creek Road. No weeds dominated within the tenement.

Although the intact vegetation on the site is in excellent health, with few weeds, there is a high level of disturbance within the tenement itself in terms of two previously utilised quarry pits. Based on the observations of the vegetation surrounding the existing pits, it is unlikely that the extension of those pits (within the tenement boundary) would have a long term detrimental affect on the surrounding hill and plains

2.2 Fauna

2.2.1 Do you expect that any fauna or fauna habitat will be impacted by the proposal?

(please tick) ☐ Yes **If yes**, complete the rest of this section.

√ No **If no**, go to the next section.

2.2.2 Describe the nature and extent of the expected impact.

2.2.3 Are you aware of any recent fauna surveys carried out over the area to be disturbed by this proposal?

√ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey(s).

If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.

Botanical North was commissioned by JAB Industries to carry out a detailed Level 2 Flora survey and Level 1 Fauna assessment within the 16 hectare Mining Tenement M80/618, located at Pivot Hill within the Parry Lagoons Nature Reserve, WA

2.2.4 Has a search of DEC records for known occurrences of Specially Protected (threatened) fauna been conducted for the site?

√ Yes ☐ No (please tick)

2.2.5 Are there any known occurrences of Specially Protected (threatened) fauna on the site?

☐ Yes √ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

A field survey of fauna was conducted by a qualified zoologist (Mr Basil Byrne) over the two days of the flora survey to examine the habitat present and condition, and to carry out opportunistic sightings of fauna. Actual trapping of fauna was not undertaken during the survey.

A buffer of 5km was requested when conducting the Protected Matters search. The results indicate that there are no World Heritage Properties, National Heritage places or Threatened Ecological Communities located within the project area. Nine threatened species were identified, one of which, the Northern Quoll, has the potential to occur within the mining site.

Very little evidence of fauna was present within the mining tenement. No scats, tracks, nests or diggings were present on the hillcrest. Wallaby paths through the grass were observed on the hillslope. No tree hollows were observed within any of the vegetation communities. One male and two female Red-backed Fairywrens (Malurus melanocephalus) were observed on the hillcrest and a brown snake (not identified to species) in the grassland/footslope area near the old quarry. No other sightings were recorded

Government of **Western**
Department of **Mines and**

COVER LETTER PROFORMA:
SUBMISSION OF NEW/REVISED INFORMATION

To:
Assessment Officer Name: Mr Adrian Wiley
Minerals Branch,
Environment Division
Department of Mines and Petroleum
100 Plain Street
EAST PERTH WA 6004

This cover letter pro forma must be used whenever additional information is submitted to DMP in relation to a document under DMP assessment (including new versions of documents). This cover letter pro forma is required to ensure that additional information is appropriately recorded, assessed and filed in departmental records.

Please tick one box, fill out the required information and then attach on top of all additional information.

☐ FURTHER INFORMATION SUBMITTED FOR A MINING PROPOSAL (OR OTHER DOCUMENT)

When specified by an Environmental Officer, minor supplementary or explanatory information for a Mining Proposal can be received as 'further information', all other changes must be in the form of a revised Mining Proposal. Further information must be in the form of a letter or report signed by the Tenement Holder, Manager or authorised representative and will become a legal obligation as a tenement condition.

Registration ID:	
MP Title:	
MP date (from Appendix 6 Checklist):	
Date information requested:	
Who requested the information:	
Indicate (Y/N) if all additional information has been provided in this document. If (N); Provide further detail of outstanding information to be sent separately.	Y/N Detail:

☒ RESUBMISSION OF A MINING PROPOSAL (OR OTHER DOCUMENT UNDER ASSESSMENT).

Registration ID:	29311
MP Title: *Note: Title must state 'Revised' and the version #. The cover page must also state the revised MP date.*	Mining Proposal (Revised) to Recommence Rock Quarrying at Pivot Hill – M80/618(P) and L80/63(P)
Date of revised MP:	17 February 2014
Version Number:	Revision 1.1
Date information requested:	15 November 2013
Who requested the information:	Adrian WILEY - Assessment Officer - DMP
☒ A new signed and dated Appendix 6 checklist has been provided. *Note: Checklist date must be consistent with the date of revised MP.*	
☒ A new electronic copy has been provided, and is identical to the hard copy submitted	
☒ All requested information has been provided in the new document	

OFFICE USE ONLY - Records	
Affix Scanned Stamp:	
Doc ID:	

JAB Industries

ACN 44 148 471 322

Mining Proposal 29311-(Revised) to Recommence Quarrying

Pivot Hill M80/618(P) and L80/63(P)

March 2014

Document Title:	Mining Proposal 29311- (Revised) to Recommence Quarrying – Pivot Hill - M80/618(P) & L80/63(P).	
Document No:	JAB-MP-PHQ-0314-Rev1.1	**Copy No:**
Type: (Tick Box)	Controlled ☐ Uncontrolled ☑	Issue A Revision 1.1

Project Summary Table

PROPONENT	Mr Michael Guerinoni JAB Industries
CONTACT DETAILS	Mr Michael Guerinoni JAB Industries P O Box 559 KUNUNURRA WA 6743 T: +61 8 9168 1943 F: +61 8 9168 1909 M: +61 (0) 417 966 168
PROPOSED OPERATIONS	Recommencement of campaign style 'side of hill' quarrying, crushing and screening activities at the Pivot Hill Basalt Quarry on M80/618(P) with access via L80/63(P) to the public road network. The saleable material would consist of a range of crushed basalt rock products for local domestic markets.
PROJECT HISTORY	The Pivot Hill Basalt Quarry was established prior to 1985 as a small scale quarry on the southern side of Pivot Hill to supply crushed rock for local construction use. The quarry is linked by a short section of unsealed mine access road to the Old Halls Creek Road that connects to the Shire-managed Parry Creek Road and the Great Northern Highway. The facility has, since its original establishment, been included in the Parry Lagoons Nature Reserve, although the active mining area is shielded from, and is located on elevated terrain some distance from the wetland. Existing mining disturbance covers 2.45ha.
THIS PROPOSAL	JAB Industries are seeking to re-establish quarrying activities at the Pivot Hill Quarry (PHQ) to support the local crushed rock demand. This revised Proposal (Registration 29311) is to support the application for a Mining Lease – M80/618(P) over the original basalt resource and a Miscellaneous Licence L80/63(P) covering the existing access road. It describes reopening the quarry as a small scale, operation centred on the existing side of hill workings that would typically mine 10kt to 30kt per year with provision to go to 45kt per year. LOM would be approximately 10 years although this is dependent on local supply and demand requirements. No infrastructure would be permanently constructed on site and the quarrying would be undertaken during the "dry season" on a campaign basis with crushed and screened rock product removed via an existing service road. Under normal operations, the site will operate between the hours of 0700hrs to 1700hrs on week days. Mine-related traffic movements on Parry Creek Road west to the Great Northern Highway cannot be predicted with certainty, but could be in the vicinity of 4 per day (90t trailers) for 125 days a year for annual production of 45,000t. The facility may require Prescribed Premises Licencing or registration as a Mobile Screening Plant (Category 70) as greater than 5,000t but less than 50,000t annual production is proposed. Total new disturbance for the project would be 4.4ha.
TIMING	The project would commence on receipt of grant of tenure and all regulatory approvals.
DISTRIBUTION	Department of Mines and Petroleum – 1 Hard Copy; 1 Electronic Copy(CD)
REPORT PREPARATION AND STATEMENT OF LIMITATIONS	In the revision of this proposal, Woolard Consulting Pty Ltd (WCPL) has relied on data, plans and other information provided by JAB Industries (JAB) and others. Except as otherwise stated in the Report, WCPL has not verified the accuracy or completeness of the information provided or undertaken any test or site work. WCPL will not be liable in relation to incorrect conclusions or recommendations should any data not be disclosed to WCPL. Within the limitations imposed by the commission, the assessment of the site and preparation of the report have been undertaken in accordance with generally accepted practices using a degree of care ordinarily exercised by professional Resource and Environmental Consultants. No other warranty, expressed or implied is made.

Mining Proposal Checklist

No.	Mining Proposal Checklist	Y/N NA	Page No.	Comments
Public Availability				
1	Are you aware that this Mining Proposal is publicly available?	Y	-	
2	Is there any information in this Mining Proposal that should not be publicly available?	N	-	
3	If "No" to Q2, do you have any problems with the information contained within this Mining Proposal being publicly available?	N	-	
4	If "Yes" to Q2, has confidential information been submitted in a separate document / section?	N	-	
5	Has the Mining Proposal been endorsed? (See last page of Checklist).	Y	-	
Mining Proposal Details				
6	Have you included the tenement number(s), site name, proposal overview and date in the title page?	Y	P2	See also Project Summary Table - P3
7	Who authored the mining proposal?	John Consulting Services, revised by Woolard Consulting Pty Ltd		
8	State who to contact for enquiries about the mining proposal.	Mr Michael Guerinoni: +61 8 9168 1943/0417 966 168		
9	How many copies were submitted to DMP?	Hard Copies = 1 Electronic Copies = 1		
10	Does this Mining Proposal support a lease application?	Y	P3	
11	Has a geological resource statement been included (refer section 4.3.2 of Mining Proposal Guidelines).	Y	P21	See Table 2.1. Not applicable to Quarry Projects
12	Will more than 10 million tonnes of ore and waste be extracted per year? State total tonnage.	N	P21	See Section 2.7- Table 2.1. Up to 45,000tpa
13	Will more than 2 million tonnes of ore be processed per year? State total throughput.	N	P21	See Section 2.7 Up to 45,000tpa
14	Is the Mining Proposal located on pre-1899 Crown Grant lands? (Not subject to the Mining Act 1978).	N	P15	See Section 1.6
15	Is the Mining Proposal located on reserve land? If "Yes" state reserve types in space below.	Y	P11	See Section 1.3 Conservation Reserve 42155
16	Will the mining proposal occur within or affect a declared occupied townsite?	N	P15	See Section 1.6

No.	Mining Proposal Checklist	Y/N NA	Page No.	Comments
17	Is the Mining Proposal within 2km of the coastline or a Private Conservation Reserve?	N	P15	See Section 1.6 Coastline
18	Is the Mining Proposal wholly or partially within a World Heritage Property, Biosphere Reserve, Heritage Site or Soil Reference Site?	N	P15	See Section 1.6. Adjacent to in ANCA /RAMSAR Site
Tenement Details				
19	Are all mining operations within granted or applied for tenement boundaries?	Y	P4	Under Application-See Sect 1.5
20	Are you the tenement holder of all tenements?	Y	P3	See Project Summary Table
21	If "No" to Q20, do you have written authorisation from the tenement holder(s) to undertake the Mining Proposal activities? (Refer to Section 4.2.1 of the Mining Proposal Guidelines.	N/A	-	-
22	If "Yes" to Q20, then is a copy of the authorisation contained within the Mining Proposal?	N/A	-	-
23	Have you checked for compliance against tenement conditions?	Y	-	No Conditions
Location and Site Layout Plans				
24	Have you included location plans showing tenement boundaries and mining operations?	Y	P18	See Appendix F Plans F1-F4
25	Have you included site layout plans showing all mining operations and infrastructure in relation to tenement boundaries?	Y	-	See Appendix F Plans F1- F4
26	Have you included Area of Disturbance Tables for all tenements impacted by mining operations?	Y	P15	Table 1.2
Environmental Protection Act				
27	Does the Mining Proposal require referral under Part 4 of the MOU (2010)? If "Yes" describe why in space below.	Y	P15	See Appendix A -Within Parry Lagoons Nature Reserve – ANCA Site
28	Has the EPA set a level of assessment? If yes, state:	N	-	Not yet referred
29	Is a Clearing Permit required? If "No" then explain why in space below.	Y	P11	Application to be lodged on grant of Tenure
30	If "Yes" to Q29 then has a permit been applied for?	N/A	-	See above
31	Is a Works Approval required by the DEC?	-	P11	Operations may require Schedule 2–Category 70 Registration/Licencing
32	Has a Works Approval been submitted to the DEC?	N	-	-

No.	Mining Proposal Checklist	Y/N NA	Page No.	Comments
Stakeholder Consultation				
33	Have the following stakeholders been consulted? (Use N/A if not relevant).			
	Shire?	Y	P52	See Appendix B
	Pastoralist?	N/A	-	
	DEC?	Y	P52	See Appendix B
	Main Roads?	Y	P57	See Appendix B
	Others? (Specify)	Y	P52	Shire of WEK, Parry Lagoons Tourism Facility, Aboriginal Communities
Environmental Assessment and Management				
34	Is the mining proposal wholly or partially within DEC managed areas?	Y		See Appendix A-Within Parry Lagoons Nature Reserve
35	If "Yes" to Q34 has DEC been consulted?	Y	P52	-
36	Is the mining proposal wholly or partially within a Red Book Area or a Bush Forever site?	N	P15	Section 1.6
37	Will the Mining Proposal impact upon a water resource area, water reserve, declared or proposed catchment, groundwater protection area, significant lake or wetland?	N	P15	Section 1.6
38	Is a water or de-watering licence required?	N	P20	See Section 2.6
39	If "Yes" to Q38 then has the licence(s) been applied for?	N/A	-	-
40	Does the mining proposal include new tailings storage or changes to existing tailings storage?	N	-	
41	Has AMD assessment been undertaken?	Y	-	See Appendix E
42	Have flora and fauna checks been undertaken?	Y	-	See Appendix E
43	Are any rare species present?	N	-	See Appendix E
44	Has a preliminary closure plan been included?	Y		Section 5
45	Do you acknowledge that the hard copy and the CD contain identical information?	Y	-	

I hereby certify that to the best of my knowledge the above checklist accurately reflects the information contained within this mining proposal.

Name: Mick Guerinoni

Position: Director

Date: 17/02/2014 **Signed:**

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1.0 INTRODUCTION

1.1 Project Summary

JAB Industries, an established civil contractor and raw materials supplier in the East Kimberley area, plans to dry season campaign mine and crush up to 45,000 tonnes per year of fresh basaltic rock from the former Pivot Hill Quarry for use in regional infrastructure developments. The current resource in the nominated mine area PH-Z2 (See Plan F-4) is estimated at 450,000t. Life of Mine (LOM) is 10 years.

LOM mining will be 'side of hill' and conducted from a 2.2ha area centred on the existing quarry on M80/618(P) to a depth of up to 2m below the current ramp crest surface and always above the water table. Mining will involve limited vegetation clearing, drainage and run-off control, recovery of skeletal topsoil for rehabilitation use, campaign drill and blast, product crushing using a mobile Plant, screening, stockpiling and loadout. The basalt outcrops over the proposed quarry area and limited topsoil has been identified for recovery in this section of the quarry. Stockpiled rock product will be loaded onto road trucks (semi-trailers) for transport via existing access roads onto the public road network to development sites. Traffic movements will be dependent on demand and will vary. Water for dust suppression will be largely derived from offsite supplies. No permanent facilities are required for the site which is located within the southern part of the Parry Lagoons Nature Reserve 42155. The Reserve forms part of the Ord River Floodplain Ramsar site.

No wet processing or tailings storage is required, no hydrocarbons or controlled wastes will be stored on site, and no waste rock landform will be developed as only very limited volumes of non-usable mine waste rock will be produced. Runoff waters will be collected for reuse in site storage dams. No potentially acid-forming material has been identified in the source rocks. No European heritage sites or Aboriginal sites are known to exist on the site. The proposed mobile processing facility would be capable of crushing and screening >5,000t and <50,000t per year and may require Prescribed Premises Licencing or registration as a Schedule 1- Category 70 facility under the EP Act (1986) and Regulations. Clearing of the annual mining zones will be staged and areas not required for future mining use will be progressively rehabilitated. Final site closure and rehabilitation will focus on developing a final landform that is visually, ecologically and structurally safe and will blend, where possible, with the existing landscape. A Mine Closure Plan will be developed within twelve months of grant of tenure.

1.2 Clearing Requirements

Existing disturbance covers 1.2 ha on M80/618(P) and 1.25ha on L80/63 for 2.45ha. Further clearing requirements for the project on M80/618(P) and L80/63(P) totals 4.4ha. Total disturbance for the project (inclusive of existing disturbance) is 6.85ha. Details are summarised in Table 1.2.

Although it is not anticipated any clearing will be required on L80/63(P), which already carries an access road, some minor grading may be required for traffic safety and a clearing allowance is registered for planning purposes. A Native Vegetation Clearing Permit Application for 4.4ha will be lodged with the DER on receipt of advice that the Mining Lease applications have been accepted.

1.3 Conservation and Visual Amenity

The project is located in the Frayne Land System (Payne and Schoknect 2011) within the southern portion of the 36,111ha Parry Lagoons Nature Reserve (42155), but on elevated basaltic terrain away from the wetlands which are the primary conservation value of the Reserve. A Management Plan developed by the DEC and Conservation Commission of Western Australia and titled the Ord River and Parry Lagoons

Nature Reserve – Plan 77 (DEC 2012), which includes the Pivot Hill site, was released in September 2012. No direct operational impacts on the wetlands were identified during the preparation of this proposal and indirect impacts such as site runoff, noise, vegetation clearing and dust will be managed with appropriate site management controls and regulatory licencing. Although only very limited volumes of topsoil medium has been identified in the mining area, rehabilitation of final shaped surfaces using reject rock, vegetation mulch and weed free imported growth medium has been demonstrated at other quarry sites to be technically achievable. These processes use landform simulation or rollover techniques such as selective restoration blasting suitable for the terrain type (Yundt and Lowe 2002) to achieve final rehabilitation objectives. During the course of the mining programme, it is proposed to undertake site trials to demonstrate the suitability of these methods to Pivot Hill. To reduce the risks typically posed by post mining high walls, selective batter caving will be investigated to determine if the practice is viable for Pivot Hill and supports the agreed end use. Potential impacts to area visual amenity from the quarry when viewed from the Parry Creek Road and Farm will be limited by (a) shielding due to the elevated topography of the basalt hill, the absence of built infrastructure, intermittent site use and progressive restoration. Simulated 3D views from Parry Creek Farm confirm that proposed quarrying operations are not visible from these locations. See Inserts on Plan F-3 in Appendix F.

Management Plan 77 identifies several potential impacts from the provision of services and infrastructure (which includes mining) to the conservation values of the Reserve; these include clearing of vegetation, altered hydrogeological regimes, further introduction and spread of weeds and disease and increased susceptibility of fire impacts to important wetland habitats. The proponent recognises the potential for such impacts to occur associated with quarry activities and will develop site specific management plans to minimise any impacts from the proposed operations.

1.4 Operational Commitments

JAB Industries makes the following operational commitments:

- Quarrying operations will be conducted during the hours of 0700 hours and 1700 hours on weekdays to minimise potential social impacts to nearby sensitive sites;
- Clearing will be staged and minimised to that required for safe and efficient operations; topsoil (very limited in volume) will be salvaged and stored in protected designated stockpiles(PH-T1) on the perimeter of the work site for subsequent use in rehabilitation;
- Mining and rock processing will be undertaken to ensure there are no untreated discharges to land. Runoff from working areas will be collected in sediment ponds and the water reused, if suitable for dust control. Bunds will be used to direct clean storm water away from disturbed areas.
- The mining approach will be similar to that practised previously (side of hill) and always above the water table. Initial mining will follow the existing excavation into the hill side with the entrance ramp at ground level. High wall height is unlikely to exceed 8-10m;
- Rehabilitation (progressive where practicable) will involve landscaping and shaping to produce shallow final slopes, topsoiling with light scarification where appropriate, to trap water and seeds. The proposed post-mining land use is conservation of flora and fauna and advice from the Kununurra DPAW Regional Office will be sought on the closure planning and outcomes for the site. Site trials will be conducted to confirm closure strategies. A Mine Closure Plan will be prepared and submitted in accordance with DMP Guidelines and timelines;
- Solid and liquid wastes including any hydrocarbon contaminated materials from equipment failure repairs will be recovered in a timely manner and disposed offsite to an approved Landfill.

- Responsibly manage risks of fire and weed ingress, and control access and vehicular movements. Equipment hygiene protocols appropriate for the scale of the operation will be employed to reduce the risks of importing weed propagules. Mine area weed management surveys and control programmes will be undertaken annually, and
- Training to ensure the workforce understands the conservation management responsibilities associated with the site and to implement environmental housekeeping and good neighbour protocols in accordance with the requirements of the Environmental Management Plan.

Project commitments are summarised in Table 1.1.

Table 1.1 Summary of Environmental Project Commitments

No.	Element Resources	Commitments
01	Resources and EMP	JAB Industries undertakes to make the resources available to fulfill all environmental commitments made in this *Mining Proposal (Revised) to Recommence Quarrying –Pivot Hill M80/618(P) & L80/63(P).* A site Environmental Management Plan (EMP) will be prepared on receipt of all regulatory approvals and, in consultation with the DMP, DER and DPAW, implemented during the construction, operation and rehabilitation phases of the project.
02	Statutory requirements and in a sustainable manner	The operations will be conducted in accordance with all prevailing applicable environmental statutory requirements and in a sustainable manner. Major elements include using resources efficiently, minimizing disturbance, adopting proactive waste management strategies, minimizing emissions, controlling runoff, assessing and managing the risks to people and the environment. Continue to consult with DMAs, local communities, other stakeholders and seek continuous improvement.
03	Hazardous materials (use, storage and transport)	Appropriate legislative and Australian standards and recognized industry measures will be adopted when handling liquid and explosive products containing potentially hazardous elements at the quarry site. This includes compliance with *Dangerous Goods Safety Act* (2004), Regulations (2007) and Amendments.
04	Emissions management	Emissions (including dust and greenhouse gases) will be managed, where feasible, by the application of appropriate control measures, equipment utilization and practices. Dusts will be controlled with (a) suppression systems on crushing and screening equipment, (b) speed controls on equipment around the site and (c) use of appropriate quality water for dust suppression on stockpiles and haul roads.
05	Surface water	Storm water run-off will be directed away from operational areas. Run-on in operational areas will be directed to mine settling dams for reuse.
06	Noise management	The workforce will be protected against noise by wearing appropriate noise protection equipment in designated areas. Noise abatement equipment will be fitted, where feasible to machinery and maintained in working condition. Noise emissions will be attenuated at sensitive receptor sites by shielding topography, attenuating distance, neighbor-friendly work practices and regulation.

No.	Element Resources	Commitments
07	Rehabilitation of site	Rehabilitation of the site will be completed at closure in accordance with the approved Mine Closure Plan, and will consist of high wall outer slope treatment, local profiling to low angles, topsoil application, armouring and re-vegetation with local provenance species. Opportunities to undertake progressive rehabilitation will be reviewed annually and reported to DMA's. JAB will undertake rehabilitation trials with advice from DPAW. A site weed management and control programme will be undertaken annually. Monitoring of rehabilitation success, in accordance with agreed completion criteria, will be undertaken annually during the operations or during any suspension of operations and for three years post closure.
08	Waste materials	Solid waste materials such as explosive boxes will be progressively removed from the site for disposal in a licensed offsite landfill and in a manner approved by the Local Government. No mobile equipment servicing products, putrescible wastes or hydrocarbons will be stored or disposed on the site.
09	Waste rock characterization	During the life of the project, the chemical and physical parameters of the limited volumes of waste rock will be monitored to ensure they continue to support end uses at final closure. Waste rock, although very limited in volume, is expected to remain Non-Acid Forming (**NAF**) during the life of the project.
10	Visual amenity	The surface and visual orientation of the final quarry site will have the overall objective of creating surface conditions which are conducive to the establishment and survival of self-sustaining vegetation communities and habitats that are compatible to the surrounding area.
11	Heritage	Members of the workforce will be instructed to avoid any identified Aboriginal heritage sites.
12	Consultation	Liaison with the local tourism business and aboriginal communities, the Shire of Wyndham East Kimberley and relevant State government agencies will be maintained throughout the life of the project.
13	Workforce Induction	An induction program will be implemented for all personnel who will work at the site. The induction will include reference to environmental management and the obligations of all personnel to assist in meeting the company's environmental management commitments. Particular attention will be directed to understanding significant fauna and introduced species issues within a high value conservation environment and operational issues such as managing site runoff, dust, noise, fire and spill management. No pets will be allowed on the site.

1.5 Surface Disturbance

The areas of the mining tenement (M80/618P) and Miscellaneous Licence (L80/63P) under application are 45.0ha and 2.9ha respectively. Two excavation sites and a short access road are present within M80/618(P) covering an area of 1.2ha and neither site is rehabilitated. The existing access road to the Old Halls Creek Road and to the intersection with the Parry Creek Road Reserve is covered by L80/63(P) with an area of 1.25ha. The proposed new surface disturbance of 4.0ha covering the mining area is centred on the existing quarry site and shown in Plan F-4, Appendix F. Clearing for annual production is likely to be in the vicinity of 0.5ha/year.

Total new disturbance on M80/618(P) for the LOM is estimated at 4.0ha and represents 8.8% of the tenement area. This includes a 1ha pit perimeter buffer zone for the abandonment bund.

Table 1.2 Existing and Proposed Land Disturbance – M80/618(P) and L80/63(P)

Tenement	Mine Elements and Closure Code	Disturbance History (ha)		
		Disturbed	Rehabilitated	This Proposal
M80/618(P)	Existing Working areas – PH-Z1,	0.2	-	-
	Quarry Expansion - PH-Z2	-	-	2.2
	Minewater Storage – PH-MD1	-	-	0.04
	Existing Borrow – PH-B1	0.5	-	0.2
	Laydown, Work Area, Stockpile - PH-L1	0.4	-	0.4
	Access Road – PH-AR1	0.1	-	0.16
	Abandonment Bund – Buffer Zone	-	-	1.0
	TOTAL	1.2	-	4.0
L80/63(P)	Existing Road Access to OHCR - PH-AR1	0.5	-	0.2
	Old Halls Creek Road(OHCR)	0.75	-	0.2
	TOTAL	**1.25**	**-**	**0.4**

1.6 Consultation and Statutory Requirements

Correspondence in relation to product transport for this proposal has been forwarded to Main Roads WA (Kimberley Region) and the Shire of Wyndham East Kimberley. Comments, including operational and road maintenance requirement have been received from both DMA's. Consultation has been undertaken with other stakeholders including Aboriginal Communities and the Parry Lakes Farm Tourism Facility.
The management of the Parry Lakes Farm has raised written concerns about the potential impact to their seasonal operations. Correspondence is referenced in Appendix B. The proposed operations are centred within an existing disturbed area and comments arising from discussions with community stakeholders, DMP and DEC Environmental Personnel (Kununurra) have been taken into account in respect to the proposed mining programme and site management.

The mine is not located wholly or partially in a gazetted occupied Township, Threatened Ecological Community (TEC) or on a Pre-1978 State Agreement Act Area, Pre-1899 Crown Grant Areas, Biodiversity Reserve, World Heritage Property, Soil Reference Site, Red Book Area, Bush Forever Site; or registered Heritage Site. This quarry site does not contain or potentially impact on significant lakes or wetlands, however, the quarry site is located in the Parry Lagoon Conservation Reserve (42155) which is listed as part of the extensive Ord River Flood Plain Ramsar Site. The proposal to recommence quarrying at the site, while not considered likely to have a significant impact on the ecological character of the Ramsar wetland, will likely require referral under the Commonwealth Environmental and Biodiversity Conservation Act (1999). The proposed operation is not located in, or will impact on a Water Supply Catchment area, Water Reserve, Groundwater Protection Area (WRC 2001), or is within 2km of a registered or proposed Private Conservation Estate, or the coastline.

Completion of environmental significance screening as outlined in the DMP Guidelines to Help you Get Environmental Approval for Mining Projects in Western Australia (2006) and review of the DMP/EPA (2010) Mineral and Petroleum (Onshore and Offshore) and Geothermal Proposals-Memorandum of

Understanding criteria, has indicated that the proposed quarry activity will require referral to the Environmental Protection Authority for assessment under Part IV of the Environmental Protection Act (1986). An Assessment Table supporting this position is referenced in Appendix A.

2.0 PROJECT DESCRIPTION

2.1 Ownership

The tenements M80/618(P) and L80/63(P) are under application by Mr Mick Guerinoni, the principal of JAB Industries, whose address is 15 Eucalyptus Close, Kununurra 6743. Contact details are listed on Page 3.

2.2 Project Objectives

JAB Industries is an established operator in the Kununurra area and surrounding Kimberley region, supplying equipment, earthen construction materials (sands, gravel and the like) for use in civil works such as pads for residential and commercial developments, and raw materials for infrastructure projects. M80/618(P) contains one of the few hard rock resources in the region – the basaltic rock has been used in the past for road making aggregate and concrete manufacture.

With increasing infrastructure development in the Kununurra and surrounding region, the company is seeking to tender for contracts for the supply of rock material, typically 10,000-30,000 tonnes per year, and possibly as much as 45,000 tonnes per year, depending on demand. Quarrying operations to supply this material trigger DMP's requirement for submission of a Mining Proposal. Project life could be ten years, although annual production will depend on demand.

This revised Mining Proposal outlines the following objectives associated with the proposed recommencement of quarrying basalt rock at the Pivot Hill site:

- the project will provide a secure hard rock construction product to support local and regional demand;
- project operations will be conducted in an environmentally responsible manner to ensure the conservation values of the site are not diminished;
- the project will work with local stakeholders to ensure effective communication channels are maintained and potential impacts are minimised;
- The project will contribute to the local, regional and state economies by providing employment opportunities and supply of construction materials.

Clearly, the operation is of economic significance to the Kununurra region, as important infrastructure developments requiring quality aggregate are planned for the region. Correspondence from local parties supporting this position is referenced in Appendix B.

2.3 Location and Land use

M80/618(P) is located in the Shire of Wyndham East Kimberley south of the Parry Creek-Kununurra Road, approximately 20km south-east of Wyndham (Figure 2.1) and 1.2km south west of the Parry Creek Farm – the nearest residential area. Access will be via the existing public road network and part of an existing road (Old Halls Creek Road) on L80/63(P), which is also under Miscellaneous Licence application by Mr Mick Guerinoni. Both M80/618(P) and L80/63(P) are located within the southern (non-wetland) part of the Parry Lagoons Nature Reserve (42155 - Conservation of Flora and Fauna) shown on Figure 2.2. In addition to its conservation base, the Reserve supports a range of current land use activities including recreation and tourism, (particularly bird watching), fishing and boating and cultural responsibilities exercised by traditional owners. Lands surrounding the Reserve are associated with pastoralism and agriculture associated with the Ord River Scheme. Tenure plans are referenced in Appendix F.

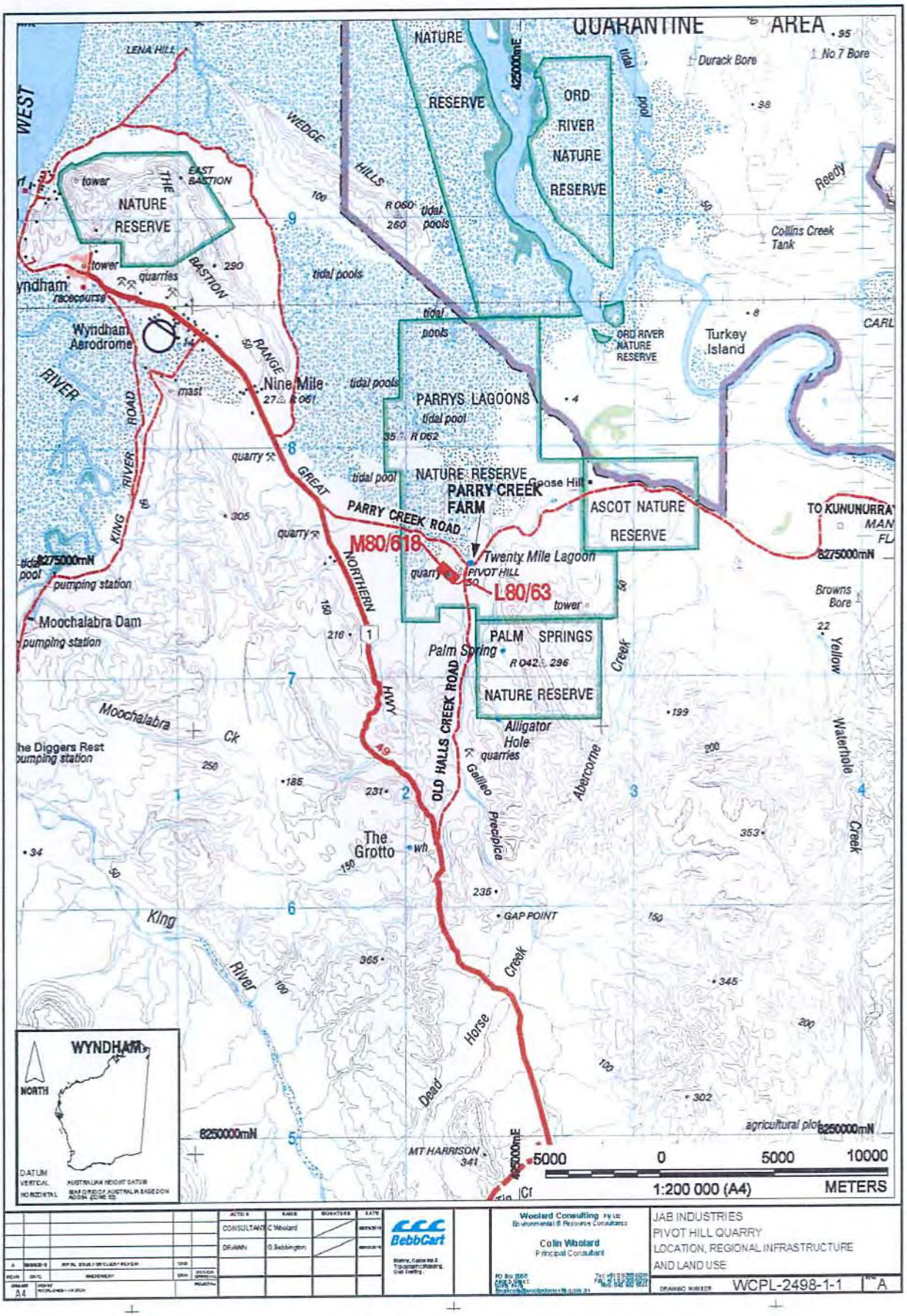

Figure 2.1 Regional Infrastructure, Topography and Land Use

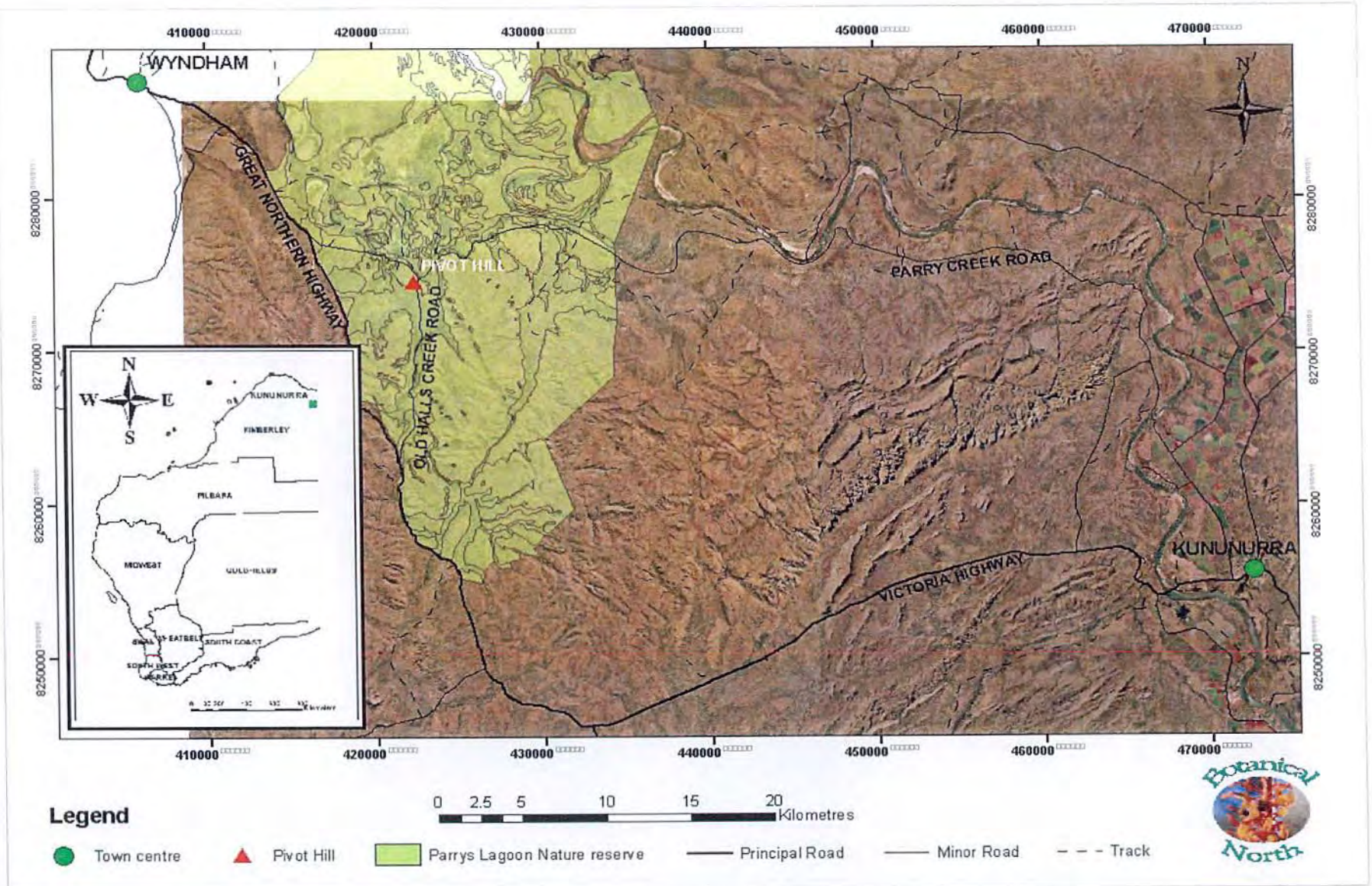

Figure 2.2 Location of Pivot Hill within Parry Lagoons Nature Reserve (Green Shaded Area)

2.4 History

The Pivot Hill project site was apparently used in the early 1980s, reportedly by government agencies, for rock-quarrying for construction materials. Existing disturbance can be seen on Plan F-3 (Appendix F) and Plate 3. The quarry has not been rehabilitated, high walls are not bunded and duty of care requirements to restrict public access is not being met.

2.5 Existing Facilities

No permanent built facilities exist on site except for the quarry; borrow voids and the access roads. Existing facilities are shown on Plan F-3 in Appendix F.

2.6 Statutory Environmental Assessment

No assessment of this proposal has previously been undertaken under Part IV of the *Environmental Protection Act (1986).* Application for a Native Vegetation Clearing Permit and permitting applications under Part V of the *Environmental Protection Act* (1986) and Regulations will be lodged following grant of tenure. Groundwater abstraction in Western Australia is regulated under the *Rights in Water and Irrigation Act* (1914). No bores are evident at the site, and as the void floor is located above the water table, groundwater abstraction licencing is not required.

2.7 Description of Proposal

2.7.1 Overview

JAB Industries is proposing to re-open the Pivot Hill Basalt Quarry and operate it as a small hillside quarry on a campaign basis to satisfy regional and local demand for crushed basalt product. Over the proposed ten year LOM as much as 450,000 tonnes of material might be mined on M80/618(P), depending on demand from infrastructure projects. It is anticipated that operations will occur for periods of weeks and months, followed by periods of low or no activity. Further approvals will be sought if the project is to continue beyond the original 10 year LOM or annual production levels are to increase.

The small amount of available topsoil will be temporarily stockpiled in non-access zones on the edge of the work areas and subsequently used in progressive rehabilitation. The underlying rock will be drilled and blasted, and the fragmented rock extracted with an excavator or front-end loader and fed into a track-mounted mobile crusher and dry screen facility. Crushed rock product will be temporarily stockpiled adjacent to the pit before being loaded into trucks for transport on the public road network.

Limited waste rock removal is involved, so backfill is not possible. Pit walls will be maintained at safe, stable angles during operations although reshaping high walls (batter caving) will be trialled as part of closure planning. Abandonment bunds will be established around the perimeter of the high wall area to prevent access and assist in the diversion of surface run-off. There are no lakes, rivers or significant water bodies in the project area. Runoff from the works area will be captured within the quarry void.

No buildings or other structures exist, or are permanently required on site, as there would no personnel domiciled on site during dry season campaign periods; drivers generally load and drive trucks. Mobile equipment such as loaders and the crushing and screening plant will be refuelled, as required, from a support truck brought to the site. Major equipment servicing will be carried out in Kununurra. No new haul roads are required: as material is mined, the mined out areas will serve as stockpile areas and access for trucks.

While the depth to the water table is not known, it is below the current (and proposed) void floor, and no dewatering of groundwater will be required. Fresh massive basalts flows commonly exhibit high impermeability and water for dust suppression will be available from wet season collection in the void, water trucked to site and drawn from site water tanks.

The quarrying process will consists of three stages:

- clearing and track rolling of vegetation and stripping of any skeletal topsoil material from the area proposed for annual production; removal of limited volumes of overburden (when required), and storage for later rehabilitation use;
- drilling and blasting of primary rock and tramming to the mobile crushing and screening plant area for processing and stockpiling, and
- load out and transport offsite via existing access roads.

The key elements of the project are summarised in Table 2.1.

Table 2.1 Description of Key Project Elements

Element	Description
Project Area Current Resource:	Based on outcrop delineation approximately 200,000 to 300,000 m^3 within the designated PH-Z2 area.
Rock Type:	Massive columnar basalt.
Life of Mine:	10 years
Mining and Processing Rate:	Up to 45,000t / year.
Mining Method:	Side of hill – high wall approximately 8 -10m with some local variation due to topography. Drill and blast with tramming of broken rock to crusher.
Void Depth:	At or slightly below current void floor level (+10m AHD).
Disturbance Area:	Whole of Project 6.85ha. See Table 1.2 for quarry element codes. Annual disturbance is likely to be less than 0.5ha/year.
Processing:	Site crushing and dry screening with mobile plant.
Water Supply and Requirements:	Dust suppression – rock drilling, tramming and processing, on access roads – up to 30kL/day. No site groundwater identified, water trucked to site with some reuse of post wet season void capture.
Site Infrastructure:	Portable first aid/crib room unit, portable generator, pumps, HDPE water tanks, self-powered mobile crushing and screening plant, portaloo, transportable weighbridge.
Product Transport:	Offsite in Double B side tippers, via Old Halls Creek Road and west via Parry Creek Road to Great Northern and Victoria Highways.

Element	Description
Equipment Refuelling:	Undertaken by service truck – no hydrocarbons stored on site, spill recovery equipment to be available during campaigns.
Closure Planning Domains:	Quarry – (a) final void footprint within abandonment bund (PH-Z2); (b) laydown screening/crushing area (PH-L1); (c) laydown product storage area (PH-L1, PH-B1); (d) mine water management dams(PH-MD1 and 2) and (e) mine access roads (PH-AR1)
Workforce:	Per campaign: will vary 2-5 persons.
Timing:	Project is scheduled to commence on receipt of grant of tenure and all regulatory approvals.

2.7.2 Native Vegetation Clearance

Clearing of native vegetation for the site will be covered in a separate Clearing Permit Application that will be submitted to the Department of Environment Regulation following grant of tenure. The proposed quarry operations will generally occupy an operating area of less than 1.0ha at any one time. Topsoils and vegetation will be recovered when present and stockpiled in protected non-flow zones for rehabilitation use. Stockpile locations (PH-T1) are shown on Plan F-4 – Appendix F although these may change with time.

The following additional clearing on M80/618(P) is proposed over the first 10 years of operation (see Plan F-4 – Appendix F). Minor clearing (0.4ha) has been scheduled for road works in L80/63(P) for planning purposes although it may not be required.

Table 2.2 Clearing Requirements – M80/618(P)

Type of Disturbance	Area (ha)
Quarry void, expansion of stockpile and laydown areas	2.6
Mine water storage	0.04
Topsoil stockpile and miscellaneous disturbance[#]	1.2
Access road [*]	0.16
Total	**4.0**

the small amount of topsoil will be temporarily stockpiled on the edge of the work area.

* Access road will be progressively developed over mined-out areas.

It is not anticipated that clearing will be required within L80/63(P), although the existing track will likely require periodic grading.

2.7.3 Quarry Design

A conceptual design for the project based on the continuation and expansion of the previous quarrying method has been developed for based on demand of up to 45,000t/year. This will result in new

disturbance of up to 1.0ha/year. Any required changes to the output or the operations would be referred to decision making authorities. Site layout and drainage vectors are shown on Plan F-4 in Appendix F.

The alpha-numeric codes (referenced as *PH-XX*) and shown on Plan F-4 and Table 1.2 refer to the domain elements used for mine and preliminary closure planning.

2.7.4 *Quarrying Operations*

Quarrying operations will commence using the existing western high wall. It is anticipated that minimal waste materials will be produced, and these will be recovered and stockpiled with topsoils at location PH-TI for later rehabilitation and bund use. The mobile plant will move around the site during the progressive mining programme.

Product removal will typically commence at the current westerly ramp position (PH-ZI) at an elevation of 10mAHD and work to the north within the abandonment bund. This bund will serve the dual purpose of restricting access and diverting surface waters from the mining void. The working face will increase gradually to 8-10m (up to 20mAHD) and extend up the ridge contour to the north and east. The floor of the quarry void will be maintained with a low camber to the working face so that incidental runoff will be captured within the void floor. While drill and blast details have not yet been established, the process would likely involve small scale localized blasting techniques to ensure fragmentation is controlled to the desired level and blast noise and vibration is minimised. Blasting events per year would be determined by the availability of the mobile crushing and screening plant and product demand. Dust suppression systems on the crushing and screening plant will control operational emissions and dusts from traffic and stockpile management will be controlled with water sprays.

2.7.5 *Crushing and Screening*

Broken rock would be trammed to the mobile crusher/screening plant which, in the early stages of the operation, may be located in the exiting borrow location PH-B1. This may change as mining progresses with the plant being located closer to the working face.

Screening is a post-crushing phase of the operation and is the separation of material into two more different sized products. Screened products typically range in size from fines to aggregate (4.5mm to 25mm).

Modern plants are equipped with curtains and water sprays for dust suppression. Water for dust suppression will utilize surface water captured in the working floor and routed through the mine dams (PH-MD1) with make-up water trucked to site.

2.7.6 *Hours of Operation*

The plant will be run intermittently in short campaigns (day shift only) to maintain the required volume of screened material. A certain level of noise is an inevitable side effect of quarry operations. The proponent will take steps to minimise noise emissions at the source and some attenuation will occur as the operations are below the elevated surface topography on the southern side of Pivot Hill.

Drill and blast, product tramming, crushing and screening and loading for transport will be undertaken in campaigns and during the hours of 0700-1700 on week days.

2.7.7 *Access to Site and Product Transport*

Access to the Quarry site will be via the Great Northern Highway, Parry Creek Road and the northern section of the Old Halls Creek Road which parallels the eastern boundary of the Mining Lease. The access

is covered under a separate Miscellaneous Lease Application. Consultations have been held with Shire and Main Roads WA regarding road usage and requirements. Correspondence is referenced in Appendix B.

Product Transport

Road trains (two trailers) will exit the site via the Old Halls Creek Road, turn west onto the Parry Creek Road and then onto the Great Northern Highway. Traffic movements will be variable depending on product demand and destination. For planning purposes, maximum annual traffic (truck) movements are estimated at 500 for transport of 45,000t of product calculated on the basis of four trips per day for 125 days per year. In addition to the minor maintenance of the gravel road section in the Miscellaneous Licence for the site, road maintenance works including dust suppression watering are required in accordance with SWEK correspondence of 18 March 2013 and extensive consultation with personnel from the Department of Main Roads. Copies of the correspondence are referenced in Appendix B.

2.7.8 Hazardous Goods

No hazardous goods will be stored on site. Explosives will be brought to site for specific programmes. Diesel equipment will be refuelled from a service truck. Emergency spill kits will be available on site during campaigns for management of spills and contaminated soils will be removed from site to an approved disposal location. Compliance with statutory requirements in respect to the storage, handling and transport of Dangerous Goods will be required as part of the site's Project Management Plan and Standard Operating Procedures. Spill management will be included in the Environmental Management Plan. Due to site topography, loss of hydrocarbon contaminants from quarry operations into offsite drainage is considered a very low risk event.

2.7.9 Support Infrastructure and Workforce

No site accommodation, workshops or other permanent facilities are required on site.

A first aid/crib room and a self-contained ablution facility (portaloo) and HDPE water tanks, will be required for campaigns.

For security reasons, equipment will not be parked at the site except during campaigns. As site work will only be undertaken during the daylight hours, lighting towers will not be required.

Locally employed staff will attend the site as required to load and truck product. Workforce numbers will vary with demand for product, with generally two persons on site at any time, occasionally up to five persons.

3.0 EXISTING ENVIRONMENT

3.1 Regional Setting

Pivot Hill is located in the Victoria Bonaparte Bioregion (**VB1**) which covers an area of 18,876 km^2 in Western Australia. The Bioregion contains several large river catchments including the Ord River which terminates in the Cambridge Gulf lowlands. Parry Creek, a lower level ephemeral tributary of the Ord River, supports important wetlands on the flood plain during the wet season. The interior of the region is dominated by the Victoria River Plateau, a large highly dissected plateau up to about 350m above sea level and composed of sandstone and other sediments. This elevated etch surface rapidly drops in elevation, often with spectacular escarpments onto the Cambridge Gulf lowlands which includes the more recently deposited Quaternary sequences of marine sediments and flood plain alluvials. Residual hilly outcrops of more resistant material such as the Pivot Hill basalt rise locally above this floodplain and form foot slopes to the escarpments. They carry open woodlands of eucalypts or shrublands over mixed grasses.

Skeletal sandy soils occur on the rugged plateau and some of the watercourses such as the Ord River and Parry Creek have developed broad, flat-bottomed alluvial valleys and meanders in their lower reaches. Drainage on the basalts is angular and dendritic and chaotic on the floodplains. On the coastal lowlands there are alluvial red earth and black soil plains, the latter developed from the weathering of basaltic rocks. Land use in the region covers grazing, conservation, irrigated agricultural land, mining, tourism and cultural use by aboriginal peoples.

The project area is located on basaltic hilly terrain (Unit 1 of Frayne Land System – Payne and Schoknect 2011) which is elevated approximately 50m above the Parry Lagoons Wetland System, and is easily accessed via the Parry Creek -Kununurra Road and Great Northern Highway.

3.2 Geology, Geochemistry and Soils

Cainozoic surficial sediments, mainly alluvium derived from higher up in the Parry Creek catchment are developed around Pivot Hill which has the appearance of a low, resistant residual basalt flow inlier.

The hard-rock resource consists of outcrop of massive tholeiitic basalt covering an area of approximately 155ha, possibly part of the Cambrian Antrim Plateau Volcanics and forming a gently dipping, thick homogenous single fresh basalt flow or sill which shows typical columnar jointing (Plate 1). Resource estimates for the entire mining lease under application have not been developed. The inlier is locally capped by shallow ferrosol soil zones containing residual gravels. Several studies in the region (NALW Taskforce 2009) have identified similar soils as textured, non-saline ferrosols (<0.4Ms/cm), with pH's typically less than 6.0 and locally gravelly.

3.2.1 Geochemistry

Compared to other rocks found on Earth's surface, basalts weather relatively fast. Their iron-rich minerals oxidise in water and air, staining the rock a brown colour due to the formation of surficial iron oxide. Chemical weathering also releases readily water-soluble cations such as calcium, sodium and magnesium which give basaltic areas a strong buffer capacity against acidification. Calcium released by basalts binds up CO_2 from the atmosphere forming $CaCO_3$ which acts as a CO_2 trap.

The resource contains no sulphide material likely to form acid on exposure to air, so that acid mine product breakdown or drainage risks are non-existent. The ARD testwork report (Hawkins 2012) confirmed the visual geological observations and support the Non Acid Forming (NAF) status of the

material. The rock is, in fact, an acid consumer and break down products will form soil. The Waste Characterisation Report is referenced in Appendix E.

3.2.2 Soils

Soils in the proposed quarry area, where they exist, are skeletal red-brown earths. Thicker soils with rock clasts are observed on foot slopes and are evident in the road material borrow east of the quarry (Plate 1). With appropriate recovery and storage, the soils represent a valuable resource for rehabilitation.

Plate 1 Skeletal Soils and Vegetation at the Existing and Proposed Quarry – Domain Code PH-Z1

3.3 Hydrology

The floodplains of the lower Ord River represent a complex network of meandering streams, permanent pools, levee banks and seasonal wetland areas. During the wet season, drainage into the streams and rivers occurs from local catchment thunderstorms or broad scale monsoonal low pressure systems. Water tables on the alluvial flats rise during the monsoon and fall during the dry as do the levels in the major streams which form isolated water holes and billabongs. Parry Creek (the main channel of which is located 2.2km east of the Pivot Hill Quarry) emanates from the dissected sandstones of the Victoria River Plateau and flows into the main floodplain environments north of the Parry Creek Road. Groundwater salinity data reported in WRC (2001) and covering the Carlton Plain and Mantinea Flats to the east of the Parry Creek area, ranges from 2,000mg/L (brackish) to greater than 14,000mg/L and are of a sodium chloride type. Similar fresh to brackish groundwater quality could be expected in deeper fractured rock aquifers, if they are present, in the Pivot Hill basalt flow below the proposed mining floor.

Surface Drainage

Localised ephemeral drainage from Pivot Hill is largely controlled by (a) sheet flow zones on the flat perimeter footslopes, (b) defined minor channels in northwest trending fracture zones located north of the Pivot Hill mine environment, and (c) from waters shed from high ground to the south east of the quarry. A detailed drainage assessment based on flow vectors of the quarry area is shown on Plan F-4 in Appendix F.

This plan displays vector lines and arrowheads to show the downhill direction and ratio of slope (1 vertical to *x* units horizontal) of slopes at various points throughout a surface. The length of each vector is proportional to the slope of the model; longer vectors indicate steeper slopes and faster runoff. The software computes the slope using the steepest grade of the triangle in which each vector is located. Each vector is annotated with its direction and/or magnitude of slope. The location of vector points is per grid interval which in this case was a 50 x 50m grid.

Diversion of runoff around work areas can be readily achieved using bunds or drains with clean waters directed into existing flow zones as mining proceeds. Tributary drainage into the Parry Creek is unlikely to be influenced by the proposed quarry extension. The runoff assessment shows that any excess drainage from the proposed mining and stockpile areas can be directed into settlement ponds or the main quarry void before release onto the southern foot slope zones where it will dissipate.

Plate 2 Unbunded Quarry Crest – Domain Code PH-Z1

Plate 3 Existing Borrow Pit with ferrosols east of Quarry Void – Domain Code PH-B1

Groundwater

While information on the occurrence of groundwater in the broader region has been documented in several studies and summarised in WRC (2001), no bore data for the Pivot Hill area was found in the DOW online Hydrogeological Atlas. Unweathered heterogeneous basalts typically yield low sustainable volumes, in unconfined aquifers and are often associated with localised fractured rocks at the base of flows. Limited recharge may occur by vertical infiltration, although no evidence of basal seepage is evident in the existing quarry.

The depth to groundwater is unknown but, given the elevation of the mineable basalt resource at 10 - 30m above the surrounding terrain and the absence of extensive weathering in the quarry area, the water table, if present, is below proposed mining depth. No groundwater bores are known to exist within 3km of the project site, but the Parry Farm located 1.2km to the north-east may operate bores in a different hydrogeological environment. There is no evidence that the proposed mining operations will directly or indirectly impact the hydrogeological or ecological wetland values of the Parry Lagoons Nature Reserve, since the mining area is elevated above the wetland ecosystems that represent the essential conservation values of the reserve. Water for dust suppression in excess of that captured in the quarry void will be trucked to site storage as required – no groundwater abstraction is proposed.

Given mining will be confined to the dry season, potential indirect impacts through runoff from the mining operations will be minimal and managed using drainage sumps to settle any runoff prior to re-use or release to the broader environment. The location of the initial sumps is shown on Plan 4 in Appendix F. The sumps will be of a ramp access construction to facilitate regular cleanout and permit maintenance of freeboard prior to the wet season. No significant hydrological changes are likely to result from the proposed mining operations. Moreover, during high rainfall events, high turbidity is a characteristic of almost all overland flows in this region. Rainfall currently collects in the quarry floor during the wet season. This water may be recovered and stored on site in HDPE storage for re-use.

Flood risks are considered to be inconsequential; the proposed mining area is elevated above the surrounding country.

3.4 Climate

The study area experiences an arid tropical climate with a high inter-annual variability in rainfall, runoff and recharge (CSIRO 2009). Data for the nearest active weather station to the project area, located at Wyndham (Station 001006), shows an average annual rainfall of 805mm (85% of which falls in the period December – March), a mean daily maximum temperature of 35.6°C (ranging from 31.1°C in June to 39.5°C in December) and a mean daily minimum temperature of 23.2°C (17.0°C in July to 27.2°C in November). Mean annual areal potential evapotranspiration (APET) is 1,988mm and greater than rainfall (CSIRO 2009).

The high rainfall variability was shown in the 2011/2012 wet season which was extremely dry, recording only 275.9mm from October 2011 through to 12 February 2012. For the same period during the previous wet season (2010/2011) a total of 804mm was recorded and the 2009/10 wet season for the same period recorded an average wet of 500.6mm.

3.5 Flora and Fauna

The project area is located within the Parry Lagoons Nature Reserve, whose prime conservation values consist of wetlands lying lower in the landscape than the basalt outcrop that constitutes the mineral resource proposed for the development.

3.5.1 Flora

A total of 100 plant species, from 38 families were recorded within the tenement and along the access road verge (Botanical North 2012). Some species were not identifiable to species level due to the lack of the reproductive material. Species are listed in Appendix E. No declared weeds were recorded during the survey. Nine introduced species were recorded. *Fabaceae* (Pea family) and *Poaceae* (grasses) were the co-dominant families located within the site, each with 15 species. *Malvaceae* was the next most prominent family, with seven taxa.

No threatened flora was recorded within the mining tenement or along the access track. A single individual of *Brachychiton tridentatus* (Priority 3) was recorded on the hillcrest, approximately 100 metres east of the eastern tenement boundary. Identification was based upon leaf shape only as fruits or flowers were absent.

With the exception of the previously mined portion of this mining tenement, vegetation in the surrounding area remains similar to pre-European vegetation (Beeston, Hopkins, & Shepherd, 2002; Australian Government, 2002). Actual determination of the pre-European vegetation upon Pivot Hill was not assessable due to the area being too finer scale for comparison with the publically available data.

3.5.2 Vegetation Communities

Four vegetation communities were identified during the mine area survey comprising Open Boab Woodland (Hillcrest), Open Boab Woodland (Hillslope), Open Woodland (Footslope) and Very Open Woodland (Plain), See Table 3.1 and Figure 2 in the Botanical North (2012) report for additional detail. The full report is referenced in Appendix E.

Table 3.1 Vegetation Community Area within Mining Tenement M80/618(P)

Community type	Hectares
Open Boab Woodland (Hillcrest)	7.1
Open Boab Woodland (Hillslope)	2.8
Open Boab Woodland (Footslope)	3.3
Very Open Woodland (Plain)	2.6
Total	**15.8**

The Hillcrest open Boab woodland and the Footslope open woodland had similar numbers of species (55 and 57 respectively) although species mix was distinctive between the two communities. The hillcrest community comprised just under half of the overall vegetation type within the tenement. The Hillslope open Boab community comprised 37 species and the Plain very open woodland just 24 species. These two community types accounted for one third of the site.

Adansonia gregorii (Boab) was dominant in the upper story throughout the tenement ranging between 1 and 15% density. All individuals appeared to be in a similar age class, with no large, old trees observed. The grasses *Eriachne obtusa*, *Heteropogon contortus* and *Sehima nervosum* were also present throughout the site. *S. nervosum* and *E. obtusa* tended to dominate the hillcrest while *H. contortus* dominated on the footslope and plain. *Terminalia canescens* was present in the mid-story throughout though mainly dominant on the hillcrest. The herb *Stemodia viscosa* was present throughout but not dominant.

Due to the open nature of the vegetation, visibility across the site (within the defined vegetation communities) revealed homogeneity of the dominant woody species. The exception was the hillslope, which tended to vary based upon the aspect of the hill. The west facing slope had a higher diversity in the drier associated ground herbs, while the eastern slope lead into a shallow gully and exhibited a higher density of the upper and mid storey vegetation. The southern slope exhibited less diversity, with the understorey comprising mainly of *Fabaceae* (Pea) species.

3.5.3 Vegetation Health

The overall health rating of "Excellent" according to the Keighery Scale was assessed for the hillcrest and hillslope open woodland communities within the site. There were very few weeds on the hillcrest (one species) or hillslope (three species), and none in any great density. With the exception of the obvious quarry pits (where a rating of "Degraded" applies), there was little disturbance to the remaining vegetation.

The footslope open woodland and the very open woodland (plain) were rated "Very Good". Tracks bisected the footslope and there was evidence of manual manipulation of the environment (rocks were stockpiled, although largely now covered in vegetation). Seven weed species were detected on the footslope but actually densities were low. Three species of weed were present within the plain, with the grass *Chloris barbata* occurring in densities between 10 and 20% along Old Halls Creek Road. No weeds dominated within the tenement.

3.5.4 Weeds

Nine weed species were detected during the survey (Table 3.2). There were no Weeds of National Significance (WONS) or declared weeds recorded during the surveys.

Table 3.2 Weeds within the Survey Area, listed by Vegetation Community

Vegetation community	Introduced species	WPT	% cover
Hillcrest	*Stylosanthes hamata*	18	
Hillslope	*Corchorus oliotorus*	190	
	Passiflora foetida	190	
	Vigna radiata	190	
Footslope	*Azadirachta indica*	20	
	Calotropis procera	189, 27	
	Chloris barbata	21	2
	Passiflora foetida	189, 21, 25, 27	
	Portulaca oleracea	23	
	Stylosanthes hamata	23, 27	
	Trianthema portulacastrum	21	
Plain	*Chloris barbata*	24, 26	10, 20
	Passiflora foetida	22, 24	
	Portulaca oleracea	22, 24	1

Weed species in the operations area will be controlled, subject to advice from DPAW, by annual spraying with follow-up for three years post closure.

3.5.5 Fauna

A field survey of fauna was conducted by a qualified zoologist (Mr Basil Byrne) over the two days of the flora survey to examine the habitat present and condition, and to carry out opportunistic sightings of fauna. Actual trapping of fauna was not undertaken during the survey.

A desktop search of the NatureMap database (DEC 2013) and the EPBC Protected Matters (DSEWC 2013) was also conducted to determine the likelihood of the presence of threatened fauna and habitat. Copies of the database printouts are referenced in Appendix C. During the site survey, any evidence of fauna was recorded, such as diggings, tracks, scats, nests and potential tree hollows as well as any bird sightings, nests or calls.

3.5.6 EPBC Database Search

A buffer of 5km was requested when conducting the Protected Matters search. The results indicate that there are no World Heritage Properties, National Heritage places or Threatened Ecological Communities located within the project area.

One wetland of international significance was identified within the vicinity, the Ord River Floodplain Ramsar site which supports critical life stages for annual bird migrations and seasonal drought refuge for a range of bird species (DEC 2012).

Nine threatened species were identified (See Table 3.3), one of which, the Northern Quoll, has the potential to occur within the mining site (See Fauna section below).

Table 3.3 Summary of EPBC Threatened Species, Conservation Status and Habitat Listing

Common Name	Name	Status	Habitat*	Listed In DEC Fauna Search
Australian Bittern	*Botaurus poiciloptilus*	Endangered	Occurs mainly in densely vegetated freshwater wetlands and, rarely, in estuaries or tidal wetlands	Yes
Red Goshawk	*Erythrotriorchis radiatus*	Vulnerable	Generalist habitat, inhabiting a variety of woodlands and forests, particularly where there is a mosaic of forest types and along ecotones. In Northern Australia, birds are year round residents within their home range. The Red Goshawk nests in tall trees, within 1 km of permanent water and usually in fairly open, diverse woodlands or along riparian zones.	No
Gouldian Finch	*Erythrura gouldiae*	Endangered	Open woodlands that are dominated by *Eucalyptus* trees and support a ground cover of *Sorghum* and other grasses. The critical components of suitable core habitat for the Gouldian Finch appear to be the presence of favored annual and perennial grasses (especially *Sorghum*), a nearby source of surface water and, in the breeding season, unburnt hollow-bearing *Eucalyptus* trees (especially *E. tintinnans, E. brevifolia* and *E. leucophloia*)	Yes
Crested Shrike-tit (northern)	*Falcunculus frontatus whitei*	Vulnerable	Open *Eucalypt* woodland types dominated by *Corymbia opaca, E. tectifica and E. confertiflora* and less often in woodland dominated by *Eucalyptus miniata, Eucalyptus tetradonta* and *Corymbia bleeseri.*	No
Purple-crowned Fairy-wren	*Malurus coronatus coronatus*	Vulnerable	Inhabits dense, riparian vegetation near permanent rivers and springs (or associated billabongs and swamps).	No
Australian Painted Snipe	*Rostratula australis*	Vulnerable	Generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains.	No
Northern Quoll	*Dasyurus hallucatus*	Endangered (EPBC) Threatened (WA)	Diversity of habitats across its range which includes rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert. Habitat generally encompasses some form of rocky area for denning purposes with surrounding vegetated habitats used for foraging and dispersal. Final quarry rehabilitation can incorporate habitat to support Northern quoll. Severely impacted by invasion of habitat by cane toads.	Yes Threatened
Barehumped Sheathtail Bat	*Saccolaimus saccolaimus nudicluniatus*	Critical Endangered (EPBC)	Diversity of habitats across Indo Asia regional including NT and Queensland. Not recorded in WA although likely to occur.	No
Water Mouse	*Xeromys myoides*	Vulnerable	Inhabits coastal saltmarsh, mangrove and adjacent freshwater wetland habitats	No
Freshwater Sawfish	*Pristis microdon*	Vulnerable	The preferred habitat of this species is mud bottoms of river embayments and estuaries. They are not found near riparian vegetation. They are usually found in turbid channels of large rivers over soft mud bottoms more than 1 m deep.	No

= unsuitable habitat = potential habitat

*Majority of habitat descriptions (Dept. Sustainability, Environment, Water, Population and Communities, 2013)

Very little evidence of fauna was observed within the mining tenement (Botanical North 2012). No scats, tracks, nests or diggings were present on the hillcrest. Wallaby paths through the grass were observed on the hillslope. No tree hollows were observed within any of the vegetation communities.

One male and two female Red-backed Fairywrens (*Malurus melanocephalus*) were observed on the hillcrest and a brown snake (not identified to species) in the grassland/footslope area near the old quarry. No other sightings were recorded. Further details are referenced in the Botanical North (2012) assessment of the Flora and Fauna within Pivot Hills Mining Tenement M80/618(P) in Appendix E.

3.5.7 Threatened Fauna

Of the threatened fauna likely to occur in the area as listed within the EPBC Database report and DEC Threatened Fauna search, three potentially match the habitat types within the mining tenement (Botanical North 2012). These included:

Northern Quoll:

The Northern Quoll (*Dasyurus hallucatus)* occurs in the top end of Queensland, the Northern Territory and Western Australia. They are generally solitary and nocturnal and make their dens in rock crevices, tree holes or, occasionally, termite mounds. In flat, open grasslands, males die after mating, but in rockier habitats, where the populations appear to be less stressed, males may live for two years. (Biota 2009).

In the *National Recovery Plan for the Northern Quoll*, Hill and Ward (2010) report at the time of European settlement, the Northern Quoll (*Dasyurus hallucatus)* was distributed widely across northern Australia. It is now confined to a set of disjunct populations across the north of Australia. The two records listed on Nature Map (DEC 2011) are from the Pivot Hill area but date from 1908.

Quolls are small carnivorous marsupials and are susceptible to cane toad toxins, fire and introduced predators such as cats. Studies in some NT locations have reported that local populations of Northern Quolls typically collapse soon after an area is colonized by cane toads. However recent evidence suggests that some native predator species such as the Quoll, which are heavily impacted when toads arrive, can make rapid adaptations (both behavioral and physiological) allowing for population recovery in the longer term.

Cane toads now occupy about >60% of the prior range of Northern Quolls, and are likely to occur across most of the rest of that range in the next 10-20 years. Cane toads were reported as being present in the Parry Lakes area in May 2011 (DEC 2012).

Researchers are confident that the spread of cane toads poses the greatest current threat to Northern Quoll populations on a national scale, but declines have also occurred in the absence of cane toads. The causes of declines in these areas are not clear but may be related to inappropriate fire regimes, clearing and habitat degradation through overgrazing or introduced predators such as cats.

Management strategies in accordance with the DEC (2009) - *Cane Toad Strategy for Western Australia - 2009 -2019* will be discussed with local regulatory agencies. The opportunity to create favorable Quoll habitat as part of rehabilitation programmes will be investigated. Detailed site surveys were undertaken to identify potential habitats within the mine areas and surrounds. Suitable habitat (hollow trees, logs, rock crevices or caves were not recorded within areas surveyed (Botanical North 2012).

Australian Bustard:

Inhabiting hummock and tussock grasslands, the bustard also utilises grassy woodlands and low shrublands (Birdlife International - 2008). Bustards have the potential to occur within the "Plain" vegetation community of the mining tenement but these areas are expected to be largely unaffected by the mining process. An increase in width of the access road may occur but this is unlikely to cause

significant impact to the larger grassland area. Very few shrubs occur within the grassland component at the site.

Peregrine Falcon:

This wide-ranging raptor occurs across a huge variety of habitats throughout its range, although cliffs (and more recently buildings/bridges) are required for nesting (The Peregrine Fund, 2010). So although the falcon may utilise the mining tenement for hunting, it is unlikely to utilise it for breeding until closure when the opportunity to create nesting site on high walls could occur as is observed in mining voids elsewhere.

Two results were returned on Nature Map (DEC, 2013) for the Peregrine Falcon in the broader Pivot Hill region.

3.6 Conservation

The mining tenement occurs alongside an area trafficked by tourists and locals during the dry season (Old Halls Creek Road and Parry Creek Road). The site itself is an old quarry with evidence of recent diggings and material removal from the borrow pit observed during the 2010 survey. The hillcrest and hillslopes showed little sign of disturbance but the footslopes and lower areas showed evidence of disturbance in the form of rocks being dumped and areas pushed up such as by earth-moving equipment.

Located at the southern-most (non-wetland) section of the Ord River Floodplain Ramsar site/within the Parry Lagoons Nature Reserve; it is highly unlikely that limited scale activities undertaken on the mining tenement will have a detrimental effect upon the Ramsar listed wetlands. The tenement and immediate mine areas are away from major creek lines so there is little chance of changes to the surface hydrology of the area or potential of contaminants entering sensitive waterways or groundwater.

Of the three threatened fauna likely to inhabit similar habitats to those identified on site, only the Australian bustard is likely to be present. The areas favoured by the bustard are unlikely to be disturbed by the mining process, although an obvious increase in traffic and activity may encourage the birds to utilise other areas of the nature reserve.

There is very little mid-level shrub layer, a requirement for many bird species and no emergent tall trees, a requirement for Red Goshawk nesting. The lack of significant stands of understory across much of the study area may have explained the lack of bird sightings and calls.

Fire regimes have changed much over the region since the disruption to traditional Aboriginal fire management resulting in fewer but more extensive and hotter fires (Hale 2008). Natural burns have occurred on Pivot Hill and if the project receives regulatory approval, a Fire Management Plan will be developed for the site as part of project management planning.

Overall the site does not appear to support likely habitats for threatened fauna nor threatened flora.

Although the intact vegetation on the site is in excellent health, with few weeds, there is a high level of disturbance within the tenement itself in terms of two previously utilised quarry pits. Based on the observations of the vegetation surrounding the existing pits, it is unlikely that the extension of those pits (within the tenement boundary) would have a long term detrimental effect on the surrounding hill and plains (Botanical North 2012) and opportunities during rehabilitation may enhance and develop habitats for selected species.

In summary, the proposed recommencement of small scale quarrying operations at Pivot Hill will directly impact on a relatively small area of habitat (6.85ha) which is well represented regionally both within and external to reserved land.

3.7 Social Environment

3.7.1 Shire of Wyndham, East Kimberley

The proposed quarry development is located wholly in the greater Kununurra Planning Region within the Shire of Wyndham, East Kimberley which covers an area of 121,000km^2. The Shire contains two major towns – Kununurra in the east and Wyndham in the west. Kununurra, with a population of 6,000, was established in the 1960s to service the construction of the Ord River Scheme (SWEK 2013). Wyndham, with a population of 800, was historically an important port for the region's pastoral and mining industries. Today, both towns provide a range of services that support pastoral, agricultural, mining, tourism and community activities. Both towns are in growth regions of Western Australia and well serviced by transport, infrastructure, education government administration and medical facilities.

3.7.2 Parry Lagoons Nature Reserve

The Parry Lagoons Nature Reserve (Reserve 42155) covers an area of 36,111ha (DEC 2012) and has the purpose of conservation of flora and fauna. The Reserve is easily accessed by existing roads and contains an internationally recognised Ramsar wetland and a range of natural terrestrial and marine and cultural values. The proposed reopening of the Pivot Hill Quarry is located on elevated terrain south of the floodplain and covers an area of 6.85ha which represents 0.02% of the current Reserve area. The nearest sensitive premise is the Parry Creek Farm, a former vegetable growing area now operating as a seasonal tourist resort. The facility is located 1.2km north east of the quarry and the owner has, as part of the stakeholder consultation process, identified several issues he has with the proposal. This correspondence is referenced in Appendix B and the proponent responses to mitigate some of the concerns are reported in Section 4.

3.7.3 Native Title

Portions of the Ord River and Parry Lagoons Nature Reserves are traditional lands for the Balanggarra people and the Miriuwung Gajerrong people. While native title for the Miriuwung Gajerrong lands has been determined through the Ord Final Agreement, the Balanggarra claims (WC00/6/WAD6004/2000 and WC99/47/WAD6027/98) are still being resolved (DEC 2012).

The Ord River and Parry Lagoons Nature Reserves are two of four existing reserves to be jointly managed in accordance with the Ord Final Agreement by the DEC and Yawoorroong Miriuwung Gajerrong Yirrgeb Noong Dawang Aboriginal Corporation, through the Yoorrooyang Dwang Regional Park Council. These arrangements will not impact on the proposed Quarry operations.

3.7.4 Heritage

Indigenous Heritage

The Department of Indigenous Affairs (DIA) and Department of Premier and Cabinet (DPC) have produced the Cultural Heritage Due Diligence Guidelines (DIA 2011) to assist proponents in identifying their statutory obligations under the Aboriginal Heritage Act (1972) and assist in maximising site protection. The guidelines contain a Heritage Assessment Matrix Tool used to determine the level of assessment required for the proposed expansion of the Pivot Hill Quarry.

Activities associated with the recommencement of mining at the Pivot Hill Quarry (ID29311) are likely to represent a ***significant (Category 4)*** land activity impact, due to the requirement for high impact ground disturbance (earth moving) and prior existing ground disturbance. As stated within the Guidelines for Category 4: *"Where an activity is proposed in an area which has previously been subject to significant*

*ground disturbance, it is generally **unlikely** that the activity will disturb an Aboriginal site and the activity will comply with these guidelines."*

A ***significant*** land activity impact combined with an ***unlikely*** heritage impact results in a ***moderate*** risk rating according to the Heritage Assessment Matrix. This requires reference to the DIA's online Aboriginal Heritage Information System (AHIS) and if an Aboriginal Site is identified within the tenements, consultation with the Department of Indigenous Affairs (DIA) is recommended.

A search of the AHIS was conducted to determine the presence of items or sites of state, national or Aboriginal heritage significance within the Pivot Hill Quarry tenements M80/618(P) and L80/63(P). The search report, referenced in Appendix D, did not locate any Aboriginal sites. Based on the risk assessment tool and AHIS search, no further assessment is deemed necessary.

As part of the stakeholder consultation process, the proponent has made further contact with the Guda Guda Community and sought advice on heritage matters associated with the site and proposed resumption of quarry activities. Correspondence is referenced in Appendices B and D.

4.0 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT AND MANAGEMENT

4.1 Overview

The environmental impact of the proposal will be considered under the following headings with the proposed precautions and management procedures planned to minimise any potential impacts outside of the immediate mine site during the quarrying programme.

Bearing in mind the type and modest scale of the proposed operations, the intermittent and seasonal operational timeframe and the daylight hour operations, the impact on the environment is seen to be minimal and no change or disbenefits of regional or local significance are anticipated.

Higher risk potential impacts associated with the recommencement of quarrying operations arising from emission sources or stakeholder consultation, and outlined in previous sections include:

- Land clearing and topsoil management;
- Dust emissions from clearing, material handling, screening and transport;
- Noise and light emissions;
- Surface water management;
- Hazardous goods management;
- Flora and fauna;
- Weed management, and
- Fire management

4.2 Land Clearing and Topsoil Management

Recommencement of quarry operations at Pivot Hill will require clearing of native vegetation and stripping of skeletal topsoil over a 4.4.0ha area within M80/613(P) and L80/63(P). The initial assessment shows that the proposed staged clearing of up to 4.4ha of sparse vegetation is not at variance with any of the 10 principles of land clearing used in WA to assess the environmental risks of clearing. A separate Clearing Permit Application will be submitted on grant of the Mining Lease.

4.2.1 Potential Impacts

- Generation of dusts during topsoil stripping, handling, transport, and from excessive clearing;
- Reduction in area of flora and fauna habitats(biodiversity loss) and increased potential for weed spread, and
- Increased risks of loss of topsoil viability from poor placement and storage, erosion or operational contamination.

4.2.2 Management of Controls

- Annual clearing areas will be marked out prior to clearing and no clearing will be undertaken without the approval of the Registered Manager;
- Existing cleared areas will be utilised, where feasible, to reduce the requirement to clear habitat;
- Topsoil will be stripped (when present), to the maximum thickness possible and stored for future rehabilitation in low stockpiles away from traffic areas, surface flow zones and works areas. Stockpiles will be signposted, monitored annually for weed spread and the location included on Mine Closure Plans, and

- Cleared areas will be rehabilitated as soon as they are no longer required for ongoing mining use.

4.3 Dust Emissions

Dust emissions will be generated during site clearing, blast hole drilling and blasting, loading of raw rock, screening and tramming operations, equipment movements, transport and from rehabilitated areas.

4.3.1 Potential Impacts

- Minor impacts on native vegetation due to dust deposition on leaves in the operations area and transport corridors;
- Wind uplift from fines stockpiles;
- Loss of visual amenity and potential contaminant movement into runoff zones;
- Reduced efficiency of mobile equipment and increase maintenance costs, and
- Safety and health risks to workforce and travelling public from wheel generated dust.

4.3.2 Management Controls

JAB Industries has an established Dust Management Standard Operating Procedure (**SOP**) aimed at minimising dust generation in the work place and compliance with DMP, DPAW and SWEK requirements. The SOP will be revised to include site specific requirements identified during regulatory assessment:

- Visual monitoring of work place and road corridor dust levels to satisfy OH&S requirements;
- Use of water injection during blast hole drilling and water sprays during crushing campaigns;
- Imposition of speed restrictions in the works area and gravelled access roads to limit wheel dust;
- Use of mobile dust suppression water cart for work areas, stockpiles and unsealed access roads including the Parry Creek Road west to the Great Northern Highway;
- Ensuring tramming, loading, spillage cleanup and transport activities are undertaken so as to minimise dust emissions by wetting down with best available quality water, and
- Ensuring dust control and barrier equipment is fitted to screening plant and servicing requirements are followed.

The quarry is located 1.2km south west of the nearest sensitive receptor – the Parry Creek Farm and is separated by elevated terrain. Prevailing winds during the "dry" operating season (BOM 2013) are typically from the east and south east and away from the sensitive receptor.

4.4 Noise, Vibration and Light Emissions

Atmospheric noise emissions will result from intermittent blasting, materials handling, crushing and transport. No impacts from light dispersal will occur as the operation will only be conducted during daylight hours. Noise emissions could result in impacts to site personnel, ambiance impacts to visitors at the Parry Creek Farm and native wildlife during peak noise activities.

With the closest residence 1.2km away, noise is unlikely to be a significant amenity issue except during short blasting periods and possibly during transport (engine breaking) at the entrance to the Parry Creek Road. Blasting will be undertaken at specified times during the day, avoided where possible during periods of low overcast and unstable atmospheric conditions, and regular consultation will be maintained with the nearby tourist farm to provide timely warning of blasts.

The plant is required to operate in accordance with the *Environmental Protection (Noise) Regulations (1997), Australian Standards* and in accordance with Guidelines defined by Section 4(1) of the *Mine Safety*

and Inspection Act (1994). Noise will arise from the normal plant and transport operations including mobile equipment reversing alarms. Operations will comply with regulatory requirements in respect to these activities. Vibration and damage to offsite structures was raised in stakeholder consultation. No evidence has been provided of impacts from vibration from previous operations at the quarry site and blasting techniques will be designed in conjunction with the licenced shotfirer to minimize transient blasting noise and vibration.

Fauna species with low tolerance for disturbance and residing adjacent to the operational area may be temporarily affected, although it is likely they would move away from the noise source.

Given the site's remote location, and the type and scale of the quarry, the proposed operation is not expected to result in excessive levels of nuisance noise at sensitive receiving premises (Parry Creek Farm), due to prevailing wind conditions, location in a void and the noise attenuation due to distance and the barrier provided by the bulk of Pivot Hill (See insert on Plan F-3).

4.5 Surface Water Management

Although quarrying activities will only be undertaken during the dry season, surface water management infrastructure associated with the quarry site, has been designed to passively limit potential impacts during the monsoon season. A detailed site runoff assessment based on a 50m grid has identified areas where runoff is concentrated due to natural terrain. Site drainage is ephemeral and not directly linked with the main Parry Creek channel.

4.5.1 Potential Impacts

- Excessive clearing of vegetation and land disturbance can change run off coefficients and alter flow paths and recharge;
- Inappropriate design of site layout and haul roads and lack of operational maintenance can result in unwanted ponding, running formation damage, erosion, localised sedimentation of drainage lines and uncontrolled release from mine dams, and
- Contamination or mixing of storm water runoff with operational (dust suppression) waters and hydrocarbons.

4.5.2 Management Controls

- The mine void and works area will be bunded to direct clean runoff into natural flow zones away from operational areas and stockpiles;
- Works area runoff will be directed into the mine void (for reuse) or settlement ponds or tanks located west of the operational areas (See Plan F-4);
- Settlement pondage will be cleaned out at regular intervals to ensure adequate capacity is available to capture contaminated runoff. Spill management capability on site will include absorption products suitable for removing any hydrocarbons that enter the sediment ponds ;
- Access roads, where required, will have verge drains linked to silt traps, and
- Monitoring and maintenance of the sediment containment infrastructure will be the responsibility of the Registered Manager.

4.6 Weed Management

Several well-known weed species including Noogoora Burr have shown themselves to be well adapted to colonisation of disturbed ground in the East Kimberley. No noxious weed species were identified during

the site inspection of the proposed project infrastructure areas (Botanical North 2012) although several common "weeds" are present in the mine environments and can proliferate after rain. Operational management strategies adopted to stop weed spread include:

- Materials (i.e. soil) should not be removed or imported for reuse where weed infestations are evident without prior spraying and follow-up monitoring;
- Existing infestations in the general project area and stockpiles will be brought to the attention of the Registered Management for action;
- Progressive rehabilitation of disturbed areas, (where feasible), will be undertaken to assist in reducing weed spread by promoting competition from local native species;
- Quarry personnel are made aware of weed management issues, quarantine requirements, and equipment hygiene requirements through the Site Induction Programme, and
- Managing weed invasions so as to control spread into native vegetation – all equipment will be cleaned down prior to transport to the project site, and weed assessment and control will be conducted after the wet season.

Movement of vehicles in and out of the site will be during the dry season when the potential for weed spread via caked on mud is low. However every precaution will be taken to check vehicles and equipment entering the site for cleanliness. A weed control program will be co-ordinated by the Registered Manager.

4.7 Hazardous Goods Management

Management of explosives in accordance with relevant regulations will be the contractual responsibility of a drill and blast contractor engaged for the project. No hazardous materials or wastes will be stored or disposed at the quarry site.

4.8 Hydrocarbon Management

No hydrocarbons will be stored on site. Major equipment servicing will be carried out in Kununurra and refuelling and lubrication on site will utilise a fuel truck.

Any hydrocarbon spillages on site are expected to be associated with equipment failure or personnel related incidents and will be of limited volume due to the scale of operations and the equipment being utilized. They will be managed by the collection of any contaminated material and delivery to an approved disposal site in the region. Appropriate spill management equipment will be available on site during campaigns and potential site contamination from infrequent, localized hydrocarbon spills or leaks are considered to represent a low risk to the environment.

JAB Industries currently require that all employees are aware of the procedures for spill management in the work environments in which they operate.

4.9 Fire Management

It is expected that there will be no requirement for the lighting of fires on the quarry site and unauthorised lighting of fires will be prohibited.

All equipment and facilities will be fitted/provided with fire extinguishers.

In case there is a need for fire management, it will be undertaken in consultation with the DPAW. Firebreaks will be constructed around quarry facilities and water trucks will be available to support any site fire fighting activities.

4.10 Waste Management

Since there are no permanent facilities on site, solid waste management simply requires removal each operational day of minor volumes of domestic waste. Any industrial waste generated at the site from activities such as equipment repairs will be returned to the proponent's workshop in Kununurra for proper disposal. Biowastes (portaloo) will be managed as part of campaign operations. Inspection of the site on several occasions by the Proponent has not identified any site contamination from previous quarrying activities. The proposed non-storage of hydrocarbons and hazardous goods on site during the proposed operations will result in a very low risk to the environment from spillage or malfunction.

4.11 Waste Rock and Tailings

As noted above, limited quantities of mine waste rock will be generated and there will be no processing tailings. The small amounts of fine dry screenings produced on site will be returned to the void as part of road surfacing, for rehabilitation use or sold as cracker dust.

Past analyses have shown that the rock, which has previously been used for road construction, does not contain sulphides and therefore does not require ARD management. Also risks to the environment were also considered low because the material to be quarried naturally outcrops at the surface. Recent NAG and NAPP testwork by MPL (2012) confirmed the earlier results and reported the basalt is an acid consumer. Testwork results are referenced in Appendix E.

4.12 Flora, Fauna and Ecosystem

The proposed mining operations will not directly impact of any of the prime ecological values of the Parry Lagoons Nature Reserve, since the mining area is of limited area, visually screened by virtue of its location, relatively isolated in terms of drainage runoff and elevated and some distance above the wetland ecosystems that represent the essential conservation values of the reserve.

Potential indirect impacts through runoff from the mining operations will be managed using diversion of runoff away from operational areas and drainage sumps to settle runoff sediment prior to reuse or release to the broader environment.

Impacts will be further minimised by:

- Restricting clearing annually to the extent required for safe operations and ensuring storm run-on into natural flow zones and vegetation communities is not impeded ;
- Rehabilitating disturbed areas as soon as is practicable;
- Salvaging skeletal topsoil and cleared vegetation for use in rehabilitation – using salvaged dead vegetation to provide fauna habitats where available;
- Managing fire risks and responding promptly to site fire events, and
- Reporting the presence of feral animals to DPAW, monitoring mine sumps for cane toad eggs and prohibiting pets and firearms on site.

Noise and dust impacts on flora and fauna will be localised, with no lasting impacts likely after operations cease at the site – the adaptive approach to rehabilitation can reasonably be expected to allow natural conditions and significant ecosystem function, to be re-established.

4.13 Social Impacts

The social impacts associated with the proposal are seen to be minimal and overall the successful operation of the quarrying, crushing and screening project is likely to result in the increased benefits to

local service companies and suppliers, employees, Local Government, and the local communities and will result in reduced greenhouse gas emissions and cost of product that would be associated with trucking in the aggregate from a more distant external source.

4.14 Heritage

No European heritage impacts have been identified.

JAB is aware of their obligations under the Aboriginal Heritage Act (1972) in respect to the protection of areas of known significance and will maintain dialogue with local communities.

No Aboriginal sites are known to occur on the project area (See Appendix D).

During operations, the requirements of the Aboriginal Heritage Act will be met especially in relation to the identification of sites. If a site is identified, operations will cease to allow proper investigation and assessment.

4.15 Land Use and Community

The Pivot Hill project is an important component of the ongoing development of raw material resources in the region that will continue to provide increased benefits to the State, the Shire of Wyndham East Kimberley and the local community. This proposal will result increased employment opportunities in the District.

Community liaison with the local and State Government Agencies and other stakeholders is already established and will be continued to address such matters as traffic impacts, dust and noise.

4.16 Mine Closure, Rehabilitation and Monitoring

The closure objectives are to rehabilitate the quarry site to a standard that is safe, stable, and non-polluting and satisfies the agreed post mining land uses. Preliminary details are outlined in Section 5.

Closure processes require the interests of other Stakeholders to be considered and consultation maintained. At final closure the mined area will be reshaped, topsoiled and seeded to support agreed land uses and monitored in accordance with commitments outlined in the Mine Closure Plan. The option of importing rehabilitation medium from similar terrain units in the district to promote site rehabilitation success will be discussed with DPAW as part of the preparation of the Mine Closure Plan.

Post closure monitoring (or during temporary suspension of operations) will be undertaken for 3 years post closure to assess:

- The stability of the mine site infrastructure such as quarry voids, abandonment bunds, water diversion bunds and rehabilitated areas;
- The success of rehabilitated areas using an agreed assessment process, and
- Access security, public safety and the need for remedial works.

Monitoring outcomes will be reported in accordance with regulatory reporting requirements.

5.0 QUARRY CLOSURE

5.1 Background

The Australian and New Zealand Minerals and Energy Council (**ANZMEC**) and the Minerals Council (**MCA**) of Australia have jointly produced a high level framework for the development of mine closure plans. The Pivot Hill Preliminary Closure Plan, to be completed within twelve months following the grant of tenure will incorporate the relevant elements from the ANZMEC, MCA and DMP guidelines in the development of a site closure plan. These high level guidelines recommend that final quarry rehabilitation and decommissioning should ensure:

- that stakeholders have their interests considered during the quarry closure process;
- that the process of closure occurs in an orderly cost effective and timely manner and all statutory requirements are met;
- that the cost of closure is adequately represented in company accounts and the community or the government is not left with a liability;
- there is clear transparent accountability and adequate resources for the implementation of pre-closure rehabilitation trials, the final closure plan and post-closure monitoring.
- the establishment of a set of indicators (i.e. completion criteria) that will demonstrate the successful completion of the closure process be developed prior to plan implementation, and
- the quarry closure plan is prepared within twelve months of grant of tenure, is reviewed every three years and post-closure monitoring will continue until the agreed completion criteria are met.

5.2 Closure Objectives

Minesite rehabilitation criteria are typically developed to achieve the following closure objectives.

- Ensure risks to public safety are minimised and that the community do not inherit any mine closure liabilities;
- Infrastructure is removed and the site is returned to a condition that will support current land uses;
- Stable topographic conditions are established that will support, a self-sustaining indigenous vegetation community consistent with the Frayne Land System – Unit 1 and agreed final land use objectives;
- Minimise off site impacts by controlling weeds, removing deleterious materials, controlling infiltration, erosion, sedimentation and the degradation of existing drainages;
- Employ rehabilitation methods that are technically effective and cost efficient, rely on standard and proven engineering practices that do not require ongoing maintenance to ensure performance, and
- Ensure the protection and conservation during rehabilitation works of any identified elements of the cultural and conservation estate within the mining leases.

The approved Pivot Hill Quarry Closure Plan incorporating the relevant objectives and results of rehabilitation research will be revised every three years in accordance with DMP requirements and discussed, prior to final quarry closure, with the DPAW Regional Kununurra Office.

5.3 Rehabilitation Concepts

Rehabilitation is defined as the implementation of procedures resulting in the return of an area to a sustainable biological condition such that it does not require ongoing maintenance.

The high level concepts generally adopted for the rehabilitation of minesites involves the reinstatement, to a nominated standard, of a natural and informal landscape in order to:

- Protect public health and safety from potential closure liabilities;
- Reduce or prevent ongoing environmental degradation to communities or other land users;
- Design for a productive, post rehabilitation use of the rehabilitated land, and constructed in such a manner so as to blend in and not overpower the landscape;
- Ensure due consideration is given in the planning process to conserving, where appropriate, items of heritage and ecological value.

In developing closure criteria for any post closure mine element, the assessment should satisfy the following aspects:

- Physical stability of the site should be enhanced by appropriate earthworks, drainage and the use of local indigenous species;
- Chemical integrity of the landform should be achieved by the removal and secure disposal of deleterious materials (i.e. contaminated soils);
- Site aesthetics should be achieved such that the final landscape is interesting but not distracting, and
- Ecosystem structure and function are re-established to support the agreed land use which is conservation.

5.4 Specific Works Programmes

Skeletal topsoil and any remnant vegetation will be removed from the proposed quarrying area prior to commencement of operations. Site water quality (TDS) for use in dust suppression will not exceed 2,500mg/L. On closure, perimeter high walls will be made safe, any residual stockpile material will be spread in low void areas and harmonised with the existing surface material to promote fauna habitat. Stockpiled topsoil will be respread, drainage, erosion control will be re-established, vegetation mulch will be respread and the disturbed areas lightly ripped on the contour.

Any materials not part of final closure will be collected and disposed off site. The area will be seeded with local provenance seeds identified from species listings (Appendix E) applicable to the terrain unit. Weed and erosion control will be undertaken progressively as operations allow. Post closure access to the site will be restricted by rock barriers or bunds on access roads. A provisional revegetation resource materials inventory is outlined in Table 5.1. During the life of the project, it is proposed to implement rehabilitation trials with advice from the local DMA's.

Table 5.1 Availability and Location of Suitable Rehabilitation Materials

Rehabilitation Materials	Unit	Quantity	Comment
Quarry Waste	m^3	Allow 500 LOM	Supplies available from quarrying activities. Used as a direct seed and sub-base to topsoil to limit loss of topsoil.
Topsoil	m^3	Allow 400. Outcrop is present in quarry area	Sourced from local topsoil. Total resource required for 5cm cover for 6.8ha is approximately 3,400m^3. Mosaic approach at 10cm thickness will ensure surface is partially covered. Option for importing supplementary topsoil to be investigated as part of closure consultation.
Vegetation Mulch	m^3	5	From stockpiles developed during clearing.
Total	m^3	**905 m^3**	

5.5 Temporary Quarry Closure

The site Mine Closure Plan (**MCP**) will be reviewed every year during site operations to ensure it remains accurate and relevant. In the event of a temporary mine closure, the transition from operations to Care and Maintenance will be an orderly and managed process. In respect to the programme, this may involve removal of any temporary site infrastructure, securing of topsoil stockpiles, the establishment of abandonment, crest, toe and ramp access bunds to maintain site security, erection of approved signs and work programmes to limit erosion potential from incomplete rehabilitation. On completion of site works a Care and Maintenance Plan will be submitted to DMP.

Provisional Closure Timeframe

The current life of mine is to 2024 with a generalised closure timeframe for the project outlined in Table 5.2.

Table 5.2 Provisional Closure Timeframe

Activity	Timeframe	Comment
Develop site draft rehabilitation strategy	2 Months	Within 12 months following grant of tenure.
Finalize draft site provisional LOM Rehabilitation and Closure Plan	1 Month	To be submitted to DMP within twelve months of grant of tenure.
Incorporate DMP/DPAW comments and consult with stakeholders and regulatory agencies	3 Months	Provisional plan approved by DMP and reverts to Stage 2 Plan with closure provision reviewed by JAB personnel annually and DMP every 3 years.
Stage 2 Plan reviewed and then updated annually	By October each year	Progress reported in AER, following site audit.
Implement regulatory approved MCP	Dependent on final closure timeframe	Preparation of closeout report including proposed post closure monitoring programme.
Regulatory review post closure	To be advised	Request for signoff.

5.6 Completion Criteria

Closure criteria are an agreed standard or level of performance that enables progressive assessment of the site in meeting the objectives, and ultimately demonstrate successful closure (ANZMEC/MCA 2000).

The overall objective of the provisional Pivot Hill Quarry Closure Plan is to establish a safe, stable post mining landform with a self-sustaining vegetative cover similar to that in the surrounding landscape. Closure criteria will be further discussed in consultation with stakeholders to define the measurable goals required for rehabilitation and closure. Provisional criteria will enable quantitative assessment during the life of the project to provide an indication of whether rehabilitation and closure objectives have been or are likely to be achieved. The criteria will be periodically reviewed in consultation with regulatory authorities.

5.7 Post Closure Monitoring and Maintenance

Final closure of the site is estimated to take approximately two months after the mobile equipment has been removed and profiling is completed. Weed control and seeding activities would be undertaken to coincide with favourable climatic conditions

5.8 Monitoring

An operational programme would (a) review revegetation opportunities annually and establish trial revegetation programme on quarry waste materials using stored vegetation mulch to determine seed viability, (b) carry out nutrient testing of local stockpiled soils to determine if initial fertiliser amendment is required, and (c) re-assess the Closure Plan on consideration of results from above and incorporate changes based on annual reviews and stakeholder consultation.

Post closure management, monitoring and reporting will be supervised until regulatory signoff is achieved. Reporting would be via an annual environmental report to the relevant agencies.

6.0 REFERENCES

Agriculture WA (2011). APB Declared Plant List. http://www.agric.wa.gov.au

Anon. (1991). WA Department of Minerals and Energy: *Guidelines on Safety Bund Walls around Abandoned Open Pits – Mining Engineering Division*. Perth.

Anon. (2012). WA Department of Indigenous Affairs, Aboriginal Heritage Inquiry System - *Site Register Reports*. Perth. Western Australia - M80/618(P) and L80/63(P). http://www.dia.wa.gov.au.

Australian Government. (2002). *Biodiversity and Vegetation*. Retrieved March 2012, from Australian Natural Resources Atlas: http://www.environment.gov.au/resource/vegetation-profiles

Australian Wildlife Conservancy. (2011). *Australian Bustard (Ardeotis australis)*. Retrieved December 2011, from Wildlife and Ecosystems - Wildlife profiles, Birds: http://www.australianwildlife.org

Beard J.S. (1990). *Plant Life of Western Australia*. Kangaroo Press, New South Wales.

Beeston, G. R., Hopkins, A. and Shepherd, D. (2002). *Disturbance of and threats to native vegetation - Audit report of land use and vegetation*. Retrieved March 2012, from Department of Agriculture and Food: http://www.agric.wa.gov.au

Biota (2009), *Hope Downs IV Northern Quoll Position Paper*.

Birdlife International. (2008). *Ardeotis australis*. Retrieved December 2011, from IUCN 2011. IUCN Red List of Threatened Species: http://www.iucnredlist.org

Botanical North (2012). *Assessment of the Flora and Fauna within Pivot Hill Mining Tenement M89/618*. March 2012.

Bureau of Land Management (2000). *Visual Resource Management Manual 8410*. US Department of the Interior.

Bureau of Meteorology. (2012). *Climate data online - Monthly Rainfall – Wyndham Airport (weather station 001006)*. October 2012, from Bureau of Meteorology - Australian Government: http://www.bom.gov.au

Casson, N., Downes, S., and Harris, A. (2009). *Native Vegetation Condition Assessment and Monitoring Manual for Western Australia*. Australian Government and Department of Environment and Conservation.

CSIRO (2009) *Water in the Ord-Bonaparte Region*. pp 183-272 – Water in the Timor Sea Drainage Division. *A Report to the Australian Government from CSIRO Northern Sustainable Yields Project*. Australia. pp. 508.

DCLM. (2003). *WA's Ramsar sites*. (2012), from Department of Environment and Conservation: www.dec.wa.gov.au

DEC (2012). *Ord River and Parry Lagoons Nature Reserve Management Plan 77*, 2012 Perth.

DEC (2013,). *NatureMap*. http://naturemap.dec.wa.gov.au. February 2013

DEC (Undated). *Regulatory Map – Category 70 - Screening of Material*

DOW (2007). *Stormwater Management Manual for Western Australia*. April 2007.

DPI (2010). *Code of Practice for Small Quarries prepared by Dept of Primary Industries*. Melbourne Victoria.

DSEWCP (2013). *EPBC Act Protected Matters Report*. 30 May 2013.

Environment Australia (2001). *A Directory of Important Wetlands in Australia*, Third Edition. Canberra.

EPA (2010). *Onshore Mineral Exploration and Development Memorandum of Understanding between the EPA and DMP*. Perth May 2010.

EPA (1997). *Environmental Protection (Noise) Regulations 1997*.

Graham, G. (2001). Victoria Bonaparte 1 (VB1 Subregion) in *A Biodiversity Audit of Western Australia's 53 Biographical Subregions in 2002*.

Hale, J (2008). *Ecological Character Description of Ord River Flood Plain Site*. A Report to the DEC. Sept 2008.

Hill, B. M. and Naird, S. J. (2010) *National Recovery Plan for the Northern Quoll (Dasyurus hallucatus)*, Dept of Natural Resources, Environment, the Arts and Sports, Darwin.

Myers, B, et. al. (2004). *Fire Management in the Rangelands*. Tropical Savannas CRC Darwin.

Payne, A. and Schoknect, N. (2011) *Land Systems of the Kimberley Region*. Tech. Bull. No. 98, Department of Agriculture and Food, Perth.

Water and Rivers Commission. (2001). *Hydrology of the Ord River Irrigation Area* Western Australia and Northern Territory. Hydrogeological Record Series. Report HG7. April 2001.

Yundt, S. E. and Lowe, B. (2002). *Quarry Rehabilitation – Cliffs, Landforms and Ecology*. Proc. 26th British Columbia Mine Rehabilitation Symposium. Dawson Creek BC. 2002.

7.0 ACRONYMS, SHORT TITLES AND DEFINITIONS

Angle of repose	The maximum angle above horizontal of a stable slope formed by a given material (depends on friction, cohesion and the shapes of the material particles)
AER	Annual Environmental Report
Batter	The face of the slope
Bench	That part of a quarry where material is loaded and hauled away
BOM	Bureau of Meteorology
Bund	An earthen mound wall which may be used for access security, diversion or control of runoff, noise attenuation or visual screens. Bunds may also be used to contain spillage of liquid materials
CP	Clearing Permit
Contour bank	An earth mound or similar, constructed approximately along the contour and which is designed to slow down and control water runoff and direct it around the disturbed area
DEC	Department of Environment and Conservation now restructured into DPAW and DER
DER	Western Australian Department of Regulation
DPAW	Western Australian Department of Parks and Wildlife
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities
DIA	Department of Indigenous Affairs renamed Department of Aboriginal Affairs
Disturbed land	Any area of land where the natural surface has been removed, excavated, shaped or otherwise altered from its natural condition
Diversion drain	A ditch and/or earth bank constructed to direct clean water from uphill of a disturbed area around the disturbed area
DMA	Decision Making Authority
DMP	Western Australian Department of Mines and Petroleum
DOW	Western Australian Department of Water
DRF	Declared Rare Flora
DWSPA	Drinking Water Source Protection Assessment
DWSPP	Drinking Water Source Protection Plan
EC	Electrical Conductivity – a measure of salinity 1EC µS/cm ≈ 0.6mg/L TDS
Environmental incident	An occurrence that will, or is likely to cause, material harm to the environment
EPA	Western Australian Environmental Protection Authority
EPBC	Environmental Protection and Biodiversity Conservation used in reference to the Act of Federal Parliament (1999)
ESA	Environmentally Sensitive Area
GWL	Groundwater Well Licence
Groundwater	Water which occupies the pores and crevices of rock or soil
HAZMAT	Hazardous Materials
HDPE	High Density Polyethelene

Hydrogeology	The study of groundwater, especially relating to the distribution of aquifers, groundwater flow and groundwater quality
IBRA	Interim Biogeographic Regionalisation for Australia (version 5.1 is used for this document)
JAB	JAB Industries proponent for the Pivot Hill Quarry project
JCS	John Consulting Services
LOM	Life of Mine
LP	Local Provence
LGA	Local Government Area
Leaching /Leachate	The process by which materials such as organic matter and mineral salts are washed out of a layer of soil or dumped material by being dissolved or suspended in percolating rainwater; the material washed out is known as leachate. Leachate can pollute groundwater and waterways
M	Mining Lease
MAHD	Metres Australian Height Datum
MOU	Memorandum of Understanding between DMP and EPA in relation to Referral of Mineral and Petroleum (Onshore and Offshore) Geothermal Proposals. Dated 29.6.2010.
NAF	Non Acid Forming
NAG	Net Acid Generation
Nutrient load	The amount of nutrient reaching the waterway over a given time (usually per year) from its catchment area
OHS	Occupational Health and Safety
Overburden	Material which overlays the resource being quarried, excludes soil and topsoil
PAF	Potential Acid Forming
PDWSA	Public Drinking Water Source Area
Point source pollution	Specific localised source of pollution, e.g. sewage or effluent discharge, industrial waste discharge
Pollution	Water pollution occurs when waste products or other substances, e.g. effluent, litter, refuse, sewage or contaminated runoff, change the physical, chemical, biological or thermal properties of the water, adversely affecting water quality, living species and beneficial uses.
Recharge	Water infiltrating to replenish an aquifer
Recharge area	An area through which water from a groundwater catchment percolates to replenish (recharge) an aquifer. An unconfined aquifer is recharged by rainfall throughout its distribution.
Relevant agencies	Decision making agencies with statutory obligations that may relate directly or indirectly to the small quarry operations
ROM	Run of Mine
Runoff	Water that flows over the surface from a catchment area, including streams
Schedule 1	Fauna listed are rare and likely to become extinct under the West Australian Wildlife Conservation Act (1950)
Sediment pond	Collects highly turbid water and stores it while suspended sediments fall out of solution and discharge it to a vegetated area

Sediment trap	Collects waterborne sediment running off areas of disturbed land using a device, such as a rock structure, pond barrier, silt fences, hay bales.
Sensitive land use	Residential areas and zones (occupied), hospitals, schools, caravan parks, and other similar uses involving the presence of individual people for extended periods, except in the course of their employment or for recreation
SOWEK	Shire of Wyndham East Kimberley
TDS	Total Dissolved Solids
TEC	Threatened Ecological Community
Treatment	Application of techniques such as settlement, filtration and chlorination to render water suitable for specific purposes including drinking and discharge to the environment.
Unconfined aquifer	An aquifer containing water, the upper surface of which is lower than the top of the aquifer. The upper surface of the groundwater within the aquifer is called the water table.
WA	Western Australia
Water quality	The physical, chemical and biological measures of water
Water table	The upper saturated level of the unconfined groundwater
WCPL	Woolard Consulting Pty Ltd

Units of Measurement

BCM	Bulk Cubic Metres
g/t	grams per tonne
ha	Hectare
kL	Kilolitre
m	Metre
mg/L	Milligrams per litre
ML	Megalitre

Appendix A

REFERRAL ASSESSMENT

PROJECT REFERRAL ASSESSMENT

Referrals under Part IV (Environmental Impact Assessment) of the Environmental Protection Act (1986) and Amendments

The Memorandum of Understanding (May 2010) between the Environmental Protection Authority and the Department of Mines and Petroleum has established administrative procedures to determine which minerals, geothermal and petroleum exploration and development proposals require referral to the EPA and at what stage the referral is made. The Memorandum is predicated upon the following principles:

- That the EPA has lead responsibility for providing advice to the Minister to the Environment regarding environmental protection in the State and is responsible for conducting the EIA process as required under the EP Act 1986;
- That the DMP has the lead responsibility for the regulation of mineral, petroleum and geothermal exploration and development in the State, and is a DMA under the EP Act;
- That the conservation significance of sensitive environments must be recognised when determining the suitability of onshore mineral exploration and development in these environments, and
- That biodiversity is best conserved in-situ and therefore the size of the impact associated with potential mining development must be recognised when determining the suitability / management of developments in these environments;

The MOU facilitates the administration of the EP Act (1986) and Regulations and the Mining Act (1978) and Regulations and other Petroleum and Geothermal Acts. Any development and productive mining and construction proposal which impinge upon the following areas or criteria should be referred to the EPA.

No.	Referral Criteria	This Proposal
1	Wholly or partially on pre-1899 Crown Grant lands and consequently not subject to the *Mining Act 1978*.	No
2	Wholly or partly within areas identified or protected under statute: ▪ National Park ▪ Nature Reserve ▪ Conservation Park ▪ State Forest ▪ Timber Reserve ▪ Threatened Ecological Community	Yes – within southern part of Parry Lagoons Nature Reserve
3	Wholly or partly within the following areas: ▪ World Heritage property ▪ Biosphere Reserve ▪ ANCA Wetlands ▪ Ramsar Wetlands ▪ Soil Reference Site ▪ Sites visited by species listed under JAMBA or CAMBA.	Yes – located on elevated terrain above the Ord River Flood Plain Ramsar and ANCA Wetlands
4	Having a direct or indirect effect upon environmentally significant lakes and wetlands including: ▪ EPP Lakes and wetlands; and Conservation Category Wetlands	No
5	Wholly or partly within 2km of declared occupied townsite or the coastline.	No
6	Likely to impact on a water resource area, including a water reserve, a declared or proposed water supply catchment area, or groundwater protection area.	No
7	Area currently subject to formal assessments by EPA.	No

Appendix B

CORRESPONDENCE AND CONSULTATION

- Shire of Wyndham, East Kimberley
- Dept of Regional Development and Lands
- Guda Guda Community
- Joorook Ngarmi Aboriginal Corporation
- Main Roads WA
- Parry Creek Farm

Table B-1 Summary of Consultation

Key Stakeholders	Date	Contact Name	Process	Issues/concerns and Response
Shire of Wyndham East Kimberley (SWEK)	06/09/2010	Gary Geoffrey, CEO	Meeting and Application for Mining Tenure	SWEK investigating supply of strategic resources and supportive of application.
Department of Regional Development and Lands and Expansion Project	23/08/2011	Peter Stubbs, Director, O-EK Project	Meeting and Application for Mining Lease	Ord East Kimberley Expansion Project supportive of lease application and re-opening of quarry.
Joorook Ngarmi Aboriginal Corporation, Wyndham	19/08/2011	Ross Campbell, Manager	Response to Application for Mining Lease	Corporation supportive of Mining Lease Application.
Guda Guda Community, Wyndham	01/09/2011	Janet Gallagher, Community Chair Person	Meeting and Application for Mining Lease	Community supportive of Mining Lease Application.
Main Roads, Western Australia	22/08/2011	David D'Mello, Regional Materials Manager	Meeting and Application for Mining Lease	Main Roads supportive of application as it would improve the availability of resources for road works.
Department of Mines and Petroleum	Numerous dates in 2012	Adrian Wiley, Mariana De Moraes	Emails	Comments and requests for more information.
Parry Creek Farm and Caravan Park	08/08/2012	Terry White, Director, Parry Creek Farm	Meetings and response to Mining Proposal	Parry Creek Farm advised they objected to the proposal on the basis of increased noise, traffic movements, direct blasting and access. JAB have addressed these issues in document.
DEC – Regional Office, Kununurra	01/03/2013	Regional Officers	Meeting	Discussion on proposal.
DMP, Perth	12/03/2013	Mike Freeman, Project Manager, Approval Facilitation	Meeting – DMP Perth	Discussion on issues in relation to permitting raised in email correspondence. Addressed in revised document.
Shire of Wyndham East Kimberley	18/03/2013 15/04/2013	Gary Geoffrey, CEO	Correspondence	Request for approval to haul product on Parry Creek Road to GNH. SWEK requirements outlined.
Guda Guda Community, Wyndham	13/05/2013	David and Janet Gallagher	Meeting	Request of Heritage Advice in respect to quarry site.

Our Ref: 43.09.01
Your Ref:
Enquiries: Nick kearns

6 September 2010

Mick Guerinoni
PO Box 559
Kununurra WA 6743

Dear Mick

Application for Miscellaneous Licence 80/61 and for Mining Lease 80/618

I refer to our meeting on 31st August 2010 and acknowledge receipt of your application for the above Miscellaneous Licence and Mining Lease.

As we discussed, the Shire supports your application in as much as it will improve the availability of aggregate that meets the applicable Main Roads WA standards for road pavement sealing. The nearest available aggregate that meets this standard is presently only available from Katherine in the Northern Territory.

As we also discussed, the Shire of Wyndham East Kimberley is working with other Shire's within the region to investigate the supply of more suitable raw materials for road construction – that meet the applicable standards – and is also investigating the possible joint purchase of an asphalting plant. The availability of an additional strategic resource, as you have indicated, would only serve to compliment our efforts.

I wish you luck with your applications.

Please contact me if you require any additional information or assistance.

Yours Sincerely

Gary Gaffney
Chief Executive Officer

Shire of Wyndham-East Kimberley

All communications to be addressed to the Chief Executive Officer
PO Box 614
Kununurra WA 6743
Ph (08) 9168 4100
Fax (08) 9168 1798
Email:
mail@thelastfrontier.com.au

Kununurra Office:
115 Coolibah Drive
Kununurra

Wyndham Office:
Koolama Street
Wyndham

The Last Frontier

www.thelastfrontier.com.au

Government of Western Australia
Department of Regional Development and Lands

ROYALTIES FOR REGIONS

Our ref: A944546
Enquiries: Peter Stubbs, Ph 9168 0604

Mr Mick Guerinoni
JAB Industries
PO Box 559
KUNUNURRA WA 6743

Dear Mr Guerinoni

APPLICATION FOR MINING LEASE 80/618

Thank you for your briefing on your efforts to source better quality raw materials to support construction in the East Kimberley region. Clearly the quality of raw materials has become a critical issue. In the States Ord Expansion project alone, the poor quality of current raw materials is costing the State an estimated additional $20m. This challenge is going to compound unless further supplies of quality raw materials are sourced.

Your proposal to mine hard rock through the above mineral lease is supported. The Department of Regional Development and Lands, notes that this lease area already has a history of mining on it. The quality of rock there is known to be of high quality. Despite the sites proximity to the Parry Creek Nature Reserve the site is small, already disturbed and plant surveys show that no rare plants are present. The site is further appropriate, as it is not visible from the Parry Creek Road.

Yours sincerely

Peter Stubbs
Director
Ord-East Kimberley Expansion Project

23 August 2011

Corner of Messmate Way and Bandicoot Drive, Kununurra Western Australia 6743 PO Box 630, Kununurra 6743
Telephone: (08) 9168 0604 Facsimile: (08) 9168 0600
Email: info@rdl.wa.gov.au Website: www.rdl.wa.gov.au
wa.gov.au

GUDA GUDA COMMUNITY.

PO Box 221

Wyndham WA 6740

To; Mr. Mick GUERINONI.

JAB INDUSTRIES. PO Box 559. KUNUNURRA. 6743.

RE; APPLICATION FOR MISCELLANEOUS LICENCE 80/61 AND FOR MINING LEASE 80/618.

We at GUDA GUDA COMMUNITY, support your application for the above project. We feel that the works will flow on to our community.

Yours Faithfully.

Janet Gallagher

Janet Gallagher

Chair Person.

1st / 9 / 2011.

JOOROOK NGARNI ABORIGINAL CORPORATION

PO BOX 209, WYNDHAM, WA, 6740
Ph: (08) 9161 1300
(08) 9161 1133
Fax: (08) 9161 1118
email: admin.joorook@bigpond.com

Mr Mick Guerinoni.
JAB Industries.
PO Box 559. Kununurra WA 6743.

Dear Mick.
We at Joorook Ngarni are very pleased to hear of your proposed venture, and wish you well.
Joorook Ngarni fully supports your endeavors as this will in turn have a flow on effect that benefits the Wyndham town with local business and the prospects of local employment which is very much needed in this town.
Again Joorook Ngarni fully supports your proposal and any assistance we may be of help to you please contact the writer on the above numbers.

Yours Faithfully.

Ross Campbell.
Manager.
19/08/11.

Government of Western Australia

mainroads WESTERN AUSTRALIA

Enquiries: David D'Mello on 9158 4311
Our Ref:
Your Ref:

22 August 2011

Mr Mick Guerinoni
PO Box 559
KUNUNURRA WA 6743

Dear Mick

APPLICATION FOR MISCELLANEOUS LICENCE 80/61 AND FOR MINING LEASE 80/618.

Thank you for your correspondence dated 17 August 2011 outlining your application for the above Miscellaneous Licence and Mining Lease.

As per your informal meeting with Darren Jackson and Antonio Zelencic of our Kununurra office Main Roads supports your application in as much as it will improve the availability of aggregate and rock that conform to the relevant MRWA specifications for rock protection, sealing and concrete works associated with road and structures construction.

The availability of an additional strategic resource would aide in the delivery of projects in the Kimberley Region.

If you require any further information please contact me on 9158 4311 or 0429 370 708.

Yours sincerely

David D'Mello
A/REGIONAL MATERIALS MANAGER (KIMBERLEY)

Australian Business Excellence Awards Bronze Award 2007

Kimberley Region, Widehouse Street, Derby or PMB 859, Derby, Western Australia 6728
Telephone: (08) 9158 4333 Facsimile: (08) 9158 4334
Email: kimreg@mainroads.wa.gov.au Website: www.mainroads.wa.gov.au

JAB INDUSTRIES

PO BOX 559, KUNUNURRA, 6743
PH: 08 9168 1943 FAX: 08 9168 1909
'EXCAVATOR HIRE WITH ATTACHMENTS'
'DOMESTIC AND COMMERCIAL CLEANING'

July 13, 2012

Parry Creek Farm
PO Box 420
WYNDHAM WA 6740

Dear Terry White

RE: PIVOT HILL BASALT QUARRY: MINING PROPOSAL (REGISTRATION 29311) – M80/618(P) & L80/63(P)

I wish to advise that JAB Industries will, in the next 7 days, submit a proposal to the Department of Mines and Petroleum for approval to re-open the Pivot Hill Basalt Quarry. The quarry and leases under application as you know are located in the Parry Lagoons Nature Reserve 1.3km south west of the Parry Creek Farm.

The Proposal is to support the application for a Mining Lease – M80/618(P) and Miscellaneous Licence L80/63(P) for the existing access road. It describes a small scale operation centred on the existing quarry workings that would typically mine 10kt to 30kt per year with provision to go to 100kt per year. LOM would be approximately 10 years although this is dependent on local supply requirements. No permanent infrastructure would be built on site and the quarry would be operated on a campaign basis with the product removed via existing service roads to other sites.

Traffic movements on Parry Creek Road cannot be predicted with certainty but could be in the vicinity of 2 per day (90t trailers) for 180 days a year for an annual production of 30,000t. The facility may require DEC registration as a Mobile Screening Plant (Category 70) as greater than 5,000t but <50,000t annual production is proposed. Quarry operations will only be conducted on day shift and Jab Industries will work with you to ensure that advance warning is provided of the infrequent blast times.

Correspondence has been forwarded to the Department of Environment and Conservation in Kununurra and the Shire although it is not anticipated that the project will significantly impact on their activities.

Please do not hesitate to contact the undersigned on 0417966168 if further information is required in relation to this application.

Yours sincerely
JAB INDUSTRIES

Mick Guerinoni
DIRECTOR

PARRY CREEK FARM
TOURIST RESORT & CARAVAN PARK
Wyndham. The Kimberleys

P.O. Box 420
WYNDHAM WA 6740

Phone 08 91611139
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Email info@parrycreekfarm.com.au

ABN: 52 798 190 966

8/8/2012

JAB Industries
PO BOX 559
Kununurra WA 6743

Attention: Mr Mick Guerinoni

Dear Sir,

Re: PIVOT HILL Re-opening. Mining Proposal (Registration 29311) - M80618 (P) & L80/63(P)

Your correspondence of the 13th July 2012 has reference

For the record, I Terry White the owner of Parry Creek Farm object most strongly to your proposal to re open the old Pivot Hill Quarry. The objections are based on the following

NOISE. Parry Creek Farm is a very quiet social experience for most people who stay here. There is a large and plentiful amount of resident birdlife. Visitors from Australia and across the World make comments as to the diversity and quality of the bird population. Triple trailer road train trucks traversing up and back along Parry Creek Road will undoubtedly disturb the ambience which now exists on the property. Further it could also mean that the myriad of birdlife we currently enjoy may move further into the bush to escape the noise thus denying us and our guests the simple pleasure of observation. Of concern also would be the starting time each morning – trucks rumbling through each morning before 8am would impact on our guests who are after all on holidays or retirees who like to relax early in the morning and enjoy staying in bed longer than the working man. As such over time this loss of peace and serenity would reflect through-out the economics of the existing business.

TRAFFIC MOVEMENT. Your correspondence indicates that perhaps only two (2) trucks per day will carry materials from the quarry. However this is simplistic in the extreme and is only an average of the yearly tonnage of 30,000tn over a set number of days which does not represent truly what occurs in normality. Both the Civil and Construction industry's rely heavily on raw material suppliers being able to supply large amounts of materials on any one day. It would not be considered extreme for a supplier to deliver from 1000-2000tn of material in a given day. This would require a number of trucks to deliver not just two. Whilst it is understood that this wouldn't occur every day it would occur from time to time each month, and as such should not be ignored or hidden behind 'averaged' figures. Nor do the figures take into account the maximum tonnage of 100,000tn p.a. This tonnage in a given year would mean on average 7 trucks per day (14 road movements/day) using the same calculation basis and many more days every month of deliveries requiring 1000-2000tn per day. This traffic movement on a carriageway such as Parry Creek Road will impact on tourist numbers and wildlife respectively which in time may be reflected in the earnings of this business.

DUST. Casual observation demonstrates that with even just a single vehicle travelling along Parry Creek Road a reasonable amount of dust is generated. This is a safety issue even now forcing those following to drop back and anyone passing going the other way to do so with extreme care. To introduce triple trailer road trains across this road on a regular basis may raise the incident and near miss rate alarmingly. Further with the amount of dust raised by a triple road train dust clouds will drift across our property creating issues with our guests, our mango orchard and ourselves as our personal accommodation is only 200 metres from the roadway. Again given time the impact of the dust generated by these large triple trailer trucks may be reflected in the business.

PARRY CREEK ROAD. The construction of this road is fragile at best. Each wet season the road is inundated with flood water and numerous 'wash-aways' and holes appear in the surface. At the end of the 'Wet' the sections damaged by the floods are repaired using a low grade fill sourced nearby. The fill is by no means good quality and in sections turns to 'buildust' rapidly and is prone to corrugation. That

aside the road is fit for purpose as the road currently does not have any heavily loaded vehicles travelling over it. However should multi wheeled triple road trains weighing in excess of 100 tonnes be introduced to this fragile ribbon of road then it would not take long for it to deteriorate to being near to impassable in places. This in turn would deter the less adventurous tourist from visiting the Parry Creek Farm as we already have issues with some people now not wanting to travel the 7km of dirt plus may impact on the cost of any delivery's to the farm.

BLASTING. Adding to the noise issue commented on previously is the infrequent blasting mentioned in your letter. Again this will impact on wildlife and guests comfort, not to mention what ground vibration damage might occur to our onsite structures given some of these are only 800 metres from the quarry.

ACCESS ROAD (L80/63[P]). This existing track is actually the "Old Halls Creek" road. Tourists looking for something a little different travel through to the Wyndham road along here. We often send people that way if asked for alternatives. However now they may be confronted with very large trucks exiting the quarry and swinging onto the Parry Creek Road. Neither the road nor the "T" junction where the road meets Parry Creek Road are currently capable of accommodating these large vehicles plus with all the dust generated by the multi wheeled triple road trains traversing the track a real danger of increased collisions between truck and light vehicle will exist.

In summary we consider that the introduction of a quarrying operation to this area would not be beneficial given there are currently 3 other operators in the Shire area who can service the demand. Additionally the introduction of the quarry with its inherent noise and dust and increased road traffic into a predominantly tourist district may have a large impact on visitor numbers and thus a negative impact on this business.

As such we oppose the proposal to re-open the quarry at Pivot Hill in the Parrys Lagoons Nature Reserve.

Sincerely yours

Terry White
Director
Parry Creek Farm

Cc DMP Perth
Cc DEC Kununurra
Cc Shire of Wyndham East Kimberley

SHIRE of WYNDHAM | EAST KIMBERLEY

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Our Ref:ED.03.2:TP2553
Your Ref:
Enquiries: Peter Kerp

18/03/2013

JAB Industries
PO Box 559
KUNUNURRA WA 6743

Dear Mick,

Pivot Hill Basalt Quarry – Request for Approval to Haul Aggregate on Old Halls Creek and Parry Creek Road to GNH

I refer to your recent correspondence dated 13 March 2013 where you provided advice to the Department of Mines and Petroleum seeking their consideration and approval to re-open the Pivot Hill Basalt Quarry on Parry Creek Road located 7.5km off the Great Northern Highway turn-off.

Please be advised the Shire is supportive of the application in that it will provide a good quality hard rock resource material for the civil construction industry, particularly for road building purposes.

The Shire is in receipt of correspondence from the tourist operator objecting to the proposed mining operation at Pivot Hill.

There are a number of operational issues that require addressing by the Proponent JAB Industries that impact adversely on Parry Creek Road pavement and the ambience of the adjoining Parry Creek Nature Reserve tourism facility.

Your proposal identifies the use of both a mobile crushing plant and screen plant which the Shire understands will require a Works Approval issued by the DEC to manage environmental issues.

In this instance the Shire has no objection to the proposal subject to compliance by JAB Industries to the following conditions:-

1. Parry Creek Road is maintained to provide motorists with a safe driving surface through the duration of the hauling operation and any damage, repairs or remedial works required to be carried out will be undertaken at JAB Industries' costs.
2. Consistent and regular water application is applied by JAB Industries to Parry Creek Road pavement surface whilst operating as a haul route with consideration of a dust suppressant application to improve the performance of the water required suppress large amounts of air born dust.

SHIRE of WYNDHAM | EAST KIMBERLEY

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3. Erection of 'truck entry' signs on both ends Parry Creek Road at the haul road junction to advise motorists of truck movements along the public road.
4. The internal haul route road off Parry Creek is watered to minimise dust nuisance.
5. Take all reasonable steps to prevent the emission of dust, noise, vibrations and other forms of nuisance from the quarry site.
6. Store or permit to store any explosives, or explosive devices on the site other than with the approval of the Department of Mines and Petroleum.
7. Use of explosives to blast/fracture rock is supervised by a licensed shot firer.
8. Permit issued by Main Roads WA to operate long/heavy vehicles on Parry Creek Road between Great Northern Highway and the internal haul route road.

Should you have any queries please contact Peter Kerp, Manager Engineering Services, on telephone 9168 4100

Yours sincerely

Gary Gaffney
Chief Executive Officer

KUNUNURRA 115 COOLIBAH DRIVE WYNDHAM KOOLAMA STREET LOCATIONS SWEK HOURS 8.00AM - 4.00PM MON-FRI

SHIRE of WYNDHAM | EAST KIMBERLEY

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Our Ref:ED.03.2:TP2553
Your Ref:
Enquiries: Peter Kerp

15/04/2013

Mr Mick Guerinoni
JAB Industries
PO Box 559
KUNUNURRA WA 6743

Dear Mick,

I refer to your recent request that Main Roads WA require vehicle configuration you propose to utilise on Parry Creek Road for Shire consideration of concessional load permit being granted for cartage of basalt road base /sealing materials.

I wish to advise that the Shire has no objection at this present time to recommend concessional load permit being issued by MRWA for Parry Creek Road between Great Northern Highway and the internal haul road to Pivot Hill Basalt Quarry.

The vehicle configuration proposed is made up of prime mover with triple side tippers.

Yours sincerely

Kevin Hannagan
Director Infrastructure Services

JAB INDUSTRIES

PO BOX 559, KUNUNURRA, 6743
PH: 08 9168 1943 FAX: 08 9168 1909
'EXCAVATOR HIRE WITH ATTACHMENTS'
'DOMESTIC AND COMMERCIAL CLEANING'

Dear Sam,

M80/618

Thank you for your emails regarding the proposed basalt rock quarry near Wyndham

I stress this is not new. It is an old quarry and a disturbed site. Extraction of material from this site is not going to detract from the conservation elements of the Parry Creek Nature Reserve. Road traffic, visitors to the Reserve, fire and cane toads are significant and genuine greater impacts. The proposed quarry is not.

It is a great frustration that I have been attempting to gain access to the material in this site 6 years now.

The State Government through Mr Peter Stubbs, the Director for the Ord East Kimberley Expansion has already attempted to provide you with context for future demand for this rock material. The need is real. Even in the Ord Final Agreement (native title) for this region allowance is made for the extraction of raw materials.

The site has been surveyed by recognised botanists, and no rare plants were found

I am trying to remain positive, but a person who runs a business which helps grow the Kimberley region it is hard not to view the lack of progress as Government procrastination

I am not inclined to provide costs estimate for transport and the like. This is very competitive business. The State Government would I assume already have such estimates from the variety of freight studies it has done in recent years. You may like to follow this up with the Department of Transport and the Department of Planning.

Regards

Mick Guerinoni

4 February 2013-02-03

jabind@bigpond.com

Appendix C

ENVIRONMENTAL DATABASE REPORTS

- NatureMap Species Report
- EPBC Act Protected Matters Report

NatureMap
Mapping Western Australia's Biodiversity

NatureMap Species Report

Created By Colin Woolard on 26/05/2013

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 128°16' 21" E,15°36' 20" S
Buffer 5km
Group By Conservation Status

Conservation Status	Species	Records
Rare or likely to become extinct	1	2
Protected under international agreement	8	90
Other specially protected fauna	1	1
Priority 1	2	3
Priority 2	1	1
Priority 3	1	1
Priority 4	4	18
Non-conservation taxon	197	1397
TOTAL	**215**	**1513**

	Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Rare or likely to become extinct					
1.	24093	*Dasyurus hallucatus (Northern Quoll)*		T	
Protected under international agreement					
2.	25558	*Ardea ibis (Cattle Egret)*		IA	
3.	41324	*Ardea modesta (Eastern Great Egret)*		IA	
4.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
5.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*		IA	
6.	24598	*Merops ornatus (Rainbow Bee-eater)*		IA	
7.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
8.	24808	*Tringa nebularia (Common Greenshank)*		IA	
9.	24809	*Tringa stagnatilis (Marsh Sandpiper)*		IA	
Other specially protected fauna					
10.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
Priority 1					
11.	12513	*Goodenia brachypoda*		P1	
12.	7152	*Utricularia stellaris*		P1	
Priority 2					
13.	7124	*Utricularia aurea (Golden Bladderwort)*		P2	
Priority 3					
14.	1	*Psilotum nudum*		P3	
Priority 4					
15.	24610	*Ardeotis australis (Australian Bustard)*		P4	
16.	24359	*Burhinus grallarius (Bush Stone-curlew)*		P4	
17.	24632	*Erythrura gouldiae (Gouldian Finch)*		P4	
18.	24633	*Heteromunia pectoralis (Pictorella Mannikin)*		P4	
Non-conservation taxon					
19.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
20.	25536	*Accipiter fasciatus (Brown Goshawk)*			
21.	25537	*Accipiter novaehollandiae (Grey Goshawk)*			
22.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
23.	3681	*Aeschynomene villosa*	Y		
24.	5278	*Ammannia multiflora*			
25.	24312	*Anas gracilis (Grey Teal)*			
26.	24316	*Anas superciliosa (Pacific Black Duck)*			
27.	24317	*Anseranas semipalmata (Magpie Goose, Pied Goose)*			
28.	24719	*Aprosmictus erythropterus (Red-winged Parrot)*			
29.	24285	*Aquila audax (Wedge-tailed Eagle)*			

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NatureMap
Mapping Western Australia's biodiversity

	Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
30.	25559	*Ardea intermedia (Intermediate Egret)*			
31.	24341	*Ardea pacifica (White-necked Heron)*			
32.	12063	*Aristida holathera var. holathera*			
33.	215	*Aristida latifolia (Feathertop Wiregrass)*			
34.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
35.	25567	*Artamus leucorynchus (White-breasted Woodswallow)*			
36.	24355	*Artamus minor (Little Woodswallow)*			
37.	24318	*Aythya australis (Hardhead)*			
38.	12061	*Barringtonia acutangula subsp. acutangula*			
39.	2773	*Boerhavia paludosa*			
40.	16329	*Bothriochloe bladhii subsp. bladhii*			
41.	1572	*Burmannia juncea*			
42.	25713	*Cacatua galerita (Sulphur-crested Cockatoo)*			
43.	25716	*Cacatua sanguinea (Little Corella)*			
44.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
45.	25599	*Cacomantis variolosus (Brush Cuckoo)*			
46.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
47.	11328	*Calhormion umbellatum subsp. moniliforme*			
48.	25600	*Centropus phasianinus (Pheasant Coucal)*			
49.	40	*Cheilanthes pumilio*			
50.	42382	*Chelodina burrungandjii (Sandstone snake-necked Turtle)*			
51.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
52.	24834	*Cinclorhamphus mathewsi (Rufous Songlark)*			
53.	24288	*Circus approximans (Swamp Harrier)*			
54.	24289	*Circus assimilis (Spotted Harrier)*			
55.	24565	*Cissomela pectoralis (Banded Honeyeater)*			
56.	25756	*Cisticola exilis (Golden-headed Cisticola)*			
57.	25582	*Climacteris melanura (Black-tailed Treecreeper)*			
58.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
59.	24566	*Conopophila rufogularis (Rufous-throated Honeyeater)*			
60.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
61.	25569	*Coracina papuensis (White-bellied Cuckoo-shrike, Little Cuckoo-shrike)*			
62.	25593	*Corvus orru (Torresian Crow)*			
63.	25701	*Coturnix ypsilophora (Brown Quail)*			
64.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
65.	25595	*Cracticus tibicen (Australian Magpie)*			
66.	19565	*Cressa australis*			
67.	1490	*Crinum angustifolium*			
68.	20180	*Crotalaria montana var. angustifolia*			
69.	25079	*Ctenotus tantillus*			
70.	25374	*Cyclorana longipes (Long-footed Frog)*			
71.	770	*Cyperus alopecuroides*			
72.	25547	*Dacelo leachii (Blue-winged Kookaburra)*			
73.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
74.	24324	*Dendrocygna arcuata (Wandering Whistling Duck, Chestnut Whistling Duck)*			
75.	24325	*Dendrocygna eytoni (Plumed Whistling Duck)*			
76.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
77.	13740	*Dichanthium sericeum subsp. polystachyum*			
78.	-18007	*Emydura sp.*			
79.	25578	*Ephippiorhynchus asiaticus (Black-necked Stork)*			
80.	4629	*Euphorbia hirta (Asthma Plant)*	Y		
81.	15903	*Euphorbia sp. B Kimberley Flora (B.J. Carter 629)*			
82.	25591	*Eurystomus orientalis (Dollarbird)*			
83.	25621	*Falco berigora (Brown Falcon)*			
84.	25622	*Falco cenchroides (Australian Kestrel)*			
85.	25623	*Falco longipennis (Australian Hobby)*			
86.	31578	*Ficus aculeata var. indecora (Ranji)*			
87.	15121	*Fimbristylis blepharolepis*			
88.	859	*Fimbristylis littoralis*			
89.	25727	*Fulica atra (Eurasian Coot)*			
90.	24401	*Geopelia cuneata (Diamond Dove)*			
91.	24402	*Geopelia humeralis (Bar-shouldered Dove)*			
92.	25585	*Geopelia striata (Zebra Dove)*			
93.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
94.	11065	*Germainia truncatiglumis*			
95.	24275	*Gerygone olivacea subsp. rogersi (White-throated Gerygone)*			
96.	2835	*Glinus lotoides (Hairy Carpet Weed)*			
97.	2836	*Glinus oppositifolius*			
98.	24443	*Grallina cyanoleuca (Magpie-lark)*			
99.	24484	*Grus rubicunda (Brolga)*			

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NatureMap

	Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
100.	25541	*Haliastur indus (Brahminy Kite)*			
101.	24295	*Haliastur sphenurus (Whistling Kite)*			
102.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
103.	25734	*Himantopus himantopus (Black-winged Stilt)*			
104.	168	*Hydrilla verticillata (Water Thyme)*			
105.	7170	*Hygrophila angustifolia*			
106.	6623	*Ipomoea coptica*			
107.	6625	*Ipomoea diamantinensis*			
108.	25005	*Lialis burtonis*			
109.	25661	*Lichmera indistincta (Brown Honeyeater)*			
110.	25385	*Litoria inermis (Bumpy Rocket Frog)*			
111.	25683	*Lonchura castaneothorax (Chestnut-breasted Mannikin)*			
112.	6136	*Ludwigia perennis*			
113.	24135	*Macropus robustus subsp. erubescens (Euro, Biggada)*			
114.	25653	*Malurus melanocephalus (Red-backed Fairy-wren)*			
115.	73	*Marsilea angustifolia (Narrow-leaf Nardoo)*			
116.	77	*Marsilea mutica*			
117.	25759	*Megalurus timoriensis (Tawny Grassbird)*			
118.	5901	*Melaleuca dealbata (Karnbor)*			
119.	5932	*Melaleuca leucadendra*			
120.	4516	*Melia azedarach (White Cedar)*			
121.	24585	*Melithreptus albogularis (White-throated Honeyeater)*			
122.	25665	*Melithreptus gularis (Black-chinned Honeyeater)*			
123.	5052	*Melochia corchorifolia*			
124.	6648	*Merremia hederacea*			
125.	25693	*Microeca fascinans (Jacky Winter)*			
126.	25694	*Microeca flavigaster (Lemon-breasted Flycatcher)*			
127.	31374	*Microstachys chamaelea*			
128.	25542	*Milvus migrans (Black Kite)*			
129.	24190	*Miniopterus schreibersii subsp. oceanae (Common Bentwing-bat)*			
130.	25545	*Mirafra javanica (Horsfield's Bushlark, Singing Bushlark)*			
131.	25609	*Myiagra alecto (Shining Flycatcher)*			
132.	25610	*Myiagra inquieta (Restless Flycatcher)*			
133.	25611	*Myiagra rubecula (Leaden Flycatcher)*			
134.	25684	*Neochmia phaeton (Crimson Finch)*			
135.	25685	*Neochmia ruficauda (Star Finch)*			
136.	24327	*Nettapus pulchellus (Green Pygmy-goose)*			
137.	25747	*Ninox connivens (Barking Owl)*			
138.	25748	*Ninox novaeseelandiae (Boobook Owl)*			
139.	25198	*Notoscincus ornatus subsp. wotjulum*			
140.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
141.	19830	*Nymphaea macrosperma*			
142.	24742	*Nymphicus hollandicus (Cockatiel)*			
143.	6547	*Nymphoides crenata (Wavy Marshwort)*			
144.	6549	*Nymphoides indica (Marshwort)*			
145.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
146.	24138	*Onychogalea unguifera (Northern Nailtail Wallaby, Karrabul)*			
147.	496	*Ophiuros exaltatus (Canegrass)*			
148.	24607	*Oriolus flavocinctus (Yellow Oriole)*			
149.	24608	*Oriolus sagittatus (Olive-backed Oriole)*			
150.	168	*Ottelia ovalifolia (Swamp Lily)*			
151.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
152.	508	*Panicum mindanaense*			
153.	24627	*Pardalotus rubricatus (Red-browed Pardalote)*			
154.	25682	*Pardalotus striatus (Striated Pardalote)*			
155.	521	*Paspalidium gracile (Slender Panic)*			
156.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
157.	13928	*Persicaria attenuata subsp. attenuata*			
158.	24156	*Petaurus breviceps subsp. ariel (Sugar Glider)*			
159.	24140	*Petrogale brachyotis (Short-eared Rock-wallaby)*			
160.	25697	*Phalacrocorax carbo (Great Cormorant)*			
161.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
162.	25699	*Phalacrocorax varius (Pied Cormorant)*			
163.	24409	*Phaps chalcoptera (Common Bronzewing)*			
164.	4680	*Phyllanthus maderaspatensis*			
165.	4684	*Phyllanthus reticulatus*			
166.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
167.	24842	*Platalea regia (Royal Spoonbill)*			
168.	25703	*Podargus strigoides (Tawny Frogmouth)*			
169.	24661	*Poecilodryas superciliosa subsp. cerviniventris (Buff-sided Robin)*			

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NatureMap
Mapping Western Australia's biodiversity

	Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
170.	24643	*Poephila acuticauda (Long-tailed Finch)*			
171.	25688	*Poephila personata (Masked Finch)*			
172.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
173.	24684	*Pomatostomus temporalis subsp. rubeculus (Grey-crowned Babbler)*			
174.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
175.	24234	*Pseudomys delicatulus (Delicate Mouse)*			
176.	24239	*Pseudomys nanus (Western Chestnut Mouse)*			
177.	24172	*Pteropus alecto (Black Flying-fox)*			
178.	24173	*Pteropus scapulatus (Little Red Flying-fox)*			
179.	25725	*Ptilonorhynchus nuchalis (Great Bowerbird)*			
180.	41001	*Ptilotus nobilis subsp. nobilis (Yellow Tails)*			
181.	24597	*Ramsayornis fasciatus (Bar-breasted Honeyeater)*			
182.	24246	*Rattus tunneyi (Pale Field-rat)*			
183.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
184.	-15188	*Scatophagus argus*			
185.	967	*Schoenoplectus praelongatus*			
186.	5	*Selaginella ciliaris*			
187.	4198	*Sesbania formosa (White Dragon Tree)*			
188.	7001	*Solanum diolcum (Gilu)*			
189.	28346	*Spermacoce gibba*			
190.	24482	*Stiltia isabella (Australian Pratincole)*			
191.	7792	*Stylidium rotundifolium*			
192.	12353	*Stylosanthes hamata (Verano Stylo)*	Y		
193.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
194.	25552	*Tadorna radjah (Radjah Shelduck)*			
195.	30872	*Taeniopygia bichenovii (Double-barred Finch)*			
196.	30873	*Taeniopygia bichenovii subsp. annulosa (Double-barred Finch)*			
197.	30870	*Taeniopygia guttata (Zebra Finch)*			
198.	24175	*Taphozous georgianus (Common Sheathtail-bat)*			
199.	33357	*Tecticornia indica subsp. jolacea*			
200.	33318	*Tecticornia indica subsp. leiostachya (Samphire)*			
201.	24844	*Threskiornis moluccа (Australian White Ibis)*			
202.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
203.	25548	*Todiramphus chloris (Collared Kingfisher)*			
204.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
205.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
206.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
207.	24851	*Turnix velox (Little Button-quail)*			
208.	718	*Urochloa pubigera*			
209.	12493	*Utricularia gibba*			
210.	17868	*Vallisneria nana*			
211.	25577	*Vanellus miles (Masked Lapwing)*			
212.	24203	*Vespadelus caurinus (Western Cave Bat)*			
213.	-17894	*Vespadelus sp.*			
214.	24248	*Zyzomys argurus (Common Rock-rat)*			
215.	24250	*Zyzomys woodwardi (Kimberley Rock-rat)*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap is a collaborative project of the Department of Environment and Conservation, Western Australia, and the Western Australian Museum

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EPBC Act Protected Matters Report

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 30/05/13 17:02:48

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 5.0Km

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	12
Listed Migratory Species:	20

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate.

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

Place on the RNE:	4
State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	13
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (RAMSAR)

[Resource Information]

Name	Proximity
Ord river floodplain	Within Ramsar site

Listed Threatened Species

[Resource Information]

Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Malurus coronatus coronatus Purple-crowned Fairy-wren (western) [64442]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
Dasyurus hallucatus Northern Quoll [331]	Endangered	Species or species habitat likely to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheathtail Bat [66889]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
Sharks		
Pristis microdon Freshwater Sawfish [66182]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Marine Species		
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Coracina tenuirostris melvillensis Melville Cicadabird [26187]		Species or species habitat may occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Poecilodryas superciliosa cerviniventris Derby White-browed Robin [26190]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Vulnerable*	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Vulnerable*	Species or species habitat likely to occur within area
Stiltia isabella Australian Pratincole [818]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Reptiles		
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnston's River Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Extra Information

Places on the RNE

[Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Ord River Floodplain	WA	Indicative Place
Parry Lagoons Nature Reserve	WA	Indicative Place
Palm Springs Reserve (former)	WA	Registered
Parry Lagoon - Ascot - Parry's Creek Area Reserves	WA	Registered

State and Territory Reserves

[Resource Information]

Name	State
Parry Lagoons	WA
Unnamed WA48482	WA

Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Frogs		
Bufo marinus Cane Toad [1772]		Species or species habitat likely to occur within area
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Plants		
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat may occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Vachellia nilotica Prickly Acacia, Blackthorn, Prickly Mimosa, Black Piquant, Babul [84351]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Parry Floodplain	WA

Coordinates

-15.59443 128.27677

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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Appendix D

HERITAGE REPORTS

- DIA Site Register Report
- Heritage Advice
  – Guda Guda Community

Government of **Western Australia**
Department of **Indigenous Affairs**

Aboriginal Heritage Inquiry System

Aboriginal Sites Database

Search Criteria

0 sites in mining tenement 'M 8000618'

Disclaimer

Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist. Consultation with Aboriginal communities is on-going to identify additional sites. The AHA protects all Aboriginal sites in Western Australia whether or not they are registered.

Copyright

Legend

Restriction

- **N** No restriction
- **M** Male access only
- **F** Female access

Access

- **C** Closed
- **O** Open
- **V** Vulnerable

Coordinate Accuracy

Accuracy is shown as a code in brackets following the site coordinates.

- **[Reliable]** The spatial information recorded in the site file is deemed to be reliable, due to methods of capture.
- **[Unreliable]** The spatial information recorded in the site file is deemed to be unreliable due to errors of spatial data capture and/or quality of spatial information reported.

Status

L - Lodged	→	IA - Information Assessed	→	ACMC Decision Made
Information lodged, awaiting assessment		Information Awaiting ACMC Decision Assessment Only		**R - Registered Site** **I - Insufficient information** **S - Stored Data**

***Explanation of Assessment**

Sites lodged with the Department are assessed under the direction of the Registrar of Aboriginal Sites. These are not the final assessment.

Final assessment and decisions will be determined by the Aboriginal Cultural Material Committee (ACMC).

Spatial Accuracy

Index coordinates are indicative locations and may not necessarily represent the centre of sites, especially for sites with an access code "closed" or "vulnerable". Map coordinates (Lat/Long) and (Easting/Northing) are based on the GDA 94 datum. The Easting / Northing map grid can be across one or more zones. The zone is indicated for each Easting on the map, i.e. '5000000:Z50' means Easting=5000000, Zone=50

Sites Shown on Maps

Site boundaries may not appear on maps at low zoom levels

Report created 07 Aug 2011 16:08:29. Identifier: 822861.

Page 1

Government of **Western Australia**
Department of **Indigenous Affairs**

Aboriginal Heritage Inquiry System
Aboriginal Sites Database

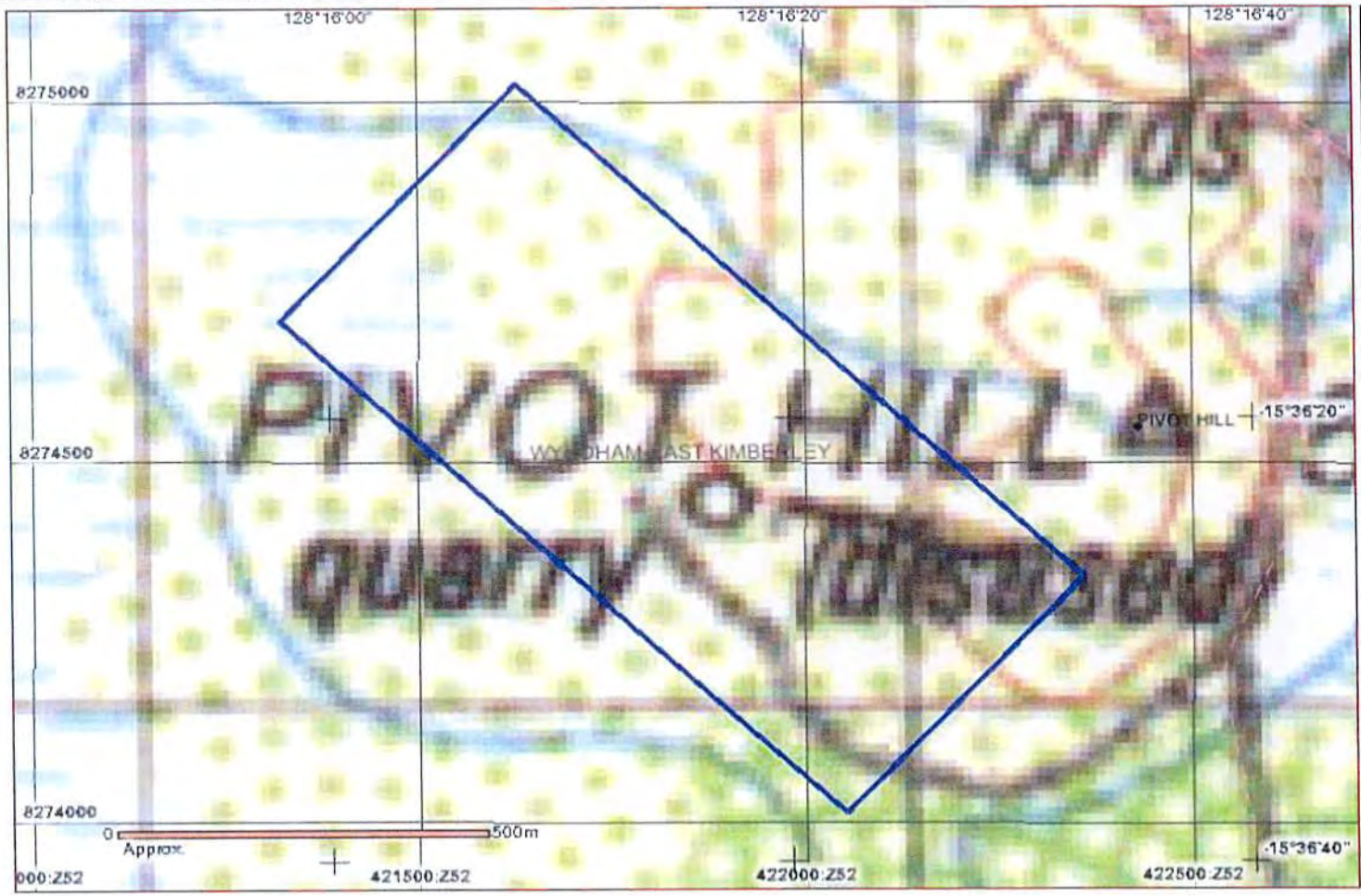
List of Registered Aboriginal Sites with Map

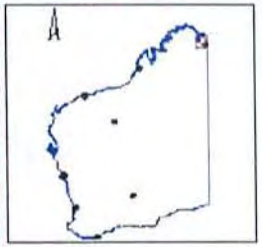
No results

Government of Western Australia
Department of Indigenous Affairs

Aboriginal Heritage Inquiry System

Aboriginal Sites Database





Legend

Selected Heritage Sites

- Registered Sites
- Town
- Map Area
- Search Area

Report created 07 Aug 2011 16:08:29. Identifier: 822861.

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Government of **Western Australia**
Department of **Indigenous Affairs**

Aboriginal Heritage Inquiry System

Aboriginal Sites Database

Search Criteria

0 sites in mining tenement 'L 8000063'.

Disclaimer

Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist. Consultation with Aboriginal communities is on-going to identify additional sites. The AHA protects all Aboriginal sites in Western Australia whether or not they are registered.

Copyright

Legend

Restriction

- N No restriction
- M Male access only
- F Female access

Access

- C Closed
- O Open
- V Vulnerable

Coordinate Accuracy

Accuracy is shown as a code in brackets following the site coordinates.

- **[Reliable]** The spatial information recorded in the site file is deemed to be reliable, due to methods of capture.
- **[Unreliable]** The spatial information recorded in the site file is deemed to be unreliable due to errors of spatial data capture and/or quality of spatial information reported.

Status

L - Lodged	→	IA - Information Assessed	→	ACMC Decision Made
Information lodged, awaiting assessment		Information Awaiting ACMC Decision Assessment Only		**R - Registered Site** **I - Insufficient information** **S - Stored Data**

***Explanation of Assessment**

Sites lodged with the Department are assessed under the direction of the Registrar of Aboriginal Sites. These are not the final assessment.

Final assessment and decisions will be determined by the Aboriginal Cultural Material Committee (ACMC).

Spatial Accuracy

Index coordinates are indicative locations and may not necessarily represent the centre of sites, especially for sites with an access code "closed" or "vulnerable". Map coordinates (Lat/Long) and (Easting/Northing) are based on the GDA 94 datum. The Easting / Northing map grid can be across one or more zones. The zone is indicated for each Easting on the map, i.e. '5000000:Z50' means Easting=5000000, Zone=50.

Sites Shown on Maps

Site boundaries may not appear on maps at low zoom levels

Report created 08 Aug 2011 10:41:30. Identifier: 823022.

Page 1

Government of Western Australia
Department of Indigenous Affairs

Aboriginal Heritage Inquiry System
Aboriginal Sites Database

List of Other Heritage Places with Map

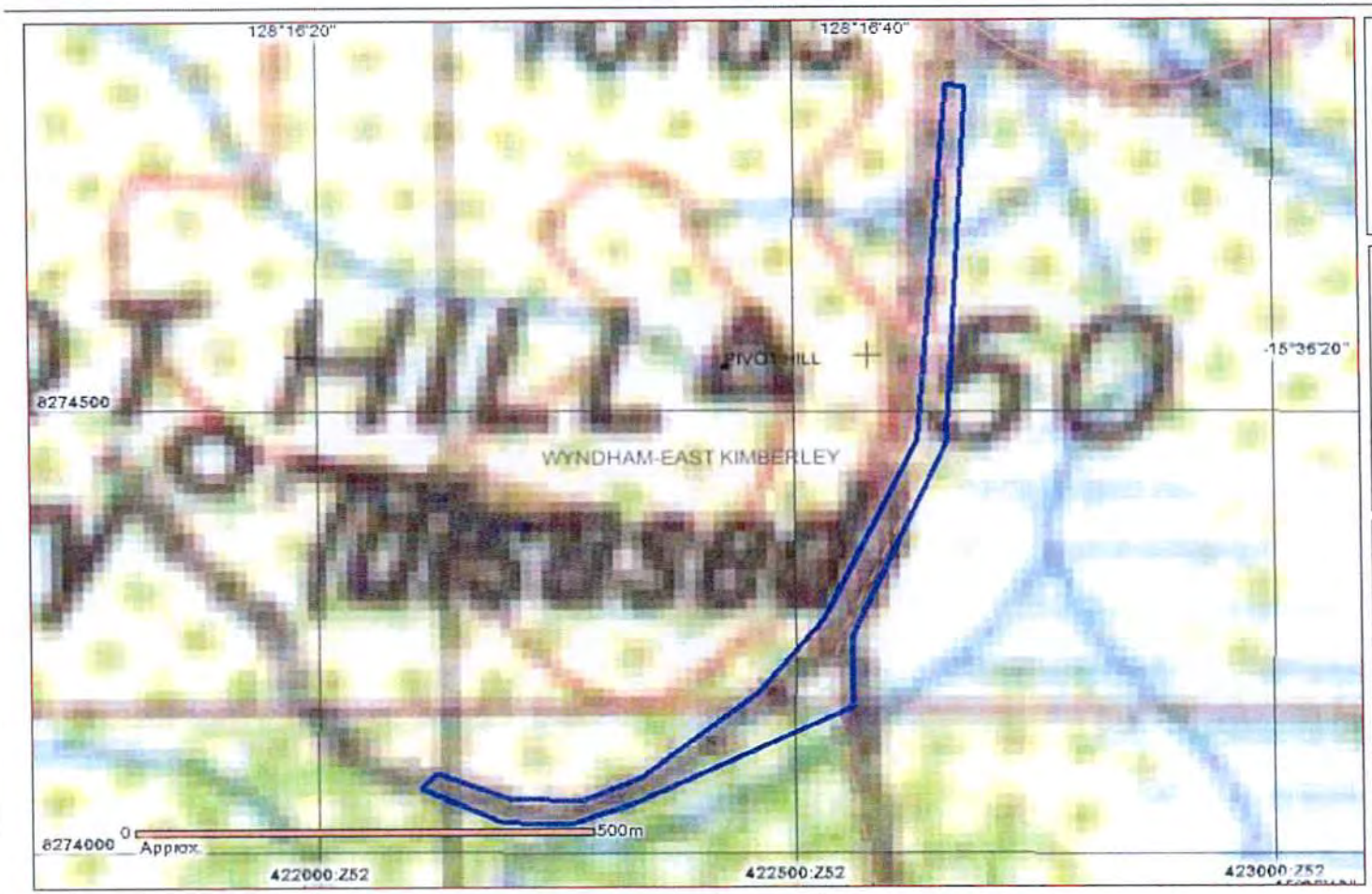
No results

Report created 08 Aug 2011 10:41:30. Identifier: 823022.
Page 4

Government of Western Australia
Department of Indigenous Affairs

Aboriginal Heritage Inquiry System

Aboriginal Sites Database



Legend

Selected Heritage Sites

Other Heritage Places

Town

Map Area

Search Area

Report created 08 Aug 2011 10:41:30. Identifier: 823022.

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PIVOT HILL QUARRY – MINE AND INFRASTRUCTURE AREAS
PROJECT HERITAGE ADVICE

CLIENT	Mr Mick Guerinoni
SURVEY AREA	The area surveyed surrounds the existing Pivot Hill Quarry, Borrow Site and access road on M80/618. The Project Mine Area boundary is marked by dotted lines on Drawing WCPL-2498-1-3. The boundary of the existing Access Road (which partially includes the Old Halls Creek Road), is located within Miscellaneous Lease 80/63 and extends from the intersection with the Parry Creek Road south to the Mine Lease. The boundary is defined in red on the attached Plan.
SURVEY FIELD DATES	13/05/2013
ABORIGINAL CONSULTANTS	JANET GALLAGHER Janet Gallagher DEREK GALLAGHER Derek Gallagher
SURVEY ENVIRONMENT	The survey area consists of flat vegetated terrain rising to an easterly trending low basalt ridge terminating at the Pivot Hill summit and the verges of the Old Halls Creek Road to the intersection with the Parry Creek Road. Vegetation communities cover Plain, Footslope and Crest terrain units as described by Botanical North (2012) and are predominantly scattered open woodland over grassland. Basalt outcrop is common.
LAND USE	Nature Conservation - the quarry is within Parrys Lagoon Nature Reserve and Mining.
ABORIGINAL SITES LOCATED OR IDENTIFIED	No previously recorded Aboriginal sites are identified on the DIA Aboriginal Site Register. No archaeological or ethnographic sites were located or identified within the survey areas during the current survey.
SURVEY RECOMMENDATIONS	The heritage survey of the nominated area at Pivot Hill Quarry and infrastructure area is completed. The traditional owners involved in the survey were satisfied that no Aboriginal sites would be impacted by the resumption of quarrying and associated activities in the survey area.
SIGNATURE & DATE	DEREK GALLAGHER 13TH May 2013 Janet Gallagher
ATTACHMENT	Drawing WCPL-2498-1-3.

Appendix E

TECHNICAL REPORTS

- Pivot Hill Vegetation and Fauna Survey
- Rock Analysis and Characterisation

Pivot Hill Vegetation and Fauna Survey

Botanical North 2012

Assessment of the flora and fauna within Pivot Hill Mining Tenement M80/618.

Prepared for:
JAB Industries

March 2012

Prepared by
Basil Byrne (BSc Hons – Zoology/Botany)

Botanist

Botanical North

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Contents

Figures

Tables