

**PRELIMINARY ENVIRONMENTAL IMPACT
ASSESSMENT and ENVIRONMENTAL
MANAGEMENT PLAN
Ellendale Gravel Extraction Area**



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Date: January 2008

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ELLENDALE GRAVEL EXTRACTION AREA

PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT

1. INTRODUCTION

Main Roads Kimberley recently proposed to upgrade the Ellendale section of the Great Northern Highway (SLK 2415.3 – 2435.4) by rehabilitating and widening the existing pavement overlay. An EIA & EMP has been undertaken for the Ellendale section with no significant environmental issues of concern. Although the EIA & EMP investigated a number of material areas further clearing and ground disturbance will be required to extend two existing gravel pits.

The proposed works are located within the Shire of Derby-West Kimberley.

2. BACKGROUND

Great Northern Highway forms part of the National Highway linking Perth to the north of the State and the Northern Territory. Growth in the mining, cattle and tourism industries in the region has resulted in increased traffic volume along the Highway. Expansion of the Ord River Irrigation Area and the fast growing tourism and mining industries in the East Kimberley are expected to further intensify the volume of traffic and freight carried on this road.

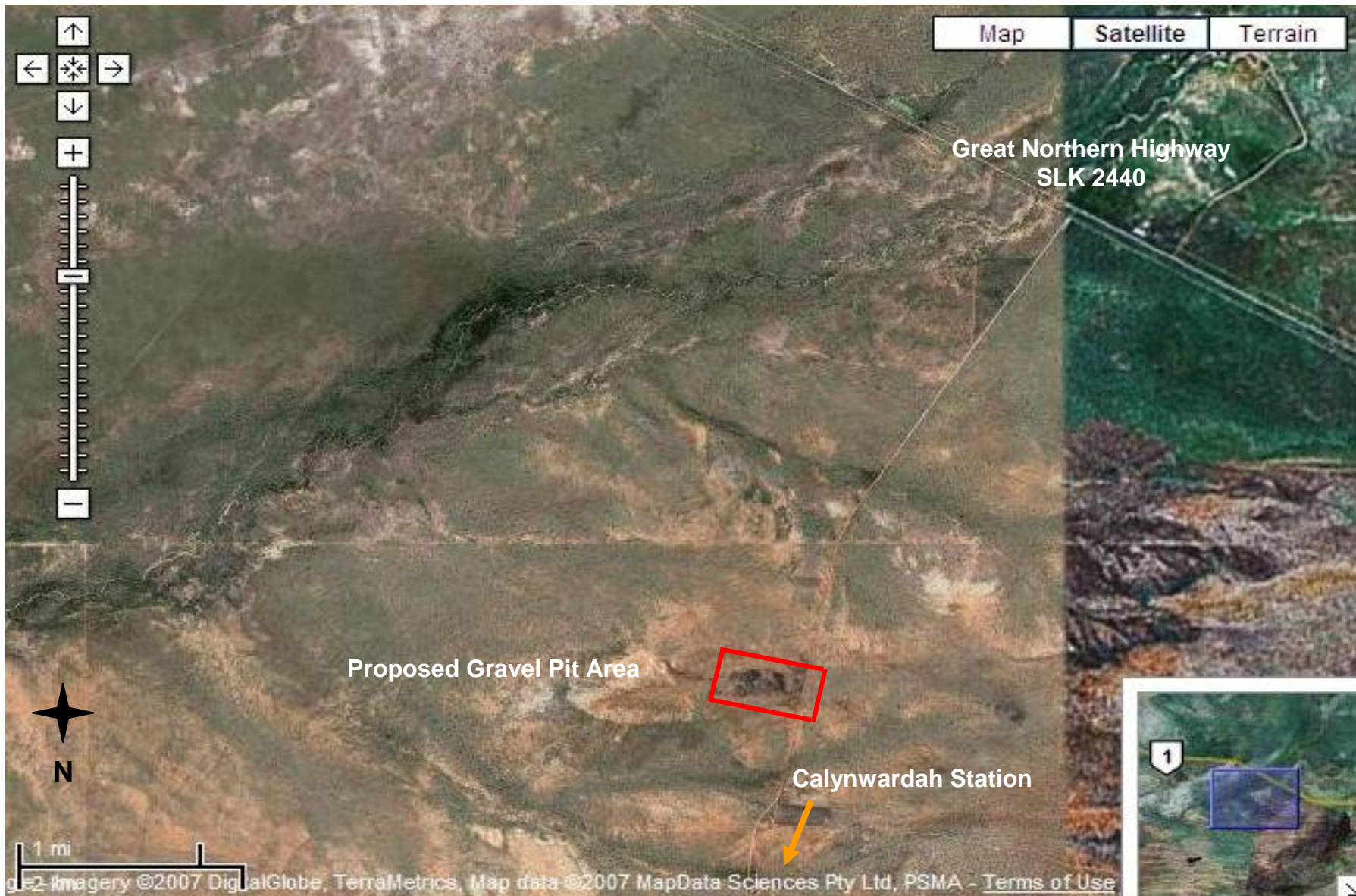
In the next few years various sections of the Great Northern Highway are to be rehabilitated and widened to restore road condition. This work will ultimately reduce maintenance costs, road user costs and improve safety. Rehabilitation of the Ellendale section of the Highway involves extraction of gravel from a number of pits. Although Main Roads has already gained environmental approval to clear native vegetation for the extraction of gravel from a number of pits, extraction of gravel from another pit is necessary for the road rehabilitation works.

As per Main Roads' Environmental Assessment and Approval process, the Low Impact Environmental Screening Checklist has been completed for the proposal, refer Appendix A. As the project will involve ground disturbance and clearing of native vegetation the project will require further environmental investigations such as the preparation of a project specific Preliminary Environmental Impact Assessment. This report fulfils this requirement.

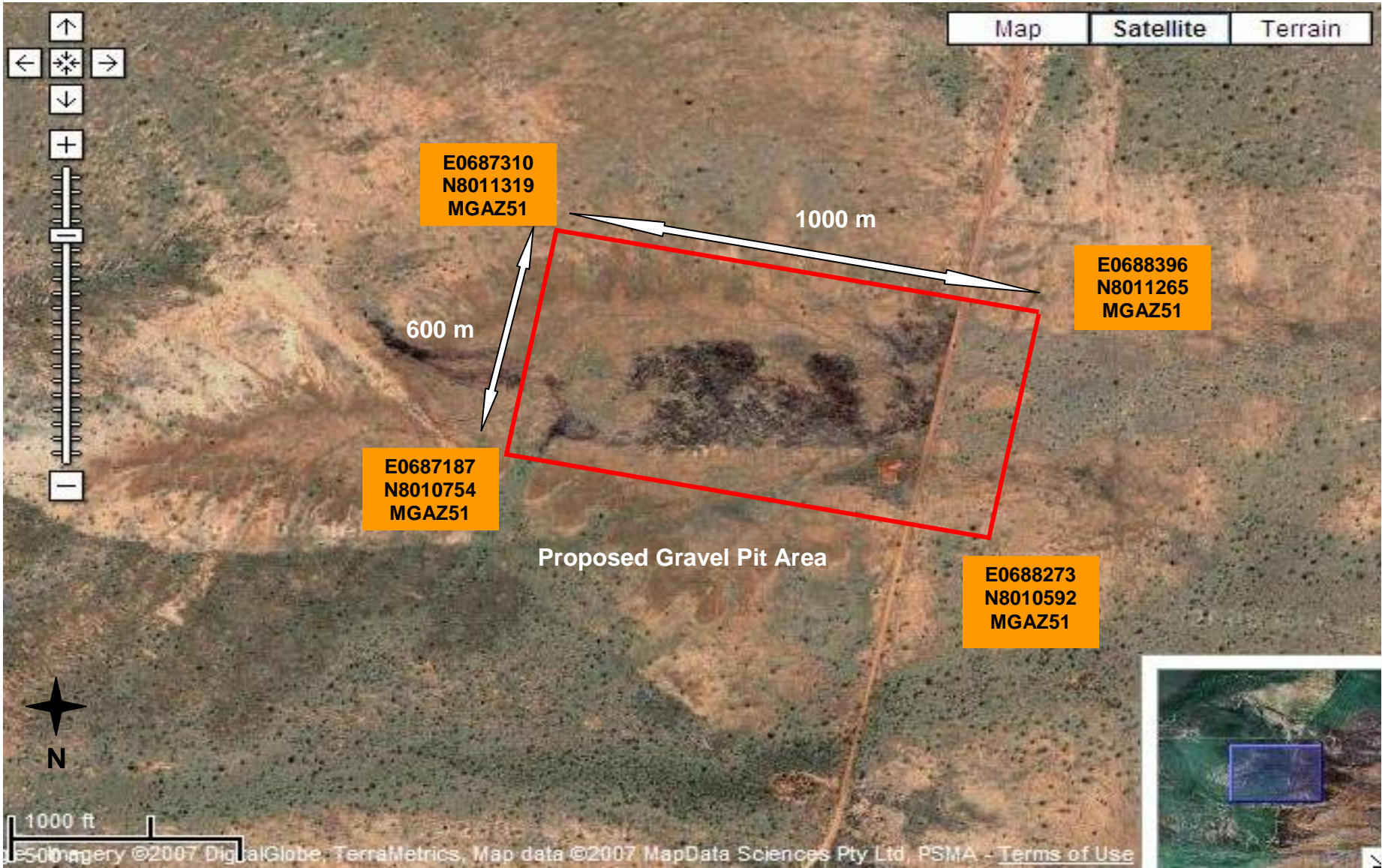
3. DESCRIPTION OF THE PROJECT

The proposed scope of works will involve extraction of gravel material for road construction works. It is proposed to investigate the area delineated on the aerial maps (see images 1 & 2) and locate naturally occurring gravels suitable for the upgrade and seal of the Ellendale section of the Great Northern Highway. The whole area under investigation will not require clearing and excavation but the best available materials will be sourced from within the proposed area. Therefore materials may be extracted from one or several locations within the proposed investigation area. All areas that are cleared and disturbed will be revegetated once gravel extraction is complete.

Altogether, approximately 40 ha of native vegetation could potentially be cleared for the extraction of gravel.



Aerial Map 1...Broad Locality Map



Aerial Map 2...Locality Map

3.1 Methodology

3.1.1 Preliminary Desktop Study

An assessment of the project area and its potential constraints was undertaken by reviewing a number of government agency managed databases.

Wetlands

The locations of wetlands and ESAs within the project area were determined using the Department of Environment and Conservation (DEC) Environmentally Sensitive Area (ESA) mapping tool (http://portal.environment.wa.gov.au/portal/page?_pageid=53,2569721&_dad=portal&_sc_hema=PORTAL), refer Appendix B, and by seeking advice from the regional DoW officer, refer Appendix F.

Threatened Flora, Fauna and Communities, Conservation Reserves and ESAs

DEC database was searched for known populations of threatened flora, fauna and Threatened Ecological Communities (TECs) and conservation reserves, refer Appendix C.

Air Quality

The need for a local air quality assessment was determined using the criteria outlined in the MRWA environmental guideline, Air Quality.

Heritage

Non-indigenous heritage was examined utilising the Australian Heritage Places Inventory (<http://www.heritage.gov.au>), Heritage Council of Western Australia (<http://register.heritage.wa.gov.au/>) and the Broome Shire Municipal Heritage Inventory refer Appendix D.

Aboriginal Heritage

A Search of the Department of Indigenous Affairs' (DIA's) (<http://www.dia.wa.gov.au/Heritage/SitesSurveysSearch.aspx>) database was undertaken to determine whether the project area contains any sites of Aboriginal heritage, refer Appendix E.

Sensitive Water Resources

The Water Information Officer of the Department of Water's (DoW's) regional office was consulted on sensitive water resources (including Public Drinking Water Source Areas) to determine whether the project area supported, or was adjacent to, any significant lakes, rivers or wetlands or proclaimed areas, refer Appendix F.

Contaminated Sites

There are no known previous land use activities on or adjacent to the project area that have the potential to create contamination, eg petrol station.

Acid Sulfate Soils

The Western Australian Planning Commission's acid sulfate soils maps were reviewed and the self assessment done (<http://www.wapc.wa.gov.au/Publications/213.aspx>) to determine what level of risk the project area is exposed to, refer Appendix G.

Weeds

Consultation was undertaken with the Department of Agriculture and Food to determine whether there are any known populations of declared plants or significant weeds in or adjacent to the project area, refer Appendix H.

Dieback

Dieback is not an issue in the area where proposed works are expected to be undertaken.

Commonwealth Referral

The decision to refer the project to the Commonwealths Department of Environment and Ware Resources (DEW) was based upon whether the project was going to impact upon matters of national significance, eg World Heritage properties, protected wetlands and migratory species, Commonwealth marine areas, threatened species or communities or nuclear actions (refer to the Commonwealth webpage www.deh.gov.au/epbc/assessmentsapprovals/index.html for further information and the search tool page at <http://www.deh.gov.au/erin/ert/epbc/imap/map.html>), refer Appendix I.

3.1.2 Site Investigation

A site visit was carried out by Materials Manager Peter Mablesen and Environment Officer Marni Baetge on 8/1/08 to examine the general features of the area. The broad vegetation types in the vicinity of the project area were identified. Other issues that were considered included topography, the impacts on creek lines, property access and the potential for noise and vibration impacts (dilapidation).

4. EXISTING ENVIRONMENT

The proposed works along the Gibb River Road are located within the Dampierland Botanical District, which is broadly characterised by pindan formation on sandplains (Beard, 1979).

Vegetation data that has been developed between DEC and the Development Assessment Forum (DAF) indicated that the different vegetation types that exist within the project areas are as follows:

- Grasslands, tall bunch grass savanna low tree; baobabs (*Adansonia gregorii*) , baubinia & beefwood (*Grevillea striata* over ribbon grass). This vegetation association is well represented throughout the region with 100% remaining;
- Shrublands, pindan; *Acacia eripoda* shrubland with scattered low bloodwood (*Eucalyptus dicromophloia*) & *E. setosa* over soft & curly spinifex on sandplain. This vegetation association is well represented throughout the region with 99.9% remaining;
- Shrublands, pindan; *Acacia eripoda* shrubland with scattered low bloodwood & *Eucalyptus setosa* over soft & curly spinifex between dunes. This vegetation association is well represented throughout the region with 100% remaining;

No declared weeds or serious environmental weeds were detected in either of the project areas.

5. CLEARING OF NATIVE VEGETATION

Under the amended *Environmental Protection Act 1986 (EP Act)* clearing of native vegetation must be under the authority of a clearing permit. In assessing whether the project is likely to have a significant impact on the environment, the project has been assessed against the DEC's 10 principles of clearing, see report below.

MRWA Vegetation Clearing Assessment Report

This guideline has been prepared to assist MRWA in addressing condition 7 "Assessment of Clearing Impacts" under Clearing Permit CPS 818/4.

For guidance on how to complete the form, refer to DEC completed reports (active permits) at http://203.20.251.100/cps_reports/.

Area Under Assessment Details

Proponent details

Proponent's name:

Main Roads Western Australia

Contacts:

Name: Marni Baetge

Phone: 08 9158 4310

Fax: 08 9158 4334

Email: marni.baetge@mainroads.wa.gov.au

Property details

Property:

Blina Pastoral Station

Colloquial name:

Ellendale Gravel Extraction Area

Area under assessment

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:	Site Plan Attached
40 ha	Several	Mechanical	Road Upgrade	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Avoidance/Minimise clearing

How have the clearing impacts been minimised?

All clearing associated with gravel excavation shall be kept to an absolute minimum. Mature and selected trees shall be conserved as far as practicable to provide for faunal habitat and Aboriginal values. The Contractor shall take all precautions necessary to prevent damage to growing trees and shrubs outside the designated areas and to selected trees within areas designated for clearing.

Background

Existing environment and information

Description of the native vegetation under application

(suggestion: To determine Vegetation Condition use - Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.)

Site Visit Undertaken	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fauna / Flora Survey Undertaken	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Site Report Attached	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fauna / Flora Survey Report Attached	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Site Photos Attached	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Other Relevant References Attached	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Vegetation Complex 64, 699, 700	Clearing Description Mechanical	Vegetation Condition Good	

ASSESSMENT OF APPLICATION AGAINST CLEARING PRINCIPLES

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments **Proposal is not at variance to this Principle**
The area proposed to be cleared is highly homogenous and the condition of vegetation is somewhat degraded. Diversity will not be compromised and therefore the proposal is not at variance with this Principle.

Methodology Site visit (08/01/08)
Vegetation data developed between DEC and the Development Assessment Forum (DAF)

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments **Proposal is not at variance to this Principle**
The EPBC Act Protected Matters Report listed a number of threatened, migratory and marine species potentially occurring in the project area. A search of the DEC threatened and priority fauna database also identified a number of fauna species within the area where material extraction is proposed. A habitat assessment was carried out in January 2008 to determine if it was likely that any of the threatened species would be utilising the areas that will be impacted on as a consequence of the proposed works. No specific habitats identified during the assessment appear to be spatially restricted to the area of impact or to be supporting important populations of significant species of fauna communities. Proposed works will have at worst a short term effect on any fauna species utilising this habitat. This proposal is therefore not at variance to this Principle.

Methodology Site visit (08/01/08)
EPBC Act Protected Matters Report database
DEC threatened and priority fauna database

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments **Proposal is not at variance to this Principle**
DEC Threatened Flora Database search indicated that no Declared Rare or Priority Flora species are within close proximity to the project area. This proposal is therefore not at variance with this Principle.

Methodology DEC Threatened Flora Database

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments **Proposal is not likely to be at variance to this Principle**
The proposal is not at variance to this Principle as no Threatened Ecological Communities (TEC's) have been identified within the project area.

Methodology Site visit (08/01/08)
DEC Threatened Flora Database

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments **Proposal is not at variance to this Principle**
The vegetation types under application are representative of Beard Vegetation Associations 64, 699 & 700 (Hopkins et al. 2001) of which there is at least 99.9% extent remaining (Shepherd et al. 2001). In addition the application falls within the Dampierland IBRA Bioregion which has 99.8% of the pre-European extent remaining (Shepherd et al. 2001). Beard Vegetation Associations and the Dampierland IBRA Bioregion are both of 'least concern' for biodiversity conservation and therefore this proposal is not at variance with this Principle.

Methodology GIS Databases:
- Interim Biogeographic Regionalisation of Australia – (08/01/08)
- Pre-European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments **Proposal is not at variance to this Principle**
The area under application does not consist of a watercourse or wetland. This proposal is therefore not at variance with this Principle.

Methodology Site visit (08/01/08)
DEC's web based Geographic Data Atlas mapping tool

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments **Proposal is not likely to be at variance to this Principle**
The clearing of remnant vegetation will possibly cause some alterations to the health of adjacent lands, such as through weed dispersal. The proposal is not likely to be at variance to this Principle as impacts will be minimised to that which is essential.

Methodology Site visit (08/01/08)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments **Proposal is not likely to be at variance to this Principle**
The proposal is not at variance with this Principle as remnant native vegetation in the project area is not associated with any adjacent or nearby conservation areas.

Methodology Site Visit (08/01/08)
DEC's web based Geographic Data Atlas mapping tool

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments **Proposal is not at variance to this Principle**
The potential clearing of remnant native vegetation is considered unlikely to cause deterioration in the quality of surface or underground waters. Therefore, clearing is not likely to be at variance with this Principle.

Methodology Site Visit (08/01/08)
DEC's web based Geographic Data Atlas mapping tool

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments **Proposal is not at variance to this Principle**
The proposal is not at variance with this Principle as clearing of native vegetation for this project is not considered to be likely to cause or exacerbate the incidence or intensity of flooding. Proposed upgrading should aim to minimise changes to natural flows and reduce the impact of flooding and channel erosion.

Methodology Site Visit (08/01/08)

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

There is no further requirement for a RIWI Act Licence, Works Approval or EP Act Licence for the area under application.

Methodology

Submissions

If required have submissions been requested and addressed

Submission Requested from	Request Sent (Date)	Submission Received (Date)	Issues Raised / Comments Made
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Assessor's recommendations

List of Principles seriously at variance, at variance or maybe at variance

Recommendation

Revegetation Management Plan will be adhered to. Environmental Management Plan will be developed and implemented to manage impact of the proposed works

References

OFFICER PREPARING REPORT

Marni Baetge (Graduate Environment Officer)
Kimberley Regional Office MRWA
Phone 08 9158 0
Date 8/1/2008

Gravel extraction for rehabilitation of the Ellendale section of the Great Northern Highway is expected to involve clearing of, at the most, approximately 40 hectares of vegetation. All vegetation to be impacted is well represented in the region and no Declared Rare Flora, Priority Flora or TEC's have been detected within the project area.

All clearing associated with sourcing raw materials, access tracks and plant lay-down areas shall be kept to an absolute minimum and mature and selected trees shall be conserved as far as practicable to provide for faunal habitat and environmental integrity. The Contractor shall take all precautions necessary to prevent damage to growing trees and shrubs outside the designated areas and to selected trees within areas designated for clearing.

Prior to clearing the Contractor shall mark out clearing limits and certify to MRWA that the clearing areas are clearly defined. All clearing shall comply with **Specification 301: Clearing**. The removal and re-spread of topsoil shall be undertaken in accordance with **Specification 302: Earthworks**.

6. ASSESSMENT OF ASPECTS AND IMPACTS

Table 1: Aspects and Impacts – Ellendale Gravel Extraction Area

Aspect	Evaluation of Potential Impacts
Air quality	Not relevant to the proposed works. Local air quality assessment is not required for the project since: <ul style="list-style-type: none"> the predicted traffic flow is less than 15,000 vehicles per day; residential and other sensitive receptors are not within 200 meters of the road centre
Dust	Likely to be a minor issue during earthworks. Standard dust control measures shall be undertaken to minimise dust production during construction.
Fauna	The EPBC Act Protected Matters Report listed a number of threatened, migratory and marine species potentially occurring in the project area (Appendix I). Subsequent consultation with DEC also confirmed that a number of threatened species potentially inhabit the gravel excavation area. On-ground assessment of the project area identified that the vegetation to be cleared for the proposed works is not likely to support important populations of significant species of fauna communities. The presence of similar habitat in adjacent areas will enable fauna to relocate if necessary.
Vegetation – clearing	At the most, a total of 40 hectares of vegetation is expected to be cleared using the purpose permit. The vegetation type expected to be impacted by the proposed works is well represented throughout the region.
Vegetation – TECs/DRF	No known occurrences of Threatened Ecological Communities, Declared Rare or Priority Flora were recorded in the project area.
Vegetation – weeds	No declared weeds or environmental weeds were identified in the project areas.
Vegetation – dieback	Not an issue given that the project area lies within the Kimberley Region.
Reserves / Conservation areas	No reserves or conservation areas are expected to be impacted by the proposed works.
Heritage (non-indigenous)	A search of the Australian Heritage Places Inventory and Heritage Council of Western Australia databases has indicated that there are no heritage significant listed sites present in the proposed works areas.
Aboriginal heritage	A search of the DIA database identified no sites of Aboriginal heritage significance in either of the project areas. However, since some of the project area may not have been surveyed, the Kimberley Land Council has been consulted. If any issues relating to Aboriginal heritage arise, these issues will be managed separately before any construction work proceeds.
Surface water/drainage	Consultation with DoW has confirmed that the proposed works will not disturb or interrupt any natural drainage and surface run-off patterns (Appendix F).
Wetlands	No wetlands will be impacted by the proposed works.
Groundwater	A search of the DoW Geographic Data Atlas indicated that the three study areas are not within any Gazetted Public Drinking Water Source Areas. However, they do lie within the Canning-Kimberley Groundwater Area which covers the entire Kimberley sub-region. No dewatering or drainage modifications are required, hence no change to groundwater level or quality.
Noise and vibration	No major sensitive local receivers. Construction works would not be expected to significantly contribute to noise levels at the nearest sensitive receivers, provided works are limited to normal working hours. The requirements of the Shire of

Table 1: Aspects and Impacts – Ellendale Gravel Extraction Area

Aspect	Evaluation of Potential Impacts
	Broome must be met in respect of noise management and construction working hours.
Visual amenity	The proposed works will result in minor and short-term visual impacts during construction. Suitable site completion treatments, including landscape planting and rehabilitation, could result in an improvement in local visual amenity.
Public safety and risk	Provided traffic management and signage to Main Roads standards is employed, none of the proposed works present any significant hazards to public safety. The proposed works will serve to enhance public safety by improving road conditions during flooding events.
Hazardous substances	Not relevant to the proposed works.
Contamination	There are no known previous land use activities on or adjacent to the project area that have the potential to create contamination, eg petrol station.
Salinity	There were no visual signs of salinity observed in the project area.
Acid Sulfate Soils	The WAPC's self-assessment (Planning Bulletin 64) indicates that no further soil investigation is required for the project.
Statutory Land Use Planning	As the proposed works is entirely within the existing road reserve, no further amendments would be required to the Local Government Planning Scheme or Region Scheme.

7. DECISION TO REFER

Given the scale of the project, the low significance of its impacts to the surrounding environment and the environmental management measures proposed, the project does not require referral to the WA Environmental Protection Authority or the Commonwealth Department of the Environment and Water Resources.

8. ENVIRONMENTAL MANAGEMENT PLAN

This section of the report (the EMP) has been developed for the project area following the completion of the above sections. The main aims of this EMP is to provide a management plan to assist in minimising the environmental impacts of the activities associated with the proposed works and identify who is responsible for the implementation of the management strategies.

This EMP will only address the actions already listed as well as any site-specific issues that were identified during the Environmental Review. The environmental management measures/conditions in Main Road's Specifications 203, 204, 301, 302 and 304 will be followed where applicable.

The areas that require special management will be addressed in terms of:

- area of management (eg vegetation);
- the timing of the various management requirements;
- the management objectives for each area;
- the management strategies that are necessary to minimise the impact;
- the person/s responsible for implementing the management action; and
- on whose advise or Main Roads requirement.

ENVIRONMENTAL MANAGEMENT PLAN					
Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Induction	Pre-Construction	Inform all personnel of the management actions/strategies required of them	Develop and implement a communication plan including response to complaints, liaising/reporting to government agencies, engagement with the community and others when work is performed, with specific reference to nuisance issues such as noise, dust and lighting spill	Project Manager	Main Roads
Vegetation Clearing - Record-keeping	All phases of Construction	All projects should maintain the required records relating to clearing native vegetation under the purpose permit	<p>Clearing:</p> <ul style="list-style-type: none"> • a copy of the PEIA & EMP (Minor projects) for small projects; • a map showing the location where the clearing occurred, recorded in an ESRI Shapefile; • the size of the area cleared (in hectares); • the dates on which the clearing was done. 	Environment Officer	DEC
Vegetation - Clearing	Pre-Construction	Ensure that the overall objectives of the alignment and construction works are compatible with maintaining and, where possible, enhancing the biological integrity of the surrounding environment and minimising vegetation loss and degradation	<p>Selection of designs/locations that minimise adverse impacts on the biological environment</p> <p>Construction works to be undertaken in the dry season to reduce the potential for soil erosion and drainage line siltation due to vegetation removal and heavy rains</p> <p>Any stockpiled vegetation from clearing works shall not be burnt. This vegetation shall be used during any rehabilitation works and either chipped or replaced according to the EMP</p> <p>All clearing shall be done in accordance with Main Roads Specification:</p> <ul style="list-style-type: none"> • 301: Clearing 	Project Manager	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN

Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Weeds	Construction	Prevent and reduce the introduction and spread of weeds	<p>Control any weed species, if present, within the project area prior to construction to limit the amount of propagative material that may be spread during disturbance</p> <p>Ensure all machinery/vehicles are clean prior to entering the works area. If a new weed infection is identified within the area, measures to reduce its spread should be established such as vehicle wash/brush-down points</p> <p>Main Roads Specifications applicable:</p> <ul style="list-style-type: none"> • 204: Environment • 301: Clearing 	Project Manager	Main Roads
Water Courses and Surface Drainage	Pre-Construction/ Construction	Maintain the hydrological regime that exists prior to the construction of the proposal and prevent erosion in areas subject to flooding	<p>Areas subject to erosion as a result of clearing shall be stabilised and designed to minimise rainfall/runoff impacts</p> <p>Works should minimise vegetation and soil disturbance to prevent soil movement. Finished works should be left in a stable condition to minimise the risk of scouring</p> <p>If washdown facilities or chemical storage takes place on site, best management practices will be utilised in accordance with DEC's <i>Water Quality Protection Notes, Mechanical Equipment Washdown</i> to minimise impact on water resources</p> <p>Stormwater drainage shall be treated and disposed of in accordance with DEC requirements</p>	Project Manager	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN

Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
			Ensure Main Roads design is followed. Main Roads Specifications applicable: • 402: Surface Drains • 405: Drainage Structures		
Visual Amenity	Pre-Construction	Ensure that the road blends in with the surrounding environment	Ensure that the road blends in with the surrounding environment	Project Manager	Main Roads
Noise, Vibration and Dust	Construction	Ensure that the construction of the proposal does not become a nuisance to the public	Access to private property and appropriate traffic management measures should be planned and implemented prior to the construction of works Works associated with the construction of the development should not prevent public access along the adjacent reserve. Public access should be maintained along the reserve at all times Any complaints regarding dust will be attended to as soon as possible Where it is found that trucks leaving the site are carrying excessive material onto sealed surfaces, these areas will be swept to reduce dust generation and maintain traffic safety Watering shall be used as a mitigation measure to protect loose surfaces	Project Manager	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN

Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Pollution and Litter	Construction	Ensure that the construction of the proposal is managed to a standard that minimises any adverse impacts on the environment	<p>Emergency cleanup procedures shall be implemented in the case of any spillage. These will include control of spilled material and removal of contaminated soil to an approved site</p> <p>The Contractor shall ensure appropriate equipment is available at all times to control any spills and shall notify the Project Manager as soon as possible following a spill</p> <p>All waste oil will be collected for recycling and any empty fuel/oil containers, used filters and waste hydraulic parts to be collected and stored in an allocated area then removed to an approved site</p> <p>Dumping or temporary storage of bitumen, asphalt, concrete or aggregate should only occur at designated depots or controlled hardstands</p> <p>The project areas, including hardstand areas, will be kept in a tidy manner at all times. All litter on the project will be placed into lidded bins and disposed of at an approved landfill</p>	Project Manager	Main Roads
Fire	Construction	Ensure that the fire risk associated with the construction of the proposal is minimised	<p>A water tanker will be on site at all times</p> <p>No fires shall be lit within the project area</p>	Project Manager	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN

Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Aboriginal Heritage	Construction	Ensure that there is no unauthorised disturbance to Aboriginal heritage sites during construction	<p>If any materials of significance to Aboriginal people are discovered, works will immediately cease within 100m of the material and the site will be examined by a qualified archaeologist</p> <p>The DIA will be notified in the event of any significant Aboriginal Heritage discovery</p> <p>If skeletal material is uncovered during works the WA Police Service will also be advised immediately</p>	Project Manager	DIA
Rehabilitation	Post-Construction	Leave the project area free from debris	All waste materials from the development are to be completely removed from the site upon completion of the development. Final clean-up shall be to the satisfaction of the Project Manager and the Site Superintendent	Project Manager	Main Roads

9. REFERENCES

Beard, J.S. (1979). Vegetation Survey of Western Australia: Kimberley. University of Western Australia Press, Perth.

Appendix A

Low Impact Screening Checklist

Form No. 6707/001/01

Checklist - Low Impact Screening Checklist

The Low Impact Screening Checklist is part of the environmental assessment and approval process, refer to in Figure 2 in the Main Roads environmental guideline Environment Assessment and Approvals. It should be noted that the checklist does not address Aboriginal heritage issues. Please refer to Main Roads guideline *Aboriginal Heritage* for the heritage assessment process.

All projects are to be screened to identify those that are Low Impact.

Projects that have "No" to all items are classed as Low Impact and should be implemented using standard contract clauses in the Tender Document Process.

Projects that have "Yes" to any item will require further environmental assessment and will be implemented using an Environmental Management Plan.

Tick "Yes" or "No" for every item.

Project Name 6. KREAT... NORTHERN... HIGHWAY... GRAVEL... EXTRACTION AREA.

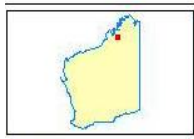
ITEM NO.	ITEM	Y	N
1	New road or road reserve to be created or expansion of existing road reserve.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Works require clearing of native vegetation outside the maintenance zone.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Works require clearing of native vegetation that is older than 10 years old within the maintenance zone.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Works to occur outside normal working hours.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Passes over, adjoins or drains directly into a wetland or sensitive watercourse.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Local natural drainage regime / hydrology will be changed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Dewatering, or a new water bore required.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Known potential source of hazardous materials within or adjoining project area. e.g. Acid Sulphate Soils, existing petrol station, industrial site or waste disposal site (landfill)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Buildings will require demolition.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Completed By: Peter Mableson Date 3.1.2008
 Signature [Signature] Title MATE RIA'S MANAGER
 Name PETER MABLESON
 To be reviewed by: Mari Saette Date 3.1.2008
 a Main Roads Signature [Signature]
 Environment Officer Name MARI SAETTE Title ENVIRONMENT OFFICER

Comments: _____

Appendix B

Wetlands and Watercourses within the Project Area



- Planning and Cadastre
- Environment
- Clearing Regs - ESA
- Clearing Regs - Schedule 1
- Clearing Permits
- Inland Waters
- Rivers - GMD
- Rivers - DDM
- Rivers - GA
- Lakes - GMD
- Lakes - GA
- Boundaries
- Location
- Economy
- Transportation
- Society



Welcome

Welcome to the Native Vegetation Map Viewer. This site helps you to identify the following:

- The location of environmentally sensitive areas, as declared by a Notice under section 51B of the Environmental Protection Act 1986.

- Areas where low impact mineral and petroleum activities can NOT occur, as defined under Schedule 1 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

Click on the links below for more information on:

[Environmentally Sensitive Areas](#)

[Low Impact Mineral and Petroleum Activities](#)

[Native Vegetation Disclaimer](#)

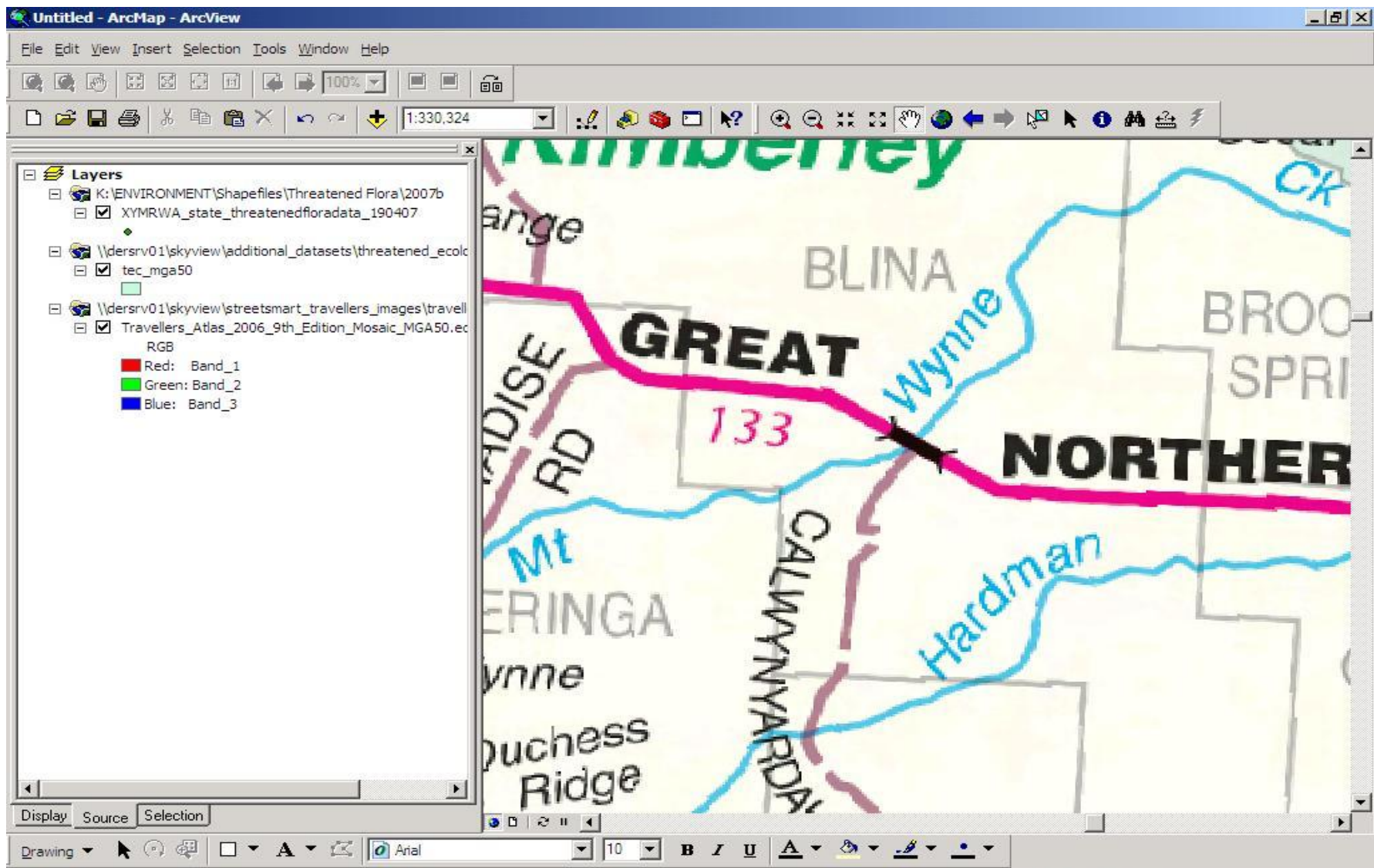
Click [here](#) for a quick tutorial on using the Native Vegetation Protection map viewer.

Zoom in tool. Click and drag a rectangle.

Results from DEC's Native Vegetation Map Viewer, January 2008

Appendix C

Department of Environment and Conservation Threatened Flora and Fauna Database Searches



Results from ArcView GIS – Threatened Ecological Communities, Declared Rare and Priority Flora, January 2008

CORRESPONDENCE WITH DEC REGARDING THREATENED FLORA IN PROJECT AREA

Hi Marni

Please find attached the results of the threatened and priority fauna database search in the vicinity of the proposed gravel pit area for the proposed upgrade of the Ellendale section of the Great Northern Highway (plus ~50km buffer).

Note that there are no results for within the proposed gravel pit area as defined by the coordinates you provided. However due to the proposed gravel pit area being small and limited records for the Kimberley area, a lack of results does not mean that there are no threatened or priority species within the area. I have provided you with the results for within ~50km area surrounding your proposed gravel pit area.

Let me know if you have any questions regarding the information supplied.

Regards,

Amy

Technical Officer (Fauna Database)
Species and Communities Branch
Department of Environment and Conservation
Fax (08) 9334 0278

From: BAETGE Marni (GEnv) [mailto:marni.baetge@mainroads.wa.gov.au]
Sent: Thursday, 3 January 2008 11:35 AM
To: Mutton, Amy
Subject: Threatened Fauna - Great Northern Highway Gravel Extraction Area

Hi Amy,

Main Roads Kimberley recently proposed to upgrade the Ellendale section of the Great Northern Highway (SLK 2415.3 – 2435.4) by rehabilitating and widening the existing pavement overlay. An EIA & EMP has been undertaken for the Ellendale section with no significant environmental issues of concern. Although the EIA & EMP investigated a number of material areas, further clearing and ground disturbance will be required to extend two existing gravel pits.

Please find attached a word document with 2 x aerial maps (and associated coordinates) where gravel extraction is proposed to be undertaken.

Could you please determine if any threatened fauna exist within each of the three borrow pit areas and if so please name each species.

Thank you for your assistance.

Regards,

Marni Baetge
Environment Officer
MAIN ROADS Western Australia
Kimberley Region
Ph: (08) 9158 4310
Fax: (08) 9158 4334
Mobile: 0427 474 965
marni.baetge@mainroads.wa.gov.au

Date Location Nam* Certainty Seen e Method
Threatened and Priority Fauna Database

17.52214 °S 124.30523 °E / 18.41235 °S 125.205221 °E Ellendale Proposed Gravel Pit Area (plus~50km buffer)

Page 1 of 3

Schedule 1 - Fauna that is rare or is likely to become extinct

***Macrotis lagotis* Bilby 1 records**

This species shelters in burrows and occupies a range of habitats from grassland on clayey and stony soils or sandplains to mulga scrub and woodlands on red earths. It has suffered a large decline and contraction in distribution.

2002 2 0 Mount Hardman Definite signs

***Petrogale lateralis* ssp. (WAM M15135) West Kimberley Rock-wallaby 5 records**

This species thrives in steep, complex rocky habitats providing tunnels, caves and crevices for shelter and protection from predators.

1901 1 10 Liveringa/Camballin Dead

1992 1 1 Erskine Range Dead

1995 1 4 Erskine Range Caught or trapped

1996 2 1 Done Hill

1996 2 1 Erskine Point

***Rhinonicteris aurantius* Orange Leaf-nosed Bat 3 records**

This species of bat occurs in a few scattered locations in the Pilbara, as well as the Kimberley. It roosts in caves and is sensitive to human disturbance.

1965 1 Mt Percy

1976 1 50 Tunnel Creek

1980 1 2 Mt Percy

***Mouldingia occidentalis* Mouldingia occidentalis 2 records**

1979 1 Napier Range Caught or trapped

1986 1 Napier Ranges Caught or trapped

***Westraltrachia alterna* Westraltrachia alterna 14 records**

1976 1 1 Napier Range Caught or trapped

1976 1 25 Napier Range Caught or trapped

1976 1 4 Napier Range Caught or trapped

1976 1 4 Napier Range Caught or trapped

1977 1 11 Napier Range Caught or trapped

1977 1 3 Napier Range Caught or trapped

1980 1 1 Napier Range Caught or trapped

1980 1 12 Napier Range Caught or trapped

1980 1 16 Napier Range Caught or trapped

1980 1 4 Napier Range Caught or trapped

1984 1 3 Napier Range Caught or trapped

1984 1 1 Napier Range Caught or trapped

1984 1 1 Napier Range Caught or trapped

2000 1 1 Napier Range Caught or trapped

Priority One: Taxa with few, poorly known populations on threatened lands

Thursday, 3 January 2008

Date Location Nam* Certainty Seen e Method
Threatened and Priority Fauna Database

17.52214 °S 124.30523 °E / 18.41235 °S 125.205221 °E Ellendale Proposed Gravel Pit Area (plus~50km buffer)

Page 2 of 3

***Westraltrachia lievreana* Westraltrachia lievreana 2 records**

1976 1 388 Oscar Ranges

1984 1 15 Oscar Range Caught or trapped

***Westraltrachia subtila* Westraltrachia subtila 1 records**

A species of land snail.

1976 1 88 Brooking Springs

Priority Two: Taxa with few, poorly known populations on conservation lands

***Vespadelus douglasorum* Yellow-lipped Cave Bat 2 records**

This species inhabits both limestone and sandstone caves, usually near water.

1958 1 2 Tunnel Creek Caught or trapped

1965 1 3 Tunnel Creek Dead

Priority Three: Taxa with several, poorly known populations, some on conservation lands

***Pristis microdon* Freshwater Sawfish 6 records**

2003 1 5 Camballin/Geegully Creek Caught or trapped

2003 1 1 Camballin/Geegully Creek Caught or trapped

2003 1 3 Camballin/Geegully Creek Caught or trapped

2003 1 3 Camballin/Geegully Creek Caught or trapped

2003 1 2 Camballin/Geegully Creek Caught or trapped

2003 1 3 Camballin/Geegully Creek Caught or trapped

Priority Four: Taxa in need of monitoring

***Macroderma gigas* Ghost Bat 2 records**

This species is Australia's only carnivorous bat and has a patchy distribution across northern Australia. It shelters in caves, mine shafts and deep rock fissures and is sensitive to disturbance.

1965 1 1 Fairfield Caught or trapped

2006 1 16 Tunnel Creek National Park Caught or trapped

***Leggadina lakedownensis* Lakeland Downs Mouse (Kerakenga) 5 records**

This secretive species is known to occur in the Pilbara and the Kimberley. Its populations rise and fall dramatically, probably in response to climatic fluctuations and availability of seeds.

2001 1 1 Mount Hardman Caught or trapped

2001 1 1 Mount Hardman Caught or trapped

2001 1 1 Mount Hardman Caught or trapped

2001 1 1 Mount Hardman Caught or trapped

2001 1 2 Mount Hardman Caught or trapped

***Ardeotis australis* Australian Bustard 1 records**

This species is uncommon and may occur in open or lightly wooded grasslands.

2005 1 2 Mt Hardman/King Leopold Ranges Day sighting

Thursday, 3 January 2008

Date Location Nam* Certainty Seen e Method

Threatened and Priority Fauna Database

17.52214 °S 124.30523 °E / 18.41235 °S 125.205221 °E Ellendale Proposed Gravel Pit Area (plus~50km buffer)

Page 3 of 3

***Heteromunia pectoralis* Pictorella Mannikin 2 records**

This species of finch occurs in the drier northern tropical grasslands of Australia.

2002 1 2 Mount Hardman Day sighting

2002 1 25 Mount Hardman Day sighting

Information relating to any records provided for listed species:-

Date: date of recorded observation

Certainty (of correct species identification): 1=Very certain; 2=Moderately certain; and 3=Not sure.

Seen: Number of individuals observed.

Location Name: Name of reserve or nearest locality where observation was made

Method: Method or type of observation

*

Thursday, 3 January 2008

Appendix D

Australian Heritage Places Inventory, Heritage Council of Western Australia and the Municipal Heritage Inventory Database Searches

OTHER REGISTER INFORMATION:

WHAT IS THE STATE REGISTER? OTHER HERITAGE LISTS

The **State Register of Heritage Places** recognises a place's value and importance to Western Australia. The State Register includes buildings, structures, gardens, cemeteries, landscapes and archaeological sites and has more than 1,200 places on it. The State Register is managed by the Heritage Council and provides a place with statutory protection to ensure it is conserved into the future.

The entire **Places Database** includes places listed in the State Register as well as those included in a Local Government's Municipal Inventory, the Commonwealth's Register of the National Estate and the National Trust's List of Classified Places. There are more than 17,500 places on the Places Database.

To do a search simply enter the details of the place; select whether you want to search the State Register or the Entire Database; and click the 'Search' button below.

It is important to note that the entry of a place in the State Register of Heritage Places does not make the place available for public access.

If you need further advice on whether a property is heritage listed, please call the Heritage Council on 9221 4177.

[SEARCH](#)[HELP](#)

Search In: State Register of Heritage Places Entire Database

Place No:

Name Contains:

Street:

Suburb/Town:

Local Govt:

Search logic:

[SEARCH](#)[HELP](#)

PLACES DATABASE ACTIONS:

[QUICK SEARCH](#)
[ADVANCED SEARCH](#)
▶ [RESULTS LIST](#)
[LOCATION REPORT](#)
[SAVE DATA](#)

There are no Places matching your search criteria.

If you'd like to perform a new search, please select a new Places database search, from the menu on the left-hand side.

[▲ top of page](#) | [\[disclaimer \]](#) | [© copyright 2007 heritage council of western australia](#)

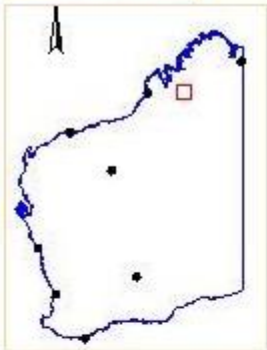
OTHER REGISTER INFORMATION:

[WHAT IS THE STATE REGISTER?](#)
[OTHER HERITAGE LISTS](#)

Appendix E

Department of Indigenous Affairs Database Search

show legend



Show on map

- Aboriginal Sites
- Heritage Surveys

refresh more

Map size

- Small
- Medium
- Large



next map

next map

next map

next map

Getting Started

1. Zoom in to an area of interest by dragging a box with your mouse in the map.
2. Display sites or surveys by selecting the layer and click refresh (under "show on map" box on the screen's left).
3. Search for site or survey report details by selecting from the "What do you want to do" drop down list, selecting the red arrow and dragging a selection area on the map. Results and links to the PDF reports are displayed on the right.

Please Note:

DIA Aboriginal Heritage Inquiry System January 2008

Appendix F

Department of Water Sensitive Water Resources Database Search



ABN: 50 860 676 021

Enquires: Marri Baetge on 9158 4318
Our Ref: 06/5570
Your Ref: NA

Dave Munday
Natural Resource Management Officer
Department of Water
PO Box 625
Kununurra WA 6743

Dear Dave,

**SENSITIVE WATER RESOURCES – GREAT NORTHERN HIGHWAY GRAVEL
EXTRACTION AREA**

Main Roads Kimberley recently proposed to upgrade the Ellendale section of the Great Northern Highway (SLK 2415.3 – 2435.4) by rehabilitating and widening the existing pavement overlay. An EIA & EMP has been undertaken for the Ellendale section with no significant environmental issues of concern. Although the EIA & EMP investigated a number of material areas further clearing and ground disturbance will be required to extend two existing gravel pits.

The attached maps show the location and boundaries of the proposed works.

Could you please identify if any of the following sensitive water resources exist in the project area:

Public Drinking Water Source Areas;
Significant lakes, rivers or wetlands; and/or
Proclaimed areas

If you require further information do not hesitate to contact me on 9158 4310 or email me at marri.baetge@mainroads.wa.gov.au

Thank you for your assistance.

Yours faithfully

Marri Baetge
ENVIRONMENT OFFICER
KIMBERLEY REGION

3 January 2008

Enc.

Appendix G

WAPC's Acid Sulfate Soils Mapping



ACID SULFATE SOILS

APPLICANT SELF - ASSESSMENT FORM

PLEASE COMPLETE THIS SELF-ASSESSMENT FORM AND ANSWER THE FOLLOWING:

STEP 1:

IS THERE EVIDENCE OF A SIGNIFICANT RISK OF DISTURBING ACID SULFATE SOILS AT THIS LOCATION?

Question 1:

Is the land depicted in Figures 1 - 10 of the Western Australian Planning Commission's Planning Bulletin No. 64: Acid Sulfate Soils as having a 'high risk of Actual Acid Sulfate Soil (AASS) & Potential Acid Sulfate Soil (PASS) < 3m from surface'?

Note: Planning Bulletin No. 64: Acid Sulfate Soils can be downloaded from:
<http://www.wapc.wa.gov.au/publications/policies/bulletins/PB64/64Nov03.html>

TICK BOX AS APPROPRIATE:

YES

NO

Question 2:

Is the land located in an area, whether depicted in Figures 1 - 10 or not, where site characteristics and local knowledge lead you to form the view that there is a significant risk of disturbing acid sulfate soils at this location?

TICK BOX AS APPROPRIATE:

YES

NO

If YES to either of these two questions go to Step 2.

If NO to both of these questions no further investigation is required. Sign this form and submit it with your application.

STEP 4: CARRY OUT DETAILED SITE ASSESSMENT IN ACCORDANCE WITH DEPARTMENT OF ENVIRONMENT GUIDELINES.

Question 7:

Did the Detailed Site Assessment reveal the presence of acid sulfate soils?



TICK BOX AS APPROPRIATE: YES NO

If **YES** to this question either modify the design of the proposal to ensure that there is no disturbance to acid sulfate soils at this location or, alternatively, prepare an Acid Sulfate Soil Management Plan to mitigate the potential adverse effects of acid sulfate soil disturbance. Sign this form and submit it with your application together with the written results of the Preliminary and Detailed Site Assessments and, if applicable, the completed Acid Sulfate Soil Management Plan.

If **NO** to this question then no further investigation is required. Sign this form and submit it with your application together with the written results of the Preliminary and Detailed Site Assessments.

APPLICANT SIGNATURE:

Full Name *MARIA BAETJE*
Signature *Maria Baetje*
Date *3.1.2008*

TICK BOX FOR ATTACHMENTS AS APPROPRIATE:

- Preliminary Site Assessment Results
- Detailed Site Assessment Results
- The Proposal Has Been Designed To Avoid Disturbance Of Acid Sulfate Soils At This Location
- Completed Acid Sulfate Soil Management Plan

Appendix H

Department of Agriculture and Food Advice on Declared Weeds

From: Everett, Mick [mailto:meverett@agric.wa.gov.au]
Sent: Wednesday, 9 January 2008 3:49 AM
To: BAETGE Marni (GEnv)
Subject: RE: Declared/Environmental Weeds – GNH Gravel Extraction Area

Marni

No declared plants or serious environmental weeds seem to be present at the gravel extraction area depicted in the aerial images you provided.

Regards

Mick Everett

Department of Agriculture

PO Box 278 DERBY WA 6728

Phone (08) 91910328

Mobile 0404904971

Fax (08)91910334

email meverett@agric.wa.gov.au

This e-mail and files transmitted with it are privileged and confidential information intended for the use of the addressee. The confidentiality and/or privilege in this e-mail is not waived, lost or destroyed if it has been transmitted to you in error. If you received this e-mail in error you must

- (a) not disseminate, copy or take any action in reliance on it;
- (b) please notify the Department of Agriculture and Food, WA immediately by return e-mail to the sender;
- (c) please delete the original e-mail.

This email has been successfully scanned by
McAfee Anti-Virus software.
Department of Agriculture and Food WA

Appendix I

Department of Environment and Water Resources

DEWR DATABASE SEACH – GNH Gravel Extraction Area

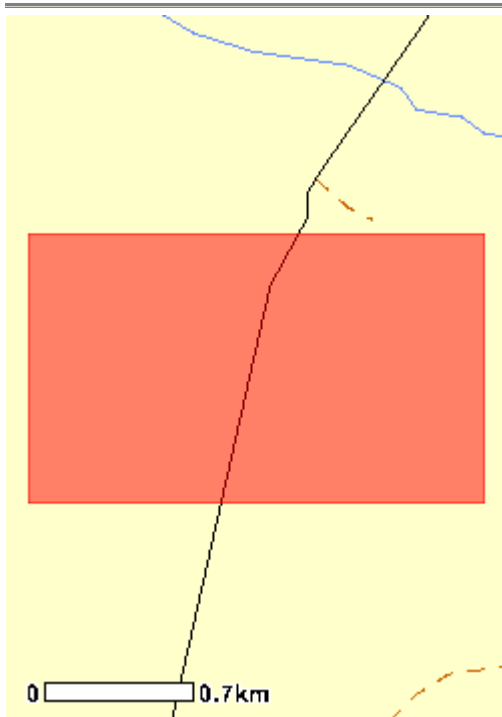
EPBC Act Protected Matters Report

3 January 2008 16:31

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.

You may wish to print this report for reference before moving to other pages or websites.

The Australian Natural Resources Atlas at <http://www.environment.gov.au/atlas> may provide further environmental information relevant to your selected area. Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>



This map may contain data which are
© Commonwealth of Australia
(Geoscience Australia)
© 2007 MapData Sciences Pty Ltd, PSMA

Search Type: Area

Buffer: 0 km

Coordinates: -17.970346,124.768261, -17.981527,124.768261, -17.981527,124.787123, -17.97034,124.787123



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 - see

<http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance: (Ramsar Sites)	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None
<u>Threatened Species:</u>	3
<u>Migratory Species:</u>	12

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. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage/index.html>.

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

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. Information on EPBC Act permit requirements and

application forms can be found at
<http://www.environment.gov.au/epbc/permits/index.html>.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Places on the RNE:	None
<u>Listed Marine Species:</u>	12
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.

State and Territory Reserves:	None
Other Commonwealth Reserves:	None
Regional Forest Agreements:	None

Details

Matters of National Environmental Significance

Threatened Species [Dataset Information]	Status	Type of Presence
Birds		
<i>Malurus coronatus coronatus</i> * Purple-crowned Fairy-wren (western)	Vulnerable	Species or species habitat likely to occur within area
<i>Rostratula australis</i> * Australian Painted Snipe	Vulnerable	Species or species habitat may occur within area
Sharks		
<i>Pristis microdon</i> * Freshwater Sawfish	Vulnerable	Species or species habitat likely to occur within area
Migratory Species [Dataset Information]	Status	Type of Presence
Migratory Terrestrial Species		
Birds		
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	Migratory	Species or species habitat likely to occur within area
<i>Merops ornatus</i> * Rainbow Bee-eater	Migratory	Species or species habitat may occur within area
Migratory Wetland Species		
Birds		
<i>Ardea alba</i> Great Egret, White Egret	Migratory	Species or species habitat may occur within area
<i>Ardea ibis</i>	Migratory	Species or species habitat may

Cattle Egret		occur within area
<i>Charadrius veredus</i> Oriental Plover, Oriental Dotterel	Migratory	Species or species habitat may occur within area
<i>Glareola maldivarum</i> Oriental Pratincole	Migratory	Species or species habitat may occur within area
<i>Numenius minutus</i> Little Curlew, Little Whimbrel	Migratory	Species or species habitat may occur within area
<i>Rostratula benghalensis s. lat.</i> Painted Snipe	Migratory	Species or species habitat may occur within area

Migratory Marine Birds

<i>Apus pacificus</i> Fork-tailed Swift	Migratory	Species or species habitat may occur within area
<i>Ardea alba</i> Great Egret, White Egret	Migratory	Species or species habitat may occur within area
<i>Ardea ibis</i> Cattle Egret	Migratory	Species or species habitat may occur within area

Migratory Marine Species

Reptiles

<i>Crocodylus porosus</i> Estuarine Crocodile, Salt-water Crocodile	Migratory	Species or species habitat likely to occur within area
--	-----------	--

Other Matters Protected by the EPBC Act

Listed Marine Species [[Dataset Information](#)]

Birds

Listed Marine Species [Dataset Information]	Status	Type of Presence
<i>Anseranas semipalmata</i> Magpie Goose	Listed - overfly marine area	Species or species habitat may occur within area
<i>Apus pacificus</i> Fork-tailed Swift	Listed - overfly marine area	Species or species habitat may occur within area
<i>Ardea alba</i> Great Egret, White Egret	Listed - overfly marine area	Species or species habitat may occur within area
<i>Ardea ibis</i> Cattle Egret	Listed - overfly marine area	Species or species habitat may occur within area
<i>Charadrius veredus</i> Oriental Plover, Oriental Dotterel	Listed - overfly marine area	Species or species habitat may occur within area
<i>Glareola maldivarum</i> Oriental Pratincole	Listed - overfly marine area	Species or species habitat may occur within area

[Haliaeetus leucogaster](#)
White-bellied Sea-Eagle

Listed Species or species habitat likely to occur within area

[Merops ornatus](#) *
Rainbow Bee-eater

Listed - overfly marine area Species or species habitat may occur within area

[Numenius minutus](#)
Little Curlew, Little Whimbrel

Listed - overfly marine area Species or species habitat may occur within area

[Rostratula benghalensis s. lat.](#)
Painted Snipe

Listed - overfly marine area Species or species habitat may occur within area

Reptiles

[Crocodylus johnstoni](#)
Freshwater Crocodile

Listed Species or species habitat may occur within area

[Crocodylus porosus](#)
Estuarine Crocodile, Salt-water Crocodile

Listed Species or species habitat likely to occur within area