



HIGHWAY
CONSTRUCTION



ALBEMI

**PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT AND
ENVIRONMENTAL MANAGEMENT PLAN**

**Madigan Road Intersection (Dampier Highway Duplication)
PEIA**

28 June 2011

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Revision 0
28 June 2011

Name & Title	
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Revision Table

Rev	Date	Author	Review
A	28 June 2011	A. Fertch (AES)	T. Cowell (AES)
B	28 June 2011	A. Fertch (AES)	J. Powell (HWA)
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PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN

MADIGAN ROAD INTERSECTION (DAMPIER HIGHWAY EXPANSION)

1. PROJECT SUMMARY

The joint venture of Highway Construction, Downer EDI Works and Albem (HWA) has been awarded the Main Roads WA Dampier Highway Duplication project. HWA is proposing to construct a temporary detour to enable the existing intersection at Madigan Road and Dampier Highway to be upgraded. The intersection is located approximately 6 km west of the Karratha in the Shire of Roebourne. (Figure 1)

The detour is to be approximately 350 m and will require approximately 0.45 ha of clearing.

2. BACKGROUND

Growth in traffic has placed pressure on Karratha's road network, and in particular, the Dampier Highway. The Dampier Highway Duplication Project aims to address these issues and provide an efficient and safe level of service for road users. The duplication will cater for the significant population and traffic growth in recent years, which has resulted from the expanding industrial activities on the Burrup Peninsula and new subdivisions.

Main Roads appointed *Highway Works Albem Joint Venture* as the Contractor to build the duplication from Bayton West to the airport turnoff. To facilitate an upgrade of the existing intersection at Madigan Road and Dampier Highway, a temporary detour of Madigan road is required.

Several environmental assessments have been conducted that are related to the Dampier Highway Duplication project. One of the most recent assessments include the HWA Borrow Pit 0.9 Expansion which is located 10 km south of the site. This proposal is to source road building material for use in the Dampier Highway Duplication project.

As per Main Roads' Environmental Assessment and Approval process, the Low Impact Environmental Screening Checklist has been completed for the proposal, refer to Appendix A. As the project involves works that require native vegetation to be cleared, the preparation of a project specific Preliminary Environmental Impact Assessment (PEIA) and Environmental Management Plan (EMP) are required. This report fulfils this requirement.

This Preliminary Environmental Impact Assessment is being undertaken for the temporary detour of Madigan Road (Figure 2 and 3).

3. DESCRIPTION OF THE PROJECT

The program involves:

- Removal of topsoil
- Establishing a temporary detour at the northern end of Madigan Road
- Road removal
- Rehabilitation

3.1 Project Location

The location and boundaries of the study area for the project are shown in Figures 1 and

2. The site is comprised of the following features:

- The site is located approximately 6 km west of Karratha on Dampier Road.
- The site is located on the eastern side of Madigan Road at the intersection of Madigan Road and Dampier Highway.
- The proposed temporary road realignment is proposed to start approximately 220 m south of Dampier Highway.
- The site is relatively flat.

Figure 1 – Project Location: Regional

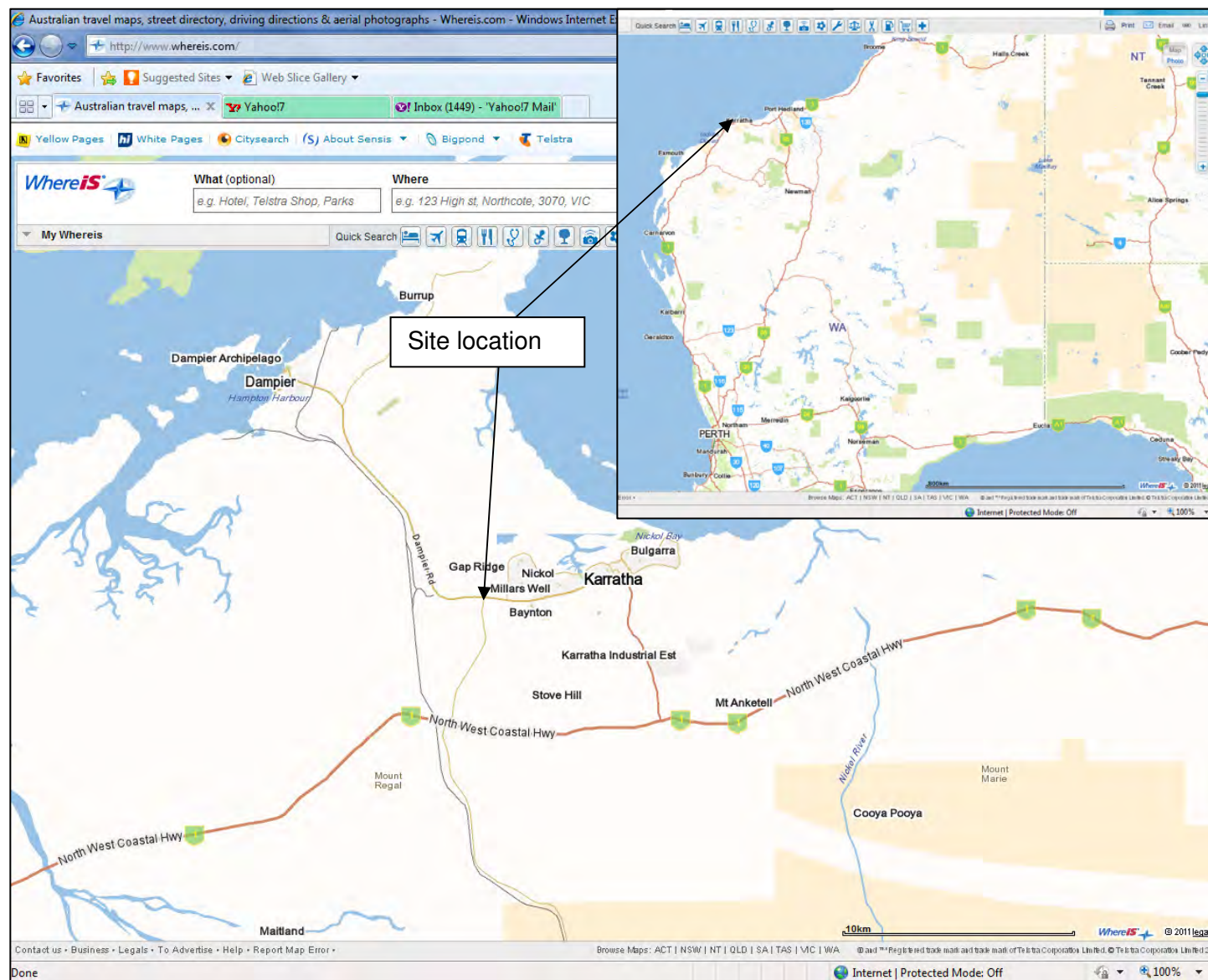


Figure 2 – Project Location: Local

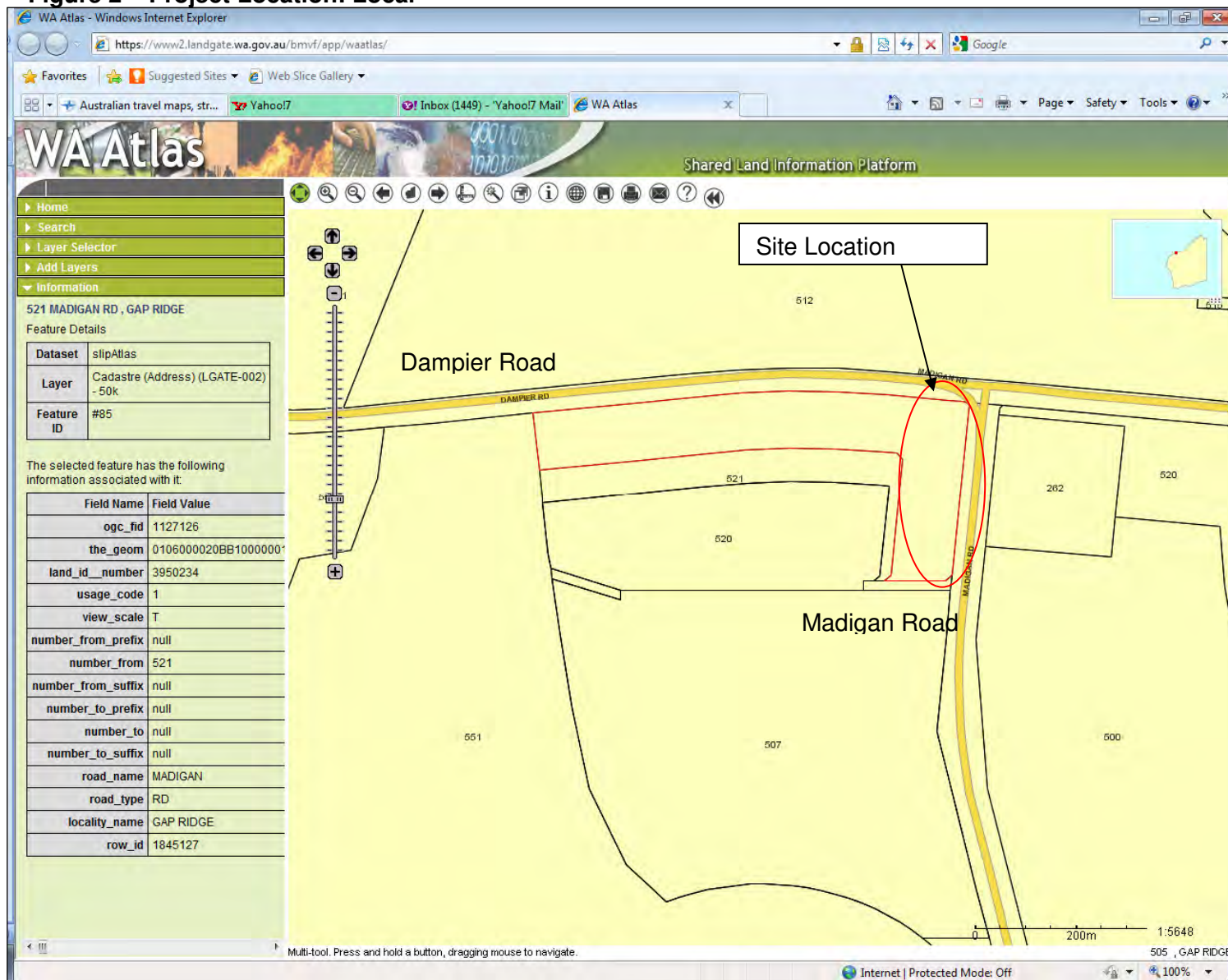


Figure 2 – Project Location: Local with aerial photo

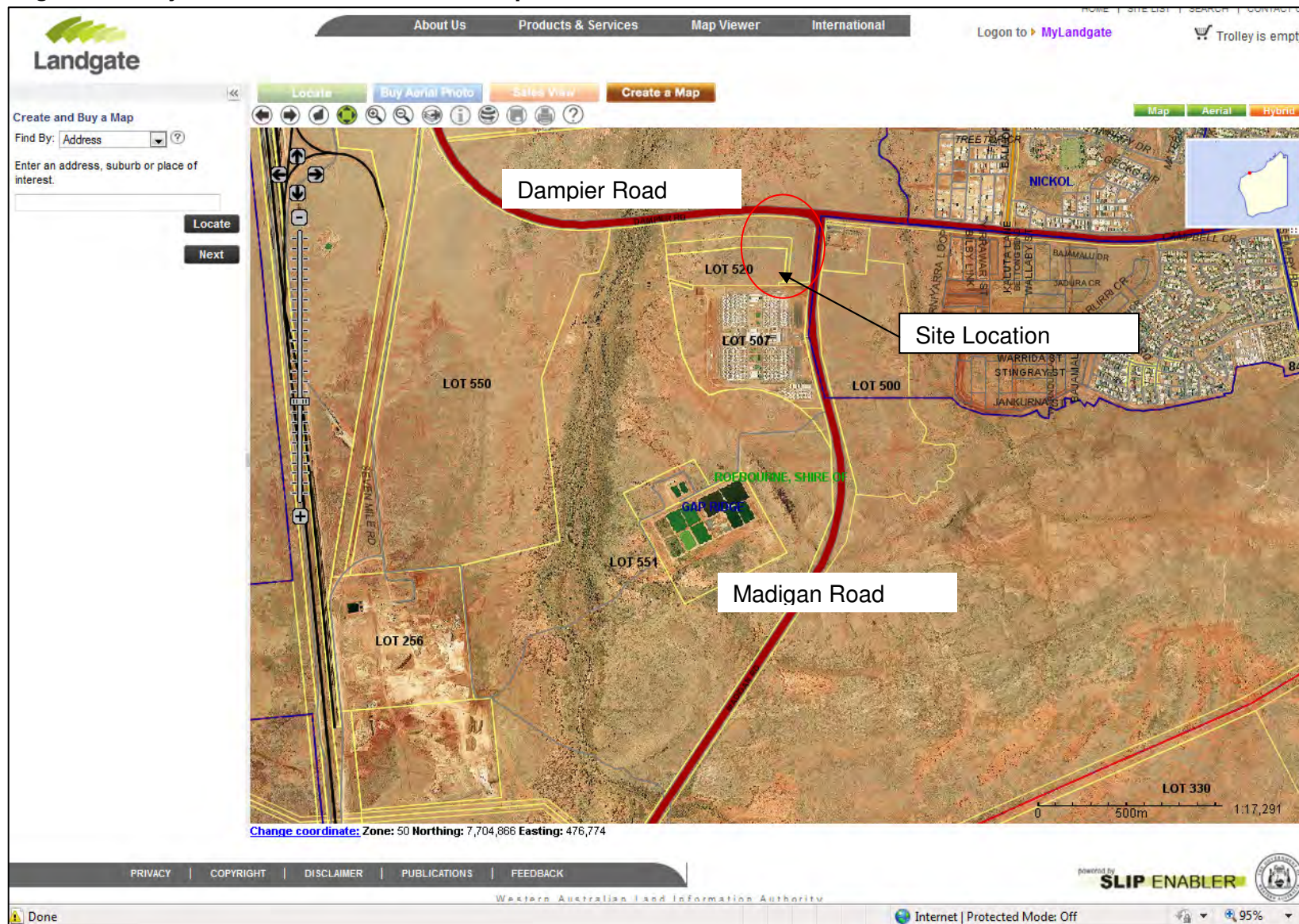
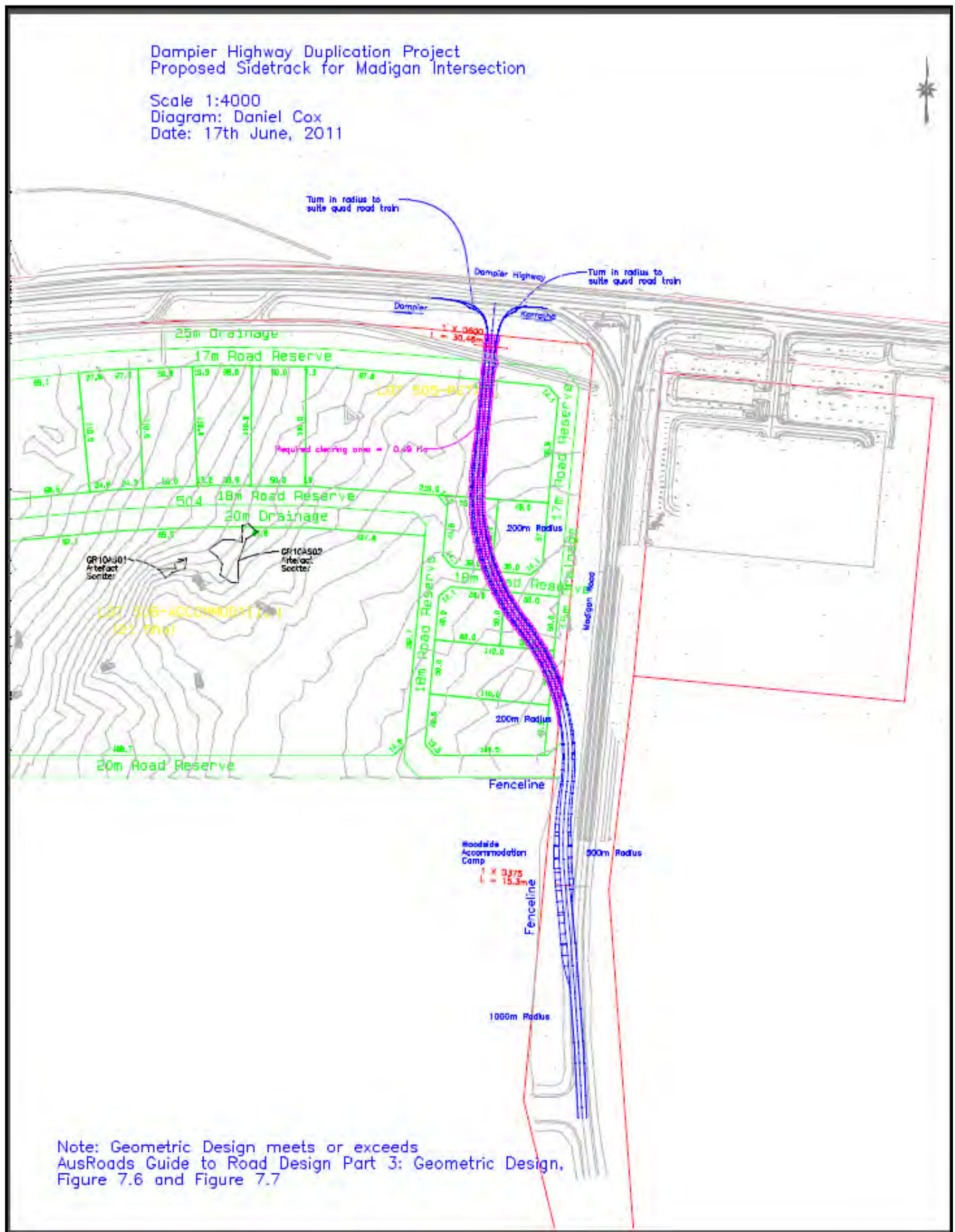


Figure 3 – Site Plan and Design Drawing



4. METHODOLOGY

4.1 Preliminary Desktop Study

A preliminary assessment of the project area and the potential constraints of the proposal were undertaken by reviewing a number of government agency managed databases and consulting where necessary.

4.1.2 Threatened Flora, Fauna and Communities, Conservation Reserves and ESA's
DEC were contacted on 22 June 2011 and Flora database searches requested. Results from previous Fauna and Threatened Community searches for HWA (21 March 2011) were utilised as they covered the project area. For search results see Appendix B.

The site is not located in an ESA or within Conservation Estate (WA Atlas, 2011). Screen captures are included as Appendix B.

4.1.3 Air Quality

Air quality is unlikely to be an issue as the activity is temporary. The closest residential area is within 1 km of the site.

4.1.4 Heritage

Non-indigenous heritage was examined utilising, the Australian Heritage Places Inventory, Heritage Council of Western Australia Places Database, the Shire of Roebourne's local heritage list and the Heritage Council of WA Places database. For search result print outs refer to Appendices C and D.

4.1.5 Aboriginal Heritage

A search of the Department of Indigenous Affairs' (DIA's) database was undertaken to determine whether the project area contains any sites of Aboriginal Heritage, refer to Appendix D.

4.1.6 Sensitive Water Resources

A search of the Department of Water (DoW) database was undertaken to determine whether the project area contains any sensitive water resources such as Public Drinking Water Source Areas or Water Pollution Control Areas, or was adjacent to any significant lakes, rivers, wetlands or proclaimed areas. The results of the database search are contained in Appendix E.

4.1.7 Contaminated Sites

A search of the DEC's contaminated sites database was undertaken to determine whether the project area contains or is adjacent to any known contaminated sites, refer Appendix F.

4.1.1 Wetlands

The locations of any wetlands within the project area was determined using the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) mapping tool, the Department of Environment and Conservation (DEC) "WetlandBase" mapping tool, refer to Appendix E.

4.1.8 Acid Sulfate Soils

The DEC acid sulfate soils (ASS) maps and Australian Soil Resource Information System were reviewed to determine the level of risk the project is exposed to, refer to Appendix E.

4.1.9 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 to Appendix H.

4.1.10 Dieback

As the project receives <400 mm of rain dieback is considered not to be an issue.

4.2 Commonwealth Referral

The decision whether to refer the project to the Commonwealth's DSEWPC was based upon whether the project would impact Commonwealth land, or may have a significant impact upon matters of national significance, which are protected under the EPBC Act. These include; World Heritage properties, National Heritage places, wetlands of international importance (listed under the Ramsar convention), Commonwealth Marine Areas, migratory species protected under international agreements, nuclear actions, nationally threatened species and ecological communities.

The DSEWPC protected matters search tool was used to determine if the project will impact upon any matters of national significance: refer to Appendix G for the results of this search and Section 7 for a discussion on the findings.

4.3 State Referral

The decision whether to refer the project to the State's EPA was based on whether the project would impact on environmental factors significantly enough to require referral under section 38 of the *Environmental Protection Act 1986*. Based on the small project footprint, temporary nature of the activity and lack of significant environmental features on the site it is considered that state referral is unnecessary.

4.4 Site Investigation

A site visit was carried out by an Environmental Scientist from Astron Environmental Services (Toni Cowell) on 24 June 2011 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 and property access.

Site photos were taken and are included in Appendix J.

During the site investigation, the assessors examined:

- vegetation to be cleared (including vegetation condition)
- the types and number of trees to be cleared (tall, medium or short) and types of shrubs to be cleared
- total area of native vegetation and the total area of other vegetation, including regrowth, landscape areas, to be cleared.
- weeds present;
- any drainage areas or wetlands present; and
- the adjacent land use is/any sensitive land uses.

5. EXISTING ENVIRONMENT

5.1 Description

The project area is located within the Roebourne Interim Biogeographic Regionalisation for Australia (IBRA) subregion (with the Pilbara bioregion). The Roebourne subregion primarily consists of quaternary alluvial plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* over *Triodia pungens* (CALM, 2002). The climate of the Roebourne subregion is semi-arid-tropical with summer rain and has significant cyclonic activity (CALM, 2002).

The vegetation is described in desktop mapping as:

589: Mosaic of Short bunch grassland - savanna /grass plain (Pilbara) / Hummock grasslands, grass steppe; soft Spinifex.

This vegetation type is described by Shepherd et al (2001) as covering 848,201 ha, of which 100% of the pre-European extent remains. Approximate 1.6% of this vegetation type is currently reserved for conservation. The proposed Madigan Road realignment proposed to temporarily clear 0.45 ha of this vegetation type.

During the site visit, native vegetation appeared to be sparsely distributed amidst introduced weed species (see plates). The vegetation condition of the area ranged from Degraded to Completely Degraded.

5.2 Site Investigation

A summary of the site investigation is provided below.

Table 1: Site Investigation and Description

Site Investigation	Description/Comments
<i>Total area (ha) of <u>native vegetation</u> to be cleared</i>	The works propose temporary clearing of a maximum of 0.45 ha of native vegetation. The Clearing area will be rehabilitated on practical completion of the project.
<i>Total area (ha) of other vegetation, including regrowth, landscape areas, to be cleared</i>	0 ha
<i>Condition of vegetation</i>	Degraded to Completely Degraded. Completely Degraded areas consisted of cleared areas for access track / possible fire break and roadside drains. The flora here compromises weed species with isolated native shrubs and grasses.
<i>Weeds present</i>	Weeds were present over the entire site.
<i>Drainage areas or wetlands present</i>	There is roadside drain that runs parallel with Madigan road and Dampier Highway. However there are no natural drainage lines or wetlands within the project area.
<i>Adjacent/sensitive land uses</i>	There are no sensitive premises likely to be affected by the project. Surrounding land use consists of roads, accommodation areas and future development. To the south of the site is Woodside's

Site Investigation	Description/Comments
	Accommodation Camp and is the closest development to the project area.

6. CLEARING OF NATIVE VEGETATION

Native vegetation describes all indigenous aquatic and terrestrial vegetation (living or dead). The term does not include vegetation that was intentionally sown, planted or propagated unless it was required under a statutory condition.

Apart from activities that are exempt under the clearing regulations, such as clearing vegetation that is less than 10 years old for maintenance, typically all Main Roads clearing will be undertaken using a permit.

It is envisaged that clearing of native vegetation for this project will be undertaken using Purpose Permit CPS818/5.

6.1 Assessment against Clearing Principles

In assessing whether the project is likely to have a significant impact on the environment, the project has been assessed against the ten clearing principles, refer to Appendix K.

The project **is unlikely to be** at variance with one or more of the 10 clearing principles.

The following table summarizes what further assessment and management is required in accordance with MRWA State-wide vegetation Clearing Permit (CPS 818/5).

Table 2: Summary of Additional Management Actions

Trigger for Action/Criteria for further action?	Yes/No or NA	Further Action Required
<i>Does the assessment indicate that the clearing may be at variance with one or more of the 10 clearing principles?</i>	N	No further action required.
<i>Does the assessment indicate that the clearing is at variance with one or more of the 10 clearing principles?</i>	N	No further action required.
<i>Will the project involve clearing a temporary area?</i>	Y	A revegetation plan will need to be prepared but not approved by DEC (Clearing less than 0.45 ha).
<i>Will the project involve clearing at variance with the clearing principles, a temporary area greater than 0.45 ha and/or in an ESA?</i>	N	No further action required.

7. ASSESSMENT OF ASPECTS AND IMPACTS

Table 3: Aspects and Impacts – Madigan Road Intersection

Aspect	Evaluation of Potential Impacts
Fauna	<p>No significant fauna issues associated with any of the proposed upgrade works. With the generally degraded and exposed nature of the works areas, no significant impacts would be expected on native fauna generally as a result of the proposed works. The project area and subsequent disturbance area is reasonably small. Clearing within the project area is limited to 0.45 ha, and this is unlikely to significantly reduce habitat availability for fauna within proximity of the site.</p> <p>No Fauna Matters of National Environmental Significance as protected under the EPBC Act (1999) will be impacted (see Table 4).</p> <p>DEC database searches indicated 4 species of priority 4 fauna are known to occur within proximity of the site (2 birds, 1 reptile and 1 mammal). The site is unlikely to form unique habitat vital to maintain populations these species. Surrounding habitat is considered well represented.</p>
Vegetation – clearing	<p>0.45 ha of native vegetation is proposed to be cleared.</p> <p>Vegetation association 589: <i>Mosaic of Short bunch grassland - savanna /grass plain (Pilbara) / Hummock grasslands, grass steppe; soft Spinifex</i> occurs on the site. This vegetation association has 100% of pre-clearing extent of vegetation remaining.</p> <p>According to Keighery, (1994) the condition of the native vegetation to be cleared is described as Degraded to Completely Degraded.</p> <p>The native vegetation proposed to be cleared is well represented regionally as it possesses more than 30% of its pre-European extent.</p> <p>The project requires temporary clearing 0.45 ha of native vegetation.</p> <p>The project will involve temporary clearing, but the site is designated as Landcorps future Bulky goods subdivision.</p>
Vegetation – TECs/DRF	<p>The TEC database search indicates there are no occurrences of TECs on or within 5km of the site. The PEC database search indicates there are 7 occurrences of the Priority 1 PEC '<i>Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands)</i>' within 5km of the site.</p> <p>The DRF database search indicated there are no occurrences of DRF species on or within within 5km of the project area.</p> <p>No Matters of National Environmental Significance as protected under EPBC Act (1999) will be impacted (see Table 4).</p>
Vegetation – weeds	<p>Consultation with the Department of Agriculture and Food confirms that there are no declared plants in the project area (Appendix H).</p> <p>Weeds are present over the entire site (See plates).</p>
Vegetation – dieback	<p>Not an issue given the project area receives less than 400 mm of average annual rainfall or is above the 26° parallel.</p>
Reserves / Conservation areas	<p>There are no conservation areas or reserves on or adjacent to the project</p>
Heritage (non-indigenous)	<p>A search of the Australian Heritage Places Inventory, Heritage Council of Western Australia and the Shire of Roebourne Municipal Heritage Inventory on-line databases has indicated that there are no known sites of heritage significance within the vicinity of the project area.</p> <p>No Heritage Matters of National Environmental Significance as protected under EPBC Act (1999) will be impacted (see Table 4).</p>

Table 3: Aspects and Impacts – Madigan Road Intersection

Aspect	Evaluation of Potential Impacts
Aboriginal heritage	<p>A search of DIA's database identified no registered heritage sites, but 3 other known heritage sites of Aboriginal Heritage significance within the vicinity of the project area. These sites were associated with midden and artefact scatters.</p> <p>A survey undertaken by Landcorp identified several new artefact scatters within close proximity to the site. These areas are unlikely to be disturbed however a section has been included within the Environmental Management Plan regarding the management of construction activities in close proximity to Aboriginal Heritage areas.</p>
Groundwater	No dewatering nor drainage modifications are required, hence no change to groundwater level or quality.
Surface water/drainage	<p>A search of DoW's database indicates that no surface water / drainage lines occur within the site. According to aerial photography the closest surface water feature which appears to be a natural drainage line is located over 400 m away from the site.</p> <p>The entire Pilbara region tends to have an annual average evaporation rate that is significantly higher than the annual average rainfall (ANRA, 2007). Therefore, the minor, non-perennial watercourses within the application area are expected to be dry for the majority of the year except following cyclonic rainfall events which generally occur between November and March (ANRA, 2007).</p> <p>The site is relatively flat with the closest a drainage line located approximately 400 m to the east of the site, and another being located one km to the west of the site. As no water courses have been identified to occur within the site boundaries, and with the knowledge that the site is relatively flat, it is unlikely that this proposal would produce significant erosion or sedimentation impacts.</p>
Wetlands	<p>DEC's Wetland base indicates that there are no wetlands within the immediate vicinity of the project area.</p> <p>No Matters of National Environmental Significance (Wetlands) as protected under EPBC Act (1999) will be impacted (see Table 4).</p>
Air quality	<p>Not relevant to the proposed works. Local air quality assessment is not required for the project since:</p> <ul style="list-style-type: none"> residential and other sensitive receptors are not within 200 meters of the road centre; and
Dust	Likely to be a minor issue during earthworks. There are several sensitive receivers adjacent to the proposed works including a residential area that is located approximately 750 m away. Impact from dust is likely to be easily managed through implementing standard construction dust management techniques.
Noise and vibration	Likely to be a minor issue. There are several sensitive receivers adjacent to the proposed works including the Gap Ridge Village approximately 350 m away and a residential area located approximately 750 m away. Construction work is not 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 Roebourne 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.
Public safety and risk	The proposal is to temporarily realign Madigan road to allow for an upgrade of the existing Madigan Road / Dampier Highway intersection. Provided traffic management and signage to Main Roads standards is employed, none of the proposed works present any significant hazards to public safety.
Hazardous substances	Any hydrocarbons or other substances to be used, are to be stored at the existing site compound.
Contamination	The works are within an area with no known previous land use activities on or adjacent to the project area have had the potential to create contamination, e.g. petrol station.

Table 3: Aspects and Impacts – Madigan Road Intersection

Aspect	Evaluation of Potential Impacts
Salinity	There were no visual signs of salinity observed in the project area. Given the nature and scale of the project the impact is considered not relevant.
Acid Sulfate Soils	No further investigations are necessary as there is no dewatering or excavation below the water table planned. Risk maps indicate the site is not in a high risk ASS area.
Statutory Land Use Planning	The proposed works are likely to take place outside the existing road reserve, however a S91 Land Access License has been obtained to enter the land.

Table 4: Commonwealth Aspects and Impacts - Madigan Road Intersection

Aspect	Evaluation of Potential Impacts
World Heritage properties	The project will not impact any World Heritage properties i.e. Shark Bay
National Heritage places	A search of the Australian Heritage Places Inventory Database located no sites within the vicinity of the project.
Wetlands of international importance (Ramsar)	A search of the Department of Sustainability, Environment, Water, Population and Communities Protected Matters Search Tool located no Ramsar Wetlands within the vicinity of the project.
Nationally threatened species or ecological communities	A search of the Department of Sustainability, Environment, Water, Population and Communities Protected Matters Search Tool located three threatened species, 10 migratory species and 8 listed marine species within the vicinity of the project. The migratory and marine bird species may occasionally fly over the site, however the site is not considered vital habitat for marine birds. The project activities are unlikely to have a significant impact on these species due to the small area of disturbance and temporary nature of the work and proximity to significantly disturbed land, such as major roads and highways.
Migratory species protected under international agreements	A search of the Department of Sustainability, Environment, Water, Population and Communities Protected Matters Search Tool located 10 migratory species within the vicinity of the project. The project activities are unlikely to have a significant impact on these species with the vegetation present unlikely to be habitat for these species. Migratory bird species that may occasionally fly over the site, however the site is not considered vital habitat for migratory birds.
Commonwealth marine areas	The project will not impact any Commonwealth marine area or marine protected area i.e. Ningaloo Marine Park
Nuclear Actions	Not relevant to the proposed works.

8. DECISION TO REFER

8.1 Referral to the Department of Sustainability, Environment, Water, Population and Communities

As the project is unlikely to impact on Matters of National Environmental Significance or impact Commonwealth land, the project does not require referral to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

8.2 Referral to the Environmental Protection Authority

Due to 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.

9. STAKEHOLDER CONSULTATION

Name	Agency	Date	Comments
Richard Watkins	DAFWA	22/06/2011	Email advice that the area is not known for Declared Weeds

10. OTHER APPROVALS/PERMITS/LICENCES

The project requires a Revegetation Plan to be prepared prior to any site clearing in accordance with Purpose Permit reporting requirements. Revegetation requirements have been included in the EMP (Appendix K).

11. REFERENCES

Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001). *Native Vegetation in Western Australia. Technical Report 249*. Department of Agriculture, Western Australia, South Perth.

Beeston, G.R., Hopkins, A.J.M. and Shepherd, D.P. (2002). *Land-use and vegetation in Western Australia*. Department of Agriculture, Western Australia, Resource Management Technical Report 250.

Appendix A

Low Impact Environmental Screening Checklist

Checklist - Low Impact Environmental Screening

The Low Impact Environmental Screening Checklist is part of the environmental assessment and approval process, explained in Figure **Error! Reference source not found.** and in the procedures. 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, ie that will have a low impact on the environment and that can be adequately managed through standard contract clauses.

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.

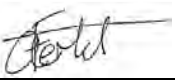
Projects that have "Yes" to **any** item will require further environmental assessment and will be implemented using an Environmental Management Plan.

Tick "Yes" or "No" for every item. Circle the relevant part of the item.

Project Name HWA Madigan Road Intersection (Dampier Highway Expansion)

ITEM NO.	ITEM	Y	N
1	New road or road reserve to be created or expansion of existing road reserve.	√	
2	Works require ground disturbance or clearing of native vegetation.	√	
3	New, or expansion of existing, pits or quarries. (non-commercial sources)		√
4	Adjoining sensitive land use. eg residential or hospital or education centre		√
5	Passes over, adjoins or drains directly into a wetland or sensitive watercourse.		√
6	Local natural drainage regime / hydrology will be changed.		√
7	Within/immediately adjacent to surface/underground Public Drinking Water Source Area.		√
8	Dewatering, or a new water bore.		√
9	Known potential source of hazardous materials within or adjoining the road reserve. e.g. Acid Sulphate Soils, existing petrol station, industrial site or waste disposal site (landfill)		√
10	Buildings will require demolition.		√

Completed By:

Signature 
 Name Ashley Fertch

Date 28.06.2011
 Title Environmental Advisor (Astron Environmental)

To be reviewed by a Main Roads Environment Officer
 Signature _____
 Name _____

Date _____
 Title _____

Comments: _____

Copies of all completed (reviewed) forms must be forwarded to the Manager Environment

Appendix B

DEC's Threatened Flora and Fauna Database Searches



Department of
Environment and Conservation

Our environment, our future



Your Ref: **21022-11.**
Our Ref: **37-0611FL**
Enquiries: Joshua Gilovitz
Phone: (08) 9334 0123
Fax: (08) 9334 0278
Email: joshua.gilovitz@dec.wa.gov.au

Astron Environmental Services

PO Box 426
Leederville, WA 6903

Attention: Ashley Fertch

Dear Ashley Fertch,

REQUEST FOR RARE FLORA INFORMATION

I refer to your request of 21 June 2011 for Threatened Flora information in the Gap Ridge area. The search was conducted within a 10km radial buffer area around the coordinate you provided.

A search was undertaken for these areas of **(1)** the Department's *Threatened (Declared Rare) Flora* database (for results, *if any*, see "DEFL" – coordinates are GDA94), **(2)** the *Western Australian Herbarium Specimen* database for priority species opportunistically collected in the area of interest (for results, *if any*, see "WAHERB" – coordinates are GDA94 – see condition number 9 in the attached 'Conditions in Respect of Supply' and **(3)**, the Department's *Declared Rare and Priority Flora List* [this list is searched using 'place names'. This list, which may also be used as a species target list, contains species that are declared rare (Conservation Code R or X for those presumed to be extinct), poorly known (Conservation Codes 1, 2 or 3), or require monitoring (Conservation Code 4) – for results, *if any*, see "DP List"]. The results are attached electronically to this email.

Attached also are the conditions under which this information has been supplied. Your attention is specifically drawn to the seventh point, which refers to the requirement to undertake field investigations for the accurate determination of rare flora occurrence at a site. *The information supplied should be regarded as an indication only of the rare flora that may be present and may be used as a target list in any surveys undertaken.*

The information provided does not preclude you from obtaining and complying with, where necessary, land clearing approvals from other agencies.

An invoice for \$300 (plus GST) to supply this information will be forwarded.

It would be appreciated if any populations of rare flora you encounter in the area could be reported to this Department to ensure their ongoing management.

If you require any further details, or wish to discuss rare flora management, please contact Dr Ken Atkins, Manager, Species and Communities Branch, on (08) 9334 0455.

Yours faithfully

Joshua Gilovitz

.....
for Keiran McNamara
DIRECTOR GENERAL

22 June 2011

Species and Communities Branch

17 Dick Perry Ave, Technology Park, Kensington
Phone: (08) 9334 0455 Fax: (08) 9334 0278

Locked Bag 104, Bentley Delivery Centre, Bentley, Western Australia 6983

www.dec.wa.gov.au

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

RARE FLORA INFORMATION

CONDITIONS IN RESPECT OF SUPPLY OF INFORMATION

1. All requests for data to be made in writing to the Director General, Department of Environment and Conservation, Attention: Threatened Flora Database Officer, Species and Communities Branch.
2. The data supplied may not be supplied to other organisations, nor be used for any purpose other than for the project for which they have been provided, without the prior written consent of the Director General, Department of Environment and Conservation.
3. Specific locality information for Declared Rare Flora is regarded as confidential, and should be treated as such by receiving organisations. Specific locality information for DRF may not be used in public reports without the written permission of the Director General, Department of Environment and Conservation. Publicly available reports may only show generalised locations or, where necessary, show specific locations without identifying species. The Department is to be contacted for guidance on the presentation of rare flora information.
4. Note that the Department of Environment and Conservation respects the privacy of private landowners who may have rare flora on their property. Rare flora locations identified in the data as being on private property should be treated in confidence, and contact with property owners made through the Department of Environment and Conservation.
5. Receiving organisations should note that while every effort has been made to prevent errors and omissions in the data provided, they may be present. The Department of Environment and Conservation accepts no responsibility for this.
6. Receiving organisations must also recognise that the database is subject to continual updating and amendment, and such considerations should be taken into account by the user.
7. **It should be noted that the supplied data do not necessarily represent a comprehensive listing of the rare flora of the area in question. Its comprehensiveness is dependant on the amount of survey carried out within the specified area. The receiving organisation should employ a botanist, if required, to undertake a survey of the area under consideration.**
8. Acknowledgment of the Department of Environment and Conservation as source of the data is to be made in any published material. The unique reference number that is given upon the request for information should be quoted. Copies of all such publications are to be forwarded to the Department of Environment and Conservation, Attention: The Manager, Species and Communities Branch.
9. The development of the PERTH Herbarium database was not originally intended for electronic mapping (eg. GIS ArcView). The latitude and longitude coordinates for each entry are not verified prior to being databased. It is only in recent times that collections have been submitted to PERTH with GPS recorded in latitude and longitude coordinates. Therefore, be aware when using this data in ArcView that some records may not plot to the locality description given with each collection.

Species and Communities Branch

17 Dick Perry Ave, Technology Park, Kensington

Phone: (08) 9334 0455 Fax: (08) 9334 0278

Locked Bag 104, Bentley Delivery Centre, Bentley, Western Australia 6983

www.dec.wa.gov.au

THE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

DECLARED RARE AND PRIORITY FLORA LIST

for Western Australia

CONSERVATION CODES

R: Declared Rare Flora - Extant Taxa

Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such.

X: Declared Rare Flora - Presumed Extinct Taxa

Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such.

1: Priority One - Poorly known Taxa

Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

2: Priority Two - Poorly Known Taxa

Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

3: Priority Three - Poorly Known Taxa

Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but are in need of further survey.

4: Priority Four - Rare Taxa

Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years.

Note, the need for further survey of poorly known taxa is prioritised into the three categories depending on the perceived urgency for determining the conservation status of those taxa, as indicated by the apparent degree of threat to the taxa based on the current information.

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ABBREVIATIONS USED IN THREATENED FLORA DATABASE PRINTOUTS

VESTING

AAP	Aboriginal Planning Authority
AGR	Chief Executive, Dep. of Agriculture
ALT	Aboriginal Land Trust
APB	Agricultural Protection Board of WA
BGP	Botanical Gardens & Parks Authority
BSA	Boy Scouts Association
CC	Conservation Commission – NPNCA - LFC
CGT	Crown Grant in Trust
COM	Commonwealth of Australia
CRO	Crown Freehold-Govt Ownership
CRW	Crown
DAG	Dep. of Agriculture
DOW	Dep. of Water
DPI	Dep. of Planning & Infrastructure
EXD	Exec Direc CALM
FES	Fire and Emergency Services Aust.
HOW	Dep. of Housing/State Housing Commission
ILD	Industrial Lands Develop. Auth
LAC	LandCorp
MAG	Minister for Agriculture
MBC	Metropolitan Cemeteries Board
MED	Ministry of Education
MHE	Minister for Health
MIN	Minister for Mines
MPL	Ministry for Planning
MPR	Minister for Prisons
MRD	Main Roads WA
MTR	Minister for Transport
MWA	Minister for Water Resources
MWO	Minister for Works
NAT	Natural Trust of Australia WA
NON	Not Vested
PLB	Pastoral Lands Board
PRI	Private/Freehold
RAI	Public Transport Authority
REL	Religious Organisation
SEC	Synergy (ex Western Power)
SHI	Shire
SPC	State Planning Commission
SWA	State of Western Australia
TEL	Telstra
UNK	Unknown
WAT	Water Corporation
WEL	Minister Community Welfare
WRC	Water & Rivers Commission
XPL	Ex-Pastoral Lease

PURPOSES

ABR	Aboriginal Reserve
ACC	Access Track
AER	Aerodrome
AIR	Airport
ARS	Agricultural Research Station
BAP	Baptist Union of WA
CAM	Camping
CAR	Caravan park
CEM	Cemetery
CFA	Conservation of Fauna
CFF	Conservation Of Flora & Fauna
CFL	Conservation of Flora
CHU	Church
CPK	Car Park
CMN	Communications
COM	Common

CON	Conservation Park
DEF	Defence
DRA	Drain
EDE	Educational Endowment
EDU	Educational purposes UWA
ENE	Enjoyment of Natural Environ.
EXC	Excepted from sale
EXL	Exploration Lease
EXP	Experimental Farm
FIR	Firing Range
FOR	State Forest
GE	General Lease
GHA	Grain Handling
GOL	Golf
GRA	Gravel Pit
GVT	Government Requirements
HAR	Harbour Purposes
HEP	Heritage Purposes
HER	Heritage trail
HOS	Hospital
KEN	Kennels
LPR	Landscape Protection
MIN	Mining lease
MUN	Municipal Purposes
NPK	National Park
NRE	Nature Reserve
OTH	Other
PAR	Parkland (& Recreation)
PAS	Pastoral lease
PFF	Protection of Flora & Fauna
PFL	Protection of Flora
PIC	Picnic ground
PLA	Plantation
POS	Public Open Space
PRS	Prison site
PUR	Purchase Lease
PUT	Public Utility
QUA	Quarry
RAD	Radio Station
RAC	Racecourse
REC	Recreation
REH	Rehabilitation/Re-establish Native Plants
RRE	Railway Reserve
RUB	Rubbish
SAN	Sand
SCH	School-site
SET	Settlers requirements
SHI	Shire Requirements
SHO	Showgrounds
SNN	Sanitary
SOI	Soil Conservation
STO	Stopping place
TIM	Timber
TOU	Tourism
TOW	Town-site
TRA	Training Ground
TRI	Trig station
UCL	Unallocated Crown Land
UNK	Unknown
VER	Road Verge
VPF	Vermin Proof Fence
WAT	Water
WLS	Wildlife Sanctuary
WOO	Firewood

SHEET_NO	SPECIES	CONSCODE	SITE	VEGETATION	LOCALITY	DATE_
PERTH 08159068	<i>Rhynchosia bungarensis</i>	4	W facing slope of large hill. Light pinky sandy soil - skeletal, amongst boulders.	Acacia coarctata subsp. coriacea, Scaevola spinescens (narrow form) scattered shrubs over Indigofera monophylla (Burrup form), Corchorus walcottii, Ptilotus obovatus var. obovatus low shrubland over Themeda sp. Burrup (B84), Triodia epactia (Burrup form)	Site B091, White Hill, Pilbara Bioregion S of Dampier Road, NW corner of Dampier Salt lease on W facing exposed slope	28 05 2000
PERTH 07288999	<i>Terminalia supranitifolia</i>	3	Rock pile.		Near Dampier	21 07 2004
PERTH 07195958	<i>Terminalia supranitifolia</i>	3	Base of rockpile.		Site 1, Burrup Peninsula, Pistol Ranges, south of Hearson's Cove Road	02 11 1998
PERTH 07469780	<i>Terminalia supranitifolia</i>	3	Base of rockpile.		Burrup Peninsula, Pistol Ranges, S of Hearson Cove Road	02 11 1998
PERTH 3144909	<i>Themeda sp. Hamersley Station</i> (M.E. Trudgen 11431)	3	Drainage focus in cracking clay plain	Eragrostis xerophila grassland	10km W of Karratha on road to Dampier opp & Mile Railway sheds on E side of road	20 08 1992
PERTH 07195966	<i>Terminalia supranitifolia</i>	3	Mid-slope of rock outcrop.		Site 2, Burrup Peninsula, Pistol Ranges, south of Hearson's Cove Road	02 11 1998
PERTH 07195923	<i>Terminalia supranitifolia</i>	3	Base of rockpile.		Site 5, Burrup Peninsula, Pistol Ranges, south of Hearson's Cove Road	28 11 1998
PERTH 07271484	<i>Rhynchosia bungarensis</i>	4	In crevices in rock piles.		Near quadrant on cutting along road to Con. camp; Burrup Peninsula	21 09 1983
PERTH 01026828	<i>Tephrosia bidwillii</i>	3			Nickol Bay	
PERTH 07469756	<i>Terminalia supranitifolia</i>	3	In rock piles.		Burrup Peninsula	10 02 1982
PERTH 07196040	<i>Terminalia supranitifolia</i>	3	Rocky plateau.		Site 3, Burrup Peninsula, Pistol Ranges, south of Hearson's Cove Road	03 11 1998
PERTH 07196008	<i>Terminalia supranitifolia</i>	3	Rocky plateau.		Site 4, Burrup Peninsula, Pistol Ranges, south of Hearson's Cove Road	03 11 1998
PERTH 07196016	<i>Terminalia supranitifolia</i>	3	Small rocky terrace on large rock outcrop		Site 6, Burrup Peninsula, Pistol Ranges, south of Hearson's Cove Road	05 11 1998
PERTH 00153397	<i>Acacia glaucocaesia</i>	3			Muda - Karratha	09 1961

Toni Cowell

From: Mutton, Amy [Amy.Mutton@dec.wa.gov.au]
Sent: Wednesday, 13 April 2011 4:29 PM
To: Toni Cowell
Subject: RE: North West Coast Highway Cooya Pooya - Database Search Request (21017-11) #3605
Attachments: FaunaSearch_Astron_Cowell3605.xls; FaunaSearch_Astron_Cowell3605_letter.pdf

Hi Toni

Please find attached the results for the Threatened and Priority Fauna search for the vicinity of the study area, Lot 258 North West Coastal Highway Cooya Pooya (plus 10km buffer). Note that there were no records within the requested 5km buffer so the buffer was increased; refer to point six of the attached letter conditions.

An invoice will be forwarded for \$200+GST. Please refer to the attached letter for the conditions relating to the supplied data.

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

Kind Regards,
Amy

The Threatened Species pages have been updated on the DEC website.

The **Threatened Flora, Fauna and Ecological Communities Data Searches** information sheet, April 2011, can be downloaded from

<http://www.dec.wa.gov.au/content/view/5379/2231/>

The **Threatened Fauna List**, Fauna Notice August 2010, and the **Threatened and Priority Fauna Rankings** August 2010 can be downloaded from

<http://www.dec.wa.gov.au/content/view/852/2010/>

The **Fauna Report Form, 2009 version**, can be downloaded from

<http://www.dec.wa.gov.au/content/view/5388/2237/>

Kind Regards,

Amy Mutton

Project Officer - Fauna

Species and Communities Branch

Department of Environment and Conservation

Phone (08) 9219 8636

Fax(08) 9334 0278

From: Toni Cowell [mailto:toni.cowell@astron.com.au]

Sent: Monday, 21 March 2011 2:58 PM

To: Podesta, Mia; Mutton, Amy; Gilovitz, Joshua; Downes, Susan

Subject: North West Coast Highway Cooya Pooya - Database Search Request (21017-11)

Good afternoon all

I would like to request Flora, Vegetation and Fauna database searches for near Lot 258 North West Coast Highway Cooya Pooya (Shire of Roebourne).

The site is located on the eastern side of Karratha Tom Price Road, approximately 0.9km south of the North West Coastal Highway intersection in Karratha.

The purpose of the data is to allow for a Due Diligence Environmental assessment of the site. The data will be used in site mapping of desktop data.

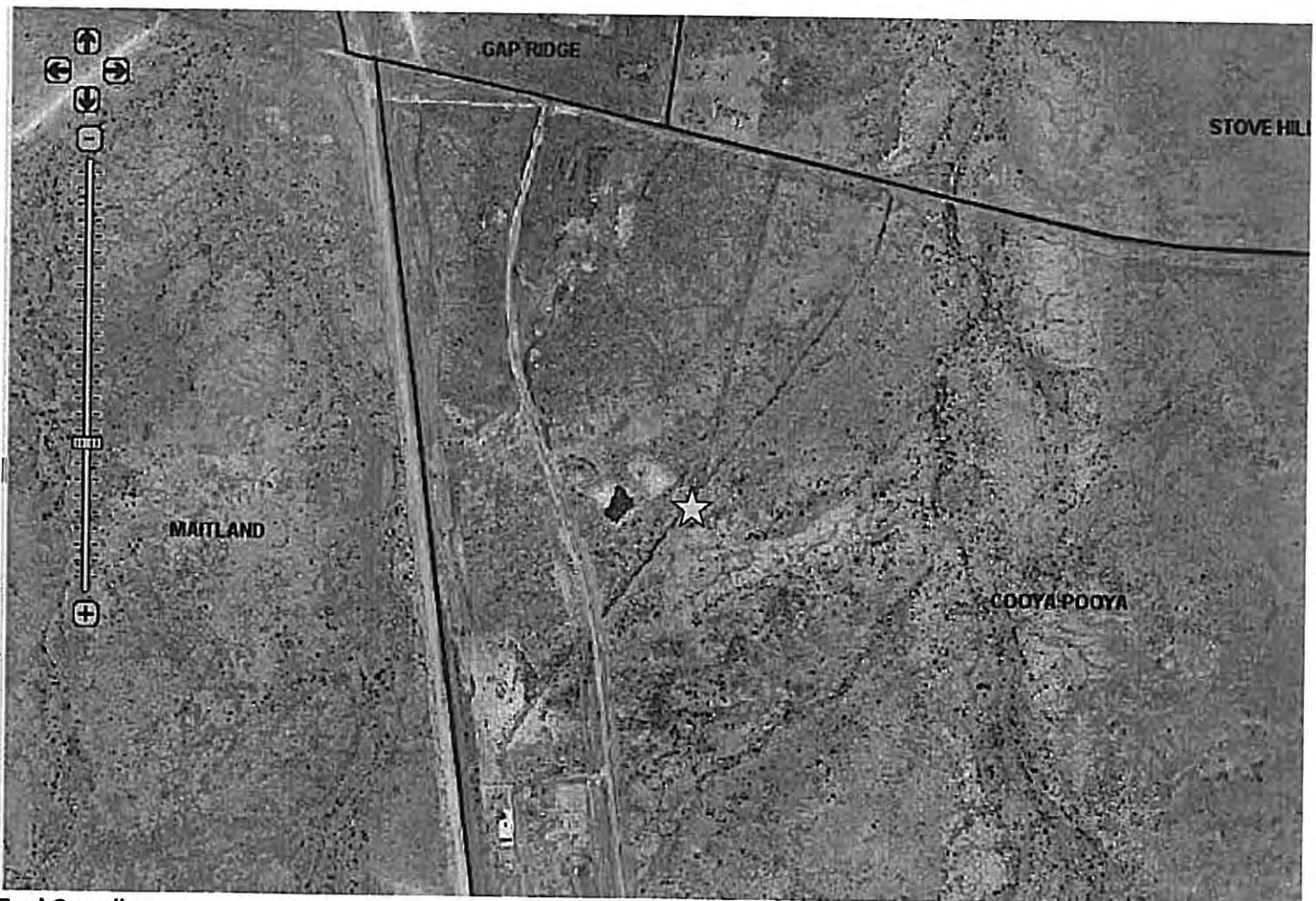
My billing details are below – Project Reference 21017-11.

Fauna – species list format.

Flora- GIS format please.

Point Location – Lat: 20° 48' 14" South
Long: 116° 46' 39" East
Buffer: 5km

Thanks
Toni



Toni Cowell
Manager - Environmental Management and Approvals

Suite 4F, 661 Newcastle St
Leederville WA 6007

PO Box 426 Leederville WA 6903

Direct: 08 6242 0656 M: 0447 001 755

Switch: 08 9228 4411 Fax: 08 9228 4635

www.astron.com.au | toni.cowell@astron.com.au



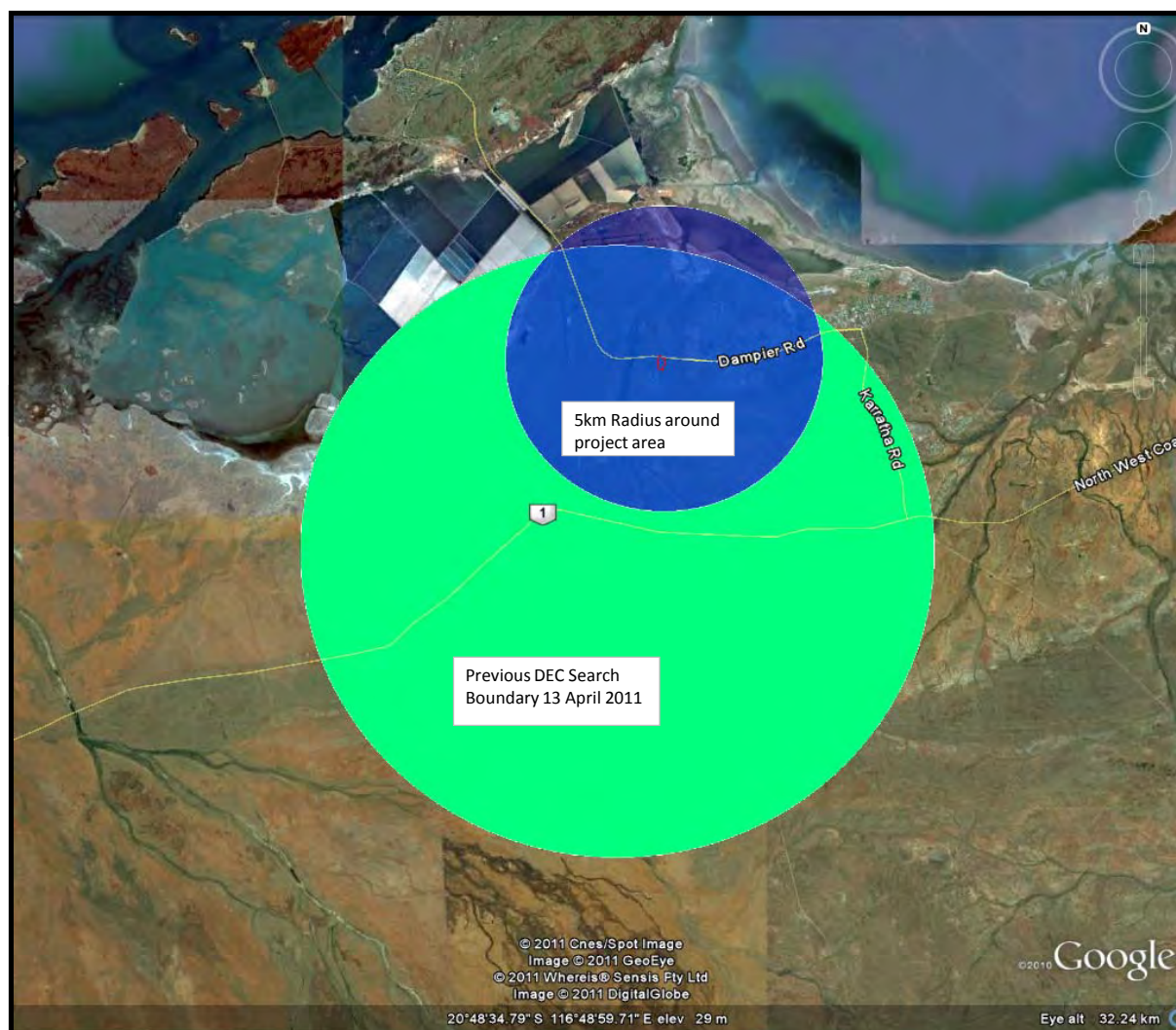
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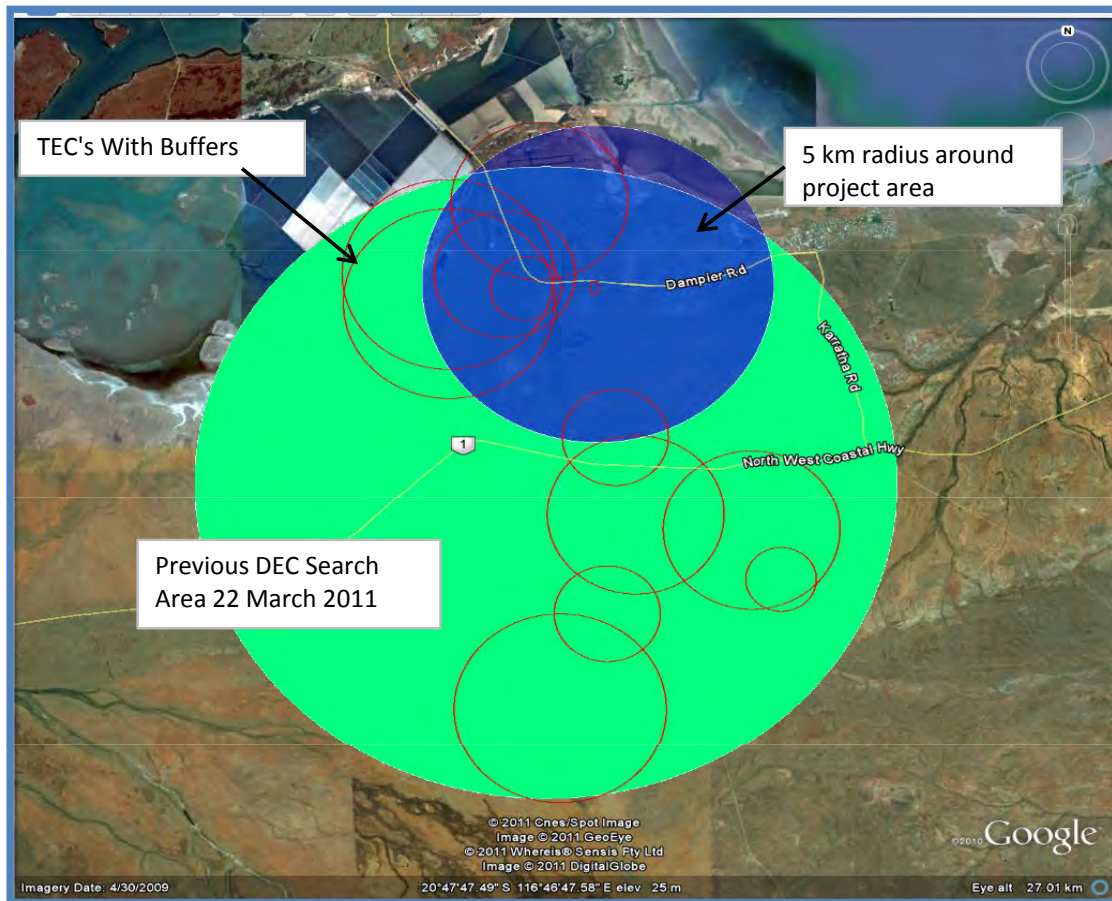
Results of Department of Environment and Conservation Threatened Fauna database 13 April 2011 (10 km from site)

SPECIES	COMMON NAME	CONS V CODE	CLASS	DATE	LOCALITY	SITE
<i>Ardeotis australis</i>	Australian Bustard	4	BIRD	1978	MAITLAND	
<i>Ardeotis australis</i>	Australian Bustard	4	BIRD	1978	MAITLAND	
<i>Ardeotis australis</i>	Australian Bustard	4	BIRD	1977	MAITLAND	
<i>Ardeotis australis</i>	Australian Bustard	4	BIRD	1978	MAITLAND	
<i>Leggadina lakedownensis</i>	Short-tailed Mouse	4	MAMMAL	2006	MAITLAND	DAMPIER AREA
<i>Notoscincus butleri</i>		4	REPTILE	2004	STOVE HILL	3.5KM SOUTH KARRATHA
<i>Notoscincus butleri</i>		4	REPTILE	2004	STOVE HILL	3.5KM SOUTH KARRATHA
<i>Notoscincus butleri</i>		4	REPTILE	2004	STOVE HILL	6KM SOUTH KARRATHA
<i>Numenius madagascariensis</i>	Eastern Curlew	4	BIRD	2006	PEGS CREEK	Karratha
<i>Numenius madagascariensis</i>	Eastern Curlew	4	BIRD	1979	MAITLAND	
<i>Numenius madagascariensis</i>	Eastern Curlew	4	BIRD	1978	MAITLAND	

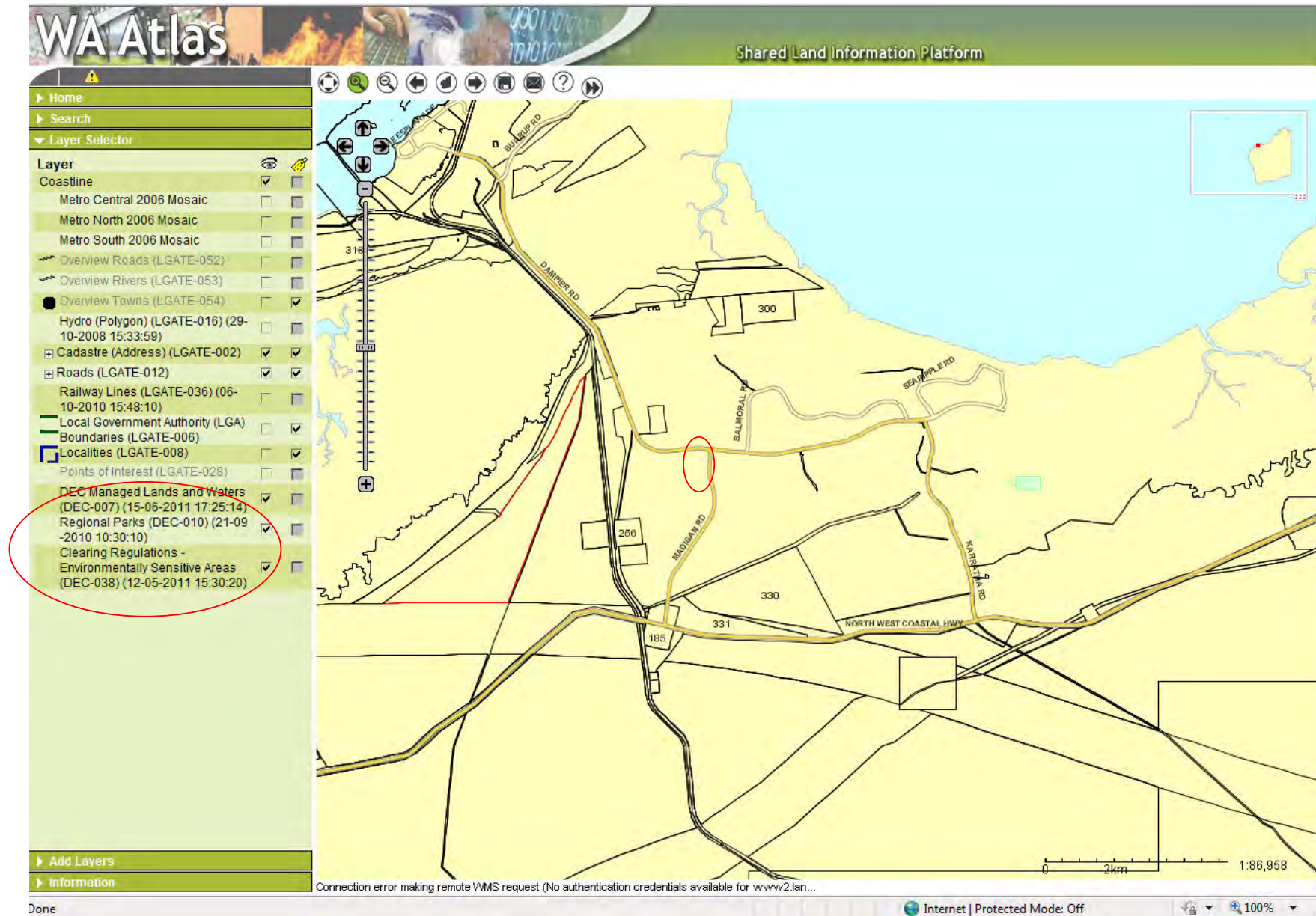
* Search was ordered for 5 km buffer of site, however search was expanded to 10 km due to no records within 5 km.



OCC					BUFFER		OCC
BDY ID	UNIQUE	COM ID	COM_NAME	CT_DESC	first_S_ID	(M)	CONFID
0	2849	Roebourne Plains gilgai grasslands	Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands)	Priority 1 PEC	Edna01	3000	No
0	2850				Edna02	1500	No
0	2854				ElevenMile02	1000	No
					ElevenMile01	2500	No
0	2853				DRW14	3000	No
0	2598				KA01d	1000	No
0	2847				KA01c	2000	No
0	2846				KA01e	2500	No
0	2848				Blackhill S	2500	No
0	2852				Blackhill N	1500	No
0	2851				RPG1	3000	No
0	2598						



WA DEC Conservation Estate and Native Vegetation Clearing Regulation ESA's Screen Capture:



Appendix C

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

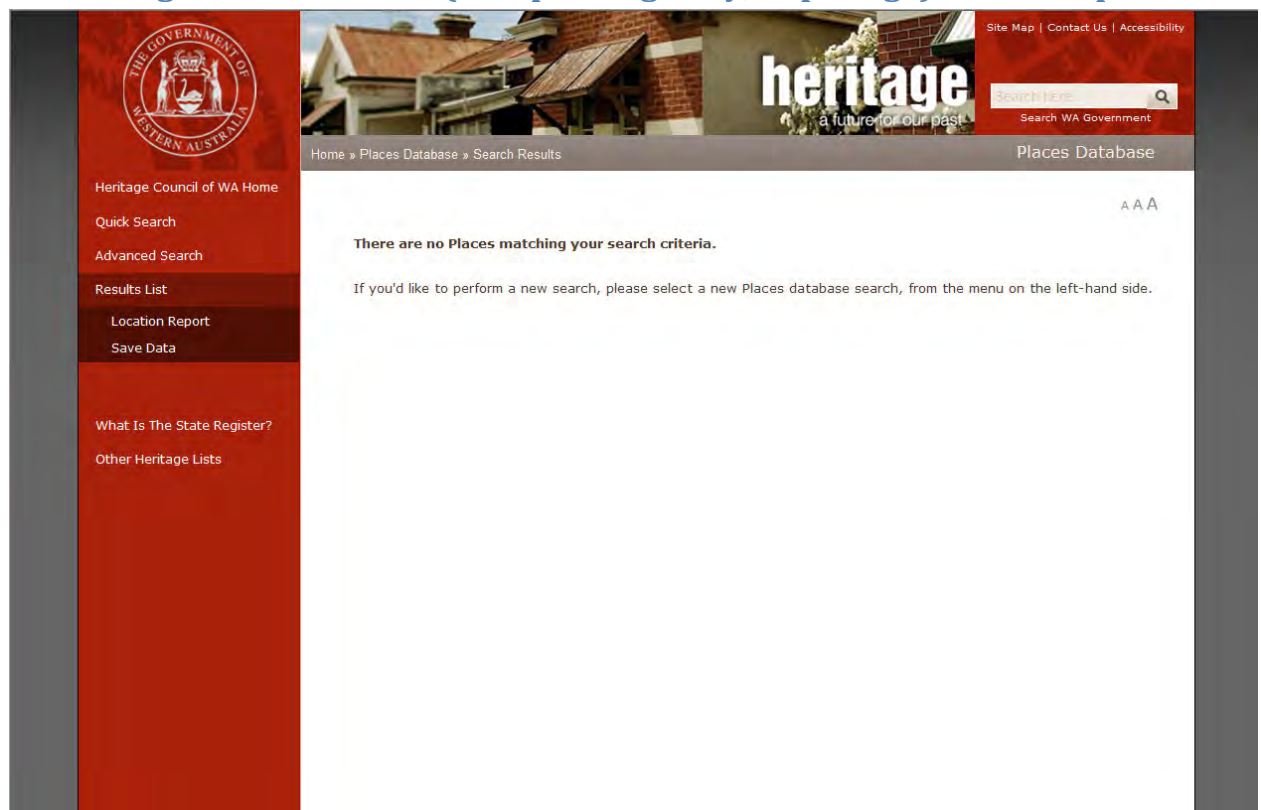
Commonwealth Screen Capture: Australian Heritage Places Inventory Search (Dampier Highway, WA)

AUSTRALIAN HERITAGE PLACES INVENTORY	
[New Search]	
No records matched your query.	
Report produced : 28/6/2011 AHPI URL : http://www.environment.gov.au/heritage/ahpi/index.html	

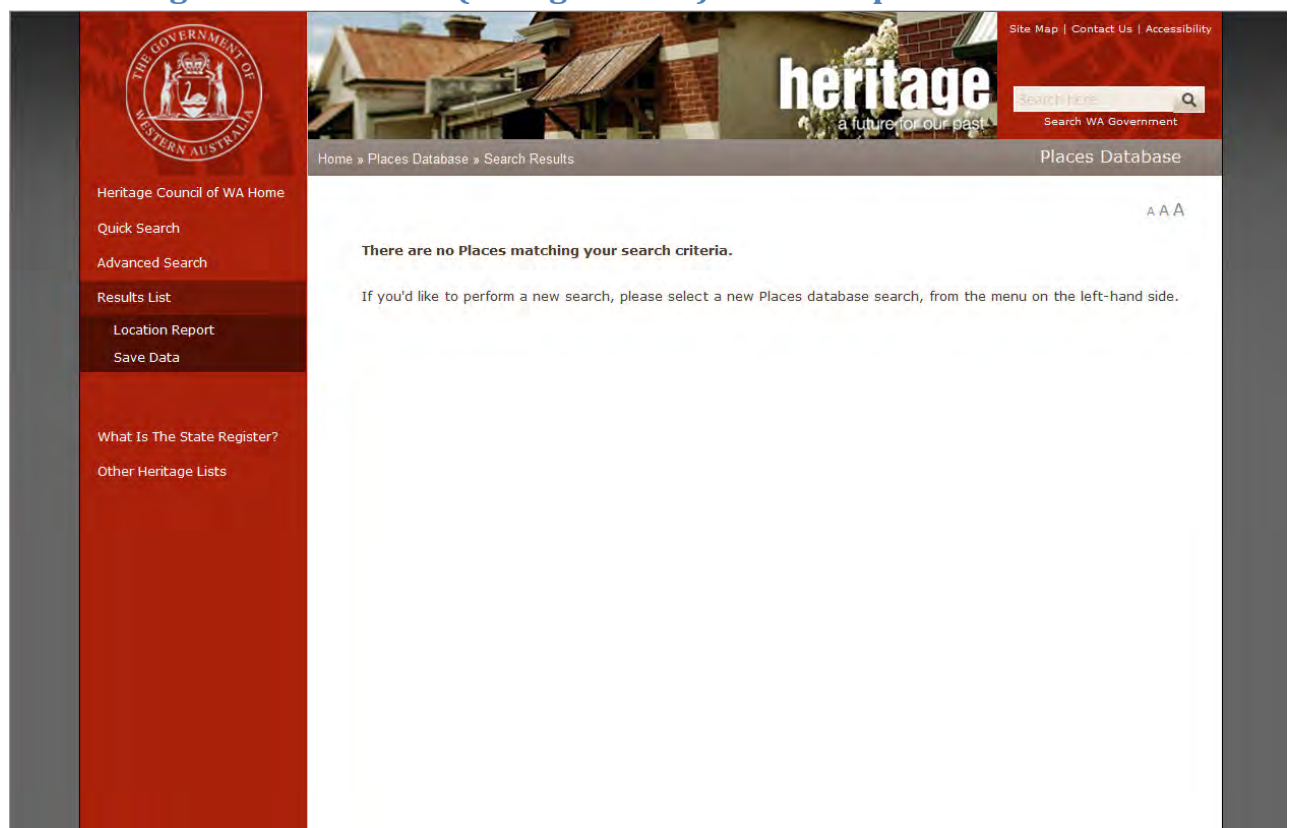
Australian Heritage Places Inventory Search (Madigan Rd, WA)

AUSTRALIAN HERITAGE PLACES INVENTORY	
[New Search]	
No records matched your query.	
Report produced : 28/6/2011 AHPI URL : http://www.environment.gov.au/heritage/ahpi/index.html	

WA Heritage Council Search (Dampier Highway, Gap Ridge) Screen Capture:



WA Heritage Council Search (Madigan Road) Screen Capture:



SHIRE OF ROEBOURNE

MUNICIPAL HERITAGE INVENTORY

NO	NAME	ADDRESS
01	Aboriginal Cemetery, Roebourne	Two mile, Roebourne, on the banks of the Harding River
02	Aboriginal Reserve, Roebourne	Two miles from Roebourne on the Port Hedland Road
03	Balla Balla Landing	Mallina Station, North of Whim Creek
04	Bezout Island Lazarette	Offshore from Cape Lambert
05	Black Hawk Bay	Dampier Archipelago, eastern side of Gidley Island
06	Burru Peninsula	Dampier Island
07	Chirrita Station	Chirrita Station
08	Cooya Pooya Homestead Group	Banks of Harding River, 22 miles south of Roebourne
09	Cossack Cemetery	Settlers Beach Road, Cossack
10	Cossack Court House	Pearl Street, Cossack
11	Cossack Customs House & Bond Store	Cnr Cossack Rd and Pearl St, Cossack
12	Cossack Lazarette	Opposite Cossack on the Estuary
13	Cossack Police Quarters, Cookhouse and Lockup	Settlers Beach Road, Cossack
14	Cossack Post & Telegraph Office	Pearl Street West, Cossack
15	Cossack Schoolhouse	Cnr Perseverance & Fraser St, Cossack
16	Depuch Island	Vicinity of Balla Balla and Whim Creek
17	Dolphin Island Grave Site	West shore of Dolphin Island in Flying Foam Passage, Dampier Archipelago
18	Enderby Island	Dampier Archipelago
19	Freddie Ye Palk's Old Building	170 Roe Street, Roebourne
20	Galbraith's Store	Cossack
21	Hearson Cove	Burru Peninsula
22	Hicks Gap	Old Roebourne to Tableland Rd, Harding Dam Catchment
23	Holy Trinity Church	Lot 2261 Hampton St, Roebourne
24	Jager's House	Withnell Street, Roebourne
25	Jarman Island Lighthouse	Jarman Island, near Cossack
26	Jarman Island Quarters	Jarman Island, near Cossack
27	Karratha Station	South on NW Coastal Highway
28	Land-backed Wharf	Cossack Road, Cossack
29	Malus Island Whaling Site	Dampier Archipelago
30	Mardie Station	South off NW Coastal Highway
31	Mercantile Store	Cossack
32	Mt Fisher Station	North on George River, NW Coastal Highway

NO	NAME	ADDRESS
33	Mt Welcome Station	Hampton Street, Roebourne
34	Old Roebourne School	Hampton Street, Roebourne
35	Old Roebourne Well	Harding River Reserve, Roebourne
36	Pegs Well	Karratha Townsite
37	Point Samson Jetty	Vitenbergs Drive, Point Samson
38	Pyramid Station	Roebourne to Wittenoom Road
39	Roebourne Cemetery	Andover Way, Roebourne
40	Roebourne Court House	Hampton Street, Roebourne
41	Roebourne Hospital/Kitchen	Hampton Street, Roebourne
42	Roebourne Library	Roe Street, Roebourne
43(a)	Roebourne Police Station	Queen Street, Roebourne
43(b)	Roebourne Gaol	Queen Street, Roebourne
44	Roebourne Post Office	Lot 11 Sholl Street, Roebourne
45	Roebourne Race Track	North West Coastal Highway, Roebourne
46	Springs Station	Old Roebourne to Tableland Rd, Roebourne
47	Stone Ruin (Hampton St)	Lot 53 Hampton Road, Roebourne
48	Stone Yards	Mt Welcome Station, Roebourne
49	Tramway Site	Roebourne to Cossack
50	Veterinary Clinic	Lot 15 Sholl Street, Roebourne
51	Warambie Station	Roebourne to Wittenoom Road
52	Watson and Tee Store	Sholl Street, Roebourne
53	We Care Life Centre	Lot 176 Roe Street, Roebourne
54	West Lewis Island	South eastern shore of the Island, Dampier Archipelago
55	Whim Creek	North West Coastal Highway, Roebourne
56	Woodbrook Station	Roebourne to Harding Dam Road

SHIRE OF ROEBOURNE MUNICIPAL HERITAGE INVENTORY

REVIEW LIST

The following places and sites were identified as significant by the Community Committee. They have not been included in the Inventory at this stage as they need to be researched further. This can be done at a later date by a review committee or by other interested people.

For the purpose of this process, the term PLACE refer to locations where there are ruins or material evidence of the historical place. SITE is used when nothing physical remains, but the recording of the historical value of the location is considered to be important.

NAME OF PLACE OR SITE	Place or Site
Camel Rocks	S
Canhams Copper Mine	S
Carlow Castle Copper Mine	S
Chinese Rocks	S
Cossack Living Sites/Date Palms	P
Cossack Upper Landings	S
Cossack Well	P
Croyden Station	P
CWA Cottage at Point Samson	S
Dawson's Creek 'Cossack Man'	S
Delambre Island	S
Dixon Island	S
East Harding River - Rob Roy Hotel	P
Egina Goldfield	S
Fisheries at Point Samson	P
Flying Foam - Turtle Pens	P
Gardeners Creek- Saddliers Garden	S
Glen Roebourne Copper Mine - Stamp Batteries	S
Golden Valley Camp and Gold Mine	S
Goods shed and yard at Point Samson	S
Happy Valley - Dampier	S
Harding River - station ruins above Cooya Pooya	P

NAME OF PLACE OR SITE	Place or Site
Inthernoona Station Ruins	P
Jubilee Hotel, Roebourne	S
Langwell Station	P
Leprosarium	P
Leslie Hills Mine	S
Karratha Cemetery	P
Karratha Church	P
Karratha Hospital	P
Karratha Shire Offices	P
Maitland River Landing	S
Mallina Station	P
Market Garden Site on Harding River/Woodbrook	S
Miller's Well	P
Mons Cupri Copper Mine	S
Nanny Goat Hill	S
Nickol Goldfield	S
Old Commercial Hotel in Roebourne near Tsakalos Garage	S
Old Convent School (Roebourne)	P
Old Garage Workshop, Roebourne	P
Old Sherlock Station Site	S
Old Stock Route Wells	P
Overland Telegraph Line	S
Paradise Well and Rock Banks	P
Pope's Nose Bridge Site	S
Rosemary Island	S
Sam's Creek and Harbour - Point Samson	P
Sherlock River Landing	S
Sherlock Station	P
Shipwreck at Point Samson	P
Stone Dwelling - behind Woodbrook	P
Tambrey Centre - Karratha	P
Toweranna Mining	S
Tozer Springs	P
Upper Nickol Goldfield and Hut	P

NAME OF PLACE OR SITE	Place or Site
Watering Cove	S
Weering Gold Mine	S
Well through Hicks Gap	P
Whandoo Copper Mine and Grave	P
White Asbestos Mines Woodbrook	S
Woodbrook Station Lead Mine	S
Yannery Hills Mine	P

Appendix D

Department of Indigenous Affairs Database Search



Search Criteria

3 sites in a search box. The box is formed by these diagonally opposed corner points:

MGA Zone 50	
Northing	Easting
7704996	477643
7705991	478325

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.

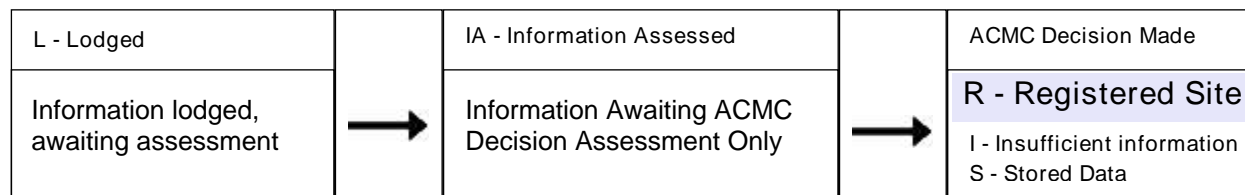
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Copyright in the information contained herein is and shall remain the property of the State of Western Australia. All rights reserved. This includes, but is not limited to, information from the Register of Aboriginal Sites established and maintained under the Aboriginal Heritage Act 1972 (AHA).

Legend

Restriction	Access	Coordinate Accuracy
N No restriction	C Closed	Accuracy is shown as a code in brackets following the site coordinates.
M Male access only	O Open	[Reliable] The spatial information recorded in the site file is deemed to be reliable, due to methods of capture.
F Female access	V Vulnerable	[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



*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.

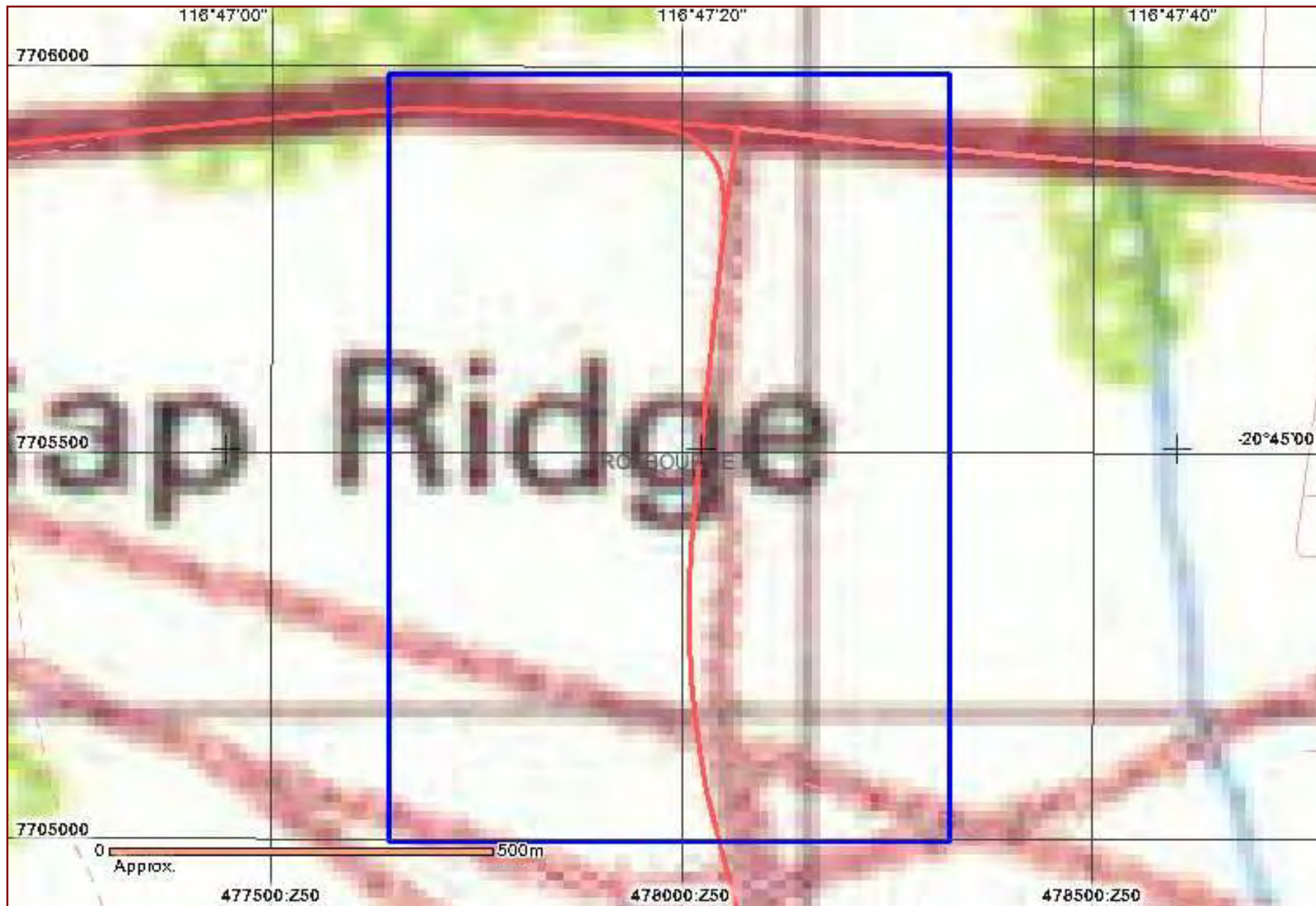
Sites Shown on Maps

Site boundaries may not appear on maps at low zoom levels



List of Registered Aboriginal Sites with Map

No results



Legend

Selected Heritage Sites

Registered Sites

Town

Map Area

Search Area

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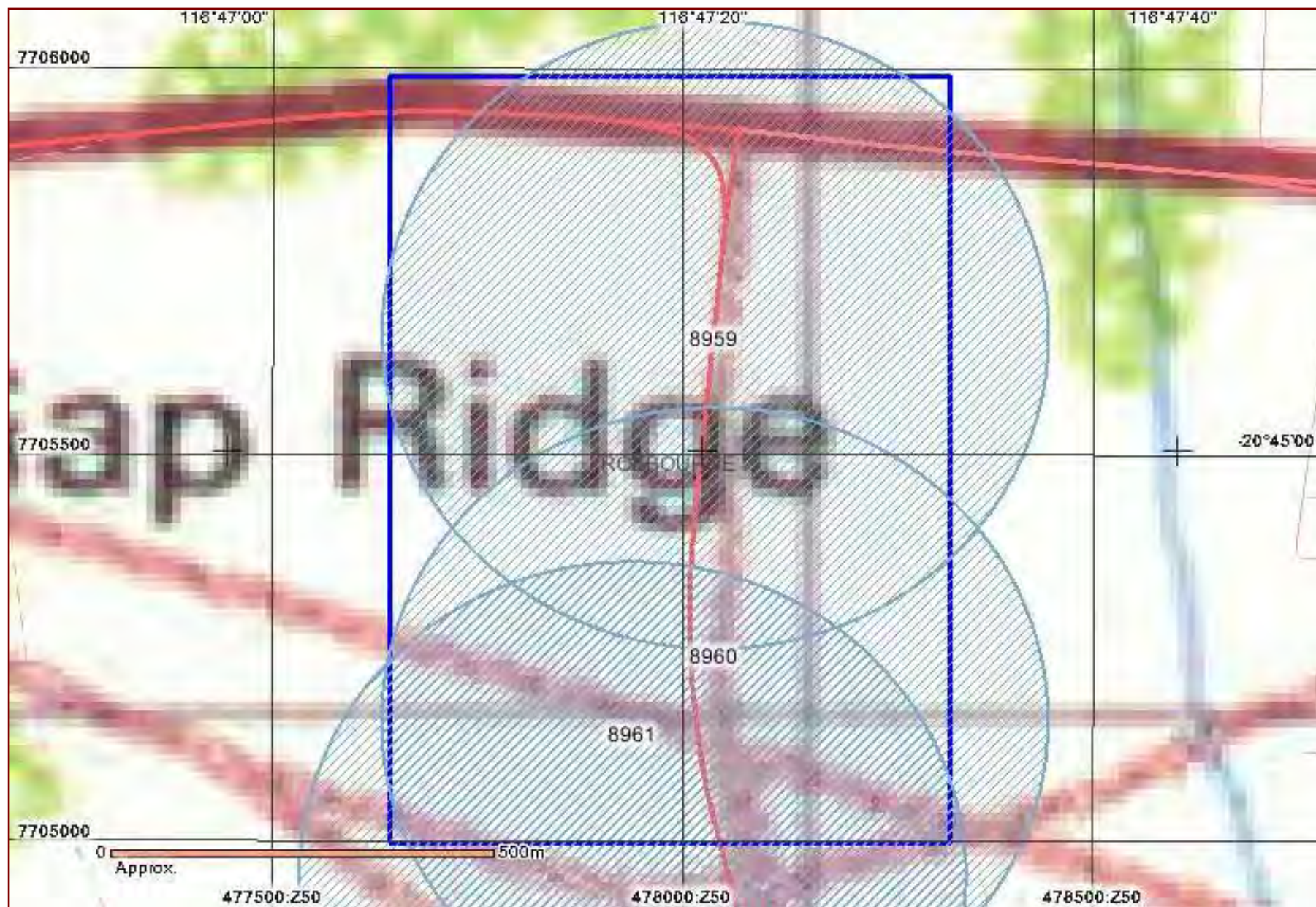
Geothermal Application, Geothermal Title, Mining Tenement, Petroleum Application, Petroleum Title boundary data copyright © the State of Western Australia (DMP) (2011.6).

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List of 3 Other Heritage Places with Map

Site ID	Status	Access	Restriction	Site Name	Site Type	Additional Info	Informants	Coordinates	Site No.
8959	S	O	N	Karratha West Access Rd 01	Artefacts / Scatter			478039mE 7705655mN Zone 50 [Unreliable]	P03550
8960	S	O	N	Karratha West Access Rd 02	Artefacts / Scatter			478039mE 7705155mN Zone 50 [Unreliable]	P03551
8961	S	O	N	Karratha West Access Rd 03	Midden / Scatter			477939mE 7704955mN Zone 50 [Unreliable]	P03552



Legend

Selected Heritage Sites

Other Heritage Places

Town

Map Area

Search Area

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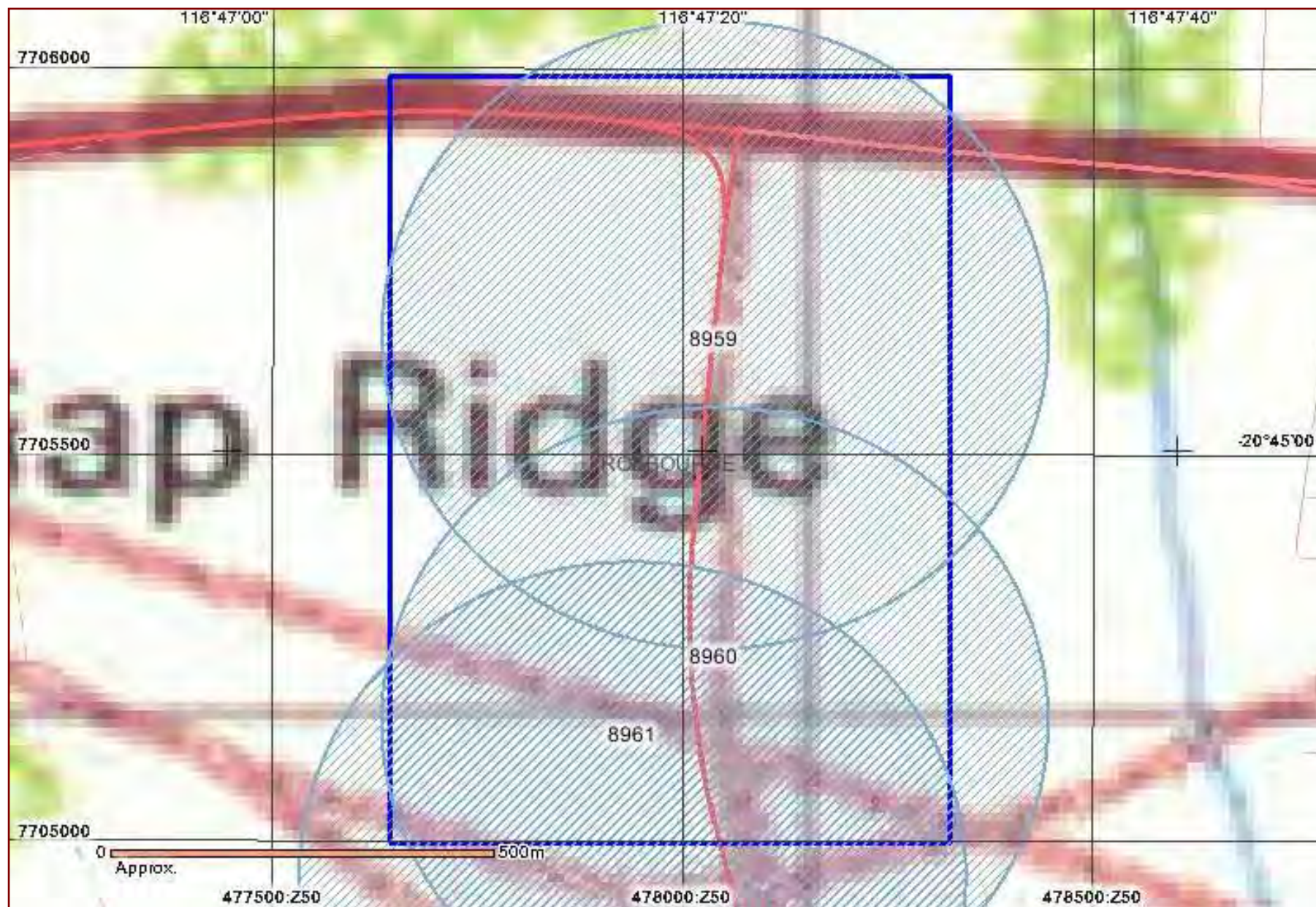
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Map Showing Registered Aboriginal Sites and Other Heritage Places



Legend

Selected Heritage Sites

- Registered Sites
- Other Heritage Places
- Town
- Map Area
- Search Area

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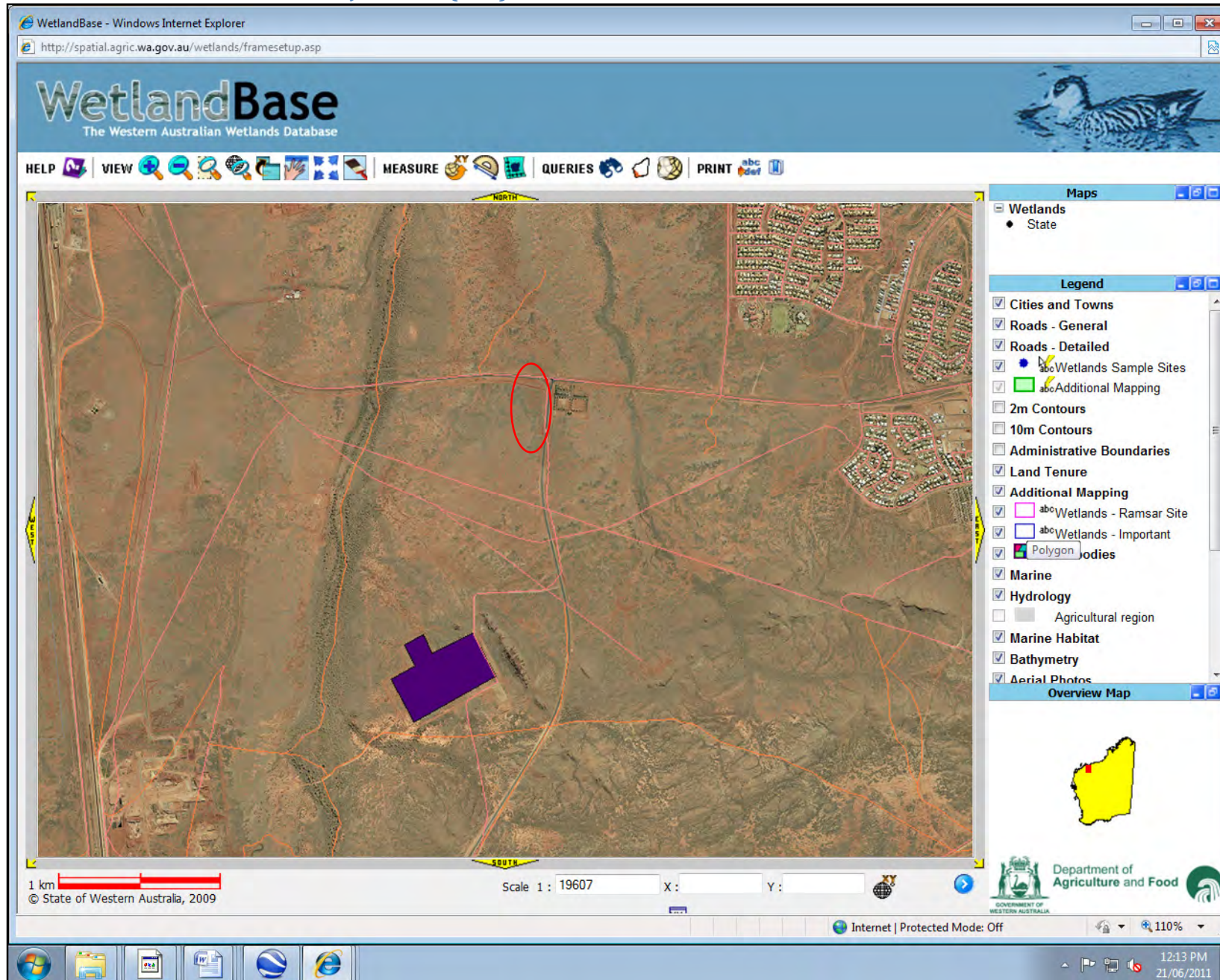
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Appendix E

Department of Water's Geographic Data Atlas Database Search

DEC WetlandBase Screen Capture: No known wetlands on subject site (red)



WA Atlas Screen Capture: Hydrology

WA Atlas - Windows Internet Explorer

https://www2.landgate.wa.gov.au/bmvf/app/waatlas/

dec wetland base

WA Atlas Shared Land Information Platform

Home
Search
Layer Selector

Layer

- Cadastral (Address) (LGATE-002) ☒ ☒
- Roads (LGATE-012) ☒ ☒
- Railway Lines (LGATE-036) (06-10-2010 15:48:10) ☒ ☒
- Local Government Authority (LGA) ☒ ☒
- Boundaries (LGATE-006) ☒ ☒
- Localities (LGATE-008) ☒ ☒
- Points of Interest (LGATE-028) ☒ ☒
- Hydro (Polygon) (LGATE-016) (29-10-2008 15:33:59) ☒ ☒
- Hydro (Point) (LGATE-017) (29-10-2008 15:44:03) ☒ ☒
- Hydro (Line) (LGATE-018) (30-07-2008 19:36:53) ☒ ☒
- Inland Flat (Polygon) (LGATE-099) (18-06-2013 24:04) ☒ ☒
- Fuzzy Water (Polygon) (LGATE-101) (18-06-2013 25:49) ☒ ☒
- Fuzzy Water (Line) (LGATE-102) (18-06-2013 26:23) ☒ ☒
- Fuzzy Water (Point) (LGATE-103) (18-06-2011 13:26:55) ☒ ☒
- Hydrographic Catchments - Basins (DOW-013) (03-11-2008 15:07:44) ☒ ☒
- Hydrographic Catchments - Catchments (DOW-014) (03-11-2008 15:07:47) ☒ ☒
- Hydrographic Catchments - Subcatchments (DOW-015) (03-11-2008 15:08:00) ☒ ☒
- Hydrographic Catchments - Divisions (DOW-016) (03-11-2008 15:08:03) ☒ ☒

Visible Status
Active Status
Label Status
Delete Layer
Metadata Link
Legend
WMS Styles
WMS Feature MIME type

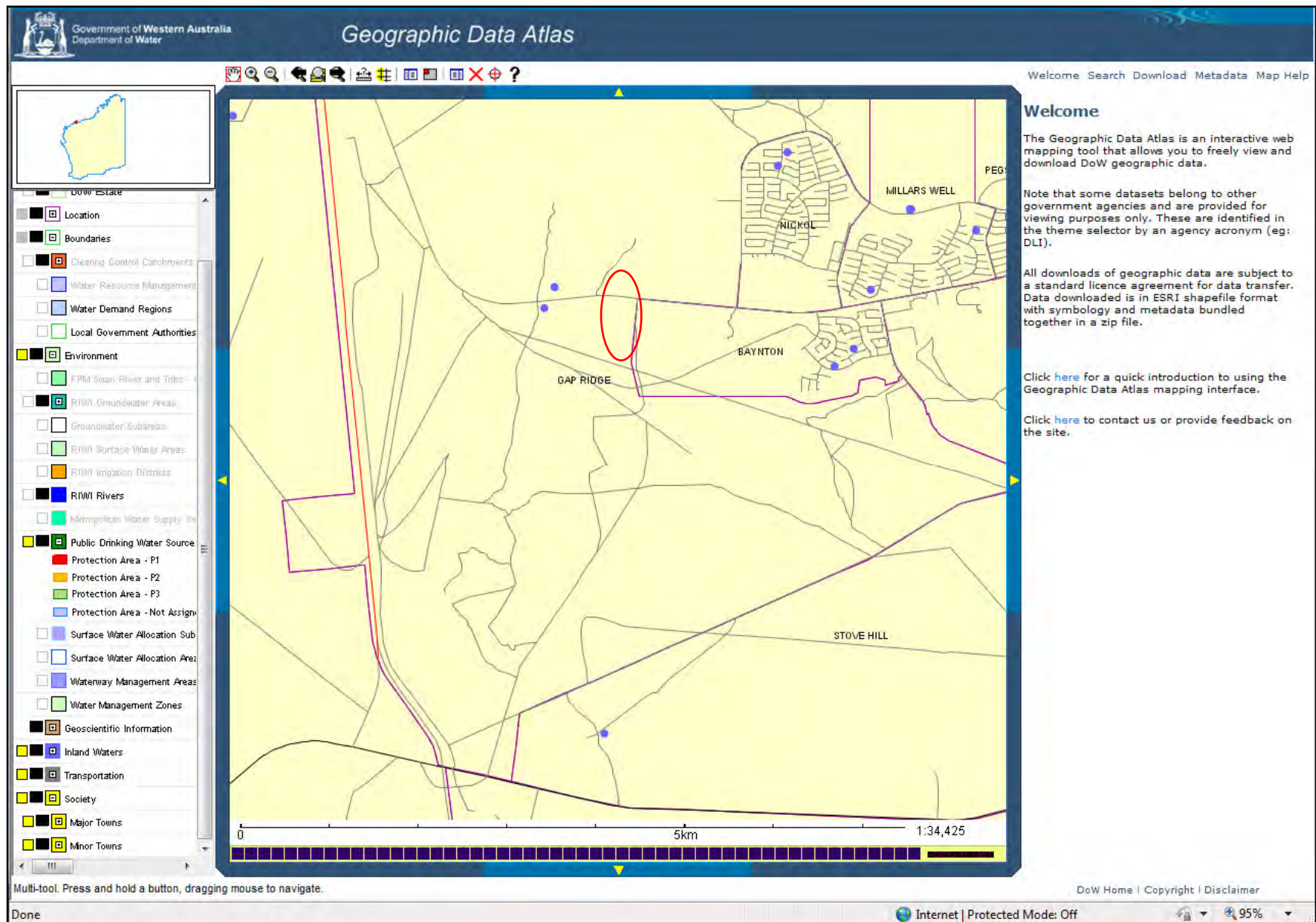
Add Layers
Information

Connection error making remote WMS request (No authentication credentials available for www2.lan...)

Internet | Protected Mode: Off

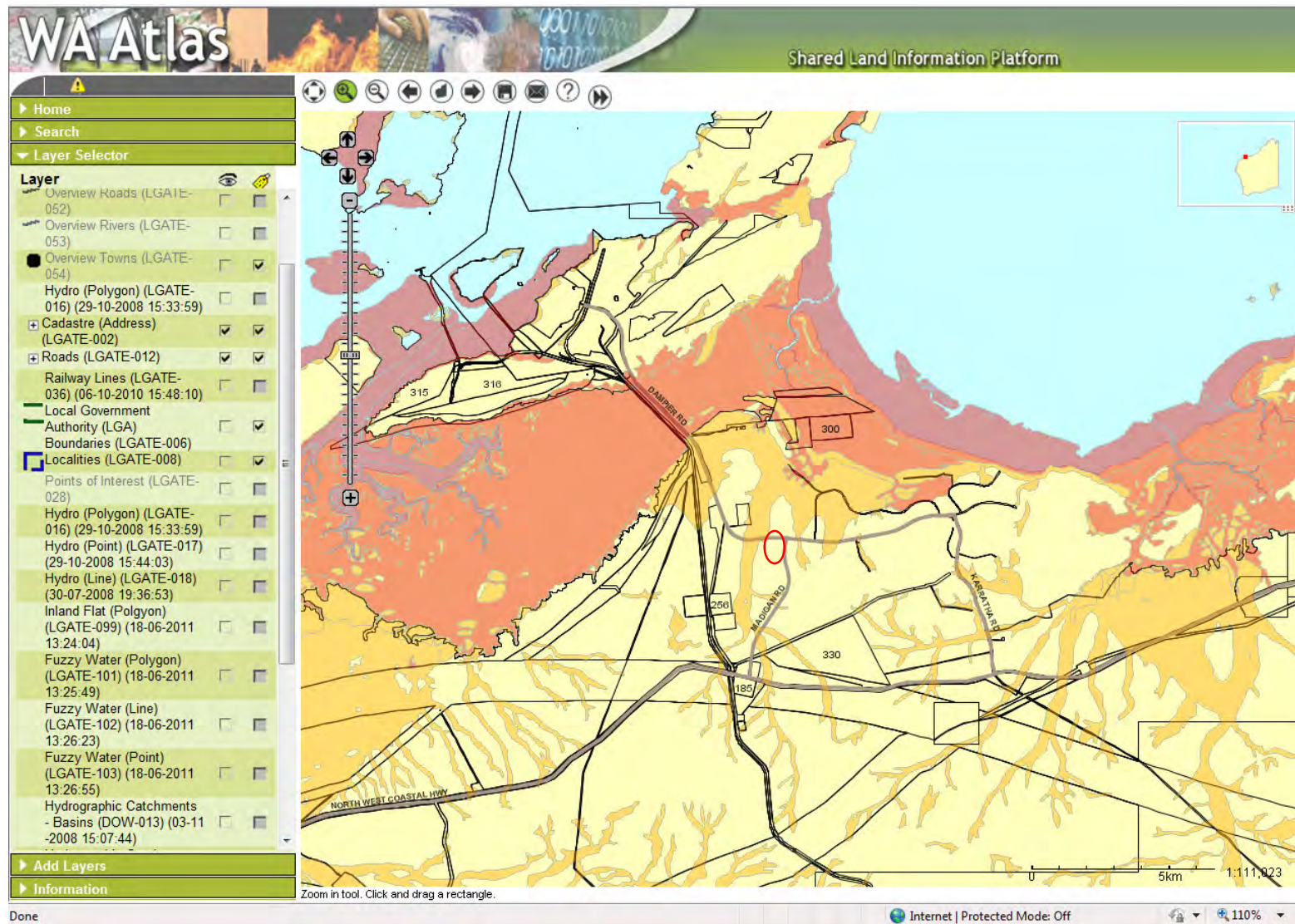
110%

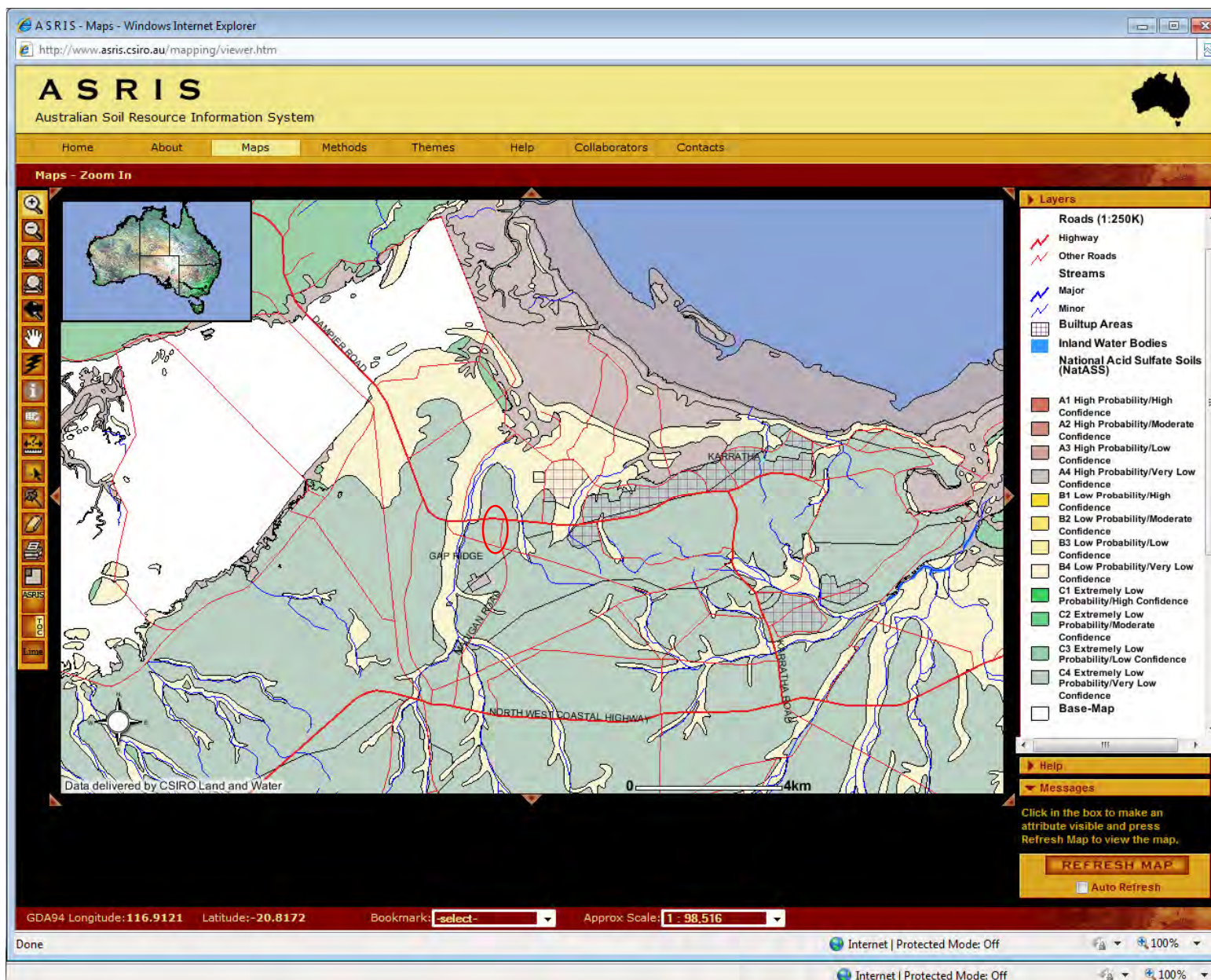
Department of Water Geographic Atlas Screen Capture: PDWSA's and Groundwater Pollution Control areas



DEC ASS Screen Capture:

Known risk of ASS “Moderate to Low” and “No known” on subject site (red)

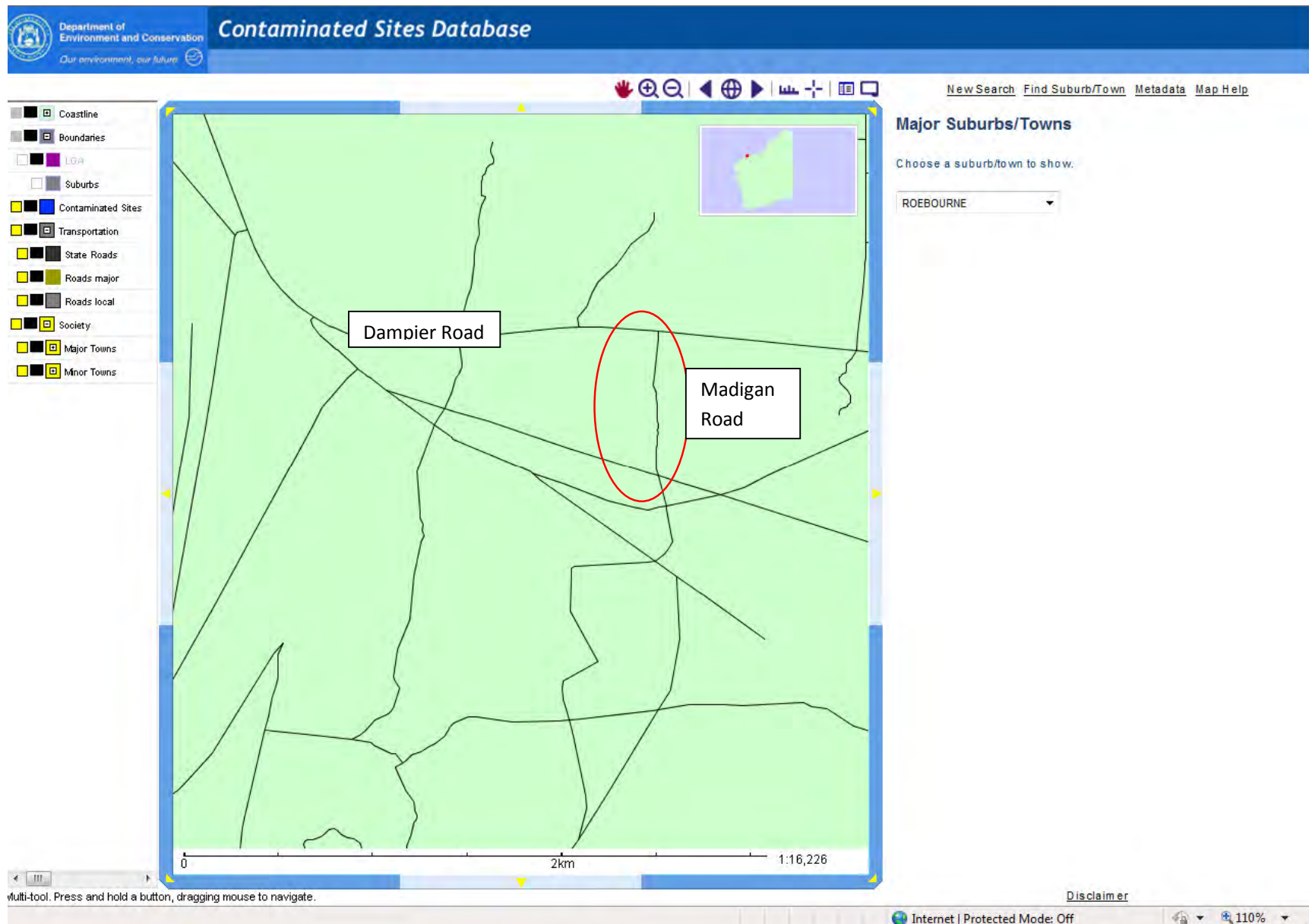




Appendix F

DEC's Contaminated Sites Database Search

Contamination Screen Capture:
No known contaminated sites on subject site (red)



Appendix G

**Department of Sustainability, Environment, Water,
Population and Communities Database Search**



Australian Government

Department of Sustainability, Environment,
Water, Population and Communities

EPBC Act Protected Matters Report: Coordinates

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 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>

Report created: 21/06/11 14:29:26



[Summary](#)

[Details](#)

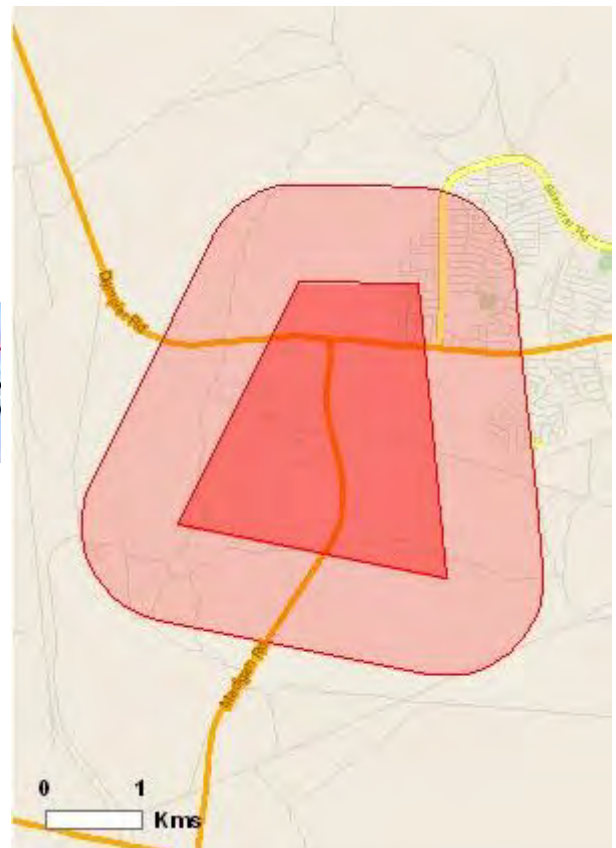
[Matters of NES](#)

[Other matters protected by
the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



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

[Coordinates](#)

Buffer: 1.0Km

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance (Ramsar Wetlands):	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None
Threatened Species:	3
Migratory Species:	10

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:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	8
Whales and Other Cetaceans:	None

Critical Habitats:	None
Commonwealth Reserves:	None

Report Summary for Extra Information

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

Place on the RNE:	None
State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	7
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Threatened Species		[Resource Information]
Name	Status	Type of Presence
MAMMALS		
Dasyurus hallucatus Northern Quoll [331]	Endangered	Species or species habitat likely to occur within area
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat likely to occur within area
REPTILES		
Liasis olivaceus barroni Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat may occur within area
Migratory Species		[Resource Information]
Name	Status	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely 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
Migratory Wetlands Species		

[Ardea alba](#)Great Egret, White Egret
[59541]

Species or species habitat may occur within area

[Ardea ibis](#)

Cattle Egret [59542]

Species or species habitat may 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

Other Matters Protected by the EPBC Act**Commonwealth Lands****[Resource Information]**

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land -

Listed Marine Species**[Resource Information]**

Name	Status	Type of Presence
------	--------	------------------

Birds[Apus pacificus](#)

Fork-tailed Swift [678]

Species or species habitat may occur within area

[Ardea alba](#)Great Egret, White Egret
[59541]

Species or species habitat may occur within area

[Ardea ibis](#)

Cattle Egret [59542]

Species or species habitat may 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 likely 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

Extra Information**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 Resources Audit, 2001.

Name	Status	Type of Presence
------	--------	------------------

Mammals[Felis catus](#)

Cat, House Cat, Domestic Cat

Species or species habitat likely to occur within area

[19]

[Oryctolagus cuniculus](#)

Rabbit, European Rabbit [128]

Species or species habitat likely to occur within area

[Vulpes vulpes](#)

Red Fox, Fox [18]

Species or species habitat may occur within area

Plants

[Cenchrus ciliaris](#)

Buffel-grass, Black Buffel-grass
[20213]

Species or species habitat likely to occur within area

[Parkinsonia aculeata](#)

Parkinsonia, Jerusalem Thorn,
Jelly Bean Tree, Horse Bean
[12301]

Species or species habitat may occur within area

[Prosopis spp.](#)

Mesquite, Algaroba [68407]

Species or species habitat likely to occur within area

[Salvinia molesta](#)

Salvinia, Giant Salvinia,
Aquarium Watermoss, Kariba
Weed [13665]

Species or species habitat may occur within area

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.

Coordinates

-20.74084 116.78607,-20.74114 116.79737,-20.7688 116.80005,-20.76375 116.77477,-20.74084 116.78607

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](#)
- 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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Last updated: Thursday, 16-Sep-2010 09:13:25 EST

[Department of Sustainability, Environment, Water, Population and Communities](#)

GPO Box 787

Canberra ACT 2601 Australia

+61 2 6274 1111 [ABN](#)

| [Australian Government](#) |

Appendix H

Department of Agriculture and Food Advice on Declared Weeds

MRWA Vegetation Clearing Assessment Report

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

For guidance on how to complete the form, refer to DEC completed reports (active permits) at https://secure.dec.wa.gov.au/cps_reports/.

1. AREA UNDER ASSESSMENT DETAILS

Proponent (Main Roads) details

Contacts:

Project Manager:
Phone:
Environment Officer:
Phone:

Property details

Property/Road:

Lot 505 Madigan Road

Colloquial name:

Madigan Road Intersection (Dampier Highway Duplication)

Area under assessment

Clearing Area (ha)	or	No. Trees	Method of Clearing	For the purpose of:	Site Plan Attached
0.45 ha			Vegetation clearing will be undertaken via mechanical means using a bulldozer (or similar) and vegetation will be stockpiled for rehabilitation purposes	Temporary Madigan Road alignment for Dampier Highway duplication	<input checked="" type="checkbox"/> Yes No

Avoidance/Minimise clearing

How have the clearing impacts been minimised?

- Clearing considered temporary
- Cleared area to be rehabilitated

2. 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 No	Fauna / Flora Survey Undertaken	Yes <input checked="" type="checkbox"/> No
Site Report Attached	Yes <input checked="" type="checkbox"/> No	Fauna / Flora Survey Report Attached	Yes <input checked="" type="checkbox"/> No
Site Photos Attached	<input checked="" type="checkbox"/> Yes No	Other Relevant References Attached	Yes <input checked="" type="checkbox"/> No

Vegetation Complex(s)	Clearing Description	Vegetation Condition(s)	Comment
589: Mosaic of Short bunch grassland - savanna /grass plain (Pilbara) / Hummock grasslands, grass steppe; soft Spinifex.	Temporary	Degraded to Completely Degraded	

3. 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 likely to be at variance to this Principle

Site is not known for DRF, Priority Flora or Threatened Ecological Communities (TEC's). The DEC databases list none of these as occurring on the site. The DEC advises that there are no known DRF and 4 known populations of PLF within 5 km of the site (which was the database search area). The DEC advises that there are no TEC's on or near the site (database search radius 5 km from site).

The site is located 600 m away from the buffer of a Priority Ecological Community (PEC), however this buffer is very large (1256 ha). As the site is located outside of the PEC buffer, the proposal is unlikely to impact upon the known PEC (Appendix B). All landforms, flora species and communities and fauna habitats within the application areas are considered well represented locally and within the Pilbara region generally.

The site is located in Beards (1975) vegetation type 589: Mosaic of Short bunch grassland - savanna /grass plain (Pilbara) / Hummock grasslands, grass steppe; soft Spinifex. Accordingly to Shepherd et al (2001), this vegetation type is well represented with an estimated current range of 100% of the pre-European range with 1.6% in IUCN Class I-IV reserves. The clearing proposed (0.45 ha) is less than 0.0001% of the extent of this vegetation type at 848,201 ha (Shepherd et al, 2001).

DEC database searches indicated there are no threatened fauna recorded on or within 5 km of the site.

The site is not within close proximity to any DEC "managed" conservation estate and there are no surface water features present in the project area.

Vegetation condition of the site is considered to primarily be 'Degraded' as there were obvious signs of weed growth over the site (see plates).

Given the condition of vegetation on the site, signs of weed invasion, extensive regional representativeness of the vegetation type, relatively small percentage of the vegetation type proposed to be cleared and temporary nature of the works the proposal is not likely to be at variance to this principle.

Methodology DEC Database Searches
DSEWPaC database searches
Shepherd et. Al (2001)
Beard 1975
Site Visit

(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 likely to be at variance to this Principle

Site is not known for Threatened fauna. All landforms, flora species and communities and fauna habitats within the application areas are considered to be well represented locally and within the Pilbara region generally. In addition, the small size of the clearing required for the road re-alignment (0.45 ha) and the temporary nature of the works make it unlikely that this activity will disturb significant habitat for any fauna species.

A protected matters search under the EPBC Act indicated that the habitat within the site may be suitable for 3 threatened fauna species including the Northern Quoll, Pilbara Leaf-nosed Bat and the Olive Python. The database search also indicated habitat within the site may be suitable for 10 migratory and 8 marine (avifauna) species. As the flora species and communities are considered to be well represented and the clearing area in question is 0.45 ha, the site is unlikely to form unique habitat vital to maintain populations of these species.

DEC database searched indicated there are no threatened fauna species recorded on or within 5 km of the site.

Methodology DEC Database Searches
DSEWPaC database searches
Site Visit

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

Comments Proposal is not likely to be at variance to this Principle

There are no listed occurrences of DRF on or near the site (DEC database). The DEC databases list no DRF or Priority Flora as occurring on the site. The DEC advises that there are no known DRF listed as occurring within 5 km of the site (which was the database search area). Four populations of PLF were located within 5 km of the site.

The vegetation type is well represented in the area.

Given the condition of vegetation on the site, signs of weed invasion, extensive regional representativeness of the vegetation type, relatively small percentage of the vegetation type proposed to be cleared, temporary nature of the works, commitments to revegetate and no previous recording of DRF or Priority flora in the area, the proposal is unlikely to be at variance to this principle.

Methodology DEC Database Searches
DSEWPaC database searches

(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

There are no listed occurrences of TECs on or near the site (DEC database).

Given the condition of vegetation on the site, signs of weed invasion, extensive regional representativeness of the vegetation type, relatively small percentage of the vegetation type proposed to be cleared, temporary nature of the works, commitments to reinstate the site and no previous recording of TECs in the area, the proposal is unlikely to be at variance to this principle.

Methodology DEC Database Searches
DSEWPaC database searches
Site Visit

(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 likely to be at variance to this Principle

Whilst the area in the immediately vicinity around the proposed site has been disturbed, the vegetation type within the application area is considered well represented locally and within the Pilbara region generally. According to Shepherd et al (2001), 100% of the vegetation type (589) remains. The conservation status of vegetation association 589 is "least concern".

The vegetation on the site is not considered an isolated remnant and is considered well represented in the area.

The site is located in Beards (1975) vegetation type 589: Mosaic of Short bunch grassland - savanna /grass plain (Pilbara) / Hummock grasslands, grass steppe; soft Spinifex. Accordingly to Shepherd et al (2001), this vegetation type is well represented with an estimated current range of 100% of the pre-European range with 1.6% in IUCN Class I-IV reserves. The clearing proposed (0.45 ha) is approximately 0.001% of the extent of this vegetation type at 848,201 ha (Shepherd et al, 2001).

Methodology Shepherd et al. (2001)

(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 likely to be at variance to this Principle

The entire Pilbara region tends to have an annual average evaporation rate that is significantly higher than the annual average rainfall (ANRA, 2007). Therefore, the minor, non-perennial watercourses within the Karratha area are expected to be dry for the majority of the year except following cyclonic rainfall events which generally occur between November and March (ANRA, 2007).

Whilst there are no permanent, natural watercourses or wetlands within the application area, there is an ephemeral drainage line situated approximately 450 m to the east of the site. The site visit confirmed that there are no naturally occurring drainage lines or wetlands within the site.

There will be no direct impacts to the drainage line.

Due to the disturbed nature of the application area, temporary nature of the works, commitment to reinstate the site, and as the project area is not located within a natural drainage line or any other surface water feature, clearing is not likely to have a significant impact and is therefore not likely to be at variance to this principle.

Methodology DoW database
Site Visit

(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 proposal requires Madigan Road to be temporarily realigned whilst further road works occur on the existing Madigan Road / Dampier Highway Intersection. The site will be cleared and a temporary road constructed. Once upgrades to the existing Madigan Road / Dampier Highway are completed, the road will be removed and the site will be reinstated.

The proposal will involve clearing of 0.45 ha. Due to the sites topography the reduction in vegetation cover is unlikely to result in erosion. No excavation is required for the proposal, and as such no impacts to groundwater are expected. The proposal will involve clearing of 0.45 ha and this is unlikely to cause appreciable land degradation.

The site will be reinstated on completion of the project. As the works are considered temporary, the works are not considered at variance to this principle.

Methodology

(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

There are no nearby conservation areas. The nearest terrestrial conservation area is the Millstream-Chichester National Park, located approximately 60 kilometres south-east of the application area.

Given the distance of the application area from any conservation areas, the removal of 0.45 ha of native vegetation is not expected to have an impact on the environmental values of these conservation areas.

Methodology CALM Managed Lands and Waters

(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 likely to be at variance to this Principle**
The entire Pilbara region tends to have an annual average evaporation rate that is significantly higher than the annual average rainfall (ANRA, 2007). Therefore, the minor, non-perennial watercourses within the Karratha area are expected to be dry for the majority of the year except following cyclonic rainfall events which generally occur between November and March (ANRA, 2007).

The majority of the western Pilbara region, including the application area, has limited surface freshwater (DEC, 2006). Freshwater flows are highly variable, characterised by short periods of very high flow that coincide with major rainfall events usually associated with tropical cyclone activity (DEC, 2006). In addition, due to the low rainfall and high evaporation rate of the region, the presence of surface water resulting from significant rain events is likely to be short-lived (ANRA, 2007).

Surface drainage features on the coastal plain in the immediate vicinity of the proposed site tend to be sporadic and shallow (GHD, 2003). The proposal does not involve deep excavation or dewatering and as such is unlikely to impact on the quality of underground water. As there are no watercourses on the site, and due to the minor clearing required (0.45 ha) the proposal is unlikely to have a significant impact upon surface or underground water in the Karratha region.

Methodology DEC 2006 Burrup Peninsula Management Plan
Australian Natural Resource Atlas (ANRA) (2007)
GHD 2003. Karratha-Tom Price Road, Karratha to Nanutarra-Munjina Rd Section CER.

(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 likely to be at variance to this Principle**
The application area experiences an arid, tropical climate with a wet summer season and dry winter season (ANRA, 2007). Most rainfall is received during the wet season with intense rainfall occurring following cyclonic events (ANRA, 2007). Following such events, it is likely that flooding of the low-lying habitat in the application areas would occur, however, the clearing of 0.45 ha of vegetation, in comparison to the size of the coastal catchment area (approximately 774,300 hectares), is not likely to lead to an increase in the incidence or intensity of flooding.

Methodology Hydrographic Catchments - catchments

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

Comments Land access is via the Land Administration Act (LAA), accordingly Native Title is likely to have been dealt with at the LAA Licence phase.

4. SUBMISSIONS

NA

5. ASSESSOR'S RECOMMENDATIONS

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

Proposal unlikely to be at variance to clearing principles.

6. REFERENCES

ANRA (2007) Australian Natural Resource Atlas: Rangelands Overview: Pilbara. Available online from:
<http://www.anra.gov.au/topics/rangelands/overview/wa/ibra-pil.html>

DEC (2006) Proposed Burrup Peninsula Conservation Reserve: Draft Management Plan 2006 - 2016. Department of Environment and Conservation.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

GHD (2003). Karratha-Tom Price Road, Karratha to Nanutarra-Munjina Rd Section CER. Prepared by GHD for Main Roads WA. http://www.epa.wa.gov.au/docs/1555_Karratha-Tom%20Price%20Road.pdf

OFFICER PREPARING REPORT

Report prepared on the 28/06/2011 by
Ashley Fertch
Environmental Advisor
Astron Environmental
6242 0655

Appendix I

Vegetation Clearing Assessment Report

Ashley Fertch

From: Watkins, Richard [richard.watkins@agric.wa.gov.au]
Sent: Wednesday, 22 June 2011 4:39 PM
To: Ashley Fertch
Cc: Elliott, Michael W; Linda Anderson
Subject: RE: Declared Weed Query - Madigan Road and Dampier Highway

Hi Ashley,

As discussed we are unaware of any **declared plants** within or adjacent to the project area of Madigan rd and Dampier Highway.(as per map) Declared plants and gazetted pest plants are plants that are covered under the legislation we administer. (Agriculture & Related Resources Protection Act 1976) Thanks for asking regarding declared plants. Declared plants that are present in the Pilbara include: Mesquite, Parkinsonia, Calotropis, and Prickly Pear.

Regards

Richard Watkins

Manager, Pilbara.
Project Manager, Invasive Species - Northern Rangelands
Department of Agriculture & Food
PO Box 1618, Karratha 6714
Ph 08 9143 7001 Fax 08 9185 3380 Mob 042 744 7201

From: Ashley Fertch [mailto:Ashley.Fertch@astron.com.au]
Sent: Wednesday, 22 June 2011 1:58 PM
To: Watkins, Richard
Subject: Declared Weed Query - Madigan Road and Dampier Highway

Hi Michael

As discussed, my client is investigating a potential temporary realignment of Madigan Road in Karratha whilst significant upgrades are completed on the existing Madigan – Dampier Highway Intersection. The area in question includes several lots on the eastern side of Madigan Road and Dampier Highway (Please see attached map). Astron is assisting with the environmental approvals and management of the proposal.

Can you please provide some advice regarding any known populations of declared plants or significant weeds in or adjacent to the project area.

I appreciate your help.

Cheers,

Ash

Ashley Fertch

Environmental Advisor



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Leederville WA 6007

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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.

Department of Agriculture and Food WA

Appendix J

Site Photos



Plate 1: Facing north showing a rough indication of the road re-alignment.



Plate 2: Another photo showing a rough indication of the road re-alignment.



Plate 3: Native spinifex surrounded by invasive weed showing a rough species.



Plate 4: Sparseness of any vegetation in some area on site. Also showing weed species prevalence.



Plate 5: Facing east, previously disturbed areas including a man made drain running parallel to Madigan Road.



Plate 6: Existing disturbance Along Dampier Highway from the Dampier Highway Duplication project.

Appendix K

Environmental Management Plan

ENVIRONMENTAL MANAGEMENT PLAN

MADIGAN ROAD INTERSECTION (DAMPIER HIGHWAY DUPLICATION)

Introduction

This Environmental Management Plan (EMP) has been developed for the project area following the completion of the Preliminary Environmental Impact Assessment (PEIA) report. The aim of this EMP is to minimise the environmental impacts associated with the proposed works as well as to identify areas of responsibilities required for the implementation of management strategies.

This EMP addresses specific issues that were identified during the PEIA. The project management measures identified within this EMP are in addition to the standard environmental management contract specifications used for Category 2 projects. Main Roads' standard environmental contract specifications (Specifications 203, 204, 301, 302 and 304) are to be adhered to where appropriate.

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

- the timing of the various management actions;
- the topic (e.g. vegetation);
- the objectives for each area;
- the actions that are necessary to minimise the impact;
- the responsible party for implementing the action; and
- whether the action arose from external advice or is a Main Roads requirement.

Communication Plan

Environmental issues specific to the project will be communicated as follows:

Method	Frequency	Participants	Reference	Record
Project Site				
Induction	Prior to Work	All personnel and subcontractors	EMP and Contractor Environmental Policy	Induction Meeting
Toolbox Meetings	Weekly	Project Personnel	EMP and Contractor Safety Plan	Minutes of Meeting
Contract Meetings	Monthly	Main Roads' Project Manager and Contractor Project Manager	EMP	Minutes of Meeting

External Communication and Complaints

A complaints register shall be maintained by the contractor. All complaints received shall be forwarded to the Main Roads' Project Manager for action. Serious complaints shall be investigated within 24 hours of the complaint being received.

ENVIRONMENTAL MANAGEMENT PLAN					
Timing	Topic	Objective	Action	Responsible Party	Advice
All phases of Construction	Vegetation Clearing - Record-keeping	All projects should maintain the required records relating to clearing native vegetation under the purpose permit.	Clearing: <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); and the dates on which the clearing was done. 	Project Manager	DEC
			Each management strategy implemented: <ul style="list-style-type: none"> a map showing the location of any area to which a management strategy has been applied recorded in an ESRI Shapefile; a description of the management strategy implemented; and the size of the area to which the management strategy was applied (in hectares). 	Project Manager	Project Manager
Pre - Construction	Visual Amenity	Ensure that road blends into environment.	Develop design documentation to meet project requirements as identified in the visual impact assessment.	Project Manager	Main Roads
Pre-Construction	Vegetation Clearing	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; and Ensure the retention of as many habitat trees, shrubs and vegetated corridors for fauna as possible, particularly where associated with riparian zones.	Selection of designs/locations that minimise adverse impacts on the biological environment.		
			Clearing and construction works to be undertaken in summer to reduce the potential for soil erosion and drainage line siltation due to vegetation removal and heavy rains.	Project Manager	Main Roads
			Control/spray weeds species within the project area prior to construction to limit the amount of propagative material that may be spread during disturbance.	Contractor	Main Roads
			Any stockpiled vegetation from clearing works shall not be burnt. This vegetation shall be used during any rehabilitation works and either mulched or respread according to this PEIA EMP.	Contractor	Main Roads
Pre - Construction	Topsoil	Ensure topsoil stockpiled prior to constructing temporary road.	Stockpile any topsoil in previously disturbed areas. This topsoil shall be respread according to this PEIA EMP.	Contractor/Project Manager	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN					
Timing	Topic	Objective	Action	Responsible Party	Advice
Pre - Construction	Vegetation Clearing - CPS 818/5 management requirements	Compliance with management conditions of purpose permit.	If clearing is pursuant to Main Purpose Permit (CPS818) ensure compliance with Section 14 of the permit relating to Dieback, other pathogen and weed control.	Contractor/Project Manager	DEC
Pre-Construction	Surface Drainage	Maintain the hydrological regime that exists prior to the construction of the proposal.	Stormwater drainage shall be treated and disposed of in accordance with DEC requirements.	Project Manager	DEC
Pre-Construction	Site access	Determine safe and approved site access	Access to private property and appropriate traffic management measures should be planned and implemented prior to the construction of works.	Contractor	Main Roads
Construction	Noise, Vibration and Dust	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.	Contractor	Main Roads
			Pedestrian public access should be should be planned and implemented prior to the construction of works.	Contractor	Main Roads
			Any complaints regarding dust will be attended to as soon as possible.	Contractor/Project Manager	Main Roads
			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.	Contractor	Main Roads
			Watering, the use of hydromulch or other forms of mulching to protect loose surfaces shall be used as mitigation measures.	Contractor	Main Roads
Construction	Pollution and Litter	Ensure that the construction of the proposal is managed to a standard that minimises any adverse impacts on the environment.	The designated servicing area will be banded to contain any spills or leaks and shall not be located in an area adjacent to any drainage areas or watercourses or will drain into a temporary sump.	Contractor	Main Roads
			Temporary storage of bitumen, asphalt, concrete or aggregate should only occur at designated depots or controlled hardstands. Precoating of aggregate will only occur in approved areas.	Contractor	Main Roads
			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. The contractor shall ensure appropriate equipment is available at all times and shall notify the Superintendent's Representative of a spill.	Contractor	Main Roads
			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	Contractor	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN					
Timing	Topic	Objective	Action	Responsible Party	Advice
			approved site.		
			The project areas, including hardstand areas, will be kept in a tidy manner at all times.	Contractor	Main Roads
Construction	Fire	Ensure that the fire risk associated with the construction of the proposal is minimised.	No fires shall be lit within the project area.	Contractor	Main Roads
			Machinery will be fitted with approved spark arresting mufflers.	Contractor	Main Roads
			A water tanker/fire fighter unit will be on site at all times.	Contractor	Main Roads
Construction	Fauna	Avoid unnecessary impacts to fauna and damage to fauna habitat.	Fauna are not to be fed or intentionally harmed.	Contractor	Main Roads
			No pets or firearms permitted on site.	Contractor	Main Roads
			The WILDCARE Helpline is to be contacted, 9474 9055, in the event of sick, injured or orphaned native wildlife.	Contractor	Main Roads
Construction	Site Management	Ensure that the site is managed to ensure that construction of the proposal will have minimal impact upon the surrounding environment.	Site office and materials storage areas will be located on previously disturbed/ designated area.	Contractor	Main Roads
Construction	Rehabilitation	Rehabilitate the project area to meet project commitments.	Implement the contract specifications for rehabilitation of the site.	Contractor	Main Roads
			All waste materials from the development are to be completely removed from the site upon completion of the project. Final clean-up shall be to the satisfaction of the Project Manager and the Site Superintendent.	Contractor	Main Roads
Construction	Revegetation	Meet project commitments for revegetating and landscaping.	Implement the Revegetation requirements as stated Below.	Contractor	Main Roads
			Following removal of temporary road, the site shall be ripped		
			Stockpiled topsoil will then be respread over the site		
			Stockpiled vegetation / mulch will then be spread over the site.		
Post - Construction	Monitoring	Meet project revegetation commitments.	Monitor effectiveness of revegetation works and weed control.	Contractor/ Project Manager	Main Roads

Monitoring

After project completion and project handover, the Asset manager should develop a monitoring program to monitor for those aspects that have been identified as requiring monitoring.

Contingency Measures

Due to the scale and nature of the project, no contingency measures are identified as the inherent environmental risks are small.

Auditing

The implementation of the EMP will be audited 5 weeks after the contractor takes possession of site. This audit will be carried out by a Main Roads staff. Audits will be undertaken again on project completion.