



**PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT and
MANAGEMENT PLAN**

**Brand Highway - Cataby Roadhouse/Dandaragan Road
Intersection Improvements**

October 2012

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PART A

1. PROJECT INFORMATION

Project Title: Brand Highway- Cataby Roadhouse and Dandaragan Road intersection.

Project locations:

Project 1 is located on Brand Highway at 106 SLK in the Shire of Dandaragan.

Project 2 is located at the intersection of Dandaragan Road and Brand Highway at 77.2 SLK within the Shire of Dandaragan.

Area proposed to be cleared:

Approximately 0.5 hectares (ha) for Project 1

Approximately 0.45 hectares for Project 2

Project purpose / components:

Project 1 involves widening the road and creating a parking bay.

Project 2 involves an intersection upgrade.

Temporary clearing: None

2. PROJECT SUMMARY

- There was one European Heritage site, Farmhouse Site (Regan's Ford), located approximately 3 km from the second project area. It is unlikely that the project will impact upon the site due to the distance from the project area and the nature of the works to be completed.
- There are two Aboriginal Heritage sites, Gingin Brook Waggy Site and Moore River Pools, which overlay project area 2. The Moore River (Gingin Brook Waggy Site) is 700 metres from the intersection and will not be impacted by the project works. The DIA also advise that the Moore River Pools will not be impacted.
- Several priority and threatened fauna species are recorded within the study areas. However the species are highly mobile and the areas to be cleared are small areas on the edge of much larger remnants, therefore the projects are unlikely to have a significant impact on fauna.
- Mapping indicates that there is a moderate risk of Acid Sulfate Soils for both projects. No dewatering or excavation below the water table is required so it is unlikely the projects will create a significant impact.
- Neither project is likely to be at variance to the 10 Clearing Principles.

3. ASSESSMENT SCOPE

The preliminary assessment involved a desktop analysis of environmental aspects and impacts, a site investigation and an assessment of native vegetation clearing. The study area was confined to a local area of a 5 km radius. The preliminary assessment determined whether an Environmental Impact Assessment was necessary and if referral to State and/or Commonwealth authorities was required.

4. PROJECT DESCRIPTION

This PEIA addresses two projects that are proposed for Brand Highway to improve public safety. Both projects occur within the Shire of Dandaragan.

Project 1: Cataby Roadhouse

The Caltex roadhouse at Cataby is located on Brand Highway at 106 SLK. The project involves widening the highway and adding a southbound truck parking bay to the east side of the highway. The ground level through the parking bay area will be lowered by up to 1m.

Project 2: Dandaragan Road Intersection

This project will involve the Dandaragan Road/Brand Highway intersection located at 77.2 SLK on Brand Highway. The intersection will be widened in the northbound direction to allow for a right turn pocket into Dandaragan Road, and a southbound left turn pocket. Existing native vegetation will have to be cleared to approximately a 5m width to allow for widening and drainage works to be undertaken on the west side of the highway. The turn aprons will also be widened at the intersection.

4.1 Project Location

Project 1: Cataby Roadhouse

The project area is located on Brand Highway 106 SLK within the Shire of Dandaragan.

MGA Coordinates: 50

E: 362 086

N: 6 596 766

The project area is shown below in Figure 1.

The location and boundaries of the study area (5 km radius) for the project are shown in Figure 2.

Project 2: Dandaragan Road Intersection

The project is within the Shire of Dandaragan. It is located at the intersection of Dandaragan Road and Brand Highway 77.2 SLK.

MGA Coordinates: 50

E: 375 882

N: 6 572 194

The project area is shown below in Figure 3.

The location and boundaries of the study area (5 km radius) for the project are shown in Figure 4.

Figure 1 – Project Area 1 Cataby Roadhouse

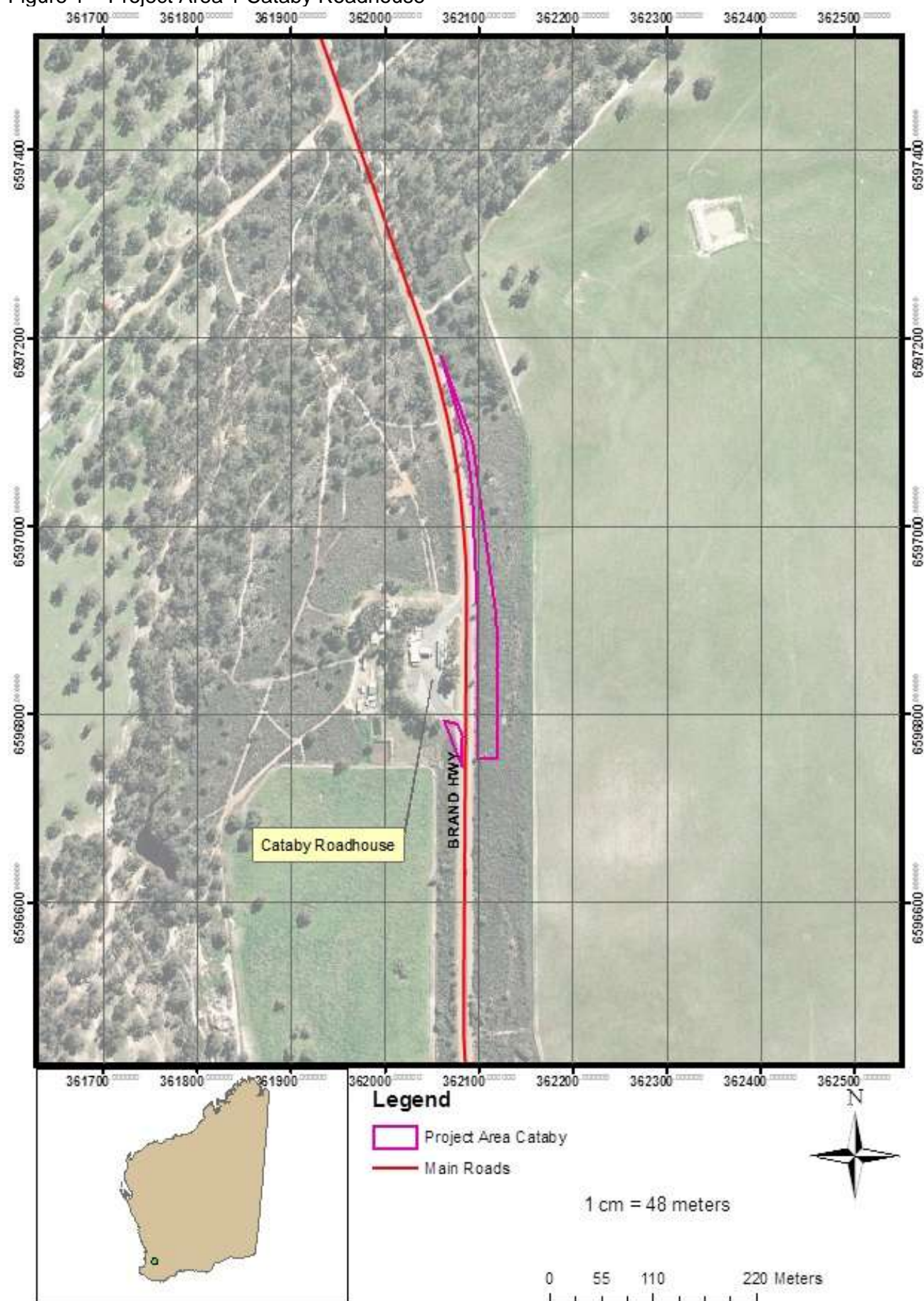


Figure 2 – Project Location 1 and Study Area

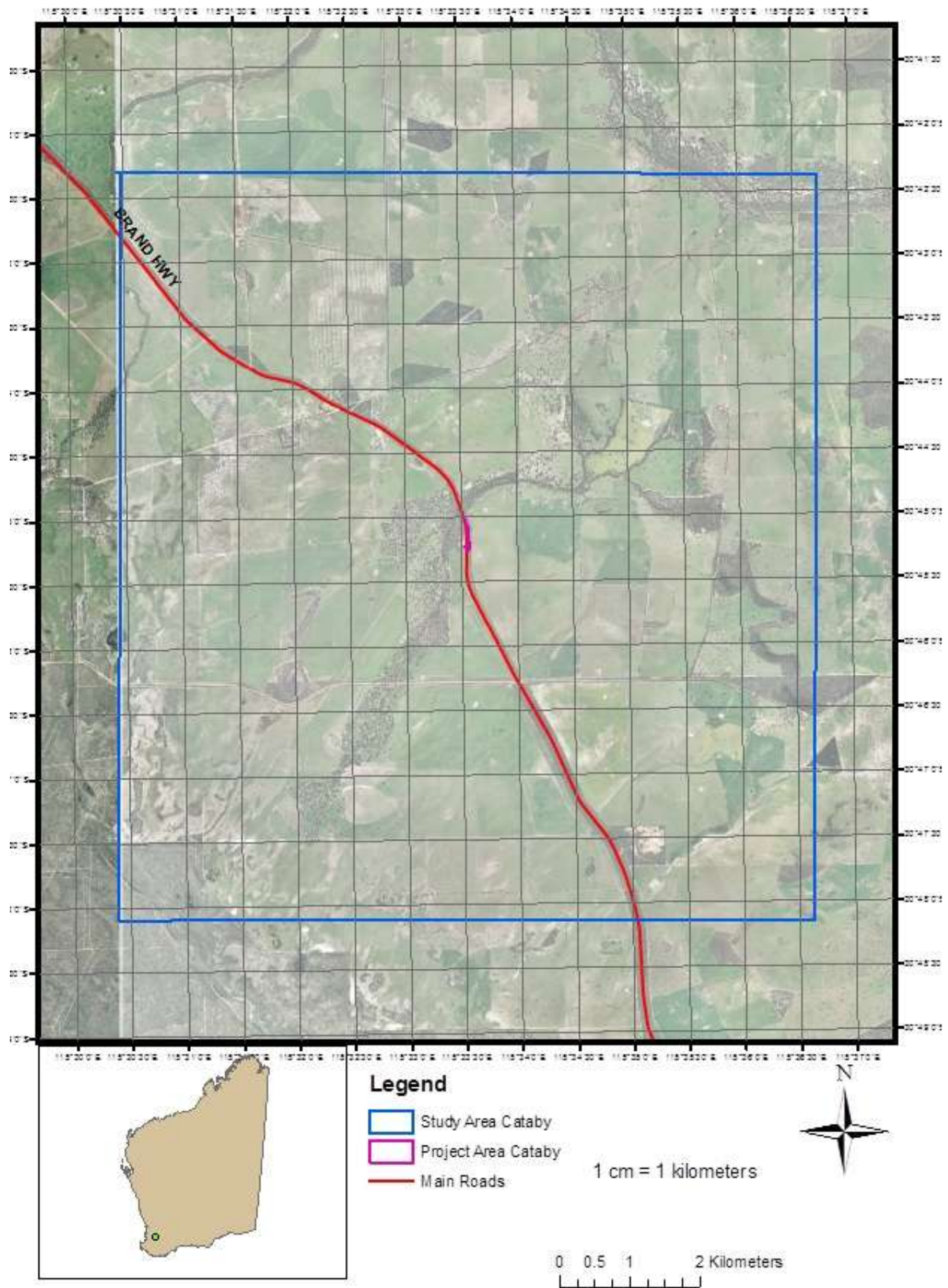


Figure 3 – Project Area 2 Dandaragan Intersection

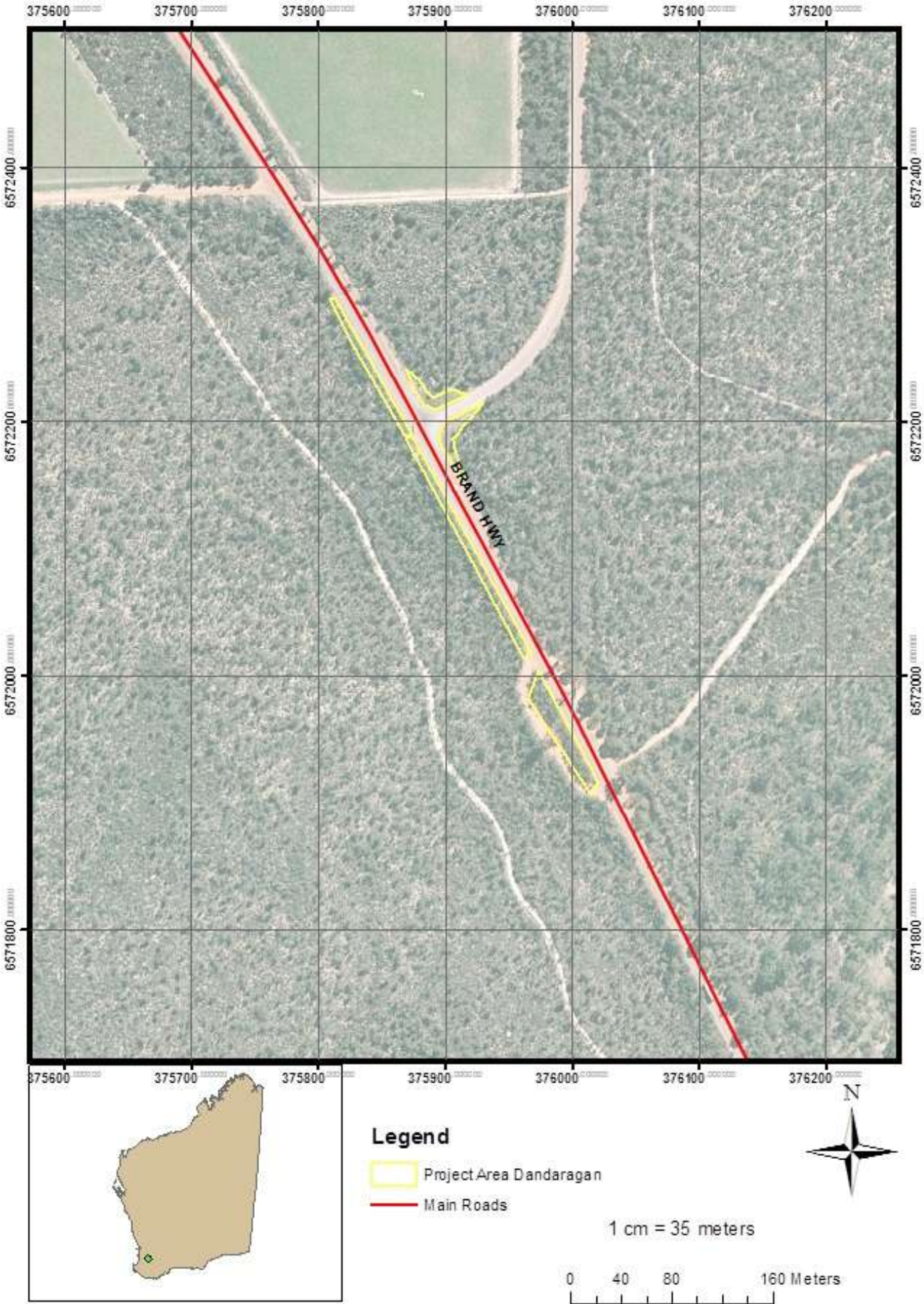
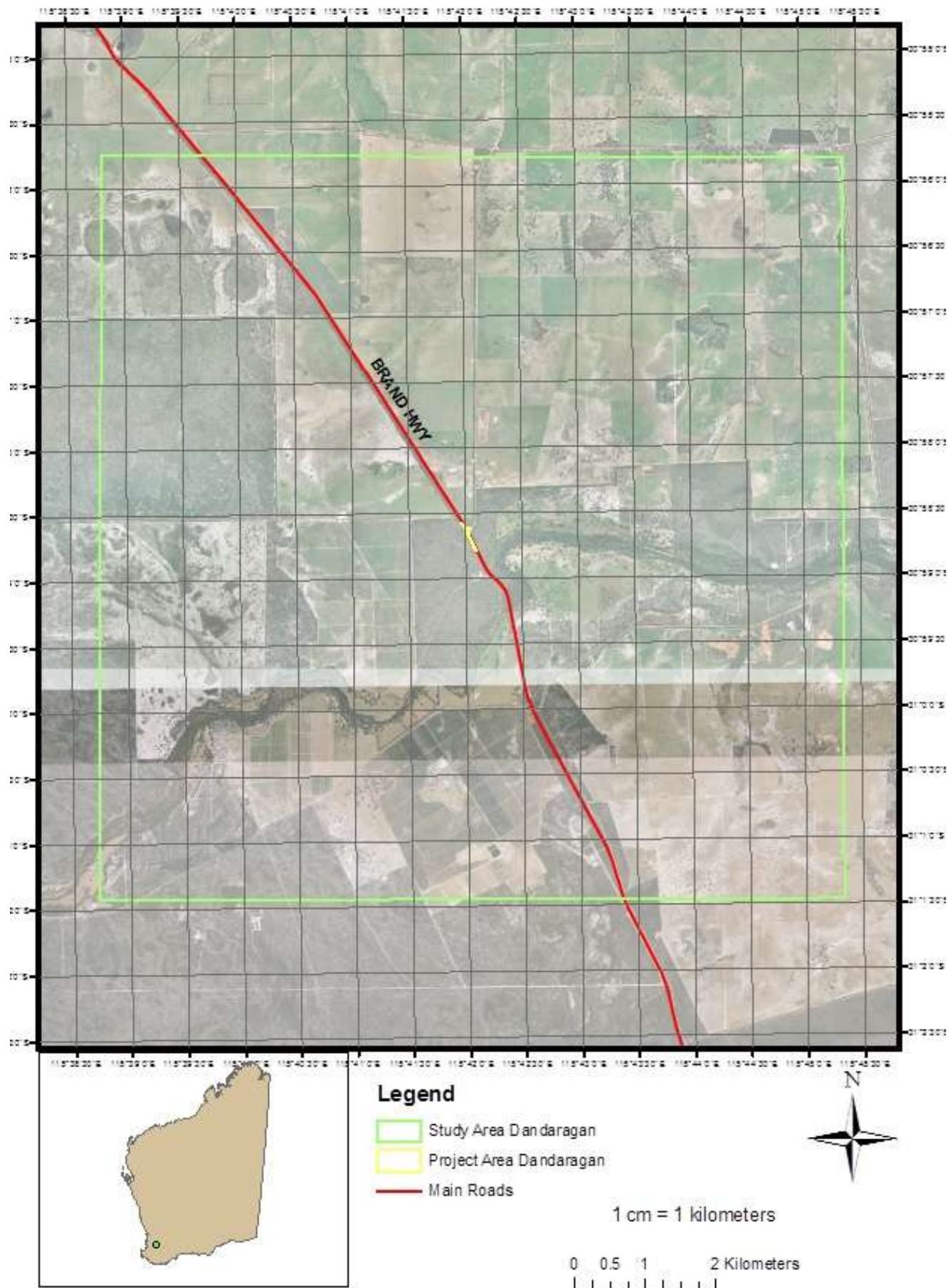


Figure 4 – Project Location 2 and Study Area



5. METHODOLOGY

5.1 Preliminary Desktop Study

A preliminary assessment of the project area and the potential constraints of the proposal were undertaken by reviewing government agency managed databases, viewing GIS shapefiles and consulting with relevant stakeholders where necessary.

5.1.1 Commonwealth Referral

The decision whether to refer the project to the Commonwealth 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 are; 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: (<http://www.environment.gov.au/erin/ert/epbc/index.html>) refer to Appendix G for the results of this search and Section 7 for a discussion on the findings.

5.1.2 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*.

6. ASSESSMENT OF ASPECTS AND IMPACTS

6.1 Aspects and Impacts

Table 1: Aspects and Impacts – Cataby Roadhouse/ Dandaragan Road Intersection

Aspect	Evaluation of Potential Impacts
Heritage (non-indigenous)	<p>A search of the Australian Heritage Places Inventory, Heritage Council of Western Australia on-line databases and MRWA GIS database has indicated that there are no known sites of heritage significance within the vicinity of the study area for project 1.</p> <p>However a search of these databases identified one site in project 2's study area. This heritage site is the Farmhouse Site (Regan's Ford). It is located approximately 3 km from the project area and will not be impacted by the works.</p> <p>No Matters of National Environmental Significance as protected under EPBC Act (1999) will be impacted (see Table 5) by either project.</p>

Aspect	Evaluation of Potential Impacts
Aboriginal heritage	<p>A search of the DIA's database identified 6 known sites of Aboriginal heritage significance within the study area for project 1. These sites were:</p> <ul style="list-style-type: none"> • Natgas 134 (Modified Tree, Artefacts / Scatter)- Located 50 m away • Iluka Cataby 02 (Artefacts / Scatter)- Located 6km away • Iluka Cataby 04 (Modified Tree)- Located 4.8 km away • Iluka Cataby 07 (Modified Tree)- Located 40 m away • Iluka Cataby 08 (Artefacts / Scatter)- Located over 3km away • Minyulo Brook Bilya (Ceremonial, Mythological, Modified Tree, Artefacts / Scatter)- Located over 5.4 km away <p>Due to the distance of the sites from the project area it is unlikely that the works will have any significant impact. However all workers should be made aware of the presence of these sites.</p> <p>A search of the DIA's database identified 14 known sites of Aboriginal heritage significance within the study area for project 2. These sites were:</p> <p>Registered:</p> <ul style="list-style-type: none"> • Gingin Brook Waggyt Site- Project located within site • Moore River Waugal- Located 50 m away • Chandala Brook- Located 50 m away <p>Other heritage places:</p> <ul style="list-style-type: none"> • Moore River/palm Flats- Located 2.8 km away • Natgas 132 (Artefacts / Scatter) - Located 1 km away • Gas Pipeline 81 (Artefacts / Scatter) - Located 1 km away • Moore River Pools- Project located within site • Wetlands & Watercourses Moore River To Bullsbrook- Located 50 m away • Red Gully Creek- Located 50 m away • Lennard Brook- Located 50 m away • Boonanarring Brook- Located 50 m away • Wallering Brook- Located 50 m away • Nullilla Brook- Located 50 m away • Breera Brook- Located 50 m away <p>Most of these sites are located in the same watercourse (Moore River) that is located 700 metres away from the project area. This watercourse itself will not be impacted by the project therefore it is unlikely that the project will affect most of these sites due to the distance and nature of works. Employees working on the project will need to be made aware of all aboriginal sites' existence.</p>
Air quality	As per Main Roads WA Corporate Procedure air quality assessment is only required for 'new road proposals and major upgrades'.
Acid Sulfate Soils	<p>The NRM SLIP database indicates that the area for both projects is classified as having 50-69% risk of subsurface acidification. As there is no dewatering or excavation below the water table planned no further investigations are required. However since there is a moderate risk of Acid Sulfate Soils care should be taken when carrying out the project works. If excavation below the watertable occurs then works need to stop immediately and further investigation implemented.</p>

Aspect	Evaluation of Potential Impacts
Dust	Likely to be a minor issue during earthworks. No major sensitive receivers adjacent to the proposed works, but excessive dust could impact vegetation. This is likely to be easily managed by standard construction dust management techniques.
Native Vegetation	See Section 8 Clearing of Native Vegetation for further information. No temporary clearing is to take place therefore no revegetation is required.
Vegetation – declared weeds	The DSEWPC database identified 10 weed species of national significance that have the potential to occur within the study area. There was no evidence of any of these species identified during the site visit. There are numerous common weed species that occur throughout the proposed works areas. These species are likely to be widespread within the general area. Appropriate weed management strategies will be applied as required throughout the project.
Vegetation – dieback	The project areas are below the 26 parallel and receive more than 400 mm of average annual rainfall. This means that potentially the area could have a dieback issue. However no evidence of dieback was identified during the MRWA site investigation. MRWA GIS database also indicates that there is no known dieback locations within the area at the present time. Dieback management strategies should be implemented throughout the project to ensure that the area does not become impacted by dieback.
Noise and vibration	No major sensitive local receivers. Construction works 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 Dandaragan must be met in respect to noise management and construction working hours.
Visual amenity	The proposed works will result in minor and short-term visual impacts during construction.
Hazardous substances	Not relevant to the proposed works, the project requires no hazardous substances to be used.
Contamination	The works are within an area that has no known previous land use activities on or adjacent to the project area have had the potential to create contamination, e.g. petrol station. A search of the DEC's contaminated sites database indicates there are no identified contaminated sites within the project area.

**PART B (PART B IS SECTION REQUIRED BY DEC FOR CLEARING PERMIT
CPS818/6)**

7. METHODOLOGY

7.1 Preliminary Desktop Study

A preliminary assessment of the project area and the potential constraints of the proposal were undertaken by reviewing government agency managed databases, viewing GIS shapefiles and consulting with relevant stakeholders where necessary.

8. 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 regulation (Section 5 – Prescribed Clearing), typically Main Roads WA clearing will be undertaken using a permit.

The clearing for this project will be completed under the MRWA Statewide Purpose Permit CPS 818/6.

8.1 Details of Vegetation Associations to be Cleared

8.1.1 Avoidance / Minimise Clearing:

Justification for how the turning pockets / location of parking bays were chosen.

- Analysis was done that compared the cost versus environmental constraints to choose the best options.
- Pre-existing structures and pre-existing roads limited choices for where the alignment and parking bays could occur.

How have the clearing impacts been minimised?

- Clearing impacts have been minimised by ensuring that the clearing footprint is as small as possible for the project works.

8.1.2 Existing environment and information

Project 1 Cataby:

This project will require the clearing of 0.5 ha of native vegetation. This vegetation is in good (Keighery, 1994) condition. There is evidence of disturbance with weed invasion and rubbish through the project area. The vegetation is predominately *Hakea sp.*, *Conospermum sp.*, *Allocasuarina sp.*, *Hibbertia sp.*, *Melaleuca sp.*, *Drosera sp.*, *Chamaescilla sp.*, *Lambertia sp.*, *Dryandra sp.*, *Xanthorrhoea sp.* and *Adenanthos sp.* The area is composed of grey sandy soils and has a flat topography.

Project 2 Dandaragan:

This project will require the clearing of 0.45 ha of native vegetation. 0.13 ha is in good to degraded (Keighery, 1994) condition the remainder is in completely degraded condition. There is evidence of disturbance with rubbish dumping and large amounts of weeds present. The vegetation is predominately *Banksia sp.* with an understorey of *Adenanthos sp.*, *Xanthorrhoea sp.*, *Allocasuarina sp.*, *Daviesia sp.* and *Hibbertia sp.* The area is composed of grey sandy soils and has a flat topography.

Table 2: Existing Environment – Cataby Roadhouse/ Dandaragan Road Intersection

Project Vegetation Complex	Project Clearing Description	Project Vegetation Condition	Comments
PROJECT 1 Beard Vegetation Association 1031 described as Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath (Government of Western	Clearing of up to 0.5 ha for road widening and southbound truck parking bay on Brand Highway, Dandaragan.	Good (Keighery, 1994)	Vegetation description and condition determined from MRWA site visit on 17 September 2012 and aerial imagery.

Australia, 2011)			
PROJECT 2 Beard Vegetation Association 1030 described as Low woodland; Banksia attenuata & B. menziesii (Government of Western Australia, 2011)	Clearing of up to 0.45 ha for intersection improvements on Brand Highway and Dandaragan Road, Dandaragan.	Good- Completely degraded (Keighery, 1994)	Vegetation description and condition determined from MRWA site visit on 17 September 2012 and aerial imagery.

8.1.3 Vegetation complexes and representation

Table 3: Existing Environment – Cataby Roadhouse/ Dandaragan Road Intersection

Project 1	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DEC reserves
IBRA Region Geraldton Sandplains	3 136 025	1 408 070	44.9%	40.2%
Shire Dandaragan	670 531	297 436	44.4%	41.1%
Beard Vegetation Association In IBRA region 1031	269 491	88 864	33%	42.2%
Beard Vegetation Association 1031	241 350	83 413	34.6%	44.1%
Project 2	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DEC reserves
IBRA Region Swan Coastal Plain	1 501 209	587 833	39.2%	34.8%
Shire Dandaragan	670 531	297 436	44.4%	41.1%
Beard Vegetation Association In IBRA region 1030	139 013	89 096	64.1%	15.7%
Beard Vegetation Association 1030	134 789	86 170	63.9%	13.7%

8.2 Assessment Against the 10 Clearing Principles

In assessing whether the project is likely to have a significant impact on the environment, the project was assessed against the ten clearing principles (EP Act 1986 Schedule 5).

The project is not likely to be at variance with the 10 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
	<p>The condition of the vegetation for project area 1 is good (Keighery, 1994). The area proposed to be cleared is approximately 0.5 ha which is located on the edge of a larger 36 ha remnant. Project 1 is mapped as Beard Vegetation Association 1031 described as Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath (Government of Western Australia, 2011).</p> <p>The condition of the native vegetation ranges from good to degraded (Keighery, 1994) for project 2. This project requires the clearing of 0.45 ha</p>

	<p>on the edge of a larger 290 ha remnant. Project 2 is mapped as Beard Vegetation Association 1030 described as Low woodland; <i>Banksia attenuata</i> & <i>B. menziesii</i> (Government of Western Australia, 2011).</p> <p>There are no Conservation estates or DEC managed lands that will be impacted by these projects due to the distance from the project areas and the small amount of clearing required.</p> <p>There were many recorded observations of fauna species, of threatened or priority status, within the two study areas. None of these will be significantly impacted as the species are mobile and as there is only a small amount of clearing required. The species will be able to move to the surrounding area which has similar vegetation in the same or better condition.</p> <p>There were numerous recorded observations of 34 priority flora species within the study area for Project 1. Of these 34 species, 15 were within 2 km, the remaining 19 were further than 2km from the project area. Of the 15 species within 2km only three had the potential to occur within the project area. These three species had the required soil type and vegetation association and are listed below:</p> <ul style="list-style-type: none"> • <i>Hypocalymma</i> sp. <i>Cataby</i> Priority 2- closest record is 910 m • <i>Jacksonia carduacea</i> Priority 3- closest record is 4 km • <i>Anigozanthos humilis</i> subsp. <i>Chrysanthus</i> Priority 4-closest record is 2.1 km <p>There were numerous recorded observations of 12 species of priority flora within the study area for Project 2. Four species were located within 1 km of the project area; the other 8 species were located greater than 1 km away. Of these species only one species had the potential to occur within the project area as they had the appropriate soil type and vegetation association. This species was <i>Haemodorum loratum</i> which is recorded being 230m away from the project area.</p> <p>The presence of priority species can indicate an area of high biological diversity. However since there is only a small amount of native vegetation to be cleared for each project it is unlikely that the area to be cleared will represent a high level of biodiversity.</p> <p>There are no Priority Ecological Community's (PECs) within project 1's study area therefore there will be no impacts upon PECs for this project.</p> <p>Within Project 2's study area there is one recorded observation of a PEC. This PEC is Swan Coastal Plain <i>Banksia attenuata</i> - <i>Banksia menziesii</i> woodlands. It was located 1.6 km to the south east of the project area. Though this PEC has potential to occur within the project area it is unlikely to cause a significant impact as the area to be removed is a small area of native vegetation in good-degraded (Keighery, 1994) condition.</p> <p>Given the above and that the area to be cleared for the projects is small, ~0.5ha and ~0.45ha respectively; it is unlikely that the projects will be at variance to this principle.</p>
Methodology	<p>MRWA Site Inspection (2012)</p> <p>MRWA GIS Shapefiles</p> <p>Department of Natural Resources and Environment (2002)</p> <p>NatureMap (Accessed 18 September 2012)</p> <p>Keighery (1994)</p>

(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
	<p>There were numerous records of 12 recorded species found within project 1's study area and numerous records of 15 recorded species found within project 2's study area.</p> <p>Recorded within Project 1 and Project 2's study area:</p> <ul style="list-style-type: none"> • <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo- Short-billed black-cockatoo)-Threatened and federally protected. Recorded sightings within project 1 project area. • <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo- Long-billed black-cockatoo)-Threatened. Recorded sightings within project 1 project area. • <i>Dasyurus geoffroii</i> (Chuditch, Western Quoll)-Threatened and Federally protected • <i>Ardea modesta</i> (Eastern Great Egret)-Protected under International Agreement (IA) • <i>Calidris ruficollis</i>(Red-necked Stint)- IA • <i>Merops ornatus</i>(Rainbow Bee-eater)- IA • <i>Plegadis falcinellus</i> (Glossy Ibis)- IA • <i>Tringa nebularia</i> (Common Greenshank)- IA • <i>Macropus irma</i> (Western Brush Wallaby)-Priority 4 <p>Recorded only within project 1's study area:</p> <ul style="list-style-type: none"> • <i>Falco peregrinus</i>(Peregrine Falcon)- Specially Protected • <i>Falco peregrinus subsp. macropus</i> (Australian Peregrine Falcon)- Specially protected • <i>Neelaps calonotos</i> (Black-striped Snake)-Priority 3 <p>Recorded only within project 2's study area:</p> <ul style="list-style-type: none"> • <i>Calidris ferruginea</i> (Curlew Sandpiper)-Protected under International Agreement • <i>Hylaeus globuliferus</i> (Bee)-Priority 3 • <i>Leioproctus contrarius</i> (Bee)-Priority 3 • <i>Ardeotis australis</i> (Australian Bustard)-Priority 3 • <i>Hydromys chrysogaster</i> (Water Rat)-Priority 4 • <i>Oreocica gutturalis subsp. gutturalis</i> (Crested Bellbird-southern) Priority 4 <p>There is potential for foraging and nesting habitat for the black cockatoo species within the project areas. In project area 1 there are <i>Eucalyptus</i> trees which are potential habitat for both species and <i>Hakea sp.</i> which will provide foraging habitat.</p> <p>In project area 2 there are <i>Eucalyptus</i> trees which are habitat for both cockatoo species and <i>Banksia's</i> which is Carnaby cockatoo foraging habitat. However in project area 1 only approximately 0.5ha of native vegetation will be removed. The surrounding area has 36 ha of vegetation in similar or better condition. In project 2 only approximately 0.5 ha of native vegetation will be removed. The surrounding area has 290 ha of vegetation in similar or</p>

	<p>better condition. Therefore it is unlikely that the clearing will cause a significant impact as the species can move to the surrounding area.</p> <p>It is unlikely that any of the other bird species or the Water Rat will be impacted as they are highly mobile and their habitat is not found within either project area. The Black-striped Snake, two bee species, Chuditch and the Western Brush Wallaby have the potential to occur within the project areas as the appropriate habitat is present. However as all species are mobile and the surrounding area has vegetation of similar or better condition it is unlikely any species will be significantly impacted.</p> <p>A search was conducted of the DSEWPC protected matters search tool for both areas. The following species were identified as potentially occurring in the study area:</p> <ul style="list-style-type: none"> • <i>Leipoa ocellata</i> (Malleefowl) • <i>Rostratula australis</i> (Australian Painted Snipe) <p>Australian Painted Snipe and the Malleefowl are unlikely to be found within the project area as their habitats are not present. Therefore it is unlikely that they will be impacted by this project.</p> <p>Given that the projects involve removing only a small amount of vegetation (~0.5 ha and ~0.45 ha) from an area that has vegetation of similar or better condition in the surrounding area it is unlikely that the habitat of fauna species will be significantly impacted. The area will not become fragmented by removing the small linear sections required for these projects as the projects occur on the edge of larger remnants (~36 ha and ~290 ha). Due to the fact that the area to be removed in both projects is small and on the edge of a pre-existing road it is unlikely that the connectivity or the ability of the area to act as a stepping stone or corridor will be affected by the clearing of the vegetation. The species within the area are mobile and as such will be able to move into the surrounding vegetation as it is similar in type and in better condition.</p>
Methodology	<p>MRWA Site Inspection (2012)</p> <p>MRWA GIS Shapefiles</p> <p>Department of Natural Resources and Environment (2002)</p> <p>NatureMap (Accessed 18 September 2012)</p> <p>DSEWPC protected matters search tool (Accessed 18 September 2012)</p>

(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
	<p>There are several recorded observations of three rare flora species within the study area for Project 1. These are:</p> <ul style="list-style-type: none"> • <i>Chamelaucium sp. Cataby</i>-Closest recording is to the east, 2.2 km away • <i>Eleocharis keigheryi</i>-Closest recording is to the north east, 850m away • <i>Grevillea calliantha</i>-Closest recording is to the north east, 3 km away. <p>There are several recorded observations of three rare flora within the study area for Project 2. These are:</p> <ul style="list-style-type: none"> • <i>Asterolasia nivea</i>-Closest recording is to the south west, 4km away. • <i>Darwinia acerosa</i>-Closest recording is to the south west, 4km away.

	<ul style="list-style-type: none"> • <i>Darwinia carnea</i>-Closest recording is to the south west, 4km away. <p>All of these species are of a significance distance away so they will not be significantly impacted by the project. The soil type in the project areas is also not suitable for these species. Therefore none of these species are likely to be present within the project areas.</p> <p>A search was conducted of the DSEWPC protected matters search tool for both areas. There were 24 and 19 species found in project 1 and project 2's study area respectively. However none of these species contain the potential to occur within the project area as the required soil type is not present.</p> <p>Given the above it is not likely that either project will be at variance to this principle.</p>
Methodology	DSEWPC protected matters search tool (Accessed 18 September 2012) MRWA GIS database DEC database MRWA site investigation (2012)

(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 TECs located in either projects study area. The closest TEC occurs over 20 km south of both project areas. It is located in vegetation association 949: Low woodland; banksia. Given the different vegetation type in the project area and distance to the nearest known TEC it is considered unlikely that the proposal will be at variance to this Principle.
Methodology	MRWA GIS database DEC database

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

Comments	Proposal is not likely to be at variance to this Principle			
	Project 1	Pre-European (ha)	Current Extent (ha)	% Remaining
	IBRA Region Geraldton Sandplains	3 136 025	1 408 070	44.9%
	Shire Dandaragan	670 531	297 436	44.4%
	Beard Vegetation Association 1031 in IBRA region	269 491	88 864	33%
	Beard Vegetation Association 1031	241 350	83 413	34.6%
	Project 1 consists of Beard Vegetation Association 1031 described as Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath (Government of Western Australia, 2011). This has more than 30% remaining in the local area. The native vegetation is in good (Keighery, 1994) condition. Approximately 10% of the study area is native vegetation			

	<p>the rest of the area is agricultural.</p> <p>The area to be removed is only approximately 0.5 ha in size. Since in the immediate area there is 36ha of native vegetation in similar or better condition it is unlikely that this project will be at variance to this principle.</p> <p>The area to be removed is a small linear section on the side of the road. There will be native vegetation remaining around the cleared area that will be able to function as a corridor to link the vegetation in the area.</p> <table><tr><th>Project 2</th><th>Pre–European (ha)</th><th>Current Extent (ha)</th><th>% Remaining</th></tr><tr><td>IBRA Region Swan Coastal Plain</td><td>1 501 209</td><td>587 833</td><td>39.2%</td></tr><tr><td>Shire Dandaragan</td><td>670 531</td><td>297 436</td><td>44.4%</td></tr><tr><td>Beard Vegetation Association 1031 in IBRA region</td><td>139 013</td><td>89 096</td><td>64.1%</td></tr><tr><td>Beard Vegetation Association 1031</td><td>134 789</td><td>86 170</td><td>63.9%</td></tr></table> <p>Project 2 consists of Vegetation Association 1030: Low woodland; <i>Banksia attenuata</i> & <i>B. menziesii</i> (Government of Western Australia, 2011). This has more than 30% remaining in the local area. Project 2 only requires approximately 0.45 ha of vegetation to be cleared. Of this area 0.22 ha is composed of vegetation in completely degraded condition. The remaining 0.23 ha of vegetation is in good to degraded condition. Approximately 25% of the study area is native vegetation the rest of the area is agricultural.</p> <p>The area to be removed is a small linear section on the edge of a much larger remanent (~290 ha). Since the area to be removed is suffering from edge effects and is surrounded by vegetation in better condition it is unlikely that this project will be at variance to this principle.</p> <p>Removing this area will not affect the ecological linkages or increase fragmentation of the area as only a small portion will be removed from the edge of a much larger area.</p> <p>Given the above it is not likely either project will be at variance to this principle.</p>	Project 2	Pre–European (ha)	Current Extent (ha)	% Remaining	IBRA Region Swan Coastal Plain	1 501 209	587 833	39.2%	Shire Dandaragan	670 531	297 436	44.4%	Beard Vegetation Association 1031 in IBRA region	139 013	89 096	64.1%	Beard Vegetation Association 1031	134 789	86 170	63.9%
Project 2	Pre–European (ha)	Current Extent (ha)	% Remaining																		
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Shire Dandaragan	670 531	297 436	44.4%																		
Beard Vegetation Association 1031 in IBRA region	139 013	89 096	64.1%																		
Beard Vegetation Association 1031	134 789	86 170	63.9%																		
Methodology	MRWA Site Inspection (2012) MRWA GIS Shapefiles Government of WA (2011)																				

(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
	<p>There are three minor non-perennial watercourses within the study area for project 1. The closest of these watercourses is located 36 m away.</p> <p>There is one watercourse in the study area for project 2. This is the Moore River. It is located 50 m from the project area.</p> <p>Since the watercourses for both projects are located a significant distance</p>

	<p>away and no dewatering is required for this project it is unlikely that any watercourses or riparian vegetation will be impacted by the project works.</p> <p>Within the study area for project 1 there are many unnamed wetlands. The closest of these is 2.9km away from the project area.</p> <p>Within project 2's study area there are many unnamed wetlands. The closest of these is 50 m away from the project area.</p> <p>Due to the distance away from the wetlands, the nature of the works and the small amount of native vegetation that is to be cleared it is unlikely that the wetlands will be impacted by this project.</p> <p>A search of the DSEWPC database indicated that there were no wetlands of national or international significance for either project.</p> <p>Due to the above and the fact that no riparian vegetation was observed in the site investigation it is unlikely that either project will be at variance to this principle.</p>
Methodology	<p>MRWA GIS database</p> <p>DEC Native Vegetation Map Viewer (Accessed 18 September 2012)</p> <p>MRWA Site Investigation (2012)</p>

(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																									
Methodology	A search of the NRM database produced the following risk results for project 1. <table><tr><td>Salinity</td><td>0-2%</td></tr><tr><td>Water erosion</td><td>3-9%</td></tr><tr><td>Wind erosion</td><td>30-49%</td></tr><tr><td>Phosphorous export</td><td>3-9%</td></tr><tr><td>Water logging</td><td>3-9%</td></tr><tr><td>Structure decline</td><td>0-2%</td></tr></table> It is clear from the above that there is low risk of land degradation. Wind erosion has a slightly higher risk than other aspects but it still only presents a low to moderate risk. <p>A search was also completed for project 2. The risk results are indicated in the table below.</p> <table><tr><td>Salinity</td><td>0-2%</td></tr><tr><td>Water erosion</td><td>10-29%</td></tr><tr><td>Wind erosion</td><td>30-49%</td></tr><tr><td>Phosphorous export</td><td>10-29%</td></tr><tr><td>Water logging</td><td>10-29%</td></tr><tr><td>Structure decline</td><td>0-2%</td></tr></table> From the table it is clear that all of the degradation aspects are low to moderate risk. <p>Both project areas occur on grey sandy soils. This means they have high infiltration rates which minimises the risk of waterlogging and water erosion. The areas also both have very flat topography which means that the risk of water erosion is minimised.</p>		Salinity	0-2%	Water erosion	3-9%	Wind erosion	30-49%	Phosphorous export	3-9%	Water logging	3-9%	Structure decline	0-2%	Salinity	0-2%	Water erosion	10-29%	Wind erosion	30-49%	Phosphorous export	10-29%	Water logging	10-29%	Structure decline	0-2%
Salinity	0-2%																									
Water erosion	3-9%																									
Wind erosion	30-49%																									
Phosphorous export	3-9%																									
Water logging	3-9%																									
Structure decline	0-2%																									
Salinity	0-2%																									
Water erosion	10-29%																									
Wind erosion	30-49%																									
Phosphorous export	10-29%																									
Water logging	10-29%																									
Structure decline	0-2%																									

	As both projects only require a small amount of clearing and given the above it is not likely that the projects will be at variance to this principle.
Methodology	NRM database (Accessed September 2012) Site Investigation (2012)

(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
	<p>There are three conservation areas that occur within project 1's study area. These include two unnamed reserves which are 3 and 4 km away from the project area. The third conservation area is the Enemunga Nature Reserve which is 5.5km away from the project area. It is unlikely that the project will impact upon the environmental values of these reserves as there is only to be a small amount approximately 0.5 ha of clearing occurring. This clearing is a small linear section that will be removed from the edge of a larger remanent approximately 36 ha. This clearing will not lead to fragmentation or affect ecological linkages in the area.</p> <p>Within the study area of project 2 there is the Namming Nature Reserve which is located 2.6 km away, to the north east of the project area.</p> <p>It is unlikely that the project will impact upon the environmental values of these reserves as there is only to be a small amount approximately 0.45 ha of clearing occurring. This clearing is a small linear section that will be removed from the edge of a larger remanent approximately 290 ha. This clearing will not lead to fragmentation or affect ecological linkages in the area.</p> <p>Due to the distance of the reserves from the project areas it is unlikely that either of these projects will be at variance to this principle.</p>
Methodology	MRWA GIS database

(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
	<p>Project 1 and 2 are both RIWI Groundwater areas. Project 2 is also a RIWI surface water area. Neither project is a PDWSA or a RIWI Irrigation Area.</p> <p>Since there is to be no dewatering it is unlikely that the groundwater will be affected. There is also only a small area to be cleared which means that it is unlikely that the groundwater and surface waters will be affected. As already addressed in principle (f) there are several watercourses in the project study area but it is unlikely that the project works will have a significant impact on any watercourse.</p> <p>Given the above it is unlikely that the project will be at variance to this principle.</p>
Methodology	MRWA database DOW geographic data atlas (Accessed 18 September 2012)

(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
	<p>A search of the NRM database indicated that there is a 3-9% risk of flooding for project 1 and a 10-29% risk of flooding for project 2.</p> <p>The soil type of project 1 and project 2 is a grey sandy soil. This means that the soils will have high infiltration rates which will reduce the chance of flooding.</p> <p>Due to this fact and the small amount of clearing that is required for the projects it is unlikely that the project will be at variance to this principle.</p>
Methodology	<p>NRM database (Accessed 18 September 2012)</p> <p>MRWA Site Investigation (2012)</p>

9. ADDITIONAL ACTION REQUIRED

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

Table 4: Summary of Additional Management Actions – Cataby Roadhouse/ Dandaragan Road Intersection

Impact of Clearing	Yes/No or NA	Further Action Required
1. Does the assessment indicate that the clearing is may be at variance, is at variance or is seriously at variance with one or more of the principles for clearing?	No	No further action required.
2. Does the assessment indicate that the clearing is at variance with one or more of the principles for clearing?	N/A	No further action required.
3. Does the assessment indicate that the clearing is at variance with clearing principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding?	N/A	No further action required.
4. Will the project involve clearing for purposes considered temporary in nature under Condition 13 of CPS818?	No	No further action required.

10. ENVIRONMENTAL MANAGEMENT

Main Roads WA attempts to avoid clearing vegetation if possible, where clearing cannot be avoided then this clearing is kept to a minimum. An Environmental Management Plan (EMP) has been developed to manage and minimise vegetation clearing for the Cataby Roadhouse/ Dandaragan Road Intersection; (see appendix K).

PART C

11. COMMONWEALTH ASPECTS AND IMPACTS

Table 5: Commonwealth Aspects and Impacts – Cataby Roadhouse/ Dandaragan Road Intersection

PROJECT 1

Aspect	Evaluation of Potential Impacts
World Heritage properties	The project will not impact any World Heritage properties i.e. <u>Shark Bay</u>
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 no threatened ecological communities, 28 threatened species and 6 listed marine species within the vicinity of the project. The project activities are unlikely to have a significant impact on these species and the marine species are listed as “over fly” with the vegetation present unlikely to be habitat for these species. Also only small amounts of vegetation are to be removed, with vegetation in the same or better condition in the surrounding area. For full results see Clearing Principle (b).
Migratory species protected under international agreements	A search of the Department of Sustainability, Environment, Water, Population and Communities Protected Matters Search Tool located 9 migratory species within the vicinity of the project. The project activities are unlikely to have a significant impact on these species as most of them are bird species that could easily move to nearby habitat or are flyover species. Also the vegetation present is unlikely to be habitat for these species.
Commonwealth marine areas	The project will not impact any Commonwealth marine area or marine protected area i.e. <u>Ningaloo Marine Park</u>
Commonwealth lands	The project is not located on and will not impact any Commonwealth lands.
Nuclear Actions	Not relevant to the proposed works.

PROJECT 2

Aspect	Evaluation of Potential Impacts
World Heritage properties	The project will not impact any World Heritage properties i.e. <u>Shark Bay</u>
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 no threatened ecological communities, 23 threatened species and 6 listed marine species within the vicinity of the project. The project activities are unlikely to have a significant impact on these species and the marine species are listed as “over fly” with the vegetation present unlikely to be habitat for these species. Also only small amounts of vegetation are to be removed, with vegetation in the same or better condition in the surrounding area. For full results see Clearing Principle (b).
Migratory species protected under international agreements	A search of the Department of Sustainability, Environment, Water, Population and Communities Protected Matters Search Tool located 9 migratory species within the vicinity of the project. The project activities are unlikely to have a significant impact on these species as the vegetation present is unlikely to be habitat for these species.
Commonwealth marine areas	The project will not impact any Commonwealth marine area or marine protected area i.e. <u>Ningaloo Marine Park</u>
Commonwealth lands	The project is not located on and will not impact any Commonwealth lands.
Nuclear Actions	Not relevant to the proposed works.

12. DECISION TO REFER

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

The preliminary impact assessment determined the project does not, will not, or is not likely to have a significant impact on Matters of National Environmental Significance or impact Commonwealth land as outlined in Table 5 of the report. For this reason the project does not require referral to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

12.2 Referral to the Environmental Protection Authority

Due to the small scale of the project, the low significance of its impacts to the surrounding environment and that it is unlikely the project will generate significant public interest; the project does not require referral to the WA Environmental Protection Authority.

13. STAKEHOLDER CONSULTATION

Table 6: Project Consultation – Cataby Roadhouse/ Dandaragan Road Intersection

Name	Agency	Date	Comments
Christine Lewis	DIA	28/09/12	Advised Moore River Pools will not be impacted.

14. OTHER APPROVALS/PERMITS/LICENCES

No further approvals, permits or licences are required for the Cataby Roadhouse/ Dandaragan Road Intersection.

15. REFERENCES

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.

Bureau of Meteorology Australia. Climate Averages for Australian Sites = Accessed 12 September 2012 http://www.bom.gov.au/climate/averages/tables/cw_010536.shtml

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

Keighery, B. J. 1994. Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Government of Western Australia. (2011). 2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Accessed September 2012.

Natural Resource Management in WA, SLIP portal, Soils Systems – Accessed 12 September 2012. http://spatial.agric.wa.gov.au/slip/products_view.asp

Main Roads WA Site Inspection, 2012. Brand Highway 106 & 77.2 SLK, 17 September 2012.

Western Australian Herbarium (2010) Florabase - The Western Australian Flora. Department of Environment and Conservation. Available online from: <http://florabase.dec.wa.gov.au>. Accessed September 2012.

Appendix A

Checklist - Low Impact Screening Checklist

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

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

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

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

Tick “Yes” or “No” for every item.

Project Name: Cataby Roadhouse 106 SLK and Dandaragan Intersection Upgrade 77.2 SLK.....

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

Completed By:

Signature M. Hopper *Date* 13/09/12
Name Matthew Hopper *Title* Project Manager

To be reviewed by
a Main Roads
Environment
Officer

Signature E. Fitzgerald *Date* 13/09/12
Name Emma Fitzgerald *Title* Graduate Environment

Comments:

Appendix B

Site Inspection Report Brand Highway/Cataby Roadhouse (17/09/12)

1.1 ATTENDEES

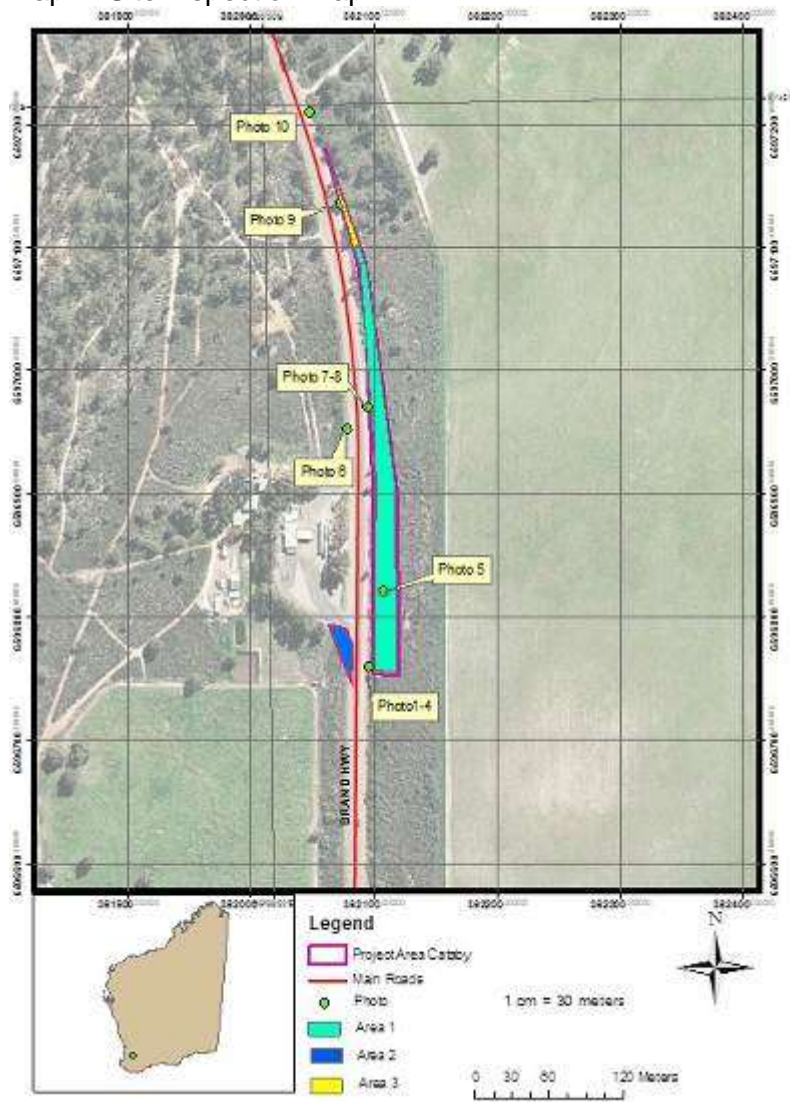
Matthew Hopper (PM)
James Widenbar (SEO)
Emma Fitzgerald (GEnv)

1.2 ACTIONS UNDERTAKEN

- Met with Project Manager on site.
- Traversed project area on foot.
- Took representative site photos.

1.3 EXISTING ENVIRONMENT & INFORMATION

Map 1. Site Inspection Map



1.4 Site Description

The project area is approximately 0.5 hectares (ha) and is mapped as Beard Vegetation Association 1031 described as Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath (Government of Western Australia, 2011). This vegetation association has 45% remaining in the region and 44% remaining in the local area therefore it is above the critical 30% required to maintain biodiversity.

The area is affected by edge effects such as weeds and rubbish from the nearby road. It composed of grey sandy soils and is a relatively flat topography. Bird species were observed but no other evidence of fauna was identified during the site visit. To the north and west of the project there is a large area of similar vegetation of the same or better condition. This area is approximately 36 ha in size.

The project area can be divided into three separate areas which are described below.

Area 1

This area is in good condition. It has a good ground cover with limited weed invasion, though there are more weeds closer to the road edge. This area was predominately composed of a heathland dominated by *Hakea sp.*, *Conospermum sp.*, *Allocasuarina sp.*, *Hibbertia sp.*, *Melaleuca sp.*, *Drosera sp.*, *Chamaescilla sp.*, *Lambertia sp.*, *Dryandra sp.*, *Xanthorrhoea sp.* and *Adenanthos sp.* One *Eucalyptus* species was present within this area however it was small and contained no evidence of hollows. There was also four *Banksia sp.* one of which was dead. This area is 0.45 ha in size.

Area 2

This area is on the LHS of Brand Highway. It is completely composed of weed species as it has been kept clear for sightlines in the past. This area is 0.03 ha in size.

Area 3

This area was in good (Keighery, 1994) condition. There is limited weed invasion and rubbish present though this increased closer to the road's edge. This area is a woodland. It has the same understorey as area 1 but it also has an overstorey that is predominately composed of *Eucalyptus sp.* There were no hollows evident in the area to be cleared as the trees were too small. This area is 0.02 ha in size.

1.5 Site Photos



Photo 1. Photo taken looking west at photo point 1. Shows LHS of Brand Highway on the approach into Cataby Roadhouse. Shows area 2 predominately composed of weed species.



Photo 2. Photo taken looking north west at photo point 1. Photo shows the Cataby roadhouse. The trees evident in the photo will remain. The rest of the area is composed of weed species.

Photo 3. Photo taken at photo point 1 looking north. This is taken on the RHS of the road. Area predominately composed of heathland in good (Keighery, 1994) condition with weed species invading from the road. The main species present are *Hakea* sp., *Conospermum* sp., *Allocasuarina* sp., *Hibbertia* sp., *Chamaescilla* sp. and *Lambertia* sp. Photo is representative of area 1.



Photo 4. Taken at photo point 1 looking south. This shows the four *Banksia* sp. present in area 1.

Photo 5. Photo taken at photo point 2 looking north. This photo is indicative of area 1. This area is the same as described in photo 3 but with limited weed presence.



Photo 6. Photo taken at photo point 3 looking west on the LHS of road. This area is similar to area 1 but with a higher weed presence. There were also DRF markers present in this area.



Photo 7. Photo taken at photo point 4 looking east. It shows vegetation which is the same as area 1. There was a slight depression in the area but otherwise the area is the same as photo 5.



Photo 8. Taken at photo point 4 facing south.



Photo 9. Photo taken at photo point 5. This photo shows area 3. The understorey of this area was the same as that in area 1. The difference between the two areas is this area was dominated by Eucalyptus sp. overstorey. The area was in good condition.



Photo 10. Photo taken at photo point 6. Shows DRF marker that was evident on both the RHS and LHS of Brand Highway at this point in the road.

Brand Highway/Dandaragan Road Intersection 17/09/12

1.1 ATTENDEES

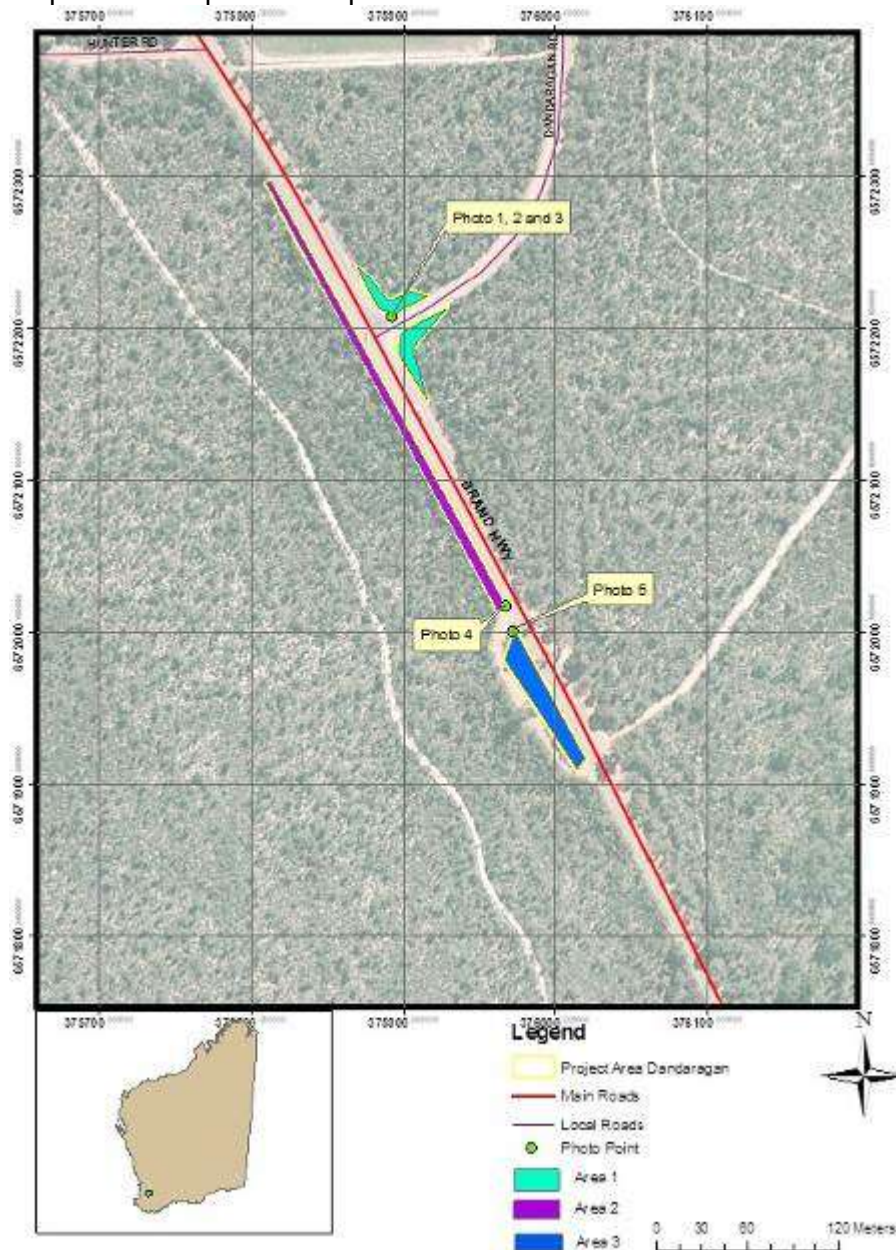
Matthew Hopper (PM)
James Widenbar (SEO)
Emma Fitzgerald (GEnv)

1.2 ACTIONS UNDERTAKEN

- Met with Project Manager on site.
- Traversed project area on foot.
- Took representative site photos.

1.3 EXISTING ENVIRONMENT & INFORMATION

Map 1. Site Inspection Map



1.4 Site Description

The area to be cleared for this project is 0.45 hectares (ha) in size. The project area for this site is representative of Beard Vegetation Association 1030 described as Low woodland; *Banksia attenuata* & *B. menziesii* (Government of Western Australia, 2011). This vegetation association has more than the critical 30% remaining. There is 64% remaining in the region and 44% remaining in the local area.

Bird species were observed but no other evidence of fauna was identified during the site visit. There were numerous mature trees in the area however none of these species would have nesting potential as they were the wrong species type.

The area is composed of grey sandy soils and the area has a very flat topography. There was evidence of disturbance within the project area. There were weeds in all areas and evidence of rubbish that had been dumped in the areas.

The project area consists of three different areas which are discussed below.

Area 1:

This area occurs on the RHS of Brand Highway where Dandaragan Road enters the highway. The area to be removed is 0.09 ha in size. The vegetation in this area is in completely degraded (Keighery, 1994) condition. The entire area to be removed is composed of weeds. The area has been kept clear in previous years to ensure appropriate sightlines were maintained. This area is shown in photos 1-3 below.

Area 2:

Area 2 is on the LHS of Brand Highway. The area to be removed is 0.13 ha in size. This area is in good to degraded (Keighery, 1994) condition. It is predominately composed of *Banksia* sp. with an understorey of *Adenanthos* sp., *Xanthorrhoea* sp., *Allocasuarina* sp., *Daviesia* sp. and *Hibbertia* sp. This area is affected by edge effects. It is a weed invested area, with numbers increasing closer to the road edge. There is evidence of rubbish dumping along the road-facing edge of the area. This area is shown in photo 4 below.

Area 3:

This area is within a parking bay that has been created on the LHS of the road. The area to be removed is 0.01 ha in size. The area to be removed is in completely degraded (Keighery, 1994) condition. There are high levels of disturbance with large amounts of weeds present and rubbish dumping within this area of vegetation. This area is the same as area 2 except with a higher level of degradation and a few *Eucalyptus* species present. The area is shown in photo 5 below.

1.5 Site Photos



Photo 1. Looking north at photo point 1 on RHS of the road. Area is in completely degraded (Keighery, 1994) condition. Composed entirely of weeds.

Photo 2. . Looking south at photo point 1, where Dandaragan Road enters. Photo taken on opposite side to photo 1 on RHS of road. Area is in completely degraded (Keighery, 1994) condition. Completely composed of weeds.



Photo 3. Looking east at photo point 1 on RHS of road. Photo showing entry of Dandaragan Road. It is evident that the area to be cleared is highly weed invested and already partially cleared to ensure appropriate sightlines.



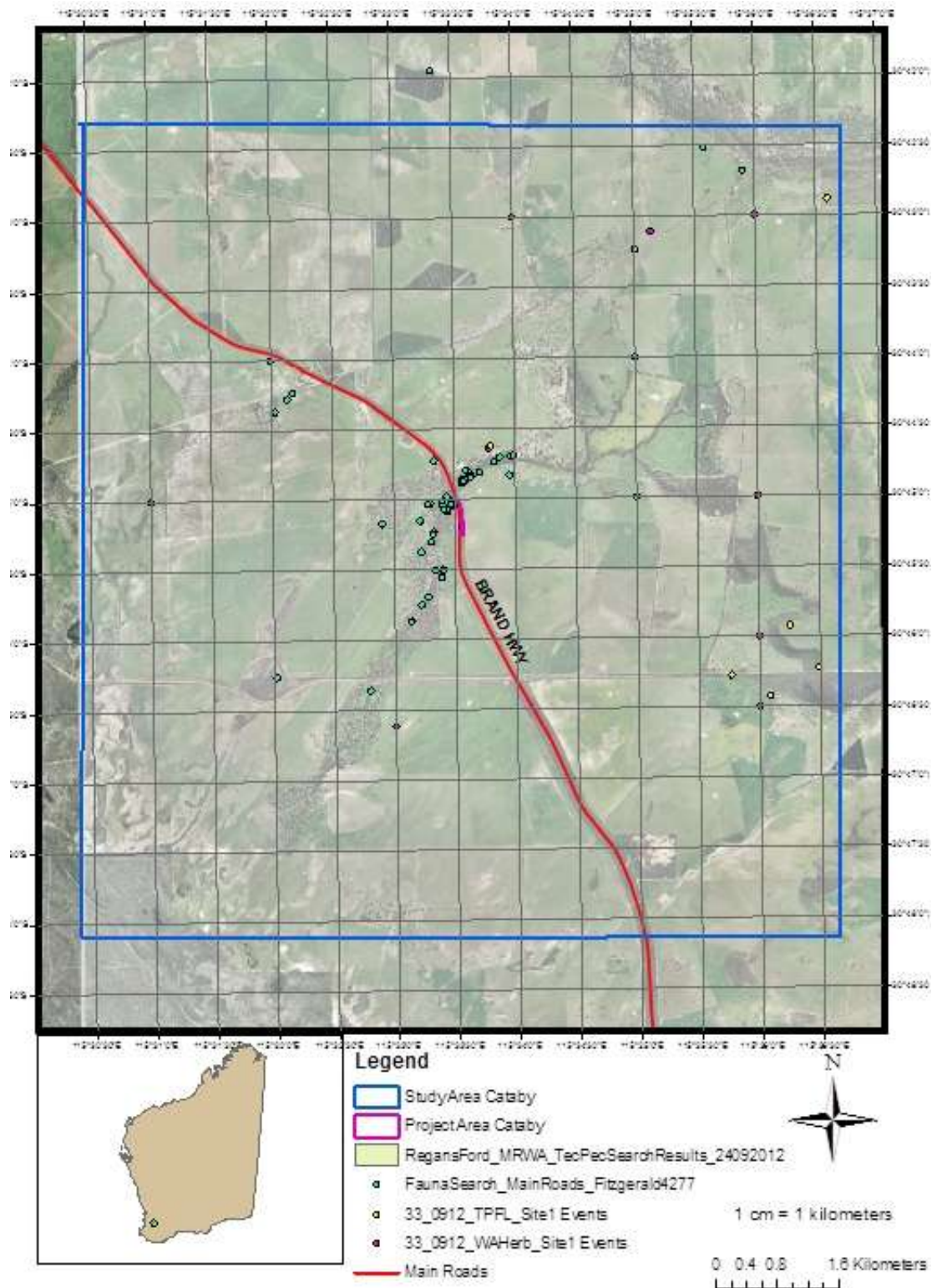
Photo 4: Photo taken looking north at photo point 2. This shows the area to be cleared on the LHS of the road. It is in good to degraded (Keighery, 1994) condition. It is predominately composed of *Banksia* sp. The area is clearly exhibiting edge effects given the large amount of weeds present.

Photo 5: Photo taken looking south at photo point 3. This photo shows the parking bay that is on the RHS of the road. The area has a few *Eucalypt* sp. present but is otherwise the same composition as that shown in photo 4. This area is in completely degraded (Keighery, 1994) condition.

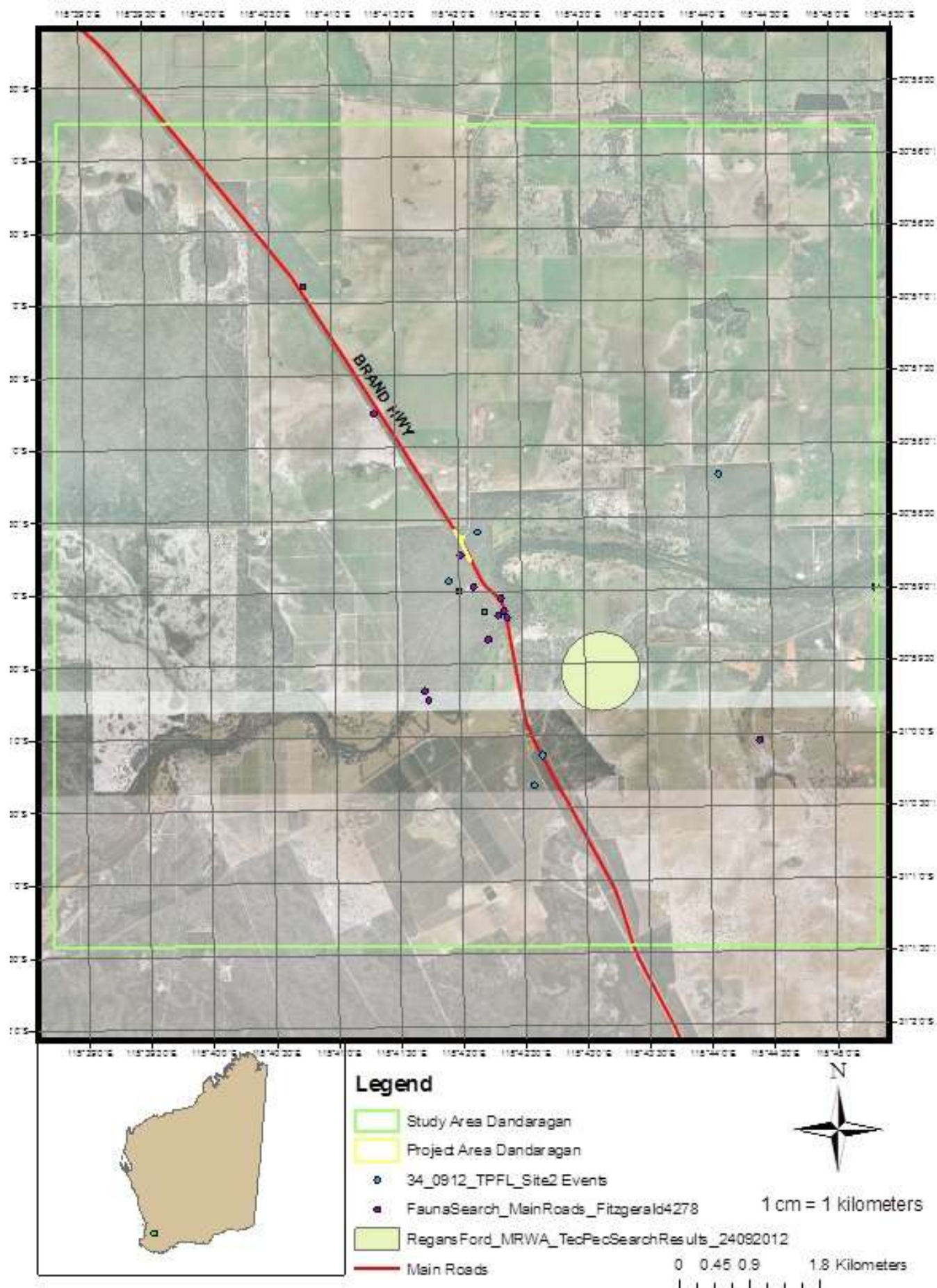
Appendix C

DEC Threatened Flora and Fauna Database Searches

Project 1



Project 2



Appendix D


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

Project 1

Search results

Search Results

Showing 1-10 of 51 results
Jump to page: 1 2 3 ... 6



Map Hybrid

Google

Map data ©2012 Google, Whereby(R), Sene's Pty Ltd - Terms of Use Report a map error

inHERIT
Our heritage places

LINKS


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- ▶ [Heritage Listings Explained](#)
- ▶ [Search Tips](#)

Project 2

Search results

Search Results

Showing 1-10 of 51 results
Jump to page: 1 2 3 ... 6



Map Hybrid

Google

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Our heritage places

LINKS

- ▶ [About inHERIT](#)
- ▶ [Heritage Listings Explained](#)
- ▶ [Search Tips](#)

Appendix E

Department of Indigenous Affairs Database Search

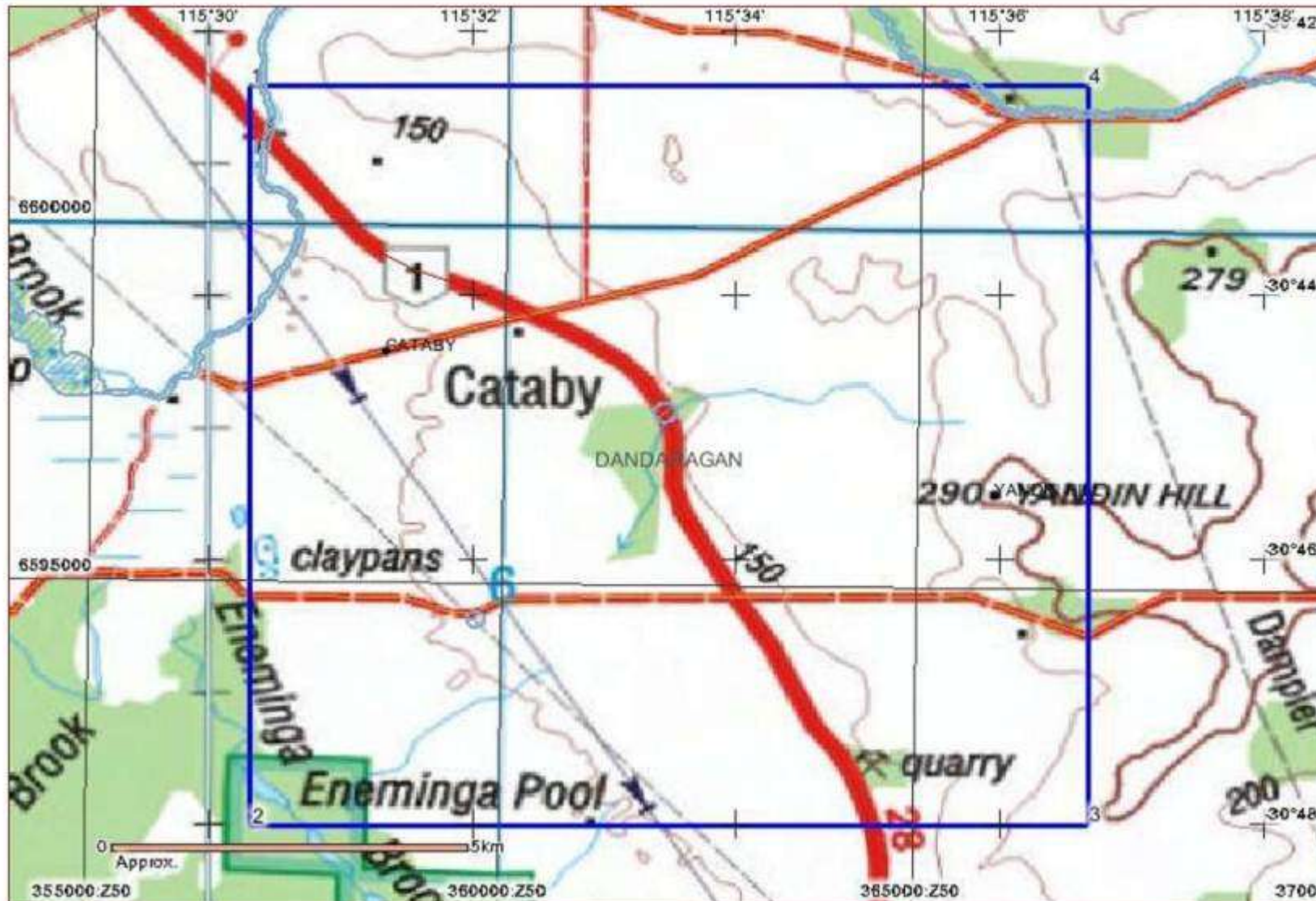
Project 1

Aboriginal Heritage Inquiry System

Aboriginal Sites Database



Government of Western Australia
Department of Indigenous Affairs



Legend

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

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Project 2

From: Christine Lewis [<mailto:Christine.Lewis@dia.wa.gov.au>]
Sent: Friday, 28 September 2012 4:11 PM
To: FITZGERALD Emma (GE)
Cc: Tanya Butler
Subject: Proposed works on the Brand Highway where it intersects with DIA 20008 Gingin Brook Waggyt Site

Hi Emma

I refer to our phone call about Main Roads' proposed works on the Brand Highway where it intersects with registered site DIA 20008 Gingin Brook Waggyt. I have attached to this email a copy of the Due Diligence Guidelines which you should use to assess your risk in undertaking activities in relation to Aboriginal heritage more generally and you should refer to it in relation to this matter.

In this case you tell me that Main Roads is planning to clear about 4.3 hectares of land within the DIA 20008 Gingin Brook Waggyt boundary. The site DIA 20008 Gingin Brook Waggyt is a closed site so the boundary shown on our public system does not necessarily reflect the exact boundary of the site. If you could send us a shape file of the area of proposed impact for your activities and we may be able to give more definitive advice by applying our mapping information to your information. However I believe from our conversation you will still be undertaking clearing within the boundary of the site.

In relation to this proposal, based on what you have told me on the phone, you are impacting a registered site with your activities. As a minimum, Main Roads will need to consult Aboriginal people about the proposed works, and depending on the outcome of that consultation, may need to seek a section 18 consent. I would strongly recommend that you speak to SWALSC about identifying people to be consulted for this project.

Christine Lewis
Manager Heritage South



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

Ground Floor, 151 Royal Street, East Perth WA 6004
Ph: (08) 6551 8061 Fax: (08) 6551 8088

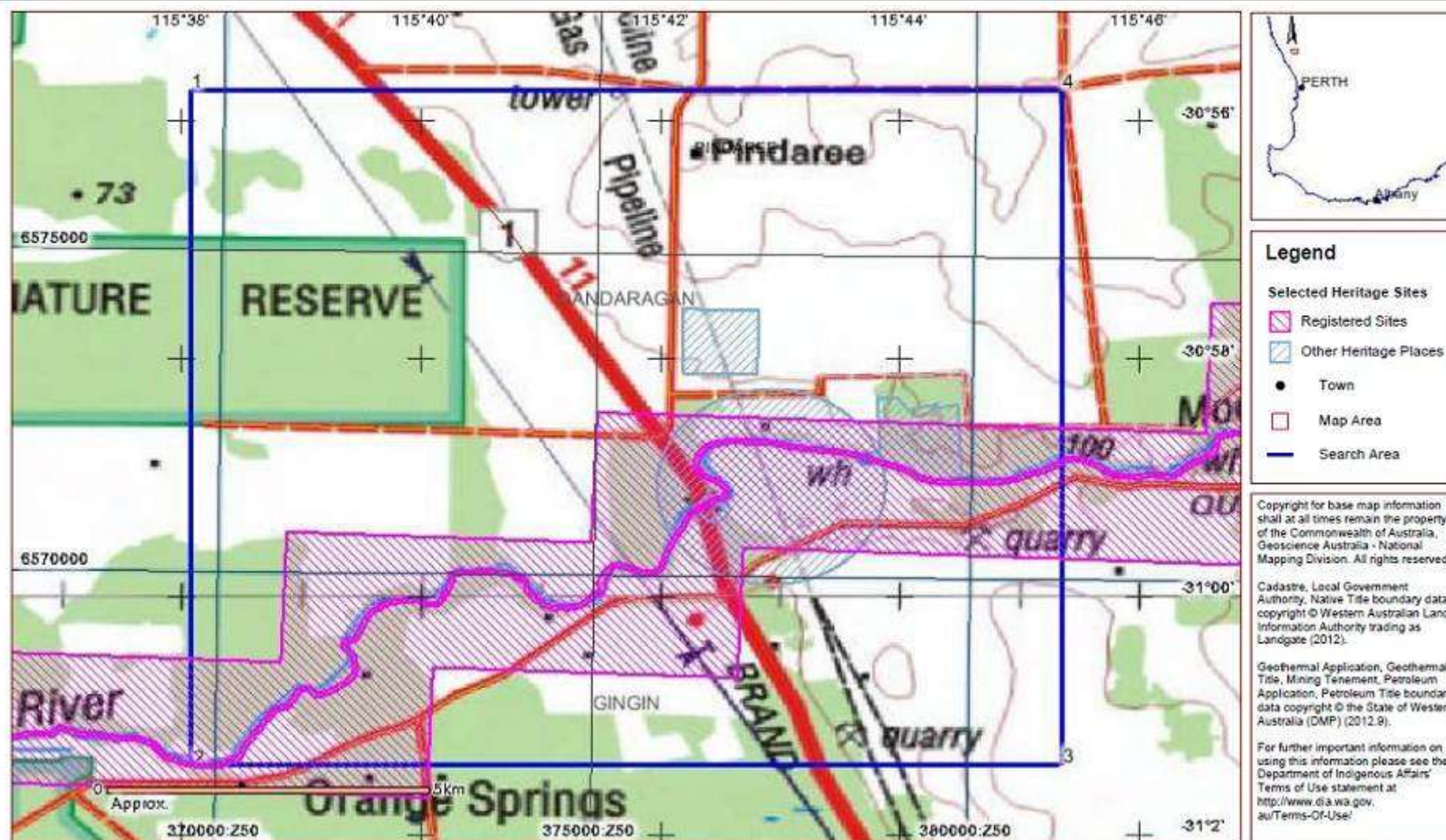
Christine.Lewis@dia.wa.gov.au dia.wa.gov.au

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Aboriginal Heritage Inquiry System

Aboriginal Sites Database





Aboriginal Heritage Inquiry System

Aboriginal Sites Database

List of 3 Registered Aboriginal Sites with Map

Site ID	Status	Access	Restriction	Site Name	Site Type	Additional Info	Informants	Coordinates	Site No.
20008	R	C	N	Gingin Brook Waggyt Site	Mythological, Historical	Plant Resource, Camp, Hunting Place, Water Source	*Registered Informant names available from DIA.	Not available for closed sites	
20749	R	O	N	Moore River Waugal	Mythological		*Registered Informant names available from DIA.	389582mE 6549648mN Zone 50 [Reliable]	
21620	R	O	N	Chandala Brook	Mythological		*Registered Informant names available from DIA.	389626mE 6549540mN Zone 50 [Reliable]	



Aboriginal Heritage Inquiry System

Aboriginal Sites Database

List of 3 Registered Aboriginal Sites with Map

Site ID	Status	Access	Restriction	Site Name	Site Type	Additional Info	Informants	Coordinates	Site No.
20008	R	C	N	Gingin Brook Waggyt Site	Mythological, Historical	Plant Resource, Camp, Hunting Place, Water Source	*Registered Informant names available from DIA.	Not available for closed sites	
20749	R	O	N	Moore River Waugal	Mythological		*Registered Informant names available from DIA.	389582mE 6549648mN Zone 50 [Reliable]	
21620	R	O	N	Chandala Brook	Mythological		*Registered Informant names available from DIA.	389626mE 6549540mN Zone 50 [Reliable]	



Aboriginal Heritage Inquiry System

Aboriginal Sites Database

List of 11 Other Heritage Places with Map

Site ID	Status	Access	Restriction	Site Name	Site Type	Additional Info	Informants	Coordinates	Site No.
3409	I	O	N	Moore River/palm Flats		Camp, [Other: RESERVE]		389349mE 6570976mN Zone 50 [Reliable]	S02794
5213	S	O	N	Natgas 132	Artefacts / Scatter			376589mE 6571050mN Zone 50 [Reliable]	S01271
5484	I	O	N	Gas Pipeline 81	Artefacts / Scatter			376639mE 6573650mN Zone 50 [Unreliable]	S00796
18083	S	O	N	Moore River Pools (Pce-06)		Plant Resource, Hunting Place, Water Source	*Registered Informant names available from DIA.	377338mE 6571399mN Zone 50 [Unreliable]	
19138	S	O	N	Wetlands & Watercourses Moore River To Bullsbrook	Mythological		*Registered Informant names available from DIA.	396128mE 6561778mN Zone 50 [Reliable]	
19183	S	O	N	Red Gully Creek	Mythological	Plant Resource	*Registered Informant names available from DIA.	396128mE 6561778mN Zone 50 [Reliable]	
20650	L	O	N	Lennard Brook	Mythological	Natural Feature, Water Source, [Other: Creek]	*Registered Informant names available from DIA.	389582mE 6549648mN Zone 50 [Reliable]	
21616	I	O	N	Boonanarring Brook	Mythological		*Registered Informant names available from DIA.	396128mE 6561778mN Zone 50 [Reliable]	
21617	I	O	N	Wallereng Brook	Mythological		*Registered Informant names available from DIA.	396128mE 6561778mN Zone 50 [Reliable]	
21618	I	O	N	Nullilla Brook	Mythological		*Registered Informant names available from DIA.	396128mE 6561778mN Zone 50 [Reliable]	



Aboriginal Heritage Inquiry System

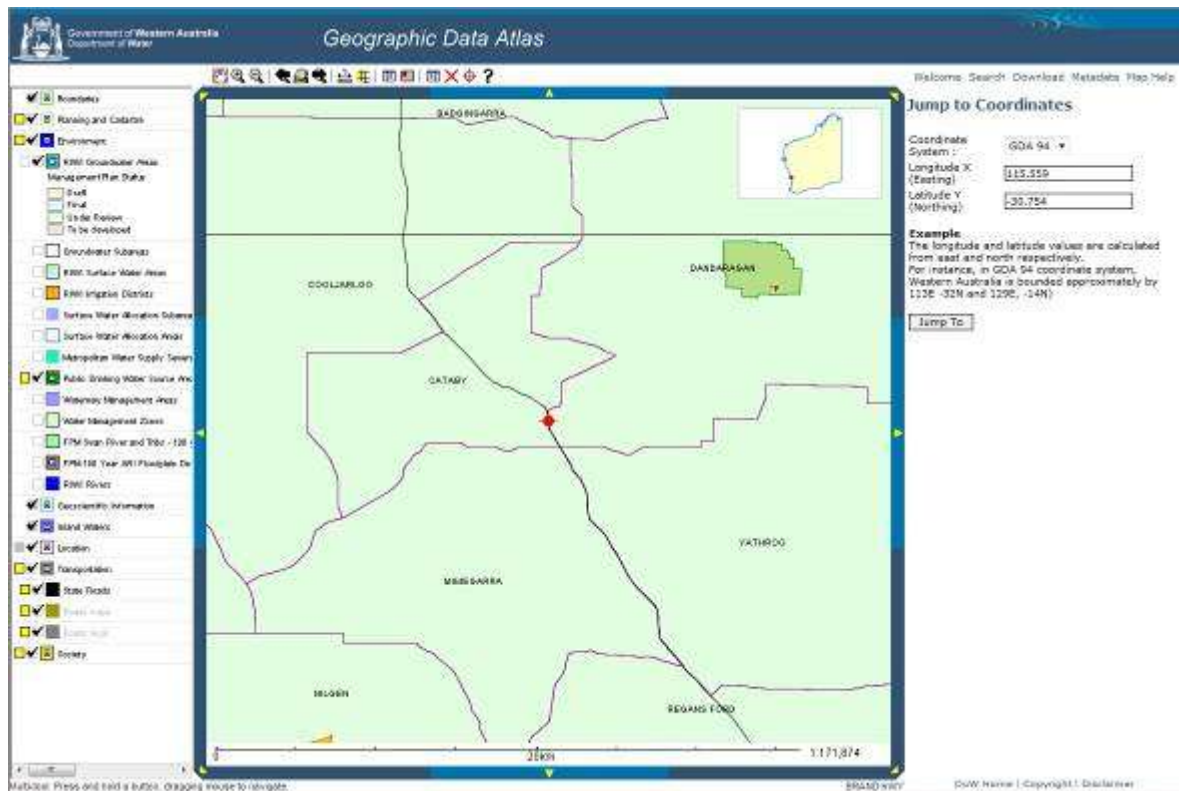
Aboriginal Sites Database

Site ID	Status	Access	Restriction	Site Name	Site Type	Additional Info	Informants	Coordinates	Site No.
21619	I	O	N	Breera Brook	Mythological		*Registered Informant names available from DIA.	396128mE 6561778mN Zone 50 [Reliable]	

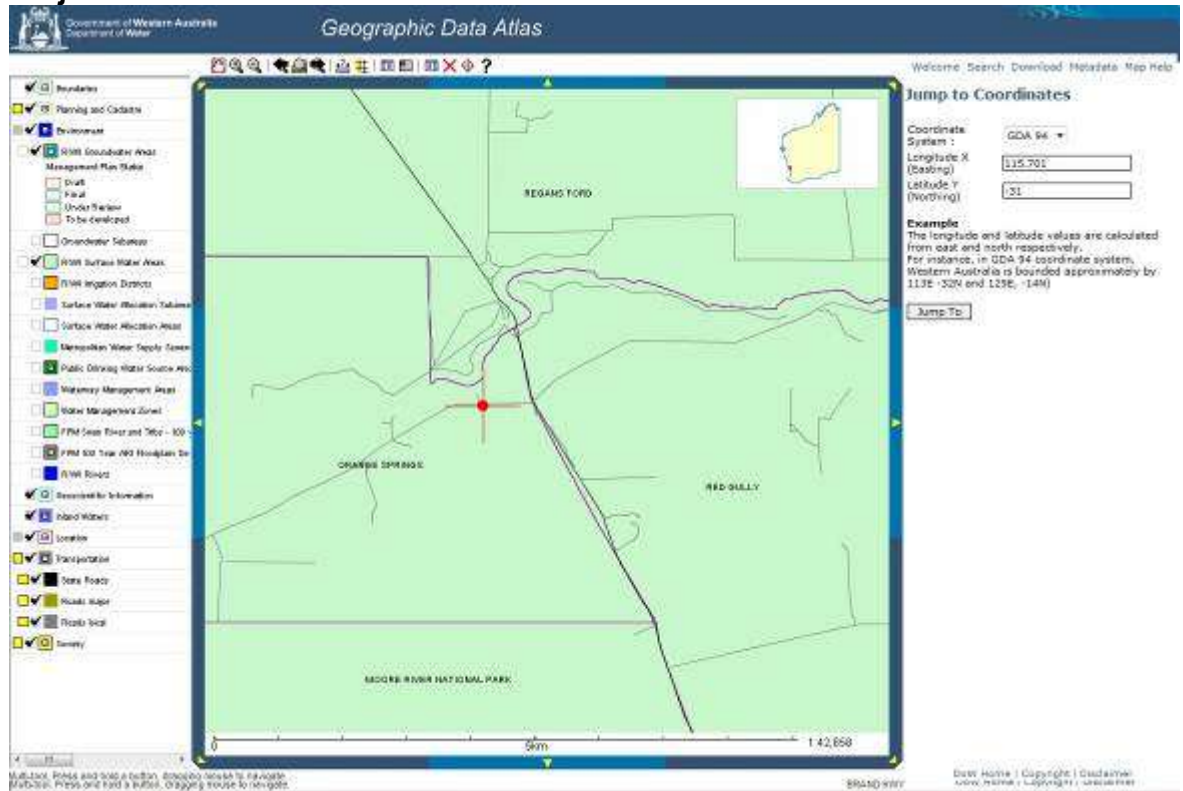
Appendix F

DoW Geographic Data Atlas Database Search

Project 1



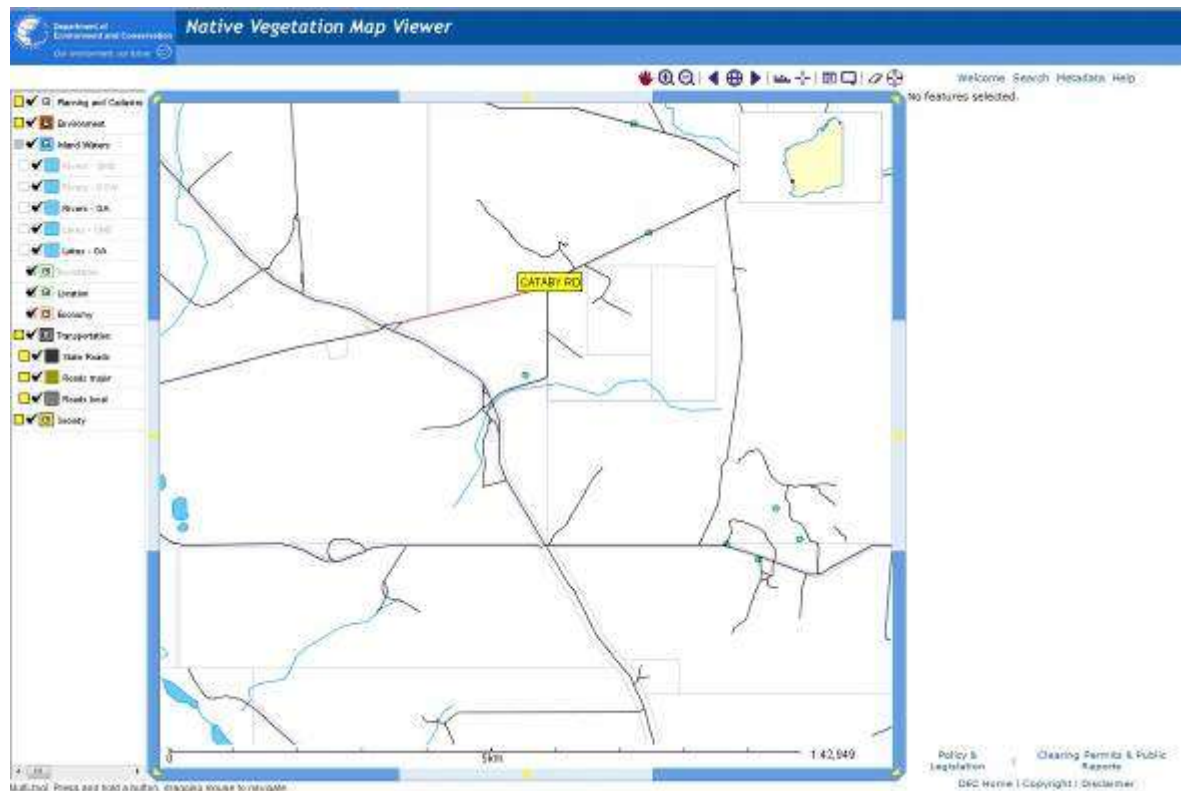
Project 2



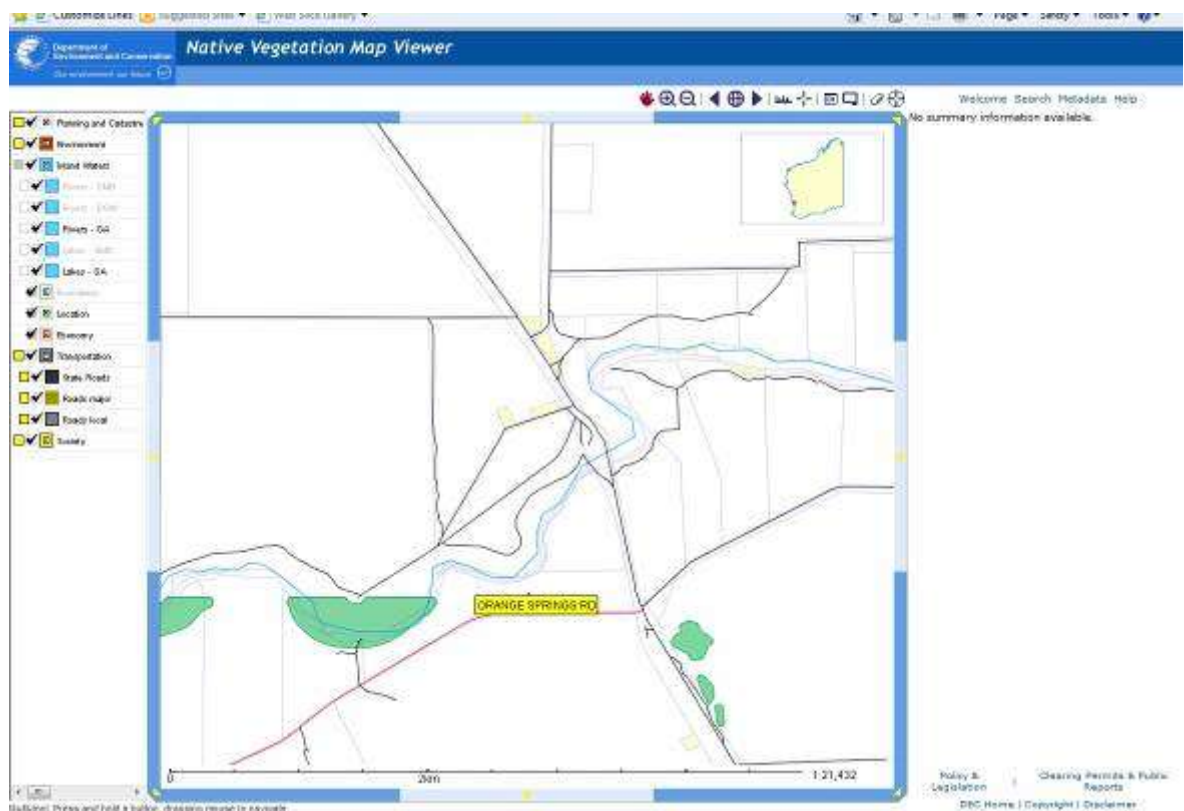
Appendix G

DEC Native Vegetation Map Viewer Database Search

Project 1



Project 2



DSEWPC Database Search

Project 1



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

EPBC Act Protected Matters Report

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

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

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 11/09/12 10:42:25

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



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[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](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	28
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

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

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

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	6
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

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

Place on the RNE:	1
State and Territory Reserves:	3
Regional Forest Agreements:	None
Invasive Species:	12
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Breeding likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Acacia forrestiana Forest's Wattle [17235]	Vulnerable	Species or species habitat likely to occur within area
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat likely to occur within area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area
Banksia serratuloides subsp. perissa Northern Serrate Dryandra [82767]	Vulnerable	Species or species habitat likely to occur within area
Centrolepis caespitosa [6393]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Chamelaucium sp. Cataby (G.J.Keighery 11009) WA Herbarium Griffin's Waxflower [82022]	Vulnerable	Species or species habitat likely to occur within area
Chamelaucium sp. Gingin (N.G.Marchant 6) Gingin Wax [64649]	Endangered	Species or species habitat may occur within area
Conospermum densiflorum subsp. unicephalum One-headed Smokebush [64871]	Endangered	Species or species habitat may occur within area
Darwinia foetida Muehea Bell [83190]	Critically Endangered	Species or species habitat likely to occur within area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat likely to occur within area
Epiblema grandiflorum var. cyaneum Baby Blue Orchid, Blue Babe-in-the-cradle Orchid, Blue Babe-in-a-cradle [67182]	Endangered	Species or species habitat may occur within area
Eucalyptus absita Badgingarra Box [24260]	Endangered	Species or species habitat may occur within area
Eucalyptus balanites Cadda Road Mallee, Cadda Mallee [24264]	Endangered	Species or species habitat may occur within area
Eucalyptus dolorosa Dandaragan Mallee [56709]	Endangered	Species or species habitat known to occur within area
Eucalyptus impensa Eneabba Mallee [56711]	Endangered	Species or species habitat may occur within area
Eucalyptus leprophloia Scaly Butt Mallee, Scaly-butt Mallee [56712]	Endangered	Species or species habitat may occur within area
Eucalyptus recta [56430]	Endangered	Species or species habitat may occur within area
Grevillea calliantha Foote's Grevillea, Cataby Grevillea, Black Magic Grevillea [56339]	Endangered	Species or species habitat likely to occur within area
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area
Hemiandra gardneri Red Snakebush [7945]	Endangered	Species or species habitat may occur within area
Leucopogon oblectus Hidden Beard-heath [19614]	Endangered	Species or species habitat may occur within area
Thelymitra manginii K.Dixon & Batty ms. [67443]	Endangered	Species or species habitat may occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Villarsia calthifolia Mountain Villarsia [10886]	Endangered	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
------	------------	------------------

Migratory Marine Birds

[Apus pacificus](#)

Fork-tailed Swift [678]

Species or species habitat 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

[Leipoa ocellata](#)

Malleefowl [934]

Vulnerable

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

[Rostratula benghalensis \(sensu lato\)](#)

Painted Snipe [889]

Vulnerable*

Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

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

Name	Threatened	Type of Presence
------	------------	------------------

Birds

[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

Name	Threatened	Type of Presence
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Extra Information

Places on the RNE [Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Northern Bassendean Dunes Area	WA	Indicative Place

State and Territory Reserves [Resource Information]

Name	State
Eneminga	WA
Unnamed WA27993	WA
Unnamed WA39571	WA

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Mammals		
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
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 likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species

Name	Status	Type of Presence
Genista sp. X Genista monspessulana Broom [67538]		habitat may occur within area Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat may occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Project 2



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

EPBC Act Protected Matters Report

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Report created: 11/09/12 10:45:12

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

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[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](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	23
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	6
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

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

Place on the RNE:	1
State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	14
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Breeding likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat likely to occur within area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area
Asterolasia nivea Bindoon Starbush [8225]	Vulnerable	Species or species habitat likely to occur within area
Banksia fuscobractea Dark-bract Banksia [83059]	Critically Endangered	Species or species habitat may occur within area
Centrolepis caespitosa [6393]	Endangered	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	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
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land

[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.

Name

Commonwealth Land -

Listed Marine Species

[Resource Information]

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

Name	Threatened	Type of Presence
Birds		
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
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Extra Information

Places on the RNE

[Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Northern Bassendean Dunes Area	WA	Indicative Place

State and Territory Reserves

[Resource Information]

Name	State
Namming	WA

Invasive Species

[Resource Information]

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

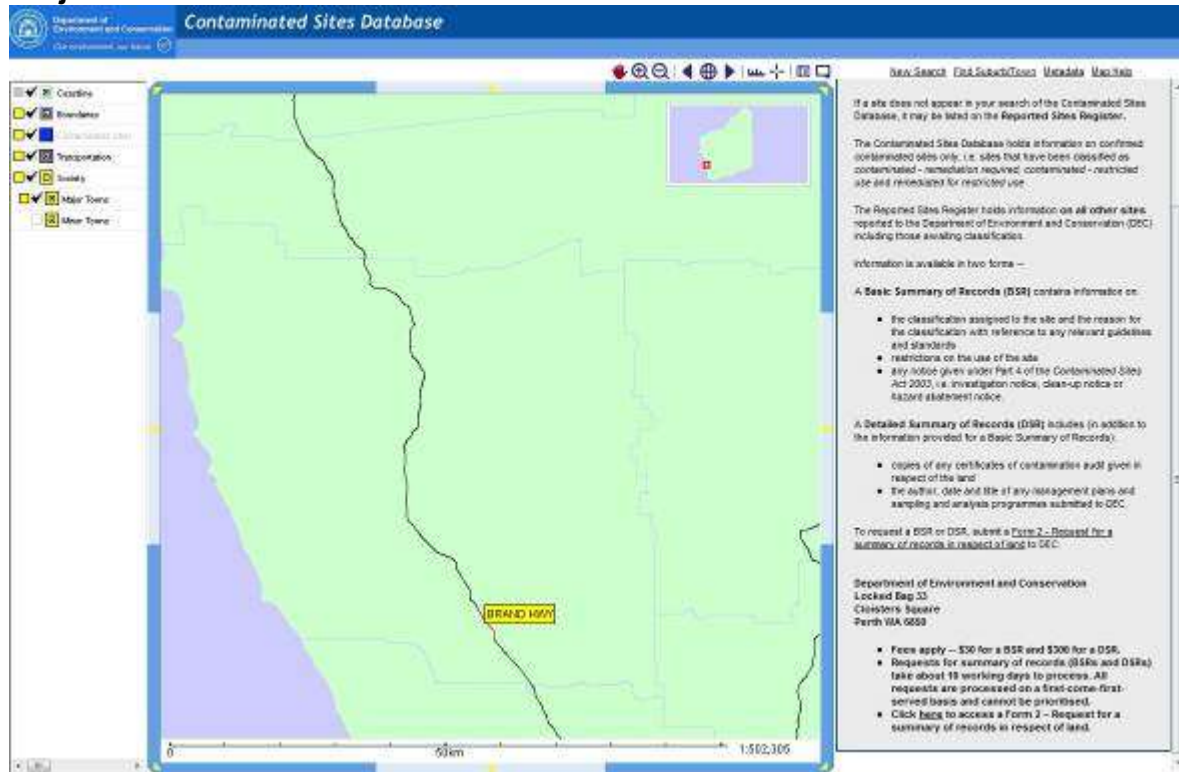
Name	Status	Type of Presence
Mammals		
Felis catus		
Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus		
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa		
Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes		
Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides		
Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Brachiaria mutica		
Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris		
Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera		
Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area

Name	Status	Type of Presence
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat may occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Appendix I

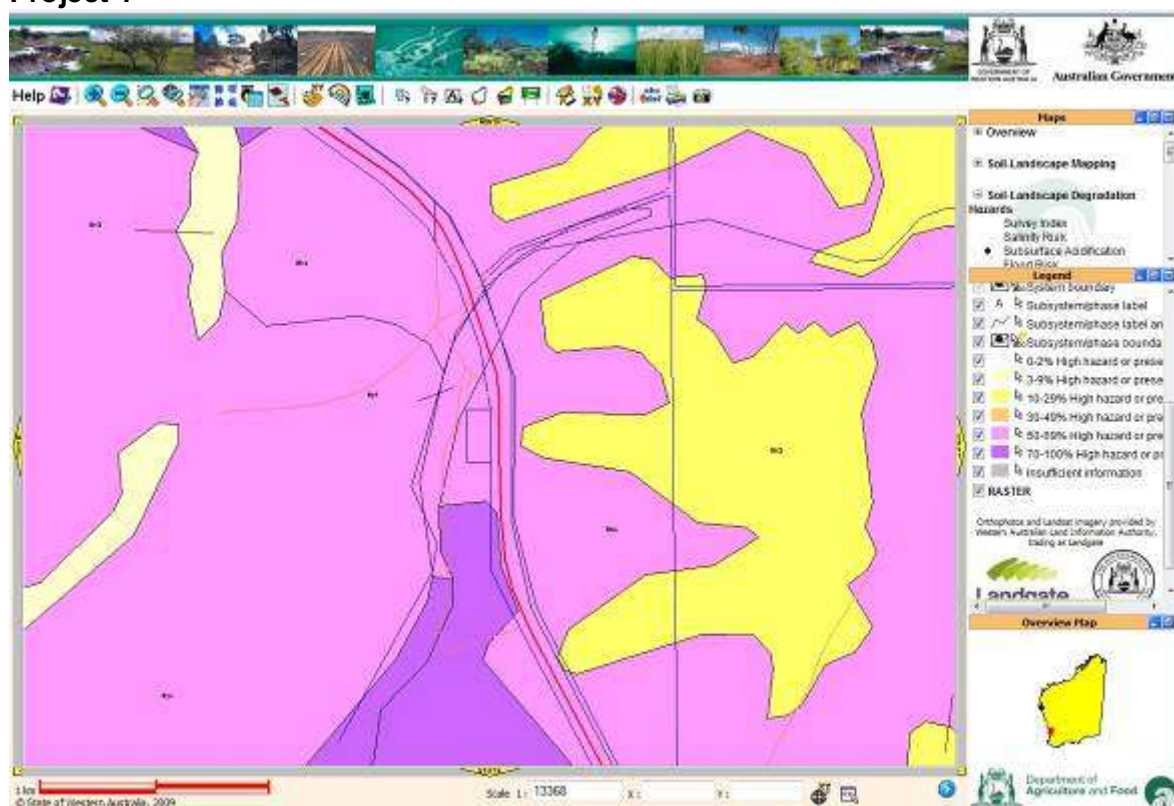
DEC Contaminated Sites Database Search

Project 1 & 2

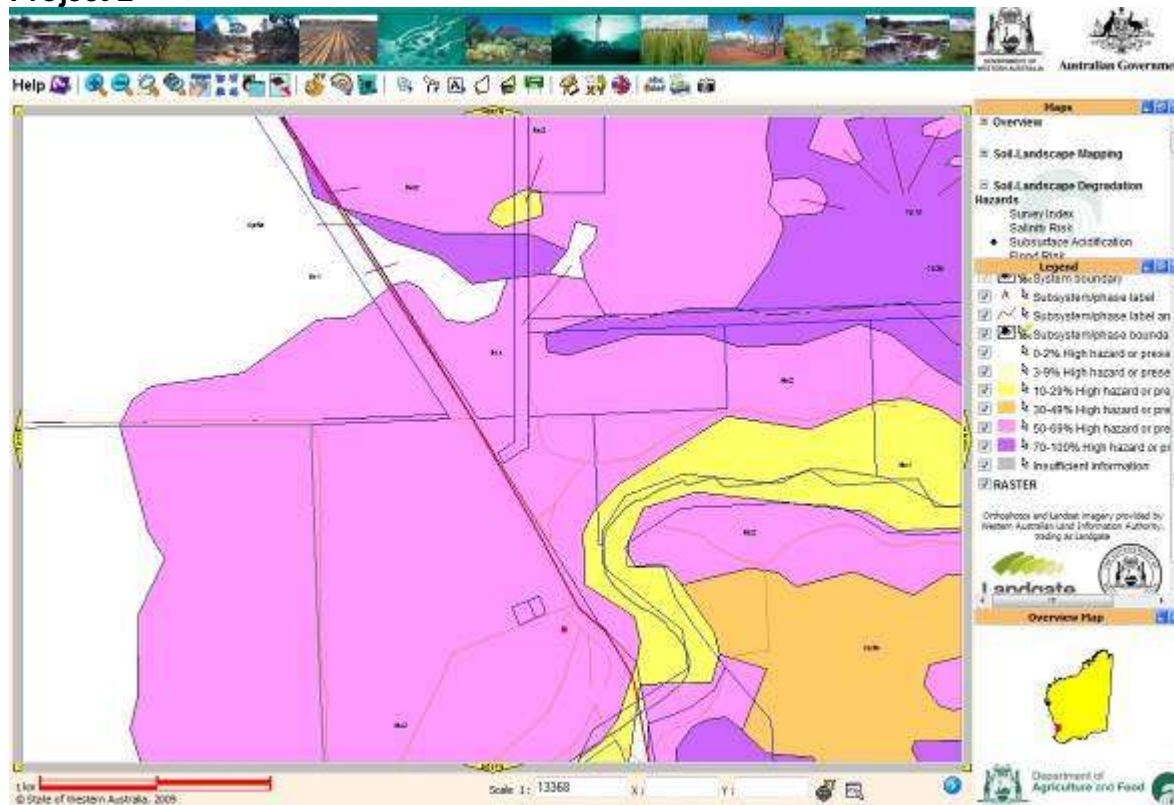


Appendix J Acid Sulfate Soils Mapping

Project 1



Project 2



Appendix K Environmental Management Plan

Cataby Roadhouse/ Dandaragan Road Intersection

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	Contractor Safety Plan	Minutes of Meeting
Contract Meetings	As required	Main Roads' Project Manager and Contractor Project Manager	EMP	Minutes of Meeting
Authority Consultation				
Department of Environment and Conservation	As required	Main Roads' Project Manager and Contractor Project Manager	-	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.

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

Due to the scale and nature of the project, there is no requirement for auditing the implementation of the EMP as the environmental risks are small.

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 as coordinates; the size of the area cleared (in hectares); and the dates on which the clearing was done. 	Project Manager	DEC
All phases of Construction	Vegetation Clearing - Record-keeping	All projects should maintain the required records relating to clearing native vegetation under the purpose permit.	Control of weeds, dieback and other pathogens: <ul style="list-style-type: none"> a copy of any management plan prepared; and for any pathogen other than dieback, the appropriate steps taken. 	Project Manager	Main Roads
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.	Project Manager	Main Roads
			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 the TDP/Revegetation Plan.	Contractor	Main Roads
Pre - Construction	Vegetation Clearing - CPS 818/4 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
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

ENVIRONMENTAL MANAGEMENT PLAN					
Timing	Topic	Objective	Action	Responsible Party	Advice
			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 approved site.	Contractor	Main Roads
			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 on the site.	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	Acid Sulfate Soils	Ensure that any potential Acid Sulfate Soils are not disturbed by the project works	If excavation below the watertable occurs then works needed to stop immediately and further investigation implemented.	Contractor	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN					
Timing	Topic	Objective	Action	Responsible Party	Advice
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