

**Main Roads Western
Australia**

Report for Brand Highway
Upgrade at 54.20 to 56.00 SLK

Preliminary Environmental
Impact Assessment

FINAL DRAFT

April 2006



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1. Introduction and Project Description

1.1 Introduction

GHD Pty Ltd were engaged by Main Roads Western Australia's Mid West Region to prepare a desktop Preliminary Environmental Impact Assessment (PEIA) for a north bound passing on the Brand Highway, Beermullah, at 54.20 to 56.00 SLK. The site location has been presented in Figure 1.

This report details the requested PEIA, which:

- » Describes the significant aspects of the existing project environment; and
- » Details the primary environmental and social impacts of the proposed works.

This PEIA has been prepared based on:

- » Brief site inspection conducted on the 2nd April 2006;
- » Discussions with Main Roads WA Project Manager;
- » Consultation with the relevant government agencies, including the Department of Conservation and Land Management (CALM), the Department of Environment (DoE), the Department of Agriculture (DoA) and the Shire of Gingin (refer to Appendix B for details); and
- » A review of relevant databases.

Environmental and social aspects identified as requiring consideration during the project have been identified in Table 1.

1.2 Project Description

Main Roads Western Australia (MRWA) proposes to undertake several upgrades to improve road safety on the southern section of the Brand Highway from Gingin to Eneabba, being from 54.20 to 169.20 SLK. Figure 2 identifies all of these proposed passing lane locations.

This report details the findings for the MRWA Site 1. This upgrade comprises a north bound passing lane of 1.8 km in length, adjacent to and south of Douglas Road, Beermullah.

Key features of the proposed road project include:

- » Road widening of approximately 8 metres from the existing seal;
- » Construction of a 1.8km long north bound passing lane; and
- » The project is proposed to be completed during 2006 / 2007.



Table 1 Environmental and Social Aspects Considered

Aspect	Section
Surrounding Area Land Use	2.1
Reserves and conservation areas	2.2
Surface waters / drainage (watercourses, stormwater disposal, water quality, proclaimed waterways)	2.3
Wetlands	2.3
Groundwater	2.4
Salinity	2.5
Acid Sulphate Soils	2.6
Vegetation	2.7
Fauna	2.8
Contaminated sites	2.9
Aboriginal heritage	2.10
European cultural heritage	2.11
Air quality	2.11
Dust	2.12
Noise and vibration	2.13
Visual amenity	2.14
Public safety and risk (industrial plant, gas pipeline, unexploded ordinance)	2.15



2. Environmental Aspects

2.1 Surrounding Area Land Use

The project area is surrounded by general farming uses, including a Pauwlonia plantation to the west, and is zoned as "Rural", under the Shire of Gingin Town Planning Scheme No. 8. The Australian Government (2006) describes the surrounding rural land uses as 'dry land agriculture' or 'livestock grazing'.

2.2 Reserves and Conservation Areas

The site is approximately 1 kilometre to the north-west of a small conservation area, 5 kilometres to the north-west of the Boonanarring Nature Reserve and 7km to the east of the Moore River National Park (Department of Land Information, 2006). None of these reserves will be impacted by the roadworks.

The Shire of Gingin Town Planning Scheme No. 8 does not recognise any local Parks and Recreation reserves in the vicinity of the roadworks.

2.3 Wetlands / Surface Waters & Drainage

This upgrade is within the Moore River surface water catchment area, of which some tributaries are proclaimed. The DoE have advised that this site does not fall within the proclaimed portion of the catchment.

No *Environmental Protection (Swan Coastal Plain Wetlands) Policy 2004* wetlands or wetlands listed under the Ramsar Convention (1971) occur within the project area.

Several permanently and seasonally inundated wetlands occur approximately 2km to the west of the project area. Wetlands in this suite have been identified by the *Environmental Protection (Swan Coastal Plain Wetlands) Policy 2004*. These areas are a significant distance from the site and will not be impacted by the proposed works.

2.4 Groundwater

The proposal is within a proclaimed groundwater area, being the Gingin Interim Groundwater Area. Construction of bores in this area require a 26D Licence under the *Rights in Water and Irrigation Act (1914)*. Taking groundwater (eg for dust suppression) will also require a licence.

The site works will not impact on any gazetted Public Drinking Water Supply Areas.

2.5 Salinity

The Department of Water (2006) identifies the area as having on average groundwater salinity levels of between 1000 and 3000 mg/L total dissolved solids (TDS).

The site is within the Moore River catchment area. The Moore River has been defined as saline, having recorded a mean salinity level of 7200 mg/L TDS between 1993 and 2002 (Department of Environment, 2005).



The vegetation clearing required to be undertaken as part of the proposed roadworks is unlikely to be of sufficient scale to result in, or exacerbate, salinity at the project site.

2.6 Acid Sulphate Soils

The project area has not been mapped for potential acid sulphate soils as part of the Western Australian Planning Commission's (2003) Planning Bulletin No. 64, although areas 10km to the south of the site have been mapped.

Those areas mapped identify inundated areas as posing a high risk of actual or potential acid sulphate soils less than 3 metres from the surface, with surrounding higher areas considered as having a moderate to low risk of having actual or potential acid sulphate soils generally at depths of greater than 3 metres from the surface.

It is considered that the site would fall into the latter category, with it likely that the project area would contain Acid Sulphate Soils at depth owing to the proximity of the project area to various wetlands, including Six Mile Swamp, Red Gully Creek and Whitfield Brook. As the roadworks associated with the project are not expected to require deep excavation, it is considered unlikely that Acid Sulphate Soils will require be encountered during the project.

2.7 Vegetation

2.7.1 Site Vegetation Composition

The composition of remnant native vegetation in the project area was interpreted from mapping conducted by Beard (1976). According to this mapping, the project area is likely to contain two vegetation communities; being Banksia Low Woodland and a mosaic of mixed scrub-heath / shrublands; dryandra thicket, mixed scrub-heath and heath with *Dryandra* spp dominant.

2.7.2 Site Vegetation Condition

Vegetation condition was assessed via a brief site inspection and aerial photography (Department of Land Information, 2006) and considered factors such as the continuity and extent of vegetation, adjacent land use, proximity to existing roads and other disturbance / disease vectors.

Based upon this assessment it was concluded that the road reserve supports good quality remnant vegetation, with the surrounding areas largely cleared and degraded agricultural land. There are other areas of continuous good quality vegetation within a 10km radius, including Moore River National Park and Boonanarring Nature Reserve.

2.7.3 Site Vegetation in a Regional Context

The relative importance of conserving remnant native vegetation in the project area at a regional scale was determined via the analysis of aerial photos by Shepherd *et al* (2002). The dataset has been archived as the 1997 vegetation extent. The results of this assessment are summarised in Table 2 below.



Table 2 Regional Assessment of Vegetation Extent

Vegetation Association	Description	Pre-European Extent (Ha)	Current Extent (Ha)	% Remaining (1997)
949	Banksia Low Woodland	116,545	96,277	82.6
1015	Mosaic: Shrublands, scrub-heath on the Swan Coastal Plain / Shrublands; Dryandra Heath.	21,378	6,368	29.8

The Environmental Protection Authority (EPA), has established through Position Statement No. 2. (*Environmental Protection of Native Vegetation in Western Australia*), the “threshold level” below which species loss appears to accelerate exponentially at an ecosystem level. This is regarded as being at a level of 30% of the pre-clearing extent of the vegetation type (EPA, 2000).

In the case of Vegetation System Associations 1015 detailed in Table 2 above, less than 30% of its original regional extent remained intact as at 1997. Clearing of this vegetation may be considered contradictory to the EPA’s recommendations stated in Position Statement No. 2.

It is recommended that MRWA conduct site surveys to determine if Vegetation System Association 1015 actually exists in the project area, and if so, the extent of impact to this vegetation (refer to Section 3.2 Recommendation 1a).

2.7.4 Environmentally Sensitive Areas

The Department of Environment (2006) do not identify any Environmentally Sensitive Areas (ESAs) at the project site.

2.7.5 Declared Rare Flora

A search was undertaken through the CALM Threatened (*Declared Rare*) Flora Database (TFD) and the *Western Australian Herbarium Specimen* (WAHERB) database for species of rare and priority flora located within the project area, including a 100 metre buffer from the project site. No species of declared rare or priority flora were recorded in this area in either of these databases.

CALM also provided results from a search of their *Declared Rare and Priority Flora* (DR&PF) list. The species in this list are those known to exist in the general localities of all the MRWA project sites shown in Figure 2, and not to this project site specifically. CALM’s full search has been provided in Appendix C.

It is recommended that flora surveys be conducted, at the same time as flora surveys to be undertaken for the other MRWA sites in the area (Winter and Spring), to ensure that no rare or priority flora are to be impacted by the roadworks at this site (refer to Section 3.2 Recommendation 1b).

2.7.6 Threatened Ecological Communities

A search of the CALM Threatened Ecological Community (TEC) database was undertaken. No TECs are known to be located within the near vicinity of the site. The closest community referred to as MRNP03 is approximately 5km to the south-west of the site.

CALM have advised that occurrences of TECs encountered during the project works should be reported to CALM to ensure their ongoing management.



It is recommended a TEC assessment be undertaken during the targeted priority flora survey prior to construction of the road (refer to Section 3.2 Recommendation 1c).

2.7.7 Diseases or Pathogens

The project area can be considered as susceptible to the development of the dieback pathogen, *Phytophthora cinnamomi* (Dieback Consultative Council, 2001).

There are many dieback susceptible species in the area, including *Banksia* and *Dryandra* species. The vegetation on site is currently in good condition and does not appear to be showing any symptoms of dieback infection.

It is recommended a dieback survey be undertaken prior to construction of the road, as per Clearing Permit Condition 7(i)(i), refer to Section 3.2 Recommendation 1e.

Condition 15a of the MRWA Clearing Permit relating to dieback hygiene measures should be adhered to during roadworks, incorporating the following steps:

- » Clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- » Avoid the movement of soil in wet conditions;
- » If movement of soil in wet conditions is necessary, the permit holder must prepare, implement and adhere to a dieback management plan, developed in consultation with CALM;
- » Ensure that no dieback affected road building materials, mulches or fill are brought into an area that is not affected by dieback; and
- » Restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

Management measures should be included in the Construction Environmental Management Plan (refer to Section 3.2 Recommendation 4).

2.7.8 Weeds

The Department of Agriculture (DoA) have recorded 74 Declared Plants as occurring within the Shire of Gingin, in addition to a wide range of common and pasture weeds.

MRWAs Term Network Contractors are aware of their operational responsibilities under the *Agriculture and Related Resources Protection Act 1976*, which stipulates that landowners whose properties support declared species are legally responsible for the management of the species.

The brief site inspection did not reveal the presence of any declared weeds, although pasture weeds such as African Lovegrass were present, particularly on the edges of the remnant vegetation.

The DoA advised the site was not known to contain any Declared Plants, but has recommended the adoption of a biosecurity protocol to ensure weeds are not spread to other locations from the sites and new weeds are not introduced to the sites through road materials and machinery. Management measures should be included in the Construction Environmental Management Plan (refer to Section 3.2 Recommendation 4).



2.7.9 Project Clearing Impact

The road reserve contains remnant Banksia woodlands and Shrublands/Scrub-heath mosaic vegetation, in good to very good condition, which will be impacted by the proposed road works.

MRWA have advised that a maximum of 8 metres is required from the edge of the existing seal to accommodate the proposed road works. The site currently has a gravel shoulder of approximately 3 metres in width. An extra 5 metres clearing over the 1.8km passing lane equates to 0.9 hectares of good quality remnant vegetation that will be required to be cleared.

MRWA have been granted a Purpose Clearing Permit (CPS 818/1) under the provisions of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. This permit provides for MRWA to conduct vegetation clearing associated with roadworks projects where that clearing is:

- » not within an Environmentally Sensitive Area, and
- » the clearing is not at variance with the 'Ten Clearing Principles'

The DoE (2006) do not identify any Environmentally Sensitive Areas (ESAs) at the project site, however, the clearing is considered to be potentially at variance with the following 'Ten Clearing Principles':

1. *Does the area to be cleared comprise a high level of biological diversity?*
2. *Does the area to be cleared comprise the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia?*
3. *Does the area to be cleared include, or is necessary for the continued existence of rare flora?*
5. *Is the area to be cleared significant as a remnant of native vegetation in an area that has been extensively cleared?*

See Appendix A for an assessment against each of the criteria.

As the project is likely to be at variance with some of the ten clearing principles, it is recommended that MRWA undertake an Environmental Impact Assessment (EIA) process, including field surveys as described in Section 3.2 Recommendation 1.

Should the EIA studies determine that the project is at variance with one or more of the clearing principles, then MRWA will need to provide a vegetation offset, to the approval of the DoE. It is considered likely that the proposed project will trigger the offset requirement.

Where the EIA is significantly at variance with any of the above criteria, MRWA will need to refer the project to the CEO of the Department of Environment.

2.8 Fauna

A search was undertaken through CALM Threatened Fauna database, which includes species declared as '*Rare or likely to become extinct (Schedule 1)*', '*Birds protected under an international agreement (Schedule 3)*', and '*Other specially protected fauna (Schedule 4)*'. See Table 3 and Appendix D for the CALM search results.



Table 3 Threatened Fauna

Scientific Name	Common Name	Record No / Date	Other information	Likelihood of Occurring in the Project sites
<i>Ardeotis australis</i>	Australian Bustard	1 in 1978	This species is uncommon and may occur in open or lightly wooded grasslands.	Low
<i>Calyptorhynchus latirostris</i> ^{1A}	Carnaby's Black Cockatoo	10 from 1982 to 1989	This species moves around seasonally in flocks to feeding areas in proteaceous scrubs and heaths and eucalypt woodlands as well as pine plantations. Breeding occurs in winter/spring, mainly in the eastern forests and wheatbelt where they can find mature hollow-bearing trees to nest in.	Moderate
<i>Dasyurus geoffroi</i> ^{1B}	Chuditch	2 in 2001	This carnivorous marsupial occupies large home ranges, is highly mobile and appears able to utilise bush remnants and corridors.	Low
<i>Galaxiella munda</i>	Western Mud Minnow	1 in 2003	This species typically occurs in shallow pools of streams and peat flats.	No waterways.
<i>Hydromys chrysogaster</i>	Water-rat (Rakali)	1 in 1972	This species occurs in waterways and wetlands that support its main prey items such as molluscs and crustaceans.	Low
<i>Hylaeus globuliferus</i>	Bee - no common name recorded.	1 in 1996	This species of native bee is known to feed on the flowers of <i>Adenanthos cygnorum</i> in particular but has also been collected from the flowers of <i>Grevillea cagiana</i> , <i>Banksia grossa</i> and <i>Banksia attenuata</i> .	Moderate
<i>Isoodon obesulus fusciventer</i>	Quenda	1 (subfossil material)	This species prefers areas with dense understorey vegetation, particularly around swamps and along watercourses, that provides ample protection from predators.	Low
<i>Leioproctus contrarius</i>	Bee - no common name recorded.	3 from 1999 to 2001	This species of native bee is apparently dependent on flowers of Goodeniaceae and possibly <i>Lechenaultia stenosepala</i> . Recent surveys have shown that it is more widespread than previously thought.	Moderate



Scientific Name	Common Name	Record No / Date	Other information	Likelihood of Occurring in the Project sites
<i>Leipoa ocellata</i> ^{1B}	Malleefowl	1 in 2005 (dead)	This species was once widely distributed across southern Australia. It prefers woodland or shrubland with an abundant litter layer that provides essential material for the construction of its nest mound.	Low
<i>Macropus irma</i>	Western Brush Wallaby	7 from 1978 to 1989	This species occurs in areas of forest and woodland supporting a dense shrub layer.	Low
<i>Oreoica gutturalis gutturalis</i>	Crested Bellbird (southern)	3 from 1982 to 1989	This sedentary and solitary species inhabits the drier mallee woodlands and heaths of the southern parts of the State.	Low
<i>Pseudocheirus occidentalis</i> ^{1B}	Western Ringtail Possum	1 (subfossil material)	This species occurs in areas of forest and dense woodlands and requires tree hollows and/or dense canopy for refuge and nesting.	Low
<i>Pseudomys shortridgei</i> ^{1B}	Heath Mouse (Dayang)	1 (subfossil material)	This species inhabits long unburnt heath and mallee scrub on sandy soils. It has a very limited distribution in the southeastern wheatbelt through to the south coast.	Low
<i>Throscodectes xederoides</i>	Mogumber Bush Cricket	1 in 1975	This species of cricket has a limited distribution around New Norcia and Mogumber and is associated with heath and grassland.	Low

Note:

1. These species are protected under the Commonwealth *Environmental Protection and Biodiversity Act 1999* (as well as the State *Wildlife Conservation Act 1950*) and have been categorised as:

- A. Endangered
- B. Vulnerable

Based upon the nominal clearing area associated with the project, it is considered unlikely that the project will significantly impact upon the long-term survival of any species of threatened fauna that may occur in the area. CALM have requested a field assessment of potential Carnaby's Cockatoo feeding and nesting sites (refer to Section 3.2 Recommendation 1d).

2.9 Contaminated Sites

A search for Potentially Contaminated Sites through the DoE Water Information (WIN) database was conducted. This search concluded that no previously recorded contaminated sites occur within the project area, which is consistent with the pattern of historical land use in the project area.



In addition, the Fire and Emergency Services Authority (FESA) were contacted and have advised that this area lies within two Unexploded Ordnance contamination sites, being the Boonanarring Brook Artillery Range and the Gingin Artillery Range (refer to Appendix E for details).

FESA have requested MRWA undertake a full UXO field survey to ensure safe construction of the road (refer to Section 3.2 Recommendation 2).

2.10 Aboriginal Heritage

A search of the Department of Indigenous Affairs (DIA) Register of Aboriginal Sites was conducted to determine the likelihood of the project impacting on a listed Aboriginal heritage site.

One Aboriginal Heritage artefacts / scatter site is known to occur within the vicinity of the proposed works, being Site No. 4098, referred to as 'Natgas 131' (refer to Appendix F for further details).

Site 4098 is on the "interim register" which means a claim has been submitted to the Aboriginal Cultural and Materials Committee, but not considered at this stage. Sites on the interim register are still provided with protection under the *Aboriginal Heritage Act 1972*.

Given the location of the interim site within the road reserve, to the southern extent of the passing lane, there may be some impact upon this site and potentially the need to apply for a Section 18, conditional approval to disturb an Aboriginal Heritage Site.

It is recommended that MRWA Project Manager liaise with the MRWA Heritage Liaison Officer and appropriate representatives of the local Aboriginal community to determine the level of impact on this area and the associated regulatory requirements (refer to Section 3.2 Recommendation 3).

MRWA and their contractors need to be aware of their obligations under the *Aboriginal Heritage Act (1972)* during the road construction.

2.11 European Heritage

A search of the Heritage Council of Western Australia's (2006) Heritage Places database was conducted to determine the likelihood of the project impacting upon a listed heritage site.

No sites of European heritage were located in close vicinity to the project area.

2.12 Air Quality

The road is not expected to significantly impact on regional air quality.

Dust may be generated during construction and should be managed for the protection of road users and adjoining landholders.

2.13 Noise and Vibration

Noise and vibration during the construction phase are not expected to be an issue, due to the lack of sensitive receptors in the area.

Noise and vibration should be controlled by MRWA standard work procedures in order to comply with the requirements of the *Environmental Protection (Noise) Regulations (1997)*.



2.14 Visual Amenity

Visual amenity for road users will be impacted, due to the clearing of remnant vegetation within the road reserve in an otherwise largely cleared landscape.

It is suggested the minimal nature of the works and low numbers of surrounding residents will result in minimal impacts on visual amenity.

2.15 Public Safety and Risk

Agility Management Pty Ltd (Pipeline Operator for APT Parmelia) have advised that their infrastructure does cross the Brand Highway at a distance of approximately 2.5km to the south of the proposed road works. Given the distance the road works is not anticipated to interfere with the gas infrastructure, but Agility have requested further details from MRWA. MRWA will make the appropriate enquiries, identify all services and work in accordance with all requirements as part of their routine design investigations and construction management procedures.

The site lies within two Unexploded Ordinance contamination sites, being the Boonanarring Brook Artillery Range and the Gingin Artillery Range (refer to Section 2.9 and Appendix E for details).

Public safety and traffic safety during construction will be managed in accordance with Standard Contract Specifications.



3. Conclusion and Recommendations

3.1 Aspects Not Considered Relevant

Through the results of this PEIA and based upon available information, it is considered unlikely that the following will be impacted upon, or will otherwise be of concern during, the proposed roadworks:

- » Reserves and Conservation Areas;
- » Wetlands, Waterways and Groundwater;
- » Salinity;
- » Acid Sulphate Soils;
- » European Heritage Sites;
- » Air Quality;
- » Noise and Vibration; or
- » Visual Amenity.

3.2 Recommendations

To ensure that the impact of the project are fully identified it is suggested that the following site investigations be conducted in order to resolve issues discussed throughout this report:

1. Development of EIA documentation to confirm the potential variances, including undertaking the following field surveys:
 - a. Extent of impact to regionally significant Vegetation System Association No. 1015;
 - b. Targeted surveys for rare and priority flora species, to be undertaken in Winter and Spring (as per surveys conducted at the other sites, identified on Figure 2);
 - c. Threatened Ecological Communities survey;
 - d. Threatened fauna species habitat survey, particularly for the Carnaby's Cockatoo; and
 - e. Dieback survey.
2. A full UXO search should be conducted as the area lies well within two UXO contamination areas. Mr Andrew Arnold – UXO Liaison Officer, FESA has offered to assist with the development of a "Scope of Works and Area Details" document to assist MRWA with the appointment of an accredited UXO Contractor.
3. Given the location of the interim Aboriginal Heritage Site No. 4098, it is recommended that MRWA Project Officer liaise with the MRWA Heritage Liaison Officer and appropriate representatives of the local Aboriginal community to determine the level of impact on this area. Any Ethnographic and Archaeological surveys required, should be undertaken by a suitably qualified consultant. Should MRWA discover any Aboriginal heritage artefacts during construction, works should be ceased immediately and an Archaeologist called to identify any artefacts and consult with the DIA.



4. Development of a Construction Environmental Management Plan by MRWA and its contractor. Issues to be considered in this management plan include:

- a. Vegetation clearing;
- b. Protection of threatened flora and threatened fauna habitat;
- c. Damage to public property;
- d. Public consultation;
- e. Dust control;
- f. Traffic safety and access;
- g. Fire management;
- h. Vehicle servicing;
- i. Weed and dieback management;
- j. Drainage management;
- k. Erosion control;
- l. Fuel and chemical storage and management;
- m. Rubbish disposal; and
- n. Environmental training.



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Figures



Appendix A
Department of Environment Clearing
Principles



1. *Does the area to be cleared comprise a high level of biological diversity?*

This project may potentially be at variance with this clearing principle.

Based upon a brief site visit and aerial photography interpretation, remnant vegetation at the project sites is believed to be in good and better condition, and likely to exhibit a high level of biodiversity.

To fully answer this question, biodiversity at the project site will need to be quantified by a field flora survey.

2. *Does the area to be cleared comprise the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia?*

This project may potentially be at variance with this clearing principle.

The project area falls within the known range of the Carnaby's Cockatoo, which feeds and nests in the general area. Vegetation at the project site is in good condition and may provide some habitat to the Carnaby's Cockatoo. CALM have requested an assessment be undertaken of the feeding and nesting habitat for the Carnaby's Cockatoo.

3. *Does the area to be cleared include, or is necessary for the continued existence of rare flora?*

Given the good condition of the vegetation on site the project may potentially be at variance with this clearing principle.

A search of CALM's databases has found that no known species of declared rare or priority flora have been identified at this site, or within a 100 metre buffer from the site, to date. However, given the good condition of the vegetation at the project site it may host priority flora species.

Winter and Spring flora surveys, undertaken in conjunction with flora surveys for the other sites identified in Figure 2, have been recommended to ensure any priority flora at this site is identified.

4. *Does the area to be cleared comprise the whole or a part of, or is necessary for the maintenance of, a threatened ecological community?*

No. The results of a search of the Department of Conservation and Land Management's Threatened Ecological Community Database concluded that no TECs have been previously recorded in the project area.

CALM have, however, recommended a TEC survey be undertaken during the flora survey(s) to ensure that this is the case.

5. *Is the area to be cleared significant as a remnant of native vegetation in an area that has been extensively cleared?*

This project may potentially be at variance with this clearing principle.

The road reserve is the only area of remnant vegetation remaining in the area, with the immediate surrounds cleared for agricultural or grazing purposes. There are areas of significant areas of continuous vegetation within the Boonanarring Nature Reserve and 7km to the east of the Moore River Nature Reserve. The road reserve potentially provides an important corridor, particularly for birds and insects, between nature reserves.

Also according to Beard (1976) mapping, one vegetation community exists in the area that are under represented on a regional scale, being Vegetation System Association No 1015 (mosaic of mixed scrub-



heath / shrublands; dryandra thicket, mixed scrub-heath and heath with *Dryandra* spp dominant). Shepherd *et al* (2002) identify that the 1997 extent comprised 29.8% of the vegetation communities pre-European extent respectively (being lower than the EPA's threshold level of 30%).

The flora survey(s) should identify whether VSA No.1015 is actually present at the project site, and if so, the level of impact to this vegetation type.

6. *Is the area to be cleared within, or in association with, an environment associated with a watercourse or wetland?*

No. The area is in upland vegetation, however, a significant chain of wetlands, recognised in the 'Revised Draft Environmental Protection (Swan Coastal Plain Wetlands) Policy 2004' occurs approximately 1km to the west of the site. Neither these wetlands, or vegetation associated with these wetlands, will not be impacted by the works.

7. *Is the clearing of the vegetation likely to cause appreciable land degradation?*

No. Only a nominal amount of vegetation clearing will be undertaken as part of the proposed roadworks and is unlikely to be of sufficient scale to result in significant land degradation.

The Department of Agriculture have assessed the proposed road works and consider the land degradation risk to be low.

8. *Is the clearing of the vegetation likely to have an impact on the environmental values of any adjacent or nearby conservation area?*

No. No conservation areas are located adjacent to the roadworks, although several conservation areas are situated within 10km of the project area. These areas will be unaffected by the proposed works.

9. *Is the clearing of the vegetation likely to cause deterioration in the quality of surface or underground water?*

No. Vegetation clearing is unlikely to be of sufficient scale to cause the deterioration in the quality of surface or underground water. Discharge will be retained onsite for *insitu* infiltration.

10. *Is the clearing of the vegetation likely to cause, or exacerbate, the incidence or intensity of flooding?*

No. Vegetation clearing is unlikely to be of sufficient scale to result in, or exacerbate the incidence or intensity of flooding.



Appendix B
Consultation



During the preparation of this PEIA GHD contacted the following stakeholders. The responses to our request for comments are detailed below.

Ms Annaleisha Sullivan, Geraldton Regional Office - Department of Environment.

Ms Sullivan advised that the highway doesn't cross any gazetted Public Drinking Water Supply Areas, however, the proposal is within the proclaimed Gingin Groundwater Area. Construction of bores in this area require a 26D licence under the *Rights in Water and Irrigation Act (1914)*, as does taking groundwater (eg for dust suppression). The project site is within the Moore River Catchment (some portions of which are proclaimed).

Ms Natalie Lauritsen, Geraldton Regional Office - Department of Environment.

Ms Lauritsen provided information on a basic check as for any clearing permit, consisting of a review of Environmentally Sensitive Areas, Threatened Ecological Communities and proximity to reserves. Ms Lauritsen advised that their records identified no priority species at this location. No Environmentally Sensitive Area was identified at this site. Ms Lauritsen advised that it will be necessary for MRWA to apply for a clearing permit as the previous exemption that applied to this activity has now expired, however, GHD advised of MRWA's new purpose clearing permit.

Ms Jacqui Maguire, Conservation Officer - Swan District Office - Department of Conservation and Land Management.

Ms Maguire strongly recommended that a vegetation assessment be conducted by MRWA prior to determination of site boundaries. These surveys should target threatened flora species and ecological communities known or likely to occur in the vicinity of the site. Further to this vegetation assessment CALM would also request that appropriate *Phytophthora cinnamomi* (Dieback) hygiene procedures are followed by MRWA during construction of the passing lane. Correct *Phytophthora* hygiene procedures to be adhered to include a requirement that all machines and vehicles are to be clean on entry to each site, and that contractors be made aware of this requirement. Ms Maguire also concurred with previous comments from Ms Gina Broun of the Moora District Office (area covering the seven northern sites on Figure 2), which also included a recommendation to survey the area for Carnaby's Cockatoo nesting and feeding habitat, undertake remedial actions such as seed harvesting/propagule collection and ensure all staff involved in the works are aware of their duty of care in regards to Environmentally Sensitive Areas (as defined in the new clearing legislation attached to the *EPBC Act (1999)* - this includes both TECs and rare plants) and the *Wildlife Conservation Act (1950)* which specifically protects DRF as well as provides protection to native flora species.

Mr Frank Rickwood, Moora District Office, Department of Agriculture.

Mr Rickwood advised that information received indicates that this site has no Declared Plants. He recommended the adoption of a biosecurity protocol to ensure weeds are not spread to other locations from the sites and, new weeds are not introduced to the sites through road materials and machinery. He indicated the site has remnant vegetation and MRWA would need to seek clearances through DoE and CALM.

Mr Frank Vallentine, Works Supervisor, Shire of Gingin.

Mr Vallentine advised that he had no concerns with the proposed works from the Shire of Gingin perspective, and welcomed the construction of new passing lane.



Mr Andrew Arnold – UXO Liaison Officer, FESA.

Mr Arnold advised that this site lies well within two known unexploded ordinance (UXO) contamination sites, being the Boonanarring Brook Artillery Range and the Gingin Artillery Range (refer to Appendix E for locations). Mr Arnold advised that numerous UXO have been found over the past 50 years, some in very close proximity to Brand Highway by former elements of UXO Services during the construction of the gas pipeline in the early 1980s. Mr Arnold recommended the site be fully searched for UXO as it lies well within the impact areas. Mr Arnold has offered to assist with the development of a "Scope of Works and Area Details" document to assist MRWA with the appointment of an accredited UXO Contractor.

Mr Gerard Connell – Lands Officer, Agility Management Pty Ltd (Operator of the Parmelia Gas Pipeline).

Mr Connell provided details of the gas pipeline infrastructure crossing in the vicinity of the project area. There is a gas crossing of approximately 2.5km to the south and Mr Connell has suggested Agility would be interested in receiving information about roadworks at this locality. Mr Connell has advised that prior to any works commencing, Agility would be pleased to receive plans and work methodology and each crossing will require a letter of conditions to be sent out to the main proponent for agreement and signing off on the site specific conditions.



Appendix C
CALM Rare and Priority Flora Search



Appendix D
CALM Threatened Fauna Search



Appendix E
Known UXO Contamination Sites



Appendix F
Aboriginal Heritage Sites



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