

**Main Roads Western
Australia**

Report for Brand Highway,
Bookara - New Passing Lane

Preliminary Environmental
Impact Assessment

FINAL REPORT

March 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 the widening on the eastern side of the Brand Highway to the south of Matsen Road for a length of approximately 1.6km, to accommodate a new south-bound passing lane (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:

- » A brief site inspection conducted on 20 January 2006
- » Brief discussions with Main Roads
- » Consultation with the Department of Conservation and Land Management, the Department of Environment, the Department of Agriculture and the Shire of Irwin; and
- » A review of relevant databases.

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

1.2 Project Description

Main Roads proposes to undertake several upgrades to improve the safety on the northern section of the Brand Highway. This PEIA considers the construction of a new passing lane on the Brand Highway from 316.62 – 318.18 SLK, a distance of approximately 1.6km

The upgrade works are located in the Shire of Irwin, approximately 17km north of Dongara.

The project area is surrounded by rural landuses and is zoned "General Farming", under the Shire of Irwin Town Planning Scheme No. 4. The Australian Government (2006) describes the surrounding land uses as 'dry land agriculture' and 'livestock grazing'.

Key features of the proposed road project include:

- » The road project will involve the widening of the road's existing seal
- » Nominal vegetation clearing is anticipated to occur with most areas already disturbed by works within the road reserve; and
- » The project will be undertaken during the 2005 / 2006 financial year.



Table 1 Environmental and Social Aspects Considered

Aspect	Refer to Section
Air quality	2.11
Dust	2.11
Fauna	2.7
Vegetation - threatened species and communities	3.6.4 + 2.6.5
Vegetation – associations, representativeness and clearing	2.6
Vegetation - dieback and other diseases or pathogens	2.6.6
European cultural heritage	2.10
Aboriginal heritage	2.9
Surface waters / drainage (watercourses, stormwater disposal, water quality, proclaimed waterways)	2.2
Groundwater	2.3
Wetlands	2.2
Salinity	2.4
Acid Sulphate Soils	2.5
Noise and vibration	2.12
Visual amenity	2.13
Public safety and risk (industrial plant, gas pipeline, unexploded ordinance)	2.14
Contaminated sites	2.8
Reserves and conservation areas	2.1
Other project-specific aspects not covered elsewhere in this list. Examples include environmentally significant landforms, coastal and mangrove areas.	2.15



2. Preliminary Environmental Impact Assessment

2.1 Reserves and Conservation Areas

No reserves or conservation areas are located in the near vicinity of the project area.

2.2 Wetlands / Surface Waters & Drainage

According to available information the project site is not within a proclaimed surface water area.

No *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998* wetlands or wetlands listed under the Ramsar Convention (1971) occur within the project area.

2.3 Groundwater

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

The site will not impact on a Public Drinking Water Supply Area with the closest (Allanooka Water Reserve) being approximately 5km to the east.

2.4 Salinity

The Department of Water (2006) identifies the area as having on average groundwater salinity levels of between 3000 and 7000 mg/L, due to the influence of coastal waters.

The Department of Agriculture assessed the proposed road works using air photography and considers the land degradation risk to be low.

2.5 Acid Sulphate Soils

The project area has not been mapped for potential acid sulphate soils as part of the WAPC (2003) Planning Bulletin No. 64.

Acid Sulphate Soils are not considered to be an issue as no wetlands or waterways are in close proximity to the site. In addition, the roadworks associated with the project are not expected to require any significant excavation. It is considered unlikely that Acid Sulphate Soils will require management during the project.

2.6 Vegetation

2.6.1 Site Vegetation Composition

The composition of remnant native vegetation in the project area was interpolated from mapping conducted by Beard (1976). According to this mapping, the project area is likely to contain a mosaic of shrublands; *Acacia rostellifera* & *Melaleuca cardiophylla* thicket / Sparse low woodland; *Eucalyptus erythrocorys* (Illyarrie).



Site Vegetation Condition

Vegetation condition was assessed via a brief site inspection and aerial imagery interpretation (Landgate, 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 project area primarily supports degraded vegetation with some highly disturbed and isolated pockets of remnant vegetation to the east of the site, with better vegetation condition vegetation on the western side of the road, particularly on the coastal dunes.

2.6.2 Project Clearing Impact

Little remnant vegetation remains on the road verges to be impacted, with vegetation removed through previous works within the road reserve, and some sections revegetated with species not endemic to the area.

Less than 0.5ha of clearing will be required for the proposed works, with significantly less than this figure constituting remnant vegetation of degraded condition.

The Department of Environment's '10 Principles of Clearing' have been discussed in relation to this project at Appendix A and form a summary of the project's anticipated environmental impact in terms of native vegetation clearing.

2.6.3 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, so it is likely the current extent figures may now be less. The results of this assessment are summarised in Table 2 below.

Table 2 Regional Assessment of Vegetation Extent

Vegetation Association No.	Description	Pre-European Extent (Ha)	Current Extent (Ha)	% remaining (1997)
433	Mosaic: Shrublands; <i>Acacia rostellifera</i> & <i>Melaleuca cardiophylla</i> thicket / Sparse low woodland; <i>Eucalyptus erythycorys</i> (Illyarrie)	37,257	15,234	40.9

The WA 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 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 Association '433 – Mosaic' detailed in Table 2 above, more than 30% of its original regional extent remained intact in 1997, however, this extent could have now reduced. It is expected that a nominal amount of native vegetation located within the road reserve will be cleared, so the project's impact upon Vegetation System Association '433 – Mosaic' is considered negligible.

It should be noted that Main Roads has recently 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 Main Roads to conduct vegetation clearing associated with roadworks projects where that clearing is:

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

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

In the case of this project it considered that the clearing is not at serious variance with the 'Ten Clearing principles'. As such a Clearing Permit for the project is not believed to be warranted.

2.6.4 Declared Rare Flora

A search of the Department of the Environment and Heritage's (DEH, 2006) online Protected Matters Search Tool was undertaken in order to identify flora protected under the *Environment Protection and Biodiversity Conservation Act 1999*, which may potentially occur within the project area. The following flora species were identified as likely to occur in the Shire of Irwin using this search:

- » *Caladenia hoffmanii*
- » *Chorizema humile* (Prostrate Flame Pea)
- » *Conostylis dielsii* subsp. *teres* (Irwin Conostylis)
- » *Conostylis micrantha* (Small-flowered Conostylis)
- » *Dryandra serratulooides* subsp. *perissa* (Northern Serrate Dryandra)
- » *Eucalyptus leprophloia* (Scaly Butt Mallee)
- » *Hypocalymma longifolium*
- » *Leucopogon marginatus* (Thick-margined Leucopogon)
- » *Paracaleana dixonii*
- » *Starwellia dimorphantha* (Arrowsmith Stilt Lily)
- » *Wurmbea tubulosi* (Long-flowered Nancy)

A search was undertaken through the Department of Conservation and Land Management's (CALM) Threatened (*Declared Rare*) Flora Database, the *Western Australian Herbarium* (WAHERB) *Specimen* database and the Department's *Declared Rare and Priority Flora List*. None of those species listed by the DEH were identified through the CALM searches as located within the project area and buffers.



The CALM database search retrieved no records on the Threatened Flora database or the WAHERB database for this particular area, however, the Priority 2 species *Stylidium pseudocaespitosum* was listed on the Department's *Declared Rare and Priority Flora List*. This plant has a known distribution around Bookara, Walkaway and Burma Road Nature Reserve.

The *Stylidium pseudocaespitosum* is described by Flora Base (2006) as a rosetted herb of 0.15 to 0.25m high, with cream / yellow flowers between August and November. The species occurs on sandy and clayey soils in flat terrain.

Refer to the Department of Conservation and Land Management's search response in Appendix B.

The project site was surveyed for the listed Priority Flora by a GHD Ecologist on the 27 February 2006. The *Stylidium* species was not identified during that site inspection. Refer to Appendix C for the details of the targeted Priority Flora search for the project area (referred to as Sites 3).

2.6.5 Threatened Ecological Communities

Based on a search of the Department of Conservation and Land Management's Threatened Ecological Community (TEC) Database, no TECs are located within the project area and are thus unlikely to be impacted upon by the project.

2.6.6 Dieback and other Diseases or Pathogens

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

The high degree of historical disturbance exhibited within the project area and its close proximity to potential disease vectors i.e. major transport routes, suggests that it is highly likely that the disease is already established within the project area.

Dieback hygiene measures should be adhered to during roadworks, with plant and machinery cleaned down prior to arrival and prior to departure from the site.

Dieback hygiene measures implemented during roadworks will reduce the risk of importing additional weeds to the site, or transporting weeds from the site to other locations.

2.6.7 Weeds

The Department of Agriculture (2006) have recorded 75 Declared Plants as occurring within the Shire of Irwin, in addition to a wide range of common and pasture weeds found elsewhere throughout the Mid-West.

Main Roads should ensure all declared plants are eradicated in line with Main Roads responsibilities under the *Agriculture and Related Resources Protection Act 1976*. This Act stipulates that landowners whose properties support declared species are legally responsible for the management of the species.

The Department of Agriculture 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. The Department is in the process of drafting biosecurity protocols for work by utility companies and other contractors.



2.7 Fauna

A search of the Department of the Environment and Heritage's online Protected Matters Search Tool was undertaken in order to identify fauna protected under the *Environment Protection and Biodiversity Conservation Act 1999*, which are likely to occur within the Shire of Irwin. The following terrestrial fauna species were identified through this search:

- » Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*); and
- » Malleefowl (*Leipoa ocellata*)

The Western Australian Museum's (2006) online collection catalogue 'Faunabase', which details actual specimen records, was also investigated in order to verify the results of the Protected Matters Search Tool results above. This investigation determined that of the two threatened fauna species have actually been recorded in a south-western portion of the Shark Bay to Dongara search area.

A search was undertaken through the Department of Conservation and Land Management's Threatened (*Declared Rare*) Flora Database, the *Western Australian Herbarium Specimen* database and the Department's *Declared Rare and Priority Flora List*. No database results were found for the site area (including a 20km buffer).

Refer to the Department of Conservation and Land Management's search response in Appendix D.

Based upon the nominal clearing area associated with the project and disturbed nature of vegetation and lack of feeding/breeding habitat in the project area, 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.

2.8 Contaminated Sites

The project area is isolated and is surrounded predominately by rural land uses. As the project area requires minimal soil disturbance within an existing road reserve, it is unlikely that any contaminated sites exist in the area.

A search for Potentially Contaminated Sites through the Department of Environment's Water Information (WIN) database was conducted by the on the 2/2/2006. 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.

2.9 Aboriginal Heritage

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

No sites of Aboriginal Heritage were located in the vicinity of the project site.

2.10 European Heritage

A search of the Heritage Council of Western Australia's 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 the vicinity of the project site.



2.11 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.

2.12 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.

In any case, noise and vibration should be controlled by Main Roads standard work procedures in order to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

2.13 Visual Amenity

The minimal nature of the works, condition of the existing roadside and low numbers of surrounding residents will result in minimal impacts on visual amenity.

2.14 Public Safety and Risk

No gas pipeline infrastructure was identified within the alignment of this upgrade. However, Main Roads will identify all services during their routine design investigations, including dial-before-you-dig enquiries.

There is no industrial plant in the area, the project area is surrounded by areas zoned as "General Farmland".

The site is not located within the boundaries of any known Unexploded Ordinance area.

Public safety and traffic safety during construction will be managed by Main Roads' Term Network Contractor as part of the project scope of works.

2.15 Other

No other relevant environmental issues were discovered through the preliminary Environmental Impact Assessment process.



3. Consultation

During the preparation of this PEIA GHD contacted the following stakeholders by e-mail on 23rd and 24th January, 2005. The responses to our request for comments are detailed below.

Ms Annaleisha Sullivan, Geraldton Regional Office - Department of Environment. Ms Sullivan advised that the proposal is within the Arrowsmith groundwater area. Construction of bores in this area require a 26D licence under the Rights in Water and Irrigation Act, taking water (e.g. for dust suppression) will also require a licence.

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, proximity to reserves etc. Ms Lauritsen advised that there was nothing of note in this area. Ms Lauritsen did add that the roadworks project may be exempt from requiring a clearing permit under Schedule 2: 'Clearing in existing transport corridors' or Schedule 3: 'Infrastructure maintenance activities' of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*, however, if not a clearing permit would have to be applied for.

Ms Catherine Page, Conservation Officer (Flora) - Geraldton District Office - Department of Conservation and Land Management. Ms Page recommended the area be searched for *Eucalyptus zopherophloia* and *Anthocercis intricate* prior to the commencement of any works. She did not have enough information to provide an opinion on the likelihood of the occurrence of *Haloragis foliosa* in the area, however did not think it would be likely that *Stylidium pseudocaesitosum* would occur as it is generally associated with different vegetation types and there are limited records of this species in the area. The *Eucalyptus*, *Anthocercis* and *Haloragis* species were not listed for the site covered in these reports, but rather for the Brand Highway projects to the east and west of the Pells Bridge, to the east of Dongara. These sites are discussed in a separate report. A flora survey to target all listed Priority Flora species was conducted on behalf of MRWA, refer to Appendix C for details.

Ms Mia Morley – Species and Communities Branch – Department of Conservation and Land Management, Woodvale. Ms Morley advised that there are no known occurrences of threatened ecological communities recorded within the project areas or buffers. She further stated that it would be appreciated if any occurrences of threatened ecological communities encountered in the area are reported to this Department to ensure their ongoing management.

Ms Kelly Poultenay – Species and Communities Branch – Department of Conservation and Land Management, Woodvale. Ms Poultenay advised of rare and priority flora listings on their database for the area. Refer to Section 2.6.4 and Appendix B for details.

Ms Christine Freeman – Species and Communities Branch – Department of Conservation and Land Management, Woodvale. Ms Freeman advised of that their database search found no threatened fauna sightings in the site area (including a 20km buffer). Refer to Section 2.7 and Appendix D for details.

Mr Paul Findlater, Geraldton Office, Department of Agriculture. Mr Findlater 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 further advised the Department is in the process of drafting biosecurity protocols for work by utility companies and other contractors. To obtain a copy of the draft protocol contact Andrew Stevens (Dept Ag, Bunbury), on



97806100 or 0427380489. He further assessed the sites for the proposed road works using air photography and considers the land degradation risk is low.

Ms Kim Senior, Environmental Health Officer, Shire of Irwin. Verbally advised that Shire of Irwin Officers saw no issue with the proposal and welcomed the construction of new passing lanes.

Mr Andrew Arnold – UXO Liaison Officer, FESA. Mr Arnold advised that the coordinates were checked against known UXO Contamination Boundaries and the project site requires no action in the form of precautionary searching, or further advice in relation to unexploded ordnance.

Mr Gerard Connell – Lands Officer, Agility Management Pty Ltd. Mr Connell verbally advised that there was no gas infrastructure in the vicinity of the project area.



4. Conclusion

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

- » Acid Sulphate Soils
- » Declared Rare and Priority Flora
- » Threatened Ecological Communities
- » Threatened Fauna
- » Wetlands and other water bodies
- » Significant Areas / Land Features
- » Contaminated Sites
- » Aboriginal Heritage Sites
- » European Heritage Sites
- » Air Quality
- » Noise and Vibration; or
- » Visual Amenity.

The project may have an impact upon remnant native vegetation, however, this clearing impact is considered to be nominal owing to the characteristics of the proposed roadworks.

4.1 Construction Phase Impacts

Environmental and social impacts requiring consideration and management during the roadworks phase of the project should be addressed by the development and implementation of a detailed Construction Phase Management Plan by Main Roads and its contractor. Issues to be considered in this management plan include:

- » Damage to public property
- » Public consultation
- » Dust control
- » Traffic safety and access
- » Fire management
- » Vehicle servicing
- » Weed and dieback management
- » Fuel and chemical storage and management; and
- » Rubbish disposal.



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Figure



Appendix A

Department of Environment Clearing Principles



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

No. Based upon remote sensing analysis (aerial photography interpretation) a brief site inspection and a targeted Priority Flora assessment, remnant vegetation in the project area is believed to be highly disturbed and is therefore unlikely to 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?*

No. Vegetation in the project area is believed to be highly disturbed and is therefore unlikely to constitute important habitat for local fauna populations.

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

No. A targeted Priority Flora survey was conducted based on the results of the CALM searches (discussed in Section 2.6.4 of this report). The only potential species listed on CALM'S *Declared Rare and Priority Flora List* (*Stylidium pseudocaespitosum*) was not found during the survey. However, this species is herbaceous in nature and not flowering at the time of the inspection, so it could have been present and not identified.

It is considered that the species was unlikely to be present on site due to the generally poor vegetation condition and lack of suitable habitat. Catherine Page of the Geraldton Office of CALM concurred with this opinion. Refer to Appendix C for details.

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.

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

No. The Vegetation System Association '433 – Mosaic' current extent comprises 40.9% of its pre-European extent (as at 1997, exceeding the EPA's threshold level of 30%). In addition, the vegetation on site is in a degraded condition, with only a nominal amount of remnant native vegetation to be cleared to provide for the proposed road works. The project's impact upon this vegetation system is considered negligible.

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

No. No watercourse or wetland exists in the location of the proposed project site.

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 using air photography 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 situated within the near vicinity of the project area.

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

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 cause the deterioration in the quality of surface or underground water. Also, no discharge will be permitted to enter adjacent waterways but rather 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. 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, or exacerbate the incidence or intensity of flooding.



Appendix B
CALM Rare and Priority Flora Search



Appendix C
Targeted Priority Flora Survey Report



Appendix D
CALM Threatened Fauna Search



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