

**ALBANY – LAKE GRACE ROAD M001 /  
BLUFF KNOLL ROAD  
INTERSECTION UPGRADE  
76.55 – 76.59 SLK**

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

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## **ALBANY – LAKE GRACE ROAD / BLUFF KNOLL ROAD INTERSECTION UPGRADE**

# COMBINED ENVIRONMENTAL REPORT

## 1. PROJECT DESCRIPTION

Main Roads Great Southern Region proposes to widen the northern side of the Albany – Lake Grace Road (76.55 – 76.59 SLK) locally known as Chester Pass Road and construct a Type B right turn auxiliary lane on Albany – Lake Grace Road at the intersection of Bluff Knoll Road, in the Stirling Range National Park, Shire of Gnowangerup, to reduce traffic conflict and increase traffic safety at this site.

The sealed widening works will increase traffic efficiency for heavy haulage vehicles on the main road (Albany – Lake Grace Road) and increase safety for commuter and tourist traffic entering and exiting Bluff Knoll Road.

## 2. BACKGROUND

This intersection is located on Albany – Lake Grace Road M001 at 76.57 SLK (right hand side) on the northern boundary of the Stirling Range National Park approximately 32 kilometres south of Borden and 89 kilometres north of the centre of Albany. The intersection is situated on a slight curve left with straight sections of alignment in each direction and adequate approach sight lines along Albany – Lake Grace Road.

Albany - Lake Grace Road is the main arterial heavy haulage route connecting the northern communities of Borden, Ongerup, Nyabing, Pingrup and Lake Grace to the Albany town and port. This route caters for all types of tourist traffic as well as all freight and grain cartage from these communities. There are a number of major tourist attractions along this route including the Stirling Range National Park incorporating various mountains including Bluff Knoll, Toolbrunup Peak and Mt Trio; wineries and the Porongurup Ranges. Traffic volumes on this route are increasing as a result of increases in tourism and industry in the region.

Bluff Knoll Road is the only road between the Albany - Lake Grace Road and the Bluff Knoll parking area at the foot of Bluff Knoll. Bluff Knoll, Isongerup Peak and Coyanarup Peak are accessible from the Bluff Knoll parking area.

A CALM Interpretative Centre is also planned along Bluff Knoll Road, initiated by the Great Southern Development Commission. Anticipated construction is approximately in 12 months time. (As advised by Martin Lloyd CALM on 4 May 2006).

The area near the intersection of Albany - Lake Grace Road and Bluff Knoll Road on the south eastern side provides the main access point for tourists to register their walks to various mountain peaks within the Stirling Range National Park.

There is a café on the north eastern side of the intersection and a caravan park on the north western side of the intersection which also enhance this area for tourism.

It is considered that to cater for the present and increased future traffic volumes utilising Bluff Knoll Road and Albany – Lake Grace Road that a right turn auxiliary lane which provides a

“passing bulge” on the western side of the intersection (opposite Bluff Knoll Road) for north bound traffic is warranted to reduce traffic conflict and to increase traffic safety at this site. The right turn auxiliary lane allowing traffic to turn right from the south with the “passing bulge” to allow through traffic to pass through the intersection on Albany – Lake Grace Rd whilst travelling north without conflict.

This proposal is part of an ongoing program of upgrading all Main Roads intersections to safely accommodate turning traffic whilst allowing continuity for through traffic at these locations.

As per Main Roads’ Environmental Assessment and Approvals process, the Low Impact Screen Checklist has been completed for the proposal, refer Appendix A. As the proposed works require clearing of native vegetation, the preparation of a project specific Preliminary Environmental Impact Assessment (PEIA) and Environmental Management Plan (EMP) are required. This report fulfils this requirement.

### **3. DESCRIPTION OF THE PROJECT**

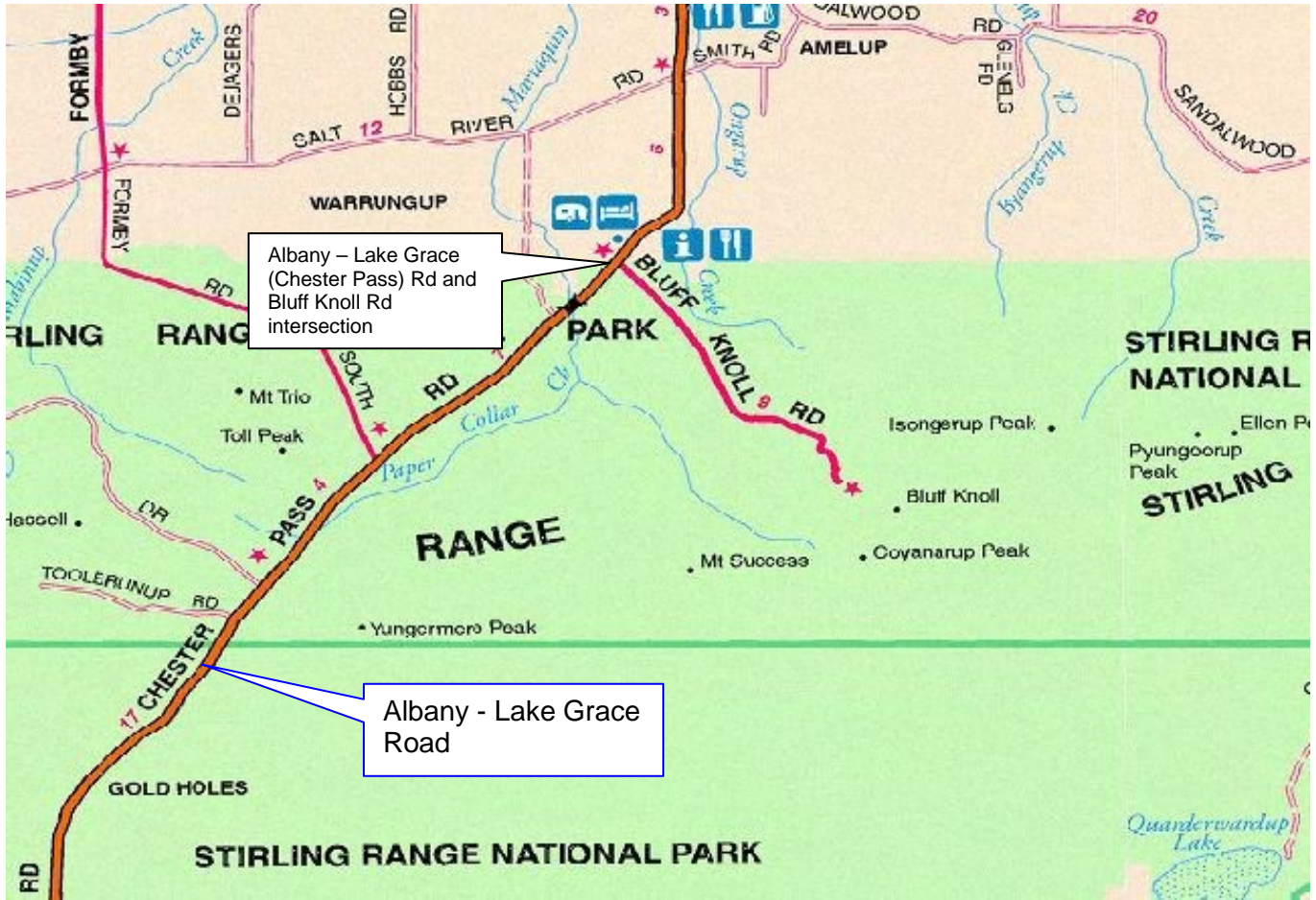
Main Roads Great Southern Region proposes to:

- Widen, kerb and seal the western side of the Albany – Lake Grace Rd for approximately 200 m either side of the Bluff Knoll Road intersection, to accommodate the installation of a right turn auxiliary lane “passing bulge” for north bound traffic to pass traffic turning into the Bluff Knoll Road.

Works will be fully contained within the existing surveyed (outside of Stirling Range National Park boundary) or unsurveyed road reserve (inside of Stirling Range National Park boundary). These works have been planned for the 2006 / 07 financial year with clearing to be conducted prior to and in conjunction with the commencement of works.

The project area encompasses, for the right turn auxiliary lane on the western side of Albany – Lake Grace Rd, an 8 m width (from existing seal edge to the toe of batter).

The location of the study area is shown on Figure 1.



**FIGURE 1: INTERSECTION LOCATION**





**FIGURE 2: CLEARING PLAN**

<b>Road:</b>	M001 Albany – Lake Grace Rd	SLK:	76.55 – 76.59
<b>Length:</b>	400 m		
<b>Existing Pavement:</b>	2 x 3.1 m wide traffic lanes + 2 x 0.9 m wide unsealed shoulders		
<b>Existing Speed Limit</b>	90 km/h		
<b>Auxiliary Lane:</b>	North East bound - 90 m long with 2 x 155 m tapers 3.5 m traffic lane and additional 1 x 2.0 m wide seal to kerb.		
<b>Timing:</b>	<b>Clearing:</b> Prior to / in conjunction with the road works. <b>Road works:</b> 2006 – 2007 financial year. <b>Duration:</b> <u>6</u> weeks		
<b>Clearing Requirements:</b>	Approx. 0.1194 ha of vegetation on the western side of Albany – Lake Grace Rd. (0.0576 ha within Stirling Range National Park and 0.0618 ha north of the Stirling Range National Park boundary). Vegetation is common both locally and regionally and is dominated by Wandoo Woodland. The wandoo woodland has an open understorey dominated by a Very Open Shrubland or Low Shrubland and Mixed Sedgeland. Kerbing is to be used to minimize the use of open drainage and clearing required.		
<b>Materials:</b>	It is proposed to extend the gravel pit along Albany – Lake Grace Rd (Sands pit) on the northern side of the Stirling Range National Park.		
<b>Land Acquisition:</b>	Not Applicable. As land for proposed road widening has already been previously acquired on the north western side of the intersection, north of the Stirling Range National Park boundary i.e. the proposed project is within a surveyed road reserve and unsurveyed road reserve through the Stirling Range National Park.		

### 3.1 Methodology

#### 3.1.1 Preliminary Desktop Study

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

#### Wetlands

There were no locations of wetlands identified within or adjacent to the project area. Determined using the Commonwealth Department of Environmental and Heritage (DEH) mapping tool, Department of environment and conservation (DEC) Environmentally Sensitive Area (ESA) mapping tool ([http://portal.environment.wa.gov.au/portal/page?\\_pageid=53,2569721&\\_dad=portal&\\_schema=PORTAL](http://portal.environment.wa.gov.au/portal/page?_pageid=53,2569721&_dad=portal&_schema=PORTAL))

Refer Appendix F.



## Threatened Flora, Fauna and Communities, Conservation Reserves and ESA's

Department of Conservation and Land Management's (CALM)'s database was searched for known populations of threatened flora, fauna and Threatened Ecological Communities (TECs) and conservation reserves. Refer Appendix B.

As Stirling Range National Park is a Environmentally Sensitive Area (ESA) then there is a possibility of TEC's being present.

A vegetation and flora survey was completed by Ms. Libby Sandiford in April 2004, and her report (refer Appendix B) advises:

- One Declared Rare Flora species – *Caladenia bryceana* subsp *bryceana* DRF is known to occur within the survey area. This population is adjacent to the northern side of Bluff Knoll Rd, between the two entrances to the Information Bay, but plants (geophyte) are only visible during the growing season – winter to spring. Another population of this species has been recorded between the car park south of Bluff Knoll Road and Chester Pass Road, possibly within the proposed road works, but has not been located since 1998 (Sarah Barrett ,botanist, Dept CALM pers comm). Several other populations of this species occur in the general vicinity, but outside the survey area. *Caladenia bryceana* sub sp *bryceana* has also been recorded from several localities between Boyup Brook and Jerramungup.

A Spring Survey (2006) was conducted by Sarah Barrett targeting the *Caladenia* at the Bluff Knoll Rd intersection No plants were located within the project area. Ms Barrett's advice was that Main Roads should apply for a Permit to take Declared Rare Flora , for the purposes of habitat destruction only, as no plants will be affected. This permit was applied for and received, although the timing on the permit was incorrect due to a change in the timing of the proposed works. This is currently being rectified, with no delays likely.

- Another Declared Rare Flora species - *Acacia awestoniana* DRF is present just outside the survey area.
- No priority species were recorded within the survey area.
- No Threatened Ecological Communities were located or are known to occur within or near the survey area.

For fauna and Threatened Ecological Communities, refer CALM database information at Appendix B. Due to the minor amount of clearing however, it is deemed that the intersection upgrade will not significantly impact on any of the listed threatened species of fauna.

Additional information regarding CALM advice on priority flora is attached in Appendix J, as well as CALM advice that the project is not likely to require referral to the federal Department of Environment and Heritage..

### Air Quality

The need for a local air quality assessment was determined using the criteria outlined in the MRWA environmental guideline, Air Quality. There are no sensitive local receivers.

## **Heritage**

Non-indigenous heritage was examined utilising the Australian Heritage Places Inventory (<http://www.heritage.gov.au>), Heritage Council of Western Australia (<http://register.heritage.wa.gov.au/>) and the Shire of Gnowangerup's Municipal Heritage Inventory (<http://register.heritage.wa.gov.au/index.html>), with nothing identified within the vicinity of the project area. Refer Appendix C.

## **Aboriginal Heritage**

A search of the Department of Indigenous Affairs' (DIA's) (<http://www.dia.wa.gov.au/Heritage/SitesSurveysSearch.aspx>) database was undertaken to determine whether the project area contains any sites of Aboriginal heritage with nothing identified within the vicinity of the project area. Refer Appendix D.

In addition to this, representatives of the various Aboriginal families with Native Title interests in the area were also consulted, with on-site visits carried out on 12 March 2004 and 6 August 2004 to ensure that the project area does not disturb any sites of Aboriginal Heritage significance. Signed statements have been obtained advising that nothing was identified within the vicinity of the project area.

## **Sensitive Water Resources**

DEC's database was checked for Public Drinking Water Supply Areas, with nothing identified within the vicinity of the project area. Refer Appendix E.

## **Contaminated Sites**

As the project area is within an unsurveyed road reserve (Stirling Range National Park) that is controlled by CALM and partially within a surveyed road reserve bordered by a caravan park (Stirling Range Retreat) on north western side and Bluff Knoll Café on the north eastern side of the intersection, there is no evidence of contamination and no known history of being contaminated or being adjacent to any contaminated sites therefore it is not considered a contaminated site.

A search of DEC's contaminated sites registry was not considered warranted or undertaken.

## **Acid Sulfate Soils**

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

## **Weeds**

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

Keith Devenish (District Manager – Jerramungup) has advised by e-mail dated Monday 29 March 2004 that Wayne Ledger (Biosecurity Officer) has no problems from their perspective. Refer Appendix H.

The Vegetation and Flora survey (Sandiford, 2004) advises “weed presence was low and no declared weeds were observed”. Refer Appendix C.

### **Dieback**

Advice regarding the broad dieback status of the project area was sought from the regional office of Department of Conservation and Land Management (CALM) with their Phytophthora Coordinator Mr Greg Freebury (Conservation Officer) providing email advice dated 12 June 2006 advising that the road verges associated with the intersection of Albany – Lake Grace Road / Bluff Knoll are infected and unprotectable. Refer Appendix I.

### **3.1.2 Site Investigation**

A site inspection carried out by Main Roads (Ms Jeanette Della Bona) and CALM Park Rangers (Mr Luke Coney and Mr Geoff Harnett) on 25 September 2003 on another nearby project (Albany – Lake Grace Road / Formby South Road intersection upgrade) identified that:

- Fauna known to occur in the area includes Chuditch, Quokka, Bandicoot, Numbat and Mallee Fowl (with a recent sighting of a Chuditch road kill nearby).

Further site visits have been carried out by Geoff Hands - Project Manager (Minor Works) on 4 February 2005 and 11 May 2006 to examine the general features of the area. Other issues that were considered included topography, the impacts on creek lines, property access and the potential for noise and vibration impacts (dilapidation).

During the site investigations the area of the proposed work site was photographed and recorded.

In addition to these investigations, an independent vegetation and flora survey of the proposed roadwork site was completed on 16 April 2004. The broad vegetation types in the vicinity of the project area were identified. Refer Appendix C.

The area of unsurveyed road reserve to be cleared along the western side of Albany – Lake Grace Road opposite Bluff Knoll Road is approximately 0.12 ha along a section 400 m long. The maximum width of clearing will be 8 m from 1m behind the top of the existing drain back slope to 1m behind the top of the new drain back slope. The installation of kerbing as part of the construction will ensure the width of any clearing and excavation is kept to the absolute minimum.

Both the Project Manger and independent site inspections reported that the presence of weeds was low and that no declared weeds were observed.

Investigation of the site also concluded that there are no drainage areas or wetlands in the vicinity of the proposed worksite.

Land use in the area is not an issue, as the adjoining land is in the Stirling Range National Park. To the northwest of the intersection is the Stirling Range Retreat Caravan Park and a café on the northeast side of the intersection. The northern boundary of the Stirling Range National Park is opposite the Bluff Knoll Rd intersection.



**PLATE 1 - View south along Albany – Lake Grace Rd from intersection of Bluff Knoll Rd**





**PLATE 2 - View north along Albany – Lake Grace Rd from intersection of Bluff Knoll Rd**





**PLATE 3 - View on western verge of Albany – Lake Grace Rd opposite Bluff Knoll Rd intersection**





**PLATE 4 - View to south along Albany – Lake Grace Rd looking towards Bluff Knoll Rd intersection showing existing driveway on western side of Albany – Lake Grace Rd and vegetation on verge which will need to be cleared to allow for construction of the proposed auxiliary right turn lane.**





**PLATE 5 - View to north along Albany – Lake Grace Rd looking showing existing driveway on western side of Albany – Lake Grace Rd and vegetation on verge which may need minimal clearing to allow for construction of the end taper for the proposed auxiliary right turn lane.**





**PLATE 6 - View east along Bluff Knoll Rd from Albany – Lake Grace Rd intersection**



**PLATE 7 - View west along Bluff Knoll Rd to Albany – Lake Grace Rd intersection**



## 4. EXISTING ENVIRONMENT

The landscape consists of flat plains lying on the northern boundary of the Stirling Range Formation abutting the granitoid Archean Yilgarn Block. Soils consist of colluvial piedmont deposits and alluvial fans derived from the Stirling Range Formation. These soils include sands and silts and gravels of sandstone, quartzite, quartz and ferruginous sandstone (Semeniuk in Thompson et al (1993)). The vegetation of the area has previously been mapped as Wandoo Woodland, (Keighery and Beard in Thompson et al (1993)) and lies near the boundary of the Stirling Range and Quaalup Systems in the Eyre botanical District (Beard 1979).

## 5. CLEARING OF NATIVE VEGETATION

Under the amended *Environmental Protection Act 1986 (EP Act)* clearing of native vegetation must be under the authority of a clearing permit.

As the project occurs within an ESA with good or better quality vegetation an independent Vegetation and Flora Survey of the proposed roadwork site was completed.

With this project being minor in scale and the close proximity of existing dump sites, aggregate sources and distance to work depots, there will be no clearing required for either the searching or extraction of suitable materials, stockpiling of materials, any temporary vehicular tracks or construction work camps.

In addition due to the physical location and road alignment in this project, no vegetation clearing will be required for sight distance requirements.

In assessing whether the project is likely to have a significant impact on the environment, the project has been assessed against the DEC's 10 principles of clearing, refer Appendix F.

## 6. ASSESSMENT OF ASPECTS AND IMPACTS

**Table 1: Aspects and Impacts: Albany – Lake Grace Rd / Bluff Knoll Rd intersection upgrade**

<b>Aspect</b>	<b>Evaluation of Potential Impacts</b>
Air quality	Not relevant to the proposed works. Local air quality assessment is not required for the project since: <ul style="list-style-type: none"><li>the predicted traffic flow is less than 10,000 vehicles per day (in urban areas) or 15,000 vehicles per day in rural areas;</li></ul> and <ul style="list-style-type: none"><li>residential and other sensitive receptors are not within 200 metres of the road centre.</li></ul>
Dust	Likely to be a minor issue during earthworks. No major sensitive receivers adjacent to the proposed works, but excessive dust could impact vegetation and the café adjacent to the proposed works. Activities will need to be subject to dust suppression to control short-term dust generation. Likely to be easily managed by standard construction dust management techniques.
Fauna	No significant fauna issues associated with any of the proposed upgrade works. Due to the proposed work occurring in a large (115,000 ha) National Park, clearing is small and unlikely to impact on native fauna. Recommendations to minimise clearing (see below) will also serve to reduce impacts to fauna and remnant fauna habitat at the site.
Vegetation – clearing	The native vegetation to be cleared will be done so using Main Roads' purpose permit with an offset as the project occurs within an ESA (Stirling Range National Park).

**Table 1: Aspects and Impacts: Albany – Lake Grace Rd / Bluff Knoll Rd intersection upgrade**

Aspect	Evaluation of Potential Impacts
	Vegetation clearing limits should be clearly established for each area as part of the final design and pegged on-site prior to any works commencing. Provided clearing limits are adhered to, there are no significant vegetation impact issues associated with the proposed works.
Vegetation – Threatened Ecological Communities (TECs) / Declared Rare Flora (DRF)	<p>One DRF species <i>Caladenia bryceana</i> subsp <i>bryceana</i> is known to occur in the area (on north side of Bluff Knoll Rd) which will not be disturbed by the proposed works on the western side of Albany – Lake Grace Rd.</p> <p>Consultation with CALM (DEC) confirms that the proposal is not going to impact upon any DRF or TECs..</p> <p>Areas outside the project area must not be disturbed as part of the proposed works</p>
Vegetation – weeds	<p>There is a low presence of common weed species occurring throughout the proposed works area. The risk of spreading these weed species or introducing others as part of the proposed work should be minimised. Standard weed hygiene measures will be applied for all earthworks in the area, including ensuring that plant and equipment brought on to the site are clean of soil.</p> <p>Consultation with the Department of Agriculture confirms that there are no declared plants in the project area.</p>
Vegetation dieback	<p>– Advice from CALM indicates that the area should be treated as dieback infected and unprotectable. To be managed using standard dieback management practices.</p> <p>No topsoil is to be reused from this site.</p>
Reserves / Conservation areas	<p>The intersection upgrade is located adjacent to a large conservation area (Stirling Range National Park, 115000ha) with the proposed clearing relatively small therefore anticipated impact is minimal. Provided clearing of the more intact vegetation is minimised, and that the works do not intrude into intact vegetation areas beyond the project area, there will be minimal impacts to this site.</p>
Heritage (non-indigenous)	<p>A search of the Australian Heritage Places Inventory, Heritage Council of Western Australia and the Shire of Gnowangerup’s Municipal Heritage Inventory on-line databases has indicated that there are no heritage listed sites present in the currently proposed works areas.</p>
Aboriginal heritage	<p>A search of DIA database identified no known sites of significance within the vicinity of the project area.</p> <p>Consultation with the DIA and the Aboriginal community has confirmed that no further investigations are required for all aspects of the project.</p>
Surface water / drainage	<p>Consultation with Department of Water has confirmed that the proposed works will not modify any existing drainage and surface run-off patterns.</p>
Wetlands	<p>There are no wetlands within the vicinity of the project area.</p>
Groundwater	<p>No dewatering or major drainage modifications are required, hence no change to groundwater level or quality. Any water used on site will be obtained from local sources and used with care to ensure no imported or onsite water contamination occurs.</p>
Noise and vibration	<p>No major sensitive local receivers. Construction works would not be expected to significantly contribute to noise levels at the nearest sensitive receivers, provided works are limited to normal working hours. The requirements of the Shire of Gnowangerup must be met in respect of noise management and construction working hours.</p>
Visual amenity	<p>The proposed works will result in minor and short-term visual impacts during construction and as the project site is partially bordered by a native landscape</p>

**Table 1: Aspects and Impacts: Albany – Lake Grace Rd / Bluff Knoll Rd intersection upgrade**

<b>Aspect</b>	<b>Evaluation of Potential Impacts</b>
	planting in front of the Stirling Range Retreat (chalets / caravan park) no site completion treatment is deemed to be required.
Public safety and risk	Provided traffic management and signage to Main Roads standards is employed, none of the proposed works present any significant hazards to public safety. The proposed works will serve to enhance public safety by improving local road conditions.
Hazardous substances Contamination	Not relevant to the proposed works.  The works are partially within an unsurveyed road reserve (Stirling Range National Park) and partially within a surveyed road reserve bordered by a chalet / caravan park (Stirling Range Retreat) on north western side and Bluff Knoll Café on the north eastern side of the intersection with no known previous land use activities on or adjacent to the project area that have had the potential to create contamination e.g. petrol station.
Salinity	Given the nature and scale of the project the impact is not relevant. There were no visual signs of salinity observed in the project area.
Acid Sulfate Soils	The WAPC's self-assessment (Planning Bulletin 64) indicates that no further soil investigation is required for the project.
Statutory Land Use Planning	As the proposed works is entirely within the existing unsurveyed (inside of Stirling Range National Park boundary) or existing surveyed road reserve (outside of Stirling Range National Park boundary), no further amendments would be required to the Local Government Planning Scheme or Region Scheme.

## **7. DECISION TO REFER**

Given the scale of the project, the low significance of its impacts to the surrounding environment and the environmental management measures proposed, the project does not require referral to the WA Environmental Protection Authority (EPA). As no Declared Rare Flora will be impacted, a Permit to Take Declared Rare Flora (habitat only) has been received, and advice from CALM states that referral to the Commonwealth Department of the Environment and Heritage (DEH) is not warranted, this project does not require referral to the DEH.

## 8. ENVIRONMENTAL MANAGEMENT PLAN

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

This EMP will only address the actions already listed as well as any site-specific issues that were identified during the PEIA. The project specific management measures identified within this EMP are in addition to the standard specifications used for Category 2 projects. The environmental management measures/conditions in Main Roads Tender Document Procedure (TDP) Specifications 203, 204, 301, 302 and 304 are still to be followed where applicable.

It is critical that all clearing works are carried out in accordance with the management measures prescribed in TDP Specifications 301 (Clearing) and 302 (Earthworks). Also note that all revegetation works should be carried out in accordance with the Main Roads Environmental Guideline Revegetation Planning and Techniques.

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

- Area of management (e.g. vegetation);
- Timing of the various management requirements;
- Management objectives for each area;
- Management strategies that are necessary to minimise the impact;
- Person/s responsible for implementing the management action; and
- On whose advise or Main Roads requirement

The project specific management measures and environmental management measures / conditions are to be included in contract documentation and implemented for this project.

**Action:** Project Manager / Contractor

ENVIRONMENTAL MANAGEMENT PLAN					
Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Vegetation Clearing - Record-keeping	All phases of Construction	All projects should maintain the required records relating to clearing native vegetation under the purpose permit	Clearing: <ul style="list-style-type: none"> <li>• a copy of the PEIA &amp; EMP (Minor projects) for small projects;</li> <li>• a map showing the location where the clearing occurred, recorded in an ESRI Shapefile;</li> <li>• the size of the area cleared (in hectares);</li> <li>• the dates on which the clearing was done.</li> </ul>	Project Manager	DEC
			Each offset implemented: <ul style="list-style-type: none"> <li>• a copy of each offset proposal;</li> <li>• a map showing the location of any offset implemented recorded in an ESRI Shapefile;</li> <li>• a description of the offset implemented; and the size of the area of the offset (in hectares).</li> </ul>	Project Manager	DEC
			Control of weeds, dieback and other pathogens: <ul style="list-style-type: none"> <li>• a copy of any management plan prepared; and</li> <li>• for any pathogen other than dieback, the appropriate steps taken</li> </ul>	Project Manager	DEC



ENVIRONMENTAL MANAGEMENT PLAN					
Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Vegetation - Clearing	Pre-Construction	Ensure that the overall objectives of the alignment and construction works are compatible with maintaining and, where possible, enhancing the biological integrity of the surrounding environment and minimising vegetation loss and degradation; 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 (outside of the Stirling Range National Park) may be required prior to construction to limit the amount of propagative material that may be spread during disturbance.	Contractor	Main Roads
			Prior to the start of clearing operations the clearing line is to be established. Clearing shall be restricted to 1 m from the edge of works with no additional clearing for topsoil storage or machine access.	Project Manager / Contractor	Main Roads
			Any stockpiled vegetation from clearing works shall not be burnt.	Contractor	Main Roads
	Construction		During construction works, damage to existing vegetation will be avoided as far as is practicable. Mature trees are to be conserved as far as is practicable and shall not be disturbed for temporary works such as access tracks, spoil areas or site offices. Vehicles and equipment is not to be parked or driven over tree roots. Trees to be removed are to be felled in a manner that ensures they fall within the approved clearing area.	Contractor	Main Roads
			Topsoil shall be stripped to a depth of 100 mm from the works area at the commencement of roadworks with the unsuitable topsoil disposed of at an approved spoil site.	Contractor	

ENVIRONMENTAL MANAGEMENT PLAN					
Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Surface Drainage	Pre-Construction	Maintain the hydrological regime that exists prior to the construction of the proposal	<p>Stormwater drainage shall be treated and disposed of in accordance with DEC requirements.</p> <p>The proposed drainage design will generally maintain existing surface drainage patterns within the project area however drainage off the road surface will deviated by kerbing.</p>	<p>Project Manager</p> <p>Project Manager / Project Designer</p>	<p>DEC</p> <p>Main Roads</p>
Visual Amenity	Pre-Construction	Ensure that the road blends in with the surrounding environment	Ensure that the road blends in with the surrounding environment.	Project Manager	Main Roads
Weed Management	Construction	Minimise the introduction and spread of weeds	<p>The following machinery and vehicle hygiene measures will be utilised to avoid the inadvertent spread of weeds within and beyond the project area:</p> <ul style="list-style-type: none"> <li>• All site employees will be advised of the hygiene measures.</li> <li>• All clearing, topsoil stripping and gravel cartage activities will be conducted under dry soil conditions.</li> <li>• Dust adhering to the sides of vehicles does not need to be removed.</li> <li>• All construction plant and machinery should be cleaned free of all soil and vegetative material prior to arrival and prior to departing the project site.</li> <li>• Clean down will comprise of the use of a brush and / or compressed air to remove clods of soil and / or soil water slurry. A metal bar or spade will be used to remove compacted soil where necessary.</li> </ul>	Contractor / Project Manager / Construction Manager	

ENVIRONMENTAL MANAGEMENT PLAN					
Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Dieback	Construction	Minimise the introduction and spread of soil pathogens	The vehicle and hygiene measures as per Weed Management above will ensure that no soil pathogens are transported to or from the project area or within the project area.	Contractor / Project Manager / Construction Manager	
Noise, Vibration and Dust	Construction	Ensure that the construction of the proposal does not become a nuisance to the public	Access to private property and appropriate traffic management measures should be planned and implemented prior to the construction of works.	Contractor	Main Roads
			Works associated with the construction of the development should not prevent public access along the adjacent reserve. Public access should be maintained along the reserve at all times.	Contractor	Main Roads
			Any complaints regarding dust will be attended to as soon as possible utilising dust suppression techniques e.g. watering.	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, as required.	Contractor	Main Roads
Pollution and Litter	Construction	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 bunded 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
			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	Contractor	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN					
Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Pollution and Litter (continued)	Construction	Ensure that the construction of the proposal is managed to a standard that minimises any adverse impacts on the environment.	Superintendent's Representative of a spill.		
			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
			Dumping of bitumen, asphalt, concrete or aggregate should only occur at an authorised waste disposal site.	Contractor	Main Roads
			Temporary storage of bitumen, asphalt, concrete or aggregate should only occur at designated depots or controlled hardstands.	Contractor	Main Roads
			The project areas, including hardstand areas, will be kept in a tidy manner at all times.	Contractor	Main Roads
			All litter on the project will be placed into lidded bins and disposed of at an authorised waste disposal site.	Contractor	Main Roads
Fire	Construction	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 and / or portable fire fighting unit will be on site at all times.	Contractor	Main Roads
			Comply with local authority fire management requirements.	Contractor	Main Roads
			All road plant and vehicles are to be fitted with fire extinguishers.	Contractor	Main Roads

ENVIRONMENTAL MANAGEMENT PLAN					
Area of management	Timing	Management objective	Management Strategy	Responsibility	Whose advice
Aboriginal Heritage	Construction	Ensure that there is no unauthorised disturbance to Aboriginal heritage sites during construction.	If any materials of significance to Aboriginal people are discovered, works will immediately cease within 100 m of the material and the site examined by a qualified archaeologist.	Contractor	Main Roads
			The Department of Indigenous Affairs will be notified in the event of any significant Aboriginal Heritage discovery.	Contractor	Main Roads
			If skeletal material is uncovered during works then the WA Police Service will also be advised immediately.	Contractor	Main Roads
Site Management	Construction	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
			A formal induction program will be conducted for all personnel prior to their commencing work on the site. The program will aim to make personnel fully aware of all management strategies.	Contractor	Main Roads
Rehabilitation	Post-Construction	Leave the project area free from debris; and Rehabilitate the project area so that the revegetated area provides a net increase in area of native vegetation at the site.	Replace the cleared trees with locally occurring natives.	Contractor	Main Roads
			All waste materials from the development are to be completely removed from the site upon completion of the development. Final clean-up shall be to the satisfaction of the Project Manager and the Site Superintendent.	Contractor	Main Roads
			Suitable topsoil shall be respread evenly to a depth of at least 100 mm on fill embankment batters, verges and cut slopes on the section from where the material originated.	Contractor	Main Roads



## 9. REFERENCES

Beard, J.S. (1990). *Plant Life of Western Australia*. Kangaroo Press. Kenthurst, NSW.

Department of Conservation and Land Management. (2001). *Wildlife Conservation (Specially Protected Fauna Notice 2001)*. State Law Publisher. Perth, Western Australia.

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Government of Western Australia. (1986). *Environmental Protection Act (WA)*. State Law Publisher. Perth, Western Australia.

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Main Roads Western Australia. (2001). *Draft Environmental Assessment and Approvals Process – Road Projects*. Unpublished Internal Main Roads Report.

Standards Australia. (1981). Australian Standard AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites. Homebush, New South Wales.

*Main Roads Corporate Procedure Environmental Guideline "Assessment of Roadside Vegetation Condition" Document No. 6707/004*.

# Appendix A

## Low Impact Environmental Screening Checklist

Form No. 6707/001/01

### Checklist - Low Impact Environmental Screening

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

All projects are to be screened to identify those that are Low Impact, i.e. that will have a low impact on the environment and that can be adequately managed through standard contract clauses.

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

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

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

**Project Name: ALBANY – LAKE GRACE RD / BLUFF KNOLL RD INTERSECTION UPGRADE**

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 ground disturbance or clearing of native vegetation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	New, or expansion of existing, pits or quarries. (non-commercial sources)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Adjoining sensitive land use. eg residential or hospital or education centre	<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	Within/immediately adjacent to surface/underground Public Drinking Water Source Area.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Dewatering, or a new water bore.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Known potential source of hazardous materials within or adjoining the road reserve. e.g. Acid Sulphate Soils, existing petrol station, industrial site or waste disposal site (landfill)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Buildings will require demolition.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Completed By: Signature Geoff Hands Date 2/6/06  
Name GEOFF HANDS Title PROJECT MANAGER - MINOR WORKS GSR

To be reviewed by a Main Roads Environment Officer: Signature MPC Date 02/06/06  
Name Melissa Pionczyk-Kruk Title G.Env. Officer

Comments:

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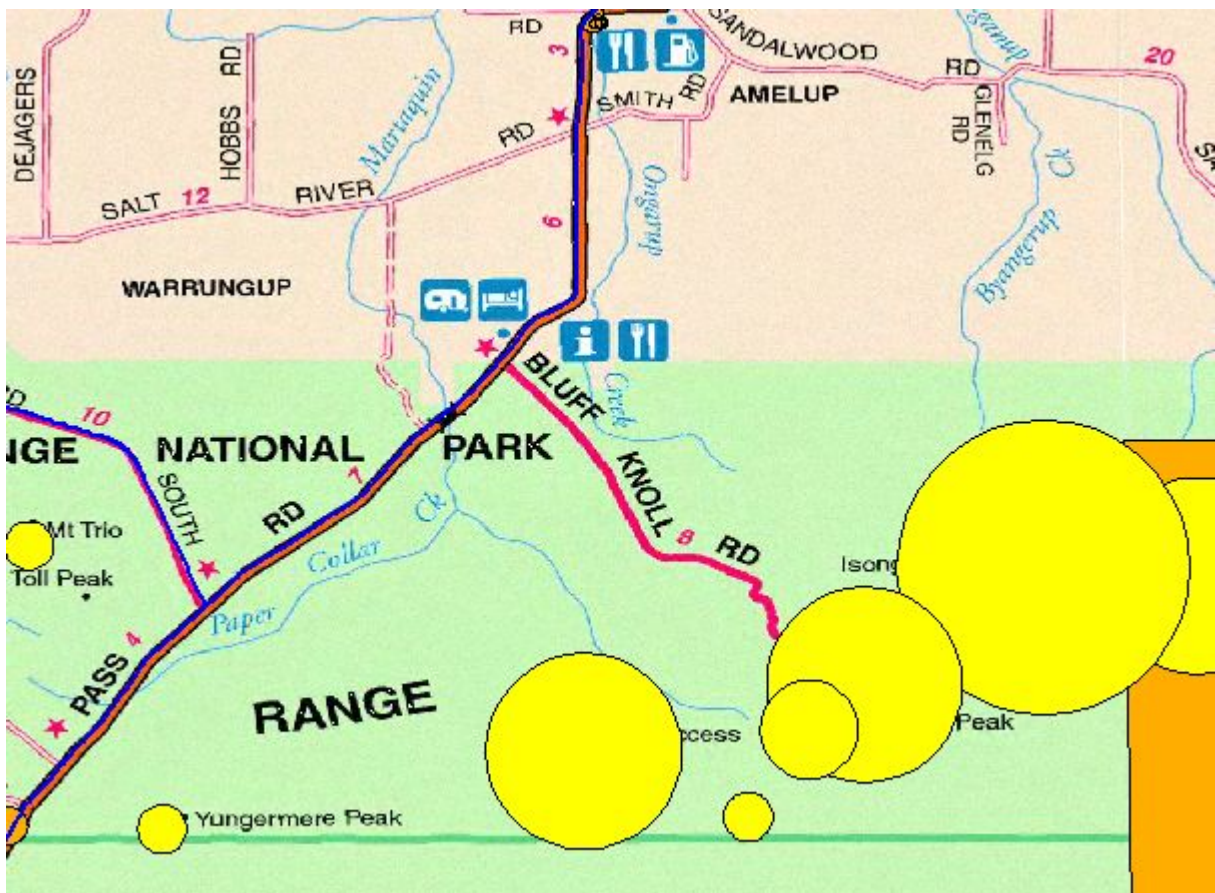


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MAIN ROADS Western Australia  
Form 670700101 Screening Checklist Rev 1.doc

## Appendix B

### Department of Conservation and Land Management's Threatened Flora and Fauna Database Searches



#### THREATENED ECOLOGICAL COMMUNITIES

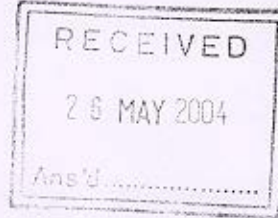
Legend: Yellow circles indicate areas of threatened ecological communities.



611-0V7

07/2897 8

Your Ref:  
Our Ref: 2001F001096V07  
Enquiries: Christine Freegard  
Phone: (08) 9334 0579  
Fax: (08) 9334 0278  
Email: chrisinef@calm.wa.gov.au



Dear Mr West



**REQUEST FOR THREATENED FAUNA INFORMATION**

I refer to the request of Michelle De Souza of the 21<sup>st</sup> of April for information on threatened fauna occurring in the vicinity of the intersection of:

Albany – Lake Grace Road – Bluff Knoll Road  
South Coast Highway – Bremer Bay Road  
South Coast Highway – Gairdner Road

A search was undertaken for this area of the Department's Threatened Fauna database, which includes species which are 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)'. Attached are print outs from these databases where records were found.

Attached also are the conditions under which this information has been supplied. Your attention is specifically drawn to the sixth point that refers to the requirement to undertake field investigations for the accurate determination of threatened fauna occurrence at a site. The information supplied should be regarded as an indication only of the threatened fauna that may be present.

It would be appreciated if any populations of threatened fauna encountered by you in the area could be reported to this Department to ensure their ongoing management.

If you require any further details, or wish to discuss threatened fauna management, please contact my Senior Zoologist, Dr Peter Mawson on 08 93340421.

Yours sincerely

*freegard*

for Keiran McNamara  
EXECUTIVE DIRECTOR  
5 May, 2004



Noted  
HW 15/5/04

SAM Reg 27/5/04

WILDLIFE BRANCH: 17 Dick Perry Avenue, Technology Park, Kensington, Western Australia  
Phone: (08) 9334 0455 Fax: (08) 9334 0278 Website: www.naturebase.net  
Postal Address: Locked Bag 104, Bentley Delivery Centre, Bentley, Western Australia 6983



**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT**

**THREATENED FAUNA INFORMATION**

**Conditions In Respect Of Supply Of Information**

- \* All requests for data to be made in writing to the Executive Director, Department of Conservation and Land Management, Attention: Senior Zoologist, Wildlife Branch.
- \* The data supplied may not be supplied to other organisations, nor be used for any purpose other than for the project for which they have been provided without the prior consent of the Executive Director, Department of Conservation and Land Management.
- \* Specific locality information for Threatened Fauna is regarded as confidential, and should be treated as such by receiving organisations. Specific locality information for Threatened Fauna may not be used in reports without the written permission of the Executive Director, Department of Conservation and Land Management. Reports may only show generalised locations or, where necessary, show specific locations without identifying species. The Senior Zoologist is to be contacted for guidance on the presentation of Threatened Fauna information.
- \* Receiving organisations should note that while every effort has been made to prevent errors and omissions in the data, they may be present. The Department of Conservation and Land Management accepts no responsibility for this.
- \* Receiving organisations must also recognise that the database is subject to continual updating and amendment, and such considerations should be taken into account by the user.
- \* It should be noted that the supplied data do not necessarily represent a comprehensive listing of the Threatened Fauna of the area in question. Its comprehensiveness is dependent of the amount of survey carried out within a specified area. The receiving organisation should employ a biologist/zoologist, if required, to undertake a survey of the area under consideration.
- \* Acknowledgment of the Department of Conservation and Land Management as the source of data is to be made in any published material. Copies of all such publications are to be forwarded to the Department of Conservation and Land Management, Attention: Senior Zoologist, Wildlife Branch.

Threatened and Priority Fauna Database

34.26°S 118.15°E / 34.37°S 118.25°E Albany - Lake Grace Road - Bluff Knoll

\* Date Certainty Seen Location Name

Method

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

*Calyptrorhynchus latirostris* Carnaby's Black-Cockatoo 0 records

This species moves around seasonally in flocks to feeding areas in proteoacacia scrubs and heaths and eucalypt woodlands as well as pine plantations. Breeding occurs in winter/spring, mainly in the eastern forests and whimbrel where they can find mature hollow-bearing trees to nest in. It is likely to occur in the area in question.

*Rhytidid sp Undescribed (WAM2295-69)* Stirling Range Rhytidid Snail 1 records

This species of snail is endemic to the Stirling Range and has been recorded between Bluff Knoll and Ellen Peak.

1969 1 1 Stirling Range National Park Caught or trapped

*Moggridgea sp (BY Main 1990/24,25)* Stirling Range Moggridgea Spider 0 records

This species of trapdoor spider is endemic to the Stirling Range and has been recorded near Bluff Knoll. It could possibly occur in the area in question.

Schedule 4 - Other specially protected fauna

*Falco peregrinus* Peregrine Falcon 0 records

This species is uncommon and prefers areas with rocky ledges, cliffs, watercourses, open woodland or margins with cleared land. It may occur in the area in question.

Priority One

0 records

Priority Two

*Bothriembryon glauerti* Bothriembryon glauerti 0 records

This species of snail is endemic to the Stirling Range and occurs in cool, litter-rich gullies. It could possibly occur in the area in question.

Priority Three

*Calyptrorhynchus banksii naso* Forest Red-tailed Black-Cockatoo 1 records

This subspecies of the Red-tailed Black-Cockatoo is restricted to the forests of the south-west. It requires tree hollows to nest and breed and is totally dependent on jarrah-forest.

1963 1 2 Stirling Range National Park Day sighting

Priority Four

*Macropus irma* Western Brush Wallaby 1 records

This species occurs in areas of forest and woodland supporting a dense shrub layer.

2002 1 1 Stirling Range National Park Day sighting



**Threatened and Priority Fauna Database**

34.26°S 118.15°E / 34.37°S 118.25°E Albany - Lake Grace Road - Bluff Knoll

<i>* Date</i>	<i>Certainty</i>	<i>Seen</i>	<i>Location Name</i>	<i>Method</i>	
			<i>Falconnulus frontatus leucogaster</i>	Crested Shrike-tit (south-western ssp)	1 records
This species is an uncommon inhabitant of woodlands.					
2000	2	1		Day sighting	
			<i>Psophodes nigrogularis oregon</i>	Western Whipbird (sthn WA subsp.)	0 records
This subspecies occurs from the Stirling Range east to Munglinup and north to Lake Grace and inhabits areas of mallee and heath, nesting in dense vegetation. Records in surrounding areas suggest that this species may occur in the area in question.					

- \* Information relating to any records provided for listed species:-
  - Date: date of recorded observation
  - Certainty (of correct species identification): 1=Very certain; 2=Moderately certain; and 3=Not sure.
  - Seen: Number of individuals observed.
  - Location Name: Name of reserve or nearest locality where observation was made
  - Method: Method or type of observation



**Vegetation and Flora Survey  
Proposed Roadwork  
Bluff Knoll Rd / Chester Pass Road Intersection**

Libby Sandiford B.Sc (Hons)  
Lot 76 Spring St Little Grove 6330  
Ph. (08) 98 44 4860

## **SUMMARY**

- One Declared Rare Flora species – *Caladenia bryceana* subsp *bryceana* DRF is known to occur within the survey area. This geophyte is only visible during Winter –Spring. Another species - *Acacia awestoniana* DRF is present just outside the survey area. A permit to take rare flora will be required prior to any road works and liaison with CALM staff is required to identify exact population locations to minimise disturbance.
- No priority species were recorded within the survey area.
- The vegetation is in very good condition and dominated by Wandoo Woodland, which is common both locally and regionally.
- Weed presence was low and no declared weeds were observed.
- No evidence of dieback presence was observed.
- Given the survey area is surrounded or adjacent to a by National Park, weed and dieback hygiene control measures are recommended during the road works.

## **BACKGROUND**

Main Roads proposes intersection improvements around the Bluff Knoll Rd / Chester Pass Rd intersection which will include minor clearing and earthworks to allow passing bulges to be constructed opposite the intersection. This area includes land within Stirling Range National Park as well as Road Reserve and privately owned land. The landscape consists of flat plains lying on the northern boundary of the Stirling Range Formation abutting the granitoid Archean Yilgarn Block. Soils consist of colluvial piedmont deposits and alluvial fans derived from the Stirling Range Formation. These soils include sands and silts and gravels of sandstone, quartzite, quartz and ferruginous sandstone (Semeniuk in Thompson et al (1993). The vegetation of the area has previously been mapped as Wandoo Woodland, (Keighery and Beard in Thompson et al (1993)) and lies near the boundary of the Stirling Range and Quaalup Systems in the Eyre botanical District (Beard 1979).

## **SURVEY**

An area larger than the proposed road works in the vicinity of Bluff Knoll Rd / Chester Pass Rd intersection was surveyed for plant species of high conservation value and threatened plant communities on 16/4/04. CALM Flora data bases were searched prior to the survey. The survey area includes a 10 m wide band either side of the existing seal edge extending 120 m along Chester Pass Road from the intersection and extending 100 m along Bluff Knoll Road.



## FLORA

No DRF or priority species were located during this survey, however one Declared Rare Flora species *Caladenia bryceana* subsp *bryceana* DRF is known to occur within the survey area. (See Appendix 1 for Conservation Codes). This population is adjacent the northern side of Bluff Knoll Rd, between the two entrances to the Information Bay, but plants are only visible during the growing season – winter to spring. Another population of this species has been recorded between the car park south of Bluff Knoll Road and Chester Pass Road, possibly within the proposed road works, but has not been located since 1998 (Sarah Barrett, Dept CALM pers comm). Several other populations of this species occur in the general vicinity, but outside the survey area. *Caladenia bryceana* sub sp *bryceana* has also been recorded from several localities between Boyup Brook and Jerramungup.

As *Caladenia bryceana* subsp *bryceana* DRF species occurs within the survey area a permit to take DRF will be required and on site inspection prior to road works will be required to identify the population location to avoid disturbance if possible.

Another Declared Rare Flora species *Acacia awestoniana* occurs 6 m outside the proposed road works area (approximately 16 m west of the current sealed road surface and 105 m south of the intersection). This species is only known from 2 populations within Stirling Range National Park. Whilst this population is outside the current area of proposed road works care must be taken to avoid disturbance of this population and liaison with CALM Staff will be required to identify the population concerned.

Due to the presence of two DRF species in the vicinity the survey area has previously been well searched for plant species of high conservation value (S. Barrett Dept CALM, pers. comm.). A search of CALM Flora databases indicate no other DRF or priority species have been recorded within the survey area although several priority species have been recorded within 1.5 km of the survey area. These species include *Eucalyptus erectifolia* P4, *Verticordia brevifolia* subsp *stirlingensis* P2, *Dryandra plumosa* subsp *denticulatus* P2, *Eucalyptus marginata* x *pachyloma* P4 and possibly *Lepidium pseudotasmanicum* P4. Of these species only *Verticordia brevifolia* subsp *stirlingensis* P2 has been recorded in habitat similar to that of the survey area i.e. Wandoo woodland.

A complete list of native plants observed within the survey area is provided in Appendix 2.

## VEGETATION

The vegetation of the survey area is dominated by Wandoo Woodland with a small area of Yate (*Eucalyptus occidentalis*) Woodland occurring in the northern a part of the survey area and a small patch of Marri Woodland occurring along the southern edge of Bluff Knoll Rd. The wandoo woodland has an open understorey dominated by a Very Open Shrubland or Low Shrubland and Mixed Sedgeland. Common species include *Calytrix flavescens*, *Bossiaea eriocarpa* *Leptospermum oligandrum*, *Melaleuca ?pentagona*, *Hakea lissocarpha*, *Neurachne alopecuroidea*, *Gahnia ancistrophylla*, *Tetraria capillaris*, *Harperia lateriflora*, and *Desmocladius aspera*. A diverse annual herbaceous layer is expected to be present during the winter-spring months.

All the vegetation types observed are common both locally and regionally and no Threatened Ecological Communities were located or are known to occur within or near the survey area.

The vegetation is in very good condition. A few introduced species were observed on the road margins, primarily pasture grasses and weeds including *\*Eragrostis curvula*, *\*Avena*

*barbata*, \**Briza maxima* and \**Anagallis arvensis*, whilst \**Ursinia anthemoides*, and \**Centaureum erythraea* were scattered throughout the Wandoo Woodland. No evidence of dieback was observed however the lack on native indicator species makes interpretation of dieback presence difficult. Due to the very high conservation values of the surrounding land in the Stirling Range National Park, dieback and weed control hygiene measures are recommended during road works.

## REFERENCES

- Beard, J.S. (1979) The Vegetation of Albany and Mt. Barker, Western Australia, Map and Explanatory Memoir 1: 250 000 Veg Map Publications Perth.
- Thomson, C, G. Hall, G. Friend (1993) Mountains of Mystery, A Natural History of the Stirling Range. Dept CALM

## APPENDIX 1 - Conservation Codes For Western Australia

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**R: Declared Rare Flora - Extant Taxa** (= Threatened Flora = Endangered + Vulnerable).

Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Threatened Species Scientific Committee.

**X: Declared Rare Flora - Presumed Extinct Taxa.**

Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Threatened Species Scientific Committee.

**1: Priority One - Poorly Known Taxa**

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

**2: Priority Two – Poorly Known Taxa**

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

**3: Priority Three – Poorly Known Taxa**

Taxa which are known from several populations at least some of which are not believed to be under immediate threat, (i.e. not currently endangered). Such taxa are under consideration for declaration as "rare flora" but are in need of further survey.

**4: Priority Four – Rare Taxa**

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

**APPENDIX 2 - SPECIES LIST** Proposed clearing Intersection Bluff Knoll Road and Chester Pass Road

<b>MONOCOTYLEDONS</b>	CYPERACEAE	
	Gahnia ancistrophylla	HAEMODORACEAE
	Lepidosperma striatum	Anigozanthus rufus
	Lepidosperma tenue	Conostylis pusilla
ANTHERICACEAE	Mesomelaena stygia	
Caesia micrantha	Tetralix capillaris	IRIDACEAE
Laxmannia sessiliflora		Orthrosanthus ?laxus
	DASYPOGONACEAE	Patersonia sp
BORYACEAE	Lomandra effusa	
Borya scirpoidea	Lomandra micrantha	PHORMIACEAE

Dianella sp

POACEAE

Austrodanthonia sp  
Austrostipa elegantissima  
Neurachne alopecuroidea

RESTIONACEAE

Anarthria laevis  
Desmocladus asper  
Harperia lateriflora

PROTEACEAE

Bossiaea eriocarpa  
Chorizema aciculare  
Gastrolobium spinosum  
Gompholobium confertum  
Gompholobium marginatum  
Gompholobium polymorphum  
Gompholobium tomentosum  
Jacksonia furcellata  
Kennedia prostrata

PITTOSPORACEAE

Sollya heterophylla

PROTEACEAE

Dryandra arctotidis  
Dryandra brownii  
\*Dryandra drummondii  
Hakea laurina  
Hakea varia/lissocarpha  
Petrophile squamata

**DICOTYLEDONS**

AIZOACEAE

Carpobrotus modestus

EPACRIDACEAE

Astroloma epacridis  
Astroloma compactum  
Leucopogon  
conostephioides

MIMOSACEAE

Acacia bidentata  
Acacia browniana  
Acacia chrysocephala  
Acacia cochlearis  
Acacia lasiocarpa  
Acacia pulchella  
Acacia saligna

MYRTACEAE

Calytrix flavescens  
Eucalyptus pleurocarpa  
Eucalyptus occidentalis  
Eucalyptus wandoo  
Kunzea micrantha  
Leptospermum  
oligandrum  
Melaleuca ?pentagona

RHAMNACEAE

Stenanthemum notiale subsp  
notiale

RUBIACEAE

Opercularia vaginata

SANTALACEAE

Choretrum glomeratus  
Exocarpus sparteus

STERCULIACEAE

Lasiopetalum angustifolium

\* = planted

# Appendix C

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

The screenshot shows a web browser window titled "Welcome to the Heritage Council of Western Australia - Microsoft Internet Explorer". The address bar displays "http://register.heritage.wa.gov.au/search\_results.html". The page header includes the text "HERITAGE COUNCIL OF WESTERN AUSTRALIA" and navigation links for "HERITAGE COUNCIL", "PLACE REGISTER", and "HERITAGE TRAILS". A secondary navigation bar contains links for "HELP", "MEDIA", "NEWS HIGHLIGHTS", "LINKS", and "FAQS". Below the header, a horizontal menu lists "ABOUT US", "DEVELOPMENT", "INSURANCE", "ASSISTANCE", "PUBLICATIONS", "CASE STUDIES", "EDUCATION", and "COMMUNITY". The main content area displays "Displaying results: [1-5] of 5". On the left, there are links for "QUICK SEARCH", "ADVANCED SEARCH", "RESULTS LIST", "LOCATION REPORT", "SAVE DATA", "WHAT IS THE STATE REGISTER", and "OTHER HERITAGE LISTS". The search results are presented in a table with two columns: a checkbox and a text description. The results are:

hide selected   hide unselected	
<input type="checkbox"/>	Moana Homestead & Woolshed (6001) <i>Chester Pass Rd, Borden</i>
<input type="checkbox"/>	Salt River Hall (1108) <i>Chester Pass Rd, South Borden</i>
<input type="checkbox"/>	Salt River School Site (6023) <i>Chester Pass Rd, South Borden</i>
<input type="checkbox"/>	The Lily (6050) <i>Chester Pass Rd, Arnekeup</i>
<input type="checkbox"/>	Yardup Cottage (6051) <i>Chester Pass Rd, South Borden</i>

At the bottom of the results section, there are links for "hide selected" and "hide unselected", and a "HELP" button. At the very bottom of the page, there are links for "top of page", "disclaimer", and "copyright 2004 heritage council of western australia". The Windows taskbar at the bottom shows the Start button, several application icons, and the system tray with the time "12:07 PM".

## **Appendix D**

### **Department of Indigenous Affairs Database Search**



## Register of Aboriginal Sites

Page 1  
RPGSR V1.57

Reference No: IC-RPGSR-6511

Report run on April 7, 2004 11:55 AM

DEPARTMENT OF INDIGENOUS AFFAIRS

### Selection Criteria

Site Search within specified polygon  
 Coordinates Type: MGA Coordinates - MGA Zone: 50  
 Coordinates: Easting: 609419 Northing: 6202188  
 Easting: 609404 Northing: 6202188  
 Easting: 609404 Northing: 6201825  
 Easting: 609419 Northing: 6201825

### Legend

Status	Access	Site Types
I Interim Register	C Closed	C Ceremonial
P Permanent Register	O Open	RP Repository / cache
S Stored Data	V Vulnerable	S Man-Made Structure
<b>Restriction</b>	<b>Reliability</b>	T Modified Tree
F Female Access Only	R Reliable	E Engraving
M Male Access Only	U Unreliable	ART Artefacts / Scatter
N No Gender Restrictions		HIST Historical
		M Mythological
		BUR Skeletal material/Burial
		F Fish Trap
		P Painting
		Q Quarry
		MD Midden / Scatter
		G Grinding patches / grooves

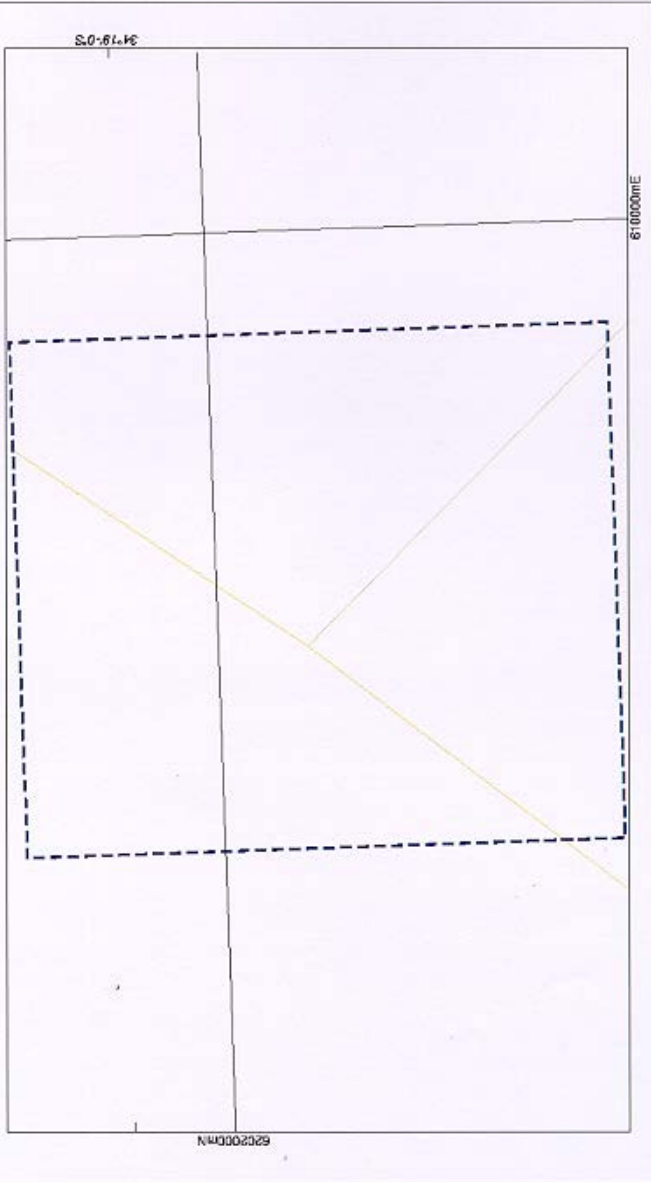
Map coordinates (Latitude / Easting & Longitude / Northing) are based on the GDA94 datum. Coordinates are indicative locations and may not necessarily represent the true centre of sites, especially if access to specific site information is tagged as "Closed" or "Vulnerable". The metric grid on Site Search Maps are for a specific MGA zone, and does not cater for MGA metric coordinates for a different MGA zone.

Site Id	Status	Access	Restriction	Reliability	Site Type	Site Name	Informants	Site No
No Sites Found within selection area.								





Site Search Map



-----Original Message-----

From: Anthony Galante [mailto:Anthony.Galante@dia.wa.gov.au]  
Sent: Thursday, July 22 2004 2:00 PM  
To: HANDS Geoffrey (SCCR)  
Cc: STEVENS Ron (SPM)  
Subject: RE: NATIVE TITLE CLAIMANTS AND DIA ENDORSEMENT TO PROCEED WITH ROAD WORKS

Geoff/Ron

The following are the names of families with ties to Borden/Jerramungup and Bluff Knoll:

Borden

Family	Representative	Contact Details
Williams	Sam Williams	9842 3820 / 9842 8008
Roberts/Brown	Eric Brown	9842 3312
Penny	Kelvin Penny	11 Lindfield Crescent, Albany 6330
Eades	Members of the Eades family previously consulted	
Woods	Members of the Woods family previously consulted	

Bluff Knoll Road

Family	Representative	Contact Details
Hayward	Verdun Hayward	9827 1512
Williams	Sam Williams	9842 3820 / 9842 8008
Penny	Kelvin Penny	11 Lindfield Crescent, Albany 6330
Roberts/Brown	Robert Minitier	9827 1433
Bolton	James Bolton	Whitehead Road, Gnowangerup
Eades	Members of the Eades family previously consulted	
Woods	Members of the Woods family previously consulted	

Regards Anthony

-----Original Message-----

From: HANDS Geoffrey (SCCR) [mailto:geoffrey.hands@mainroads.wa.gov.au]  
Sent: Wednesday, 14 July 2004 1:36 PM  
To: Anthony Galante  
Cc: STEVENS Ron (SPM)  
Subject: RE: NATIVE TITLE CLAIMANTS AND DIA ENDORSEMENT TO PROCEED WITH ROAD WORKS

Anthony,

Ron Stevens and I would like to set up a meeting with yourself to establish a protocol for dealing with this matter. Could you please advise a suitable date and time. My phone number is 9892 0552.

Thanks and Regards

Geoff Hands  
PM Minor Works  
Main Roads Western Australia  
Great Southern Region  
Chester Pass Rd, Albany

-----Original Message-----

From: Anthony Galante [mailto:Anthony.Galante@dia.wa.gov.au]  
Sent: Monday, May 17 2004 4:44 PM  
To: HANDS Geoffrey (SCCR)

Cc: Stephen Loo; Robert Reynolds  
Subject: FW: NATIVE TITLE CLAIMANTS AND DIA ENDORSEMENT TO PROCEED WITH ROAD WORKS

Dear Geoffrey

I have investigated the matter of recent site clearance consultations undertaken by Main Roads offer the following feedback:

1. The informants represent essentially one major family (Eades) rather than a representative spectrum of relevant Indigenous people. There seems to be a lack of representativeness and an absence of equity in terms of other families that could have been included. Other relevant informants include the following families: Roberts; Minter; Bolton; Loo; Coyne; Knapp; Williams; Colbung inter alia.
2. I would recommend that in addition to SWALSC future anthropological consultants are directed to liaise with the Department of Indigenous Affairs, Southern Region, prior to the consultations taking place to ensure that all appropriate informants are included. I would hope this will mitigate against these difficulties in the future.
3. DIA cannot give endorsement for these works to proceed and it is recommended that further consultation take place.

Should you have queries, please contact me.

Anthony Galante  
Regional Manager, Southern Region  
Department of Indigenous Affairs  
129 Aberdeen St  
ALBANY WA 6330  
PO Box 5091 ALBANY WA 6330  
Tel (08) 9842 3347  
Fax (08) 9842 3517  
Email: Anthony.Galante@dia.wa.gov.au  
Mobile: 0407 192 095

<<http://www.dia.wa.gov.au>>

We invite you to provide feedback on how you found our service. Click below.  
<<http://www.dia.wa.gov.au/Feedback/default.aspx>>

-----Original Message-----

From: Rose Butler  
Sent: Thursday, 22 April 2004 11:05 AM  
To: Anthony Galante  
Subject: FW: NATIVE TITLE CLAIMANTS AND DIA ENDORSEMENT TO PROCEED WITH ROAD WORKS

I have advised Geoff that there is an issue and that this office may not be able to endorse the development with the group that have been consulted with and that I have referred the matter to you. If you need any info on who should be consulted, Sam will assist. I hope this is OK.

Regards

Rose

-----Original Message-----

From: HANDS Geoffrey (SCCR) [<mailto:geoffrey.hands@mainroads.wa.gov.au>]  
Sent: Wednesday, 21 April 2004 4:58 PM  
To: Rose Butler  
Cc: STEVENS Ron (SPM)  
Subject: NATIVE TITLE CLAIMANTS AND DIA ENDORSEMENT TO PROCEED WITH ROAD WORKS

Rose,

As per our telephone conversation, I advise that Main Roads intend to construct traffic "passing bulges" / right turn auxiliary lanes on the following intersections, next financial year.

For both of below intersections:

\* South Coast Highway / Bremer Bay Rd incorporating Borden - Boxwood Hill Rd.

\* South Coast Highway / Gairdner South Road in the Shire of Jerramungup.

The names of the Native Title claimants consulted are:

1. Deana Eades
2. Aden Eades (Jnr)
3. Errol Eades
4. William Woods
5. Lee - Anne Woods
6. Gillian Woods

and for below intersection:

\* Albany - Lake Grace Rd / Bluff Knoll Road in the Shire of Gnowangerup (Stirling Range National Park).

The names of the Native Title claimants consulted are:

1. Aden Eades (Snr)
2. Aden Eades (Jnr)
3. Errol Eades
4. William Woods
5. Lee - Anne Woods
6. Kirsty Eades

Main Roads wrote a letter, dated 24 March 2004, to your office seeking endorsement from DIA to proceed with the proposed works, due to there being no known sites or ethnographic issues within the project areas and received a letter from Stephen Loo (DIA - Perth) on 21 April 2004 advising that Main Roads seems to have taken all necessary precautions and steps to ensure that no Aboriginal sites or sites of significance are within the proposed road works. The letter also requested Main Roads contact your Regional Manager for further consideration and approvals for the road works. Whilst Stephen Loo has acknowledged that due process has been followed, DIA did not give Main Roads formal endorsement. Can you therefore please provide Main Roads with this endorsement.

If you have any concerns relating to providing this endorsement please contact our Acting Regional Manager Ron Stevens on 9892 0521 or myself on 9892 0552.

Regards  
Geoff Hands  
PM Minor Works

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ABN: 50 860 676 021

I Sam WILLIAMS have been consulted in regards to the proposed Main Roads WA works at the junction of the South Coast Highway / Gairdner South Road and South Coast Highway / Bremer Bay Road within the Shire of Jerramungup and Albany – Lake Grace (Chester Pass) Road / Bluff Knoll Road within the Shire of Gnowangerup and I am satisfied that no disturbance will take place to Aboriginal heritage sites or sites of significance.

  
Signature

06/08/04  
Date

Comments:

OK  
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ABN: 50 860 676 021

I Kelvin Penny have been consulted in regards to the proposed Main Roads WA works at the junction of the South Coast Highway / Gairdner South Road and South Coast Highway / Bremer Bay Road within the Shire of Jerramungup and Albany – Lake Grace (Chester Pass) Road / Bluff Knoll Road within the Shire of Gnowangerup and I am satisfied that no disturbance will take place to Aboriginal heritage sites or sites of significance.

Kelvin Penny  
Signature

6 / 8 / 04  
Date

Comments:

NIL  
.....  
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ABN: 50 860 676 021

I JAMES BOLTON have been consulted in regards to the proposed Main Roads WA works at the junction of the Albany – Lake Grace (Chester Pass) Road and Bluff Knoll Road within the Shire of Gnowangerup and I am satisfied that no disturbance will take place to Aboriginal heritage sites or sites of significance.

James Bolton  
Signature

6 18 10 11  
Date

Comments:

NIL  
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ABN: 50 860 676 021

I ROBERT MINTEA have been consulted in regards to the proposed Main Roads WA works at the junction of the Albany – Lake Grace (Chester Pass) Road and Bluff Knoll Road within the Shire of Gnowangerup and I am satisfied that no disturbance will take place to Aboriginal heritage sites or sites of significance.

Robert Minter  
Signature

6/8/04  
Date

Comments:

NIL  
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I Verdun Hayward have been consulted in regards to the proposed Main Roads WA works at the junction of the Albany – Lake Grace (Chester Pass) Road and Bluff Knoll Road within the Shire of Gnowangerup and I am satisfied that no disturbance will take place to Aboriginal heritage sites or sites of significance.

Verdun Hayward  
Signature

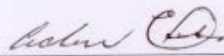
6/8/04  
Date

Comments:

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N.B.  
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I ADEN C. KADES have been consulted in regards to the proposed Main Roads WA works at the junction of the Chester Pass Road and Bluff Knoll Road junction within the Shire of Gnowangerup and I am satisfied that no disturbance will take place to Aboriginal heritage sites or sites of significance.

  
\_\_\_\_\_  
Signature

12/03/04  
Date

Comments:

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ABN: 50 860 676 021

I WILLIAM WOODS have been consulted in regards to the proposed Main Roads WA works at the junction of the Chester Pass Road and Bluff Knoll Road junction within the Shire of Gnowangerup and I am satisfied that no disturbance will take place to Aboriginal heritage sites or sites of significance.

William Woods  
Signature

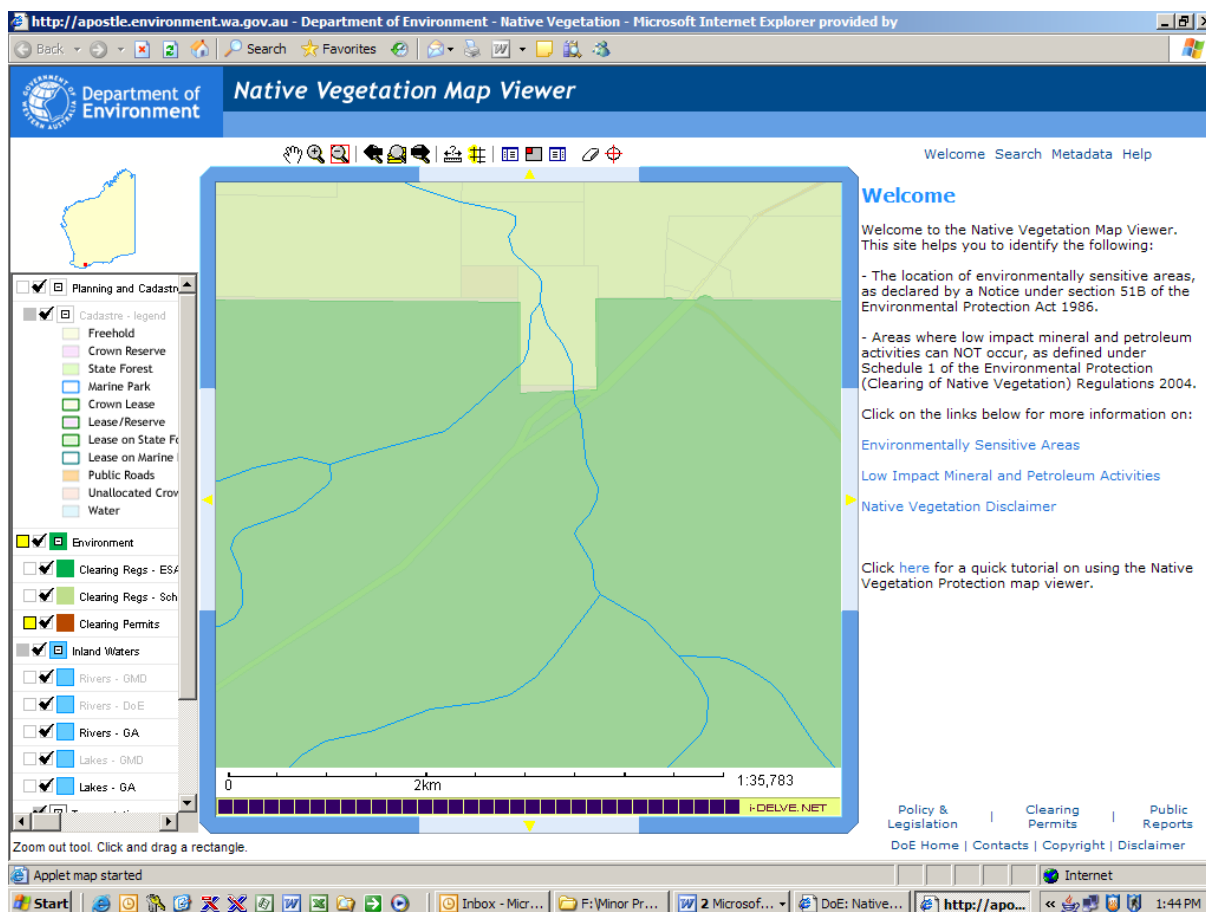
12/3/04  
Date

Comments:

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## Appendix E

### DEC's Sensitive Water Resources Database Search



-----Original Message-----

**From:** WEST Paul (EO/A)  
**Sent:** Tuesday, March 30 2004 4:06 PM  
**To:** HANDS Geoffrey (SCCR)  
**Subject:** Environmental Surveys for Bluff Knoll and Bremer Bay areas.

Geoff,

As requested by Rob Howard, I have undertaken a number of database searches for the following intersection upgrades;

- Albany - Lake Grace Road - Bluff Knoll Road;
- South Coast Highway - Bremer Bay Road; and
- South Coast Highway - Gairdner South Road.

The databases searched included Dept of Indigenous Affairs, IRIS for threatened flora, WA Heritage Council's Database, Threatened Ecological Communities, Public Drinking Water Supply Areas, Wetlands, CALM Reserves and the Australian Heritage Database.

The only serious issues are the possible impacts to Priority Flora located 260m east of the SCH - Bremer Bay Road intersection and the CALM reserve surrounding the Bluff Knoll intersection. Advice from CALM should be sought on the Bluff Knoll intersection upgrade to ensure their concerns with dieback, drainage and weeds are properly addressed in the EMP. Depending on



the extent of clearing associated with the Bremer Bay intersection, advice from CALM may also need to be sought.

The results of the database searches are attached and I have also placed hard copies in the mail, including more information on the Bremer Bay priority flora.

The pink or orange squares are Aboriginal heritage sites (Gairdner), the large yellow circles are threatened ecological communities (Bluff Knoll) and the green (CALM) and yellow dots (IRIS) are threatened flora sites.

Good luck with the PEIA and let me know if you have any queries.

Regards

Paul West  
Environment Officer  
Environment Branch  
Main Roads Western Australia  
Don Aitken Centre  
Waterloo Crescent  
East Perth WA 6004

Phone 9323 4566  
Fax 9323 4547  
Mobile 0419047724

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# Appendix F

## Assessment against the DEC's Ten Clearing Principles

### Guidelines - MRWA Vegetation Clearing Assessment Report

This guideline has been prepared to assist MRWA in addressing condition 7 "Assessment of Clearing Impacts" under Clearing Permit CPS 818/2.

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

#### 10. AREA UNDER ASSESSMENT DETAILS

##### 10.1 Proponent details

Proponent's name: **MRWA Great Southern Region**  
Contacts  
: Name: Andrew Duffield  
Phone: 08 9892 0555  
Fax:  
Email:

##### 10.2 Property details

Property: Albany – Lake Grace Road intersection with Bluff Knoll Road, Stirling Range National Park, Shire of Gnowangerup  
Colloquial name:

##### 10.3 Area under assessment

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:	Site Plan Attached
Road Reserve 0.0641ha, National Park 0.0554ha		Mechanical	Road construction/intersecti on upgrade	<input type="checkbox"/> Yes

##### 10.4 Avoidance/Minimise clearing

How have the clearing impacts been minimised? Kerbing has been utilised to reduce the amount of clearing required  
Intersection design modified several times to reduce clearing footprint

#### 11. BACKGROUND

##### 11.1 Existing environment and information

###### 11.1.1 Description of the native vegetation under application

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

Site Visit Undertaken	<input type="checkbox"/> Yes	Fauna / Flora Survey Undertaken	<input type="checkbox"/> Yes
Site Report Attached	<input type="checkbox"/> Yes	Fauna / Flora Survey Report Attached	<input type="checkbox"/> Yes
Site Photos Attached	<input type="checkbox"/> Yes	Other Relevant References Attached	<input type="checkbox"/> Yes

Vegetation Complex	Clearing Description	Vegetation Condition	Comment
1: Medium woodland; wandoo and yate	Vegetation under application is to be cleared in order to upgrade the intersection of Albany – Lake Grace and Bluff Knoll Rds	Very good; vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	

#### 12. ASSESSMENT OF APPLICATION AGAINST CLEARING PRINCIPLES

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

Comments **Proposal is not likely to be at variance to this Principle**  
The vegetation to be cleared is of very good condition, and is considered to be of high biological diversity (Sandiford 2004). There is a large amount of similar vegetation in the Stirling Range National Park (115000ha); therefore removal of this vegetation is unlikely to be significant on either a local or Bioregion level due to the small area concerned.

**Methodology** Sandiford (2004); Site visit 30/10/2006

**(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**

CALM (DEC) advice is that 4 Declared and 5 Priority listed fauna species occur within 10km of the project area. Given the small amount of clearing required for the project and the large area of vegetation surrounding the site it is considered unlikely that any Declared or Priority fauna will be impacted, or that the habitat could be considered "significant" in a local context.

**Methodology** CALM (2004)

**(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**

A population of Declared Rare Flora (DRF) (*Caladenia bryceana* subsp. *bryceana*) occurs within the vicinity of the project site. Liaison with Sarah Barrett (botanist, DEC Albany) has advised that the area under application contains no plants. A Permit to Take Declared Rare Flora was applied for and received, in order to take "habitat only". On advice of DEC officers and having received the Permit, it is considered that the proposal is not likely to be at variance to this principle.

**Methodology** Permit to Take Declared Rare Flora, 2006. Sarah Barrett, DEC Albany, pers.comm. 2006. Sandiford, 2004.

**(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 at variance to this Principle**

A number of Threatened Ecological Communities exist within the Stirling Range National Park; however, no Threatened Ecological Communities were identified within or in the vicinity of the project area during the biological survey.

**Methodology** Sandiford (2004), CALM advice, ESA search (DEH 2006).

**(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**

Vegetation association number 967 occurs in the project site. Its pre-European distribution is 50176ha, current distribution of 11174ha, giving a percentage remaining of 22.3%. This is below the EPA's threshold of 30%. However, due to the small area to be cleared and the offset required, it is unlikely that the clearing required for this project will be at variance to this Principle.

**Methodology** EPA Position Statement no. 2, Shepard et al (2001)

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

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

There are no watercourses or wetlands within the vicinity of the project area. A floodway exists approximately 10km to the north along Albany – Lake Grace Rd, which is not expected to be impacted by the proposed works. Existing drainage and surface run-off patterns will be maintained. Removal of the small amount of vegetation associated with these works is unlikely to be significant.

**Methodology** Site visit 2006.

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

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

The area under application is very small and surrounded by large areas of remnant vegetation within the Stirling Range National Park. There is unlikely to be any land degradation issues associated with this project due to its small scale and surrounding vegetation.

**Methodology** Site visit 2006.

**(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**

Although the works occur within the Stirling Range National Park, the clearing associated with them is minimal in the context of the Park (ie less than 0.01%). Therefore, the proposal is unlikely to be at variance to this Principle.

**Methodology** Site visit 2006.

**(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**

Due to the small nature and scale of the vegetation under application, and the large areas of surrounding remnant vegetation, it is considered unlikely that this proposal is at variance to this Principle.

**Methodology** Site visit 2006.

**(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**

Due to the small nature and scale of the vegetation under application, and the large areas of surrounding remnant vegetation, it is considered unlikely that this proposal is at variance to this Principle.

**Methodology** Site visit 2006.

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

**Comments** N/A

**Methodology**

**13. SUBMISSIONS**

**If required have submissions been requested and addressed**

<b>Submission Requested from</b>	<b>Request Sent (Date)</b>	<b>Submission Received (Date)</b>	<b>Issues Raised / Comments Made</b>
----------------------------------	----------------------------	-----------------------------------	--------------------------------------

**14. ASSESSOR'S RECOMMENDATIONS**

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

**Recommendation (does this clearing require a Revegetation Management Plan / Offset Proposal / Environmental Management Plan / Management Strategy/New Application, under CPS 818/2)**

**15. REFERENCES**

**OFFICER PREPARING REPORT**

Melissa Piowczyk-Kruk

Position: Graduate Environment Officer

Great Southern Regional Office

MRWA

08 9892 0567

30/10/06

## Further advice from DEC to support assessment

**From:** Barrett, Sarah [mailto:Sarah.Barrett@dec.wa.gov.au]  
**Sent:** Friday, 8 December 2006 2:27 PM  
**To:** PIOWCZYK-KRUK Melissa (GEnv)  
**Subject:** RE: Chester Pass Rd project

Melissa

I cannot find Sarah Comer's e-mail but from I can re-iterate (in Sarah's absence) that she had no concerns re the proposal from a fauna perspective

Regards  
Sarah Barrett



# Appendix G

## WAPC's Acid Sulfate Soils Mapping



### ACID SULFATE SOILS

#### APPLICANT SELF - ASSESSMENT FORM

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

#### **STEP 1:**

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

##### Question 1:

Is the land depicted in Figures 1 - 11 of the Western Australian Planning Commission's Planning Bulletin No. 64: Acid Sulfate Soils as having a 'high risk of Actual Acid Sulfate Soil (AASS) & Potential Acid Sulfate Soil (PASS) < 3m from surface'?

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

**TICK BOX AS APPROPRIATE:** YES  NO

##### Question 2:

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

**TICK BOX AS APPROPRIATE:** YES  NO

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

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

**STEP 2: ARE ANY OF THE FOLLOWING WORKS PROPOSED, OR LIKELY TO BE CARRIED OUT, ON THE LAND?**

**Question 3:**

Are any dewatering works proposed to be undertaken?

**TICK BOX AS APPROPRIATE:** YES  NO

**Question 4:**

Is the surface elevation  $\leq$  5m AHD and is excavation of  $\geq 100\text{m}^3$  of soil (i.e. 10 standard dump truck loads) proposed?

**TICK BOX AS APPROPRIATE:** YES  NO

**Question 5:**

Is the surface elevation  $>$  5m AHD and is excavation of  $\geq 100\text{m}^3$  of soil (i.e. 10 standard dump truck loads) with an excavation depth of  $\geq 2\text{m}$  proposed?

**TICK BOX AS APPROPRIATE:** YES  NO

If YES to any of these three questions go to Step 3.

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

**STEP 3: CARRY OUT PRELIMINARY SITE ASSESSMENT IN ACCORDANCE WITH DEPARTMENT OF ENVIRONMENT GUIDELINES.**

Note: Copies of documents in the Acid Sulfate Soils Guidelines Series and further technical advice and information can be obtained from the Contaminated Sites page on the Department of Environment's website at <http://www.environ.wa.gov.au/contaminatedsites>.

**Question 6:**

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

**TICK BOX AS APPROPRIATE:** YES  NO

If YES to this question go to Step 4.

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

**STEP 4:**

**CARRY OUT DETAILED SITE ASSESSMENT IN ACCORDANCE WITH DEPARTMENT OF ENVIRONMENT GUIDELINES.**

**Question 7:**

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



**TICK BOX AS APPROPRIATE:**

YES

NO

If YES to this question you should consider modifying the design of the proposal to ensure that there is no disturbance to acid sulfate soils at this location. Regardless of whether you modify the design or not, sign this form and submit it with your application together with the written results of the Preliminary and Detailed Site Assessments.

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

**APPLICANT SIGNATURE:**



.....  
Full Name



.....  
Signature



.....  
Date

**TICK BOX FOR ATTACHMENTS AS APPROPRIATE:**

Preliminary site Assessment Results

Detailed site Assessment Results

The proposal has been designed to avoid disturbance of Acid Sulfate Soils at this location

## Appendix H

### Department of Agriculture Advice on Declared Weeds

From: Devenish, Keith [mailto:KDevenish@agric.wa.gov.au]  
Sent: Monday, March 29 2004 1:24 PM  
To: STEVENS Ron (SPM)  
Cc: Parry, Colin  
Subject: RE: Environmental Assessments - 2004/05 Network Safety and Improvement Program

Hi Ron,  
I spoke today with Wayne Ledger our biosecurity officer and there are no problems from our perspective associated with widening the road on Chester Road in Gnowangerup shire and Hassell highway in Jerramungup shire  
Keith Devenish  
District Manager  
Department of Agriculture  
PO Box 98  
JERRAMUNGUP WA 6337  
(08) 9835 1177  
kdevenish@agric.wa.gov.au

-----  
From: Parry, Colin  
Sent: Wednesday, 24 March 2004 10:16 AM  
To: Ledger, Wayne; Devenish, Keith  
Cc: Knight, Ted  
Subject: FW: Environmental Assessments - 2004/05 Network Safety and Improvement Program

Wayne and Keith,

This request for information on weed risk under environmental assessment for road-works relates to areas in Jerry and I think Gnowangerup shires. Please liaise direct with Ron Stevens of MRD. Phone contacts and email address below.

Kind regards

Col Parry  
Senior Protection Officer  
Project Manager-Animal Pests SAR  
ph.(08) 98928 465 fax.(08) 98412 707  
cparry@agric.wa.gov.au

-----Original Message-----

From: STEVENS Ron (SPM) [mailto:ron.stevens@mainroads.wa.gov.au]

Sent: Wednesday, 24 March 2004 10:05 AM

To: cparry@agric.wa.gov.au

Subject: Environmental Assessments - 2004/05 Network Safety and Improvement Program

Col,

As discussed Main Roads has commenced planning work for three small projects in the above program. Details of the three project are as follows:

- \* Albany-Lake Grace Road (Chester Pass Rd) and Bluff Knoll Road Junction
- \* South Coast Highway (Hassell Hwy) and Gairdner South Road Junction
- \* South Coast Highway (Hassell Hwy) and Bremer Bay Road Junction

The scope of work includes widening (3m to 5 m wide) to provide for turning lanes for vehicles turning right off the highway into the minor road. Typically the project area would extend no more than 200 m either side on the junction along the highway and 100m down the minor road.

To assist Main Roads with the preparation of Environmental Management Plans could you please advise of any known infestations of declared weeds.

If you need any further information you can contact me direct on 9892 0521 or Geoff Hands on 9892 0552.

Regards

Ron

# Appendix I

## CALM Advice on Dieback

From: Freebury, Greg [mailto:gregf@calm.wa.gov.au]  
Sent: Monday, 12 June 2006 3:15 PM  
To: HANDS Geoffrey (PM)  
Cc: Hennessy, Cameron; Coney, Luke; Lloyd, Martin  
Subject: TRIM: Chester Pass Rd - dieback

Hi Geoff,

Further to our recent telephone conversation, I am writing to confirm that the area associated with the intersection of Chester Pass and Bluff Knoll Roads is *Phytophthora* infested and unprotectable. I therefore see no problem, from a *Phytophthora* perspective, with the proposed construction of a passing bulge at this intersection.

As the area is already infested there is no requirement to use uninfested basic raw materials, however vehicles and machinery should be cleaned down prior to moving to another site that is uninfested or where the dieback status is unknown.

Please contact me if you require any further information or advice.

Regards

Greg Freebury  
Conservation Officer  
Dept of Conservation and Land Management  
120 Albany Hwy, Albany

Ph: (08)9842 4570  
Mob: 0429 102 452



# Appendix J

## CALM Advice on Priority Flora and Advice on DEH Referral

### Priority Flora:

From: Barrett, Sarah [mailto:sarahba@calm.wa.gov.au]  
Sent: Monday, July 19 2004 12:16 PM  
To: HANDS Geoffrey (SCCR)  
Subject: RE: Main Roads Network Safety Improvement Projects

Geoffrey

Further to our meeting today

I would like to confirm that there are no DRF located within the proposed zone of clearing for the following projects

- \* South Coast Hwy (Hassell Hwy) and Bremer Bay Rd (incorporating Borden - Bremer Bay Rd)
- \* South Coast Hwy (Hassell Hwy) and Gairdner South Rd

While Priority flora do occur within the proposed zone, these do not require a permit to take and both of the species located are relatively abundant locally in remnant vegetation in that area. Therefore there are no threatened flora issues related to this clearing.

As per our discussion, the Chester Pass / Bluff Knoll Rd project may require site visit and a Permit to take rare flora will be required as clearing will affect the habitat of the Declared Rare orchid *Caladenia bryceana* ssp *bryceana*.

Regards  
Sarah Barrett

-----Original Message-----

From: HANDS Geoffrey (SCCR) [mailto:geoffrey.hands@mainroads.wa.gov.au]  
Sent: Wednesday, July 14, 2004 2:22 PM  
To: Barrett, Sarah  
Cc: STEVENS Ron (SPM)  
Subject: Main Roads Network Safety Improvement Projects

Sarah,

Further to your e-mail advice to Ron Stevens (our Senior Project Manager) of 2 March 2004. I advise that Main Roads has had Ms Libby Sandiford complete a flora survey and reports (copy attached - in case you haven't been forwarded a copy) for the following intersections / junctions:

- \* 1. Albany - Lake Grace Rd (Chester Pass Rd) and Bluff Knoll Rd - currently no funding for construction.
- \* 2. South Coast Hwy (Hassell Hwy) and Bremer Bay Rd (incorporating Borden - Bremer Bay Rd) - have funding for construction.
- \* 3. South Coast Hwy (Hassell Hwy) and Gairdner South Rd - have funding for construction.

of which it is proposed to install a right turn auxiliary lane "passing bulge" opposite the individual intersections. The survey was conducted on an area 10 m wide from the existing seal edge by 120 m long either side of the intersection for the proposed widened side.

<<re veg reports.>>

From the reports it has been identified that for:

Item 1 the flora will need to be identified on-site by CALM so as the boundary of the DRF / priority flora can be surveyed and marked on our plan.

Item 2 there appears to be no DRF however Priority 3 & 4 flora will possibly be disturbed and therefore require CALM approval to "take".

Item 3 there appears to be no DRF or Priority flora which will be disturbed in the area to be widened.

Ron and I would like to arrange a meeting with you (initially in the office) to discuss these projects and show you preliminary drawings / detailed backgrounds we have available. Could you therefore advise a suitable date and time. My phone number is 9892 0552.

Thanks and Regards  
Geoff Hands  
PM Minor Works  
Main Roads Western Australia  
Great Southern Region  
Chester Pass Rd, Albany

### DEH Referral:

Melissa

See below for Ken Atkins response

As per phone call the strip west of the road to 10 m will be intensively surveyed late August / early September when the species is in flower to ensure that no plants will be directly impacted, I will forward a map of the known sub-populations as well as its 'critical habitat' to you shortly Following this survey we can look at 'Permit to Take'

Regards  
Sarah

---

**From:** Atkins, Ken  
**Sent:** Wednesday, 9 August 2006 5:09 PM  
**To:** Barrett, Sarah  
**Cc:** Anderson, Lawrie  
**Subject:** RE: caladenia bryceana permit to take

This is difficult to advise on (without knowing the details) as I am not sure what the Commonwealth position is regarding impact on listed critical habitat. The situations I have dealt with in the past have all been for the actual taking of plants, so I have no precedence regarding 'only' habitat. Certainly in the situations I have dealt with, they have not raised the issue of habitat or critical habitat when liaising, which implies that this has not been a significant issue with them.

I would imagine, that they would take a lead from us, but cannot be 100%.

Ultimately, it is the proponent's responsibility to refer to DEH or not. If we are concerned over a project, we can advise the DEH, but I would suggest that in this case if they are missing the known site by 20m that we would not do so.

I agree that they should apply for a permit to cover themselves (including if it is subsequently referred to the DEH). This will give us the opportunity to review how they are proposing to do the work, and set some guidelines or conditions.

---

Dr Ken Atkins  
Manager, Species and Communities Branch  
Department of Environment and Conservation  
Locked Bag 104  
BENTLEY DELIVERY CENTRE WA 6983

Phone (08) 93340425  
Fax (08) 93340278

-----Original Message-----

**From:** Barrett, Sarah  
**Sent:** Wednesday, 9 August 2006 4:35 PM  
**To:** Atkins, Ken  
**Cc:** Anderson, Lawrie  
**Subject:** caladenia bryceana permit to take

Ken

Main Roads are planning to widen the Chester Pass Rd in the vicinity of a *C. bryceana* population at the Bluff Knoll turnoff. While it is unlikely that any 'above ground plants' would be taken it certainly comes under 'Critical Habitat' and clearing will be within 20 m probably of sub-populations recorded in the past.

I have advised Main Roads that they will still need a permit to take, their environmental officer has now queried whether this need to go to DEH under EPBC Act as its listed Federally

Can you advise?

Thanks  
Sarah

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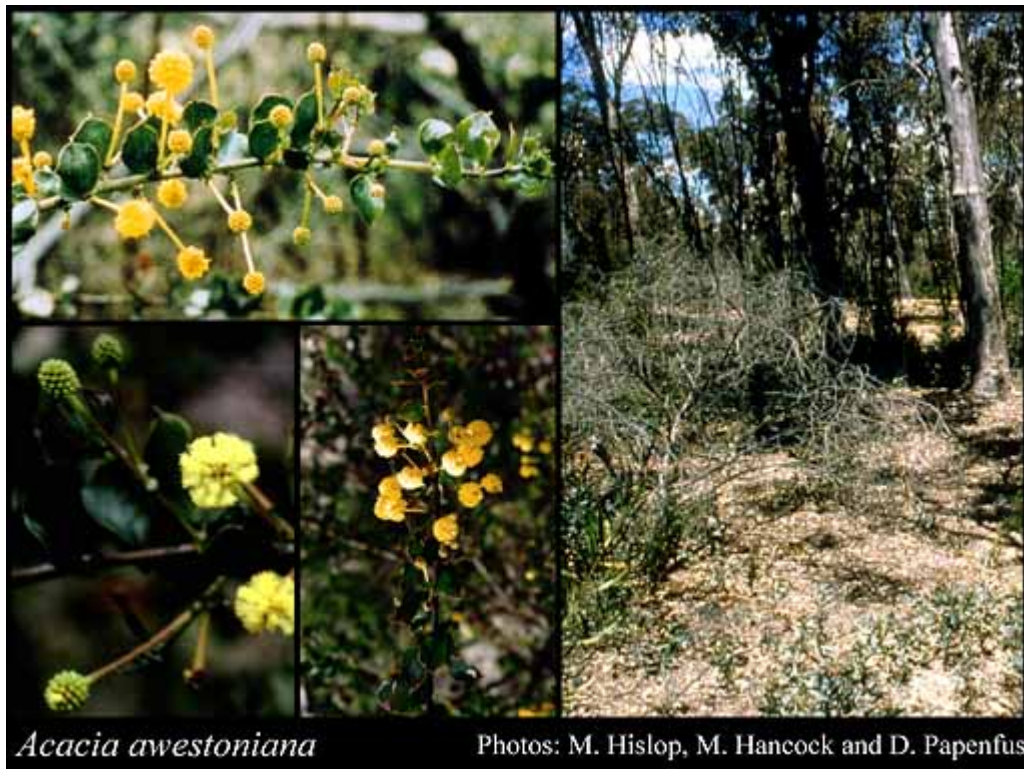






Photographs courtesy of CALM's Florabase application.





*Acacia awestoniana*

Photos: M. Hislop, M. Hancock and D. Papenfus

Photographs courtesy of CALM's Florabase application.

## Appendix K

### Department of Environment and Heritage Database Search

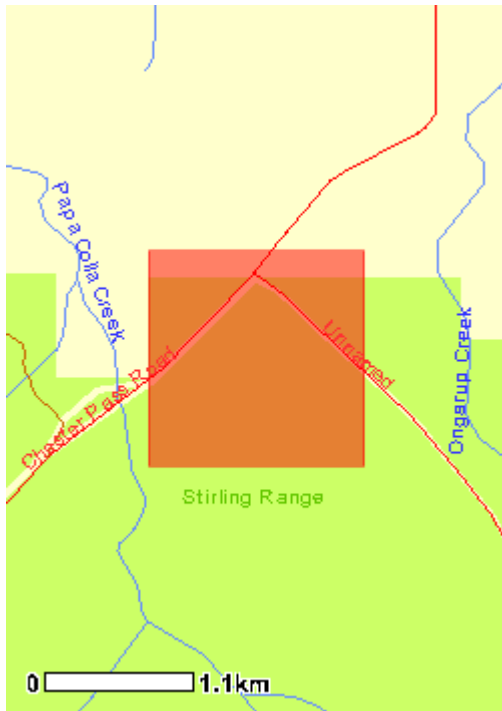
#### 16. EPBC ACT PROTECTED MATTERS REPORT

13 June 2006 18:46

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Information on the coverage of this report and qualifications on data supporting this report are contained in the [caveat](#) at the end of the report.

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

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



**Search Type:** Area

**Buffer:** 1 km

**Coordinates:** -34.31666,118.1833, -34.31666,118.2, -34.33333,118.2, -34.33333,118.1833



**Report Contents:** [Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgments](#)



## 16.1 Summary

### 16.2 Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://www.deh.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

<b>World Heritage Properties:</b>	None
<b>National Heritage Places:</b>	None
<b>Wetlands of International Significance: (Ramsar Sites)</b>	None
<b>Commonwealth Marine Areas:</b>	None
<b>Threatened Ecological Communities:</b>	None
<b><u>Threatened Species:</u></b>	14
<b><u>Migratory Species:</u></b>	2

### 16.3 Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at <http://www.deh.gov.au/heritage/index.html>.

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

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.deh.gov.au/epbc/permits/index.html>.

<b>Commonwealth Lands:</b>	None
<b>Commonwealth Heritage Places:</b>	None
<b><u>Places on the RNE:</u></b>	1
<b><u>Listed Marine Species:</u></b>	5

<b>Whales and Other Cetaceans:</b>	None
<b>Critical Habitats:</b>	None
<b>Commonwealth Reserves:</b>	None

#### 16.4 Extra Information

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

<b><u>State and Territory Reserves:</u></b>	1
<b>Other Commonwealth Reserves:</b>	None
<b>Regional Forest Agreements:</b>	None

#### 16.5 Details

#### 16.6 Matters of National Environmental Significance

Threatened Species [ <a href="#">Dataset Information</a> ]	Status	Type of Presence
<b>Birds</b>		
<a href="#"><u><i>Calyptorhynchus latirostris</i></u></a> * Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo	Endangered	Species or species habitat likely to occur within area
<a href="#"><u><i>Leipoa ocellata</i></u></a> * Mallee Fowl	Vulnerable	Species or species habitat likely to occur within area
<a href="#"><u><i>Psophodes nigrogularis oregon</i></u></a> * Western Whipbird (western mallee)	Vulnerable	Species or species habitat likely to occur within area
<b>Mammals</b>		
<a href="#"><u><i>Dasyurus geoffroii</i></u></a> * Chuditch, Western Quoll	Vulnerable	Species or species habitat likely to occur within area
<a href="#"><u><i>Myrmecobius fasciatus</i></u></a> * Numbat	Vulnerable	Species or species habitat likely to occur within area
<a href="#"><u><i>Setonix brachyurus</i></u></a> * Quokka	Vulnerable	Species or species habitat may occur within area
<b>Plants</b>		
<a href="#"><u><i>Acacia awestoniana</i></u></a> * Stirling Range Wattle	Vulnerable	Species or species habitat likely to occur within area
<a href="#"><u><i>Adenanthos pungens subsp. pungens</i></u></a> * Dwarf Spider-orchid	Vulnerable	Species or species habitat likely to occur within area
<a href="#"><u><i>Caladenia bryceana subsp. bryceana</i></u></a> * Dwarf Spider-orchid	Endangered	Species or species habitat likely to occur within area
<a href="#"><u><i>Caladenia sp. Jarrah forest (S.D. Hopper 3990)</i></u></a> * Dwarf Spider-orchid	Vulnerable	Species or species habitat likely to occur within area
<a href="#"><u><i>Conostylis misera</i></u></a> * Dwarf Spider-orchid	Endangered	Species or species habitat likely to occur within area

Grass Conostylis		to occur within area
<a href="#"><u><i>Sphenotoma drummondii</i></u></a> *	Endangered	Species or species habitat likely to occur within area
<a href="#"><u><i>Thelymitra psammophila</i></u></a> *	Vulnerable	Species or species habitat likely to occur within area
Sandplain Sun-orchid		
<a href="#"><u><i>Verticordia carinata</i></u></a> *	Vulnerable	Species or species habitat likely to occur within area
Stirling Range Featherflower		

Migratory Species [ [Dataset Information](#) ]      Status      Type of Presence

### Migratory Terrestrial Species

#### Birds

<a href="#"><u><i>Haliaeetus leucogaster</i></u></a>	Migratory	Species or species habitat likely to occur within area
White-bellied Sea-Eagle		
<a href="#"><u><i>Leipoa ocellata</i></u></a>	Migratory	Species or species habitat likely to occur within area
Mallee Fowl		

## 16.7 Other Matters Protected by the EPBC Act

Listed Marine Species [ [Dataset Information](#) ]      Status      Type of Presence

#### Birds

<a href="#"><u><i>Apus pacificus</i></u></a>	Listed - overfly marine area	Species or species habitat may occur within area
Fork-tailed Swift		
<a href="#"><u><i>Ardea alba</i></u></a>	Listed - overfly marine area	Species or species habitat may occur within area
Great Egret, White Egret		
<a href="#"><u><i>Ardea ibis</i></u></a>	Listed - overfly marine area	Species or species habitat may occur within area
Cattle Egret		
<a href="#"><u><i>Haliaeetus leucogaster</i></u></a>	Listed	Species or species habitat likely to occur within area
White-bellied Sea-Eagle		
<a href="#"><u><i>Merops ornatus</i></u></a>	Listed - overfly marine area	Species or species habitat may occur within area
Rainbow Bee-eater		

Places on the RNE [ [Dataset Information](#) ]  
Note that not all Indigenous sites may be listed.

#### Natural

[Stirling Range National Park WA](#)

## 16.8 Extra Information

State and Territory Reserves [ [Dataset Information](#) ]

Stirling Range National Park, WA

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## 16.9 Caveat

The information presented in this report has been provided by a range of data sources as [acknowledged](#) at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under "type of presence". For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the [migratory](#) and [marine](#) provisions of the Act have been mapped.

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as [extinct or considered as vagrants](#)
- some species and ecological communities that have only recently been listed
- [some terrestrial species](#) that overfly the Commonwealth marine area
- migratory species that are very [widespread, vagrant, or only occur in small numbers](#).

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites;
- seals which have only been mapped for breeding sites near the Australian continent.

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

### 16.10 Acknowledgments

This database has been compiled from a range of data sources. Environment Australia acknowledges the following custodians who have contributed valuable data and advice:

- [New South Wales National Parks and Wildlife Service](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Water and Environment, Tasmania](#)
- [Department of Environment and Heritage, South Australia Planning SA](#)
- [Parks and Wildlife Commission of the Northern Territory](#)
- [Environmental Protection Agency, Queensland](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Atherton and Canberra](#)
- [University of New England](#)
- Other groups and individuals

[ANUCLIM Version 1.8, Centre for Resource and Environmental Studies, Australian National University](#) was used extensively for the production of draft maps of species distribution. Environment Australia is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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