# ENVIRONMENTAL IMPACT ASSESSMENT
# AND
# ENVIRONMENTAL MANAGEMENT PLAN

## Bussell Highway (H043)
## *(SLK 67.50-70.76)*
## *Carbunup Reserve to Chambers Road*

### Realign Existing Highway (Project B)

## Contents

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## 1. SUMMARY

Main Roads WA (MRWA) initially undertook Preliminary Environmental Impact Assessment (PEIA) investigations in March 2010 for two projects on Bussell Highway between Carbunup and Roy Road (SLK 67.50-72.6).

Project A is the section between Chambers Road and Roy Road (SLK 70.76-72.60) and is programmed for construction during 2011/12. This project is predominantly widening along the existing alignment but also includes a substantial cutting near the Yelverton Road intersection.

Project B extends from the southern boundary of the Carbunup reserve to Chambers Rd (SLK 67.50 - 71.44) and is planned for construction during 2012/13. This section involves realignment of the highway to eliminate a number of substandard curves.

The PEIA considered that neither project would impact on environmental factors significantly enough to require referral under section 38 of the *Environmental Protection Act 1986* (EP Act). Neither project would significantly impact upon matters of National Environmental Significance so do not warrant referral to the Federal Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC).

The estimated clearing of native vegetation for both projects (1.8ha) was assessed against the 10 Clearing Principles as identified in Schedule 5 of the EP Act. It was identified that the clearing may be at variance with Principles (a), (b), (c) and (f). Submissions were invited from relevant stakeholders (Appendix D).

The Department of Environment and Conservation's (DEC) Native Vegetation Conservation Branch submission indicated that the clearing (for both projects) was at variance to Principle (f) and may be at variance to Principles (a), (b), (c), (d), (e), (g) and (i).

The Commissioner of Soil and Land Conservation's response considered that the project is unlikely to result in land degradation, provided adequate provision was made for the management of runoff from the road.

The Department of Water (DoW) indicated that any proposed interference with the bed and/or banks of any waterway outside of the current Road Reserve would require a Permit to Disturb Beds or Banks and that the proposed works should be undertaken consistent with MRWA's *Environmental Guideline – Water Protection* (2008).

Due to the need to deliver the works associated with Project A during the 2011/12 construction season (December 2011 – April 2012), a separate Environmental Impact Assessment (EIA) was produced for Project B (this EIA).

This EIA for Project B draws on additional specialist field studies and has determined that the project is at variance to Principles (a), (d), (e) and may be at variance to

Principle (b). This is based on the proposed clearing of vegetation classified as a Threatened Ecological Community (TEC) and the relocation of Priority Flora.

In accordance with the conditions of Part V, Clause 16 of the Purpose Permit CPS 818/6, an offset proposal is required and has been developed concurrently for Project B.

A dieback survey has been undertaken and determined that dieback infection is present in all areas of remnant vegetation and that no areas are protectable (NPC Consulting 2011). In regards to dieback management, the following was provided, "due to all assessed sections of the Bussell Highway being unprotectable there are no requirements for hygiene management for the highway upgrade project" (NPC Consulting 2011).

An archaeological survey was undertaken and concluded that no Aboriginal heritage sites have been reported or recorded in the vicinity of Project B, "It is the opinion of SJC Heritage Consultants Pty Ltd that there is a low probability of encountering archaeological materials" (SJC Heritage Consultants 2011).

Following completion of this EIA, it has been determined that Project B will not have a significant environmental impact to an extent that would warrant referral to the EPA. Furthermore, the project will not significantly impact upon matters of National Environmental Significance so does not warrant referral to DSEWPaC.

## 2. PROJECT DESCRIPTION

MRWA South West Region proposes to widen and realign Bussell Highway between SLK 67.50 and 70.76 in the City of Busselton (refer to Appendix A, Figure 1 and Figure 2). The objective of the project is to provide additional seal width and a more forgiving roadside environment with increased clear zones and flatter batter slopes to improve safety for road users. The project is in the City of Busselton and is within the gazetted City of Busselton Town Planning Scheme No. 20.

## 3. BACKGROUND

The project is part of the overall Vasse to Margaret River project which aims to widen Bussell Highway to a 10 metre wide seal with a number of passing lanes and improvements to intersections.

An Aboriginal Heritage Survey (Goode, Greenfeld & Webb 2002) and a Biological Survey (Biota 2001) have previously been undertaken for the extent of the overall project (SLK 60.20 to 96.90).

PEIA investigations were originally undertaken for both stages of this project (Project A: SLK 70.76 – 72.60 and Project B SLK 67.50 - 70.76). The clearing was assessed against the 10 Clearing Principles of Schedule 5 of the EP Act. It was identified that the clearing may be at variance with Principles (a), (b), (c) and (f).

Submissions were invited from relevant stakeholders. These are described below:

- DEC's Native Vegetation Conservation Branch responded indicating that the clearing was at variance to Principle (f) and may be at variance to Principles (a), (b), (c), (d), (e), (g) and (i).
- The Commissioner of Land and Soil Conservation's response considered that land degradation would be unlikely to occur as a result of the project being implemented, provided adequate provision was made for the management of runoff from the road.

- The DoW indicated that any proposed interference with the bed and/or banks of any waterway outside of the current Road Reserve would require a Permit to Disturb Beds or Banks and that the proposed works should be undertaken consistent with MRWA's *Environmental Guideline – Water Protection* (2008) - Section 5.

In accordance with MRWA's Environmental Assessment and Approval process, this EIA is being compiled to assess Project B against the 10 Clearing Principles again to determine with the assistance of additional field studies, the extent of variance proposed. This information will then be used to facilitate the development of an offset proposal in accordance with the conditions of Part V, Clause 16 of the Purpose Permit CPS 818/6.

## 4. CONSULTATION AND FIELD STUDIES

Consultation and enquiries have been undertaken with a range of agencies (as listed in the PEIA) including DEC (Andrew Webb, Regional Botanist, Bunbury) who has attended site inspections with MRWA Project Manager (Bruce Walker) and Environment Officer (Peter Swanson) on 28 July and 6 October 2011. Based on these discussions and the findings of the PEIA, MRWA engaged specialised consultants to examine a range of specific environmental aspects that may be potentially impacted.

The following reports have been compiled:

- *A Rare Flora and Vegetation Survey of Seven Areas of Remnant Vegetation South of Carbunup* - Ekologica P/L for **ngh**environmental (2011);
- *Preliminary Western Ringtail Possum (WRP) assessment (site 2) and Hollow Bearing Tree (HBT) location (site 6) for proposed clearing along the Bussell Highway, Carbunup* – **ngh**environmental (2011);
- *ADDENDUM to WRP Site 2 survey results: Western Ringtail Possum (WRP) fauna surveys within SLK 67.8 (RHS) (Area 2) and a section of Carbunup Reserve off Bussell Highway, Carbunup* – **ngh**environmental (2012);
- *Phytophthora Dieback Interpretation Report Bussell Highway Upgrade SLK 67.5 to SLK 72.6* - NPC Consulting (2011); and
- *Indigenous Heritage Desktop Review Bussell Highway Upgrade SLK 67.5 to SLK 72.6 (Carbunup to Island Brook)* – SJC Heritage Consultants P/L (2011).

From the findings of these surveys and additional consultation with the DEC, this EIA has reassessed the clearing for Project B against the 10 Clearing Principles, as specified within Schedule 5 of the EP Act. As a result, Project B is considered at variance to Principles (a), (d), (e) and may be at variance to Principle (b).

Note: references to the (remnant) areas of vegetation in this EIA for Project B are based upon the system used in the *'A Rare Flora and Vegetation Survey of Seven Areas of Remnant Vegetation South of Carbunup'* (Ekologica P/L 2011).

## 5. DETAILS OF PROJECT

The road works associated with Project B involve road realignment from SLK 67.50 to 70.76 (refer to Appendix A, Figures 2 and 3), specifically involving:

- Realign and widen the road to provide a 12 metre wide seal on 14 metre wide formation eliminating a number of substandard curves;
- Relocate the Lennox Road intersection (at SLK 69.57) approximately 50 metres north to provide a perpendicular approach to Bussell Hwy which will improve the safety for entering traffic;
- Construct one northbound and one southbound overtaking lane; and
- Widen the eastern side south of SLK 70.44 (Chambers Road) to SLK 70.76

The design for the project has taken into consideration the replacement and/or extension of existing culvert drains so as to maintain current drainage patterns. No dewatering is expected to be required.

The estimated area of native vegetation to be cleared for Project B is approximately 0.87ha (refer to Appendix A, Figure 2).

## 6. EXISTING ENVIRONMENT

The labelling of the existing patches of remnant vegetation in the project area is provided within the *Rare Flora and Vegetation Survey of Seven Areas of Remnant Vegetation South of Carbunup* (Ekologica 2011). The project will not impact Remnant 4 and only minor impacts are proposed for Remnant 1, 2, 3 and 5 (clearing of 0.87ha of vegetation).

The condition of the vegetation varies from 'Completely Degraded' to 'Very Good' (Ekologica 2011). Remnant 3 is considered to have the highest conservation value being classed as a Threatened Ecological Community (TEC) "Southern *Corymbia calophylla* woodlands on heavy soils (SCP1b)" (Ekologica 2011). Remnant 5 is also classified as this TEC but is infested with invasive exotic species such as plantation pine trees (refer to Appendix A, Figure 3). The majority of the surrounding land is open pasture with some vineyards in the southern section near Chambers Road, as is evident from aerial photos (Appendix E).

## 7. RESIDUAL IMPACTS OF CLEARING

The most significant impact of Project B is related to the proposed clearing (0.54ha) of vegetation in Remnants 1, 3 and 5 which are considered TEC "Southern *Corymbia calophylla* woodlands on heavy soils (SCP1b)" (Ekologica 2011).

A new population (four plants) of the Declared Rare Flora (DRF) taxon *Daviesia elongata subsp. elongata* was also found in Remnant 3. Based on preliminary designs, it was determined that the 'critical habitat' around the population would be impinged upon (Ekologica 2011). However, after having the construction footprint pegged and consulting with DEC, the DRF species will not be impacted by the project as there is approximately 20 metres of pastoral grassland that will be revegetated as a buffer and more than 30 metres of existing native vegetation between the population and the construction footprint that will not be disturbed (refer to Appendix A, Figure 3).

Populations of the Priority 3 species *Loxocarya magna* were found in Remnant 4 and Remnant 5. Remnant 4 is not proposed to be cleared and therefore no impacts to *L. magna* individuals are proposed within Remnant 4. It is anticipated that some individuals of *L. magna* will require translocation in Remnant 5 as a result of the project. The DEC has advised that this species is tolerant to relocation with a high survival rate (pers.comm. Andrew Webb, DEC 2011).

## 8. ASSESSMENT AGAINST THE CLEARING PRINCIPLES

### MRWA Vegetation Clearing Assessment Report

This report has been prepared to assist MRWA in addressing condition 7 "Assessment of Clearing Impacts" under Clearing Permit CPS 818/6.

**AREA UNDER ASSESSMENT DETAILS**

### Proponent details

| | | |
|---|---|---|
| **Proponent's name:** | Main Roads WA | |
| **Contacts:** | Name: | Peter Swanson |
| | Phone: | 9724 5692 |

| | |
|---|---|
| Fax: | 9724 5656 |
| Email: | peter.swanson@mainroads.wa.gov.au |

## Property details

| | |
|---|---|
| **Property:** | Road reserve and acquired private property along Bussell Highway (SLK 67.50 and 70.76) south of Carbunup Reserve to Chambers Road in Carbunup. |
| **Colloquial name:** | N/A |

## Area under assessment

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: | Site Plan Attached |
|---|---|---|---|---|
| 0.87ha | N/A | Manual and mechanically | Road widening and realignment for the safety of motorists | Yes – Refer to Appendix A |

## Avoidance/Minimise clearing

**How have the clearing impacts been minimised?**

Clearing of vegetation is to the extent of providing an appropriate area for construction and safe clear zones to acceptable standards.

Design adjustments have been implemented to avoid and reduce clearing of vegetation within Remnant 3 which supports a TEC and DRF.

A stand of large trees on the western side of the highway extending approximately 150m south from Chambers Road will be preserved and a wire rope safety barrier installed to protect road users in addition to the remnant vegetation.

# BACKGROUND

## Existing environment and information

The existing patches of remnant vegetation in the project area are provided within the *Rare Flora and Vegetation Survey of Seven Areas of Remnant Vegetation South of Carbunup* (Ekologica 2011). The project will not impact Remnant 4. Clearing is proposed for Remnant 1, 2, 3 and 6 (0.87ha cleared).

The condition of the remnants varies from 'Completely Degraded' to 'Very Good' (Ekologica 2011). Remnant 3 is considered to have the highest conservation value being classed as a TEC "Southern *Corymbia calophylla* woodlands on heavy soils (SCP1b)" and also containing DRF (Ekologica 2011). Remnant 5 is also classified as this TEC but is infested with invasive exotic species such as plantation pine trees. The majority of the surrounding land is open pasture with some vineyards in the southern section near Chambers Road, as is evident from aerial photos (Appendix E).

| | | | | | |
|---|---|---|---|---|---|
| **Site Visit Undertaken** | X Yes | ☐ No | **Fauna / Flora Survey Undertaken** | X Yes | ☐ No |
| **Site Report Attached** | X Yes | ☐ No | **Fauna / Flora Survey Report Attached** | X Yes | ☐ No |
| **Site Photos Attached** | X Yes | ☐ No | **Other Relevant References Attached** | X Yes | ☐ No |

| Vegetation Complex | Clearing Description | Vegetation Condition | Comment |
|---|---|---|---|
| Based on Havel and Mattiske (2002) mapping, the project area contains the following vegetation complexes (Ekologica 2011):<br><br><u>Remnants 1, 2, 5 and 6</u><br>Abba (Af) complex: "Open forest of *Corymbia calophylla-Agonis flexuosa-Acacia saligna* on lower slopes in the humid zone<br><br><u>Remnant 3</u><br>Abba (Af) complex: as above.<br>Abba (Aw): "Mosaic of tall shrubland of *Melaleuca viminea* and woodland of *Eucalyptus rudis, Melaleuca rhaphiophylla* with occasional *Corymbia calophylla* on broad depressions in the humid zone."<br><br>The project area is also situated within the Beard Vegetation Association 1136 (medium woodland; marri with some jarrah, wandoo, river gum and casuarina) (Beard 1981). | Mechanical / hand | The majority of the vegetation to be cleared has been classified as 'Degraded' to 'Good'. The condition of the TEC has been classified as 'Very Good' (Ekologica 2011). | |

## 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 at variance to this Principle**

The project is likely to involve clearing of approximately 0.87ha of remnant vegetation. DEC Threatened (Declared Rare) Flora database and the EPBC Act protected matters search for threatened flora species indicated that there are 10 Priority Flora species that may potentially occur within the project area. No Priority Ecological Communities (PECs) were listed as occurring within the project area.

In order to identify the presence of the abovementioned Priority Flora and vegetation communities, a *Rare Flora and Vegetation Survey of Seven Areas of Remnant Vegetation South of Carbunup* (Ekologica 2011) was undertaken within the project area. The DEC Priority 3 species *Loxocarya magna*, which is not listed under the EPBC Act, was found in Remnant 4 and Remnant 5. The survey identified no PEC's within the project area.

A *Preliminary Western Ringtail Possum (site 2) and Hollow Bearing Tree (site 6) Assessmen*t (**ngh**environmental 2011) was undertaken for Remnants 2 and 6. Given that Project B only includes Remnant 2, the results associated with Remnant 6 are not discussed further. Although the vegetation at Remnant 2 is completely degraded, WRP were identified within the Peppermint stands.

While clearing of remnant vegetation is proposed, the degree of impact is only expected to be low and primarily relates to the loss of narrow linear strips of roadside vegetation. It has also been established that the project area is infested with dieback and that no areas are protectable (NPC Consulting 2011), denoting that the biological diversity of the project area will not be further compromised by the spread of dieback.

However, given the presence of a Priority 3 population and threatened fauna (WRP), the project is likely to be at variance to this Principle.

**Methodology**

NPC Consulting, 2011: *Phytophthora Dieback Interpretation Report Bussell Highway Upgrade SLK 67.5 – SLK 72.6.*

Ekologica, 2011: *A Rare Flora and Vegetation Survey of Seven Areas of remnant Vegetation South of Carbunup*, prepared for **ngh**environmental.

**ngh**environmental, 2011: A *Preliminary Western Ringtail Possum (site 2) and Hollow Bearing Tree (site 6) Assessmen*t.

### *(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 MAY be at variance to this Principle**

The fauna assessment (**ngh**environmental 2011) of Remnant 2 identified WRP within the proposed clearing area. Although many of the Peppermints (*Agonis flexuosa*) are exhibiting some degree of crown dieback, the site does contain habitat utilised and therefore necessary for WRP and could be considered at variance to this principle. Only a small section of Remnant 2 is proposed to be cleared (0.14ha of the total 0.67ha). Given the lack of understorey and completely degraded nature of vegetation at the site, it is unlikely that it will provide significant habitat for any other species.

Discussions between Peter Swanson (MRWA) and Kim Williams (Manager, Bunbury, DEC) have identified that the 1-3 possums observed within Remnant 2 (**ngh**environmental 2011, 2012) are likely to require translocation to the adjacent Carbunup Reserve, prior to clearing. It is understood that the proposed clearing within Remnant 2 would further isolate the WRP population and result in inadequate habitat to enable their persistence. The adjacent Carbunup Reserve, which is considered to be of very high regional conservation value, provides vegetation in 'Good' to 'Excellent' condition (Elscot 2002). WRP surveys have also been undertaken (**ngh**environmental 2012) within a section of the Carbunup Reserve to confirm the sites capability to support the WRPs present at Remnant 2.

Potential black cockatoo habitat, at least two hollow bearing trees, was identified within Remnant 2. These trees are located outside of the proposed clearing footprint and therefore will not be impacted by the project (**ngh**environmental 2011). Site specific assessments for black cockatoo habitat have not been undertaken for this EIA and therefore this assessment relies on the advice provided by MRWA in relation to extent of impacts. While there are several large Marri trees greater than 500mm DBH (diameter at breast height) along the road verge and currently shown in the proposed clearing area south of Remnant 2 (Figure 2), this area (0.045ha) will not be impacted by the project (Project Manager Bruce Walker, MRWA, pers comm.).

The project is unlikely to clear vegetation associated with black cockatoo breeding habitat, due to the

lack of hollow bearing trees or trees over 500mm DBH (Bruce Walker pers comm.). On this basis, it is unlikely that the project will trigger any of the DSEWPaC's criteria for the three threatened black cockatoo species (DSEWPaC 2011) and therefore impacts to black cockatoos are not considered significant.

In relation to WRP, while the proposed clearing is not likely to be a significant impact at a species level, the small population of WRPs which Remnant 2 supports are likely to be displaced as a result of the proposed clearing. On this basis, the project may be at variance to Principle (b).

**Methodology**

Elscot, S., 2002: *Carbunup Reserve Management Plan*. Prepared for the Shire of Busselton.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC), 2011: *Environment Protection and Biodiversity Conservation Act 1999 draft referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo (endangered) Calyptorhynchus latirostris, Baudin's Cockatoo (vulnerable) Calyptorhynchus baudinii, Forest Red-tailed Black Cockatoo (vulnerable) Calyptorhynchus banksii naso*.

**ngh**environmental, 2011: A *Preliminary Western Ringtail Possum (site 2) and Hollow Bearing Tree (site 6) Assessmen*t.

**ngh**environmental, 2012: *WRP and Brushtail Possum surveys of a section of Carbunup Reserve*. Unpublished report to MRWA.

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

**Comments**

### Proposal NOT LIKELY be at variance to this Principle

Results from the DEC and WA Herbarium database search (Ekologica 2011) identified five DRF occurring locally.

The EPBC Act protected matters search tool revealed five Endangered species as having the potential to occur within the project area (DSEWPaC 2011).

The *'Rare Flora and Vegetation Survey of Seven Areas of remnant Vegetation South of Carbunup*' (Ekologica 2011) identified a new population (four plants) of the DRF taxon *Daviesia elongata* subsp. *elongata* within Remnant 3. This species is also listed as a threatened species with the status of "Vulnerable" under the EPBC Act.

Based on preliminary designs, it was determined that the 'critical habitat' surrounding the DRF population would be impinged upon (Ekologica 2011). However, after having the construction footprint pegged and consulting with the DEC, the DRF species will not be impacted by the project as there is approximately 20 metres of pastoral grassland that will be revegetated as a buffer and more than 30 metres of existing native vegetation that will not be disturbed between the population and the construction footprint (refer to Appendix A, Figure 3).

**Methodology**

Ekologica, 2011: *A Rare Flora and Vegetation Survey of Seven Areas of remnant Vegetation South of Carbunup*, prepared for **ngh**environmental.

Department of Sustainability, Environment, Water, Population and Communities. (DSEWPC) (2011). EPBC Act Protected Matters Report. Refer to Ekologica (2011).

## *(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 at variance to this Principle

Results from the DEC database search identified five TECs within a 5km radius of the project area (Ekologica 2011).

The EPBC Act protected matters search tool revealed no listings of TECs within the project area (DSEWPaC 2011).

The TEC "Southern Eucalyptus (*Corymbia calophylla*) woodlands on heavy soils (SCP 1b)" occurs within Remnant 3 and 5 (Ekologica 2011). Clearing of approximately 0.54ha of vegetation within these Remnants is required.

On this basis, the project is at variance to this Principle and suitable offsets will be required.

**Methodology**

Ekologica, 2011: *A Rare Flora and Vegetation Survey of Seven Areas of remnant Vegetation South of Carbunup*, prepared for **ngh**environmental.

## *(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 at variance to this Principle

The vegetation types for the project area are provided within Tables 1 and 2. This includes both Beard (1981) and Mattiske and Havel (2002) vegetation types with comparisons between conservation status and current extents at different scales, as carried out by Shepherd (2007 and 2009).

**Table 1: Vegetation Percent Remaining (Beard Mapping (1981), table from CAR Reserves Analysis (2009)).**

| **Pre-European Extent Remaining: Vegetation Association No.** 1136 Medium woodland; marri with some jarrah, wandoo river gum and Casuarina. | | |
|---|---|---|
| **Regional Context** | **Location** | **Pre-European Extent Remaining (%)** |
| State-wide | Jarrah Forest (JF) | 7.99 |
| Bioregional (IBRA Region) | Jarrah Forest (JF) | 68.45 |
| Bioregional (IBRA Sub-Region) | Southern Jarrah Forest (JF2) | 68.45 |
| LGA | City of Busselton | 7.75 |

**Table 2: Mattiske and Havel mapping (2002), table from Shepherd (2007)**

| RFA CODE | RFA NAME | PreEuropean Vegetation | Current Vegetation | % Vegetation Remaining | % Remaining of Current Vegetation in DEC Tenure |
|---|---|---|---|---|---|
| AF | Abba | 19,059 | 2,414 | 12.7% | 0% |
| AW | Abba | 90,948 | 4,396 | 4.8% | 0% |

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30% of that present pre-European (Commonwealth of Australia, 2001).

The vegetation types within the project area have less than 30% of their pre-European extents (excluding Beard Vegetation Association 1136 – IBRA Region and IBRA Sub-region) and therefore trigger variance to this Principle.

**Methodology**


Beard, J.S. 1981. Vegetation survey of Western Australia.

Ekologica, 2011: *A Rare Flora and Vegetation Survey of Seven Areas of remnant Vegetation South of Carbunup*, prepared for **ngh**environmental.

Commonwealth of Australia. 2001. Biodiversity Conservation Research: Australia's Priorities.

Mattiske Consulting and Havel. J.J. 2002. *Review of management options for poorly represented vegetation complexes*. Report to the Conservation Commission of Western Australia.

Shepherd (2007) *2. Mattiske_RFA vegetation extent- Use for Mattiske and Heddle stats.xls*, from DAFWA.

Shepherd (2009) *car_reserve_analysis2009.xls*, from Department of Agriculture and Food Western Australia (DAFWA).


## *(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

Following a review of the EPBC Act protected matters search tool (DSEWPaC, 2011) and the DEC's Geomorphic Wetland Dataset (DEC, 2004), no EPBC Act protected matters were identified however a Multiple Use Wetland (ufi 13201) does lie within the project area (Appendix B).

Despite this, the implementation and outcome of the project will have minimal to no impact on the Multiple Use Wetland, as confirmed by the DoW submission (Appendix C).

**Methodology**


Department of Water submission (Appendix C)

Department of Environment and Conservation (DEC), 2004. *Geomorphic Wetlands of the Swan Coastal Plain dataset.*

Department of Sustainability, Environment, Water, Population and Communities. (DSEWPC), 2011. *EPBC Act Protected Matters Repor*t. Refer to Ekologica (2011).

### *(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 project area encompasses the Swan Coastal (Abba) Plain landform. The majority of the project area is situated on the Jindong Flats soil landscape unit which are well drained flats with sandy gradational grey brown (Busselton) soils, some red brown sands and loams (Marybrook Soils). A portion of the project area lies within the Abba wet vales unit, which are "small arrow swampy depressions along drainage lines and alluvial soils" (Tille and Lantzke, 1990).

The DEC's Acid Sulfate Soil (ASS) maps were reviewed on the Shared Land Information Platform to determine the level of risk the project is exposed to (refer to Appendix B). The search revealed a 'medium to low risk of ASS occurring within 3 metres of natural soil surface' across the majority of the project area. Given that no dewatering or excavations below the natural groundwater table are proposed, risks associated with ASS are minimal.

The limited extent of the proposed clearing is unlikely to cause appreciable land degradation. Revegetation will be undertaken at the earliest possible occasion using innovative techniques involving the incorporation of clean mulched vegetation into the topsoil which will further stabilise the soil, increase water infiltration and provide an immediate seed bank. Mitigation of scouring in the proposed larger table drains will be undertaken by lining the drain with geo-fabric and rocks to reduce the flow of water and contain displaced silt.

The Commissioner of Soil and Land Conservation's response considered that land degradation would be unlikely to occur as a result of the project being implemented, provided adequate provision is made for the management of runoff from the road.

**Methodology**

Consultation with Main Roads' Project Manager

Commissioner of Soil and Land Conservation (Appendix C)

Minutes of Meeting with DEC (Andrew Webb) (Appendix D)

Tille, P. J. and Lantzke, N. C. 1990. *Land Resources of Busselton-Margaret River-Augusta. Busselton-Dunsborough Map*. Western Australian Department of Agriculture. Perth.

### *(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**

The Carbunup Reserve, which is an Environmentally Sensitive Area (ESA) and TEC with registered DRF and Priority Flora, lies immediately to the north of the project area. No impact is expected to occur outside of the project area and it is therefore considered unlikely that the reserve will be impacted. Prevention of weed dispersal will need to be managed in accordance with the EMP.

**Methodology**

Elscot, S., 2002: *Carbunup Reserve Management Plan*. Prepared for the Shire of Busselton.

### *(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**

No dewatering or drainage modifications are required and therefore the project will not impact groundwater level or quality. Furthermore, no clearing of riparian vegetation is proposed (Ekologica 2011).

There are a number of existing cross road culverts that collect road run-off and surface water from table drains and direct it westwards towards Island Brook. The design for the project has taken into consideration the necessary replacement and/or extension of existing culverts so as to maintain current drainage patterns. Impacts would be further mitigated by the management recommendations in the EMP (Appendix F).

**Methodology**

Ekologica, 2011: *A Rare Flora and Vegetation Survey of Seven Areas of remnant Vegetation South of Carbunup*, prepared for **ngh**environmental.

### *(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**

Apart from the soils within the Abba wet vales unit (which is only a very small component of the project area), the soils within the project area are free draining. Any proposed drainage modifications will be

designed to maintain the existing drainage as far as practicable. On this basis, the project is unlikely to exacerbate the incidence or intensity of flooding.

**Methodology** Tille, P. J. and Lantzke, N. C. 1990. *Land Resources of Busselton-Margaret River-Augusta. Busselton-Dunsborough Map*. Western Australian Department of Agriculture. Perth.

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

**Comments** Following completion of this EIA, it has been determined that the project will not have a significant environmental impact that would warrant referral to the EPA. Furthermore, the project will not significantly impact upon matters of National Environmental Significance so does not warrant referral to DSEWPaC.

**Methodology** As above.

## SUBMISSIONS

### If required have submissions been requested and addressed

| Submission Requested from | Request Sent (Date) | Submission Received (Date) | Issues Raised / Comments Made |
|---|---|---|---|

Refer to Appendix C

## ASSESSOR'S RECOMMENDATIONS

**Principles at variance to the proposal:**

Principles (a), (d) and (e) are at variance to Project B. The project may also be at variance to Principle (b).

**Recommendation:**

The proposed clearing for both stages of this project were considered as being at variance to the Clearing Principles, therefore submissions were invited from relevant stakeholders (Appendix C), as per Main Roads Clearing Permit CPS 818/6. An additional invitation for submission has been extended to DEC specifically for this particular project (Project B). An offset will be required and negotiations are currently underway with the DEC regarding a suitable offset.

## OFFICER PREPARING REPORT

**ngh**environmental
Senior Environment Officer
Phone: 9759 1985

Date: April 2012

## 9. REFERENCES


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Keighery, B.J., Keighery, G.J., Webb, A., Longman, V.M., and Griffin, E.A., Department of Environment and Conservation and EA Griffin & Associates, April, 2008: *A Floristic Survey of the Whicher Scarp*.

**ngh**environmental, 2011: *Western Ringtail Possum (WRP) assessment (site 2) and Hollow Bearing Tree (HBT) location (site 6) for proposed clearing along the Bussell Highway, Carbunup*

**ngh**environmental, 2012: *ADDENDUM to WRP Site 2 survey results: Western Ringtail Possum (WRP) fauna surveys within SLK 67.8 (RHS) (Area 2) and a section of Carbunup Reserve off Bussell Highway, Carbunup.*

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# APPENDIX A

# Figures

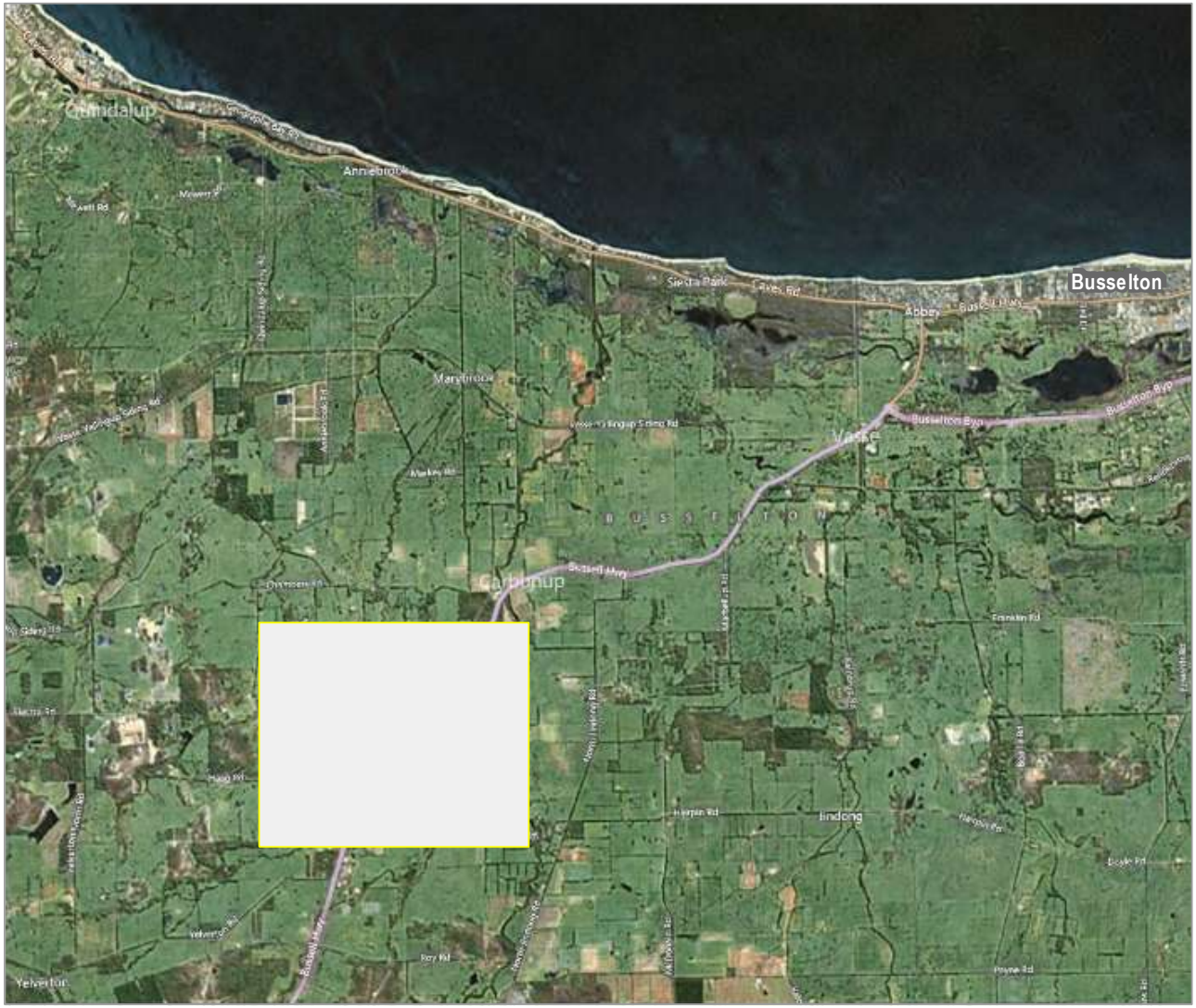



**Figure 1: Location of Project Area**

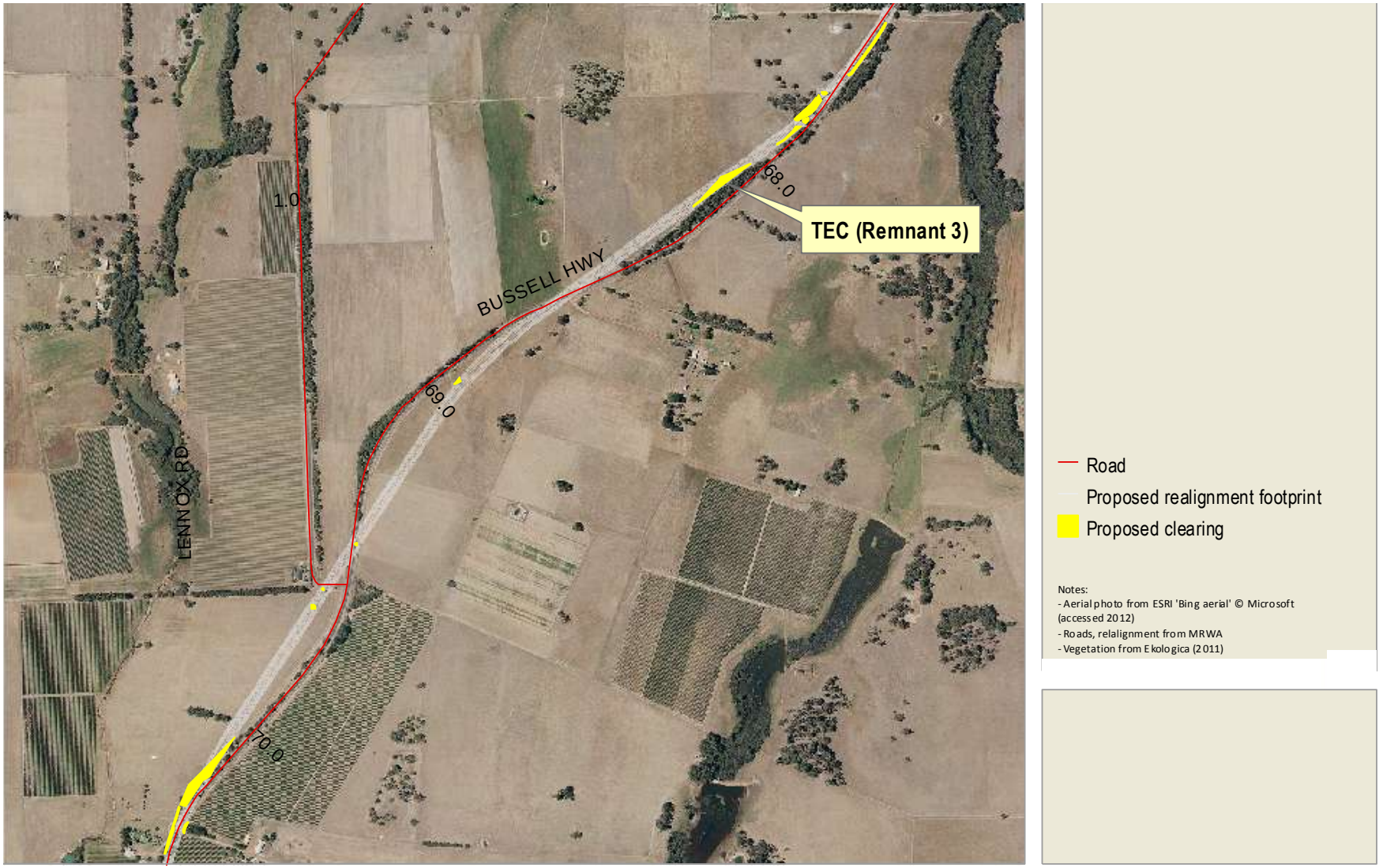



**Figure 2: Proposed Design and Clearing Areas.**

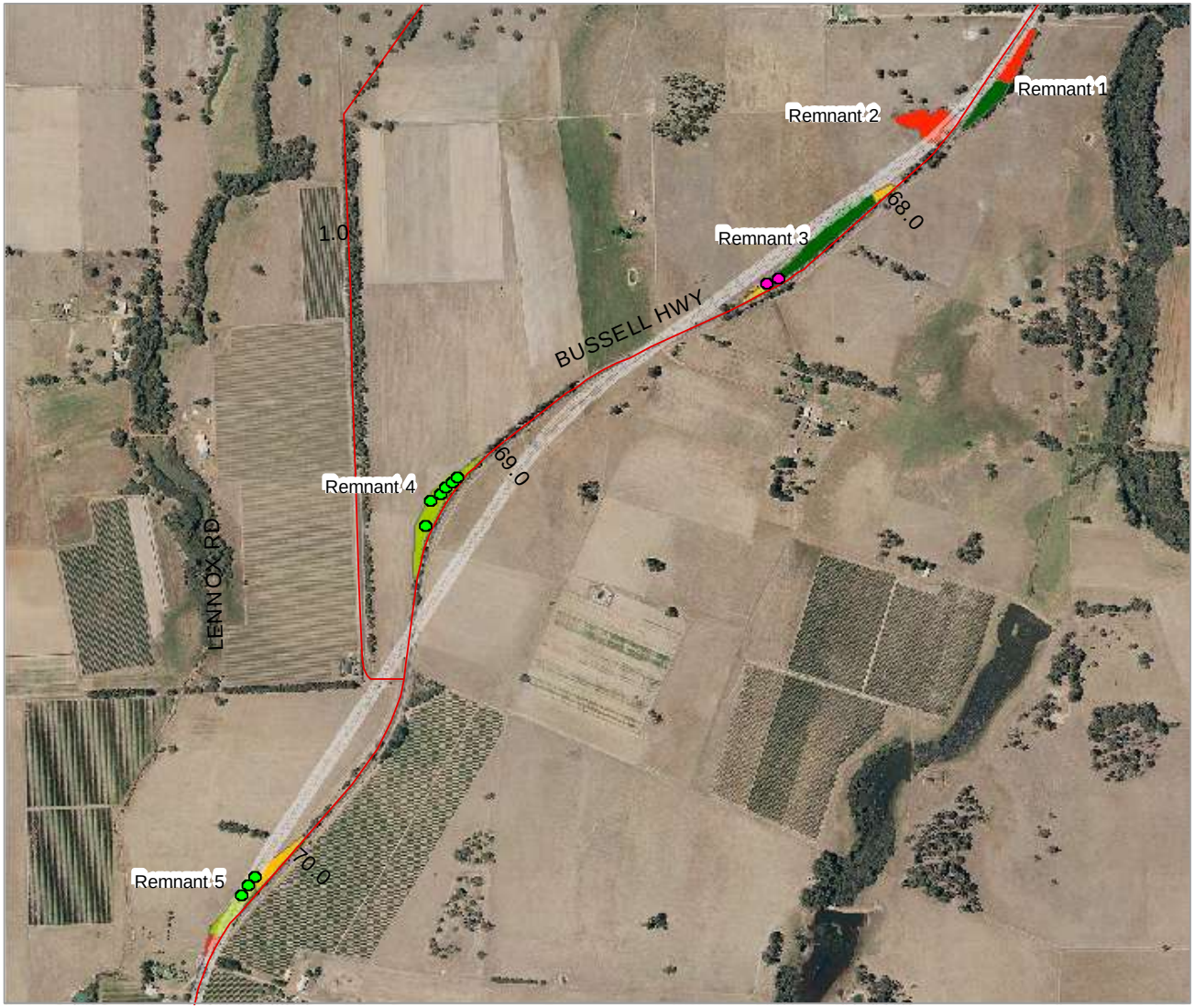
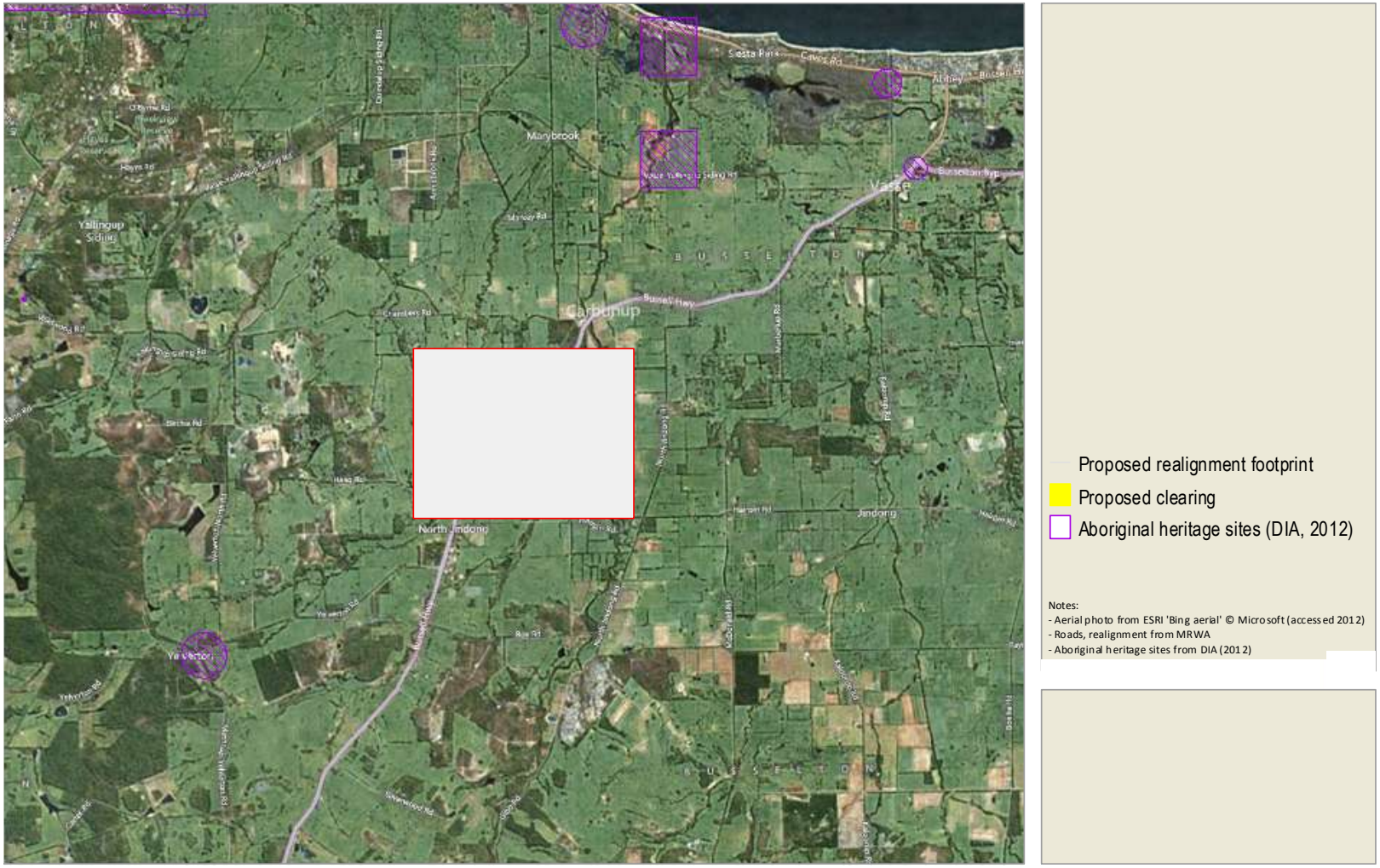


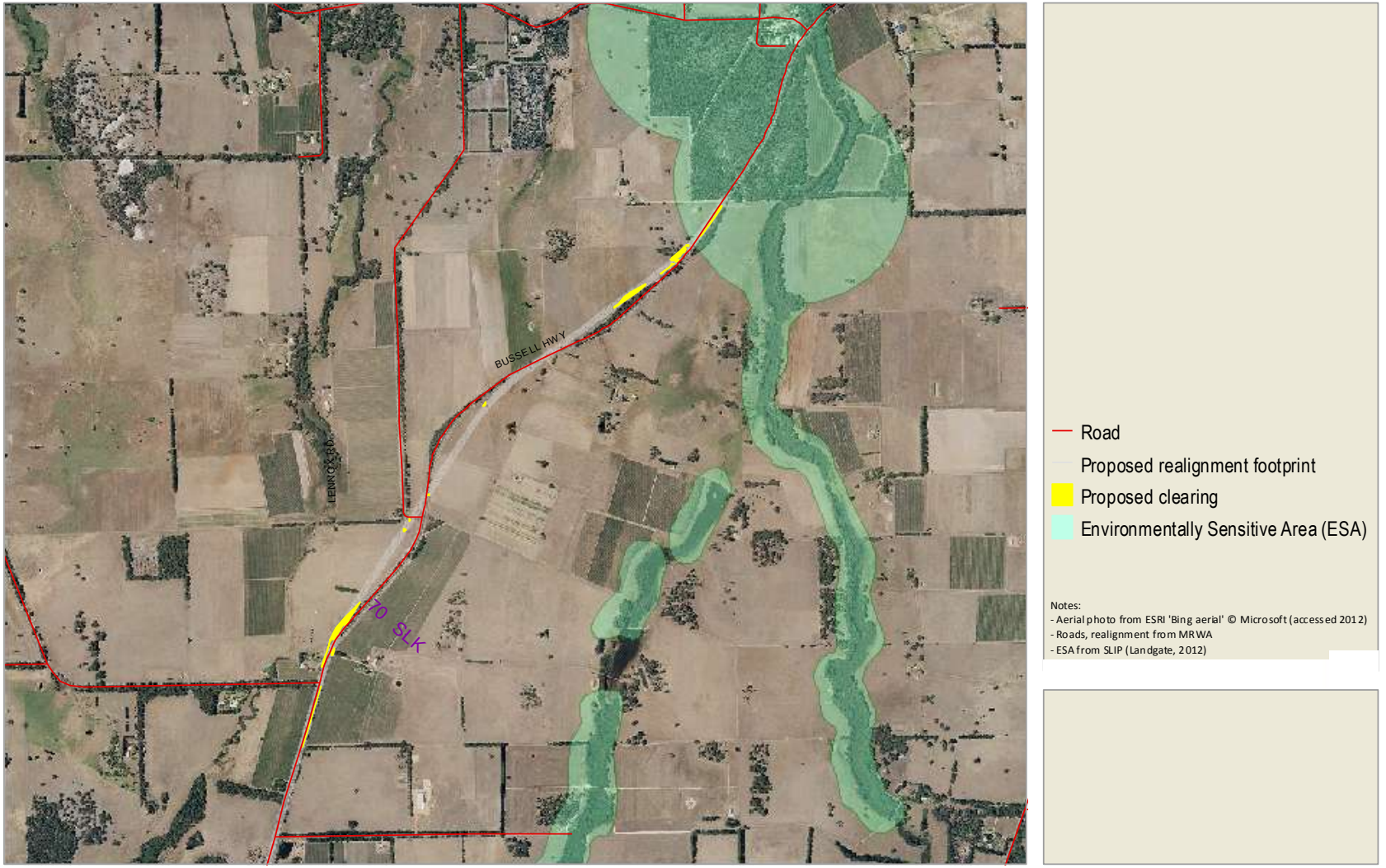

**Figure 3: Location of Declared Rare Flora and Vegetation Condition within Project Area.**

# APPENDIX B

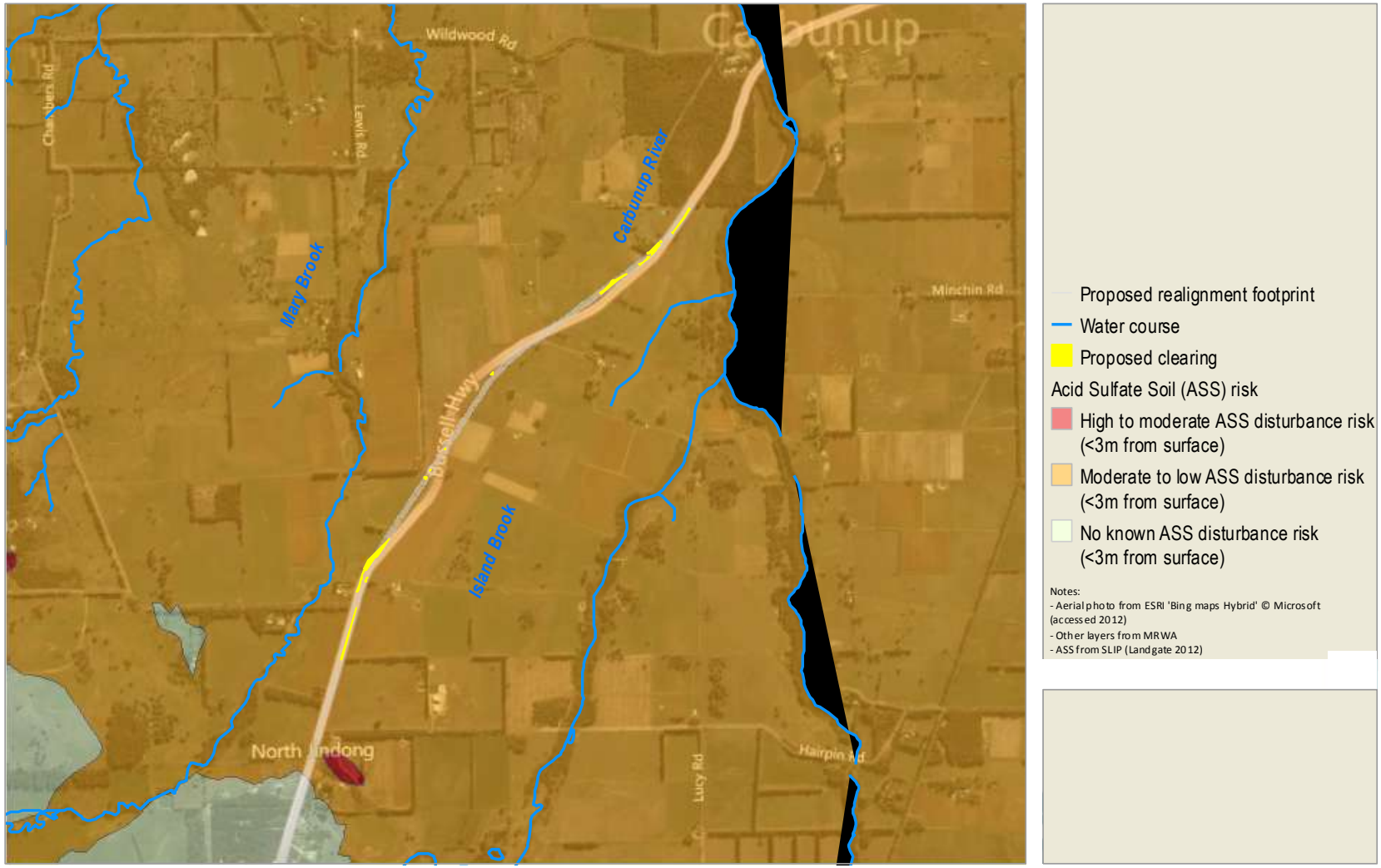
# Environmental Aspects



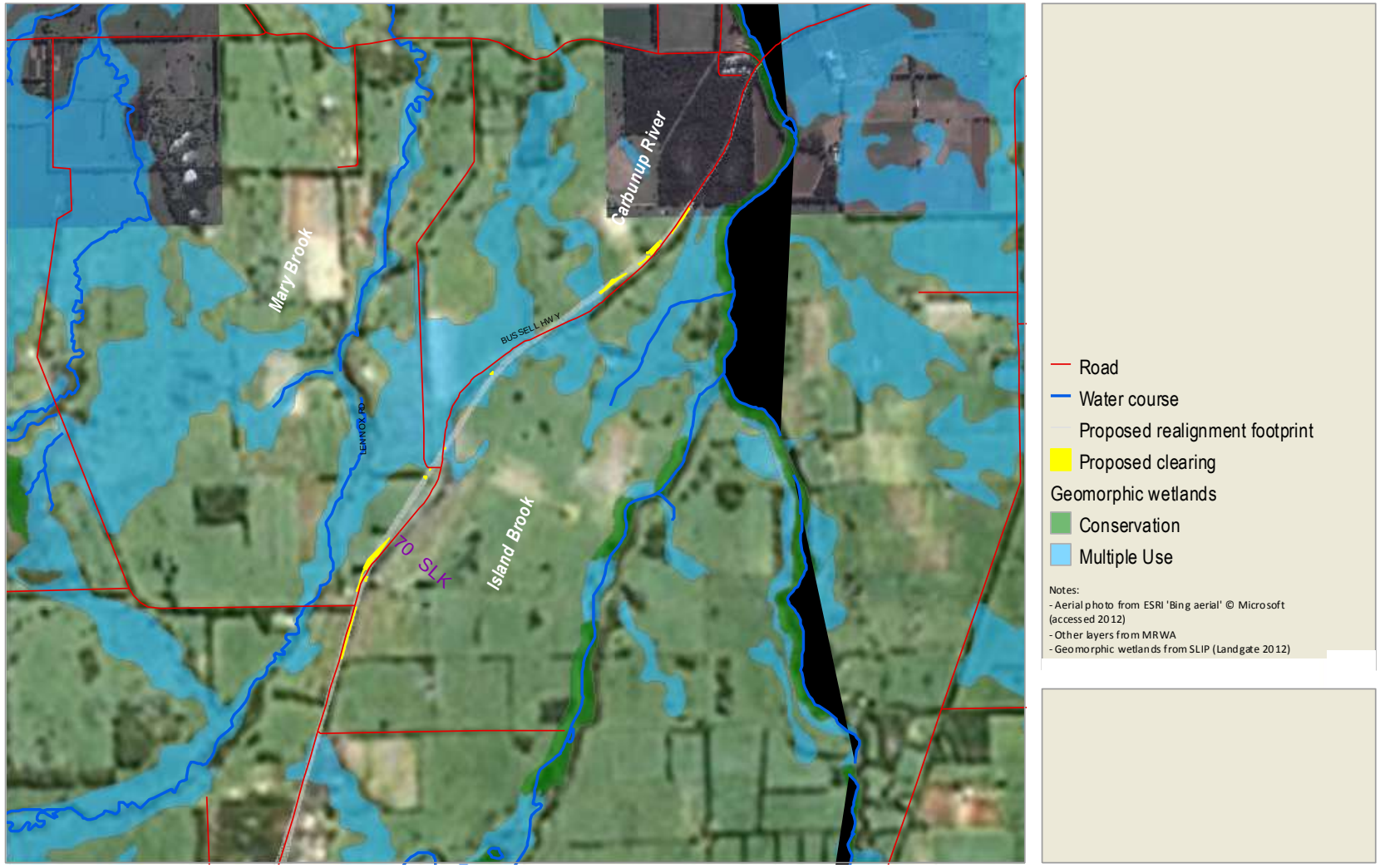

**Location of Aboriginal heritage sites within the vicinity of the project area.**




**Location of Environmentally Sensitive Areas (ESAs) within the vicinity of the project area.**




**Department of Environment and Conservation ASS risk mapping for the project area.**




**Department of Environment and Conservation Geomorphic Wetland mapping for the project area.**

# APPENDIX C

# Invitation to Stakeholders and Stakeholders' Submissions for both Projects (SLK 67.50-72.6)

Chief Executive Officer
Department of Environment and Conservation
Locked Bag 104
BENTLEY DELIVERY CENTRE WA 6983

31 March 2011

Dear Sir/Madam

**INVITATION FOR SUBMISSION - PROPOSED ROAD WORKS: BUSSELL HIGHWAY SOUTH OF CARBUNUP TO ISLAND BROOK (67.5-72.6)**

Main Roads South West Region (SWR) proposes to widen and realign Bussell Highway between SLK 67.5 and 72.6 in the Shire of Busselton. The project is part of the overall Vasse to Margaret River project which aims to widen Bussell Highway to a 10 metre wide seal with a number of passing lanes and improvements to intersections.

The clearing for the project has been assessed against the *Environmental Protection Act's* Clearing Principles and it is considered that the clearing may be at variance with one or more of the clearing principles. Therefore in accordance with Condition 8(a) of Main Roads' Clearing Permit CPS 818/5, Main Roads invites submissions from relevant stakeholders.

The objective of the project is to provide additional seal width and a more forgiving roadside environment with increased clear zones and flatter batter slopes to improve safety for road users.

The works are to be undertaken in stages:

Stage 1: widening works on the Island Brook Bridge (June – September 2011)

- Widen Island Brook Bridge by 2.13m on the eastern side to match the proposed increased width of road (Stage 2) on the approaches to the bridge. The pier and abutments will be extended by following the existing concrete profile and foundation level. Excavation to a depth of up to 1.0m will be required on the bank and 0.5m in the bed of the brook. Embankments on the eastern side will be widened to accommodate the new guardrails that will extend 24m from the bridge.

Stage 2: road works (widening) from 70.5 to 72.6 SLK (December 2011- March 2012)

- Widen along the eastern side of the existing road to provide a 10 metre seal on 12 metre formation

- Lower the crest to the north of the Yelverton Road intersection to improve the sight distances at the intersection which are currently substandard. The cutting to be excavated to a maximum depth of 5 metres and will extend approximately 250m either side of the crest. The overall clearing footprint required to accommodate the new batters and drainage is of a width tapering from 10 to 17m wide from the existing edge line.
- Yelverton Road will be also be lowered for a length of 250m from the highway to enable it to intersect suitably with the lowered highway.
- Provide right turn passing bulges at two intersections.

Stage 3: road works (realignment) from 67.5 to 70.5 SLK (December 2012 - March 2013)

- Realign and widen to provide a 10 metre wide seal on 12 metre wide formation between 67.5 SLK and 70.4 SLK (Chambers Rd) eliminating a number of substandard curves
- Relocate the Lennox Road intersection approximately 50 metres north to provide a perpendicular approach to Bussell Hwy which will improve the safety for entering traffic.
- Construct 1 northbound and 1 southbound overtaking lane.
- Provide right turn passing bulges at two intersections.

The estimated area of native vegetation to be cleared for the widening and realignment is approximately 1.8ha. Additional land of varying widths will need to be acquired for the length of the project to accommodate the new alignment and a small amount of clearing will be undertaken on some of these sections. The majority though is already cleared pasture. The greater part of the clearing will occur in the existing Main Roads' reserve and cleared vegetation will be mulched for future revegetation works.

In accordance with Main Roads policy to improve lateral clearance along sections where works occur, some trees that are outside the limit of earthworks but within the adopted clear zone will also be removed. The bulk of this clearing is on the western side between Chambers Rd and Yelverton Rd. Some of these trees may be of a size to provide habitat hollows, so an additional fauna survey will be undertaken.

The topography is flat in the northern section with a low hill to the south with the crest at the Yelverton Road intersection. The watercourse Island Brook which crosses Bussell Highway in an east-west direction near the southern extent of the project (SLK 72.43) is a tributary of the Carbunup River which flows north to Geographe Bay between Vasse and Dunsborough. There are a number of cross road culverts that collect road run-off and surface water from table drains and direct it westwards to Island Brook.

The adjoining land use is predominantly agriculture and viticulture. The soil type is predominantly duplex sandy gravel / loamy gravel / pale deep yellow sand. The three vegetation associations (1000, 1136 & 1181) identified within the project area are well represented (>30%) in the IBRA region and sub-region. Association 1136 (Medium woodland; marri with some jarrah, wandoo, river gum and casuarina) is under-represented in the LGA with only 6% remaining.

A Biological Survey was undertaken by Biota Environmental Services in 2001 for Main Roads for the extent of the overall project (SLK 60.2 to 96.9). It is proposed however to undertake an additional flora survey specifically for this project prior to works commencing to address possible variance to the Clearing Principles.

The Carbunup Reserve, which is an ESA /TEC with registered DRF and PF, lies at the northern extent of the project. No impact is expected to occur outside of the project footprint so it is highly unlikely that the reserve will be impacted. A small amount of clearing of native vegetation is required in some of the areas of acquired land in the

northern section of the project. Because of the proximity of some of these stands to the Carbunup Reserve and the similarity of vegetation types; there may be an impact on as yet undiscovered colonies of Priority or Declared flora that may have generated from the reserve. The vegetation type at this location is not well represented in the LGA, but the extent of the clearing is very small and would not be considered as having a significant impact.

The vegetation in the northern section of the project area is highly disturbed and retains only some degraded remnant vegetation sections. These are generally strips of narrow road side trees, sometimes just isolated specimens, an occasional large shrub with little or no understorey other than exotic weeds and pasture grasses. The Biota Biological Survey (2001) defined the vegetation of this section as predominantly degraded Jarrah (*Eucalyptus marginata*) / Marri (*Corymbia calophylla*) woodland with occasional Peppermint (*Agonis flexuosa*), Golden Wreath Wattle (*Acacia saligna*) and Sheoak (*Allocasuarina fraseriana*). The vegetation condition was assessed in accordance with the Vegetation Condition Rating of Keighery (1994) as being of Condition Rating 5 and 6 as detailed below.

*Conditon Rating 5 - Degraded: Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.*

*Condition Rating 6 – Completely Degraded: The structure of the vegetation is no longer intact and the area is completely or almost completely without native species.*

The area north of Chambers Road where the new alignment will link back into the existing highway is a mix of natives and exotics including several rogue pine trees. Similarly, south of Yelverton Road on the eastern side, which is proposed for the widening, there is a stretch of poplar trees that will be removed as part of the project. Proximate to Island Brook, Biota identified *A. flexuosa / C. calophylla* woodland over *Callistachys lanceolata* and *A. linearfolia* and mixed sedges on drainage lines. This section is in better condition and was assessed as condition rating 4 on the Keighery scale.

*Condition Rating 4 - Good: Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it.*

The design for the project has taken into consideration the replacement and/or extension of existing culvert drains so as to maintain current drainage patterns. No dewatering is expected to be required but there will be extensive excavation work to reduce the crest at Yelverton Road intersection. This will result in defined embankments to Main Roads' standards at an increased batter of 1:3 to minimise potential soil erosion in the sandy soils. Revegetation will be undertaken at the earliest possible occasion to further stabilise the soil and increase water infiltration. Mitigation of scouring of the proposed larger table drains will be undertaken by lining the drain with geo-fabric and rocks for the majority of the length to reduce the flow of water and contain displaced silt.

As per Main Roads' Environmental Assessment and Approval process, a Preliminary Environmental Impact Assessment has been undertaken. The clearing has been assessed against the *Environmental Protection Act's* Clearing Principles and is considered may be at variance to Principles A (biological diversity), B (indigenous fauna), C (rare flora) and F (watercourse or wetland).

Main Roads values input from its stakeholders and we would appreciate comments on this proposal from your organisation. If your organisation wishes to comment on this proposed project, please provide your submission by COB 29 April 2011 to PO Box 5010. Bunbury WA 6231 or email to peter.swanson@mainroads.wa.gov.au.

If you require any further information please contact me on 97245692.

Yours faithfully

Brett Belstead
DIRECTOR
SOUTH WEST OPERATIONS

CC:
Regional Manager
Department of Water
SW Regional Office
P O Box 261
Bunbury W A 6231

Director
Conservation Council WA
2 Delhi Street
West Perth WA 6005

Office of the Commissioner of Soil and Land Conservation
Department of Agriculture and Food
Locked Bag 4
Bentley Delivery Centre WA 6983

Chief Executive Officer
Shire of Busselton
Locked Bag 1,
BUSSELTON WA 6280

**MRWA INVITATION FOR SUBMISSIONS**

Government of **Western Australia**
Department of **Environment and Conservation**


Your ref: 10/6614
Our ref: CPS 818/5
Enquiries: Chloe Sykes
Phone: 9219 8743
Fax: 9219 8701
Email: nvp@dec.wa.gov.au


MAIN ROADS W.A.
BUNBURY
17 MAY 2011
RECEIVED

File 10/6614
Document No. Bu #9804
Resp. Officer PEO Swanson
Related: Bu #6441

Mr Brett Belstead
Director
South West Region
Main Roads Western Australia
PO Box 5010
BUNBURY WA 5600

Dear Mr Belstead

**CPS 818/5 – SUBMISSION – BUSSELL HIGHWAY SOUTH OF CARBUNUP TO ISLAND BROOK (SLK 67.5 – 72.6)**

Thank you for your letter dated 31 March 2011, inviting the Department of Environment and Conservation's (DEC) Native Vegetation Conservation Branch to provide comment on Main Roads Western Australia's (MRWA) proposed road widening and realignment of Bussell Highway between SLK 67.5 and 72.6, in the Shire of Busselton. I understand that the area of impact involves the clearing of approximately 1.8 hectares of native vegetation.

Submissions are invited in accordance with condition 8 of clearing permit CPS 818/5 for any clearing that 'may be at variance', 'is at variance' or 'is seriously at variance' with the clearing principles contained within Schedule 5 of the EP Act.

A preliminary assessment of the vegetation proposed to be cleared has been undertaken against the clearing principles contained in Schedule 5 of the *Environmental Protection Act 1986* (EP Act), taking into account information you have provided and information DEC has obtained through consultation.

I advise that the following issues were identified during assessment:

- The clearing may impact rare and priority flora species, specifically *Daviesia elongata subsp. elongata*, *Caladenia busselliana* and *Caladenia procera*, which occur in the Carbunup reserve and may be present in other remnant vegetation in the area, and *Loxocarya magna* (Priority 3), which is known to have a population in remnant vegetation at a pull-off/rest area that may be impacted by the relocation of the Lennox Road intersection. A flora survey is required to determine the impact on conservation flora species. I understand that a biological survey of the project area was undertaken in 2001 and request that a copy of this survey be provided for further consideration by DEC.
- The vegetation proposed to be cleared may be an occurrence of threatened ecological community SCP1a *Eucalyptus (Corymbia) calophylla* woodlands on heavy soils of the southern Swan Coastal Plain, which is known to occur in the Carbunup reserve and may be present in other areas of remnant vegetation in the vicinity, or priority ecological communities of the Whicher Scarp. Floristic community type vegetation surveys are required to determine the presence and impact on ecological communities of conservation significance.


**Native Vegetation Conservation Branch**
Phone: (08) 9219 8700 or (08) 9219 8744 Fax: (08) 9219 8701 Email: nvp@dec.wa.gov.au
Postal Address: Locked Bag 104, Bentley Delivery Centre, BENTLEY WA 6983
www.dec.wa.gov.au/nvc
wa.gov.au

- The proposed clearing may impact important habitat for threatened fauna species, particularly the western ringtail possum and Carnaby's black cockatoo. Fauna surveys of tree hollows and areas of peppermint (*Agonis flexuosa*) are required to determine the impact.
- The vegetation proposed to be cleared includes riparian vegetation growing in association with Island Brook and may also include wetland vegetation in other areas.
- Two of the three mapped Beard vegetation types for the project area retain less than 30% of the pre-European extent within the bioregion, Beard 1136 has 7.98% and Beard 1000 has 27.2% remaining, respectively. In addition, the proposed impact area is in an extensively cleared area, with approximately 10% of native vegetation remaining in a 10 kilometre radius.
- There is a significant risk of wind erosion following the removal of native vegetation from sandy soils. I acknowledge that MRWA intends to revegetate the cleared areas to minimise soil erosion.
- The proposed clearing may result in increased sedimentation of the Island Brook and nearby Carbunup River. I acknowledge that the design for the project has taken into account the replacement and /or extension of existing culvert drains so as to maintain current drainage patterns and that MRWA intends to mitigate the scouring of the proposed larger table drains by lining the drain with geo-fabric and rocks for the majority of the length to reduce the flow of water and contain displaced silt.

Considering the above, the proposed clearing is at variance to principle (f), may be at variance to principles (a), (b), (c), (d), (e), (g) and (i) and is not likely to be at variance to principles (h) and (j).

In accordance with conditions 5(a)(ii) and 9(c) and Part V of clearing permit CPS 818/5, MRWA is required to submit for approval an offset proposal as the clearing 'is at variance' to principle (f) and 'may be at variance' to principles (a), (b), (c), (d) and (e).

In accordance with conditions 5(a)(iii), 9(d) and 12 of clearing permit CPS 818/5, MRWA is required to submit for approval a management strategy developed in consultation with the Commissioner of Soil and Land Conservation as the clearing 'may be at variance' to clearing principles (g) and (i).

Whilst this preliminary assessment has been undertaken, I request that DEC meets with MRWA representatives on site to determine the need for a current survey.

As requested above, please provide a copy of the 2001 biological survey for the project area, identified in MRWA's submission invitation, to DEC for further consideration.

If you have any queries regarding the matters raised above, please contact Liesl Rohl at DEC's Native Vegetation Conservation Branch on (08) 9219 8708.

Yours sincerely

Kelly Faulkner
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

*Officer delegated under Section 20*
*of the Environmental Protection Act 1986*

11 May 2011

*Cc: Mr Murray Limb, Manager, Environment Branch. Main Roads WA, PO Box 6202, East Perth 6892*

**SUBMISSION FROM DEC NATIVE VEGETATION CONSERVATION BRANCH**

Hi Peter 17/05/2011

Following are the Department's comments on proposed road works and location (your 67.5 to 72.7) as outlined in the three maps provided 10 May.

Proposed works should be undertaken consistent with MRWA's Environmental Guideline – Water Protection (2008). - Section 5.

Any proposed interference with the bed and/or banks of any waterway within South of Yelverton Road and being on the western side (only) of the Bussell Highway and also outside of the current Road Reserve will require a Permit from the Department of Water. This Permit should be obtained from the Busselton office of the Department of Water.

It should be noted that Island Brook on the Western side of Bussell Highway is a Swan Coastal Plain Resource Enhancement category wetland. Management objectives for RE wetlands, in accordance with DoW's Position Statement, is for restoration and protection towards improving their conservation value. These wetlands have the potential to be restored to conservation category.

It should be noted that the DoW has a monitoring instrument 230m south of 72.7 and on the eastern side of Bussell Highway. MRWA should not locate any camps, parking areas, vehicle or chemical storage or washdown areas etc. within 100m of this point.

Regards

Carol Anderson

SW Region

Dept of Water



**SUBMISSION FROM DEPARTMENT OF WATER**

Good afternoon Peter 3/05/2011

I refer to your letter of 31 March 2011 (ref: 10/6614) in which you advise me of the proposed road works on the above section of the Bussell Highway in the Shire of Busselton.

I have looked at the scope of works and note that it will be necessary to clear 1.8ha of remant vegetation in order to implement this project.For the most part, the grades along the section of road that is proposed to be widened are reasonably flat (0.1-0.4% in the middle section) and increase to 1 - 1.3% at the northern and southern ends. Provided adequate provision is made for the management of run off from the road, I am of the opinion that land degradation is unlikely to occur as a result of this project being implemented.

Therefore, the proposed land clearing is unlikely to be at variance with principle g.

Should you require further information, please contact me on 9368 3282.

Yours sincerely

Andrew Watson
Commissioner of Soil and Land Conservation.

_____



**SUBMISSION FROM COMMISSIONER SOIL AND LAND CONSERVATION**

# APPENDIX D

# Minutes of Meeting with DEC (Andrew Webb)

**MEETING MINUTES: 28th July 2011**

## Inspection of remnant vegetation that may be impacted by proposed realignment/widening of Bussell Highway between Carbunup reserve and Island Brook (SLK 67.5 - 72.6)

ATTENDEES:
AW Andrew Webb - DEC South-West office
BW Bruce Walker – Project Manager MRWA
PS Peter Swanson – Environment Officer MRWA

The objective of the meeting was to address the issues as raised in the Native Vegetation Conservation Branch letter dated 11th May 2011 (MRWA TRIM REF: B11#9804.

1. **Outcomes and recommendations from DEC (AW):**
   The inspection showed that there are eight areas of conservation concern within the project area relating to Threatened Flora, Threatened Ecological Communities (TEC) and/or Threatened Fauna along the alignment. These areas are shown on the attached map and the issues relating to them are discussed below.

   - Area 1 – Vegetation within this remnant to the south of the pull-off area is of a Good condition, if any clearing is proposed to occur within this intact vegetation it will need to be included in the proposed flora surveys.

   - Area 2 – this area of Peppermint vegetation is showing evidence of high level Western Ringtail Possum grazing impact, given this small remnant will be reduced in size by approximately half and that there is no directly continuous vegetation for animals to disperse into this area will need to be subject to a preliminary possum survey to gain an idea of population size and determine if onsite management of the animals will be required.

   - Area 3 – this area supports Excellent condition vegetation of the Abba vegetation complex (Mattiske & Havel 1998), it is recommended that this area be excluded from clearing impact. The current road plans indicate some impact and as such the areas TEC and Threatened flora status needs to be established. It is understood that the road will have an overtaking lane adjacent to this area of vegetation, if high conservation values are found to exist in this vegetation the potential relocation of the overtaking lane to remove clearing impact should be considered.

   - Area 4 – While this area will not be impacted by the clearing proposal it will become separated from the road reserve and as advised MRD will seek to relinquish the land, potentially selling to the adjoining private landholder. Given this vegetation is part of the highly cleared Abba vegetation complex (Mattiske &

Havel 1998) on the Swan Coastal Plain it is likely to be regionally significant, potentially supporting Threatened flora and/or TEC and as such its future conservation security is of concern to DEC. It is recommended that this area be included in floristic surveys to map its condition, establish if it supports Threatened flora and/or is a TEC.

- Area 5 - As shown onsite this vegetation supports a population of *Loxocarya magna* (P3), this population was not recorded by the MRD 2001 flora surveys, that survey instead recorded the species as being present in Area 4, it is unknown if this is an error in the 2001 flora report or if the species is found at both sites. It is possible that some or all of the population of this species in Area 5 will be impacted by the proposed road works. The extent of species impact needs to be determined by the proposed floristic survey.

- Area 6 – On the west side of the highway, south of the Chambers road the road verge vegetation is found to supports large trees that may potentially be suitable for Black Cockatoo nesting and feeding habitat, if trees (500 mm dbh with hollows) have to be removed from this area they should be done outside of breeding season (March - July)

- Area 7 - both private land and public reserves in this area support remnant vegetation, floristic surveys need to be undertaken over the areas of proposed clearing impact. The floristic survey needs to make reference to Keighery *et.al* (2008) to establish if the vegetation that is to be impacted is an example of a Whicher Scarp Priority Ecological Community (PEC).

- Area 8 – clearing at this area associated with the crossing of Island Brook will be on the eastern side of the highway. An existing clearing is found adjacent to the bridge and as such impact on riparian vegetation will be minimal (2-3m). The riparian vegetation within this small area of clearing is degraded and will not require a flora survey. However the Peppermint trees within the wider valley here are potential Ringtail Possum habitat and as a precaution a possum spotter will be required at the time of clearing.

<u>Other Issues discussed onsite included:</u>

- It is noted that some of the vegetation within the areas as flagged above for floristic survey is degraded, as such it is recommended that the floristic surveys also include a requirement to map condition of the areas surveyed so that the extent of clearing impact on intact plant communities can be fully determined.

- While machinery is onsite it was detailed that an extra half-metre of seal would be added to the extent of the highway within Carbunup Reserve. This work will not require any vegetation clearing but if not managed closely may potentially impact on adjacent plants of the DRF species *Caladenia procera*. It was discussed that these works within Carbunup Reserve will be undertaken in close liason with the Flora Officer of the Blackwood District DEC Office to avoid that occurring. It was clarified that no other works are to occur within the extent of the highway through Carbunup reserve and that no machinery or vehicles associated with the upgrade works will be parked, turned-around or entering that section of the reserve during the upgrade.

- As discussed onsite, in regards to determining regional significance of vegetation proposed for impact, as is detailed in section 2.1 of Appendix 3 in EPA Guidance Statement 10 (EPA 2006) vegetation complex mapping (Heddle *et.al* 1980, Mattiske & Havel 1998) needs to be used as the base mapping of ecological communities within the south-west area.

2. **MRWA responses as per titles of NVCB letter:**

- Rare and Priority Flora:
  A spring flora survey is to be undertaken in Areas 1, 3, 4, 5 & 7.
  Design footprint to be pegged at SLK 70 (RHS) (Area 5) to identify impact on existing Priority flora.

- Threatened Ecological Communities:
  A floristic community type vegetation survey will be conducted to identify possible TECs and PECs in areas 3, 4 & 7. Areas 3 & 4 will refer to SCP1b Southern *Eucalyptus (Corymbia) calophylla* woodlands on heavy soils. In area 7, reference will be made to Keighery *et.al* (2008) to establish if the vegetation that is to be impacted is an example of a Whicher Scarp Priority Ecological Community (PEC).

- Habitat for threatened fauna species:
  A fauna survey will be undertaken at SLK 67.8 (RHS) (Area 2) to investigate the number of possums in this area.
  A fauna spotter will be engaged to supervise clearing activities in Areas 2 & 8.
  Trees with hollows >DBH 500mm in Area 6 will be removed outside of the black cockatoo breeding season between March and July.

- Riparian vegetation:
  The riparian vegetation to be cleared is minimal and of a degraded condition. It consists of one medium sized peppermint (*Agonis flexuosa*) and three smaller specimens of the same species. There is a large extent of better vegetation that is more typical of riparian vegetation in the close proximity.

- Remaining vegetation extents:
  As was explained by DEC onsite, in regards to determining regional significance of remnant vegetation within the south west area as per EPA Guidance Statement 10, vegetation complex mapping (Heddle et.al 1980 & Mattiske & Havel 1998) should be used as the base mapping of ecological communities. An assessment against this mapping rather than Beard vegetation association mapping will be undertaken as part of the proposed flora and floristic community survey.

- Wind erosion and Increased Sedimentation:
  AW concurred that there is minimal likelihood of wind erosion or increased sedimentation to Island Brook occurring if Main Roads' standard procedures are followed and given the additional mitigating actions as proposed in MRWA letter to stakeholders. (TRIM B11#6441).

Other issues:
While separate to this NVP application, MRD will contact the Blackwood District DEC office in early September to discuss issues associated with the minor shoulder works proposed to be undertaken within the extent of the Highway through Carbunup Reserve..

The requirement for an offset (and extent) will be identified from the results of the field surveys.

The Commissioner of Soil and Land Conservation (email submission 03/05/2011) does not have any issues regarding land degradation (B11#11317).

# APPENDIX E

# Site Photos

Photo 1:

# Appendix F

# Environmental Management Plan

| ENVIRONMENTAL MANAGEMENT PLAN | | | | | |
|---|---|---|---|---|---|
| **Timing** | **Topic** | **Objective** | **Action** | **Responsible Party** | **Advice** |
| All phases of the Project | Environmental Management | Inclusion of environmental management measures | Environmental management measures detailed in this EMP will be included in the technical specifications, contractual documents and site induction materials prepared for the project for all site personnel and service providers. | Project Manager | Main Roads |
| | | Operational Management | Nominate a person responsible for monitoring and reviewing all operations in order to minimise any impact to the environment or nuisance to the public. | Contractor | Main Roads |
| | Vegetation Clearing - Record-keeping | All projects should maintain the required records relating to clearing native vegetation under the purpose permit. | a copy of the PEIA & EMP | Project Manager | DEC |
| | | | a map showing the location where the clearing occurred, recorded as a shape file (>0.5ha) or coordinates of individual specimens | | |
| | | | the size of the actual area cleared (in hectares) | | |
| | | | the dates on which the clearing was done | | |
| | | | | | |
| Pre-Construction | Permits required & Surveys to be undertaken | Identify potential dieback, DRF/PF and fauna issues | **Flora, fauna and dieback surveys have been undertaken for the project area.** | Project Manager / Contractor | Main Roads |
| | Vegetation | 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<br>ensure the retention of as many habitat trees, shrubs and vegetated corridors for | **Engage a fauna spotter for the clearing works associated with Remnant 2.** | | |
| | | | **Selection of individual tree specimens that might be retained and protected with barriers or similar alternative treatments, especially in the Threatened Ecological Community areas.** | | |
| | | | **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. | | |

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| | | fauna as possible, particularly where associated with riparian zones. | **Control/spray known weed species** within the project area prior to construction disturbance to limit the amount of propagative material that may be spread during disturbance. Refer to Roadside Conservation Committee, WA, 2005: *Handbook of Environmental Practice for Road Construction and Maintenance Works* | | |
| | | | **The clearing line (or individual specimens) will be clearly marked and checked prior to clearing especially in the Threatened Ecological Community areas.** | Project Manager / Contractor | |
| | | | **Vegetation from clearing works shall not be burnt.** | | |
| | | | **Translocate individuals of *Loxocarya magna* that will be impacted from Remnant 5 to Remnant 4 with the DEC or a suitable consultant.** | Project Manager / Contractor | Main Roads |
| | | Avoid damage to adjacent vegetation | Trees to be removed are to be felled in a manner that they fall within the approved clearing line. | Contractor | Main Roads |
| | | | Vehicles and equipment will not be parked or driven over tree roots or undisturbed vegetation. | | |
| | Public Relations | | Inform Main Roads, local shire and local land-holders of the nature and timing of works and provide contact details for complaints. | Contractor | Main Roads |
| | | | | | |
| Construction | Noise, Vibration and Dust and Public Access | 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 works. | Contractor / Project Manager | Main Roads |
| | | | Works associated with the construction should not prevent public access along adjacent land. Public access should be maintained along the reserve at all times. | Contractor | Main Roads |
| | | | Any damage due to vibration, dust or noise is the responsibility of the contractor to rectify. | | |
| | | | 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. | | |
| | | | Watering, the use of hydromulch or other forms of mulching to protect loose surfaces shall be used as mitigation measures as necessary. | | |

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| | Weeds & Pathogens (Dieback) | Minimise the risk of introducing weeds or pathogens to the site | **Machinery will be thoroughly cleaned prior to commencement of works. Clearing of the Threatened Ecological Community area shall be undertaken prior to other areas.**<br>**Topsoil from identified weed infested areas will be disposed of in locations nominated (see TMP).** | Contractor | Main Roads |
| | | | **Topsoil will be stored and respread within the same section to minimise the potential introduction/spread of weeds or pathogens (see TMP).** | | |
| | Pollution and Litter | Ensure that the construction of the proposal is managed to a standard that minimises any adverse impacts on the environment. | The designated servicing area will be 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 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. | | |
| | | | Dumping or temporary storage of bitumen, asphalt, concrete or aggregate should only occur at designated depots or controlled hardstands. | | |
| | | | The project areas, including hardstand areas, will be kept in a tidy manner at all times. | | |
| | Fuel & Chemical Storage | Avoid chemical storage and spill impacts | No storage of fuels or hazardous chemicals on site. | Contractor | Main Roads |
| | | | Maintain materials for the clean-up of spills. | | |
| | Fire | Ensure that the fire risk associated with the construction of the proposal is minimised. | No fires shall be lit within the project area. | Contractor | Main Roads |
| | | | A water tanker or fire fighting equipment will be on site at all times. | | |
| | Aboriginal Heritage | Appropriately manage any Aboriginal heritage material identified during works. | Works should immediately cease within 20m of uncovered material of interest. | Contractor | Main Roads DIA |
| | Site Management | Ensure that the site is managed to ensure that construction of the proposal will have minimal impact upon the surrounding environment. | Site office and materials storage areas will be located on previously disturbed/ designated area. | Contractor | Main Roads |

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| Post-Construction | Reinstatement of project site | Leave the project area free from debris. | All waste materials from the development are to be completely removed from the site upon completion of the development. | Contractor | Main Roads |
| | | | Final clean-up shall be to the satisfaction of the Project Manager and the Site Superintendent. | | |