Clearing Assessment Report – CPS 818

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Albany Highway (H001) Improvements near Beattie Road (SLK 343.45-344.45)

Great Southern Region
EOS 2592

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1 PROPOSAL

1.1 Purpose and Justification

Albany Highway (H001) is the primary link between the Great Southern regional centre of Albany and Perth. It is used to transport commodities (principally grains and timber products) to and from the Port of Albany for export using Multi-Combination Vehicles (MCVs) up to 36.5m in length. Albany Highway is also used by commuters, school and commuter buses, and tourists.

In 2020, a Road Safety Inspection (Paul G Robertson Associates 2020, D22#71884) was commissioned to assess the safety of the intersections of Albany Highway with two Shire roads: West Beattie Road (No. 3120316, H001 SLK 343.66), and Beattie Road (No. 3120075, H001 SLK 343.85), as well as the parking bay south of the intersections. The intersections are located in a rural area within the Plantagenet Shire, north of Mount Barker.

As shown in **Figure 1**, the two local roads intersect Albany Highway in a staggered pattern within a sag curve that is speed zoned 110 km/hr and currently allows for overtaking. It also has an unconventional parking area (H001 SLK 343.67 – 343.84) with unclear access points, and a school bus stop that caters for ~10 school children every morning and afternoon. The northbound approach to the site is on a long, gradual downhill section of Albany Highway that tends to encourage increasing of vehicle speeds, followed by potential overtaking within the sag curve adjacent to the intersections and the access to the parking bay. The West Beattie Road intersection with Albany Highway was rated number 8 of the top 10 in the RAC's Risky Road Survey (2018/19). Between 2014 and 2019, five crashes were recorded at the site, including one single vehicle medical crash and three 2-vehicle crashes.

Due to the high risk of serious accident followed by road trauma, Main Roads proposes to construct:

- passing bulges on Albany Highway opposite sideroad crossovers;
- a southbound left turn pocket into Beattie Road; and
- a bus bay on the northbound verge (SLK 343.60), with a footpath linking to West Beattie Road.

1.1.1 Main Roads Approach to Road Safety and the Environment

Main Roads is committed to minimising the environmental impacts of all of its activities, and manages the State road network to achieve balanced economic, social, safety and environmental benefits for the community. Main Roads recognises that Western Australia's environment is significant from a global perspective and the unique conservation values that are contained within its road reserve. Main Roads road network often adjoins natural areas and, in some locations, the reserve itself hosts remnant vegetation with high environmental values. Although the reserves were not established for this purpose, Main Roads recognises that it has a responsibility to conserve the environmental values that occur within the State's road network and minimise the impact its proposals have on the environment. In addition to providing a safe and efficient road network for all people using the roads under its control, Main Roads is also committed to protecting and enhancing the natural environment.

In accordance with National and State Government road safety policies, Main Roads is also committed to substantially reducing road trauma on the road network through Safe System principles. The Safe System approach acknowledges that more than two thirds of all serious crashes are due to human error rather than deliberate risk taking (e.g. speeding or drink driving) and seeks to improve behaviour through education and enforcement while managing the safety of vehicles,

speeds and the road and road infrastructure. It is shown that improving sub-optimal road formation will substantially reduce the likelihood and severity of road crashes. For example, according to the Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured numbers by more than 50%.

As the statutory authority responsible for providing and managing a safe and efficient main road network in Western Australia, Main Roads focuses on improving road safety by thoroughly considering all environmental, economic and community benefits and impacts. It operates on a hierarchy of avoiding, minimising, reducing and then, if required, offsetting our environmental impacts. This has been achieved through changes in proposal scope and design. Main Roads regularly reduces its clearing footprint by restricting earthworks limits for proposals, steepening batters, installing barriers, establishing borrow pits in cleared paddocks and avoiding temporary clearing for storage, stockpiles and turn around bays to avoid and minimise its impacts.

Further details on measures to avoid, minimise and reduce are provided in Section 1.5.

1.2 Proposal Scope

Main Roads proposes to construct:

- passing bulges on Albany Highway opposite sideroad crossovers;
- a southbound left turn pocket into Beattie Road; and
- a bus bay on the northbound verge (SLK 343.60) with a footpath linking to West Beattie Road.

The full scope is detailed in the drawings in **Appendix 1** and include

- traffic management;
- earthworks;
- culvert extension and ancillary drainage works;
- pavement and surfacing;
- installation and relocation of signage;
- line marking; and
- maintenance of existing roads and access tracks.

1.3 Proposal Location

The Development Envelope is located on Albany Hwy (H001) from SLK 343.45 to 344.45 in the Shire of Plantagenet, as shown in **Figure 1**. The desktop assessment Study Area was confined to a 10km radius from the Development Envelope, as shown in **Figure 2**.

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818: up to **0.35ha** native vegetation within a 2.2ha Development Envelope that includes 1.06ha cleared areas and 0.06ha planted vegetation.
Areas of Native Vegetation Clearing: as shown in **Figure 3** and **Figure 4.**
Type of Native Vegetation: detailed below and shown in **Figure 3**:

Native Vegetation Type	Area (ha)
Corymbia calophylla Open Forest [CcOF]	0.07
Eucalyptus wandoo Open Forest [EwOF]	0.06
Eucalyptus cornuta Closed Forest [EcCF]	0.22
TOTAL	**0.35**

The clearing includes 0.06ha of planted *Corymbia calophylla* Open Forest.

Figure 1. Development Envelope for Albany Highway (H001) Improvements near Beattie Road (SLK 343.45-344.45)

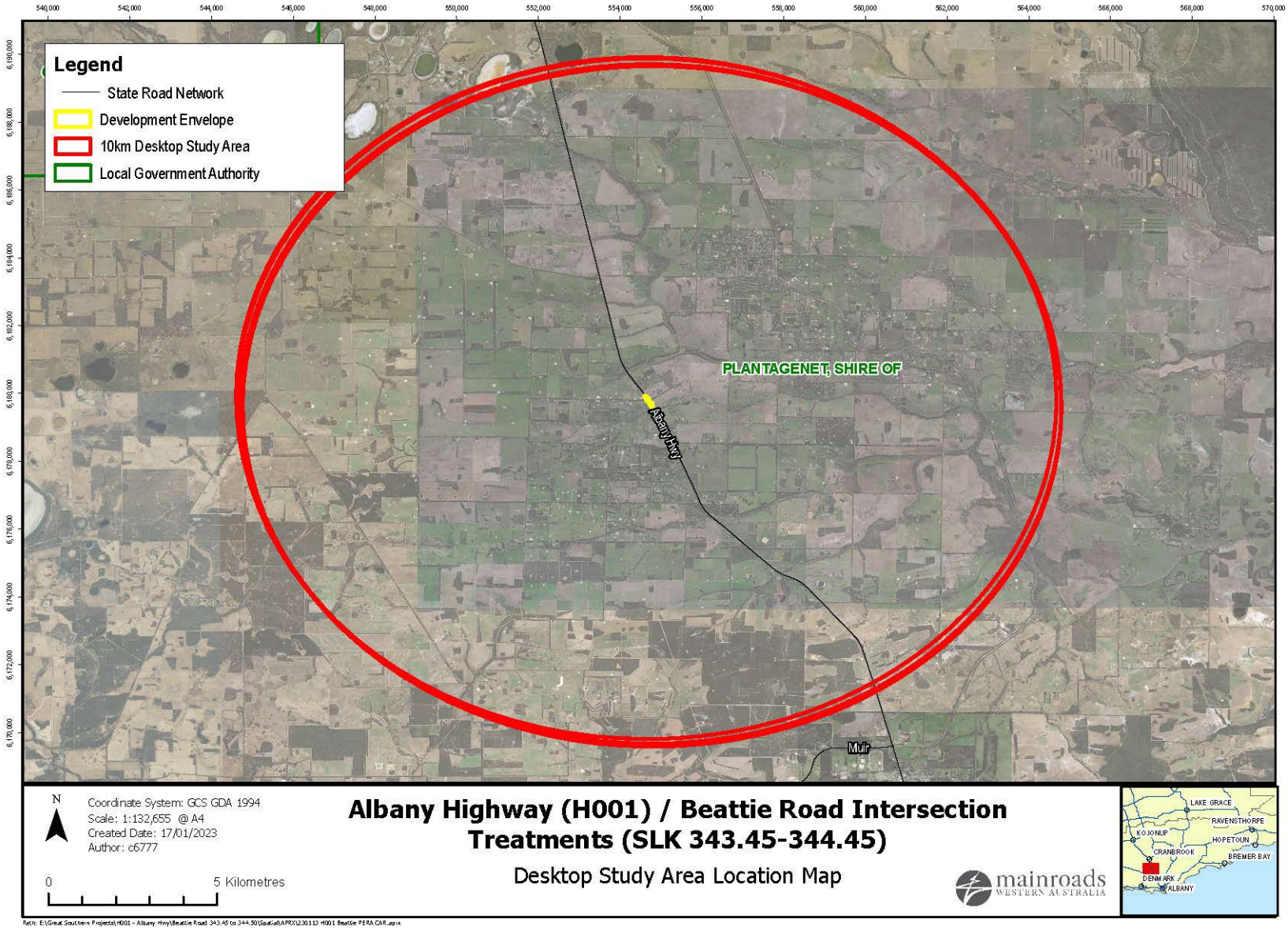

Figure 2. Desktop Study Area for Albany Highway (H001) Improvements near Beattie Road (SLK 343.45-344.45)

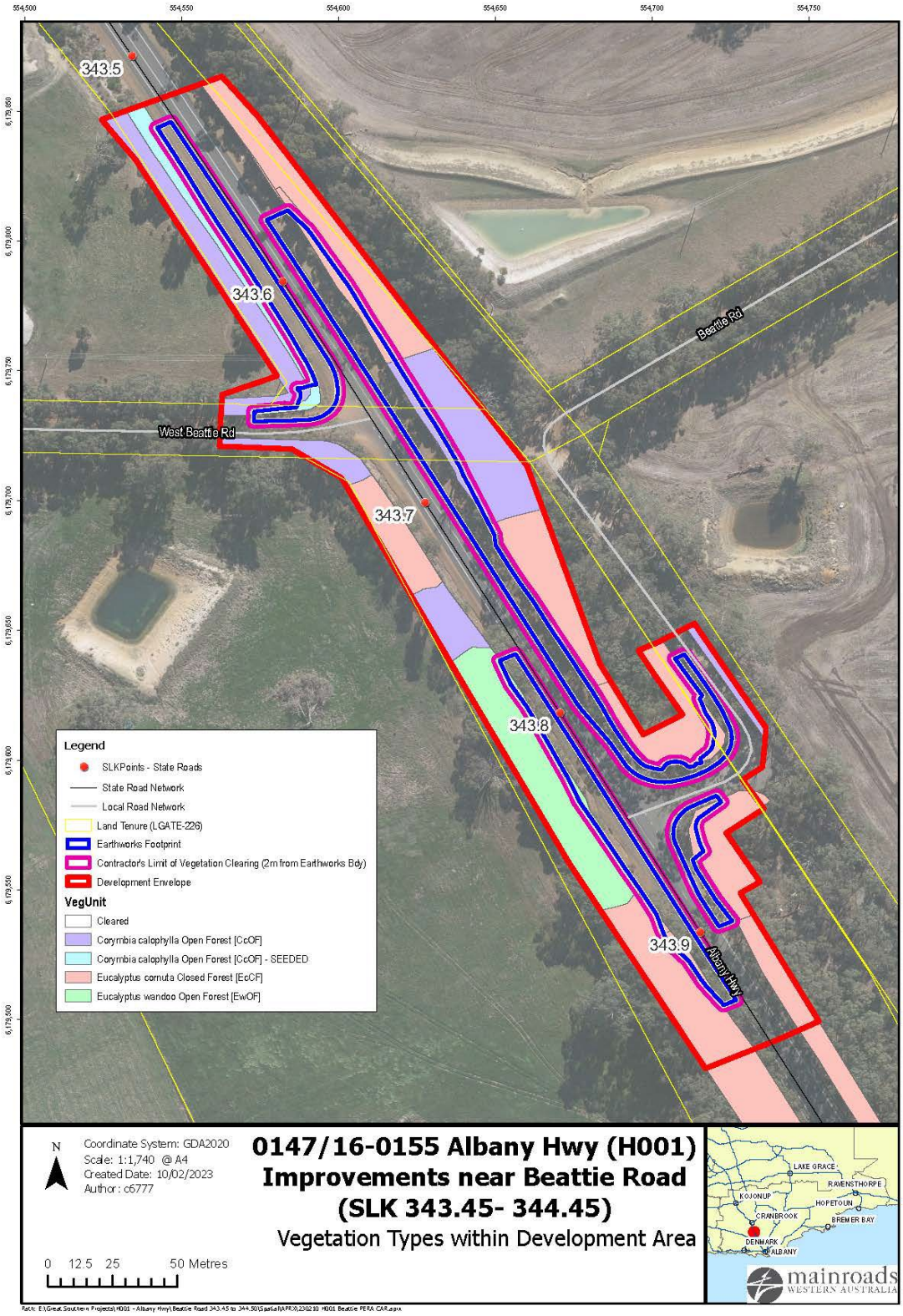

Figure 3 Vegetation Units within Development Envelope for Albany Highway (H001) Improvements near Beattie Road (SLK 343.45-344.45)

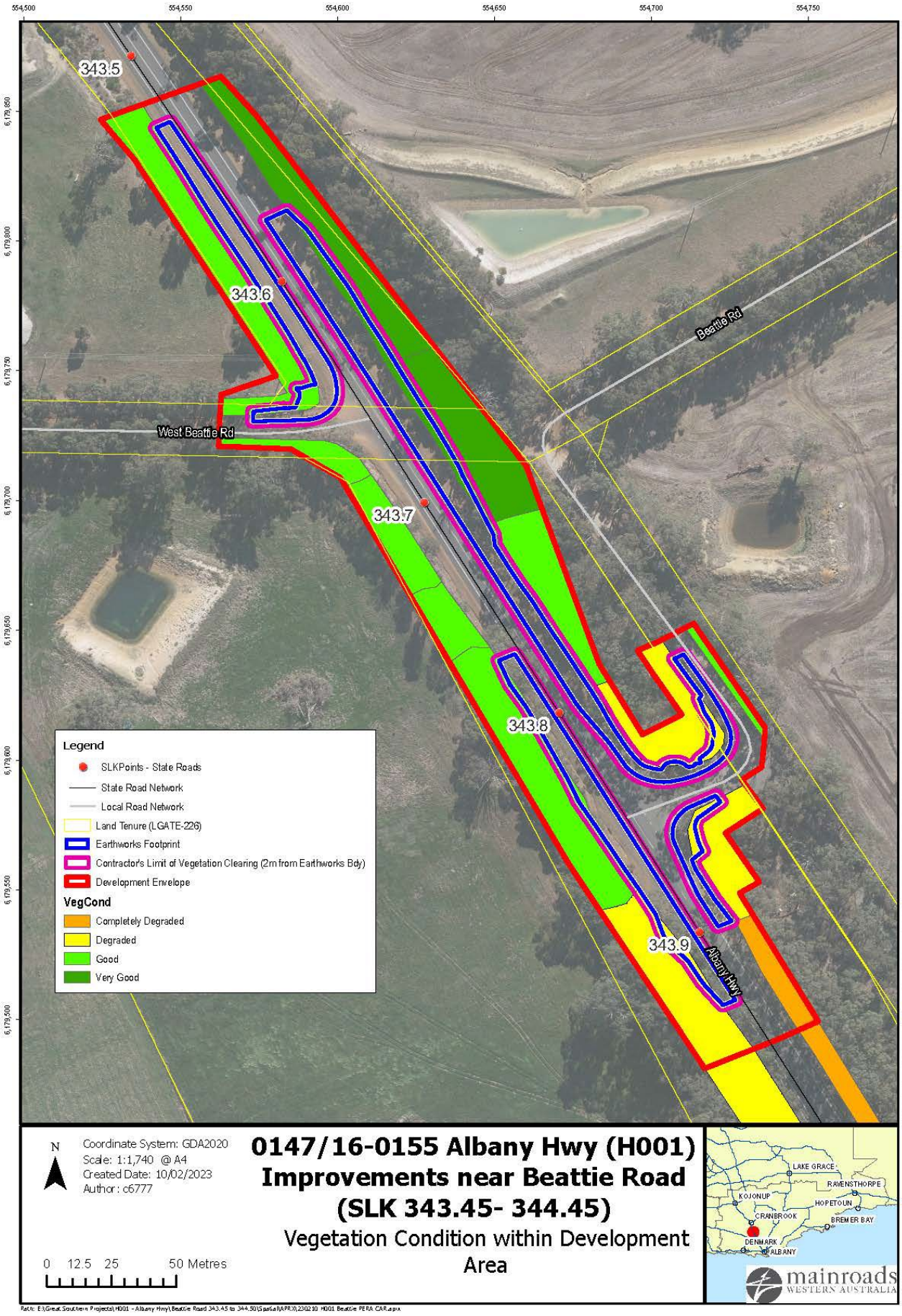

Figure 4. Vegetation Condition within Development Envelope for Albany Highway (H001) Improvements near Beattie Road (SLK 343.45-344.45)

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

The following alternatives to clearing were considered during the development of the Proposal:

- Different treatment options; however, this could potentially result in a poorer safety outcome and may result in future fatalities or serious injuries and further degradation of the State road asset;
- Steepening batter slopes; and
- Kerbing.

1.6 Measures to Avoid, Minimise, Reduce and Manage Proposal Clearing Impacts

The design and management measures implemented to avoid and minimise the potential clearing impacts of the Proposal are provided in Table 1.

Table 1. Measures Undertaken to Avoid, Minimise, Reduce and Manage the Proposal Clearing Impacts

Design or Management Measure	Discussion and Justification
Alignment to one side of existing road	Sections of the Proposal area which require clearing are in cut and hence re-alignment of the carriageway is not possible due to the topographical constraints of the Proposal area.
Simplification of design to reduce number of lanes and/or complexity of intersections	Several different treatment options were considered to improve safety within the Proposal area. The widening scope of works cannot be further simplified whilst retaining the necessary safety benefits. Discussion with the design team and Main Roads Great Southern Region Network Manager identified necessary inclusions that were required for safety improvements e.g. extra width of carriageway to incorporate a southbound left turn pocket into Beattie Road is necessary to address the safety issues within the Proposal area.
Steepen batter slopes	The use of 1:2 and 1:3 drain backslope (dependent on cut depth) on design as opposed to 3:1 or 6:1 has minimised environmental clearing as much as possible. It is not possible to implement steeper batters.
Installation of barriers	As the sections of the design that require clearing are in an area of cut, the installation of safety barriers would not reduce the clearing footprint due to the requirements of roadside drainage. Thus, this is not a suitable measure to avoid or minimise clearing.
Installation of kerbing	Kerbing was considered to minimise environmental clearing along certain sections of the design. Through discussion with the Main Roads Great Southern Region Network Manager, it was identified this would introduce safety concerns in some sections that are not acceptable, and hence was removed from these sections of the design. Kerbing has been included for sections that otherwise would not pose a safety risk when kerbed to minimise clearing.
Use of existing cleared areas for access tracks, construction storage and stockpiling	No temporary clearing for storage, side tracks, stockpiles, turn around bays etc. will be undertaken as part of the Proposal activities. All site facilities, including laydown areas, site offices, materials storage areas, construction vehicles/machinery parking areas and access tracks will be located on previously disturbed or cleared areas.

1.7 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act, Main Roads has also had regard to the below instruments where relevant.

Other Legislation potentially relevant for assessment of clearing and planning/other matters:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Rights in Water and Irrigation Act 1914*
- *Aboriginal Heritage Act 1972* (WA).

Other relevant policies and guidance documents:

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (Government of WA, December 2014)
- Procedure: Native vegetation clearing permits (Government of WA, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, 2014)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020)
- Approved conservation advice under section 266B of the EPBC Act for threatened flora/fauna/vegetation communities.
- Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt (Department of the Environment, 2015)
- Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan (Department of Parks and Wildlife, 2013)
- Referral guideline for 3 WA threatened black cockatoo species (DCCEEW, 2022)

2 SCOPE AND METHODOLOGY OF CLEARING ASSESSMENT

Native vegetation will be cleared to accommodate this Proposal. This clearing will be undertaken using the Main Roads Statewide Clearing Permit CPS 818.

To comply with CPS 818, Main Roads must prepare a Clearing Assessment Report (CAR).

The CAR outlines the key activities associated with the Proposal, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the Proposal using the ten Clearing Principles listed under s51 of the *Environmental Protection Act 1986* (EP Act) and strategies used to manage vegetation clearing.

2.1 Report Terminology and Sources

The following terms are used in this Clearing Report

- **Native Vegetation Clearing Area** – The maximum amount of native vegetation to be cleared for the Proposal that will accommodate the designed earthworks and, typically, a nominal buffer to allow for the safe movement of machinery during construction.

- **Development Envelope** – The maximum extent within which the Clearing Area will be located. This envelope larger than the Clearing Area and the Proposal Area to allow for minor changes to the Proposal footprint as the design process continues, and to account for minor and unexpected changes that may occur during construction, such as working to avoid a large tree or encountering buried boulders or services. This flexibility allows the site personnel to make modifications to the Proposal to avoid areas that may contain better environmental values. The CAR has assessed all environmental values within the Development Envelope as though all of these values will be impacted, up to the amount specified within the Clearing Area.

- **Proposal Area** – The total footprint of the Proposal including both cleared and uncleared areas. This is based on the current design and is less than the development envelope. It usually includes a buffer to allow for constructability and the movement of machinery during construction.

- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 10km radius.

- **Survey Area** – Area covered by the field surveys, which is typically larger than the Development Envelope.

2.2 Desktop Assessment

A desktop assessment of the Development Envelope was undertaken by viewing internal datasets and other government agency managed databases, and consulting with relevant stakeholders where necessary. Results from the search for Matters of National Significance can be found in **Appendix 2**.

GIS layer viewing and mapping is done using ArcMap and/or Main Roads corporate mapping system known as iMaps. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. Government managed databases were searched to locate additional information, which are found under References in **Section 9**.

2.3 Surveys and Assessments

The following surveys/assessments were undertaken to inform this CAR:

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA*
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)*

A summary of the methodology and the results of the above surveys are provided in Section 3.

3 SUMMARY OF SURVEYS

3.1 Overview of Surveys

Biological and targeted surveys conducted for the proposal are outlined in **Table 2**. A summary of the findings in these reports are presented in **Section 3.2**.

Table 2. Summary of Biological and Targeted Surveys Relevant to the Proposal

Consultant & Survey Name	Survey Details
BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA 6323*	**Survey Area:** Survey area comprised the Main Roads road reserve from Albany Highway SLK 343.50 to 344.28 (~3.51ha including cleared areas), with an additional TEC assessment area included during the field work (SLK 344.28-344.42 right hand side of Albany Highway road reserve). **Type:** Out-of-season reconnaissance flora, vegetation and basic fauna survey, including a targeted flora, targeted black cockatoo habitat assessment and targeted TEC assessment. **Timing:** Fieldwork conducted 23-24 March 2022 and 27 July 2022 **Survey Results Shapefile TRIM Ref:** D23#47402 **Document TRIM Ref:** Report D23#47388, Recommendations Memo D23#47382
Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report*	**Survey Area:** Survey area comprised the Development Envelope (~3.69ha including cleared areas). **Type:** Environmental site Inspection of the Development Envelope, including a targeted threatened and priority flora survey and re-mapping of BioDiverse Solution's vegetation type and condition mapping. **Timing:** Fieldwork conducted 19 October 2022 **Survey Results Shapefile TRIM Ref:** D22#1180603 Vegetation Type and D22#1192920 Vegetation Condition **Document TRIM Ref:** D22#1147518

3.2 Summary of Surveys

In March 2022, BioDiverse Solutions (BDS) undertook an out-of-season flora and vegetation and fauna survey which included a targeted flora and Threatened Ecological Community (TEC) assessment for the Proposal.

Following an extension of the design footprint, BDS undertook a second survey in July 2022 of the additional Proposal areas to survey for significant fauna (incl. threatened and priority fauna) and to extend the fauna habitat mapping. A BDS botanist was not available, so no additional vegetation mapping was completed.

No priority or threatened flora was detected during BDS' surveys. However, given the BDS surveys were undertaken out of season, the post survey significant flora Likelihood of Occurrence (LOO) assessment concluded that it was possible for three species to occur: *Thelymitra psammophila* (T), *Stylidium lepidum* (P3)

and *Caladenia integra* (P4). Main Roads Environment Officers and botanists undertook an Environmental Site Inspection of the Development Envelope on 19 October 2022, which included a targeted threatened and priority flora survey of *Thelymitra psammophila* (T), *Stylidium lepidum* (P3) and *Caladenia integra* (P4). The inspection also included a review of the BDS *Eucalypt Woodlands of the Western Australian Wheatbelt* TEC assessment and mapping of vegetation condition and vegetation type mapping within the additional Proposal areas. The Main Roads Environmental Site Inspection found:

- No threatened or priority flora species within the Development Envelope. The desktop investigation and post survey likelihood-of-occurrence assessment revealed that the presence of these species was unlikely based on the incompatible habitat type and high amount of weed cover in the Development Envelope.
- No threatened or priority ecological communities within the Development Envelope (i.e. Wheatbelt TEC had been incorrectly mapped by BDS 2022).
- The vegetation condition was predominately found to be in Degraded to Completely Degraded Condition due to the high abundance of weed cover throughout the Development Envelope (i.e. some areas incorrectly mapped by BDS 2022). One smaller patch of good quality vegetation exists on the eastern side of the highway.
- One Declared Pest and WoNS was identified: *Asparagus asparsgoides* and several patches of *Watsonia* ?*meriana*.

There are no known Black Cockatoo breeding areas within 10km of the Development Envelope, which is also outside the Western Ringtail Possum Management Zone. No fauna individuals, calls, tracks or scats were observed during the MRWA inspection (D22#1147518). BDS observed two threatened bird species during its survey (Baudin's (EN) and Forest Red-tailed (VU) Black Cockatoo), with only low to moderate foraging and roosting habitat deemed present for Black Cockatoos within the Development Envelope and no suitable DBH trees containing hollows suitable for Black Cockatoos. No high-quality potential habitat was deemed present for Western Ringtail Possums (CR), Brush-tailed Phascogale (CD) and Quenda (P4) and BDS observed no evidence of these species (e.g. scats, tree scratchings/markings, diggings, foliar feeding patterns etc) during its survey.

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

The Development Envelope is within the Southern Jarrah Forest (JAF02) subregion, and contains two Vegetation Associations:

System Association Name:	Narrikup	Kendenup
Vegetation Association Number:	3	967
Structure Description:	Forest	Woodland other
Floristic Description:	Mainly jarrah *Eucalyptus marginata* and marri *Corymbia calophylla*.	Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris, E. oleosa*. Riverine; rivergum *E. camaldulensis*. Tropical; messmate, woolybush.
Remnant Vegetation by Beard Association Rarity in LGA:	36.37% remaining	22.72% remaining
Remnant Vegetation by Beard Association Rarity in IBRA Region:	67.10% remaining	23.09% remaining

Three vegetation units were identified during the BDS survey (**Figure 3)**:

1. *Eucalyptus wandoo* Open Forest [EwOF] - *Eucalyptus wandoo* Open Forest, over *Bossiaea linophylla* Sparse Shrubland, over *Ehrharta calycina, Briza maxima, Avena barbata* Tussock Grassland.
2. *Corymbia calophylla* Open Forest [CcOF] - *Corymbia calophylla* Open Forest over *Ehrharta calycina, Briza maxima* Tussock Grassland.
3. *Eucalyptus cornuta* Closed Forest [EcCF] - *Eucalyptus cornuta* Closed Forest, over *Hakea laurina* Sparse Shrubland, over *Kennedia coccinea*, *Trifolium angustifolium* Sparse Forbland, over *Briza maxima* Sparse Tussock Grassland.

The MRWA inspection confirmed the north-western section of the Development Envelope also contains planted vegetation using species of the *Corymbia calophylla* Open Forest vegetation type, including *Callitris pyramidalis, Calothamnus quadrifidus, Hakea lissocarpha, Hakea undulata.*

The MRWA inspection confirmed there are no known threatened or priority flora species or threatened or priority ecological communities within the Development Envelope.

The vegetation condition of the Development Envelope was found to range from 'Completely Degraded' to 'Very Good' condition (Keighery, 1994) (**Figure 4**). The MRWA inspection confirmed the north-eastern and north-western sections of the Development Envelope varied between degraded (from Beattie Road) and increasing in condition to very good, displaying approximately 10% coverage of weed species, with no Weeds of National Significance (WONS) or Declared weed species in these areas. The south-eastern and south-western patches of the Development Envelope was mapped as degraded to completely degraded. The MRWA inspection identified that the Development Envelope had an 80% coverage of WONS Bridal Creeper (*Asparagus asparsgoides*) and dense patches of *Watsonia* ?*meriana,* providing a low vegetation condition rating.

Table 3 and **Table 4** provide details of the vegetation types within the Proposal and the remaining extents of these associations.

For a full description of the existing vegetation, refer to the Main Roads Environmental Site Inspection Report (D22#1147518) and BioDiverse Solutions Survey Report (D23#47388).

Table 3. Summary of Vegetation Types within Development Envelope and 5m from Earthworks Boundary

Vegetation Type	Total Extent Mapped (ha) within Development Envelope	Total Extent Mapped (ha) within 5m of Earthworks Boundary
Corymbia calophylla Open Forest [CcOF]	0.32	0.07
Eucalyptus wandoo Open Forest [EwOF]	0.16	0.06
Eucalyptus cornuta Closed Forest [EcCF]	0.60	0.22
Total Native Vegetation (ha)	**1.08**	**0.35**
Corymbia calophylla Open Forest [CcOF] – SEEDED	0.06	0.06
Total Vegetation (Planted and Native) (ha)	**1.14**	**0.41**
Cleared areas	1.06	0.77
Total Area (ha)	**2.2**	**1.18**

Table 4. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of Current Extent)
Veg Assoc No. *3*	**Statewide**	2,661,404.62	1,803,437.48	67.76	81.50
	IBRA Bioregion *Jarrah Forest*	2,390,591.54	1,604,101.56	67.10	81.00
	IBRA Sub-region *Southern Jarrah Forest*	1,482,491.85	880,655.65	59.40	78.50
	Local Government Authority *Shire of Plantagenet*	252,388.59	91,789.98	36.37	49.38
Veg Assoc No. 967	**Statewide**	216,684.92	36,536.08	16.86	3.02
	IBRA Bio region *Jarrah Forest*	29,340.13	6,773.33	23.09	4.38
	IBRA Sub-region *Southern Jarrah Forest*	29,340.13	6,773.33	23.09	4.38
	Local Government Authority *Shire of Plantagenet*	11,965.25	2,718.65	22.72	8.83

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

In assessing whether the Proposal's proposed clearing is likely to have a significant impact on the environment, the Proposal was assessed against the ten Clearing Principles (EP Act, Schedule 5).

Each principle has been assessed in accordance with the former Department of Environment Regulation (now Department of Water and Environmental Regulation (DWER) '*A Guide to the Assessment of Applications to Clear Native Vegetation*' (Department of Environment Regulation, 2014) and other relevant clearing permit application decision reports prepared by DWER.

The proposed clearing is **not likely to be at variance** with the ten Clearing Principles.

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

Proposed clearing is not at variance to this Principle.

Assessment

No priority or threatened flora were detected during BDS' reconnaissance survey, but since it was conducted outside of Spring, three species were deemed "Possible" to occur (*Thelymitra psammophila* (T), *Stylidium lepidum* (P3) and *Caladenia integra* (P4). Main Roads completed a Targeted Flora Survey of the Development Envelope during Spring 2022 and found none of these three targeted species. The desktop investigation and post survey likelihood-of-occurrence assessment revealed that the presence of these species was unlikely based on the incompatible habitat type and high amount of weed cover in the Development Envelope.

There are no known Black Cockatoo breeding areas within 10km of the Development Envelope, which is also outside the Western Ringtail Possum Management Zone. No fauna individuals, calls, tracks or scats were observed during the MRWA inspection (D22#1147518).

BDS observed two threatened bird species during its survey (Baudin's (EN) and Forest Red-tailed (VU) Black Cockatoo), with only low to moderate foraging and roosting habitat deemed present for Black Cockatoos within the Development Envelope and no suitable DBH trees with known nesting hollows or containing hollows potentially suitable for Black Cockatoos. No high-quality potential habitat was deemed present for Western Ringtail Possums (CR), Brush-tailed Phascogale (CD) and Quenda (P4) and BDS observed no evidence of these species (e.g. scats, tree scratchings/markings, diggings, foliar feeding patterns etc) during its survey.

According to the DPIRD-005 Native Vegetation Extent GIS layer, there is up to 4377.20ha native vegetation present within the 10km Desktop Study Area that could be potential foraging and roosting habitat for Black Cockatoos. The proposed clearing of up to 0.35ha of native vegetation within the Development Envelope equates to 0.008% of the native vegetation within the 10km Desktop Study.

The remnant vegetation condition ranges from Completely Degraded to Very Good; however, the small amount of native vegetation clearing proposed (0.0352ha within a 2.2ha Development Envelope) is unlikely to have a significant impact on the level of biodiversity of the Development Envelope or its surrounds.

Based on the above, the Development Envelope has limited biodiversity value and the proposed clearing is **not at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- DCCEEW Protected Matters Search Tool Report (**Appendix 2**, accessed 10 February 2023)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (Accessed 10 Nov 2022)
  - DBCA Threatened and Priority flora database search (Accessed 10 November 2022)
  - DBCA Threatened fauna database search (Accessed 10 November 2022)
  - DPIRD-005 Native Vegetation Extent (Accessed 23 February 2022)

(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.

Proposed clearing is not at variance to this Principle.

Assessment

Based on a search of the Desktop Study Area (10km from the Development Envelope, **Figure 2**), BDS identified 3 threatened and priority fauna species as being 'Likely' and 10 as 'Possible' to occur based on potential habitat being present within the Development Envelope.

Species assessed as 'Likely' to occur were:

1. Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii* subsp. *naso*, VU);
2. Baudin's Cockatoo (*Calyptorhynchus baudinii,* EN); and
3. Carnaby's Cockatoo (*Calyptorhynchus latirostris,* EN).

Species assessed as 'Possible' to occur were:

1. Muir's Corella (*Cacatua pastinator* subsp. *pastinator*, CD);
2. Quenda (*Isoodon fusciventer,* P4);
3. Red-tailed phascogale (*Phascogale calura*, CD);
4. South-western brush-tailed phascogale (*Phascogale tapoatafa* subsp. *wambenger*, CD);
5. Fork-tailed swift (*Apus pacificus,* MI);
6. Australian bittern (*Botaurus poiciloptilus,* EN);
7. Sharp-tailed sandpiper (*Calidris acuminata,* MI);
8. Peregrine falcon (*Falco peregrinus,* OS);
9. Black-striped dwarf galaxias (*Galaxiella nigrostriatal,* EN); and
10. Western ringtail possum (*Pseudocheirus occidentalis,* CR).

There are no known Black Cockatoo breeding areas within 10km of the Development Envelope. BDS found no trees with a suitable Diameter at Breast Height (DBH) (i.e. greater than 500mm or 300mm for Salmon Gum and Wandoo species) within the Development Envelope that contained known nesting hollows or hollows potentially suitable for Black Cockatoos.

The proposed Works will impact a maximum of 10 suitable DBH trees, none of which contain hollows suitable for Black Cockatoos. MRWA will liaise with its Contractor during the Works to try to minimise impacts to these trees, where possible.

Although BDS found potential Black Cockatoo foraging and roosting habitat within the Development Envelope, it was deemed to be low to moderate quality and represents a very small percentage of the potential foraging and roosting habitat available within the 10km Desktop Study Area (i.e. under 0.02%), as detailed below.

Black Cockatoo Species	Habitat Type	Total Area (ha) in 2.2ha Development Envelope	% of 4377.20ha Potential Native Veg within 10km Study Area
Forest Red-Tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (Endangered)	Potential Foraging (Low-Moderate Quality) Habitat	0.483	0.01%
	Potential Roosting Habitat	1.028	0.02%
Carnaby's Cockatoo (*Calyptorhynchus latirostris or Zanda latirostris*) (Endangered)	Potential Roosting and Foraging (Low-Moderate Quality) Habitat	1.019	0.02%
Baudin's Cockatoo (*Calyptorhynchus baudinii or Zanda baudinii*) (Vulnerable)	Potential Foraging (Low-Moderate Quality) Habitat	0.332	0.01%
	Potential Roosting Habitat	1.019	0.02%

The Development Envelope is outside the Western Ringtail Possum Management Zone. No fauna individuals, calls, tracks or scats were observed during the MRWA inspection (D22#1147518). BDS only observed two threatened bird species during its survey (Baudin's and Forest Red-tailed Black Cockatoo).

Given the small amount of vegetation clearing proposed (0.035ha within a 2.2ha Development Envelope), fauna impacts are unlikely and the risk can be managed using the Main Roads Principal Environmental Works Requirements (PEWR) document (D22#1209968, **Appendix 3**).

Based on the above, the proposed clearing is unlikely to be significant habitat for fauna indigenous to WA and is **not at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- DCCEEW Protected Matters Search Tool Report (**Appendix 2**, accessed 10 February 2023)
- Government GIS Shapefiles:
  - DBCA Threatened fauna database search (Accessed 10 November 2022)
  - DPIRD-005 Native Vegetation Extent (Accessed 23 February 2022)

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

Proposal is not at variance to this Principle.

Assessment

No significant flora was identified during BDS' surveys in March and July 2022, but since they were outside Spring, three species (VU *Thelymitra psammophila,* P3 *Stylidium lepidum* and P4 *Caladenia integra*) were considered to be "Possible" to occur.

Main Roads completed a Targeted Flora Survey of the Development Envelope during Spring 2022 and found none of these three targeted species. The desktop investigation and post survey likelihood-of-occurrence assessment confirmed that the presence of these species was unlikely based on the incompatible habitat type and high amount of weed cover in the Development Envelope.

Based on the above, the lack of significant flora within the Development Envelope and the small amount of proposed clearing, impacts to significant flora are unlikely and the proposed clearing is **not at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- DCCEEW Protected Matters Search Tool Report (**Appendix 2**, accessed 10 February 2023)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority flora database search (Accessed 10 November 2022)

(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.

Proposed clearing is not at variance to this Principle.

Assessment

BDS (2022) reported two patches of Wheatbelt TEC within the Survey Area; however, the MRWA inspection noted that the vegetation canopy was dense, and forests were present. Therefore, it was determined that the conclusions given by BDS for the Wheatbelt TEC assessment were incorrect.

According to the conservation advice (DoE 2015), for vegetation to qualify as the Wheatbelt TEC, the canopy has to be greater than 10% but less than 40% and contain key indicator species. Patch 1 in the BDS report has 40-100% canopy cover and includes *Eucalyptus cornuta*, a species not listed in the conservation advice. Patch 2 in the BDS report varies from 40%-100% to 70-100% eucalypt canopy cover, again with quadrat three recording *E. cornuta*.

It was therefore determined that the Wheatbelt TEC is not present within the Development Envelope due to a co-dominant species in the canopy not being a recognised wheatbelt woodland species and the canopy cover forming forests, not woodlands.

Based on the above, the proposed clearing is **not at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- DCCEEW Protected Matters Search Tool Report (**Appendix 2**, accessed 10 February 2023)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (Accessed 10 Nov 2022)

(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.

Proposed clearing is not likely to be at variance to this Principle.

Assessment

The Development Envelope is within the Southern Jarrah Forest (JAF02) subregion, and contains two Vegetation Associations:

System Association Name:	Narrikup	Kendenup
Vegetation Association No.	3	967
Structure Description:	Forest	Woodland other
Remnant Vegetation by Beard Association Rarity in LGA:	36.37% remaining	22.72% remaining
Remnant Vegetation by Beard Association Rarity in IBRA Region:	67.10% remaining	23.09% remaining

Vegetation Association 3 has over 30% remaining and is not considered under represented.

Vegetation 967 has less than 30% remaining, but only a small amount of native vegetation clearing is proposed (up to 0.35ha) and the majority of Vegetation 967 within the Development Envelope is in a degraded or completely degraded condition, as shown in **Figure 4**.

Based on the above, the proposed clearing is not considered to have a significant impact on remnant vegetation and is **not likely to be at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- Aerial photography
- Government GIS Shapefiles:
  - Pre-European vegetation (Accessed 10 November 2022)
- Statewide Vegetation Statistics (Government of Western Australia 2018)

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

Proposed clearing is not likely to be at variance to this Principle.

Assessment

The BDS survey and Main Roads environmental inspection confirmed that the Development Envelope does not contain any native riparian vegetation that is grown in, or in association with, an environment associated with a watercourse or wetland.
One of the four *Eucalyptus occidentalis* (Swamp Yate) suitable DBH trees within the Development Envelope will require clearing (Tree ID #1). This species can be associated with riparian habitats, however, is also known from alluvial flats, low lying wet areas, around salt lakes and hills (Western Australian Herbarium 2023). In this instance it is not associated with a watercourse, lake or wetland.

Orup Creek is a tributary of the Kalgan River and crosses Albany Highway approximately 150m south of the Development Envelope. The Kalgan River is approximately 2km northeast of the Development Envelope. The desktop assessment confirmed there are no wetlands (Ramsar, geomorphic, etc.) within 10km of the Development Envelope.

It is considered that the removal of one suitable DBH *Eucalyptus occidentalis* (Swamp Yate) tree is unlikely to significantly disturb or interrupt any natural drainage or surface run-off patterns and will not impact the bed or banks of a watercourse.

Based on the above, the proposed clearing is **not likely to be at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- DCCEEW Protected Matters Search Tool Report (**Appendix 2**, accessed 10 February 2023)
- Western Australian Herbarium (2023). Florabase—the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. https://florabase.dpaw.wa.gov.au/. (Accessed 28 Feb 2023).
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (Accessed 10 Nov 2022)
  - DBCA Threatened and Priority flora database search (Accessed 10 November 2022)
  - DBCA Threatened fauna database search (Accessed 10 November 2022)
  - Geomorphic Wetlands (Accessed 10 November 2022)
  - Ramsar Wetlands (Accessed 10 November 2022)
  - Important Wetlands (Accessed 10 November 2022)
  - Watercourses (Accessed 10 November 2022)
  - RIWI Act Rivers (Accessed 10 November 2022)

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

Proposed clearing is not at variance to this Principle.

Assessment

The Development Envelope lies within the Kent System (254Ke), which is described as *"Undulating lateritic plain with lakes and poorly drained flats. Duplex sandy gravels, loamy gravels, grey deep sandy duplexes semi-wet soils and wet soils"*.

The Proposal is in an area classified as low risk of occurrence of acid sulphate soils, and the proposed clearing of up to 0.35ha is unlikely to significantly change flood risk and salinity, waterlogging, water erosion and wind erosion risk, none of which are mapped as being of high likelihood/risk within the Development Envelope:

- 10-50% of the map units have a high to extreme wind erosion risk.
- 10-30% of the map units have a moderate to very high water logging risk
- <30% of the map units have a high to extreme water erosion risk
- 10-30% of the map units have a moderate to high salinity risk or is presently salilne.
- <30% of the map units has a moderate to high flood risk

Based on the above, the proposed clearing is **not at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- Government GIS Shapefiles:
  - Acid Sulphate Soil Risk Map (Accessed 10 November 2022)
  - Soil landscape land quality – Water Erosion Risk (Accessed 10 November 2022)
  - Soil landscape land quality – Wind Erosion Risk (Accessed 10 November 2022)
  - Soil landscape land quality – Salinity Risk (Accessed 10 November 2022)
  - Soil landscape land quality – Surface Acidity (Accessed 10 November 2022))
  - Soil landscape land quality – Waterlogging Risk (Accessed 10 November 2022)
  - Soil landscape land quality – Flood Risk (DPIRD-007) (Accessed 10 November 2022)

(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.

Proposed clearing is not at variance to this Principle.

Assessment

The Development Envelope is within a highly modified landscape consisting of agricultural properties adjacent to the road reserve. There are no nature reserves, conservation areas or Bush Forever Sites within 9.5km of the Development Envelope

Based on the above, the proposed clearing is **not at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- DCCEEW Protected Matters Search Tool Report (**Appendix 2**, accessed 10 February 2023)
- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters & Lands of Interest (Accessed 10 November 2022)
  - Geomorphic Wetlands (conservation category wetlands only) (Accessed 10 November 2022)
  - Ramsar Wetlands (Accessed 10 November 2022)
  - Important Wetlands (Accessed 10 November 2022)

(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.

Proposed clearing is not at variance to this Principle.

Assessment

There are no Public Drinking Water Source Areas (PDWSAs) or groundwater or surface water catchments proclaimed under the WA *Rights in Water and Irrigation (RIWI) Act 1914* within 10km of the Development Envelope. There are no catchments proclaimed under the *Country Areas Water Supply Act 1947* (CAWS Act) within 8.5km of the Development Envelope. No dewatering nor drainage modifications are required to undertake the Works, hence no change to groundwater level or quality is anticipated.

Orup Creek is ~150m south of the Development Envelope, which is a tributary of the Kalgan River ~ 2km northeast of the Development Envelope. The proposed clearing will not disturb or interrupt any natural drainage or surface run-off patterns and will not impact any bed or banks of a watercourse, including Orup Creek.

The Development Envelope is classified as low risk of occurrence of acid sulphate soils. Given the nature and scale of the proposed clearing, the risk to surface water and groundwater is considered negligible.

Based on the above, the proposed clearing is **not at variance** to this Principle.

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- DCCEEW Protected Matters Search Tool Report (**Appendix 2**, accessed 10 February 2023)
- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 10 November 2022)
  - CAWSA Part 2A Clearing Control Catchments (Accessed 10 November 2022)
  - RIWI Act, Groundwater Areas (Accessed 10 November 2022)
  - Soil landscape land quality - Salinity Risk (Accessed 10 November 2022)
  - Groundwater Salinity Statewide (Accessed 10 November 2022)
  - Soil Mapping (Accessed 10 November 2022)
  - Acid Sulphate Soil risk mapping (Accessed 10 November 2022)
  - Soil landscape land quality - Subsurface Acidification Risk (Accessed 10 November 2022)

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not at variance to this Principle.

Assessment

The ground disturbance associated with the proposed clearing is minor in nature and scale and is unlikely to cause or exacerbate the incidence of flooding. The proposed works will not disturb or interrupt any natural drainage or surface run-off patterns and will not impact any bed or banks of a watercourse.

Based on the above, the proposed clearing is **not at variance** to this Principle

Methodology

- BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA* (D23#47388)
- Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (D22#1147518)
- Government GIS Shapefiles:
  - Soil Mapping (Accessed 10 November 2022)
  - Soil landscape land quality - Waterlogging Risk (Accessed 10 November 2022)
  - Soil landscape land quality - Flood Risk (Accessed 10 November 2022)

6 COMPLIANCE WITH CPS 818

Table 5 summarises what further pre-clearing impact assessment is required in accordance with CPS 818.

Table 5. Summary of Additional Management Actions Required by CPS 818

Impact of Clearing	Yes/No or NA	Further Action Required
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.	**No**	No further action required.
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **or** (j) the incidence of flooding.	**N/A**	
3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **and** (j) the incidence of flooding.	**N/A**	
4. The Proposal involves clearing for temporary works (as defined by CPS 818).	**No**	No further action required.
5a. Proposal is within a Region that: • has rainfall greater than 400mm; and, • is South of the 26th parallel; and, • works are necessary in 'Other than dry conditions'; and, • works have potential for **uninfested** areas to be impacted.	**No**	Standard Vehicle and Plant management actions from Principal Environmental Works Requirements (PEWR) document (D22#1209968, **Appendix 3**) and Hygiene Checklists will be applied
5b. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	**No**	No further action required.
6. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback.	**No**	No further action required.
7. Weeds are likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.	**No**	Standard Vehicle and Plant management actions from Principal Environmental Works Requirements (PEWR) document (D22#1209968, **Appendix 3**) and Hygiene Checklists will be applied MRWA sprayed the Development Envelope in October 2022 to eradicate the Bridal Creeper population prior to construction and will undertake further monitoring with follow-up sprays in coming years, as required.
8. Did an environmental specialist conduct the survey or field assessment?	**Yes**	The Environmental Specialist undertaking the biological assessments was suitably qualified and had more than three years' experience.
9. Did an environmental specialist prepare the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal?	**Yes**	The Environmental Specialist preparing the Assessment Report was suitably qualified and had more than three years' experience.

7 REFERENCES

BioDiverse Solutions (2022) *Reconnaissance Flora, Vegetation And Basic Fauna Survey Report - Albany Highway (H001) / Beattie Road Intersection (SLK 343.45-344.50) Kendenup, WA 6323* (TRIM D23#47388)

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Main Roads WA (2002) *Environmental Site Inspection Report For A Clearing Desktop Report H001 Albany Highway – Beattie and West Beattie Roads Improvements (343.44 – 344.70 SLK)* (TRIM D22#1147518)

Paul G Robertson Associates. (2020). *Road Safety Inspection: Beattie Road Intersections with Albany Highway H001. SLKm 343.66 To 344.16 Km.* Prepared For Main Roads WA (MRWA TRIM Ref D22#71884)

8 APPENDICES

APPENDIX 1	Extract From Design Drawings
APPENDIX 2	Matters Of National Environmental Significance Search
APPENDIX 3	Principal Environmental Works Requirements (PEWR) Document (D22#1209968)

APPENDIX 1: EXTRACT FROM DESIGN DRAWINGS

METROPOLITAN & SOUTHERN REGIONS DIRECTORATE
GREAT SOUTHERN REGION

CONTRACT No. 0147/16-0155
INTERSECTION TREATMENTS

ALBANY HIGHWAY (H001)

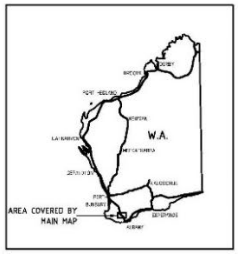
BEATTIE ROAD SECTION

343.45 TO 344.30 SLK

SHIRE OF PLANTAGENET

DRAWINGS - ROADWORKS

LOCALITY PLAN



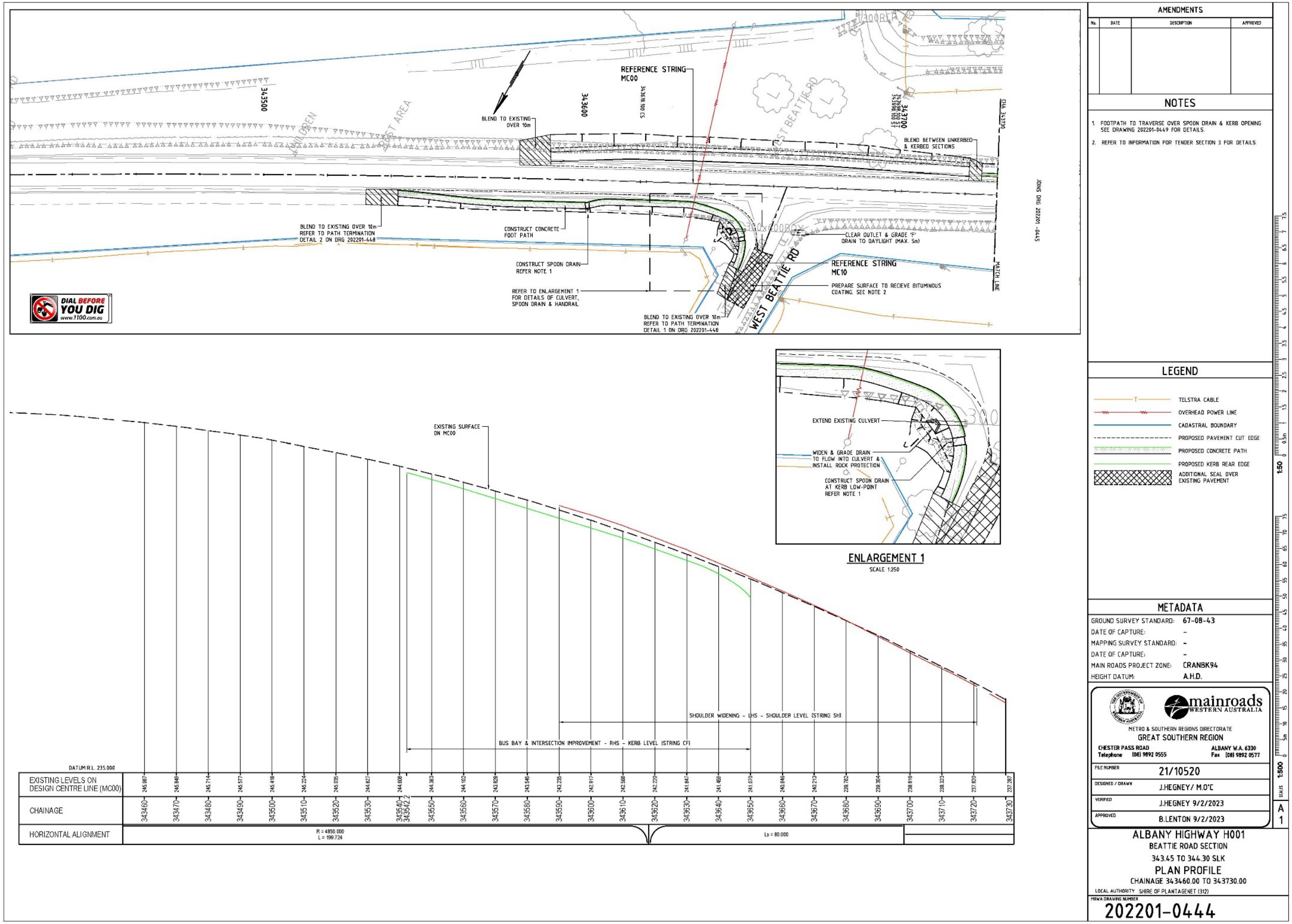
KEY PLAN

PROJECT DRAWINGS

DRAWING NUMBER	DESCRIPTION
	ROAD CONSTRUCTION DRAWINGS
202201-0443	INDEX & LOCALITY PLAN - ROAD CONSTRUCTION DRAWINGS
202201-0444	PLAN PROFILES - CHA 343580.00 TO 343730.00
202201-0445	PLAN PROFILES - CHA 343730.00 TO 343916.00
202201-0447	TYPICAL CROSS SECTIONS
202201-0448	TYPICAL DETAILS - SHEET 1 OF 2
202201-0449	TYPICAL DETAILS - SHEET 2 OF 2
202201-0450	CULVERT SCHEDULE & PROFILES
202201-0451	PAVEMENT MARKING & SIGN LOCATION
202201-0453	CROSS SECTIONS ALBANY HIGHWAY - CHA. 343542 TO 343630
202201-0454	CROSS SECTIONS ALBANY HIGHWAY - CHA. 343640 TO 343730
202201-0455	CROSS SECTIONS ALBANY HIGHWAY - CHA. 343740 TO 343830
202201-0456	CROSS SECTIONS ALBANY HIGHWAY - CHA. 343840 TO 343906

STANDARD DRAWINGS

	DESCRIPTION
9331-0376	KERB TYPES
9331-0377	KERB TREATMENTS
9931-0198	PAVEMENT MARKING LINE TYPES
200331-0182	PAVEMENT MARKINGS AND RRPM'S AT TYPE "BA" AND TYPE "AU" INTERSECTIONS ON RURAL ROADS
200431-0002	STOP AND GIVE WAY LINES
200631-0038	LONGITUDINAL DIVIDING LINES TO PROHIBIT OVERTAKING IN BOTH DIRECTIONS ON TWO LANE, TWO WAY ROADS
201031-0027	RAISED PAVEMENT MARKERS - GENERAL APPLICATIONS - FREEWAYS, HIGHWAYS, MAIN ROADS AND ARTERIAL ROADS IN RURAL AND OUTER METROPOLITAN AREAS
201331-0026	MRWA PATTERN CHANGE MARKS - FOR BARRIER LINES ON CURVES OR CRESTS
8720-0762	LOCATION DETAILS FOR TWO AND THREE POST SIGNS
9548-106	LOCATION DETAILS FOR ONE POST SIGNS
9220-0180	UNBRACED SIGN BLANKS, BOLT HOLE LOCATIONS
8720-0657	POSTS FOR UNBRACED SIGNS: COMMON LENGTHS USED
201131-0064	SMALL BOX CULVERTS - CONSTRUCTION DETAILS - SHEET 1
201131-0065	SMALL BOX CULVERTS - CONSTRUCTION DETAILS - SHEET 2
201131-0066	SMALL BOX CULVERTS - CONSTRUCTION DETAILS - SHEET 3
9831-5497	OFF-ROAD DRAINAGE - TYPICAL PLAN
9831-5498	OFF-ROAD DRAINAGE - CROSS SECTIONS
201131-0069	KERBED BATTER DRAINS - TYPICAL DETAILS
201331-0032	TYPICAL DETAILS GRANULAR TRANSVERSE JOINTS
201631-0084	TYPICAL TIE-IN DETAILS (GRANULAR PAVEMENT)
8820-0257	TYPICAL MOUNTING FOR SINGLE SIDED & BACK TO BACK SIGNS
9020-0693	TYPICAL MOUNTING DETAIL SINGLE SIDE & BACK TO BACK SIGNS
9320-316	TRAFFIC SIGN BRACKETS
9531-2303	STANDARD FINGER BOARD SIGN BRACKETS
200631-0004	LOCATION DETAILS KILOMETRE PLATE G10-3



CHAINAGE	EXISTING LEVELS ON DESIGN CENTRE LINE (MC00)
343460	245.867
343470	245.849
343480	245.714
343490	245.577
343500	245.418
343510	245.224
343520	245.035
343530	244.827
343540 / 343542.2	244.608
343550	244.363
343560	244.102
343570	243.828
343580	243.545
343590	243.235
343600	242.917
343610	242.588
343620	242.220
343630	241.847
343640	241.459
343650	241.070
343660	240.646
343670	240.213
343680	239.762
343690	239.304
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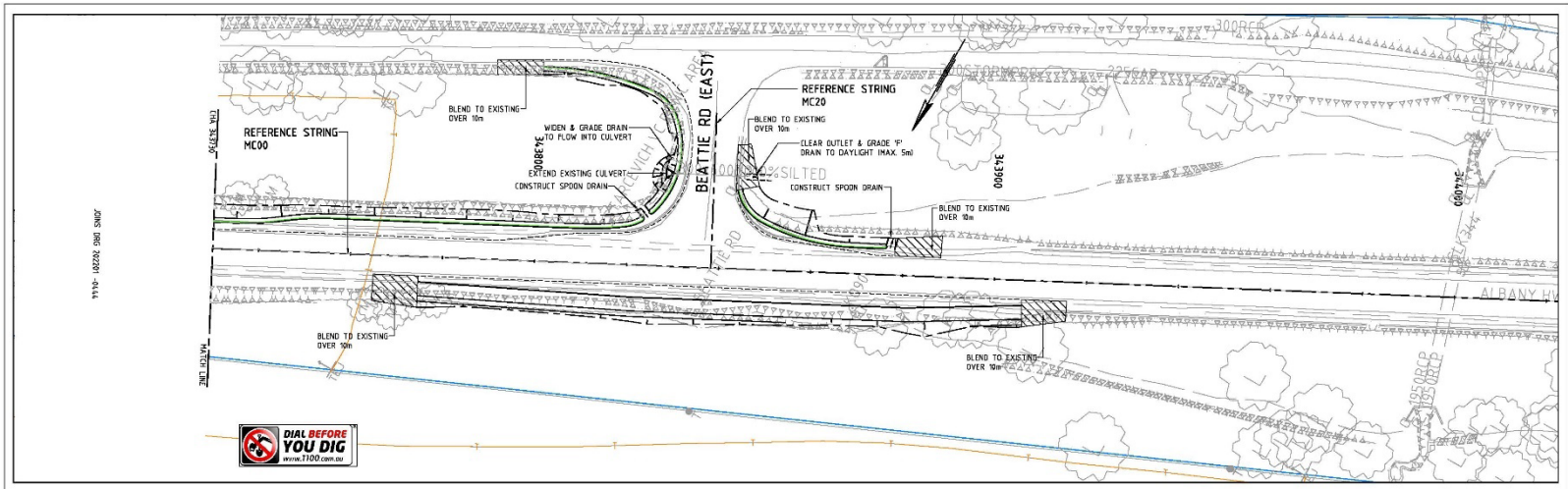
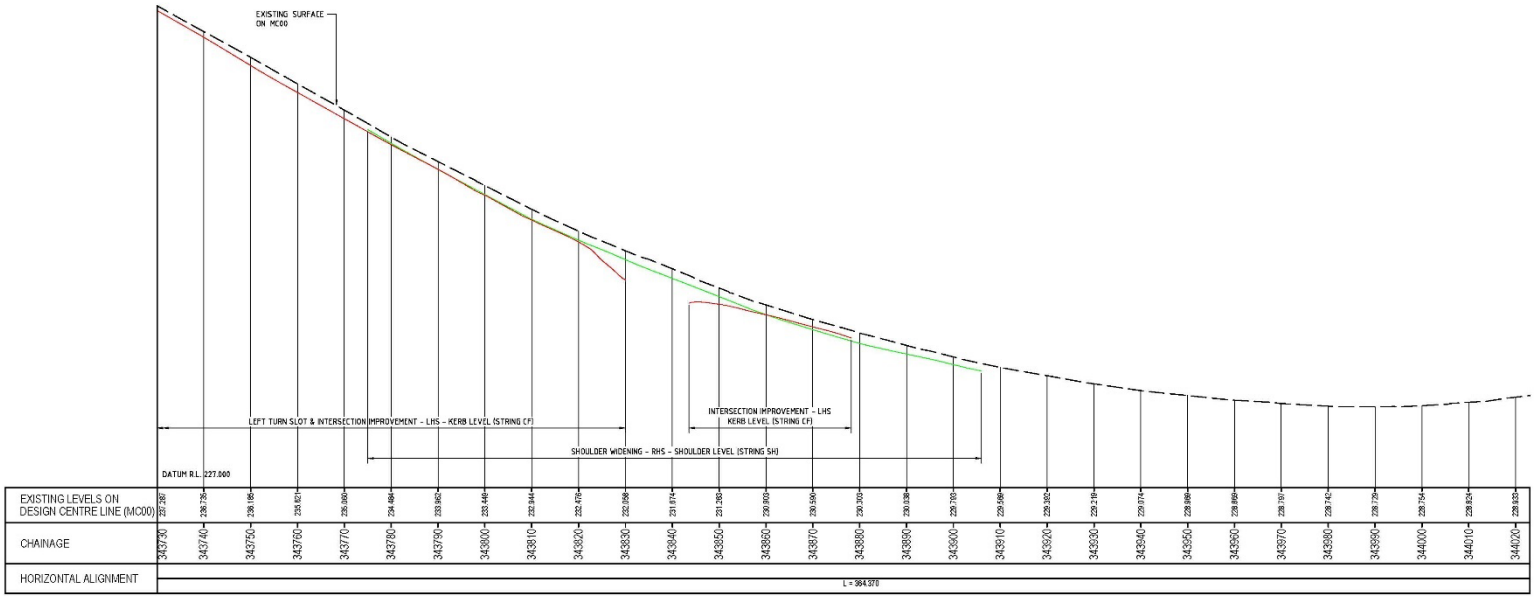
343720	237.820
343730	237.287





AMENDMENTS

No.	DATE	DESCRIPTION	APPROVED

NOTES

LEGEND

- TELSTRA CABLE
- OVERHEAD POWER LINE
- CADASTRAL BOUNDARY
- PROPOSED KERB REAR EDGE
- PROPOSED PAVEMENT CUT EDGE

METADATA

GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	-
MAPPING SURVEY STANDARD:	-
DATE OF CAPTURE:	-
MAIN ROADS PROJECT ZONE:	CRANBK94
HEIGHT DATUM:	A.H.D.

mainroads WESTERN AUSTRALIA
METRO & SOUTHERN REGIONS DIRECTORATE
GREAT SOUTHERN REGION
CHESTER PASS ROAD ALBANY W.A. 6330
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FILE NUMBER	21/10520
DESIGNED / DRAWN	J.HEGNEY/ M.O'C
VERIFIED	J.HEGNEY 9/2/2023
APPROVED	B.LENTON 9/2/2023

SCALES 1:500 1:50 A1

ALBANY HIGHWAY H001
BEATTIE ROAD SECTION
343.45 TO 344.30 SLK
PLAN PROFILE
CHAINAGE 343730.00 TO 344020.00
LOCAL AUTHORITY SHIRE OF PLANTAGENET (312)
MRWA DRAWING NUMBER
202201-0445

APPENDIX 2: MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE SEARCH

Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 10-Feb-2023

DEVELOPMENT ENVELOPE

PMST STUDY AREA (10KM FROM DEVELOPMENT ENVELOPE)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	23
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	14
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Eucalypt Woodlands of the Western Australian Wheatbelt	Critically Endangered	Community likely to occur within area	In feature area
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Zanda baudinii listed as Calyptorhynchus baudinii			
Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Species or species habitat likely to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
MAMMAL			
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
PLANT			
Adenanthos pungens subsp. pungens			
Spiky Adenanthos [19429]	Vulnerable	Species or species habitat may occur within area	In feature area
Banksia anatona			
Cactus Dryandra [82758]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Banksia brownii			
Brown's Banksia, Feather-leaved Banksia [8277]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Banksia pseudoplumosa			
False Plumed-Banksia [82760]	Endangered	Species or species habitat may occur within area	In buffer area only
Caladenia christineae			
Christine's Spider Orchid [56716]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caladenia dorrienii			
Cossack Spider-orchid [6596]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caladenia harringtoniae			
Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Conostylis misera Grass Conostylis [21320]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Darwinia meeboldii Cranbrook Bell [21512]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat may occur within area	In buffer area only
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Wamballup	Nature Reserve	WA	In buffer area only

Regional Forest Agreements		[Resource Information]
Note that all areas with completed RFAs have been included.		
RFA Name	State	Buffer Status
South West WA RFA	Western Australia	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Martagallup and Woogenellup Passing Lanes, Plantagenent Shire WA	2015/7566	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-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, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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APPENDIX 3: PRINCIPAL ENVIRONMENTAL WORKS REQUIREMENTS (PEWR, D22#1209968): Albany Highway (H001)/Beattie Road Intersection Treatments (SLK 343.45-344.30)

mainroads WESTERN AUSTRALIA

Principal Environmental Works Requirements:

0147/16-0155 Albany Highway (H001) / Beattie Road Intersection Treatments (SLK 343.45-344.30)

Pre Construction

- ✓ The Contractor must prepare, implement and maintain processes to ensure that the movement of all vehicles, plant and machinery (including turnaround areas) does not occur outside the **Limits of Vegetation Clearing shown on Figure 1.**
- ✓ The Contractor must ensure that all areas associated with the storage, parking, servicing, wash down and refuelling of all vehicles, plant and machinery are located within designated areas approved by the MRWA Representative prior to works commencing.
- ✓ The Contractor must ensure that all site personnel are aware of the negative impacts caused by unauthorised access beyond the Limits of Vegetation Clearing and the meaning of the pegging/flagging colours, as well as the requirements of this document.
- ✓ The Contractor must comply with the following agencies requirements for fire prevention, including fire and vehicle movement bans: Local Government Authority; Department of Biodiversity, Conservation and Attractions (DBCA); and Department of Fire and Emergency Services (DFES).
- ✓ The Contractor must only undertake fuel storage, chemical storage, vehicle refuelling, servicing and maintenance activities within designated areas approved by the MRWA Representative prior to works commencing. Designated areas must be demarcated and at least 100m away from watercourses and hardstand and bunded to contain any potential spills.
- ✓ Where the Works are proposed to be undertaken outside 7am-7pm on any day (or on any Sunday or public holiday) with noise levels anticipated to exceed assigned levels (as defined in Regulation 8 of the WA *Environmental Protection (Noise) Regulations 1997)* at noise sensitive premises, the Contractor must undertake the Works in accordance with a noise management plan approved by the Local Government Authority.
- ✓ The Contractor must complete the MRWA Vehicle/Machine Hygiene Checklist to verify that all machinery, vehicles and equipment are clean on entry to site (i.e. free of soil and plant material), particularly on the tyres, mud flaps and underbody.

During Construction

- ✓ The Contractor must peg/demarcate the Limits of Vegetation Clearing with PINK flagging tape and vegetation proposed to be retained with WHITE flagging tape.
- ✓ The Contractor must report any damage to vegetation beyond the Limits of Vegetation Clearing to MRWA as an Environment Incident using EQSafe.
- ✓ The vegetation within the Limit of Works may contain transient individuals of conservation significant fauna. The Contractor must undertake tree clearing in the following manner to allow fauna escape:
  - Prior to clearing, use machinery to tap large trees to encourage any animals evacuate.
  - Undertake clearing in one direction and towards areas of native vegetation to allow animals to escape to adjacent habitat.
- ✓ The Contractor must ensure that all onsite personnel undertake visual monitoring and are vigilant to the presence of fauna. Any sightings of fauna, including injury or fatality, must be reported to MRWA as an Environmental Incident using EQSafe.
- ✓ The Contractor must contact the WILDCARE Helpline on (08) 9474 9055 for assistance if sick, injured or orphaned wildlife are found on site and report it to MRWA as an Environmental Incident in EQSafe.
- ✓ The Contractor must undertake pruning in accordance with AS 4373 - 2007 *Pruning of amenity trees,* neatly pruning back branches by hand close to the trunk of the tree or main branches to minimise disturbance to vegetation growing outside the Limits of Vegetation Clearing.
- ✓ The Contractor must ensure the Works do not cause an unreasonable emission of dust that is:
  - a nuisance to the local community or nearby landowners;
  - a visual obstruction and/or safety hazard to the public travelling on roads; and/or
  - harms environmental receptors (e.g. vegetation) within proximity to the Works.
- ✓ The Contractor must maintain spill response equipment suitable for the volume and the type of material that is known to be stored on site.
- ✓ Where spills cannot be cleaned up immediately, the Contractor must ensure the spill is appropriately isolated (i.e. the spill discharge is ceased) and contained, then reported to MRWA via EQSafe.

- ✓ The Contractor must ensure that surface water run-off from the Limit of Works are managed to prevent adverse effects to vegetation, water resources and properties beyond the Limit of Works.

Post Construction

- ✓ The Contractor must submit records of checking all vehicles, machinery and plant are clean on entry to the MRWA Representative.
- ✓ The Contractor must clean up the site and dispose of waste to the satisfaction of the MRWA Representative and in accordance with the requirements of the Local Government Authority, WA state regulations and local government bylaws.
- ✓ The Contractor must provide the MRWA Representative with the following data within 2 weeks of clearing being completed, who will forward it to the MRWA Environment Officer for processing:
  - Start and end date of clearing in a dd/mm/yyyy format.
  - The total area in hectares of vegetation cleared.
  - Shapefile of the area cleared in accordance with the MRWA Environment and Heritage Data Management Standards (https://www.mainroads.wa.gov.au/globalassets/community-environment/environment/environmental-and-heritage-data-standards.pdf).

Caution – Remember

- No clearing of vegetation is permitted beyond the Limits of Vegetation Clearing.
- Use the MRWA Vehicle/Machine Hygiene Checklist to verify all materials, plant and equipment are certified clean, uncontaminated and free from rubble, weeds and disease.
- Do not communicate with External Parties (direct enquiries to the MRWA Representative).
- Report all environmental incidents and near misses using EQSafe.

Road Building Material

Road building materials are supplied to the Contractor by the Principal at the location defined in the Information for Tenderers (IFT) Document i.e.

- ✓ **Taylor's Gravel Pit – Albany Highway (H001) SLK 346.61**

The Contractor must:

- ✓ contact the landowner prior to access.
- ✓ only use stockpiled material.
- ✓ only use existing tracks/routes approved by the landowner.
- ✓ not undertake vegetation clearing.
- ✓ practice good hygiene and complete the MRWA's Vehicle and Plant Hygiene Checklist prior to entry into the pit.
- ✓ ensure all discharges (including noise, dust, waste and drainage) do not leave the pit.

Spoil Disposal

Spoil disposal is nominated to the Contractor by the Principal at the location defined in the Information for Tenderers (IFT) Document i.e.

- ✓ **Taylor's Gravel Pit and Spoil Site – Albany Highway (H001) SLK 346.61**

The Contractor must:

- ✓ contact the landowner prior to access
- ✓ only use existing tracks/routes approved by the landowner.
- ✓ not undertake vegetation clearing.
- ✓ practice good hygiene and complete the MRWA's Vehicle and Plant Hygiene Checklist prior to entry into the pit.
- ✓ not deposit spoil within 50m of any existing natural drainage lines, or in a manner that adversely obstructs or restricts water flows.
- ✓ stockpile spoil in windrows with an approx. height of 2.5m and a distance of 5m between them.
- ✓ ensure all discharges (including noise, dust, waste and drainage) do not leave the pit.
- ✓ manage all project spoil (including cleared vegetation, soil and topsoil) **as dieback infested**.
- ✓ only use spoil stockpile locations approved by the MRWA Representative.

Water

Potential water sources available to the Contractor by the Principal are defined in the Information for Tenderers (IFT) Document i.e:

- **Frost's Water Source – Albany Highway (H001) SLK 344.55**

The water source is a pre-1950 man-made earth dam in Orup Creek, which is a minor, non-perennial water course and is mapped as having a high probability of Acid Sulphate Soils. No impact is anticipated, since no dewatering is proposed and only a small amount of surface water will be extracted for the Project, with measures taken to ensure that anoxic soils are not exposed.

The Contractor must

- ✓ contact the landowner prior to access.
- ✓ only use existing tracks/routes approved by the landowner.
- ✓ not undertake vegetation clearing.
- ✓ practice good hygiene and complete the MRWA's Vehicle and Plant Hygiene Checklist prior to entry into the water source.
- ✓ report water usage via the MRWA Combined Contractor Monthly Report - Works
- ✓ not undertake earthworks that will disturb more than 100m^3 of soil, dewatering or soil draining activities.
- ✓ cease work activities and immediately notify the MRWA Representative if ASS are suspected to have been uncovered due to any of the following being observed:
  - sulfurous smell e.g. hydrogen sulfide or 'rotten egg' gas
  - jarositic horizons or substantial iron oxide mottling in the surface encrustations or in any material dredged or excavated and left exposed;
  - unusually clear or milky blue-green water flowing from or within the area (aluminium released by ASS acts as a flocculating agent);
  - oily-looking bacterial surface scum; or
  - extensive iron stains on any drain or pond surfaces, or iron-stained water and ochre deposits.

Key Contacts

MRWA Representative: **Jonny Hegney** p: 9892 0517 m: 0429101235 e: jonny.hegney@mainroads.wa.gov.au
MRWA Environment Officer: **Michelle North** p: 9323 4081 e: michelle.north@mainroads.wa.gov.au

Contractor Sign-off

All Personnel signing on and undertaking the Works have read and understood this document.

NAME	SIGNATURE	DATE

Contractor must forward signed PEWR to MRWA Representative, to forward to MRWA Environment Officer

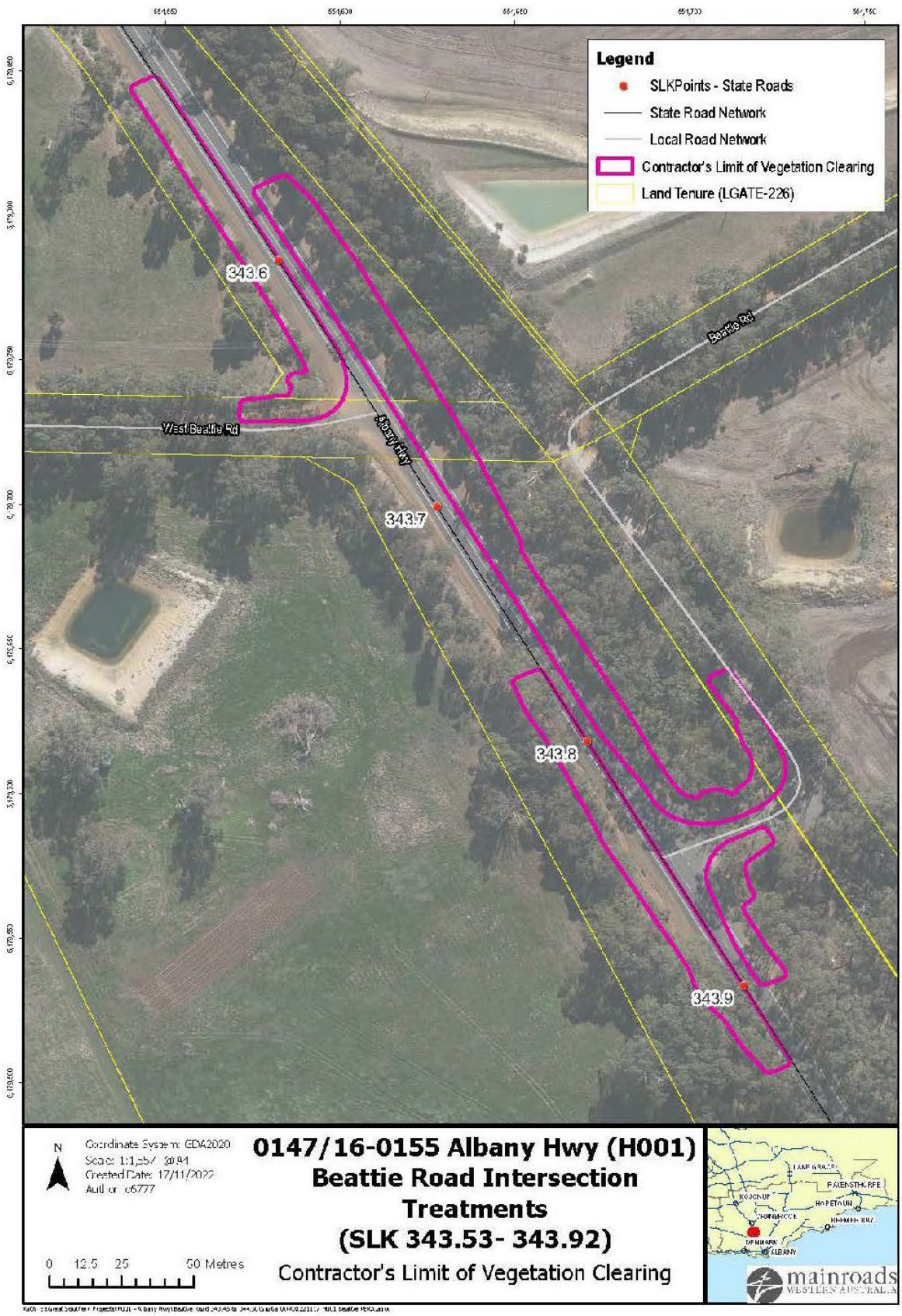

Figure 1. Limit of Vegetation Clearing for 0147/16-0155 Albany Highway (H001) / Beattie Road Intersection Treatments (SLK 343.45-344.30)

mainroads WESTERN AUSTRALIA

Vehicle / Machine Hygiene Checklist –

0147/16-0155 Albany Highway (H001) / Beattie Road Intersection Treatments (SLK 343.45-344.30)

Vehicles, machinery, equipment and plant can transport invasive species like Phytophthora cinnamomi, pests and weeds into remnant vegetation. This checklist ensures that plant and vehicles do not arrive at Main Roads sites containing material from another site.

Table 1: Vehicle / Plant Details

Date & Time:	
Location of Inspection:	
Owner / Operator:	
Plant Type / Make/ Model:	
Registration Number:	
Odometer / Hour Meter Reading:	

Table 2: Hygiene Checklist

Check the following sections of the vehicle / plant to ensure they are clean and free of vegetative and soil material

Item	Type (front, rear, sides)	Not Applicable	Not Clean	Clean
Scrub bar		☐	☐	☐
Air filter		☐	☐	☐
Fenders		☐	☐	☐
Radiator area		☐	☐	☐
Belly plates /underside		☐	☐	☐
Bucket, blade and forks, backhoe attachment , scraper		☐	☐	☐
Rippers		☐	☐	☐
Suspension		☐	☐	☐
Spare wheels		☐	☐	☐
Wheels and tracks, skids		☐	☐	☐
Drill bits		☐	☐	☐
Mud flaps		☐	☐	☐
Flat sections	*Esp. horizontal*	☐	☐	☐
Cupped sections		☐	☐	☐
Chassis areas	*H or C sections*	☐	☐	☐
Hinged points	*Esp. articulated areas e.g. truck, crane, excavator arm*	☐	☐	☐
Leaks	*Motor, transmission, hoses, hydraulics to be stuck down, reservoirs*	☐	☐	☐

Item	Type (front, rear, sides)	Not Applicable	Not Clean	Clean
Spill kits		☐	☐	☐
Fire suppression gear		☐	☐	☐
Trailers		☐	☐	☐
Cargo space		☐	☐	☐
Inside Cabin		☐	☐	☐
Under the Bonnet / Engine Bay		☐	☐	☐
Lights, Bumpers and Accessories e.g. toolboxes, spare tyres.		☐	☐	☐
Hydraulics and any attachments e.g. arms/booms, tynes and rippers, support frames, hydraulic hoses etc.		☐	☐	☐
OTHER COMMENTS ON HYGIENE OF VEHICLE				

INSPECTION SIGN OFF

I declare that the vehicles, plant and equipment listed above has been thoroughly inspected by myself and is free of all vegetative and soil material.

Name		**Position**	
Signature		**Date**	

I concur that the plant / equipment meets to required Hygiene Standards and is therefore suitable for entry to this site.

Name		**Position**	
Signature		**Date**	

OR

This vehicle / plant does not meet the required hygiene standards, and is therefore not suitable for entry to this site until the following areas are further cleaned.

Name		**Position**	
Signature		**Date**	

PHOTOS

<Insert photos if required>