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Main Roads Western Australia

**Bunbury Port Access Project
(Stage 2)**

Environmental Offset Plan

September 2011



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Executive Summary

Main Roads proposes to construct the Bunbury Access Project Stage 2 (the Project) to provide improved access to the Bunbury Port. The Project comprises Stage 2 of the Bunbury Port Access Road (PAR) and Stage 1 of the Bunbury Outer Ring Road (BORR) as shown at Figure 1.

Main Roads commissioned GHD Pty Ltd (GHD) to prepare an Environmental Offset Plan (EOP) for the Project. This plan has been prepared based on advice from Main Roads in respect to the impact mitigation measures implemented, residual impacts and proposed offset measures.

The Project was referred to the Environmental Protection Authority (EPA) in late 2010 under Section 38 of the *Environmental Protection Act 1986* (EP Act) and the EPA subsequently determined that the Project did not require formal environmental assessment. Consequently project clearing will be conducted under Main Roads Statewide Purpose Clearing Permit (CPS 818/5). An assessment of the proposed clearing against the Ten Clearing Principles has concluded that it is at variance with principles (b) and (f), and may be at variance with principle (e). Under the conditions of CPS 818/5 any variance with the clearing principle requires the provision of an environmental offset.

In late 2010, Main Roads referred the Project to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DoSEWPC) under the provision of the *Environment Protection and Biodiversity Conservation Act 1999*. DoSEWPC has determined that the proposed action is a 'Controlled Action' as a result of impacts on threatened species – Western Ringtail Possum (WRP) (*Pseudocheirus occidentalis*), Carnaby's Cockatoo (*Calyptrorhynchus latirostris*) and Baudin's cockatoo (*C. baudinii*). DoSEWPC has since determined that the action will be assessed through Preliminary Information. Conditions 3-7 prescribed as part of the project approval (EPBC 2010/5768) require a number of management measures to be implemented to manage impacts on threatened fauna species. This report has been prepared to comply with Condition 5 of the approval which requires the preparation, approval and implementation of an Environmental Offset Plan.

The route for the PAR and BORR were included in the draft Greater Bunbury Region Scheme (GBRS) which was gazetted in January 2008. The Western Australian Planning Commission (WAPC) who prepared the GBRS referred it to the EPA for assessment under the EP Act in August 2006. In their report (Bulletin 1108) the EPA provided specific recommendations in respect to the PAR and BORR. Both road projects were identified as requiring more detailed consideration due to deferred factors – remnant vegetation, wetlands, fauna and noise. The WA Minister for the Environment released Statement No. 000697 in October 2005 which prescribes conditions relevant to the implementation of PAR and BORR.

This EOP has been prepared to document impact mitigation measures implemented by Main Roads, residual environmental impact and the proposed environmental offsets required to address Commonwealth and West Australian environmental legislation.

The impacts requiring and environmental offset are in respect to:

- ▶ Loss of Western Ringtail Possum habitat - 5.5 ha confirmed habitat, 14.3 ha of potential habitat
- ▶ Loss of habitat for Carnaby's Cockatoo and Baudin's Cockatoo – 3.5 ha confirmed habitat, 13.2 ha of potential habitat
- ▶ Moore Road wetland fringe– no direct wetland impact



- ▶ Preston River crossing – 1.5 ha of clearing
- ▶ Clearing impact on Ferguson River crossing – 0.3 ha
- ▶ Clearing impact on regionally significant and underrepresented vegetation Complexes – Southern River (14.8 ha), Guildford (0.7 ha) and Swan (1.2 ha)

Main Roads proposes to offset these impacts through the implementation of both direct and contributing offsets. These offsets being:

Direct Offset (Land Purchases / Rehabilitation)

The purchase, implementation of management measures (revegetation and fencing) will be conducted as part of project implementation. The purchased offset land will be rezoned to Regional Open Space and incorporated into the conservation estate through the GBRS planning process.

Proposed land purchases are:

- ▶ Lot 1 Moore Road (36.4 ha)
- ▶ Lot 3 Moore Road (23.5 ha)
- ▶ Lot 15 South Western Highway land and revegetation of ecological linkage to Preston River (8.6 ha)
- ▶ Lot 15 South Western Highway remnant vegetation (7.8 ha)
- ▶ Portion of Lot 5 adjacent to the Ferguson River (4.2 ha)

In addition Main Roads proposes to revegetate land (Part of Lot 11, Lot 5814 and Reserve 31 866) adjacent to the existing Preston River Foreshore Reserve (7.7 ha).

The securing of these lots into the conservation estate is in line with recommendations of EPA Bulletin 1282 (EPA, 2008b). Land purchases and rehabilitation also provides an important link for the Preston River to Ocean Regional Park (Government of WA, 2011).

Contributing Offsets

- ▶ Carnaby's Cockatoo research funding to the Department of Environment and Conservation (DEC) (\$300 000). This is congruent with EPBC Act approval Condition 4.
- ▶ Western Ringtail Possum research funding to the University of WA (\$250 000) as required under EPBC Act approval Condition 6.
- ▶ Additional research funding, yet to be defined, to the University of WA to monitor the efficacy of the possum rope bridge to be constructed as part of the Project.



1. Introduction

1.1 Background

Main Roads proposes to construct the Bunbury Access Project Stage 2 (the Project) to provide improved access to the Bunbury Port. The Project comprises Stage 2 of the Bunbury Port Access Road (PAR) and Stage 1 of the Bunbury Outer Ring Road (BORR) as shown at Figure 1. The Project will provide a high standard route for traffic to access Bunbury Port and the developing Preston industrial areas east of Bunbury, without having to travel through the developed areas of Bunbury. Construction is planned to commence in early 2012 and be delivered as a Design and Construct Contract by the Contractor.

Main Roads commissioned GHD Pty Ltd (GHD) to prepare an Environmental Offset Plan (EOP) for the Project. This plan has been prepared based on advice from Main Roads in respect to the impact mitigation measures implemented, residual impacts and proposed offset measures.

1.2 Environmental Approvals

West Australian

In late 2010 the Project was referred to the Environmental Protection Authority (EPA) for a determination under Section 38 of the *Environmental Protection Act 1986* (EP Act) on the requirement for formal assessment. In February 2011 the EPA determined that the Project did not require formal environmental assessment. Consequently Main Roads will conduct the Project clearing under its Statewide Purpose Clearing Permit (CPS 818/5). An assessment of the proposed clearing impact against the Ten Clearing Principles has concluded that the Project clearing may be at variance with Principles b), e) and f).

As required under the conditions of CPS 818/5 variance with any of the clearing principle requires the provision of an environmental offset.

Commonwealth

In late 2010, Main Roads referred the Project to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DoSEWPC) under the provision of the *Environment Protection and Biodiversity Conservation Act 1999*. DoSEWPC has determined that the proposed action is a 'Controlled Action' and it be assessed through Preliminary Information as a result of impacts on threatened species – Western Ringtail Possum (WRP) (*Pseudocheirus occidentalis*), Carnaby's Cockatoo (*Calyptorhynchus latirostris*) and Baudin's cockatoo (*C. baudinii*).

DoSEWPC issued conditional environmental approval for the project on September 7, 2011. The approval (Appendix A) prescribed a number of conditions to manage impacts on threatened fauna species. This report has been prepared specifically to address Condition 5 which requires the preparation, approval and implementation of an Environmental offset Plan.

1.3 Planning Approvals

The original route for the PAR is the result of a major road planning study completed by Main Roads in 1997 in conjunction with planning for the BORR. The route for the PAR and BORR were included in the draft Greater Bunbury Region Scheme (GBRS). The GBRS was effected in November 2007 after being passed through parliament, and gazetted in January 2008.



The Western Australian Planning Commission (WAPC) prepared the GBRS which was then referred to the EPA for assessment under Section 48 of the EP Act in August 2006. In their report (Bulletin 1108) the EPA provided specific recommendations in respect to the PAR and BORR. The EPA recommended some sections of these roads be re-aligned; and that the assessment of a number of environmental factors be deferred so that the EPA would have the opportunity to assess the projects in more detail at the appropriate stage in the planning process. Both PAR and BORR were identified as requiring more detailed consideration due to deferred factors – remnant vegetation, wetlands, fauna and noise.

The WA Minister for the Environment released Statement No. 000697 (Appendix B) prescribing conditions for the implementation of the GBRS in October 2005. Condition 5 of the approval requires the “Preparation of an offset strategy prior to construction of the Port Access Road and Bunbury Outer Ring Road.

The PAR Stage 2 that forms part of this Project is not the ultimate alignment as detailed in the GBRS. This current alignment has avoided impact on the three areas of vegetation identified by the EPA as of regional conservation significance (EPA, 2003) - Areas 9, 10 and 11. The current BORR Stage 1 alignment impacts on two vegetated areas (Area 6 and Area 8) noted as being of regional significance by the EPA (2003) in their assessment of the GBRS. These areas are the Preston River crossing (Area 6) and the vegetation east of Moore Road (Area 8). Re-alignment of the BORR Stage 1 during the design process to avoid these areas has not been possible.

1.4 'Scope

This EOP has been prepared to document the environmental offsets required to address:

- Part V of Main Roads Purpose Clearing Permit 818/5
- Conditions prescribed by the Minister for the Environment in approving the Greater Bunbury Region Scheme (Statement No. 000697)
- Advice and conditions prescribed by DoSEWPC the approval of the Project (EPBC 2010/5768) (Condition 5)

1.4.1 Commonwealth Environmental Requirements

Approval conditions were prescribed by DoSEWPC (2010/5768) in giving the Project conditional environmental approval. These conditions as detailed at Appendix A address issues such as:

- Defining the protection and habitat clearing limits for Western Ringtail Possum and Black Cockatoo species
- The requirements to provide funding for research for Western Ringtail Possum and Carnaby's Black Cockatoo
- The preparation and implementation of an Offset Management Plan
- The preparation and implementation of a Western Ringtail Possum Management Plan
- Audit, monitoring and reporting requirements

Earlier correspondence from DoSEWPC (Reference 2010/5768) to Main Roads (11 February 2011) noted that due to potential impacts on listed threatened species and communities ie Western Ring-tailed



Possum, Carnaby's Cockatoo and Baudin's Cockatoo Main Roads is required to provide suitable environmental protection and enhancement offsets.

The advice noted that:

"Outcomes on other projects with impacts on these fauna species have been successfully achieved where:

1. For every hectare of Black Cockatoo foraging habitat cleared, 4 hectares are created through the successful establishment of new plantings of foraging species and/or infill planting of degraded habitat: or
2. For every hectare of foraging habitat cleared, 6 hectares of existing unprotected or 'at risk' habitat is protected in perpetuity, or
3. A combination of new plantings and/or infill-planting and/or protection of existing habitat in perpetuity produces similar overall results to those above.
4. 1:1 offset for Western Ringtail Possum habitat has previously been accepted for projects clearing less than 20% of the remnant habitat patch."

The EOP also considers the mitigation and enhancement measures for these species as detailed in:

- ▶ *Environment Protection and Biodiversity Conservation Act 1999* Draft referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and Forest red-tailed black cockatoo (Commonwealth of Australia, 2011).
- ▶ Significant Impact guidelines for the vulnerable western ringtail possum (*Pseudocheirus occidentalis*) in the southern Swan Coastal Plain, Western Australia (Australian Government, 2009).

1.4.2 West Australian Environmental Requirements (CPS 818/5)

The proposed project clearing will be conducted under Main Roads Statewide Purpose Clearing Permit CPS 818/5. An assessment of the Project clearing impact against the Ten Clearing principles identified that clearing is at variance with Principles b) and f), and may be at variance with Principle (e). These principles are:

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

As per the conditions of Part V, Clause 16 of CPS 818/5 Main Roads is required to implement an environmental offset that follows the principles detailed in the clearing permit.

1.4.3 West Australian Planning Requirements

Conditional approval for the implementation of the GBRS, which includes the PAR and BORR, issued by the WA Minister for the Environment (Statement No. 000697) included a condition that required the



“Preparation of an offset strategy prior to construction of the Port Access Road and Bunbury Outer Ring Road.’

The condition details that - “With respect to the Bunbury outer Ring Road, the strategy shall include rehabilitation of the strip of land adjacent to the road in the vicinity of Lot 15 North Boyanup Road (South Western Highway)”



2. Environmental Impacts

2.1 Impact Mitigation and Enhancement

The environmental impacts of the Project are documented in the Bunbury Port Access Project (Stage 2) Environmental Impact Assessment (GHD, 2011).

The following section considers those Project impacts that require the implementation of an environmental offset. These being impacts on:

- ▶ Western Ringtail Possum habitat
- ▶ Carnaby's Cockatoo and Baudin's Cockatoo habitat
- ▶ Moore Road wetland
- ▶ River crossings - Preston River and Ferguson River
- ▶ Regionally significant and underrepresented vegetation Complexes – Southern River, Guildford and Swan

Throughout the development of the Project, Main Roads has attempted to minimise the impacts of the project in line with:

- ▶ the impact mitigation and enhancement of best practise requirements of DoSEWPC (Commonwealth of Australia, 2011)
- ▶ CPS 818/5 offset principles (c) – “Offsets are implemented only once all avenues to avoid, minimise, rectify or reduce environmental impacts have been exhausted.”

Table 1 summarises impact mitigation measures that have been implemented and the details the residual impacts requiring an environmental offset.



Table 1 Bunbury Port Access Project (Stage 2) Summary of Impact Mitigation Measures and Residual Impacts

Item	Environmental Asset	Legislative Protection	Impact Mitigation				Residual Impact Requiring Offset	Proposed Offset	
			Avoid	Minimise	Rectify	Reduce		Direct	Contributing (Enhancing)
1	Western Ringtail possum. Loss of habitat (<i>Corymbia calophylla</i> / <i>Agonis flexuosa</i> open woodland comprising Southern River and Guildford Vegetation Complexes)	EPBC Act listed species (Section 18 and 18A) Wildlife Conservation Act 1950, Schedule 1 species Clearing principle (b)	A number of alignment options were considered for PAR alignment of the project. The option selected reduced possum habitat clearing by 4.8 ha from the alignment option with the greatest impact.	Clearing will be the minimum necessary for the safe construction and operation of the Project. Fencing will be aligned to minimise habitat loss.	Revegetation with suitable habitat species	Install a possum rope bridge to link habitat areas	Yes	Yes	Yes
2	Carnaby's Cockatoo foraging habitat - <i>Corymbia calophylla</i> / <i>Agonis flexuosa</i> open woodland	EPBC Act listed species (Section 18 and 18A) <i>Wildlife Conservation Act 1950</i> , Schedule 1 species Clearing principle (b)	A number of alignment options were considered for PAR alignment of the project. The option selected reduced possum habitat clearing by 4.4 ha from the alignment option with the greatest impact.	Clearing will be the minimum necessary for the safe construction and operation of the Project. Fencing will be aligned to avoid habitat loss.	Revegetation of portions of the project site with suitable foraging species	No other options to further reduce the residual impact	Yes	Yes	Yes
3	Moore Road wetland buffer - EPP Lake and Environmental Sensitive Area	<i>Environmental Protection (Swan Coastal Plain Lakes) Policy, 1992</i> <i>Environmental Protection (Clearing of Native Vegetation) Regulations, 2004.</i> Clearing Principle (f)	Not possible to avoid entirely the wetland buffer. The EPP mapped area and wetland vegetation is 15 m and 35 m beyond the clearing footprint respectively.	Clearing of fringing vegetation will be minimum necessary for the safe construction and operation of the Project. Road drainage will be designed so that there is no discharge of off road run off to the wetland.	The roadworks batter within the wetland fringe will be revegetated with indigenous native species	No other options to further reduce the residual impact	Yes	Yes	No
4	Preston River - Conservation category wetland, Environmentally Sensitive Area and Swan vegetation complex Ferguson River – Multiple use wetland and Swan vegetation complex	<i>Environmental Protection (Clearing of Native Vegetation) Regulations, 2004</i> Clearing Principle f Clearing Principle (f)	Not possible to avoid entirely this watercourse due to road crossing. Bridge abutments setback to maintain fauna linkage along the river bank. The bridge design avoids long term disturbance of the primary watercourse.	Clearing will be minimised to minimum necessary for the safe construction and operation of the Project. Fencing will be aligned to minimise impact on riparian vegetation. Road drainage will be designed so that there is no discharge of off road run off to the wetland.	Proposed revegetation of road reserve at crossing with native species. Drainage designed so that there is no direct discharge of road run-off to the watercourse.	No other options to further reduce the residual impact	Yes	Yes	No
5	Regionally significant vegetation - Southern River Complex	Clearing principle (e)	The selected PAR alignment option reduced clearing of this complex by 7.8 ha There were no further options to reduce the impact on this complex as bridge crossings are required at the Ferguson and Preston Rivers.	Clearing will be minimised to minimum necessary for the safe construction and operation of the Project.	Revegetation of project site.	No other options to further reduce the residual impact	Ye	Yes	No



Item	Environmental Asset	Legislative Protection	Impact Mitigation				Residual	Proposed Offset	
			Avoid	Minimise	Rectify	Reduce			
6	Regionally significant vegetation – Swan Complex– Preston and Ferguson River crossings	Clearing principle (e)	The selected PAR alignment option reduced habitat clearing by 0.8 ha There were no further options to reduce the impact on this vegetation complex.	Clearing will be minimised to minimum necessary for the safe construction and operation of the Project.	Revegetation of road reservation at bridge crossings	No other options to further reduce the residual impact	Yes	Yes	No
7	Regionally significant vegetation – Guildford Complex	Clearing principle (e)	There were no options to reduce the impact on this complex.	Clearing will be minimised to minimum necessary for the safe construction and operation of the Project.	No options to rectify the impacts	No other options to further reduce the residual impact	Yes		No



3. Residual Impacts Requiring Offset

As shown in Table 1 impact mitigation of the key environmental assets has not been possible and residual impacts remain. These residual impacts are discussed in the following section.

3.1 Fauna Habitat Impacts (Item 1 and 2, Table 1)

The direct loss of fauna habitat, particularly for Western Ringtail Possum, Carnaby's and Baudin's Cockatoo is considered to be a significant impact of the Project.

The alignment selection process considered a number of potential routes for the PAR Stage 2 alignment to link the existing PAR Stage 1 with the BORR Stage 1. These options are shown at Figure 2. The alignment that has been selected and now forms the current Project, has reduced the habitat impact for both Western Ringtail Possum and White-tailed Black Cockatoo species. The reduction in habitat impacts is detailed in Table 2.

Table 2 Direct Habitat Loss for Conservation Significant Fauna Species

Species	Worst Case Alignment Option Potential Habitat Loss (ha)	Current Alignment Potential Habitat Loss	Reduction in Habitat Potential Loss (ha)
Western Ringtail Possum	19.1	14.3	4.8
White-tailed Black Cockatoo	17.6	13.2	4.4

Residual impact of habitat loss for these species remains and consequently offsets are required under the state and Commonwealth requirements detailed at Section 1.4.

The loss of fauna habitat listed as Schedule 1 under the WA *Wildlife Conservation Act 1950* is at variance with Clearing Principle (b).

3.2 Moore Road Wetland Impact (Item 3, Table 1)

The Moore Road Wetland occurs south of the proposed earthworks footprint approximately 300 m west of the Boyanup Picton Road intersection 3. The wetland is protected under the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* and defined as an Environmentally Sensitive Area (ESA) under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. The wetland vegetation is 35 m from the earthworks footprint while the edge mapped EPP Lake boundary is 15 m from the footprint.

The wetland has been grazed for a number of years and comprises remnant paperbarks over a weed/pasture understorey. It has been assessed as having a vegetation condition rating of Good. The Project embankment will traverse the wetland buffer, impact the immediate wetland fringe and pass within 35 m of the wetland vegetation at it closest point.



Impacts on the wetland could not be avoided through the project development stage and consequently an environmental offset to address the residual impact is required. The road drainage will be constructed so that there is no direct discharge of road run-off to the wetland.

The impact of the Project on the wetland fringe is at variance with Clearing Principle (f).

3.3 Preston River Impact (Item 4, Table 1)

The Preston River is a Conservation Category Wetland and also recognised as an ESA. The river foreshore and its surrounds have been grazed for many years and essentially comprise an overstorey of native Jarrah (*Eucalyptus marginata*), Flooded Gum (*E. rudis*) and Red Gum (*Corymbia calophylla*) with a weed / pasture understorey. The vegetation condition of the watercourse is considered as Degraded.

The watercourse will be impacted by the construction of two bridges at the highway crossing and it is expected that additional clearing will be required to allow for the safe construction of the bridges.

The impact of the river crossing is at variance with Clearing Principle (f).

3.4 Ferguson River Impact (Item 4, Table 1)

The Ferguson River is a Multiple Use wetland. The river foreshore has been previously altered by major drainage works and drainage excavation works. The PAR crossing comprises a remnant overstorey and, regrowth *E. rudis* and a weed infested understorey.

The impact of the river crossing is at variance with Clearing Principle (f).

3.5 Regionally Significant Vegetation Impact (Items 5, 6 and 7, Table 1)

Regional vegetation has been mapped by Heddle, *et al.* (1980) at a scale of 1:250,000 based on major geomorphic units on the Swan Coastal Plain. The Project traverses three vegetation complexes defined by Heddle as described in Table 3:

Table 3 Vegetation Complexes Traversed across the Project Area

Vegetation Complex	Vegetation Description
Swan	Woodland of <i>Eucalyptus rudis</i> and <i>Melaleuca raphiophylla</i> with localised occurrences of low open forest of <i>Casuarina obesa</i> and <i>Melaleuca cuticularis</i> .
Guildford	Mixture of Open Forest to Tall Open Forest of Wandoo (<i>Eucalyptus wandoo</i>) Jarrah and Marri, and Woodland of Wandoo (with rare occurrences of <i>Eucalyptus lane-poolei</i>). Minor components include Flooded Gum.
Southern River	Open Woodland of Jarrah (<i>Eucalyptus marginata</i>), Marri (<i>Corymbia calophylla</i>) and Banksia species with Fringing Woodland of Flooded Gum (<i>Eucalyptus rudis</i>) and paperbark (<i>Melaleuca raphiophylla</i>) along creek beds.

According to Heddle (1980), the remaining pre-European vegetation extent of these vegetation types is as shown in Table 4.



Table 4 Regional Assessment of Vegetation Extent (Swan Coastal Plain)

Vegetation Complex	Pre-European Extent (Ha)	Current Extent (Ha)	% Remaining (of Pre-European Extent)	Status
Swan	92,497	4 662	5.0	Endangered
Guildford	15,783	2 454	15.6	Vulnerable
Southern River	57,979	11 501	19.8	Vulnerable

The mapped Heddle complexes can be used to determine vegetation extent and status on the Swan Coastal Plain. A vegetation type is considered to be under-represented if there is less than 30 % of its original extent remaining. The WA Environmental Protection Authority (EPA) recognises vegetation associations that are not well represented in reserves as being 'significant'. Vegetation complexes which have 10%-30% of their pre-European extent remaining may be considered regionally significant (EPA 2006).

Although the site vegetation has been degraded through past land use it is considered to be of regional significance. Clearing Principle (e) also recognises the significance of these remnant vegetation complexes and the Project clearing may be considered to be at variance. It is expected that Project clearing impact will be as detailed in Table 5.

Table 5 Assessment of PAR Stage 2 Clearing Impact on Regional Vegetation Complexes

Vegetation Complex	Current Extent (Ha)	% Remaining (of Pre-European Extent)	Project Clearing	Project Clearing as % Remaining (of Pre-European Extent)
Swan	4 662	5.0	1.2	0.03
Guildford	2 454	15.6	0.7	0.03
Southern River Complex	11 501	19.8	14.8	0.13

As shown in Table 5, the Project clearing as a proportion of the current extent of the vegetation complexes is very small this may be considered to be at variance with Clearing Principles (e) and (f).



4. Proposed Environmental Offsets

4.1 Offset Rationale

Main Roads proposes to address the requirements of both the Commonwealth and West Australian offset requirements through the protection and enhancement of key environmental assets listed at Section 2.1 through a number of both direct and contributing offsets. These are defined by the EPA Position Statement No. 9 (EPA, 2008) as:

Direct Offsets

Direct offsets are environmentally beneficial activities undertaken to counterbalance an adverse environmental impact or harm, with the goal of achieving a 'net environmental benefit'.

Contributing Offsets

Contributing offsets are environmentally beneficial activities undertaken to complement and enhance direct offset activities. Contributing offset activities may not immediately assist in a 'net environmental benefit' outcome, but instead materially add to environmental knowledge, research, management and protection, and ultimately lead to improved environmental outcomes.

These offsets have been developed congruent with DoSEWPC conditions and advice, and the principles detailed in CPS 818/5.

The proposed offsets areas are shown at Figure 3, while a summary of the residual impacts on key environmental assets and the proposed offset are detailed in Table 6. Each of the environment values of the proposed offsets are summarised below.

4.2 Direct Offsets – Land Purchases

Main Roads has secured the purchase of land for direct offsets. These are properties and their environmental values are detailed below.

4.3 Lot 1 Moore Road

Main Roads has secured the purchase of Lot 1 Moore Road which is traversed by the Project. An area of 36.4 ha is proposed to be set aside as part of the direct offsets for the Project.

Environmental Values

Lot 1 was identified by the EPA (2008), being part of Investigation Area 11 as comprising regionally significant vegetation as detailed at Appendix C. The lot forms part of Recommendation Area B which the EPA (2008) recommended be reserved as Regional Open Space.

A site survey conducted in October 2010 identified six main vegetation types within the lot. The vegetation types are outlined below.

- ▶ Low lying wetland area, heavily vegetated with a good combination of trees, understory and ground cover.
- ▶ Low lying wetland - mostly populated with *Melaleuca* species and has a degraded understory consisting of pasture and sedges.



- Open area of pasture.
- Dense Banksia woodland with a good understory and ground cover.
- Jarrah, Marri, *Banksia ilicifolia* and Melaleuca woodland, the understory in this area is dense in some parts and degraded in others.
- Agonis, Jarrah, Marri and *Banksia ilicifolia* woodland with a degraded understory.

The vegetation condition within Lot 1 varies from excellent condition to degraded as shown at Appendix D

A number of different fauna habitats are present within the lot, including:

- Seasonal wetland; and
- Banksia/Agonis/Jarrah woodland;

The habitat present varies from degraded to excellent and the majority has the potential to regenerate. A dense overstorey of mature trees with breeding hollows provides both breeding and feeding habitat for significant species. It is highly likely that feral predatory species such as foxes and cats are present on the site.

During the October 2010 site inspection evidence of Cockatoo feeding and possum droppings were found within the lot. A previous site visit conducted in 2008 found significant numbers of active possum dreys and included a number of Cockatoo sightings. These observations indicate that the lot is valuable as fauna habitat supporting a number of threatened species.

Environmental Offset

Lot 1 provides the following environmental attributes to offset the residual impact of the Project:

- Provides 36.4 ha of potential Cockatoo foraging habitat
- Provides 36.4 ha of known Western Ringtail Possum habitat
- Secures 36.4 ha of Southern River vegetation complex into the proposed regional park
- Secures a 1.8 ha EPP wetland, ESA and multiple use wetland (UFI 1395) into the proposed regional park
- Provides 3.2 ha available for revegetation and inclusion into the proposed regional park
- Secures 36.4 ha of the regionally significant vegetation identified by the EPA (2008b) (Investigation Area 11).

4.4 Purchase of Lot 3 Moore Road

Main Roads has purchased Lot 3 Moore Road which will provide 33.8 ha as a direct offset for the Project.

Environmental Values

Lot 3 was also identified by the EPA (2008b) as being part of Investigation Area 11 supporting regionally significant vegetation as detailed at Appendix C. The lot again forms part of Recommendation Area B which the EPA recommended be reserved as Regional Open Space under the GBRS.



The lot was assessed in March 2011 by ecologists from GHD. The site vegetation types within the offset land are outlined below and as shown at Appendix D.

- Marri peppermint open woodland
- Marri Banksia peppermint open woodland
- *Melaleuca raphiophylla* woodland
- Paddock / cleared

The condition rating within the lot varies from very good to degraded as shown at Appendix D.

The lot was broadly assessed for habitat suitable for Cockatoo species and Western Ringtail Possum. The site contains the key cockatoo foraging species of Marri and Jarrah with patches of peppermint with overlapping canopy. Based on the broad assessment, the lot contains habitat suitable for both Black Cockatoo species and the Western Ringtail Possum.

Environmental Offset

Lot 3 provides the following environmental benefits to offset the residual impacts of the Project:

- Provides 23.5 ha of White-tailed Black Cockatoo foraging habitat
- Secures 23.5 ha of Southern River vegetation complex into the proposed regional park
- Identified as regionally significant vegetation by the EPA (2008b) (Investigation Area 11)

4.5 Purchase of Linkage through Lot 15 South Western Highway

Main Roads proposes to initiate the purchase of 8.6 ha of currently cleared farmland between the South Western Highway and Preston River, and rehabilitate this land using species suitable for foraging by White-tailed Black Cockatoo and habitat for Western Ringtail Possum as detailed at Appendix E.

The purchase and rehabilitation of this land also fulfils Condition 5-1 of the Minister for the Environment's conditional approval of the GBRS.

Environmental Values

Although currently cleared pasture Main Roads proposes to purchase a portion of the lot to provide a 200m wide 550m long strip of land and rehabilitate the pasture with native plant species. This will in the medium to long term provide a secure habitat linkage between the remnant vegetation on Lot 15 and the Preston River.

This linkage was noted as a significant link in the Preston River to Ocean Regional Park (Government of WA, 2011). The linkage was also identified by the EPA (2008b) as Linkage Restoration Area Q noting that it contributed to a regionally significant ecological linkage.

Environmental Offset

In the long term the purchase and rehabilitation of this land will:

- Create 8.1 ha of cockatoo foraging habitat
- Create 8.1 ha of possum habitat
- Provide a 200m wide 8.1 ha ecological linkage between SW Highway and Preston River as noted under the Preston River to Ocean Regional Park (Government of WA, 2011).



- ▶ Provide a regionally significant ecological linkage between the regionally significant vegetation remnant as identified by the EPA (2008b) (Investigation Areas 8 and 17)

4.6 Purchase of Remnant Vegetation on Lot 15 South Western Highway

Main Roads proposes to initiate the purchase of 7.8 ha remnant Marri Peppermint Woodland that occurs on the south western corner of Lot 15 South Western Highway. This remnant abuts the ecological linkage detailed at Section 4.2.3.

Environmental Values

The remnant vegetation in Lot 15 was identified by the EPA (2008b), being part of Investigation Areas 16 and 17 as comprising regionally significant vegetation as detailed at Appendix C. The portion of the lot forms part of Recommendation Area D comprising high conservation value regionally significant vegetation which the EPA recommended be reserved as Regional Open Space under the GBRS and managed for conservation.

The remnant also provides a critical link for the Preston River to Ocean Regional Park (Government of WA, 2011).

A site survey conducted in October 2010 identified six main vegetation types within the remnant. These are outlined below and shown at Appendix D.

- ▶ Scattered trees over pasture.
- ▶ Peppermint, Jarrah, Marri, *Banksia ilicifolia* and *B. grandis* woodland with a mostly degraded understorey.

The vegetation condition varied from Good to Completely Degraded as also shown at Appendix D.

A dense overstorey of mature trees with breeding hollows provides both breeding and feeding habitat for both Western Ringtail Possum and cockatoo species. During the site inspection in October 2010 evidence of Cockatoo feeding, possum dreys, possum droppings and a Western Ringtail Possum skull were found within the remnant.

Environmental Offset

The purchase of the remnant vegetation on Lot 15 will:

- ▶ Secure 7.8 ha of Possum habitat into the Preston River to Ocean Regional Park
- ▶ Secure 7.8 ha of cockatoo habitat into the Preston River to Ocean Regional Park
- ▶ Secure the tenure 7.8 ha of high conservation value regionally significant vegetation identified by the EPA (2008b) (Investigation Areas 16 and 17)
- ▶ Provide a critical link for the Preston River to Ocean Regional Park (Government of WA, 2011).

4.7 Purchase of Portion of Lot 5 at the Ferguson River Foreshore

Main Roads has purchased a 4.2 ha severed portion of Lot 5 which abuts the Ferguson River as shown at Figure 3.



Environmental Values

The remnant vegetation identified by the EPA (2008b) as being part of Investigation Area 8 comprising regionally significant vegetation as detailed at Appendix C. The Lot forms part of Recommendation Area C which the EPA (2008) recommended be reserved as Regional Open Space under the GBRS and managed for conservation purposes.

Environmental Offset

The outcome of this purchase will be:

- Securing 4.2 ha of potential cockatoo habitat
- Securing 4.2 ha of Swan Vegetation Complex into the proposed regional park
- Securing part of regionally significant vegetation identified by the EPA (2008b) as Recommendation Area C
- Secure a vegetated buffer to approximately 680m of the Ferguson River

4.8 Rehabilitation of Preston River Foreshore Reserve

Part of Lot 11, Lot 5814 and Reserve 31 866 comprise 7.7 ha abutting the western bank of the Preston River as shown at Figure 3. These lots are currently identified as Regional Open Space under the GBRS. Main Roads proposes to fence the private property boundary and rehabilitate 7.1 ha of these lots with species suitable as Black Cockatoo foraging species over a 1200m length of the river foreshore.

Discussions with the City of Bunbury who currently manage these has lots has indicated in principle approval to the proposed rehabilitation and fencing works. This component of the offset proposal will in the long term have the following outcomes:

Environmental Values

The Preston River abutting these lots was also identified by the EPA (2008b) as being part of Investigation Area 8 comprising regionally significant vegetation as detailed at Appendix C. The lots abut Recommendation Area C which the EPA (2008) recommended be reserved as Regional Open Space under the GBRS and managed for conservation purposes.

Main Roads proposes to rehabilitate and revegetate 7.1 ha of these lots using native species as detailed at Appendix E. These species include those suitable as foraging and breeding habitat for both Western Ringtail possum and cockatoo species.

Environmental Offset

The fencing and revegetation of these portions of Lot 11, Lot 5814 and Reserve 31 866 will in the medium long term:

- Provide 7.1 ha of Cockatoo foraging habitat
- Provide 7.1 ha of possum habitat
- Provide a 7.1 ha vegetated buffer 50-90 m wide to the Preston River enhancing this Conservation Category Wetland and ESA
- Provide a vegetated buffer to the regional significant Preston River foreshore reserve (EPA, (2008b) (Investigation Area 8).



4.9 Contributing Offsets

Main Roads proposes to enhance the direct offsets with the contributing offset detailed below.

4.9.1 Carnaby's Cockatoo Research Funding

Main Roads has discussed opportunities for providing cockatoo research funding with Dr Peter Mawson Principal Research Scientist with the Department of Environment and Conservation. As a result of these discussions DEC submitted a research proposal to Main Roads in August 2010 which addressed a number of research priorities for Carnaby's Cockatoo.

The "Research Proposal to Support the Conservation of Carnaby's Cockatoo (*Calyptorhynchus latirostris*) on the Swan Coastal Plain" included the following priorities:

- ▶ research into critical foraging and breeding habitat
- ▶ a covenanting program for foraging and breeding habitat on private land
- ▶ assistance with purchase of land on or near to the Swan Coastal Plain
- ▶ funding for the revegetation of pine plantations with native species following pine harvesting

Main Roads proposes to provide funding of \$300 000 to finance this research.

The provision of the research funding is in line with EPBC Act approval Condition 4.

4.9.2 Western Ringtail Possum

Main Roads will provide funding of \$250 000 as a contribution to the University of Western Australia (UWA) for the monitoring of possum rope bridge overpass usage in Busselton.

Main Roads will also provide additional funding to UWA to monitor the efficacy and usage of the possum rope bridge overpass to be built as part of the Project. The value of this funding is currently being discussed with UWA.



Table 6 Summary or Residual Impacts and Proposed Offsets

Item	Environmental Asset	Residual Impact	Direct Offset						Total Offset Area	Contributing Offset Research Funding
			Lot 1 Moore Rd	Lot 3 Moore Rd	Lot 15 SW Hwy Ecological Linkage	Lot 15 SW Hwy Purchase of land portion	Preston River foreshore	Ferguson River Lot 5		
1	Confirmed Possum habitat (potential habitat)	5.5 ha (14.3 ha)	33.2 ha and 3.2 ha of revegetation	23.5 ha	Revegetate 8.1 ha of habitat	7.8 ha	Revegetate 7.1 ha of habitat		64.5 ha land 18.4 ha of revegetation	\$250 000
2	Confirmed Cockatoo habitat (potential habitat)	3.5 ha (13.2 ha)	33.2 ha and 3.2 ha of revegetation	23.5 ha	Revegetate 8.1 ha of cockatoo foraging habitat	7.8 ha	Revegetate 7.1 ha of cockatoo foraging habitat	4.2 ha	68.7 ha of vegetated land 18.4 ha of revegetation	\$300 000
3	Moore Rd Wetland (EPP and ESA)	No direct impact	1.8 ha EPP						1.8 ha EPP wetland	
4	Preston River (CCW and ESA)	1.5 ha			Revegetate 8.1 ha 200m wide ecological linkage		7.1 ha vegetated buffer		15.2 ha of revegetation	
5	Ferguson River	0.3 ha						4.2 ha	4.2 ha	
6	Guildford Complex	0.7 ha								
7	Southern River Complex	14.8	36.4 ha	23.5 ha		7.8 ha			67.7 ha	
8	Swan Complex	1.2 ha						4.2 ha	4.2 ha	
9	Other environmental outcomes		Secure 36.4 ha of land recommended for conservation by the EPA	Secure 23.5 ha of land recommended for conservation by the EPA	Create a critical linkage for the Preston River to Ocean Regional Park, and as recommended by EPA	Secure critical component for the Preston River to Ocean Regional Park and land recommended for conservation by the EPA	Secure 7.1 ha of land recommended for conservation by the EPA	Secure 4.2 ha of land recommended for conservation by the EPA		

5. Conformance of Offset Proposal

5.1 Commonwealth Offset Requirements

The following table summarises the proposed offset to address Project impacts on Western Ringtail Possum, Carnaby's Cockatoo and Baudin's Cockatoo. These offset measures are assessed against the EPBC Act approval Conditions and the Commonwealth documents detailed at Section 1.4.1.

Table 7 Conformance with Protected Species Offset, Mitigation and Enhancement Measures

Item	Offset / Mitigation Measure	Main Roads proposed Offset / Action
DoSEWPC Advice and Approval Conditions		
1	Provide a 1:1 offset for Western Ringtail Possum habitat. EPBC Act approval Conditions 3, 5 and 6	1. Purchase of land providing 64.5 ha of possum habitat. This provides for the clearing of 64.5 ha of Possum habitat although the project will require clearing of 5.5 ha of confirmed habitat and 14.3 ha of potential habitat. 2. Create by revegetation 18.4 ha of habitat. 3. Installation of Possum rope overpass and research funding to monitor its use 4. Provision of \$250 000 research funding The proposed offset meets DoSEWPC advice and EPBC Act approval Conditions 3, 5 and 6.
2	Provide an offset for Carnaby's and Baudin's Cockatoo comprising: <ul style="list-style-type: none"> 4 to 1 for establishing new habitat and 6 ha to 1 ha for existing habitat. EPBC Act approval Conditions 4, 5 and 6.	1. Purchase of land providing 68.7 ha of habitat. This provides for the clearing of 11.5 ha of cockatoo habitat. 2. Create by revegetation 18.4 ha of habitat which provides for the clearing of 4.6 ha of habitat. Note the project will clear 3.5 ha of confirmed habitat and 13.2 ha of potential habitat. 3. Provision of \$300 000 research funding The proposed offset meets DoSEWPC advice and EPBC Act approval Conditions 4, 5 and 6.
Environment Protection and Biodiversity Conservation Act 1999 Draft referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and Forest red-tailed black cockatoo (Commonwealth of Australia, 2011).		
3	Design the action to avoid or minimise clearing of cockatoo habitat	1. The route alignment selected for the project results in less clearing of both Western Ringtail Possum (4.8 ha) and Black-tailed white cockatoo (4.4 ha). 2. Fencing will be aligned to minimise habitat clearing.
4	Retain habitat along riparian and other corridors to preserve roosting habitat, movement corridors and watering points	1. Revegetation of 7.1 ha of habitat at Preston River foreshore. 2. Proposed revegetation of road reserve at Preston River

		crossing with native species. 3. Purchase of vegetated buffer to Ferguson River comprising 4.2 ha 4. Reduce vegetation clearing to the minimum necessary for the safe construction and operation of the road bridges.
5	Improve, replant and manage habitat on or next to the site of impact.	1. Land purchases and proposed revegetation. 2. proposed revegetation of portions of the road reserve
6	Re-create movement corridors between patches of remnant habitat	Provide 200m wide (8.1 ha) revegetated link between Preston River and remnant vegetation on Lot 15 South Western Highway.
7	Maintain a mosaic of vegetation age classes and species to increase the ecological value and longer term viability of the vegetation	Land purchases and revegetation using local species suitable for cockatoo foraging. Rezoning of land offsets to Regional Open Space under Greater Bunbury Region Scheme and inclusion into proposed regional park will provide long term security of tenure.
8	Plant a mix of foraging habitat species, using local plant species. Plant blocks or corridors of several hectares to produce enough food to sustain a local population for several weeks	1. Revegetation of portions of the road reserve with native plant species. 2. Land purchases and proposed revegetation using local species suitable for cockatoo foraging including the 200m wide corridor on Lot 15 SW Hwy.
7	Avoid or control plant diseases such as dieback caused by <i>Phytophthora</i> spp.	Implement dieback management during road construction
8	Manage habitat for conservation	Rezoning of land offsets to Regional Open Space under Greater Bunbury Region Scheme and inclusion into proposed regional park will provide long term security for conservation.
Significant Impact guidelines for the vulnerable western ringtail possum (<i>Pseudocheirus occidentalis</i>) in the southern Swan Coastal Plain, Western Australia (Australian Government 2009).		
9	Retain and improve remnant habitat patches including corridors	1. Purchase 64.5 ha of land for inclusion into the conservation estate. 2. Provide 18.4 ha of revegetation including plant species suitable for Western Ringtail Possum. This includes 8.1 ha revegetated link between Preston River and remnant vegetation on Lot 15 SW Hwy.
10	Retain Peppermint trees	Reduce vegetation clearing to the minimum necessary for the safe construction and operation of the road and bridges.
11	Use landscape plantings as a means of creating or connectivity	<i>Agonis flexuosa</i> (Peppermint) will be utilised in the revegetation planting mix.



Main Roads believes that the proposed offset complies with the advice, management measures and enhancements requested by DoSEWPC through the combination of direct and contributing offsets.

5.2 State Offset Requirements

Compliance with the offset principles detailed in Condition 16 of CPS 818/5 is demonstrated in the following Table.

Table 8 Compliance with CPS 818/5 Offset Principles

	Offset Principle	Main Roads Offset Compliance
a	Direct offsets should directly counterbalance the loss of native vegetation	The direct offsets counterbalance the loss of native vegetation.
b	Contributing offsets should complement and enhance the direct offset	The contributing offsets (possum rope overpass and \$400 000 research funding) address fauna species considered as part of direct offset
c	Offsets are implemented only once all avenues to avoid, minimise, rectify or reduce environmental impacts have been exhausted	All opportunities to avoid, minimise, rectify and reduce impacts have been realised
d	The environmental values, habitat, species, ecological community, physical area, ecosystem, landscape, and hydrology of the offset should be the same as, or better than, that of the area of native vegetation being offset	The proposed offsets will result in a net environmental benefit and assist in the development of the proposed regional park.
e	A ratio greater than 1:1 should be applied to the size of the area of native vegetation that is offset to compensate for the risk that the offset may fail	Overall the proposed offsets have a ratio greater than 1:1 for residual impacts as shown at Table 6.
f	Offsets must entail a robust and consistent assessment process	<p>The assessment of environmental impacts and offset values has been conducted consistently by qualified and experienced environmental practitioners.</p> <p>The proposed offsets are congruent with EPA recommendations for the Preston Industrial Park (2008b).</p>
g	In determining an appropriate offset, consideration should be given to ecosystem function, rarity and type of ecological community, vegetation condition, habitat quality and area of native vegetation cleared	<p>The proposed offset areas are either adjacent to or in close proximity to the impact area. The offsets address the Project clearing impact, regionally significant vegetation complexes, wetlands and protected fauna species.</p> <p>The proposed offsets are consistent with the recommendations of the EPA (2008b) and the Preston River to Ocean Regional Park.</p>



	Offset Principle	Main Roads Offset Compliance
h	The offset should either result in no net loss of native vegetation, or lead to a net gain in native vegetation and improve the condition of the natural environment	<p>The offsets will lead to a net gain in overall vegetation and wetlands secured within the conservation estate.</p> <p>Habitat values of the land purchases and revegetation works, plus proposed research funding will provide a net benefit and enhancement of knowledge about Western Ringtail Possum, Carnaby's and Baudin's Cockatoo.</p>
i	Offsets must satisfy all statutory requirements	The proposed offset complies with the statutory requirements of CPS 818/4 and Condition 5 of Ministerial Approval 0697.
j	Offsets must be clearly defined, documented and audited	The proposed offset is clearly defined and provides the opportunity for monitoring and auditing.
k	Offsets must ensure a long-term (10-30 year) benefit	The offsets will ensure a long term benefit to conservation significant fauna species, wetlands and proposed regional park.
l	An environmental specialist must be involved in the design, assessment and monitoring of offsets	<p>N/A at this time.</p> <p>The revegetation works will be conducted by an experienced landscape practitioner.</p> <p>Site vegetation monitoring will be conducted by an appropriately experienced ecologist to determine compliance with the Completion criteria</p>

Main Roads believes that the proposed environmental offsets for the project are congruent and compliant with the relevant Offset principles embedded in CPS 818/5.

The proposed offsets were the subject of discussions with officers from the Department of Environment and Conservation's Bunbury office on July 29, 2011.



6. Implementation Plan

The following section details how main Roads proposes to implement the EOP.

6.1 Purchase of Offset Properties

Main Roads has/or is in the process of purchasing the offset land required to provide the offset land detailed in this EOP, namely

- Lot 1 Moore Road (purchased)
- Lot 3 Moore Road (purchased)
- Lot 15 South Western Highway – remnant vegetation and environmental linkage (in negotiation)
- Lot 5 severed portion for Ferguson River foreshore (purchased)

The portion of Lot 15 and the environmental linkage to the Preston River will be acquired within 12 months of the commencement of road construction. If the successful purchase of the land cannot be negotiated with the owners Main Roads will identify other offset sites for consideration by DoSEWPC and DEC.

6.2 Security of Offset Tenure

The land and vegetation included in the EOP will be protected for long term conservation purposes in the following manner.

Zoning

It is proposed that Regional Open Space Reservations will be placed over the identified land under the provisions of the Greater Bunbury Region Scheme. Rezoning proposals will require the approval of local government and the Western Australian Planning Commission, and will provide statutory protection over the conservation values of the land.

Ownership

Privately owned freehold land will be purchased by Main Roads in the name of the Commissioner of Main Roads. The land will subsequently be transferred to the State of WA (Department of Regional Development and Lands), who will arrange for those areas to be reserved as a Crown reserve with, a management order issued to a responsible agency, in this case either the City of Bunbury or the Department of Environment and Conservation. The tenure of any existing publicly owned land will not change.

Management

Main Roads will manage the land until such time that completion criteria have been achieved and the land ownership has been transferred to the State of WA. The management of the land will then be undertaken by the designated agency and immediately managed as if it were already a conservation reserve.



Regional Park

In the longer term, the land areas are to be included into a Regional Park, potentially the proposed Preston River to Ocean Regional Park. Inclusion into a Regional Park managed by DEC will provide a management framework for the land and other adjoining conservation areas to provide broad direction for the protection and enhancement of the conservation values of the lands included in the Regional Park.

6.3 Management of Degraded Offset Land

Main Roads has prepared an Offset Revegetation Plan to define proposed management and rehabilitation measures for the offset sites. The objectives of the revegetation plan are:

- ▶ To revegetate the offset sites with local plant species including those that are suitable habitat for Western Ringtail Possum and White-tailed Black Cockatoo
- ▶ To form habitat and habitat linkages between existing conserved native vegetation
- ▶ To manage access to the offset properties through the installation of fencing

The proposed rehabilitation methodology, species, completion criteria, monitoring and management measures are detailed at Appendix E. Once the completion criteria have been achieved Main Roads will hand over management of the properties to the responsible agency.



7. Reporting

Main Roads will report on the implementation of the EOP as required under the following approval requirements.

Commonwealth Approval Conditions

Congruent with EPBC Act approval Condition 8 Main Roads will report for 10 years from September 7, 2011, within three months of every 12 month anniversary of the commencement of construction on compliance with each of the conditions of the approval, including implementation of management plans, including this EOP, as specified in the Conditions. The compliance report will be published on Main Roads website and documentary evidence providing proof of the date of publication and non-compliance with any Condition of the approval will be provided to DoSEWPC at the same time that the compliance report is published.

West Australian

Main Roads will report in writing to the DEC compliance with this EOP on or before June 30 each year of activities conducted between January 1 and December 31 the preceding year. This reporting will be conducted as part of Main Roads corporate annual reporting requirements as required under the conditions of Part VI of CPS 818/5.

At the completion of the revegetation establishment period (September 2014) Main Roads will report to DEC on compliance with the revegetation completion criteria as detailed in the Revegetation Implementation Plan.



8. Limitations

This report presents the results of:

- ▶ Desktop data searches for environmental aspects and site visits conducted in 2008, 2009 and 2010
- ▶ Information provided by Main Roads WA in respect to offset properties, land acquisition and land transfers, and proposed offset property management and revegetation.

The conclusions of this report were based on this information and reflect the environment of the site at the time of survey. GHD accepts no responsibility for any variation in the flora and fauna present at the site due to natural and seasonal variability.

The data and advice provided herein relate only to the Project Area described herein and must be reviewed by a competent scientist before being used for any other purpose. GHD Pty Ltd accepts no responsibility for other use of the data or edits or alterations made to the report from the submitted final .pdf copy.

Where reports, searches, any third party information and similar work have been performed and recorded by others the data is included and used in the form provided by others. The responsibility for the accuracy of such data remains with the issuing authority, not with GHD.



9. References

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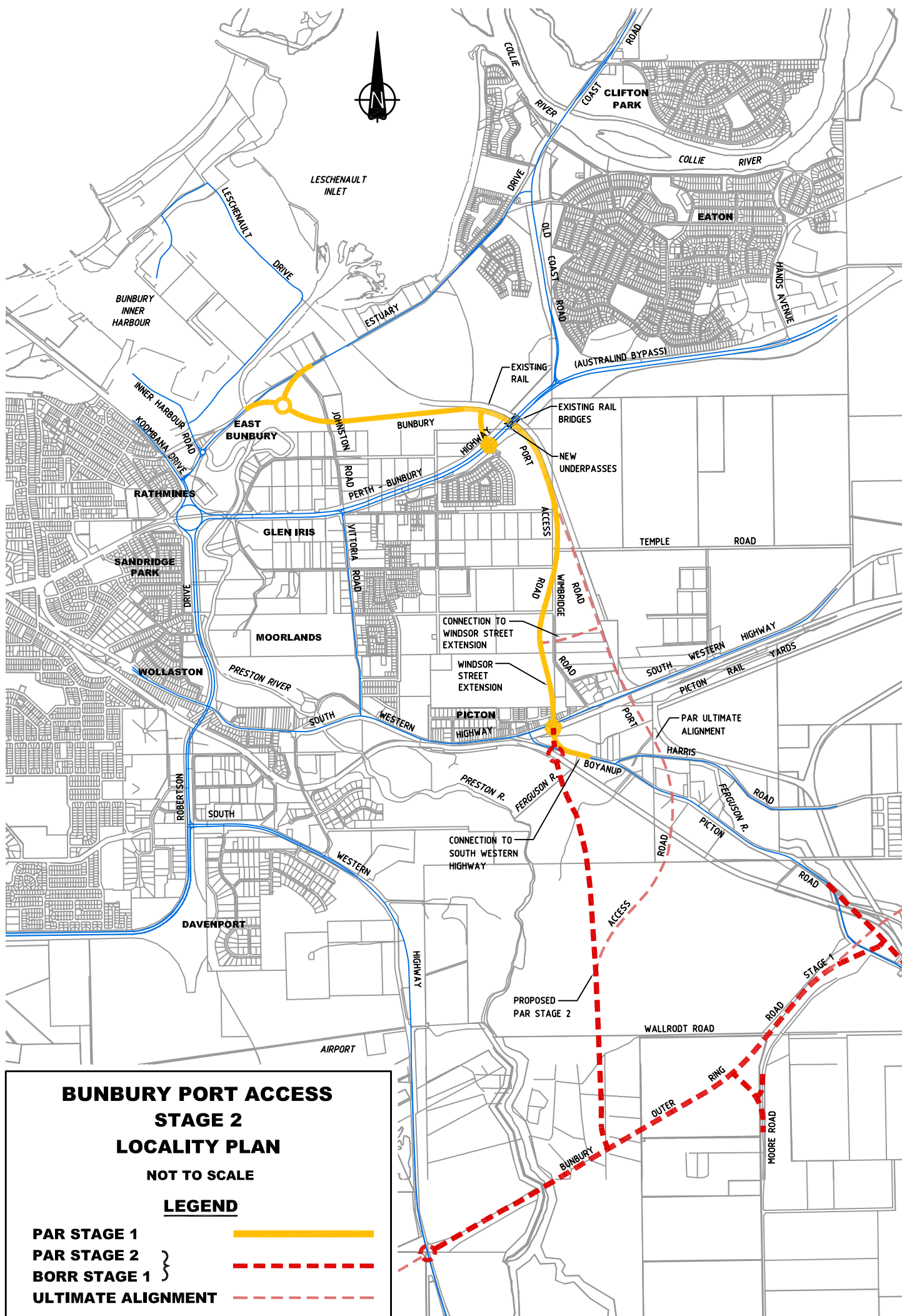


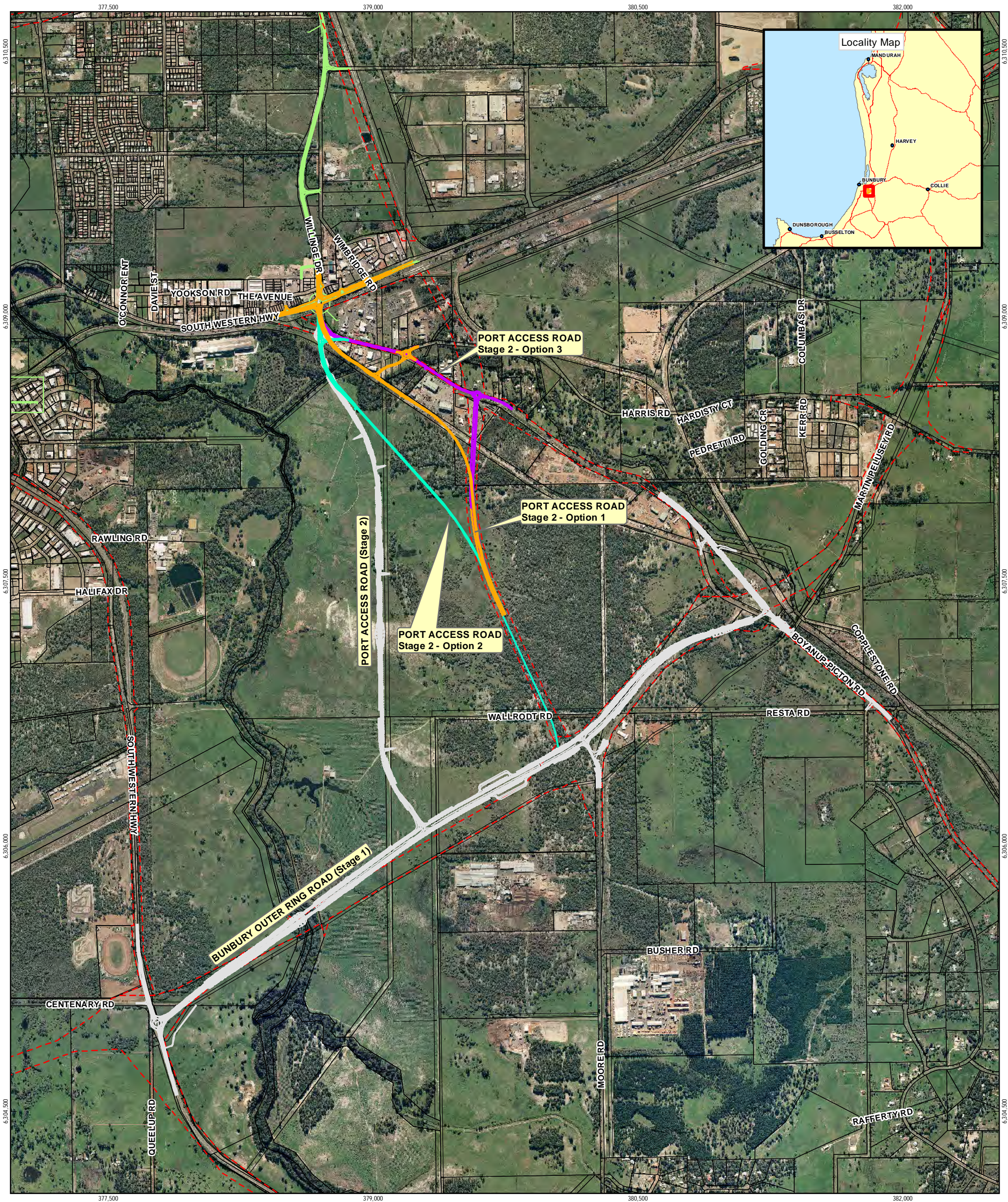
Western Australian Planning Commission (2011). Preston River to Ocean Regional Park, Establishment Plan Proposal Final Report. Western Australian Planning Commission. Perth, WA.



Figures

Figure 1	Project Locality Plan
Figure 2	Road Alignment Options
Figure 3	Environmental Offset Areas

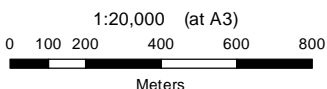




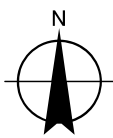
LEGEND

Proposed Road Designs

- Port Access Rd (Stage 2 - Option 1)
- Port Access Rd (Stage 2 - Option 2)
- Port Access Rd (Stage 2 - Option 3)
- Bunbury Port Access Project Stage 2
- Port Access Road - Stage 1 (Completed)
- Greater Bunbury Region Scheme Boundaries
- Cadastre



Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50



CLIENTS | PEOPLE | PERFORMANCE

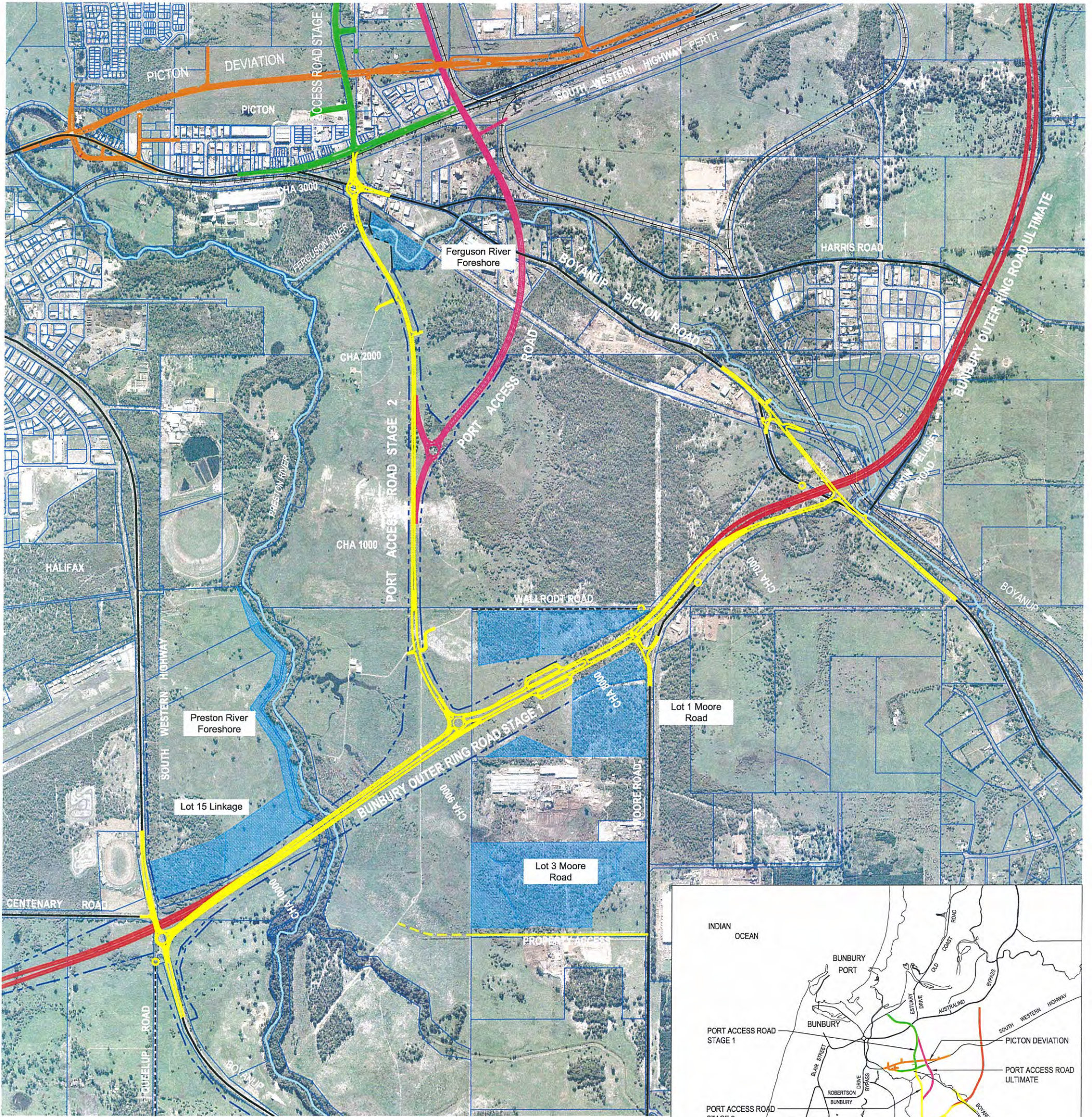


Main Roads WA
Bunbury Port Access Project Stage 2

Job Number 61-24038
Revision 0
Date 22 NOV 2010

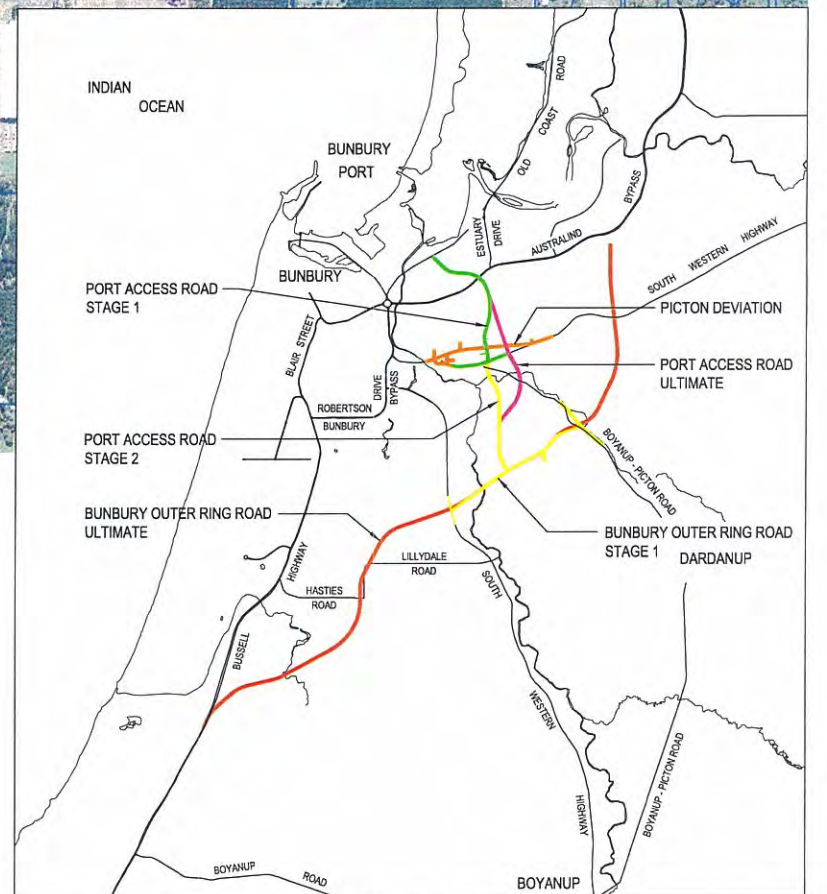
Alignment Options and
GBRS Reservation

Figure 2



LEGEND

- BUNBURY PORT ACCESS (STAGE 2)
- BUNBURY OUTER RING ROAD (ULTIMATE DESIGN)
- PORT ACCESS ROAD (ULTIMATE DESIGN)
- PORT ACCESS ROAD (STAGE 1)
- PROPOSED UNSEALED ROAD
- PICTON DEVIATION
- EXISTING SEALED ROAD
- EXISTING UNSEALED ROAD
- EXISTING RAIL
- LAND RESERVATION
- CADASTRAL BOUNDARY



LOCALITY PLAN
SCALE: 1:10000



Australian Government



Government of
Western Australia

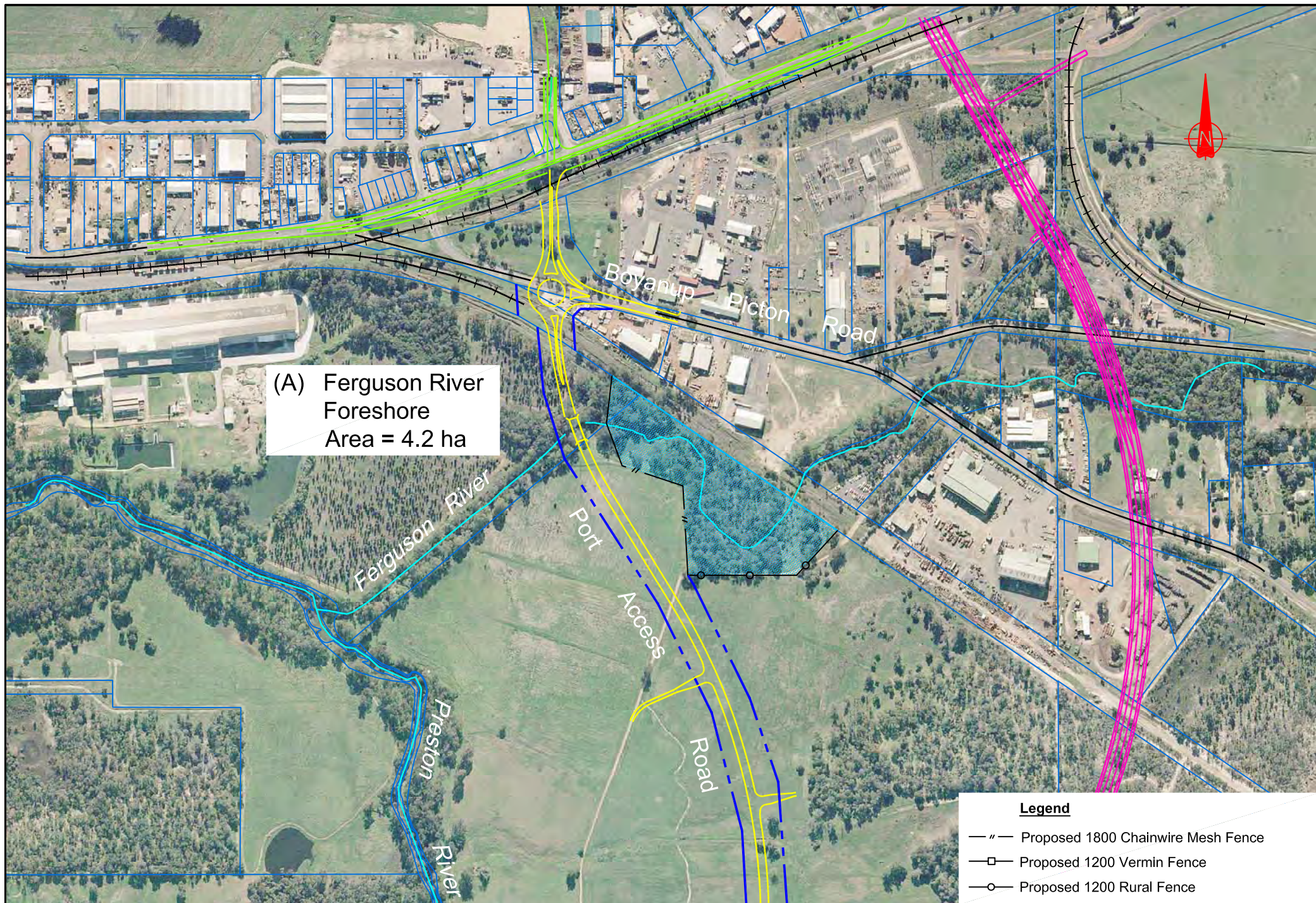


BUNBURY PORT ACCESS PROJECT STAGE 2

ENVIRONMENTAL OFFSET PLAN

UPDATED: 5 AUGUST 2011

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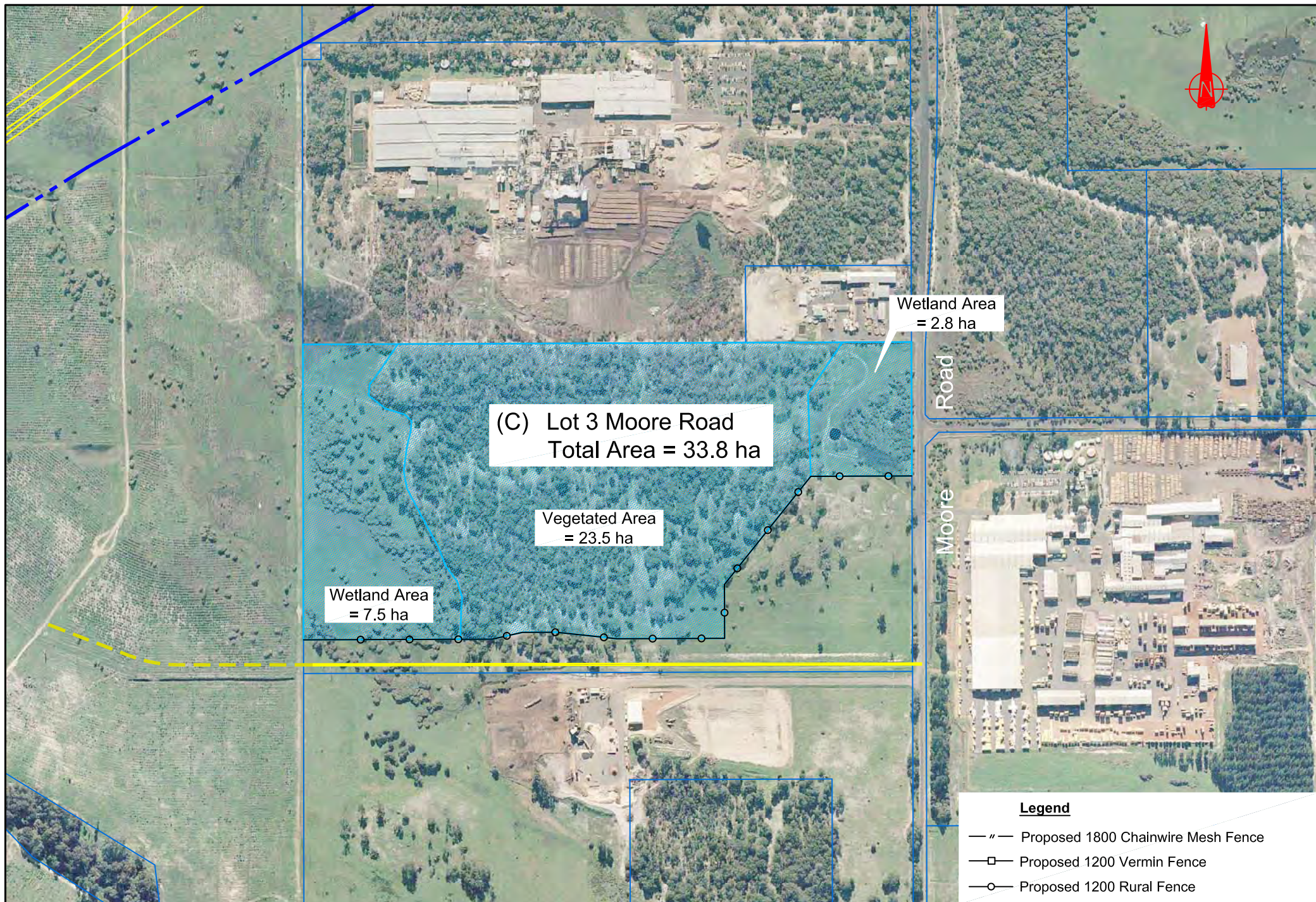


(B) Lot 1 Moore Road
Total Area = 36.4 ha



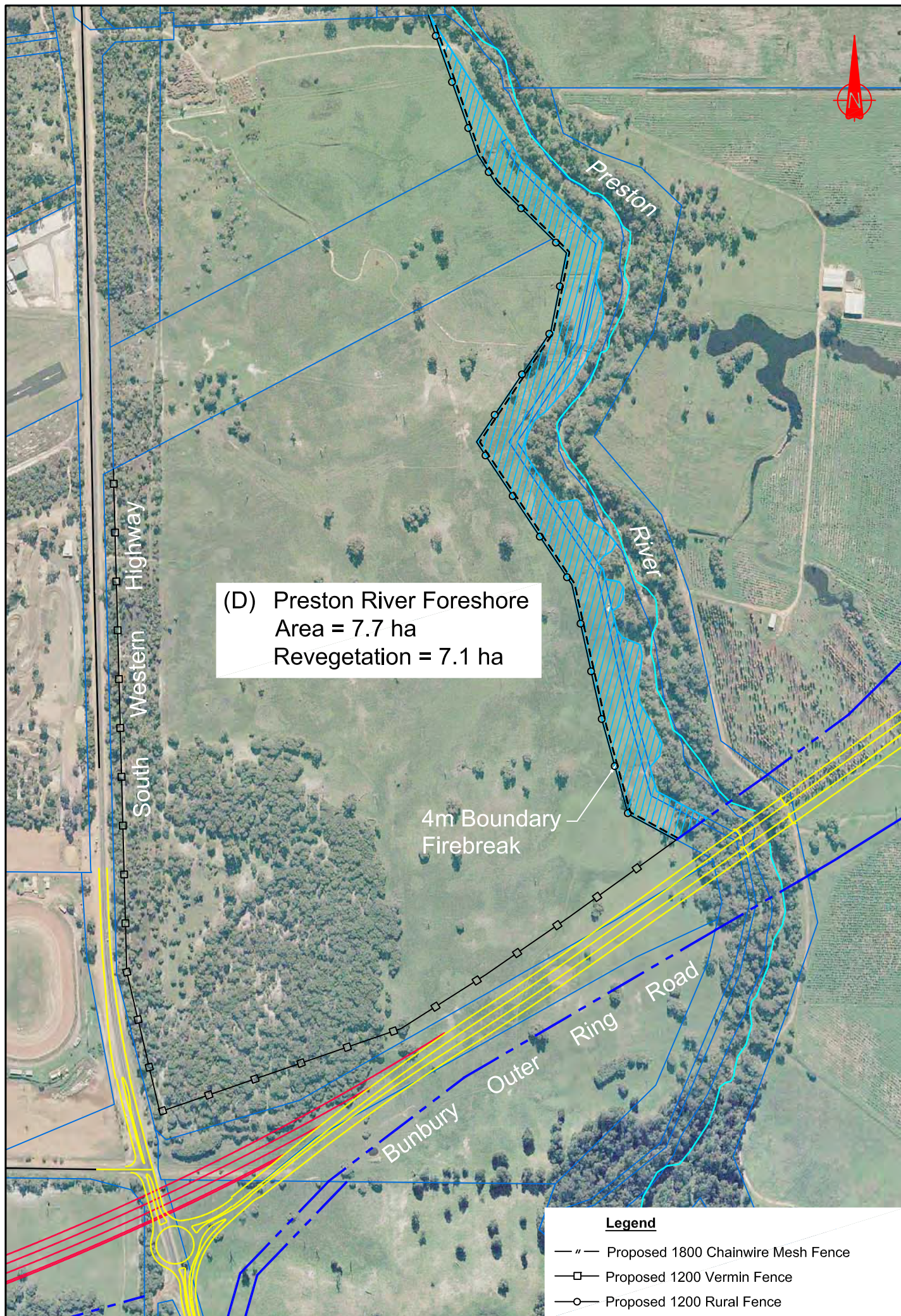
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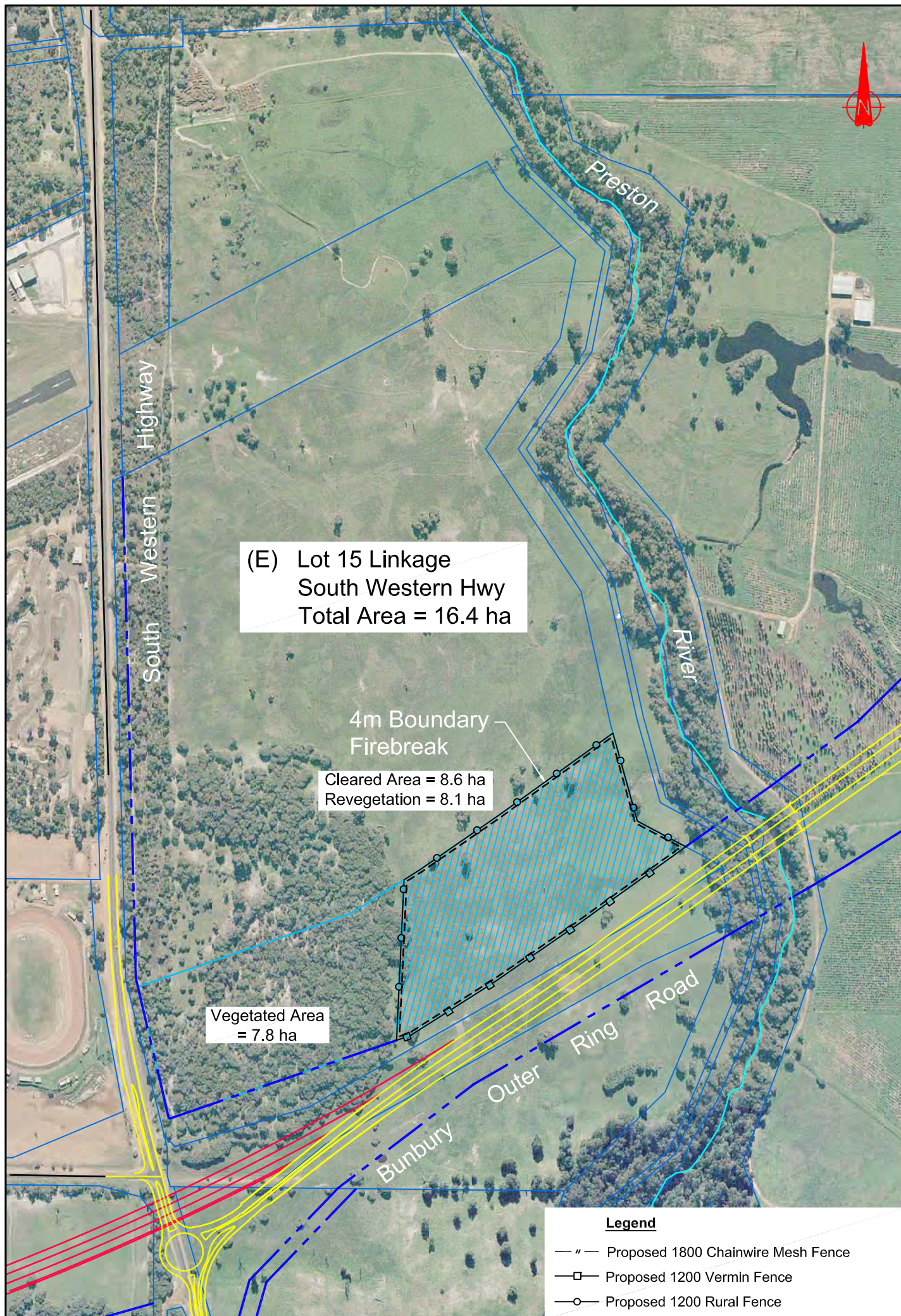
- — — Proposed 1800 Chainwire Mesh Fence
- □ — Proposed 1200 Vermin Fence
- ○ — Proposed 1200 Rural Fence



Legend

- " — Proposed 1800 Chainwire Mesh Fence
- Proposed 1200 Vermin Fence
- Proposed 1200 Rural Fence







Appendix A

EPBC Act Approval Instrument (EPBC 2010/5768)



**Notification of
DECISION ON ASSESSMENT APPROACH**

Bunbury Port Access Project – Stage 2, WA (EPBC 2010/5768)

This decision is made under Section 87 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed action

proposed action	This proposed action is to construct new roads with a footprint of 43.5ha linking Stage 1 of the Bunbury Port Access Road to the South Western Highway and the improvement and modification to several existing roads (as outlined in referral documentation EPBC 2010/5768).
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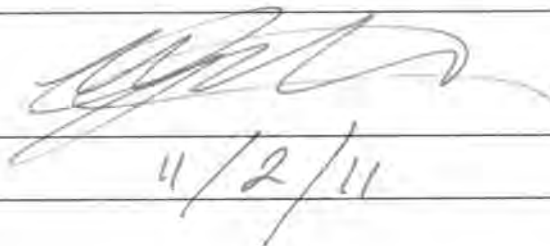
Decision on assessment approach

assessment approach	The project will be assessed by preliminary documentation
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Person authorised to make decision

name and position	Matthew Johnston A/g Assistant Secretary Environment Assessment Branch
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signature



date of decision

11/2/11



Australian Government

Department of Sustainability, Environment, Water, Population and Communities

Approval

Bunbury Port Access Project - Stage 2, WA (EPBC 2010/5768)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Main Roads Western Australia
proponent's ABN	50 860 676 021
proposed action	To construct new roads linking Stage 1 of the Bunbury Port Access Road to the South Western Highway and the improvement and modification to several existing roads [See EPBC Act referral 2010/5768].

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	


conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 December 2041.

Decision-maker

name and position	Barbara Jones Assistant Secretary Environment Assessment Branch
signature	
date of decision	7 SEPTEMBER 2011

Conditions attached to the approval

1. Within 30 days after the **commencement** of the action, the person taking the action must advise the **Department** in writing of the actual date of **commencement**.
2. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.
3. To protect habitat for the Western Ringtail Possum (*Pseudocheirus occidentalis*), Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) and the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*), no more than 13.7 ha of *Corymbia calophylla* / *Agonis flexuosa* woodland and 1.5 ha of *Eucalyptus rudis* woodland may be **cleared** unless approved in writing by the **Minister**.
4. In order to protect Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), within 6 months of the date of this approval, the person taking the action must provide documentary evidence to the **Department** that \$300 000 has been provided to the **DEC** to undertake research on Carnaby's Black Cockatoo on the swan coastal plain. Within 3 months of the date of this approval, the person taking the action must provide the **Department** with a project outline for this research that includes detail on:
 - the purpose of the research;
 - who will undertake the research;
 - a timeline indicating when the components of the research will be undertaken; and
 - how the research findings will be published.
5. The person taking the action must prepare and submit an *Offset Management Plan* (the plan) to the **Department** for the **Minister's** approval, to mitigate and offset the impacts on **listed threatened species**.

The person taking the action must not **clear** any **on-site habitat** for **listed threatened species** unless the **Minister** has approved the plan.

The plan must include:

 - details of the offset properties, how they will be managed and protected in perpetuity; and
 - how revegetation of habitat for **listed threatened species** will be undertaken.

If the **Minister** approves the plan then the approved plan must be implemented.
6. In order to protect the Western Ringtail Possum (*Pseudocheirus occidentalis*), within 6 months of the date of this approval, the person taking the action must provide documentary evidence to the **Department** that \$250 000 has been provided to a **recognised research organisation** for research and monitoring of the efficacy of rope bridges for the Western Ringtail Possum. The person taking the action must publish the results of the research on the internet within 6 months of the completion of the research, and the research must be published on the internet for at least 2 years.
7. In order to protect the Western Ringtail Possum the person taking the action must prepare and submit a *Western Ringtail Possum Management Plan* (the plan) to the **Department** for the **Minister's** approval, to mitigate and offset the impacts on the Western Ringtail Possum.

The person taking the action must not **clear** any **on-site habitat** for the Western Ringtail Possum unless the **Minister** has approved the plan.

The plan must include mitigation measures to reduce the impact of fragmentation and road mortality, and include details of:

- how fauna crossings and rope bridges will be constructed;
- how research and monitoring on the above measures will be undertaken;
- who will undertake the research and monitoring;
- how the results of research will be published; and
- how monitoring results can be used to improve the mitigation measures to increase their efficacy.

If the **Minister** approves the plan then the approved plan must be implemented.

8. For ten years from the date of this approval, within three months of every 12 month anniversary of the **commencement** of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published.
9. If the person taking the action wishes to carry out any activity otherwise than in accordance with the management plan(s) as specified in the conditions, the person taking the action must submit to the **Department** for the **Minister's** written approval a revised version of that management plan. The varied activity shall not commence until the **Minister** has approved the varied management plan in writing. The **Minister** will not approve a varied management plan unless the revised management plan would result in an equivalent or improved environmental outcome over time. If the **Minister** approves the revised management plan, that management plan must be implemented in place of the management plan originally approved.
10. If the **Minister** believes that it is necessary or convenient for the better protection of **listed threatened species** and communities to do so, the **Minister** may request that the person taking the action make specified revisions to the management plan/s specified in the conditions and submit the revised management plan/s for the **Minister's** written approval. The person taking the action must comply with any such request. The revised approved management plan/s must be implemented. Unless the **Minister** has approved the revised management plan/s, then the person taking the action must continue to implement the management plan/s originally approved, as specified in the conditions.
11. Unless otherwise agreed to in writing by the **Minister**, the person taking the action must publish all management plan(s) referred to in these conditions of approval on their website. Each management plan must be published on the website within 1 month of being approved, and must remain on the website for ten years after they are published.

Definitions

Clear / Clearing: The cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of native vegetation.

Commencement: The initiation of any **clearing** or **construction**.

Construction: Includes any preparatory works required to be undertaken including the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for buildings or infrastructure.

DEC: the Western Australian Department of Environment and Conservation.

Department: The Australian Government Department administering the *Environment Protection and Biodiversity Conservation Act 1999*.

Listed threatened species: In this case are:

- Western Ringtail Possum (*Pseudocheirus occidentalis*);
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*);
- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*); and
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*).

Minister: The Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* and includes a delegate of the Minister.

On-site Habitat: For the Western Ringtail Possum is the area marked with yellow striping in Attachment A. For Carnaby's Black Cockatoo, Baudin's Black Cockatoo, and the Forest Red-tailed Black Cockatoo is the area marked in dark green and light blue in Attachment B.

Recognised research organisation: an Australian university (based from a Western Australian campus), or other organisation that conducts scientific ecological research (such as the **DEC**).

Attachment A



LEGEND
 Bunbury Port Access Project Stage 2
 3m Road Extents Buffer
 Known Western Ringtail Possum Habitat

Vegetation Type
 Corymbia calophylla
 Agrostis flexuosa ripens viviparula
 Eucalyptus rudis woodland
 Melaleuca thymophylla wetland
 Paddock/Cleared

1:10,000 (M A3)
 0 100 200 300 400 500 600 700
 Meters
 Map Projection: Transverse Mercator
 Coordinate System: Geocentric Datum of Australia
 Grid Map Grid of Australia 1984 Zone 50



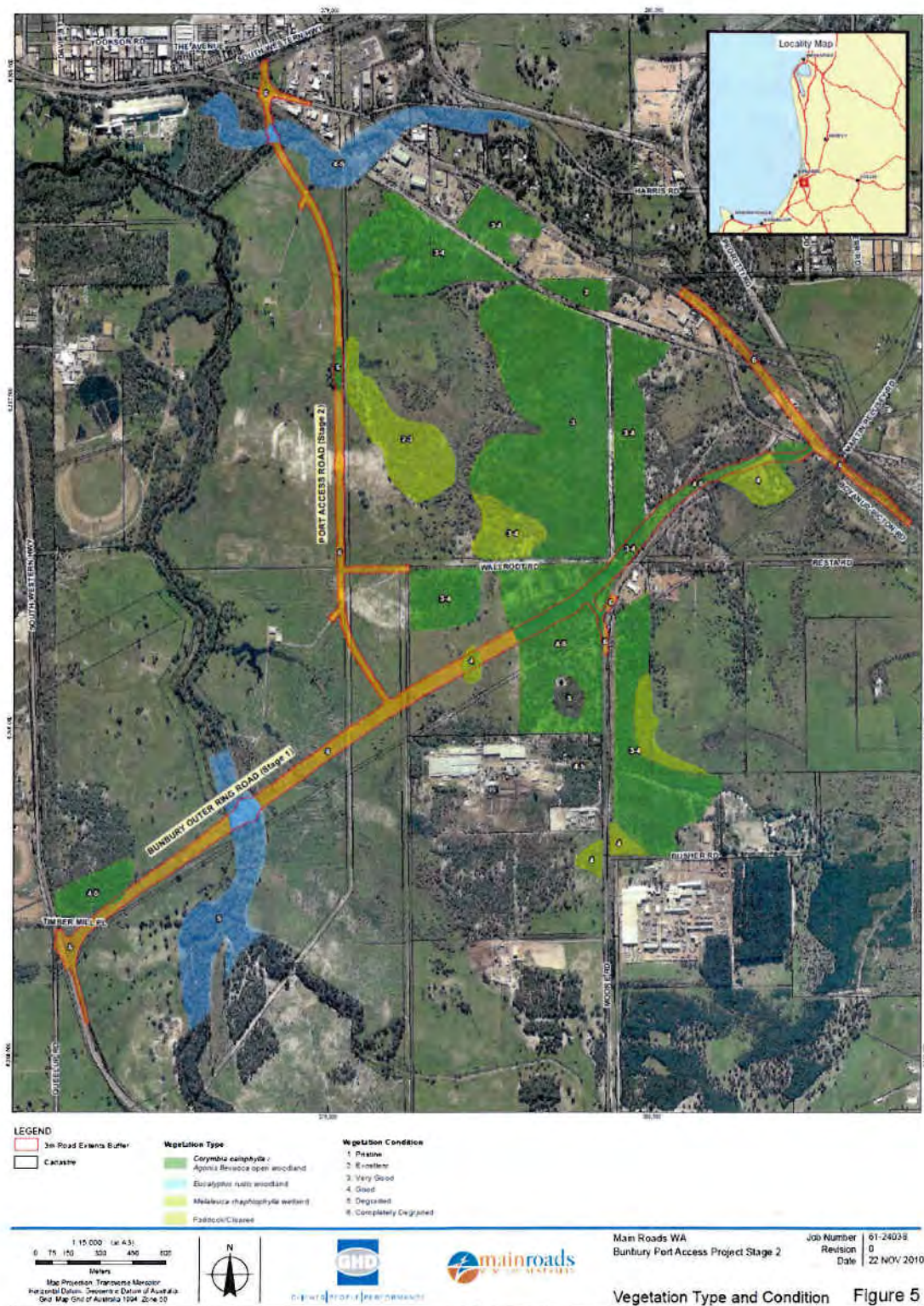
Main Roads WA
 Bunbury Port Access Project Stage 2
 Known Possum
 Habitat and Impact

Job Number 61-24038
 Revision 0
 Date 22 NOV 2010

Figure 7a

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Attachment B





Appendix B

Ministerial Statement 0697



Statement No.

GOVERNMENT OF WESTERN AUSTRALIA

000697

MINISTER FOR THE ENVIRONMENT; SCIENCE

**STATEMENT THAT A SCHEME MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF DIVISION 3 OF PART IV OF THE
ENVIRONMENTAL PROTECTION ACT 1986)**

GREATER BUNBURY REGION SCHEME

Scheme Purpose: To guide and regulate the use and development of land and to make provisions for regional infrastructure and regional open space within the Greater Bunbury Region.

Responsible Authority: Western Australian Planning Commission

Responsible Authority Address: 469 Wellington Street, PERTH WA 6000

Assessment Number: 1048

Report of the Environmental Protection Authority: Bulletin 1108

Subject to the following conditions, there is no known environmental reason why the Greater Bunbury Region Scheme to which the above report of the Environmental Protection Authority relates should not be implemented:

1 Additional Land to be Reserved

1-1 All or portions of the following sites shall be reserved for conservation, in accordance with the requirements set out in Attachment 1 of the Minister for the Environment's "Statement that a Scheme may be Implemented" No. 000697 published on (date):

- 1) Reserve 35061 Paris Road, Australind - Decommissioned Wastewater Treatment Plant
- 2) Reserve 31012 Harewoods Road, Dalyellup
- 3) Foreshore adjoining Port Installations Reserve
- 4) Twin Rivers - Pt Lot 211 Barnes Avenue, Australind
- 5) College Grove - Lot 1000 Bussell Highway
- 6) Pt Loc 632 Parade Road, Glen Padden
- 7) Reserve 670 North Boyanup Road, Davenport
- 8) Picton Waters - Environmental Protection Policy Lake on portion of Lots 40-44 Jeffery Road, Picton
- 9) Pt Lot 1 North Boyanup Road, Davenport
- 10) Lot 317 Harewoods Road, Dalyellup
- 11) Lot 1, Dalyellup Boulevard, Dalyellup

Published on

31 OCT 2005

2 Realignment of Primary Regional Roads Reserves

2-1 Portions of the following Primary Regional Roads Reserves shall be realigned, in accordance with the requirements set out in Attachment 1 of the Minister for the Environment's "Statement that a Scheme may be Implemented" No. 000697 published on (date):

- 1) Port Access Road
- 2) Bunbury Outer Ring Road

CONDITIONS TO BE INCORPORATED INTO THE SCHEME BY INSERTION OF PROVISIONS IN SCHEME TEXT

3 Management Plans

3-1 The following Environmental Management Plans may be required in accordance with the specifications set out in Attachment 1 in the Minister for the Environment's "Statement that a Scheme may be Implemented" No. 000697 published on (insert date), and shall be subsequently implemented in accordance with the provisions of the Management Plans, to the satisfaction of the Western Australian Planning Commission:

- 1) Environmental Management Plans for schemes, subdivisions and developments which impact on Regional Open Space in the scheme, Crown conservation or nature reserves, a National Park or bushland, waterways, wetlands or other land that may be part of an ecological linkage;
- 2) Environmental Management Plans for industrial development within the Kemerton Industrial Area and Special Control Area No. 2;
- 3) Drainage, Nutrient and Water Management Plans in areas where the Average Maximum Groundwater Level is less than 1.2 metres below the natural ground surface or where any proposed off-site drainage could lead to degradation of wetlands or waterways; and
- 4) Acid Sulfate Soil Management Plans where the presence of acid sulphate soils is confirmed or there is likely to be a significant risk of disturbing acid sulphate soils.

4 Biological Survey

4-1 As part of a scheme amendment or application to subdivide or develop land which has the potential to impact on regionally significant native remnant vegetation or native fauna, the Western Australian Planning Commission or local government, as the case requires, may require a biological survey, including a search for Declared Rare Flora and Fauna, Priority Flora, Threatened Flora Communities and Threatened Fauna, to be undertaken.

The biological survey shall be undertaken to the satisfaction of the Western Australian Planning Commission or local government, as the case requires, having due regard for advice from relevant government agencies, and shall be taken into account when considering the rezoning and subsequent subdivision and development applications.

5 Provision of Environmental Offsets

- 5-1 Prior to construction of the Port Access Road and Bunbury Outer Ring Road, an environmental offset strategy shall be prepared to mitigate unavoidable impacts on wetlands and native vegetation associated with the Port Access Road and Bunbury Outer Ring Road to the satisfaction of the Western Australian Planning Commission on advice of the Environmental Protection Authority. With respect to the Port Access Road, the strategy shall include a foreshore management plan for the Ferguson River in the vicinity of the road. With respect to the Bunbury Outer Ring Road, the strategy shall include rehabilitation of the strip of land adjacent to the road in the vicinity of Lot 15 North Boyanup Road (South Western Highway) and design of the intersection with the Australind Bypass to minimize impacts on environmental values of the area.

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT; SCIENCE

31 OCT 2005

**STATEMENT THAT A SCHEME MAY BE IMPLEMENTED –
GREATER BUNBURY REGION SCHEME**

**SPECIFICATIONS FOR ENVIRONMENTAL MANAGEMENT PLANS,
ADDITIONAL LAND TO BE RESERVED AND REALIGNMENT OF PRIMARY
REGIONAL ROAD RESERVES**

1 Environmental Management Plans for Schemes, Subdivisions and Developments

1-1 Prior to amending local town planning schemes, or finally approving subdivisions or developments (whichever is sooner), the Western Australian Planning Commission or local government, as the case requires, may require an Environmental Management Plan to be prepared and implemented to achieve the objective of managing the potential impacts of the proposed subdivision or development on the following:

- 1) land which is reserved as Regional Open Space in the Scheme;
- 2) a Crown conservation or nature reserve;
- 3) a National Park; or
- 4) bushland, waterway, wetland or land that may be part of an ecological linkage.

The Environmental Management Plan shall include:

- i) a description of existing environmental values, and the identification of the environmental outcome to be achieved through the implementation of the Plan;
- ii) clear delineation of boundaries of significant areas to be protected;
- iii) fire management;
- iv) drainage and nutrient management;
- v) management of access and rehabilitation;
- vi) vegetation and/or wetland mitigation strategies;
- vii) a program for implementation;
- viii) allocation of responsibilities and identification of timing and duration of implementation;
- ix) provision for routine monitoring of environmental values; and
- x) provision of details of contingency plans in the event that the monitoring surveys indicate that the development is having or has had an adverse impact upon environmental values.

- 1-2 Environmental Management Plans required by condition 1-1 shall be prepared to the satisfaction of the Western Australian Planning Commission or local government, as the case requires, having due regard for advice from relevant government agencies and shall be implemented in accordance with a program defined in the Environmental Management Plan.

2 Environmental Management Plans for Industrial Development within the Kemerton Industrial Area and Special Control Area No. 2

- 2-1 Prior to approving subdivision or development within the Kemerton Industrial Area and the Special Control Area No. 2, the Western Australian Planning Commission or local government, as the case requires, may require an Environmental Management Plan to be prepared and implemented to achieve the objective of managing the potential impacts of the proposed development.

The Environmental Management Plan shall include:

- 1) a description of existing environmental values (including vegetation, fauna and wetlands) and the identification of the environmental outcome to be achieved through the implementation of this Plan;
- 2) management of potential impacts on visual amenity;
- 3) clear delineation of significant areas to be protected;
- 4) a program for implementation;
- 5) allocation of responsibilities and identification of timing and duration of implementation;
- 6) provision for routine monitoring of environmental values; and
- 7) provision of details of contingency plans in the event that the monitoring surveys indicate that the subdivision or development is having or has had an adverse impact upon environmental values.

- 2-2 An Environmental Management Plan required by condition 2-1 shall be prepared to the satisfaction of the Western Australian Planning Commission or local government, as the case requires, having due regard for advice from relevant government agencies and shall be implemented in accordance with a program defined in the Environmental Management Plan.

3 Drainage, Nutrient and Water Management Plans

- 3-1 Prior to amending local town planning schemes, or finally approving subdivision or developments (including those for intensive horticulture), whichever is sooner, in areas where the Average Maximum Groundwater Level is less than 1.2 metres below the natural ground surface, or where any proposed off-site drainage could lead to degradation of wetlands or waterways, the Western Australian Planning Commission or local government, as the case requires, may require a Drainage, Nutrient and Water Management Plan to be prepared and implemented.

- 3-2 A Drainage, Nutrient and Water Management Plan, if required, shall ensure that there is no net increase in nitrogen export to the Leschenault Estuary as a result of development within the Greater Bunbury Region.
- 3-3 The Drainage, Nutrient and Water Management Plan shall be prepared to the satisfaction of the Western Australian Planning Commission or local government, as the case requires, having due regard for advice from relevant government agencies, and shall be implemented in accordance with a program defined in the Drainage, Nutrient and Water Management Plan.

4 Acid Sulfate Soil Management Plans

- 4-1 Prior to amending local town planning schemes, or finally approving subdivisions or development, the Western Australian Planning Commission or local government, as the case requires, may require a Preliminary Acid Sulfate Soils Assessment to be prepared where there is likely to be a significant risk of disturbing acid sulfate soils.
- 4-2 Where the presence of acid sulfate soils is confirmed, an Acid Sulphate Soil Management Plan shall be prepared to the satisfaction of the Western Australian Planning Commission or local government, as the case requires, having due regard for advice from relevant government agencies and implemented in accordance with a program defined in the Acid Sulphate Soil Management Plan.

5 Additional Land to be Reserved

5-1 Reserve 35061 Paris Road, Australind - Decommissioned Wastewater Treatment Plant

Land shall be reserved for conservation purposes to protect the integrity, function and environmental value of the bushland on the northern and western portions of Reserve 35061 Paris Road, Australind, to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority, and shall only be used for conservation and complementary purposes.

5-2 Reserve 31012 Harewoods Road, Dalyellup

Land shall be reserved for conservation purposes to protect the integrity, function and environmental value of the bushland on the northern portion of Reserve 31012 Harewoods Road, Dalyellup to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority and shall only be used for conservation, landscape and recreational purposes.

5-3 Foreshore adjoining Port Installations Reserve

Land shall be reserved for conservation purposes to protect the integrity, function and environmental value of the foreshore adjacent to the Port Installations Reserve to the requirements of the Western Australian Planning Commission on advice of the

Environmental Protection Authority and shall only be used for conservation and complementary purposes.

5-4 Twin Rivers - Pt Lot 211 Barnes Avenue, Australind

A portion of Pt Lot 211 Barnes Avenue as detailed in the Minister for the Environment's determination of appeals relating to the Environmental Protection Authority's report and recommendations on the Scheme, dated 30 November 2004, shall be reserved for conservation purposes to protect the integrity, function and environmental values of the land to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority, and shall only be used for conservation and complementary purposes.

5-5 Picton Waters – Environmental Protection Policy Lake on Portion of Lots 40-44 Jeffery Road, Picton

Land shall be reserved for conservation purposes to protect the integrity, function and environmental value of the wetland on Lots 40-44 Jeffery Road, Picton, to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority, and shall only be used for conservation and complementary purposes. The land requirements shall include an appropriate buffer to protect the core wetland.

5-6 College Grove – Lot 1000 Bussell Highway

A portion of Lot 1000, Bussell Highway, as detailed in the Minister for the Environment's determination of appeals relating to the Environmental Protection Authority's report and recommendations on the Scheme, dated 30 November 2004, shall be reserved for conservation purposes to protect the integrity, function and environmental values of the land to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority, and shall only be used for conservation and complementary purposes.

5-7 Pt Loc 632 Parade Road, Glen Padden

Land shall be reserved for conservation purposes to protect the integrity, function and environmental value of the bushland on Pt Loc 632 Parade Road, Glen Padden, to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority, and shall only be used for conservation and complementary purposes.

5-8 Reserve 670 North Boyanup Road, Davenport

Land shall be reserved for conservation purposes to protect the integrity, function and environmental value of the bushland on Reserve 670 North Boyanup Road, Davenport to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority, and shall only be used for conservation and complementary purposes.

5-9 Pt Lot 1 North Boyanup Road, Davenport

Land shall be reserved for conservation purposes to provide an appropriate buffer to the Preston River on Pt Lot 1, North Boyanup Road, Davenport to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority, and shall only be used for conservation and complementary purposes.

5-10 Lot 317 Harewoods Road, Dalyellup

Lot 317 Harewoods Road, Dalyellup shall be reserved for conservation purposes to protect the integrity, function and environmental value of the bushland on the land to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority, and shall only be used for conservation and complementary purposes.

5-11 Lot 1 Dalyellup Boulevard, Dalyellup

Lot 1 Dalyellup Boulevard, Dalyellup shall be reserved for conservation purposes to protect the integrity, function and environmental values of the land to the requirements of the Western Australian Planning Commission on advice of the Environmental Protection Authority and shall only be used for conservation and complementary purposes.

6 Realignment of Primary Regional Roads Reserves

6-1 Port Access Road

The Port Access Road Primary Regional Roads Reserve shall be realigned in accordance with the Minister for the Environment's determination of appeals relating to the Environmental Protection Authority's report and recommendations on the Scheme, dated 30 November 2004.

6-2 Bunbury Outer Ring Road

The Bunbury Outer Ring Road Primary Regional Roads Reserve shall be realigned in accordance with the Minister for the Environment's determination of appeals relating to the Environmental Protection Authority's report and recommendations on the Scheme, dated 30 November 2004.



Appendix C

Extracts from Bulletin 1282

Advice on areas of conservation significance in the Preston Industrial Park

**Advice of the Environmental Protection Authority to the Minister for the
Environment under Section 16(e) of the *Environmental Protection Act 1986***

**Environmental Protection Authority
Perth, Western Australia
Bulletin 1282
March 2008**

Strategic Advice Timelines

Date	Progress stages
25 Oct 2007	Request for advice from Minister for the Environment
25 Mar 2008	EPA section 16(e) advice released

Report Released:

25 March 2008

There is no appeal period on s16(e) advice.

ISBN. 0 7307 6882 1

ISSN. 1030 – 0120

Executive Summary

This report provides the Environmental Protection Authority's (EPA's) advice to the Minister for the Environment under section 16(e) of the *Environmental Protection Act 1986* on the areas of conservation significance within the area identified by the Western Australian Planning Commission (WAPC) for the future development of the Preston Industrial Park. The Preston Industrial Park is approximately 2950 hectares (ha) in area, and is situated approximately 4 kilometres (km) east of the Bunbury Central Business District, within the municipalities of the City of Bunbury and the Shire of Dardanup.

The Preston Industrial Park has been identified as an industrial area in strategic planning documents, most recently in *Industry 2030-Greater Bunbury Industrial Land and Port Access Planning* (WAPC 2000) which contains an *Interim Strategy Plan* for the area pending the completion of further technical investigations.

The Department for Planning and Infrastructure (DPI), on behalf of the WAPC is currently undertaking a review of the *Industry 2030 – Preston Industrial Park Interim Strategy Plan* with a view to developing a Structure Plan for the area to guide and facilitate appropriate land use zoning and development.

A formal request was made by the Minister for the Environment requesting strategic advice from the EPA on the areas of native vegetation to be retained in the Preston Industrial Park Area, and if required, other environmental matters to be addressed in subsequent planning stages.

In preparing its advice the EPA has taken into account the *Preston Industrial Park – Environmental Study* (Connell Wagner and Ecoscape 2007) commissioned by the DPI in addition to, other biological studies in the area, advice of the Department of Environment and Conservation, site visits and investigations.

The Preston Industrial Park Area has been divided in 25 Investigation Areas. Investigation Areas were delineated by considering the draft remnant vegetation mapping from Swan Bioplan and areas defined in Connell Wagner and Ecoscape 2007, to include all natural areas with bushland of 'Good' or better condition on the Keighery condition scale (Government of Western Australia 2000).

In considering the areas of native vegetation to be retained within the Preston Industrial Park, the EPA has applied the *Strategy to Identify Regionally Significant Natural Areas* as outlined in Guidance Statement No.10 (EPA 2006a) and Bulletin 1108 Greater Bunbury Region Scheme (EPA 2003a). This has included the consideration of:

1. Native Vegetation and Flora;
2. Native Fauna;
3. Wetlands and Waterways (Preston and Ferguson Rivers); and
4. Ecological Linkage.

A natural area assessment sheet has been completed for each Investigation Area to assess them against the EPA's criteria for regional significance.

The EPA has used these assessments to formulate strategic recommendations which provide for the protection of priority areas of regional conservation significance. Further to this the EPA has made recommendations for a series of natural areas in the Preston Industrial Park for the purpose of enhancing and restoring ecological linkage.

The recommendations are divided into several categories. The categories acknowledge subsequent planning approvals processes that apply to the future development of the Preston Industrial Park which can provide for conservation and management. The categories are:

Conservation

The EPA recommends that regionally significant natural areas of highest conservation value are retained as Regional Open Space as a future amendment to the Greater Bunbury Region Scheme and appropriately managed for conservation purposes.

Subdivision/Rezoning Protection

The EPA recommends that regionally significant areas of high conservation value that due to their size, shape, location or isolation can be adequately protected and retained as part of any future rezoning, subdivision or development whichever comes first.

Linkage – Enhancement or Restoration

The EPA recommends that the enhancement and restoration areas as identified in strategic locations between the Conservation and Subdivision/Rezoning Protection Areas be restored and/or enhanced to contribute to regionally significant ecological linkage. Opportunities should be explored through future rezoning, subdivision or development, including the implementation of other developments where offsets may be required, or conservation initiatives targeting the restoration and/or enhancement of these areas.

The EPA has also identified environmental matters which will require further consideration during subsequent statutory planning processes (i.e. structure planning, town planning schemes, subdivision and development proposals) so the environment will be adequately protected. These include:

1. Wetland Buffers;
2. Air Quality;
3. Noise;
4. Water Quality and Quantity;
5. Flood Way Mapping;
6. Acid Sulfate Soils;
7. Solid and Liquid Waste Disposal;
8. Risk;
9. The requirement for construction materials; and
10. Development Priority.

The EPA will also use the advice provided in this report when assessing subsequent statutory planning instruments such as town planning schemes and development proposals.

With respect to future development for the PIP, the EPA expects that a development footprint that complies with the advice in this report is not likely to require formal assessment of native vegetation and flora, native fauna, wetlands, waterways or ecological linkage in the foreseeable future. However, the EPA retains the ability under the *Environmental Protection Act 1986* to assess any amendments or proposals that may have a significant impact on the environment.

Finally the EPA commends the WAPC and DPI on its strategic and proactive approach to the consideration of environmental matters in its overall planning for the Preston Industrial Park.

Summary of recommendations

The EPA's recommendations are based on the future land use of the area for industrial land use purposes. The EPA's recommendations are in recognition of the environmental values of the area and it is the EPA's expectation that areas with significant environmental values will be retained as part of future planning for the Preston Industrial Park.

The EPA recommends that:

- 1. All remnant vegetation within the Preston Industrial Park is considered to be regionally significant and should be retained.**
- 2. The vegetation in its entirety within Recommendation Areas A,B,C, D and E (Figure 6) be reserved as Regional Open Space in a future amendment to the GBRS and appropriately managed.**
- 3. That vegetation in its entirety within Recommendation Areas F,G, H, I, J, and K (Figure 6) be retained and protected as part of any future rezoning, subdivision or development, whichever comes first.**
- 4. Connectivity be enhanced in Recommendation Areas L, M, N, P and U (Figure 6) and restored in Areas Q, R & S (Figure 6) given the fragmented distribution of the remaining natural areas in the study area and the negative impact this has on long term viability in a changing climate.**
- 5. Appropriate buffers for wetlands be determined based on the values of the wetlands and proposed land uses, and protected and appropriately managed as part of any future rezoning, subdivision or development, whichever comes first.**
- 6. That the Minister note the Advice Provided in Section 10 on environmental matters that will require further consideration as part of future planning processes.**

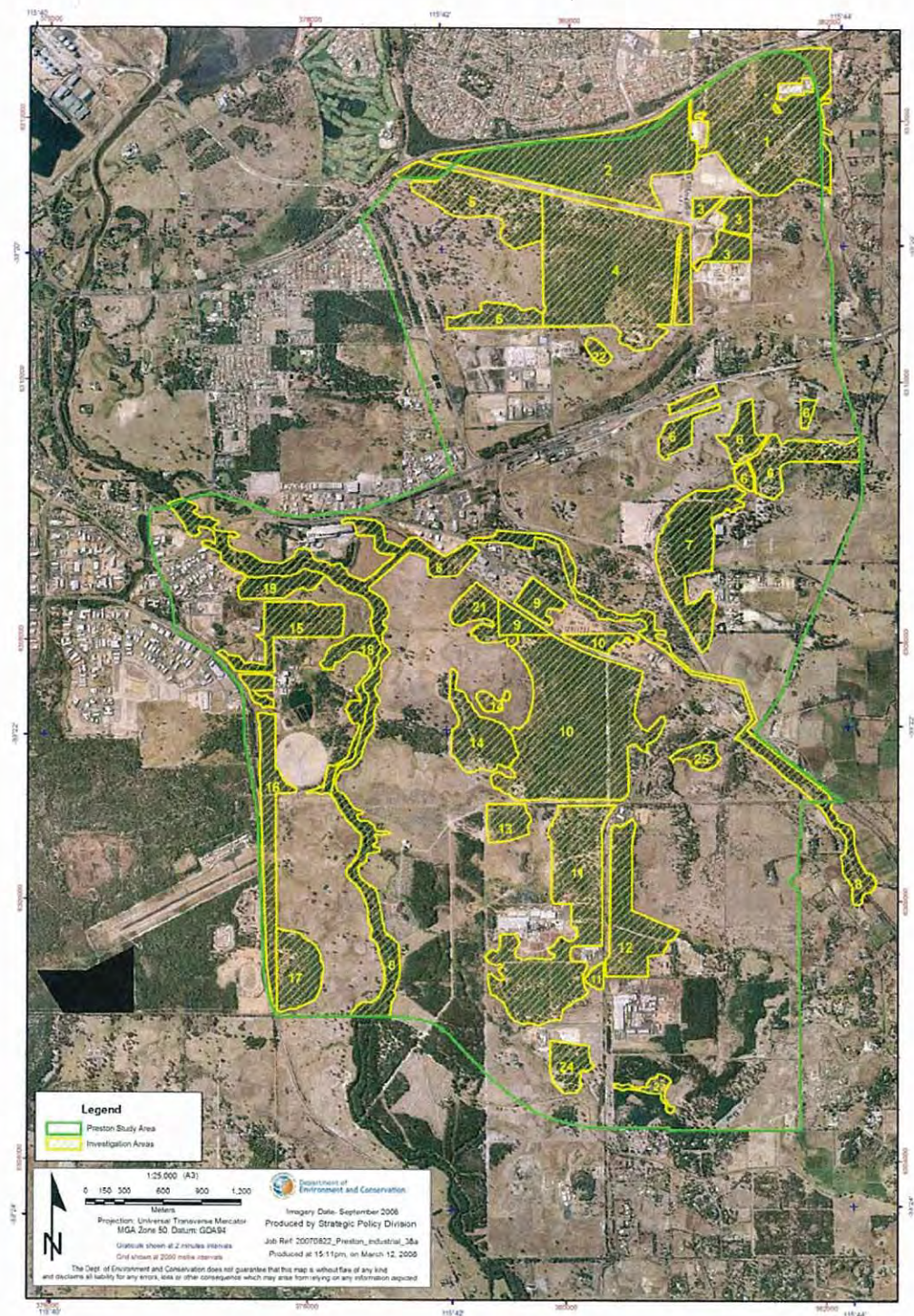


Figure 5. Investigation Areas

8.1 Investigation Areas

As mentioned above the study area has been divided into 25 Investigation Areas (Figure 5). Table 5 below indicates which criteria for regional significance each of the Investigation Areas meet. Please note there is no Investigation Area 20 as this area was determined to be a plantation.

Table 5: Criteria met for regional significance for each Investigation Area

Investigation Area	Representation of communities	Diversity	Rarity	Maintenance of Processes	Scientific or Evolutionary	Wetland Protection	Number of Criteria Met
1	x	x	x	x		x	5
2	x	x	x	x		x	5
3		x	x	x		x	4
4		x	x	x		x	4
5			x				1
6	x		x	x			3
7	x		x	x		x	4
8	x		x	x		x	4
9		x	x	x		x	4
10		x	x	x		x	4
11		x	x	x		x	4
12		x	x	x			3
13			NK*	x			1
14			x	x			2
15			x	x		x	3
16			x	x		x	3
17			x	x		x	3
18			NK*	x		x	2
19			NK*	x		x	2
21			x	x			2
22			NK*				1?
23			x				1
24			x	x			2
25	x	x	x	x		x	5

X = Criteria Met

*NK = Not Known, may meet this criteria but not verified because site specific information not available.

Almost all areas meet the criterion for Maintaining Ecological Processes and Natural Systems as they form part of the four regional ecological linkages previously recognised by the EPA within the PIP (EPA 2003a). The EPA (2003a) stated that naturally vegetated areas in the area of the linkages will be priorities for retention and protection, particularly if larger and relatively intact.

In undertaking the studies for the PIP no information was collected in order to apply the criterion for scientific or evolutionary importance. Therefore it should not be inferred that any particular area does not meet this criterion.

8.1.1 Investigation Area 1

Description

Investigation Area 1 is located on Lots 2 on diagram 78828 Picton East, Lot 84 on plan 29208 Picton East and Lot 40 on plan 232800 Taverner Road Picton East at the north west corner of the area known as the Northern Precinct of the PIP (Figure 5). The remnant vegetation covers an area of approximately 88ha. The land is currently zoned Rural and Primary Regional Roads under the GBRS and General Farming under the Shire of Dardanup Town Planning Scheme No. 3.

This area is marginally impacted by the alignment of the Bunbury Outer Ring Road. The position of this road was assessed in the GBRS (Bulletin 1108) and the final alignment subsequently determined by the Minister for the Environment through the appeals process. Ministerial Statement No. 697 provides conditions relating to this road, including the provision of an environmental offset strategy to mitigate unavoidable impacts on wetlands and native vegetation associated with the road.

The EPA's assessment of the GBRS "deferred" the environmental factors of remnant vegetation and wetlands for all rural zoned land under the GBRS to allow for a more detailed assessment at later stages of the planning process.

Assessment

The natural attributes of Investigation Area 1 are described in detail in Sheet 1 (Appendix 6). Investigation Area 1 is considered to be a regionally significant natural area meeting 5 criteria. The natural attributes of Investigation Area 1 that contribute to meeting the criteria are listed below.

- Representation of Ecological Communities;
 - Representative area of natural vegetation in predominately Very Good condition of the Southern River Vegetation complex.
- Diversity;
 - A highly diverse area with respect to diversity of landforms, wetland and upland vegetation units, habitat and fauna.
- Rarity;
 - Location for 4 Priority and 1 poorly reserved Flora.
 - Location for 3 threatened bird species (Baudin's, Carnaby's and Red-tailed Black Cockatoo), 1 threatened mammal species (Western Ringtail Possum), 1

More recently the EPA considered the subdivision of Lot 3 on diagram 50159 (Harris Road), Picton East under Section 38 of the EP Act.

Assessment

The natural attributes of Investigation Area 7 are described in detail in Sheet 7 (Appendix 6). Investigation Area 7 is considered to be a regionally significant natural area meeting 4 criteria. The natural attributes of Investigation Area 7 that contribute to meeting the criteria are listed below.

- Representation of Ecological Communities;
 - Representative area of natural vegetation in Good to Very Good condition of the Guildford vegetation complex.
- Rarity;
 - Location for 3 Priority and 5 poorly reserved Flora
 - Location for 2 threatened bird species (Baudin's and Red-tailed Black Cockatoo), 1 threatened mammal species (Western Ringtail Possum), and at least 3 bird species listed as conservation significant on the Swan Coastal Plain.
- Maintaining Ecological Processes or Natural Systems;
 - Part of a regional ecological linkage: McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (north-south ecological linkage).
- General Criteria for the Protection of Wetland, Streamline, and Estuarine Fringing Vegetation and Coastal Vegetation;
 - The area contains 1 EPP Lake and 2 likely Conservation Category wetlands.

The EPA acknowledges that previous decisions made under Section 48A, and subsequently S38, have impacted upon its ability to protect natural areas of regional significance within this Investigation Area. Accordingly the EPA has taken this into consideration in making its recommendations.

Summary

It is the EPA's opinion that:

- a) Investigation Area 7 is a regionally significant natural area of high value which should be retained within the future planning for the PIP area.
- b) Investigation Area 7 should be retained as Regional Open Space as a future amendment to the GBRS and appropriately managed.

Accordingly Investigation Area 7 is included in Recommendation Area E as shown in Figure 6.

8.1.8 Investigation Area 8

Description

Investigation Area 8 is located on various lots along both the Preston and Ferguson Rivers within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 105ha. The land is currently zoned Regional Open Space under the GBRS and Parks and Recreation

under the City of Bunbury Town Planning Scheme No.7, and Recreation and General Farming under the Shire of Dardanup Town Planning Scheme No. 3.

Assessment

The natural attributes of Investigation Area 8 are described in detail in Sheet 8 (Appendix 6). Investigation Area 8 is considered to be a regionally significant natural area meeting 4 criteria. The natural attributes of Investigation Area 8 that contribute to meeting the criteria are listed below.

- Representation of Ecological Communities;
 - Representative area of natural vegetation in predominately Good to Degraded condition of the Southern River, Swan and Guildford Vegetation Complexes.
- Rarity;
 - Location for 1 Priority and 4 poorly reserved flora.
 - Location for 1 threatened bird species (Baudin's Black Cockatoo), 1 threatened mammal species (Western Ringtail Possum), and at least 4 bird species that are of regional conservation significance.
- Maintaining Ecological Processes or Natural Systems;
 - Part of 3 regional ecological linkages: Ferguson River, Preston River and McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (north-south ecological linkage).
- General Criteria for the Protection of Wetland, Streamline, and Estuarine Fringing Vegetation and Coastal Vegetation;
 - The area contains both the Preston and Ferguson Rivers.
 - The area contains Conservation Category wetlands.

Summary

It is the EPA's opinion that:

- a) Investigation Area 8 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 8 should be retained as Regional Open Space, as a future amendment to the GBRS where not previously reserved, and appropriately managed.

Accordingly Investigation Area 8 is included in Area C as shown in Figure 6.

8.1.9 Investigation Area 9

Description

Investigation Area 9 is located on Lot 5545 on plan 21705, Crown Reserve 40552, South Western Highway, Picton within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 13ha. The land is currently zoned Rural, Primary Regional Roads, Railways and Industrial under the GBRS and Industry, Rural, Primary Distributor Road and Railway under the City of Bunbury Town Planning Scheme No. 7.

8.1.10 Investigation Area 10

Description

Investigation Area 10 is located on Lot 5, on plan 7878, Boyanup-Picton Road Picton East and Lot 520 on plan 301384, Picton East within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 111ha. The land is currently zoned Rural, Industrial, Railways and Primary Regional Roads under the GBRS and General Farming, General Industry and Public Utilities under the Shire of Dardanup Town Planning Scheme No. 3.

This Investigation Area is intersected by the alignment of the Bunbury Outer Ring Road and Port Access Road. The alignment of these roads was assessed in the GBRS (Bulletin 1108) and the alignment subsequently determined by the Minister for the Environment through the appeals process. Ministerial Statement No. 697 provides conditions relating to these roads including the provision of an environmental offset strategy to mitigate unavoidable impacts on wetlands and native vegetation associated with the road.

The EPA's assessment of the GBRS "deferred" the environmental factors of remnant vegetation and wetlands for all rural zoned land under the GBRS, and remnant vegetation, wetland, watercourses, fauna and noise for the Port Access Road and Bunbury Outer Ring Road, to allow for a more detailed assessment at later stages of the planning process.

The EPA is also currently undertaking an Environmental Review of an amendment for the proposed rezoning of the subject land from General Farming to Development Zone under the Shire of Dardanup Town Planning Scheme No. 3.

Assessment

The natural attributes of Investigation Area 10 are described in detail in Sheet 10 (Appendix 6). Investigation Area 10 is considered to be a regionally significant natural area meeting 4 criteria. The natural attributes of Investigation Area 10 that contribute to meeting the criteria are listed below.

- Diversity;
 - A highly diverse area with respect to diversity of landforms, wetland and upland vegetation units, habitat and fauna.
- Rarity;
 - Guildford vegetation complex
 - Location for 1 Priority and 9 poorly reserved Flora
 - Location for 2 threatened bird species (Red-tailed Black and Carnaby's Black Cockatoo), 1 threatened mammal species (Western Ringtail Possum), and at least 11 bird species listed as conservation significant on the Swan Coastal Plain.
- Maintaining Ecological Processes or Natural Systems;
 - Part of a regional ecological linkage: McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (north-south ecological linkage).

- General Criteria for the Protection of Wetland, Streamline, and Estuarine Fringing Vegetation and Coastal Vegetation;
 - The area contains a Conservation Category wetland

Summary

It is the EPA's opinion that:

- a) Investigation Area 10 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 10 should be retained as Regional Open Space as a future amendment to the GBRS and appropriately managed.

Accordingly Investigation Area 10 is included in Area B as shown in Figure 6.

8.1.11 Investigation Area 11

Description

Investigation Area 11 is located on Lots 1, 2 and 3 on diagram 46933, Moore Road Dardanup West within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 75ha. The land is currently zoned Rural, Industrial and Primary Regional Roads under the GBRS and General Farming, General Industry and Important Regional Roads under the Shire of Dardanup Town Planning Scheme No. 3.

This Investigation Area is intersected by the alignment of the Bunbury Outer Ring Road and Port Access Road. The alignment of these roads was assessed in the GBRS (Bulletin 1108) and the alignment subsequently determined by the Minister for the Environment through the appeals process. Ministerial Statement No. 697 provides conditions relating to these roads including the provision of an environmental offset strategy to mitigate unavoidable impacts on wetlands and native vegetation associated with the road.

The EPA's assessment of the GBRS "deferred" the environmental factors of remnant vegetation and wetlands for all rural zoned land under the GBRS, and remnant vegetation, wetland, watercourses, fauna and noise for the Port Access Road and Bunbury Outer Ring Road, to allow for a more detailed assessment at later stages of the planning process.

Assessment

The natural attributes of Investigation Area 11 are described in detail in Sheet 11 (Appendix 6). Investigation Area 11 is considered to be a regionally significant natural area meeting 4 criteria. The natural attributes of Investigation Area 11 that contribute to meeting the criteria are listed below.

- Diversity;
 - A highly diverse area with respect to diversity of landforms, wetland and upland vegetation units, habitat and fauna.
- Rarity;

- Location for 1 Priority and 5 poorly reserved Flora.
- Location for 3 threatened bird species (Baudin's, Carnaby's and Red-tailed Black Cockatoo), 1 threatened mammal species (Western Ringtail Possum), and at least 9 bird species listed as conservation significant on the Swan Coastal Plain.
- Maintaining Ecological Processes or Natural Systems;
 - Part of a regional ecological linkage: McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (north-south ecological linkage).
- General Criteria for the Protection of Wetland, Streamline, and Estuarine Fringing Vegetation and Coastal Vegetation;
 - The area contains an EPP Lake.

The EPA acknowledges that a portion of the Investigation Area is currently zoned industrial under the GBRS, consistent with the Town Planning Scheme. The EPA does not consider that the recommendations in this report prevent the continued Industrial land use at this locality.

Summary

It is the EPA's opinion that:

- a) Investigation Area 11 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 11 should be retained as Regional Open Space as a future amendment to the GBRS and appropriately managed.

Accordingly Investigation Area 11 is included in Area B as shown in Figure 6.

8.1.12 Investigation Area 12

Description

Investigation Area 12 is located on Lots 4 on diagram 46933 Dardanup West, Lot 10 on diagram 82158, Busher Road, Dardanup West and Lot 609 on plan 246174, Resta Rd Dardanup West within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 31ha. The land is currently zoned Industrial under the GBRS and General Farming and General Industry, under the Shire of Dardanup Town Planning Scheme No. 3.

Assessment

The natural attributes of Investigation Area 12 are described in detail in Sheet 12 (Appendix 6). Investigation Area 12 is considered to be a regionally significant natural area meeting 3 criteria. The natural attributes of Investigation Area 12 that contribute to meeting the criteria are listed below.

- Diversity;
 - A highly diverse area with respect to diversity of landforms, wetland and upland vegetation units and habitat.

- Rarity;
 - Location for 1 poorly reserved Flora.
 - Location for 3 threatened bird species (Baudin's, Carnaby's and Red-tailed Black Cockatoo), and at least 3 bird species listed as conservation significant on the Swan Coastal Plain.
- Maintaining Ecological Processes or Natural Systems;
 - Part of a regional ecological linkage: McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (north-south ecological linkage)

The EPA acknowledges that this Investigation Area is currently zoned industrial under the GBRS. The EPA's opinion on this area has been reached because the EPA has reassessed the regional natural values of the site using the criteria to identify regionally significant areas and has found that the site has higher values than previously indicated.

Summary

It is the EPA's opinion that:

- a) Investigation Area 12 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 12 should be retained as Regional Open Space as a future amendment to the GBRS and appropriately managed.

Accordingly Investigation Area 12 is included in Area B as shown in Figure 6.

8.1.13 Investigation Area 13

Description

Investigation Area 13 is located on Lot 1 on diagram 46933 Dardanup West within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 9ha. The land is currently zoned Rural under the GBRS and General Farming under the Shire of Dardanup Town Planning Scheme No. 3.

The EPA's assessment of the GBRS "deferred" the environmental factors of remnant vegetation and wetlands for all rural zoned land under the GBRS to allow for a more detailed assessment at later stages of the planning process.

Assessment

The natural attributes of Investigation Area 13 are described in detail in Sheet 13 (Appendix 6). Investigation Area 13 is considered to be a regionally significant natural area meeting 1 criterion and likely to meet a second. The natural attributes of Investigation Area 13 that contribute to meeting the criteria are listed below.

- Rarity (Not Known, insufficient information);
 - Location for at least 3 bird species listed as conservation significant on the Swan Coastal Plain.
 - Likely habitat for 3 threatened bird species (Baudin's, Carnaby's and Red-tailed Black Cockatoo)

- Maintaining Ecological Processes or Natural Systems;
 - Part of a regional ecological linkage: McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (north-south ecological linkage)

Summary

It is the EPA's opinion that:

- a) Investigation Area 13 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 13 should be retained as Regional Open Space as a future amendment to the GBRS and appropriately managed.

Accordingly Investigation Area 13 is included in Area B as shown in Figure 6.

8.1.14 Investigation Area 14

Description

Investigation Area 14 is located on Lot 5 on plan 7878, Boyanup-Picton Road Picton East within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 23ha. The land is currently zoned Rural under the GBRS, and General Farming under the Shire of Dardanup Town Planning Scheme No. 3.

The EPA is currently undertaking an Environmental Review of an amendment for the proposed rezoning of the subject land from General Farming to Development Zone under the Shire of Dardanup Town Planning Scheme No. 3.

The EPA's assessment of the GBRS "deferred" the environmental factors of remnant vegetation and wetlands for all rural zoned land under the GBRS to allow for a more detailed assessment at later stages of the planning process.

Assessment

The natural attributes of Investigation Area 14 are described in detail in Sheet 14 (Appendix 6). Investigation Area 14 is considered to be a regionally significant natural area meeting 2 criteria. The natural attributes of Investigation Area 14 that contribute to meeting the criteria are listed below.

- Rarity;
 - Location for Declared Rare Flora *Diuris drummondii*
 - Location for 1 threatened mammal species (Western Ringtail Possum), and at least 5 bird species listed as conservation significant on the Swan Coastal Plain.
- Maintaining Ecological Processes or Natural Systems;
 - Part of a regional ecological linkage: McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (north-south ecological linkage).

Summary

It is the EPA's opinion that:

- a) Investigation Area 15 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 15 should be retained as Regional Open Space as a future amendment to the GBRS and appropriately managed.

Accordingly Investigation Area 15 is included in Area D as shown in Figure 6.

8.1.16 Investigation Area 16

Description

Investigation Area 16 is located on Lots 1050 on plan 33291, Crown Reserve 670 South Western Highway Davenport, Lot 549 on plan 213069 South Western Highway, Lot 5 on diagram 50137 South West Highway Davenport and Lots 14 and 15 on plan 64665 South West Highway Davenport within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 28ha. The land is currently zoned Regional Open Space, Public Purpose, Rural, Primary Regional Roads and Industrial under the GBRS and Industry, Special Use 17 and 18, Parks and Recreation, Rural Public Purposes, Primary Distributor Road and Development Zone-Industrial under the City of Bunbury Town Planning Scheme No. 7.

The EPA's assessment of the GBRS considered the zoning of Lot 15 on plan 64665 South Western Highway (North Boyanup Road) Davenport and the reservation of part Lot 5 on diagram 50137 South West Highway (North Boyanup Road) Davenport and Crown Reserve 670 South Western Highway (North Boyanup Road).

In considering Lot 15, the EPA recommended that the vegetation in the southern corner should be protected through the future planning process. The EPA's assessment of the GBRS "deferred" the environmental factors of remnant vegetation and fauna for Lot 15 North Boyanup Road, Davenport under the GBRS to allow for a more detailed assessment at later stages of the planning process

Part Lot 5 and the southern portion of Reserve 670 was reserved in the GBRS, however at this time the EPA considered that there may be some scope for development in the northern portion. Accordingly the EPA's assessment of the GBRS "deferred" the environmental factors of remnant vegetation fauna and ecological linkage for Reserve 670 North Boyanup Road, Davenport under the GBRS to allow for a more detailed assessment at later stages of the planning process.

Assessment

The natural attributes of Investigation Area 16 are described in detail in Sheet 16 (Appendix 6). Investigation Area 16 is considered to be a regionally significant natural area meeting 3 criteria. The natural attributes of Investigation Area 16 that contribute to meeting the criteria are listed below.

- Rarity;
 - Location for 5 poorly reserved Flora.
 - Location for 1 threatened bird species (Baudin's Black Cockatoo), and at least 7 bird species listed as conservation significant on the Swan Coastal Plain.

- Maintaining Ecological Processes or Natural Systems;
 - Part of a regional ecological linkage: Maidens/Preston River (east-west ecological linkage).
- General Criteria for the Protection of Wetland, Streamline, and Estuarine Fringing Vegetation and Coastal Vegetation;
 - The area contains 2 Conservation Category wetlands.

The EPA's opinion on this area has been reached because the EPA has reassessed the regional natural values of the site using the criteria to identify regionally significant areas and has found that the site has higher values than previously indicated. The EPA acknowledges that the Investigation Area is within larger lots that are currently zoned industrial under the GBRS, consistent with the TPS. The EPA considers that adequate protection of the values of this site can be provided through conservation and management as part of future planning proposals. The EPA does consider that land outside of the Investigation Area within these lots can be developed for the intended industrial purpose.

Summary

It is the EPA's opinion that:

- a) Investigation Area 16 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 16 should be retained as Regional Open Space as a future amendment to the GBRS and appropriately managed.

Accordingly Investigation Area 16 is included in Area D as shown in Figure 6.

8.1.17 Investigation Area 17

Description

Investigation Area 17 is located on Lot 15 on plan 64665 South Western Highway Davenport within the area known as the Southern Precinct of the Preston Industrial Park (Figure 5). The Remnant covers an area of approximately 18ha. The land is currently zoned Primary Regional Roads and Industrial under the GBRS and Primary Distributor Road and Development Zone-Industrial under the City of Bunbury Town Planning Scheme No. 7.

The EPA's assessment of the GBRS considered the zoning of Lot 15 on plan 64665 South Western Highway (North Boyanup Road) Davenport. The EPA recommended that the vegetation consistent with Investigation Area 17 was regionally significant and should be protected through the future planning process.

This area is marginally impacted by the alignment of the Bunbury Outer Ring Road. The alignment of this road was assessed in the GBRS (Bulletin 1108) and the alignment subsequently determined by the Minister for the Environment through the appeals process. Ministerial Statement No. 697 provides conditions relating to this

road including the provision of an environmental offset strategy to mitigate unavoidable impacts on wetlands and native vegetation associated with the road.

The EPA's assessment of the GBRS "deferred" the environmental factors of remnant vegetation and fauna for Lot 15 North Boyanup Road, Davenport and remnant vegetation, wetland, watercourses, fauna and noise for the Port Access Road, to allow for a more detailed assessment at later stages of the planning process.

Assessment

The natural attributes of Investigation Area 17 are described in detail in Sheet 17 (Appendix 6). Investigation Area 17 is considered to be a regionally significant natural area meeting 3 criteria. The natural attributes of Investigation Area 17 that contribute to meeting the criteria are listed below.

- **Rarity;**
 - Location for 1 poorly reserved Flora.
 - Location for 2 threatened species (Baudin's Black Cockatoo and Western Ringtail Possum), and at least 2 bird species listed as conservation significant on the Swan Coastal Plain.
- **Maintaining Ecological Processes or Natural Systems;**
 - Part of a regional ecological linkage: Maidens/Preston River (east-west ecological linkage).
- **General Criteria for the Protection of Wetland, Streamline, and Estuarine Fringing Vegetation and Coastal Vegetation;**
 - The area contains a Conservation Category wetland.

The EPA's opinion on this area has been reached because the EPA has reassessed the regional natural values of the site using the criteria to identify regionally significant areas and has found that the site has higher values than previously indicated. The EPA acknowledges that the Investigation Area is within a larger lot that is currently zoned industrial under the GBRS, consistent with the TPS. The EPA considers that adequate protection of the values of this site can be provided through conservation and management as part of future planning proposals. The EPA considers that land outside of the Investigation Area within these lots can be developed for the intended industrial purpose.

Summary

It is the EPA's opinion that:

- a) Investigation Area 17 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 17 should be retained as Regional Open Space as a future amendment to the GBRS and appropriately managed.

Accordingly Investigation Area 17 is included in Area D as shown in Figure 6.

- Rarity;
 - Location for 2 threatened bird species (Carnaby's and Red-tailed Black Cockatoo), and at least 1 bird species listed as conservation significant on the Swan Coastal Plain.
- Maintaining Ecological Processes or Natural Systems;
 - Important bird breeding habitat.
- General Criteria for the Protection of Wetland, Streamline, and Estuarine Fringing Vegetation and Coastal Vegetation;
 - The area contains an EPP lake.

Summary

It is the EPA's opinion that:

- a) Investigation Area 25 is a regionally significant natural area of high value which should be retained within the future planning for the Preston Industrial Park area.
- b) Investigation Area 25 should be retained and protected as part of any future rezoning, subdivision or development, whichever comes first.

Accordingly Investigation Area 25 is included in Area I as shown in Figure 6.

9. Recommendation Areas

Based on these assessments the EPA considers that all Investigation Areas are regionally significant natural areas that should be retained in the future planning for the PIP. This is consistent with the EPA's policy in the GBRs that the general protection of remnant native vegetation on the Swan Coastal Plain should be achieved through the preferential location of developments in cleared areas (EPA 2003a).

The EPA has used these assessments to formulate strategic recommendations for protection of priority areas of regional conservation significance. Further to this the EPA has made recommendations for a series of natural areas in the PIP, for the purpose of enhancing and restoring ecological linkage. This is consistent with the EPA's policy statement in the GBRs that there be proactive planning for the restoration of ecological communities and landscape rehabilitation between and around selected sequences of the small remaining remnants on the eastern side of the Swan Coastal Plain in the Greater Bunbury Region (EPA 2003a).

The EPA's recommendations are discussed below and are divided into several categories. The categories acknowledge subsequent planning approvals processes that apply to the future development of the Preston Industrial Park which can provide for conservation and management. It should be noted that where Investigation Areas are described, the Lot numbers affected are not repeated below. The reader is referred to Section 8 above that details lot numbers which form Investigation Areas.

Conservation Areas

The EPA has identified areas that are considered to be the regionally significant natural areas of highest conservation value and should be retained as Regional Open

Space as a future amendment to the Greater Bunbury Region Scheme and appropriately managed for conservation purposes.

Conservation Areas A, B, C, D and E have been identified in this category (Figure 6).

Subdivision/Rezoning Protection

The EPA has also identified areas that are considered to be regionally significant natural areas of high conservation value which should be retained within the future planning for the Preston Industrial Park. Due to the size, shape, location or isolation of these areas the EPA considers that adequate protection of the values can be provided through conservation and management as part of future planning proposals. These areas should be retained and protected as part of any future rezoning, subdivision or development, whichever comes first.

Subdivision/Rezoning Protection Areas F, G, H, I, J and K have been identified in this category (Figure 6).

Linkage – Enhancement or Restoration

The EPA has identified areas for enhancement or restoration in strategic locations between the Conservation and Subdivision/Rezoning Protection areas that contribute to regionally significant ecological linkage. These are natural areas that were not of a condition suitable to be included in an Investigation Area.

Opportunities should be explored through future rezoning, subdivision or development, including the implementation of other developments where offsets may be required, or conservation initiatives targeting the restoration and/or enhancement of these areas.

Identification of such areas allows for:

- Enhancement where some natural values remain, or
- Restoration where little or no natural values remain.

Linkage Enhancement Areas are identified as L, M, N, P and U (Figure 6).

Linkage Restoration Areas are identified as Q, R & S (Figure 6).

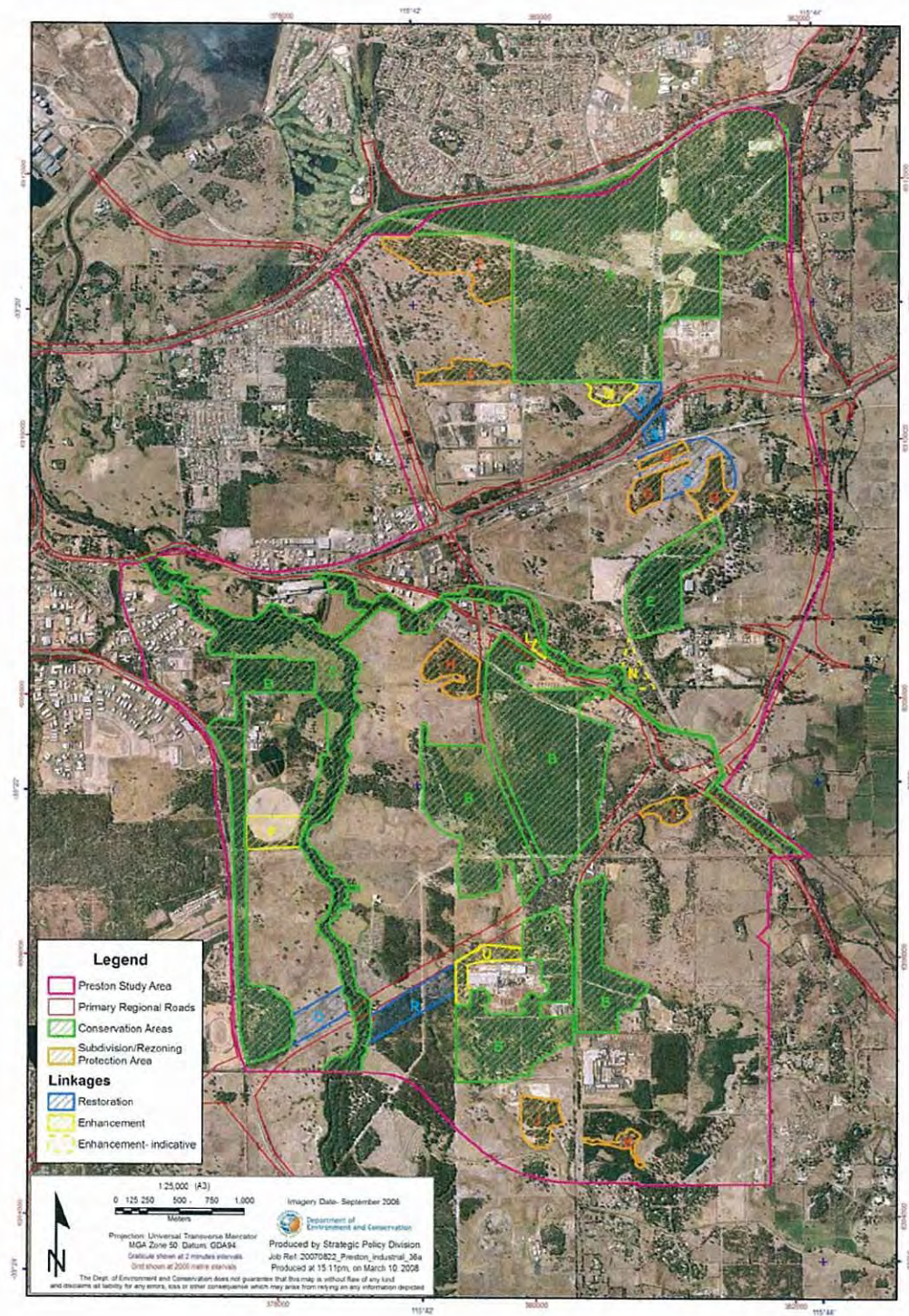


Figure 6. Recommendation Areas

9.1 Conservation Areas

These 5 areas represent the highest conservation values in the PIP, as they each meet at least 4 criteria for regional significance (Table 6). The EPA recommends that these 5 areas be retained as Regional Open Space as a future amendment to the Greater Bunbury Region Scheme and appropriately managed for conservation purposes.

Table 6: Criteria met for regional significance for proposed conservation areas

Conservation Area	Representation of communities	Diversity	Rarity	Maintenance of Processes and Systems	Scientific or Evolutionary	Wetland Protection	Total Criteria met for Regional Significance
A	x	x	x	x		x	5
B		x	x	x		x	4
C	x		x	x		x	4
D		x	x	x		x	4
E	x		x	x		x	4

9.1.1 Recommendation Area A

Recommendation Area A covers an area of approximately 314ha and includes Investigation Areas 1, 2, 3 and 4. The majority of the land is currently zoned Rural with a small part Industrial and Primary Regional Roads under the GBRS, General Farming under the Shire of Dardanup Town Planning Scheme No. 3, and Industry under the City of Bunbury Town Planning Scheme No. 7.

Area A meets the highest number of criteria for regional conservation significance of all the sites, includes areas in best condition, is the largest and most consolidated and is therefore the highest priority conservation area in the PIP.

9.1.2 Recommendation Area B

Recommendation Area B covers an area of approximately 269ha and includes Investigation Areas 9, 10, 11, 12, 13 and 14. The majority of the land is currently zoned Rural with a part zoned Industrial and Railways under the GBRS. At the local scale, it includes land zoned General Farming, General Industry and Public Utilities under the Shire of Dardanup Town Planning Scheme No. 3 and Rural, Industry and Railway under the City of Bunbury Town Planning Scheme No. 7.

Area B meets 4 criteria for regional conservation significance, and includes the second largest population in the state of the threatened flora *Diuris drummondii* (Tall Donkey Orchid) (DEC unpublished data).

9.1.3 Recommendation Area C

Recommendation Area C covers an area of approximately 133ha and includes Investigation Area 8, 18 and 19. The majority of the land is already zoned under the GBRS as Regional Open Space with a portion zoned Industrial and Railways. At the local scale, it includes land zoned Parks and Recreation, Special Use 18 and Railway under the City of Bunbury Town Planning Scheme No. 7 and General Farming and Public Utilities under the Shire of Dardanup Town Planning Scheme No. 3.

Area C meets 4 criteria for regional conservation significance, and is particularly significant for regional ecological linkage, providing linkage from north and west of the PIP through to the Darling and Whicher Scarps. Therefore this area connects major landforms in the Greater Bunbury Region, the coastal and estuarine areas of the portion of the Swan Coastal Plain to the Darling and Blackwood Plateaus.

This recommendation includes areas that are Completely Degraded and do not meet the criteria for regional conservation significance, but because they are within areas of high conservation significance they are not deemed to be suitable for development. Development of these areas is likely to indirectly impact on the significant environmental values that surround them. Such areas are recommended for reservation to Regional Open Space to be used for conservation and complementary purposes.

9.1.4 Recommendation Area D

Recommendation Area D covers an area of approximately 61ha and includes Investigation Areas 15, 16 and 17. The land is zoned Regional Open Space, Rural, Industrial and Public Purpose-Airport under the GBRS and Parks and Recreation, Rural, Development Zone-Industrial, Industry, Public Purposes (Local Government) and Special Use 17 and 18 under the City of Bunbury Town Planning Scheme No. 7.

Area D meets 4 criteria for regional conservation significance, and provides an important part of the Maidens/Preston ecological linkage.

9.1.5 Recommendation Area E

Recommendation Area E covers an area of approximately 32ha and includes the majority of Investigation Area 7. The land is zoned Rural and Industrial under the GBRS and Rural and Restricted Uses (R2 Dry Industry) under the Shire of Dardanup Town Planning Scheme No. 3.

Area E meets 4 criteria for regional conservation significance, and includes the best representation of the Guildford complex in the PIP.

The southern portion of Investigation Area 7 is not included in this recommendation in recognition of previous decisions.

9.1.3 Recommendation Area C

Recommendation Area C covers an area of approximately 133ha and includes Investigation Area 8, 18 and 19. The majority of the land is already zoned under the GBRS as Regional Open Space with a portion zoned Industrial and Railways. At the local scale, it includes land zoned Parks and Recreation, Special Use 18 and Railway under the City of Bunbury Town Planning Scheme No. 7 and General Farming and Public Utilities under the Shire of Dardanup Town Planning Scheme No. 3.

Area C meets 4 criteria for regional conservation significance, and is particularly significant for regional ecological linkage, providing linkage from north and west of the PIP through to the Darling and Whicher Scarps. Therefore this area connects major landforms in the Greater Bunbury Region, the coastal and estuarine areas of the portion of the Swan Coastal Plain to the Darling and Blackwood Plateaus.

This recommendation includes areas that are Completely Degraded and do not meet the criteria for regional conservation significance, but because they are within areas of high conservation significance they are not deemed to be suitable for development. Development of these areas is likely to indirectly impact on the significant environmental values that surround them. Such areas are recommended for reservation to Regional Open Space to be used for conservation and complementary purposes.

9.1.4 Recommendation Area D

Recommendation Area D covers an area of approximately 61ha and includes Investigation Areas 15, 16 and 17. The land is zoned Regional Open Space, Rural, Industrial and Public Purpose-Airport under the GBRS and Parks and Recreation, Rural, Development Zone-Industrial, Industry, Public Purposes (Local Government) and Special Use 17 and 18 under the City of Bunbury Town Planning Scheme No. 7.

Area D meets 4 criteria for regional conservation significance, and provides an important part of the Maidens/Preston ecological linkage.

9.1.5 Recommendation Area E

Recommendation Area E covers an area of approximately 32ha and includes the majority of Investigation Area 7. The land is zoned Rural and Industrial under the GBRS and Rural and Restricted Uses (R2 Dry Industry) under the Shire of Dardanup Town Planning Scheme No. 3.

Area E meets 4 criteria for regional conservation significance, and includes the best representation of the Guildford complex in the PIP.

The southern portion of Investigation Area 7 is not included in this recommendation in recognition of previous decisions.

9.2 Subdivision/Rezoning Protection Areas

These 6 areas include areas of regional conservation significance for which the EPA considers that adequate protection of the values can be provided through conservation and management as part of future planning proposals. These areas should be retained, as they each meet at least 1 criterion for regional significance (Table 7), and protected as part of any future rezoning, subdivision or development, whichever comes first.

Table 7: Criteria met for regional significance for proposed subdivision protection areas

Conservation Area	Representation of communities	Diversity	Rarity	Maintenance of Processes and Systems	Scientific or Evolutionary	Wetland Protection	Total Criteria met for Regional Significance
<i>F</i>			X				1
<i>G</i>	X		X	X			3
<i>H</i>			X	X			2
<i>I</i>	X	X	X	X		X	5
<i>J</i>			X	X			2
<i>K</i>			X				1

9.2.1 Recommendation Area F

Recommendation Area F covers an area of approximately 43ha and includes Investigation Area 5. The land is currently zoned Industrial under the GBRS and Industry under the City of Bunbury Town Planning Scheme No. 7.

Area F is generally in Good to Degraded condition but contains areas of habitat for 2 threatened bird species (Red-tailed Black Cockatoo and Baudin's Black Cockatoo). The regionally significant values of this area can be adequately protected through conservation and management as part of future planning proposals.

9.2.2 Recommendation Area G

Recommendation Area G covers an area of approximately 18ha and includes Investigation Area 6. The land is currently zoned Industrial under the GBRS and Restricted Uses (R2 Dry Industry) under the Shire of Dardanup Town Planning Scheme No. 3.

Area G meets 3 criteria for regional conservation significance. Area G contains vegetation of the Guildford complex, provides habitat for 1 threatened bird species (Red-tailed Black Cockatoo) and forms a critical part of the ecological linkage between the northern and southern precincts of the PIP. However it is fragmented and in generally Degraded condition. The EPA considers that the regionally significant

values of this area can be adequately protected through conservation and management as part of future planning proposals.

9.2.3 Recommendation Area H

Recommendation Area H covers an area of approximately 13ha and includes Investigation Area 21. The land is currently zoned Rural under the GBRS and Rural under the City of Bunbury Town Planning Scheme No. 7.

Area H meets 1 criterion for regional conservation significance, supporting populations of 1 threatened mammal species (Western Ringtail Possum). However Area H is small and isolated and the EPA considers that the regionally significant values of this area can be adequately protected through conservation and management as part of future planning proposals.

9.2.4 Recommendation Area I

Recommendation Area I covers an area of approximately 5ha and includes Investigation Area 25. The land is currently zoned Rural under the GBRS and General Farming under the Shire of Dardanup Town Planning Scheme No. 3.

Area I meets 5 criteria for regional conservation significance, however due to the small size and isolation of Area I, the EPA considers that the regionally significant values of this area can be adequately protected through conservation and management as part of future planning proposals.

9.2.5 Recommendation Area J

Recommendation Area J covers an area of approximately 10ha and includes Investigation Area 24. The land is currently zoned Rural under the GBRS and General Farming under the Shire of Dardanup Town Planning Scheme No. 3.

Area J meets 2 criteria for regional conservation significance, supporting populations of 1 threatened bird species (Baudin's Black Cockatoo) and 1 threatened mammal species (Western Ringtail Possum), and contributing to ecological linkage. However Area J is small and isolated and the EPA considers that the regionally significant values of this area can be adequately protected through conservation and management as part of future planning proposals.

9.2.6 Recommendation Area K

Recommendation Area K covers an area of approximately 3ha and includes Investigation Area 23. The land is currently zoned Rural under the GBRS and Rural under the Shire of Dardanup Town Planning Scheme No. 3.

Area K meets 1 criterion for regional conservation significance and was observed to support a significant population of 1 threatened mammal species (Western Ringtail Possum), however due to the small size and isolation of Area K, the EPA considers that the regionally significant values of this area can be adequately protected through conservation and management as part of future planning proposals.

9.3 Linkage Enhancement Areas

The EPA has recommended areas in strategic locations for enhancement and restoration given the fragmented distribution of the remaining natural areas in the study area and the negative impact this has on long term viability in a changing climate. Where these areas have not been previously discussed in Section 8 the Lot numbers are identified below.

9.3.1 Recommendation Area L

Recommendation Area L is located on Lot 10 on diagram 60475, South Western Highway Picton on the Ferguson River Foreshore, within the area known as the Southern Precinct of the PIP (Figure 6). The recommendation covers an area of approximately 0.7ha. The land is currently zoned Rural under the GBRS and Parks and Recreation under the City of Bunbury Town Planning Scheme No. 7.

The EPA previously recommended this area for retention as ROS in its assessment of the GBRS in order to consolidate the size and shape of the Ferguson River Foreshore and provide linkage to the nearby Crown Reserve 5545. The EPA acknowledges that through the appeals process that it was determined by the Minister that the EPA's recommendation not be adopted. However, the ecological linkage values remain and require some level of protection.

The EPA makes its current recommendation on the basis that development of the area for industrial purposes will be incompatible with residential land use. Therefore during the rezoning process there is an opportunity to protect the ecological linkage and it is recommended that this land be acquired at this time and appropriately reserved or protected through planning approvals processes.

9.3.2 Recommendation Area M

Recommendation Area M is located on Lot 2010 on diagram 43721 Picton East, within the area known as the Northern Precinct of the Preston Industrial Park (Figure 6). The recommendation covers an area of approximately 5ha and includes part Investigation Area 4. The land is currently zoned Rural under the GBRS and General Farming under the Shire of Dardanup Town Planning Scheme No. 3.

This area is located directly adjacent to Conservation Area A and contains a Resource Enhancement wetland. This area contributes to the ecological linkage between core conservation areas (Conservation Areas A and E). While vegetation condition of this area is Degraded, management actions (such as weed control and enhancement plantings with native flora) would further enhance the ecological linkage values of this area.

9.3.3 Recommendation Area N

Recommendation Area N is located on Lot 37 on plan 128640 Harris Road Picton East on the Ferguson River Foreshore, within the area known as the Northern Precinct of the Preston Industrial Park (Figure 6). The recommendation covers an area of approximately 4ha. The land is currently zoned Industrial under the GBRS and

General Farming and Public Utilities under the Shire of Dardanup Town Planning Scheme No. 3.

There is a need to maintain and enhance the ecological linkage between the Ferguson River (Conservation Area C) and Conservation Area E. The boundary of this recommendation is indicative only and subject to review based on detailed investigation of the site.

9.3.4 Recommendation Area P

Recommendation Area P is located on Lots 5 on diagram 50137 South West Highway Davenport and Lot 1 on diagram 10260 (North Boyanup Road) Davenport within the area known as the Southern Precinct of the PIP (Figure 6). The Recommendation Area covers an area of approximately 11ha. The land is currently zoned Regional Open Space under the GBRS and Special Use 18 under the City of Bunbury Town Planning Scheme No. 7.

Recommendation Area P was identified for retention of Regional Open space under the GBRS. This area was considered through the appeals process and it was determined by the Minister that the area be retained for Regional Open Space as it is a key component of the Ocean to Preston River Park and is the only area of land providing direct linkage to the Preston River. In addition Ministerial Statement No.697 required that Pt Lot 1 North Boyanup Road be reserved for conservation purposes to provide an appropriate buffer to the Preston River and shall only be used for conservation and complementary purposes.

An assessment of aerial photography indicates that the vegetation within this area has been impacted leaving only a small corridor of vegetation along its southern boundary. The EPA therefore recommends that the area be revegetated to restore this linkage.

9.3.5 Recommendation Area U

Recommendation Area U is located on Lots 1 and 2 on diagram 46933 Moore Road Dardanup West within the area known as the Southern Precinct of the PIP (Figure 6). The recommendation covers an area of approximately 8ha. The land is currently zoned Rural and Industry under the GBRS and General Farming and General Industry under the Shire of Dardanup Town Planning Scheme No. 3.

The vegetation within Recommendation Area U contributes to linkage between Conservation Area B and the Preston River (Conservation Area C). Actions to manage this area for conservation purposes (such as weed control and enhancement plantings with native flora) would enhance the natural values of this area and further strengthen the regional ecological linkage.

9.4 Linkage Restoration Areas

9.4.1 Recommendation Area Q

Recommendation Area Q is located on Lot 15 on plan 64665 South West Highway Davenport within the area known as the Southern Precinct of the PIP (Figure 6). The recommendation covers an area of approximately 9ha. The land is currently zoned Industrial under the GBRS and Development Zone-Industrial under the City of Bunbury Town Planning Scheme No. 7.

This recommendation aims to restore linkage between the Ocean to Preston River Regional Park and the Preston River. This linkage area will require rehabilitation to restore the ecological linkage values of this area.

The alignment of Bunbury Outer Ring road was assessed in the GBRS (Bulletin 1108) and the alignment subsequently determined by the Minister for the Environment through the appeals process. Ministerial Statement No. 697 provides conditions relating to this road including the provision of an environmental offset strategy to mitigate unavoidable impacts on wetlands and native vegetation associated with the road. The EPA notes that the Ministerial Condition specifically relates to the rehabilitation of the strip of land adjacent to the road in the vicinity of Lot 15 North Boyanup Road (South Western Highway). The proposed Restoration Area Q may provide a suitable option to fulfil this requirement.

9.4.2 Recommendation Area R

Recommendation Area R is located on Lot 7 on Plan 10116 Davenport within the area known as the Southern Precinct of the PIP (Figure 6). The recommendation covers an area of approximately 14ha. The land is currently zoned Rural under the GBRS and Rural under the City of Bunbury Town Planning Scheme No. 7.

This recommendation aims to restore linkage between Conservation Area B and the Preston River (Conservation Area C). To overcome significant deficiencies in the ecological linkage between these high priority conservation areas, an area for restoration is required. This should be located in a strategic position that preferably traverses the shortest distance between Areas B and C to minimise the area required. The location of Recommendation Area R abuts the Bunbury Outer Ring Road and provides a management boundary. This linkage area will require rehabilitation.

9.4.3 Recommendation Area S

Recommendation Area S is located on Lot 105 on diagram 96, Picton East, Lot 2010 on diagram 43721 Picton East and Lot 1 on diagram 22496, South Western Highway, Picton East within the area known as the Northern Precinct of the PIP (Figure 6). The recommendation covers an area of approximately 24 ha. The land is currently zoned Rural, and Industry under the GBRS and General Farming and Restricted Uses (R2 Dry Industry) under the Shire of Dardanup Town Planning Scheme No. 3.

Recommendation Area S aims to consolidate Recommendation G and restore linkage between Conservation Area's A and E. The area is in Completely Degraded

11. Recommendations

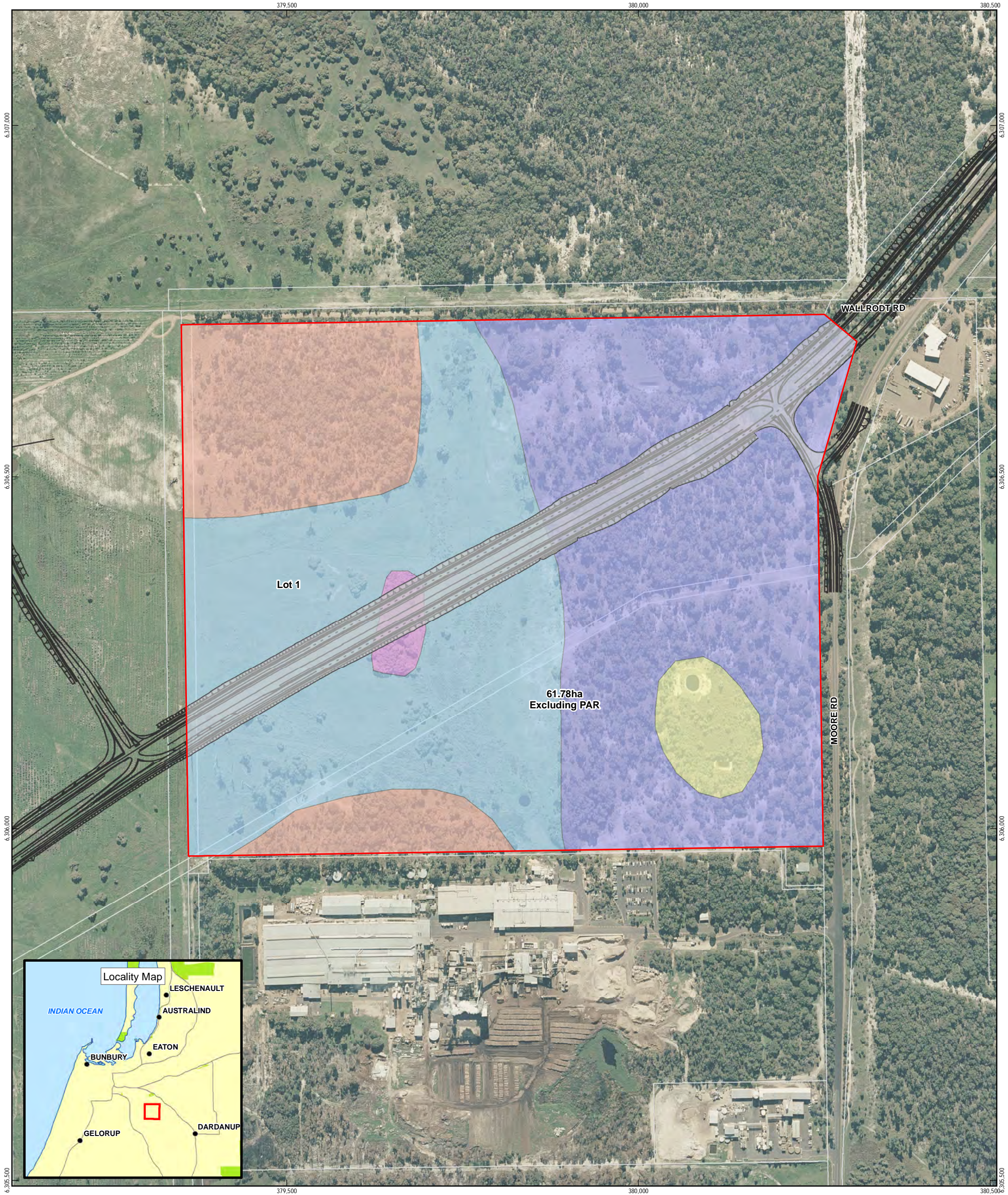
The EPA recommends that:

- 1. All remnant vegetation within the Preston Industrial Park is considered to be regionally significant and should be retained.**
- 2. The vegetation in its entirety within Recommendation Areas A,B,C, D and E (Figure 6) be reserved as Regional Open Space in a future amendment to the GBRs and appropriately managed.**
- 3. That vegetation in its entirety within Recommendation Areas F,G, H, I, J, and K (Figure 6) be retained and protected as part of any future rezoning, subdivision or development, whichever comes first.**
- 4. Connectivity be enhanced in Recommendation Areas L, M, N, P and U (Figure 6) and restored in Areas Q, R & S (Figure 6) given the fragmented distribution of the remaining natural areas in the study area and the negative impact this has on long term viability in a changing climate.**
- 7. Appropriate buffers for wetlands be determined based on the values of the wetlands and proposed land uses, and protected and appropriately managed as part of any future rezoning, subdivision or development, whichever comes first.**
- 8. That the Minister note the Advice Provided in Section 10 on environmental matters that will require further consideration as part of future planning processes.**



Appendix D

Offset Site Vegetation Mapping



LEGEND

— Port Access Road

Study Area (minus area of Port Access Road)

Port Access Road (in Study Area)

Cadastre (Nov 2011)

Vegetation Type

Low lying wetland

Low lying *melleuca* populated wetland over pasture and sedges

Pasture

Banksia Woodland

Jarrah, Marri, *B.ilisifola* and *melleuca* woodland

Agonis, Jarrah, Marri, *B.ilisifola* and *melleuca* woodland

02550100150200250

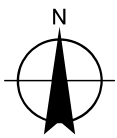
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Metres

Map Projection: Transverse Mercator

Horizontal Datum: Geocentric Datum of Australia (GDA)

Grid: Map Grid of Australia 1994, Zone 50



Main Roads WA - ETS

Environmental Values Assessment

Lot 1 Wallrodt Road, Dardanup West

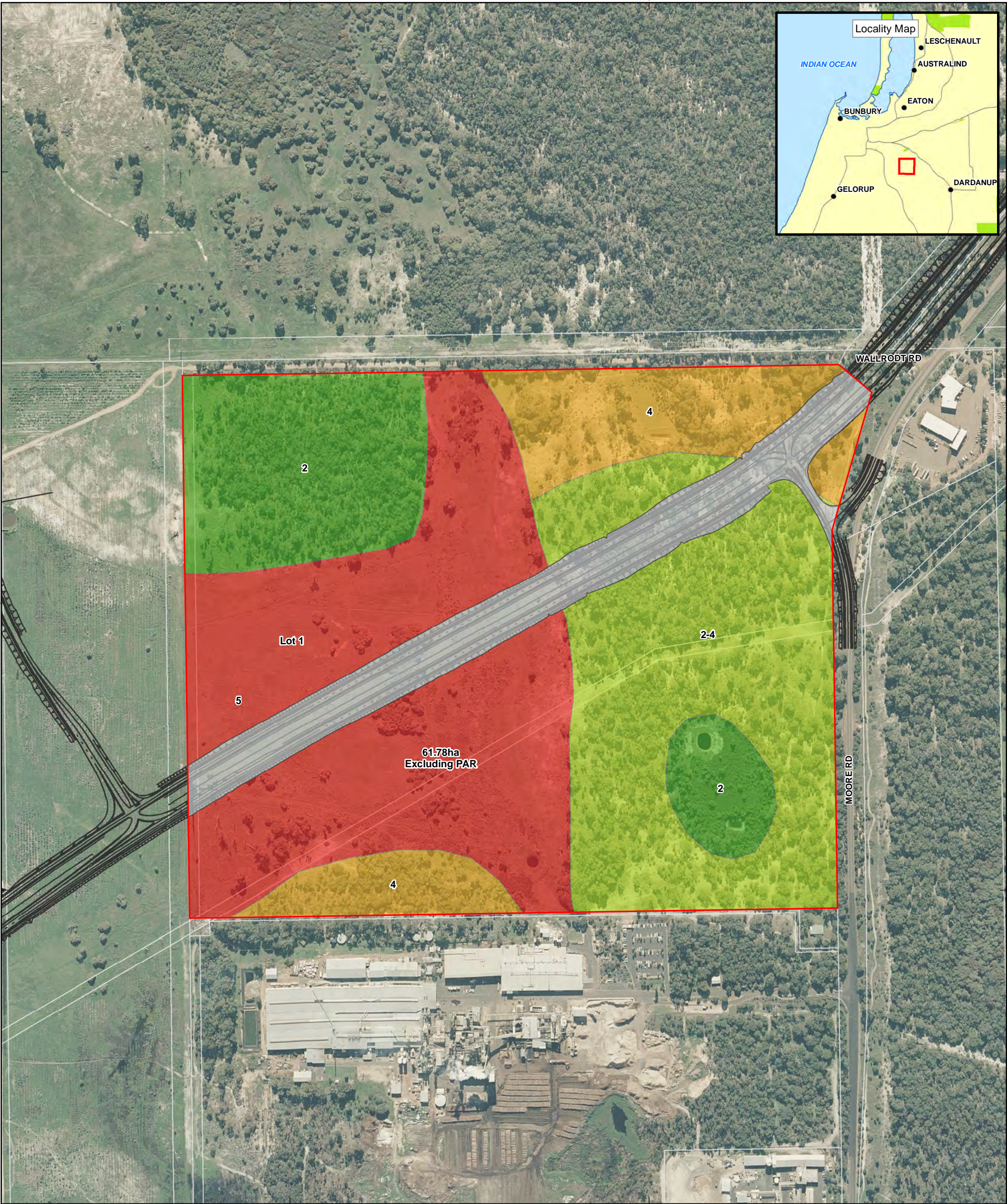
Job Number 61-26239

Revision C

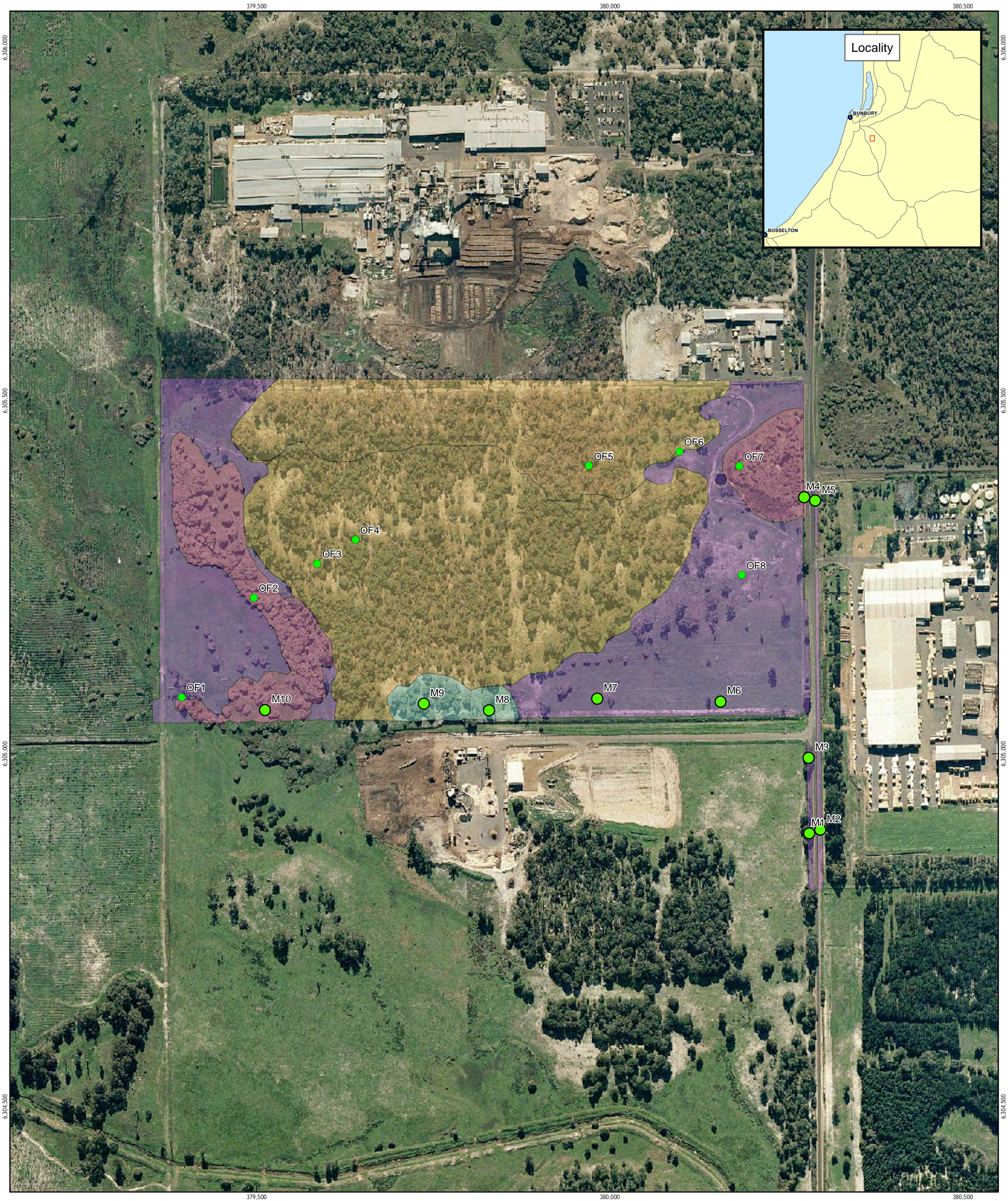
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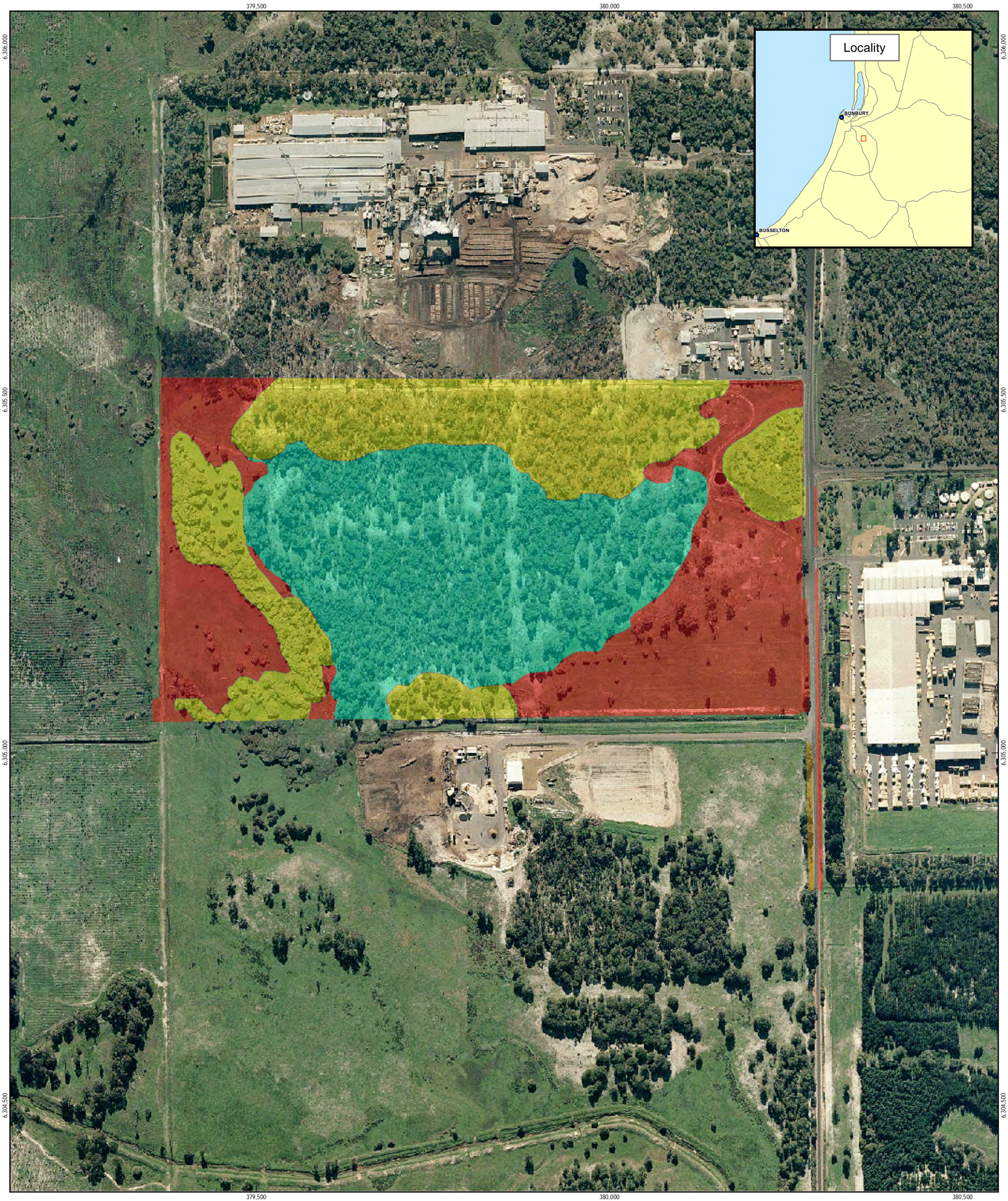
Lot 1 Vegetation Type

Appendix D

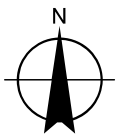
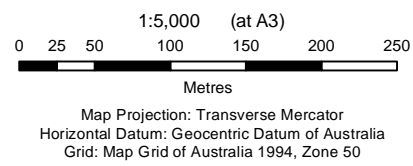


LEGEND	
— Port Access Road	Vegetation Condition
Study Area	2 - Excellent (11.03 ha)
Port Access Road	2-4 - Excellent to Good (18.69 ha)
Cadastre	4 - Good (8.56 ha)
	5 - Degraded (23.49)





- LEGEND**
- Vegetation Condition**
- 1. Pristine or Nearly so
 - 2. Excellent
 - 3. Very Good
 - 4. Good
 - 5. Degraded
 - 6. Completely Degraded



Main Roads WA - ETS
PAR Stage 2 - Env Management Services

Job Number 61-26518
Revision 0
Date 26 Aug 2011

Vegetation Condition

3



Bunbury Outer Ring Road

Port Access Road

Study Area

Cadastre

Vegetation Type

Scattered trees over pasture

Agonis, Jarrah, Marri, *B.illisifolia* and *B.grandis* woodland

1:5,000 (at A3)

0

25

50

100

150

200

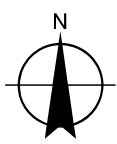
250

Metres

Map Projection: Transverse Mercator

Horizontal Datum: Geocentric Datum of Australia (GDA)

Grid: Map Grid of Australia 1994, Zone 50



Main Roads WA - ETS

Environmental Values Assessment

Lot 15, South West Hwy

Job Number

Revision

Date

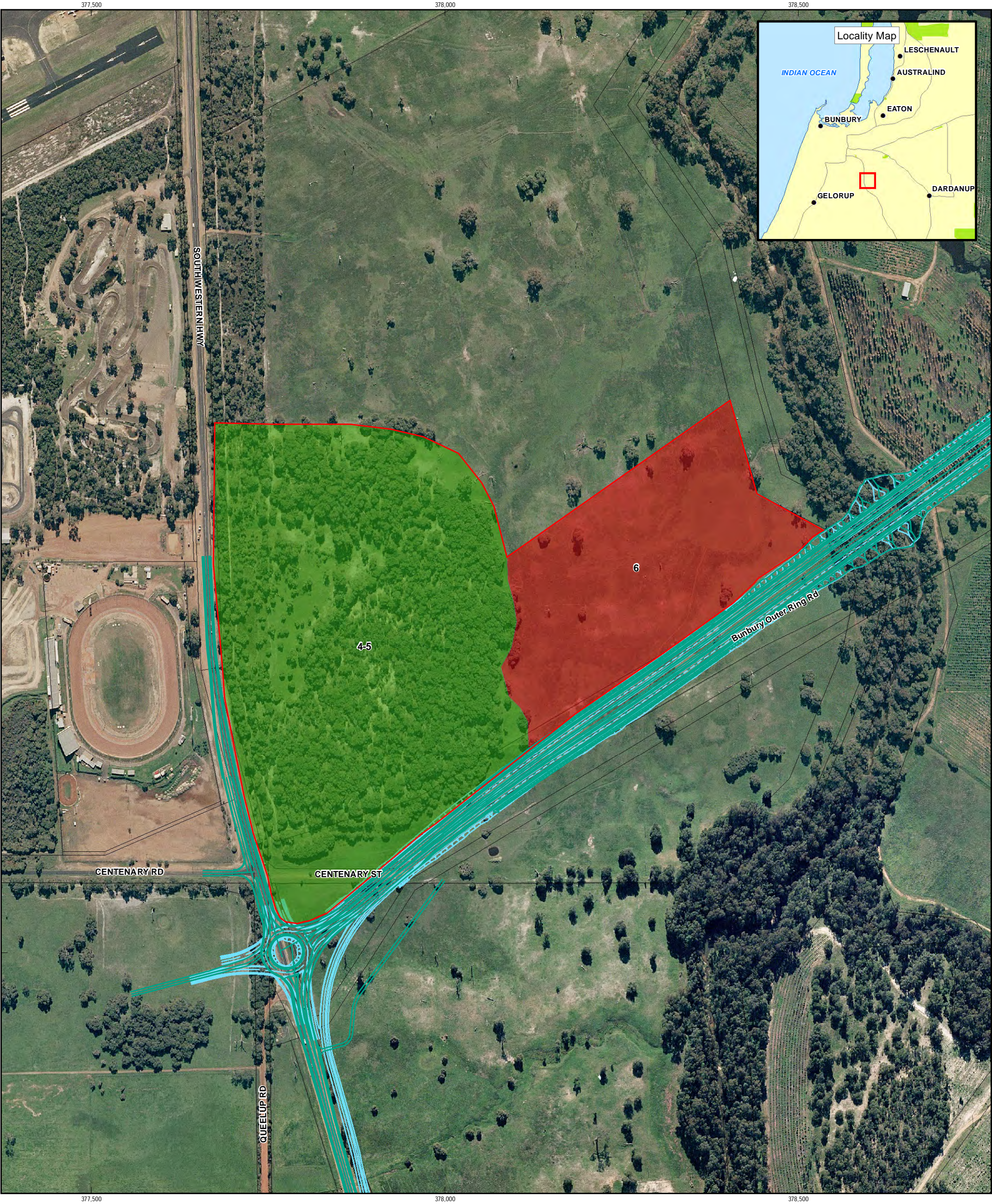
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0

29 Sep 2011

Vegetation Type

Figure 3



LEGEND

Bunbury Outer Ring Road Study Area (34.090 ha)

Port Access Road Cadastre

Vegetation Condition

4-5 - Good to Degraded (23.758 ha)

6 - Completely Degraded (10.241 ha)

0 25 50 100 150 200 250

1:5,000 (at A3)

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads WA - ETS
Environmental Values Assessment
Lot 15, South West Hwy

Job Number 61-26239
Revision 0
Date 29 Sep 2011

Vegetation Condition

Figure 4

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Data Source: Landgate (SLIP); Bunbury 2031 Mosaic - 200801, Cadastre - 20101104; GHD: Vegetation Condition - 20101104, Study Area - 20101104, Port Access Road - 20101008, Bunbury Outer Ring Road - 2010; MRWA: Road Names - 2009; GA- Topo 250k Series 3- 2006. Created by:mdalton2



Appendix E

Revegetation Implementation Plan



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Main Roads Western Australia

Bunbury Port Access Project Stage 2 Revegetation Implementation Plan

September 2011



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1. Introduction

This plan has been prepared by GHD with input from Main Roads WA to document the implementation of revegetation and other works proposed as a component of the environmental offsets for the Bunbury Port Access Project Stage 2 (BPA Stage 2) (the Project). The Project is as shown at Figure 1.

Environmental offsets are required as a consequence of approval conditions under the *Environment Protection and Biodiversity Act 1999*, (EPBC 2010/5768), and under Main Roads Clearing permit 818/5.

This report details:

- The objectives of the revegetation works
- Offset sites
- Typical revegetation plant species
- Proposed revegetation and rehabilitation works for each offset site
- Revegetation monitoring and completion criteria
- Contingency and management actions

This report forms a component of the Environmental Offset Plan (EOP) prepared for the Project and should be read in conjunction with the EOP as appropriate.

1.1 Objective

The objective of the offset plan is to replace and enhance ecological values to offset those lost through clearing required for the construction of BPA Stage 2 by undertaking rehabilitation and fencing works on surplus land and offset properties.

This implementation plan is proposed to document impact mitigation measures offsets required to address Commonwealth and West Australian environmental legislation to offset the impacts on the listed threatened species:

- Western Ringtail Possum
- Carnaby's Black Cockatoo
- Baudin's Black Cockatoo
- Forest Red-tailed Black Cockatoo



2. Offset Sites

The proposed offset sites are:

- ▶ Site A - Ferguson River Foreshore (Part Lot 5) - 4.2 ha of existing *Eucalyptus rudis* woodland fringing the Ferguson River outside of the road reserve
- ▶ Site B - Lot 1 Moore Road – Additional land purchase comprising 36.4 ha of remnant vegetation and pasture
- ▶ Site C - Lot 3 Moore Road – Additional land purchase comprising 10.3 ha of degraded wetland and 23.5 ha of upper storey woodland and pasture understorey
- ▶ Site D - Preston River Foreshore Reserve (part Lot 11, Lot 5814 and Reserve 31 866) north of the road alignment on 7.7 ha of land currently vested with City of Bunbury outside of the road reserve
- ▶ Site E - Lot 15 South Western Highway Linkage– revegetate a 200m wide strip of land, comprising 8.6 ha of land adjacent to the Project between remnant vegetation on Lot 15 and the Preston River, as required under the conditional approval of the Greater Bunbury Region Scheme



3. Revegetation Plant Species

The following list outlines the key flora species that will be used in revegetation of the offset properties Preston River, and revegetated linkage on Lot 15 South Western Highway.

Table 1 Revegetation Plant Species

Genus	Species	Form	Cockatoo / Possum Habitat
<i>Acacia</i>	<i>extensa</i>	Shrub	
<i>Acacia</i>	<i>pulchella</i>	Shrub	
<i>Agonis</i>	<i>flexuosa</i>	Tree	Yes
<i>Allocasuarina</i>	<i>fraseriana</i>	Tree	Yes
<i>Allocasuarina</i>	<i>humilis</i>	Shrub	Yes
<i>Banksia</i>	<i>attenuata</i>	Tree	Yes
<i>Banksia</i>	<i>grandis</i>	Tree	Yes
<i>Banksia</i>	<i>littoralis</i>	Tree	Yes
<i>Billardiera</i>	<i>heterophylla</i>	Shrub	
<i>Conostylis</i>	<i>candicans</i>	Herb	
<i>Corymbia</i>	<i>Calophylla</i>	Tree	Yes
<i>Dryandra</i>	<i>sessilis</i>	Shrub	Yes
<i>Eucalyptus</i>	<i>marginata</i>	Tree	Yes
<i>Eucalyptus</i>	<i>rudis</i>	Tree	Yes
<i>Grevillea</i>	<i>crithmifoliai</i>	Shrub	Yes
<i>Grevillea</i>	<i>vestita</i>	Shrub	Yes
<i>Hakea</i>	<i>Prostrate</i>	Shrub	Yes
<i>Hardenbergia</i>	<i>comptoniana</i>	Shrub	
<i>Jacksonia</i>	<i>furcellata</i>	Shrub	Yes
<i>Kennedia</i>	<i>prostrata</i>	Shrub	
<i>Kunzea</i>	<i>ericfolia</i>	Shrub	
<i>Melaleuca</i>	<i>huegelii</i>	Shrub	
<i>Melaleuca</i>	<i>incana</i>	Shrub	



Genus	Species	Form	Cockatoo / Possum Habitat
<i>Melaleuca</i>	<i>preissiana</i>	Tree	
<i>Melaleuca</i>	<i>rhapsiophylla</i>	Tree	
<i>Melaleuca</i>	<i>systema</i>	Shrub	
<i>Melaleuca</i>	<i>viminea</i>	Shrub	
<i>Olearia</i>	<i>axillaris</i>	Shrub	
<i>Patersonia</i>	<i>occidentalis</i>	Herb	
<i>Regelia</i>	<i>ciliate</i>	Shrub	



4. Proposed Rehabilitation and Revegetation Works

The following section details works proposed for each of the offset properties.

The revegetation works will be conducted using proven methodologies developed by Main Roads as described at Appendix A.

4.1 Site A - Ferguson River Foreshore Reserve, Part Lot 5

Main Roads proposes to enhance the ecological values of this site through management of the existing weedy understorey and fencing to manage unrestricted public access and facilitate its use as a fauna corridor.

The site will be fenced along the new road reserve boundary with a 1.8m high chainmesh fence to restrict fauna access into the road reserve. To promote fauna to utilise the river reserve and the bridge setbacks for fauna movement the south eastern reserve boundary will be fenced with a rural fence. Initial selective herbicide treatment for weed control is proposed to control *Watsonia* within the river reserve.

Table 2 Part Lot 5 Proposed Actions and Timing

Topic	Action	Timing
Weed control	Determine appropriate method and timing of weed control	October 2011
	Weed control program commencing in spring 2011 to control <i>Watsonia</i> over a two year period to achieve effective control	October 2011
	Additional weed control program continues in spring 2012 to control <i>Watsonia</i>	September 2012
	Additional weed control program continues in spring 2013 to control <i>Watsonia</i>	September 2013
Boundary Fence – Road Reserve	Install 1.8 m chain mesh boundary fence along the new road reserve to control fauna access	June 2013
Rural Fence – South Eastern Boundary	Install of rural fence to define south eastern boundary	June 2013
Handover	Completion criteria compliance reporting to Department of Environment and Conservation.	September 2014

4.2 Site B - Lot 1 Moore Road

The rehabilitation of degraded area's within Lot 1 is primarily aimed at replicating the ecological values of the adjacent Banksia/Jarrah/Peppermint woodland within the property by revegetating the currently cleared portion which will provide a vegetated linkage between existing remnant vegetation..



Table 3 Lot 1 Moore Road Proposed Actions and Timing

Topic	Action	Timing
Weed control	Determine appropriate method and timing of weed control	March 2012
	Conduct initial weed spraying 1-2 times prior to initial earthworks	June / August 2012
	Implement additional weed control work as required to achieve completion criteria	Ongoing
Earthworks	Remove rubbish and declared weeds	March 2012
	Re-contour landform to blend with surrounding contours	March 2012
Access	Install 1.8 m chain mesh fencing of the road reserve to exclude public access	June 2013
Revegetation	Define plant propagation requirements for seedling planting	November 2011
	Undertake seed collection from surrounding vegetation	November 2011
	Undertake seedling propagation using collected seed	November 2011
	Complete soil analysis and define soil nutrient status. Implement soil improvement as required based on nutrient status.	March 2012
	Undertake seeding and seedling planting as per the MRWA Revegetation Planning and Techniques 6707/031.	June 2012
	Undertake infill seedling planting as per the MRWA Revegetation Planning and Techniques 6707/031 if required.	June 2013
Pest and other fauna control	Implement pest control program to minimise damage from grasshoppers and other insects if required based on monitoring.	As required
	Install tree guards for seedlings if required.	As required
	Monitor progress of rehabilitation success and implement contingency actions as required (Section 1.5.3)	Dec 2012 / Jan 2012
		April/May 2013
		Dec 2013 / Jan 2014
		April/May 2014
	Handover management of site to DEC on achievement of completion criteria	September 2014
Reporting	Completion criteria compliance reporting to Department of Environment and Conservation.	September 2014



4.3 Site C - Lot 3 Moore Road

Lot 3 Moore Road supports habitat suitable for native species including Black cockatoo species and Western Ringtail Possum. Main Roads proposes to promote the regeneration of the existing site vegetation through the removal of uncontrolled public access and grazing pressure by fencing the property.

Table 4 Lot 3 Moore Road – Proposed Actions and Timing

Topic	Action	Timing
Weed Control	Determine appropriate method and timing of weed control	October 2011
	Weed control program commencing in spring 2011 to control Watsonia over a two year period to achieve effective control	October 2011
	Additional weed control program continues in spring 2012 to control Watsonia	September 2012
	Additional weed control program continues in spring 2013 to control Watsonia	September 2013
Fencing	Maintenance and improvements of existing boundary fence to control public access	June 2013
	Install rural fence along the southern property boundary	June 2013
Reporting	Completion criteria compliance reporting to Department of Sustainability, Environment, Water, Populations and Community and Department of Environment and Conservation.	September 2014

4.4 Site D - Preston River Foreshore Reserve

The rehabilitation approach for completely degraded pasture areas within the Preston River foreshore reserve is primarily aimed at replicating and enhancing the surrounding ecological values of the adjacent vegetation.

Table 5 Preston River Foreshore Proposed Actions and Timing

Topic	Action	Timing
Community Engagement	Work with local environmental groups (Leschenault Catchment Council and Aboriginal community)	All of Project timeframe
Weed control	Determine appropriate method and timing of weed control.	March 2012
	Conduct weed control 1-2 times prior to initial earthworks.	May / August 2012
	Implement ongoing weed control works, including Declared Weeds, as required to achieve completion criteria.	May 2013
Earthworks	Remove rubbish.	May 2012



Topic	Action	Timing
	Re-contour landform to blend with surrounding contours.	May 2012
Access	Install rural fence to control grazing and public access on western boundary.	March 2012
Revegetation	Determine plant propagation requirements for seedling planting.	November 2011
	Undertake seed collection from surrounding vegetation	November 2011
	Undertake seedling propagation using collected seed	November 2011
	Complete soil analysis and define soil nutrient status. Implement soil improvement as required.	March 2012
	Undertake seeding and seedling planting as per the MRWA Revegetation Planning and Techniques 6707/031.	June 2012
	Undertake infill seedling planting as per the MRWA Revegetation Planning and Techniques 6707/031 if required.	June 2013
Pest and other fauna control	Implement pest control program to minimise damage from grasshoppers and other insects if required.	As required
	Install tree guards around seedlings if required.	As required
	Monitor progress of rehabilitation outcomes as detailed in Section 1.5 and implement contingency actions as required, as detailed in Section 1.5.3	Dec 2012 / Jan 2012 April/May 2013 Dec 2013 / Jan 2014 April/May 2014
Reporting	Completion criteria compliance reporting to Department of Environment and Conservation.	September 2014

4.5 Site E - Lot 15 South Western Highway Ecological Linkage

The rehabilitation of the completely degraded 200 m wide linkage of Lot 15 and Lot 1 on South Western Highway area is primarily aimed at replicating the ecological values of the adjacent vegetation.



Table 6 Lot 15 Rehabilitation – Proposed Actions and Timing

Topic	Action	Timing
Community Engagement	Work with local environmental groups (Leschenault Catchment Council and Aboriginal community)	All of Project timeframe
Weed control	Determine appropriate method and timing of weed control.	March 2012
	Conduct weed control 1-2 times prior to initial earthworks.	May -August 2012
	Implement ongoing weed control works, including Declared Weeds, as required to achieve completion criteria.	2013
Earthworks	Remove rubbish.	2012
	Re-contour landform to blend with surrounding contours.	2012
Access	Install 1200 mm high vermin fence on road reserve and the new northern boundary of lot 15 to control grazing and public access	March 2012
Revegetation	Determine plant propagation requirements for seedling planting.	November 2011
	Undertake seed collection from surrounding vegetation	Seasonal
	Undertake seedling propagation using collected seed.	November 2011
	Complete soil analysis and define soil nutrient status. Implement soil improvement as required.	March 2012
	Undertake seeding and seedling planting as per the MRWA Revegetation Planning and Techniques 6707/031.	June 2012
	Undertake infill seedling planting as per the MRWA Revegetation Planning and Techniques 6707/031 if required.	June 2013
Pest and other fauna control	Implement pest control program to minimise damage from grasshoppers and other insects if required.	As required
	Install tree guards around seedlings if required.	As required
	Monitor progress of rehabilitation outcomes as detailed in Section 1.5 and implement contingency actions as required, as detailed in Section 1.5.3	Dec 2012 / Jan 2012
		April/May 2013
Reporting	Completion criteria compliance reporting to Department of Environment and Conservation.	Dec 2013 / Jan 2014
		April/May 2014
		September 2014



5. Revegetation Monitoring and Completion Criteria

5.1 Monitoring Program

Assessment of the revegetation works within the Site will be undertaken biannually (December/January and April/May) against the Revegetation Completion Criteria.

Rapid Assessment (RA) plots, 100m long x 10m wide, will be established at the rehabilitation sites, with an additional RA plots in remnant vegetation within the existing vegetated sites to act as control sites. Within each RA plot, two quadrats, referred to as Q1 and Q2, each 2.5 m x 2.5 m, will be established at random locations within the RA plots, to be broadly representative of the vegetation within the rapid assessment (RA) plot. The RA plots will be monitored qualitatively, and Q1 and Q2 quadrats quantitatively.

Parameters to be monitored qualitatively in the RA plot and compared against the completion criteria will include:

- native plant foliage cover (high/medium/low/none)
- weed cover (high/medium/low/none)
- presence of bare soil areas greater than 4 m in diameter
- vegetation health and survival (including signs of disease and pests)

Parameters to be monitored quantitatively in Q1 and Q2 quadrats and compared against the completion criteria will include:

- projected native foliage cover (%)
- native species diversity (number of species)
- native species density (average number of plants per m²)
- weed species density (percentage cover)
- weed species diversity (number of species)

Monitoring will be undertaken for three years after initial planting with completion planned for August 2014. Monitoring and maintenance will continue until completion criteria are met or as otherwise agreed by DEC (or City of Bunbury).

5.2 Completion Criteria

Main Roads Environment will provide a report assessing the revegetation works against the completion criteria at the end of the proposed "Establishment Period" planned in April / May 2014. This report will be used as the basis of successful rehabilitation and hand over of on-going management and maintenance to DEC.

Acceptance of the works at the end of the Vegetation Establishment Period shall be subject to:

1. Landscaping and revegetation works meeting the completion criteria for final completion based on two or more randomly selected representative plots (10 m x 2 m or equal area) per nominated planting zone within the project area. Nominated planting zones are as shown in Figure 2.
2. Satisfactory completion of all additional maintenance and remedial works by Main Roads



3. Satisfactory preparation and submission of monitoring reports to DEC

Acceptance criteria for plants shall be:

- ▶ Plants are well formed and exhibit signs of healthy growth
- ▶ Plants are free of disease symptoms (eg yellowing, wilting, etc)
- ▶ Plants are free from signs of insect pests

The Revegetation Completion Criteria are detailed in Table 7.

Table 7 Revegetation Establishment Completion Criteria (Sites B, D and E)

Criterion	Design Requirements – Number Seedlings planted	Twelve weeks after Completion	After one Autumn 2012	Completion of Establishment Period – August 2013	At Final Completion – August 2014
Plants surviving (80%) after two seasons	Number	90%	75%	60%	60%
A minimum of 50% projected foliage cover (excluding any weeds) over any treated area of 1000 m ² , with no bare soil areas with a diameter > 4 m ² .	%			60%	100%
Species richness (50% of the species planted still present) within each nominated planting zone.	%	50%	50%	60%	60%
Surviving plants meeting acceptance criteria		N/A	N/A	Yes or No	Yes or No
Foliage cover (or demonstrated progress towards this level by monitoring reports)	Aerial Photo		Aerial Photo	Aerial Photo	Aerial Photo

5.3 Contingency and Management Actions

Contingency actions shall be implemented if monitoring during the establishment period indicates that completion criteria are not being met or are unlikely to be achieved. MRWA Environmental Manager has responsibility for implementing any actions, should they be required.

Table 8 Contingency actions for the rehabilitation sites

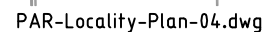
Trigger	Action
Insufficient provenance seed volumes or plants collected and propagated from current seed collection areas.	<p>Discuss with DEC the potential to extend seed collection areas or obtain additional seed and plants from other seed collectors and native nurseries.</p> <p>Prioritise areas for planting and/or direct seeding, potentially postponing some of the planned works.</p>
Inadequate native flora species richness and/or cover to achieve completion criteria.	<ol style="list-style-type: none"> 1. Identify cause. 2. Implement approach to remedy cause, which could include: <ul style="list-style-type: none"> ▶ collecting additional seed for direct seeding or plant propagation to compensate for the insufficient native plant species richness and/or cover ▶ undertaking of infill seedling planting or additional direct seeding ▶ application of fertilisers or wetting agents etc to improve soil. 3. Monitor success of remedy.
Significant changes to native flora species diversity, richness and/or cover between monitoring periods	<ol style="list-style-type: none"> 1. Identify cause, which could include: <ul style="list-style-type: none"> ▶ favoured species is potentially invasive or a pioneer species ▶ spatial and seasonal variation is attributing to succession within plant communities ▶ limiting factors restricting the development of species (e.g. infiltration rates, groundwater level, soil surface features, diseases). 2. Implement approach to remedy cause, which could include: <ul style="list-style-type: none"> ▶ application of fertilisers and wetting agents ▶ removal of potentially invasive species 3. Monitor success of remedy.
Unacceptable weed infestations as per completion criteria.	<ol style="list-style-type: none"> 1. Identify cause. 2. Identify the weeds, their location and coverage and obtain quotations from contractors to control them. 3. Employ a contractor to control the weeds. 4. Monitor success of weed control.
Erosion occurring.	<ol style="list-style-type: none"> 1. Identify cause. 2. Implement remedy (may involve consulting an expert to determine the appropriate remedy). 3. Monitor success of remedy.

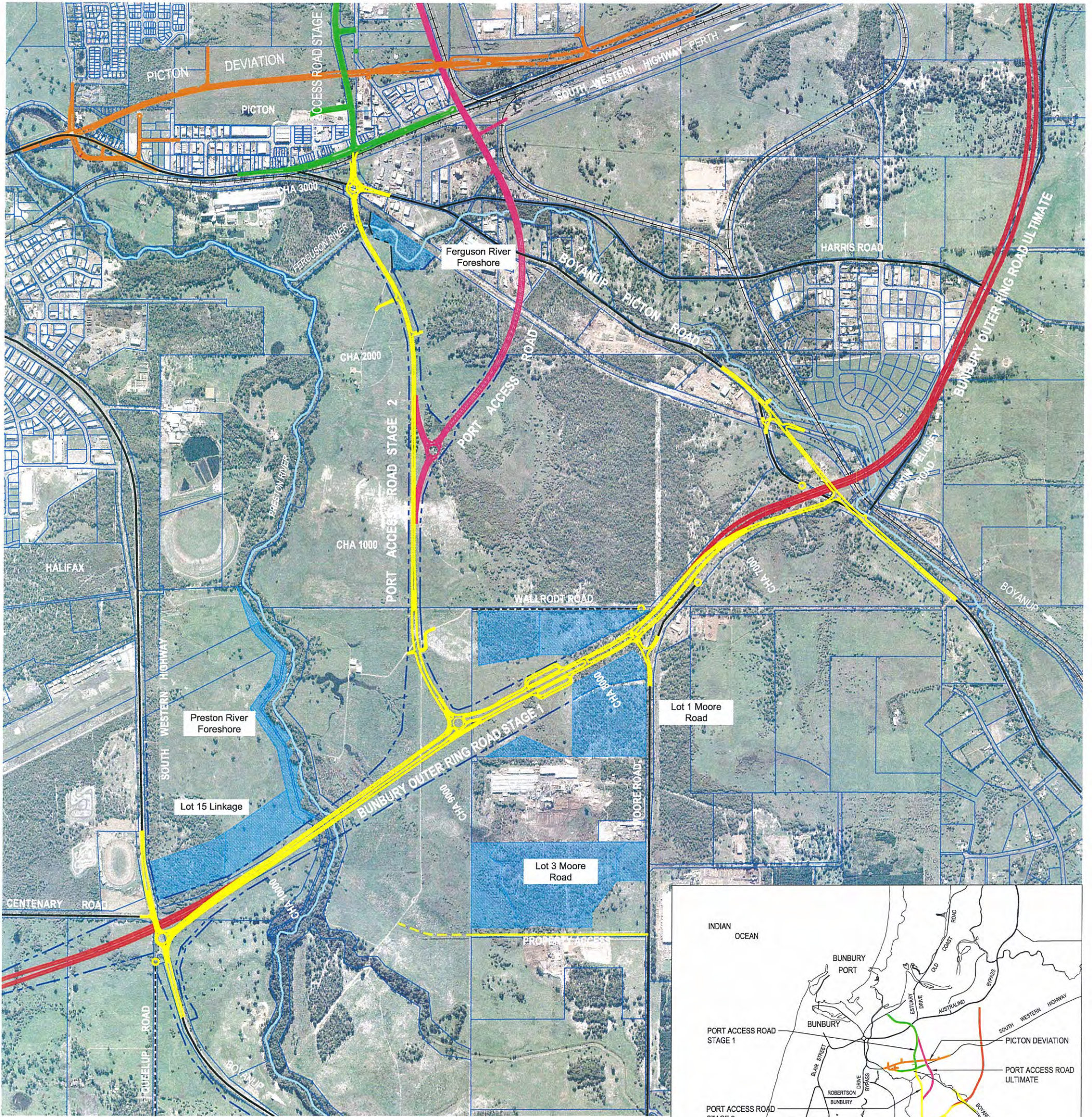


Figures

Figure 1 Locality Plan

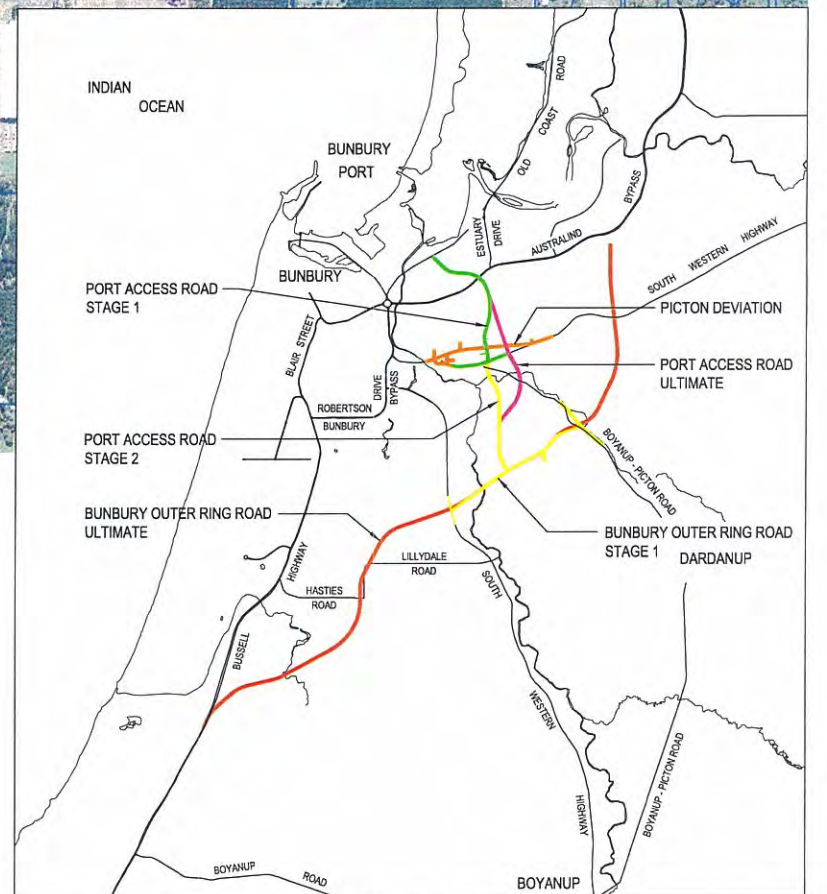
Figure 2 Offset Properties





LEGEND

- BUNBURY PORT ACCESS (STAGE 2)
- BUNBURY OUTER RING ROAD (ULTIMATE DESIGN)
- PORT ACCESS ROAD (ULTIMATE DESIGN)
- PORT ACCESS ROAD (STAGE 1)
- PROPOSED UNSEALED ROAD
- PICTON DEVIATION
- EXISTING SEALED ROAD
- EXISTING UNSEALED ROAD
- EXISTING RAIL
- LAND RESERVATION
- CADASTRAL BOUNDARY



LOCALITY PLAN
SCALE: 1:10000



Australian Government



Government of
Western Australia

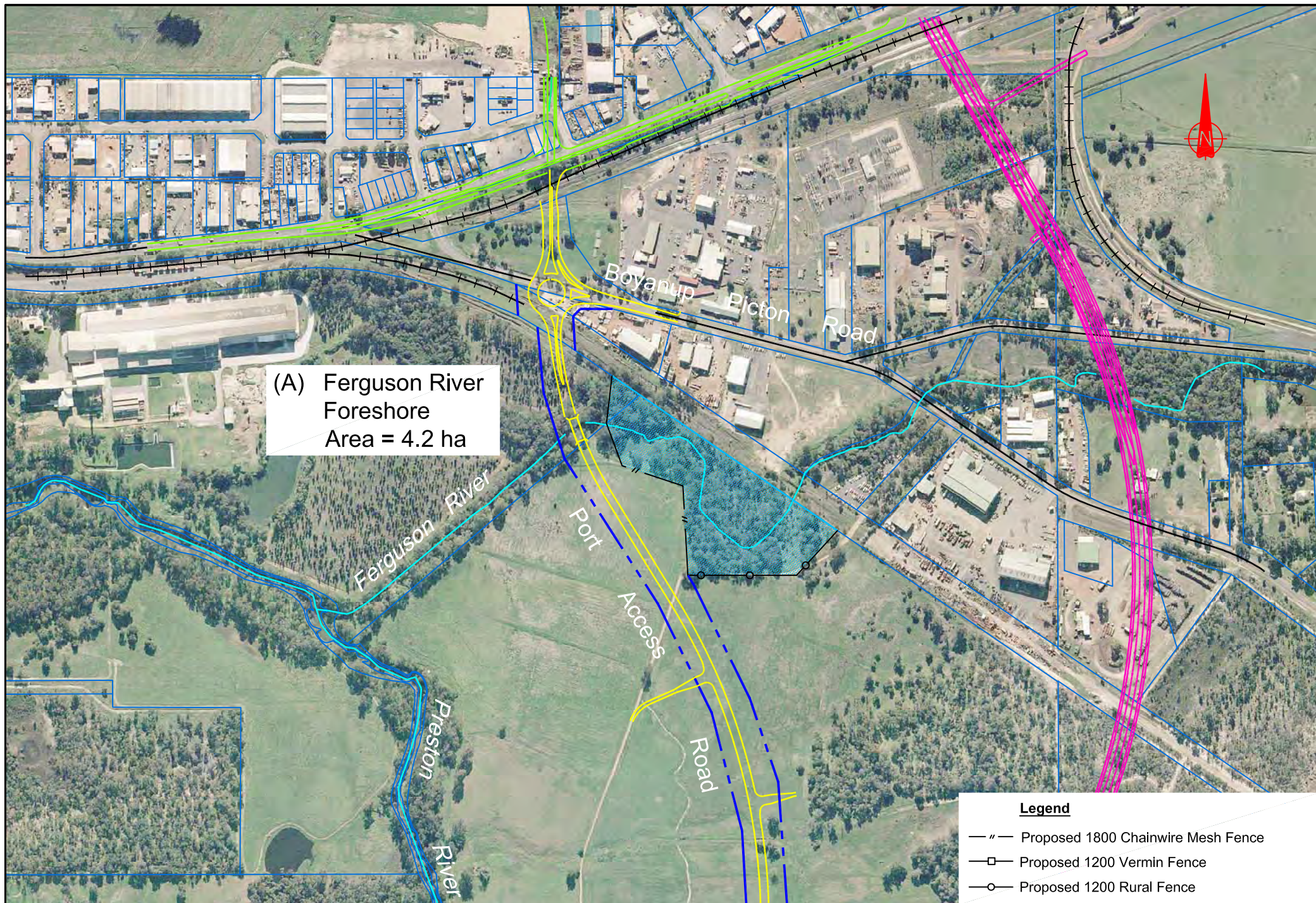


BUNBURY PORT ACCESS PROJECT STAGE 2

ENVIRONMENTAL OFFSET PLAN

UPDATED: 5 AUGUST 2011

1:10000 0 100m 200 300 400 500 600 700 800 900 1000

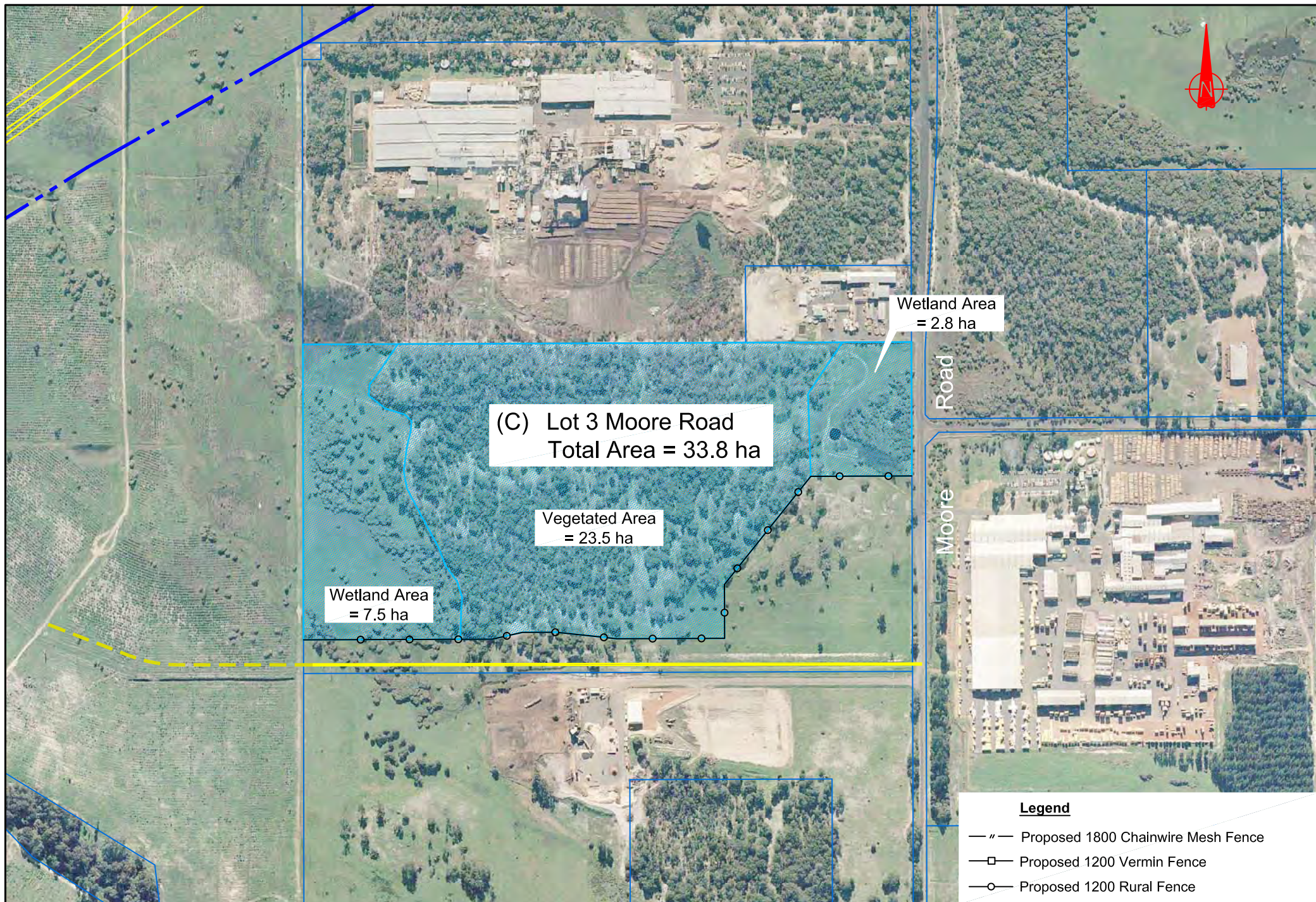


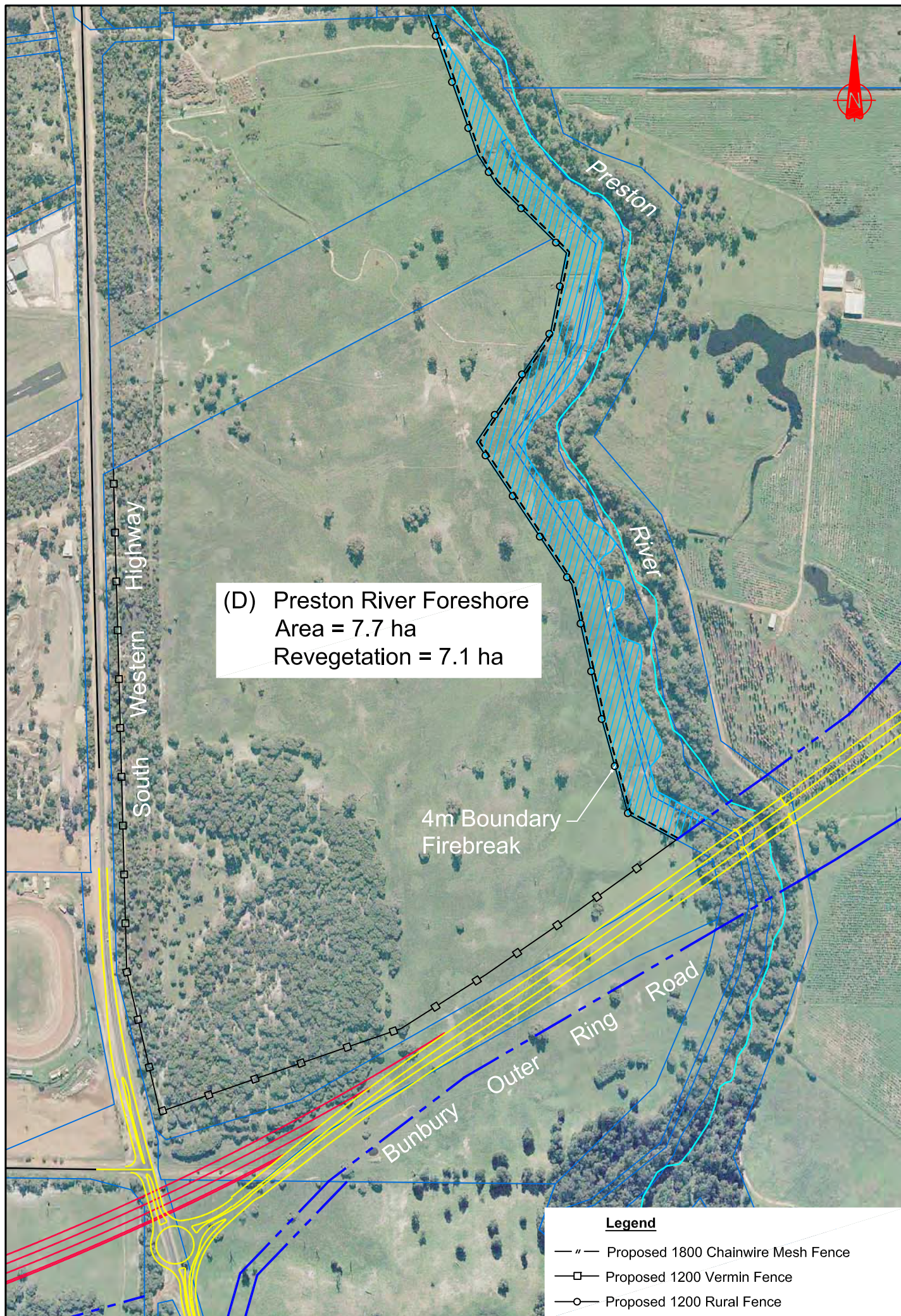
(B) Lot 1 Moore Road
Total Area = 36.4 ha

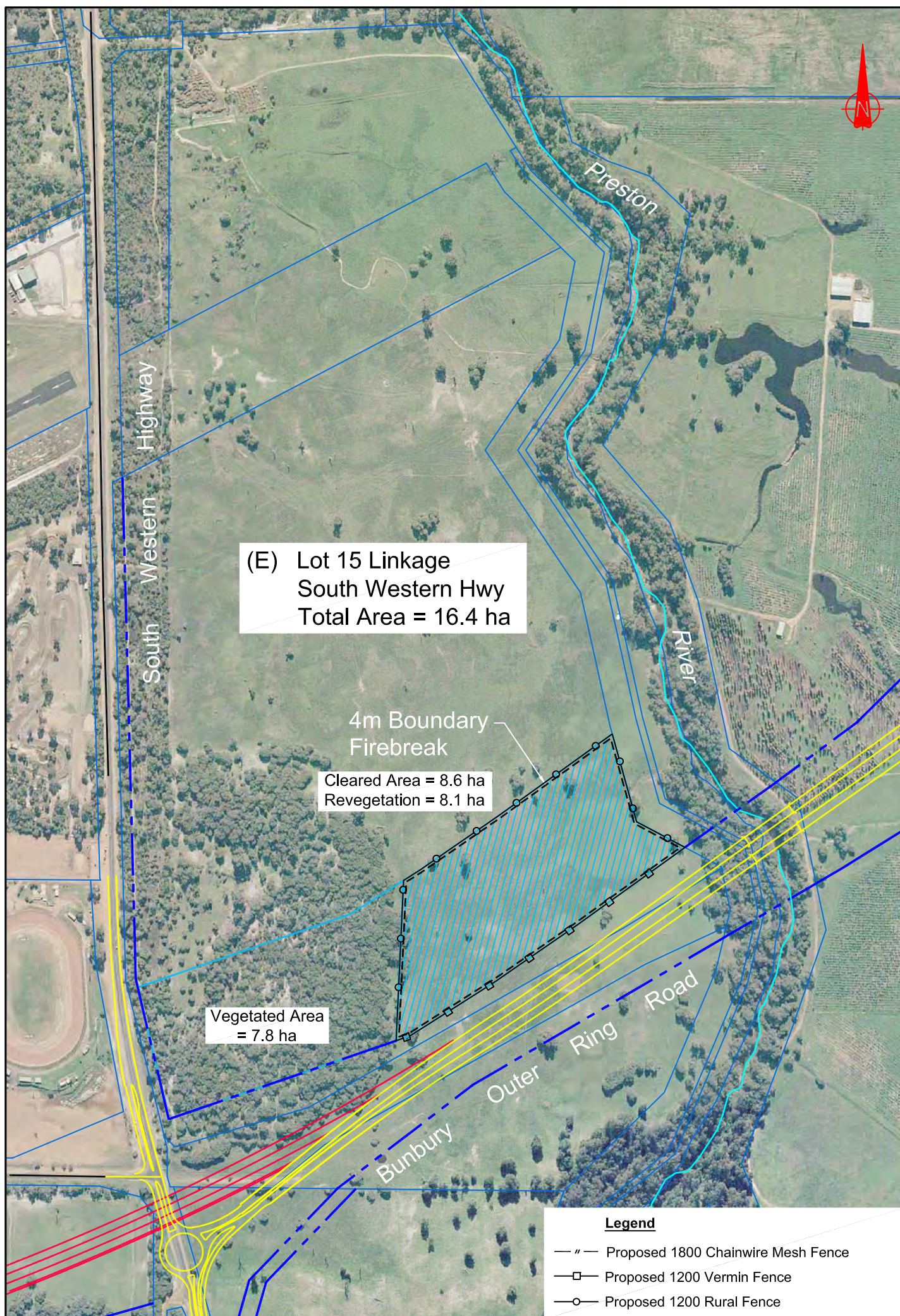


Legend

- " — Proposed 1800 Chainwire Mesh Fence
- □ — Proposed 1200 Vermin Fence
- ○ — Proposed 1200 Rural Fence









Appendix A

Revegetation Methodology



Bunbury Port Access Road Stage 2 Revegetation Works

1 Dieback Management

All rehabilitation areas are “not able to be assessed” for dieback due to a lack of dieback susceptible indicator species (e.g. cleared areas including pastoral lands and heavily disturbed scattered parkland vegetation). These areas may have been infected by *P. cinnamomi* through past disturbance and usage. To minimise the risk of spreading dieback, areas that are “not able to be assessed” for dieback (i.e. uninterpretable areas) are treated with the same care as dieback infected areas. Dieback management measures include:

- hygiene training will be included in an induction program to ensure all personnel are aware of the requirements to prevent the spread of weeds and diseases
- Prior to arrival on site all Plant, machinery, equipment and tools are to be cleaned
- Prior to departure from the project site all Plant, machinery, equipment and tools are to be cleaned.

2 Revegetation Methodology

Planting methods will follow the Revegetation Planning and Techniques Doc. No. 6707/031 (MRWA 2004). All seed and seedlings will be attempted to be sourced within the South West Botanical Province and where practicable, sourced from as close to the sites as possible to ensure that the indigenous features of the local species are maintained.

3 Species Lists

The revegetation species lists, planting densities and completion criteria have been developed based upon known propagation successes of the species and several botanical surveys of species known to occur throughout the alignment including the following:

Government of Western Australia 2000, *Bush Forever Volume 2, Directory of Bush Forever Sites*, Department of Environmental Protection.

Gibson N, Keighery B, Keighery G, Burbidge A and Lyons A 1994, *A Floristic Survey of the Southern Swan Coastal Plain*, unpublished Report for the Australian Heritage Commission prepared by Department of Conservation and Land Management and the Conservation Council of Western Australia.

The individual site physical, chemical, biological and other parameters has been considered in species selection to assist to achieve successful establishment of the new vegetation.

4 Seedling sources

All seedlings required for the project are sourced from nurseries accredited under the Nursery Industry Accreditation Scheme of Australia. The nurseries are required to comply with the potting mix requirements of AS 7343 and to use industry approved containers for the seedlings. To ensure appropriate root development all seedlings are to be propagated in native tubes (50 mm square x 120 mm deep). All containers are sterilised prior to any material being placed in them to avoid the introduction or spread of soil borne pathogens. Only suitably mature tube stock with well developed roots, 10-15 cm high foliage that has been hardened off and is of a generally good health condition is accepted. Seedlings are ordered on an annual basis (November) to allow sufficient time for seed collection and plant propagation.



5 Planting

Planting is undertaken during the winter season when the soil moisture is suitable for seedling establishment, usually between May and July. Depending upon the site conditions planting is undertaken using the rip mound plant, furrow and rip plant or infill individual auger planting methods. Weed control is undertaken over the previous year (e.g. herbicide application), when it is most suitable to eradicate the species present and anytime after seedling planting, when required to control annual grass. All seedlings are to be planted with an industry standard, 20g slow release native fertiliser tablet approximately 200 mm deep and 200 mm from the roots.

Rip Mound Planting

This method involves an initial herbicide application followed by rotary hoeing of the areas to be ripped and mounded to remove large soil aggregates and improve soil friability. This is followed by the ripping of soil to a minimum depth of 500 mm and the mounding of the soil into rows approximately 500 mm high (soil will settle to approximately 300 mm high). All mounds are then to be treated with a pre-emergent herbicide. Mulch is then spread over the mounds to an optimal depth of 70 mm and seedlings are planted on the top of these mounds.

In waterlogged soil conditions this method provides the advantage of creating a zone of aerated soil for root development. Additional advantages of creating this rip mound plant area are the definition of a maintenance zone for weed control. Mounded rows should traverse any slopes to discourage water movement and soil erosion.

Furrow and Rip Planting

This method involves an initial herbicide application followed by scalping of the weedy topsoil to create a furrow approximately 100mm deep. This is then followed by the ripping of soil in the centre of the furrow line to a minimum depth of 500 mm into rows. All furrowed areas are then treated with a pre-emergent herbicide. Mulch is then spread along the furrows to an optimal depth of 70 mm and seedlings are planted along the rip lines.

In drier conditions or in non-wetting soils grey sands the inverted furrows also need to following existing contours to promote localised areas for water infiltration and avoid scour problems.

Auger Planting

This method is used in situations where creating a mound is undesirable for soil erosion reasons or when site access is too restrictive or the area is relatively small. After weed control measures are undertaken, holes are augured to a minimum depth of 500 mm with a CSIRO tree auger or equivalent. Seedlings are planted into these holes and mulch is placed around the seedling for approximately 1 m² and 70 mm deep.

6 Weed Control

Weed control shall be conducted prior to any new planting works as failure to control weeds will result in unsuccessful revegetation. Control of weeds will be undertaken in accordance with the *Agriculture and Related Resources Act 1976* and under industry best practise for Weed control. If weed control is required near wetlands, Roundup Bioactive® will be used. Weed control will continue for up to three years after planting. Spot spraying of Declared plants will also be undertaken on Land Acquisition sites prior to transfer of land to DEC.



7 Pest control

New planting sites that are likely to be damaged by local fauna will have tree guards placed around seedlings as required to minimise damage from rabbits and kangaroos.

Control methods for rabbits may need to be implemented prior to any revegetation works and during the establishment period. Monitoring of this threat is to be undertaken on a regular basis to ensure the extent of infestations is known and the appropriate management is implemented.



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		Name	Signature	Name	Signature	Date
1	N McCarthy	F Hannon	<i>Fiona Hannon</i>	F Hannon	<i>Fiona Hannon</i>	29.9.11



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0	N McCarthy	F Hannon	<i>F Hannon</i>	F Hannon	<i>F Hannon</i>	29/9/11