Main Roads Western Australia

Albany Highway Widening
Kojonup South (SLK 254.9 -266)

Preliminary Documentation
EPBC 2017/7934

July 2018

Limitations and assumptions

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It is assumed that the information provided by Main Roads Western Australia is correct and up to date for the project. Mapping has been completed utilising shapefiles provided by Main Roads Western Australia.

Table of contents

Table index

Figure index

Appendices

Appendix A – Environmental Management Plan

1. Introduction

1.1 Project background

Albany Highway is a major transport route for the state of Western Australia to the Great Southern Region. The highway south of Kojonup from 254.9 to 266 straight line kilometer (SLK) has been identified as a high risk location, requiring works to improve road user safety. A number of alternatives were considered, and road widening was identified as the solution most likely to result in significant safety improvements.

Works will consist of vegetation clearing either side of the current carriageway to allow for shoulder widening and sealing works. Shoulder widening will be to 2 metres (m) and the sealed road width will be 11 m. Culvert extensions will be undertaken as required.

1.2 Project justification

A total of 793 people were killed or seriously injured in the Great Southern Region from 2004 to 2013, a rate of 135.8 people per 100,000 population persons. This is five times the state average. Most of the fatal and serious crashes that occur in the regional areas of Western Australia involve only one vehicle which has run off the road and/or collided with an object or rolled over. Almost half of accidents are cars hitting a stationary object, and over half occur on 110 kilometers per hour (km/h) roads. It is estimated that 30% of these accidents were caused by fatigue. Road widening increases the likelihood of driver recovery and reduces run off road collisions.

Ten accidents have occurred on the stretch of road from 255.21 to 266 SLK from 2012 to 2016. Five were classified as major accidents, and a further two required medical attention or hospitalisation. Fifty percent of the acceidents on this stretch of road were cars hitting objects. Widening is required to improve the safety features of this section of Highway and comply with the Austroads safety guidelines. The shoulder widths of this section of Highway are currently only 0.3 to 0.6 m which significantly reduces the likelihood of driver recovery. In addition, Albany Highway is predominantly used to carry long distance, high speed traffic where driver error and driver fatigue play a large role in accidents. According to the Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured (KSI) numbers by 64%.

1.3 Report purpose

On 28 July 2017, the project proposal to clear native vegetation and widen the existing Albany Highway 254.9 – 259.8 SLK in the Shire of Kojonup was determined to be a Controlled Action by the Department of the Environment and Energy (DotEE) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to impacts to Matters of National Environmental Significance (MNES). The proposal was varied on 13 November 2017 to extend the project area, and further avoid environmental impacts associated with the proposed works (see Section 2.2).On 16 February 2018, it was determined that the proposal would be assessed by preliminary documentation. This report provides information required for this assessment.

1.4 Project location

The project is approximately 250 kilometres (km) south-east of Perth in Western Australia and is is located immendiately south of Kojonup township on Albany Highway, from 254.9 – 266 SLK, in the Shire of Kojonup. The location of the project area is shown in Figure 1.

The desktop study area is a 20 km buffer around the project area and is shown in Figure 2.

Paper Size ISO A3

0 0.5 1 1.5 2

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Project Location

Project No. **61-37116**
Revision No. **0**
Date **26/04/2018**

FIGURE 1

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Print date: 10 May 2018 - 12:15

Data source: Landgate: Roads - 20180420; Geoscience Australia: GeoData Topo 250k Series 3; Main Roads: Project Area - 20180420, Imagery. Created by: afeeney

Paper Size ISO A3

0 1 2 3 4

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Study Area

Project No. **61-37116**
Revision No. **0**
Date **26/04/2018**

FIGURE 2

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Print date: 10 May 2018 - 12:17

Data source: Landgate: Roads - 20180420; GHD: Desktop Study Area - 20180420; Main Roads: Project Area - 20180420, Imagery. Created by: afeeney

2. Preliminary documentation

A summary of the information requested as part of the Preliminary Documentation and the corresponding section in this report is provided below in Table 1.

Table 1 Information requested for preliminary documentation and corresponding section in this report

Information Requested	Section
For the Eucalypt Woodlands of the Western Australian Wheatbelt threatened ecological community (Wheatbelt Woodlands TEC), please provide the following: • mapping of the Eucalypt Woodlands within the project area • if there is more than one patch of the Eucalypt Woodlands in the project area (as defined in the Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt (Commonwealth of Australia 2015) (conservation advice)), provide the size (in ha) of each patch • information detailing any potential indirect impacts to larger areas of the ecological community immediately surrounding the project area.	Section 2.1
Describe and assess the likely effectiveness of measures proposed to avoid and/or mitigate the direct and indirect impacts the proposed action could have on the Eucalypt Woodlands and/or Carnaby's cockatoo (*Calyptorhynchus latirostris*) and the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (black cockatoos). This information must include, but is not limited to: • any measures proposed to avoid or mitigate the introduction and/or spread of weeds and *Phytophthora cinnamomi* (dieback) • further details on the installation of artificial nesting hollows for black cockatoos.	Section 2.2
In the event that impacts cannot be avoided or mitigated, please provide further details on all offset(s) proposed to compensate for the residual significant impacts on EPBC Act listed species and communities, including: • the type of offset (s) proposed • extent to which the proposed offset actions correlate to, and adequately compensate for, EPBC Act listed species and communities • suitability of the location of any proposed offset site for EPBC Act listed species and communities • conservation gain to be achieved by the offset i.e. positive management strategies that improve the site or averting the future loss, degradation or damage of the protected matter • time it will take to achieve the proposed conservation gain • level of certainty that the proposed offset will be successful • current land tenure of any proposed offset and the method of securing and managing the offset for the life of the impact.	Section 2.3

Information Requested	Section
Demonstrate how the proposed offset is consistent with the EPBC Act Environmental Offsets Policy (October 2012, Offsets Policy). Using guidance available on the Offsets Policy website, provide a completed Offsets Guide and justifications.	Section 2.3.2
Demonstrate that the action is not inconsistent with relevant recovery plans and/or threat abatement plans including but not limited to: • Western Australian Department of Parks and Wildlife (2013), Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan • Western Australian Department of Environment and Conservation (2008), Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan • Australian Government Department of the Environment (2014), Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi*.	Section 2.3.3
Please provide further detail on the social and economic costs and/or benefits of undertaking the proposed action, including: • basis for any estimations of costs and/or benefits • potential employment opportunities expected to be generated at each phase of the proposed action • details of any public and stakeholder consultation activities, including the outcomes.	Section 2.4 and 2.5

2.1 Listed Threatened species and communities

The project is located in a highly cleared landscape, with a number of surrounding land uses including farming which has resulted in habitat fragmentation. A biological survey was undertaken by Southern Ecology (Mr Damien Rathbone) in November 2016. Mr Rathbone has over 13 years experience as an ecologist in southwest Western Australia. This survey identified patches surrounding the project area that met the requirements of the Conservation Advice for the Eucalypt Woodlands of the Western Australian Wheatbelt TEC (Commonwealth of Australia 2015). The survey area included the full width of the road reserve and some areas of adjacent private property that together comprised 46.39 hectares (ha). Seven patches of this woodland were identified in the survey that meet the requirements of the Conservation Advice (Table 2). Of these, three would be directly impacted by the widening project. Following significant modification to reduce the overall impact on this woodland, the road widening project will now only impact up to 0.035 ha of this TEC. The percentage of each patch to be cleared is presented in Table 2.

Table 2 Wheatbelt Woodlands TEC patch size and clearing

Vegetation Type	Vegetation Condition	Patch size recorded in survey (ha)	Clearing of patch (ha)	Percentage of patch to be cleared	Width of clearing (m)
Eucalyptus wandoo Woodland	Good	0.54	0	0%	0
Eucalyptus rudis Woodland	Degraded/Good	1.1	0.018	1.6%	Maximum of 5.5 m, however most of the clearing is approximately 0.5 m wide. Width of vegetation in area is approximately 15-40 m wide.
Eucalyptus wandoo Woodland	Good	0.81	0.012	1.52%	Maximum clearing width of 3 m. Width of vegetation in area is approx. 15-20 m wide.
Eucalyptus rudis Woodland	Good	0.44	0	0	0
Eucalyptus wandoo Woodland	Good	0.49	0.005	1.08%	Approx. 5 m of clearing within a 90 m wide patch of native vegetation.
Eucalyptus rudis Woodland	Good	0.07	0	0%	0
Eucalyptus rudis Woodland	Good	0.03	0	0%	0

Indirect impacts to the patches is considered possible, as a result of edge effects and weed invasion. Significant indirect impacts are unlikely as the proposed project is the widening of an existing road and total hectares of TEC clearing is small (0.035 ha spread over a number of small strips – See Figure 3).

Paper Size ISO A3

0 50 100 150 200

Metres

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

Main Roads Western Australia
Kojonup South EPBC

Woodlands of the Wheatbelt Threatened Ecological Community

Project No.	**61-37116**
Revision No.	**0**
Date	**26/04/2018**

FIGURE 3

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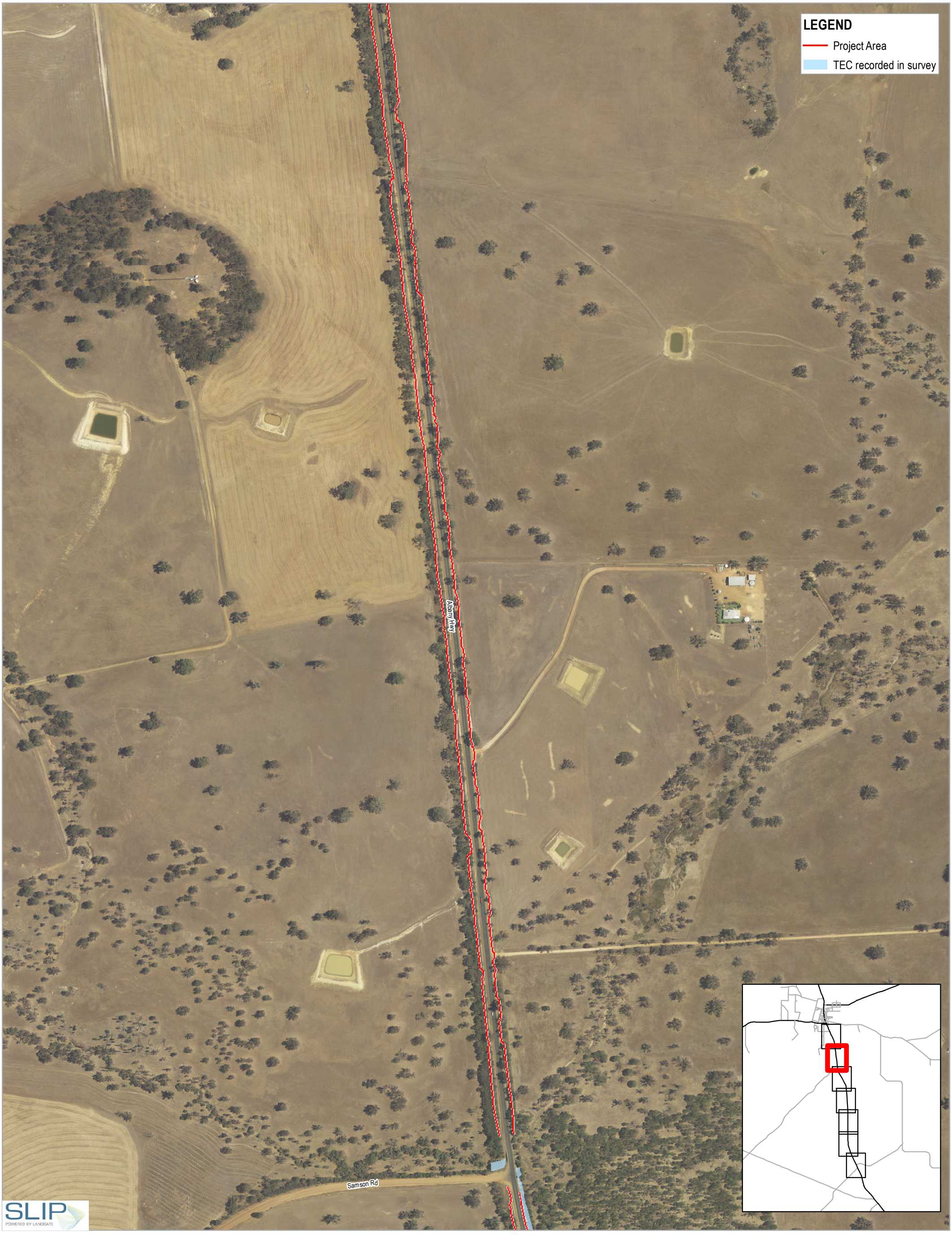

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Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 50

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Kojonup South EPBC

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Date **26/04/2018**

FIGURE 3

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Metres

Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 50

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FIGURE 3

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Map Projection: Transverse Mercator
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FIGURE 3

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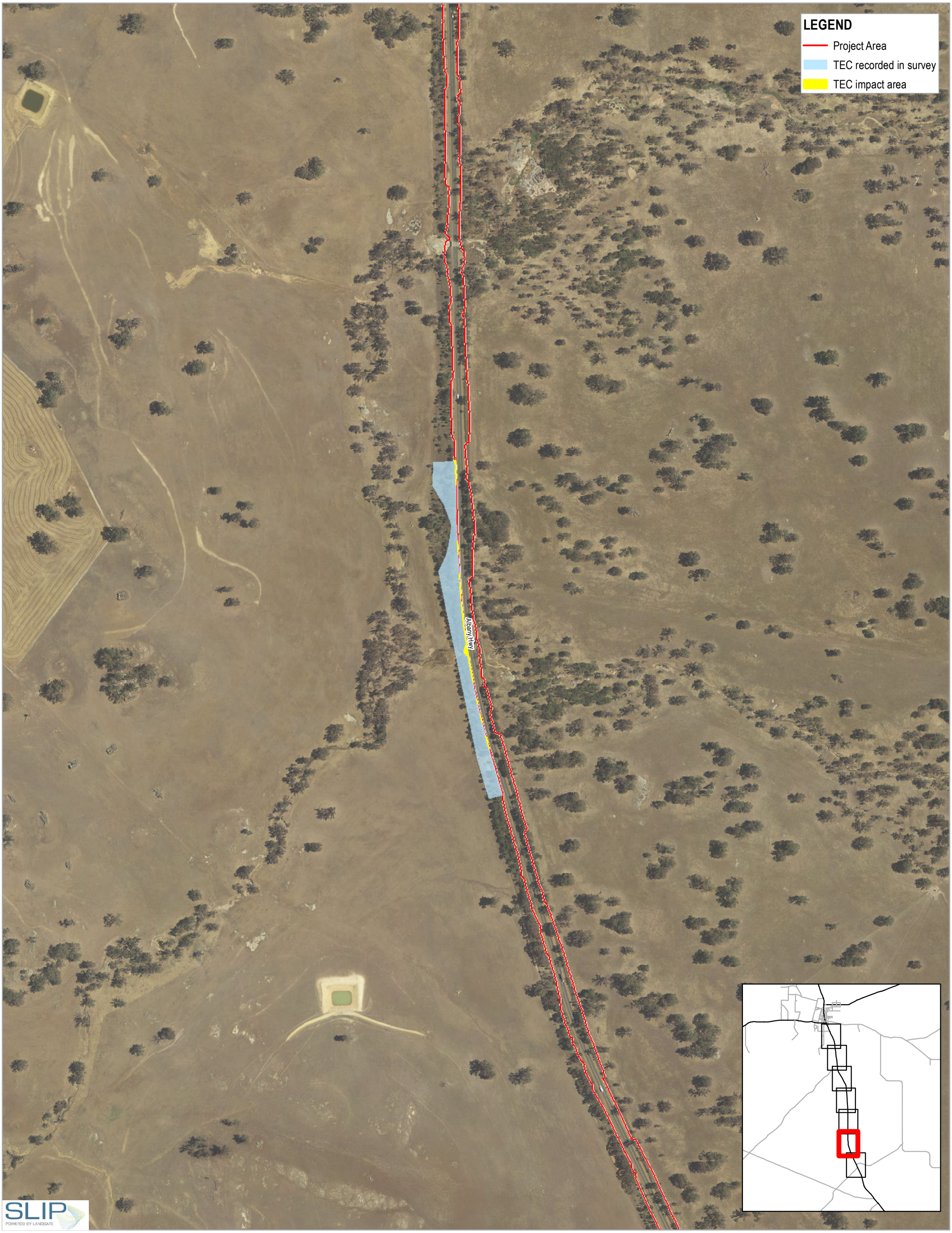

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Map Projection: Transverse Mercator
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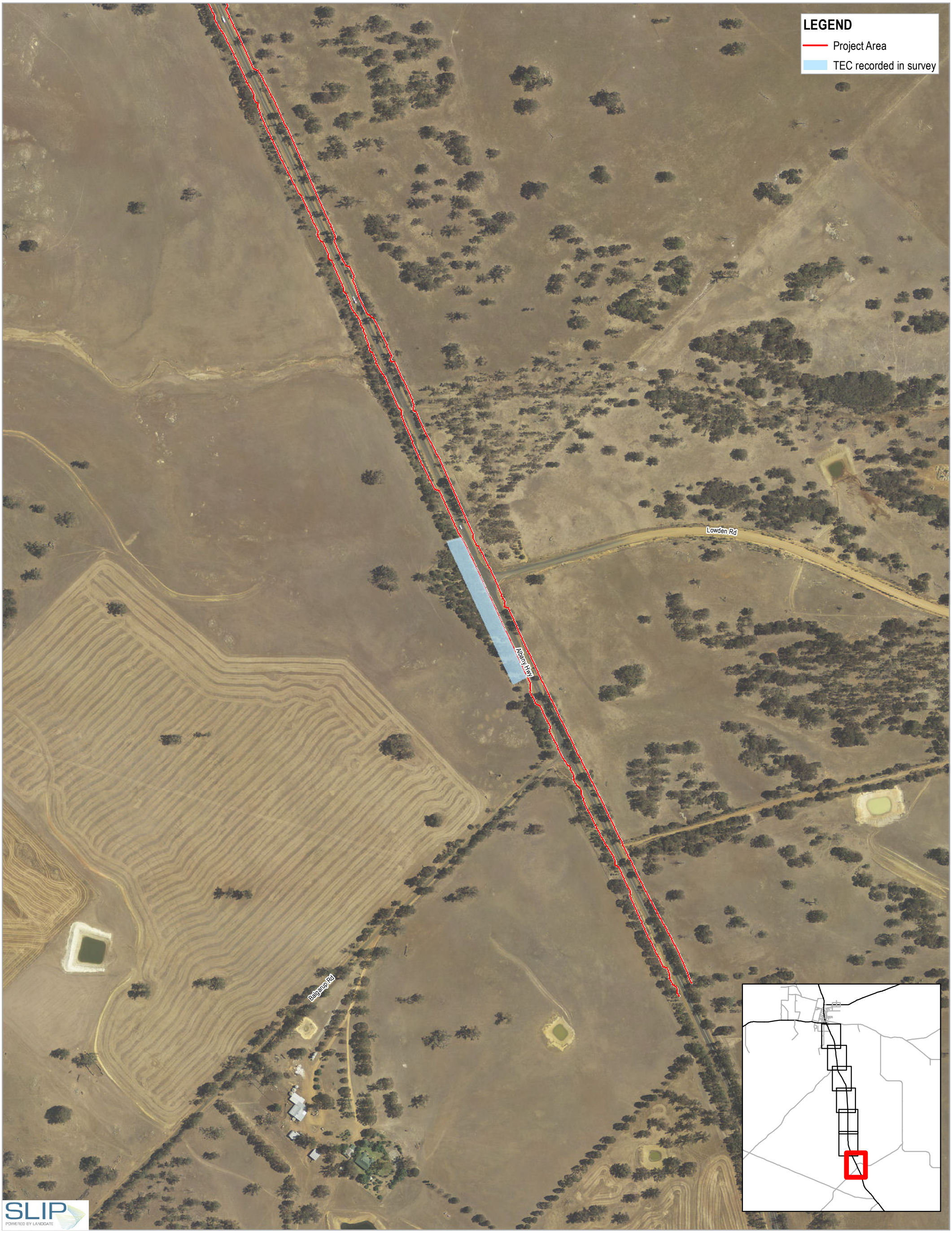

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Data source: Landgate: Roads - 20180420; Main Roads: Project Area, TEC Impact Area, TEC Recorded In Survey - 20180420, Imagery. Created by: afeeney

2.2 Avoidance, minimisation and mitigation

2.2.1 Environmental impact assessment and project scoping

An initial assessment was undertaken, including a desktop analysis of environmental aspects and impacts, and a site investigation. A detailed assessment of native vegetation clearing impacts was completed, in accordance with State and Commonwealth legislation.

Biological surveys were also conducted for the project, including targeted searches for Black Cockatoo habitat (Rathbone 2017).

2.2.2 Impact avoidance and minimisation

Biological survey and impact assessment information was applied to the project, to reduce the impacts of the works as far as practicable. Impact avoidance and minimisation measures applied to the project include the following:

- Reducing the total clearing area for the project and utilising already cleared areas where possible. Initial clearing included 8.03 ha of native vegetation, whereas the revised action involves 5.5 ha of clearing.
- Under standard construction practice, 2 m beyond the earthworks limits is cleared to allow for maintenance, drainage and vegetation control beyond the road. This gap has been reduced, resulting in a reduction of approximately 2 ha of clearing (Main Roads 2018).
- Locating supporting services such as laydown facilities and offices in already cleared areas.
- Changing the project design to remove the requirement to clear trees suitable as current or future black cockatoo breeding habitat.
- Reducing clearing of the Wheatbelt Woodlands TEC to 0.035 ha from 0.71 ha.
- Steepening of road batters and installation of roadside barriers. The pavement batter will be 1:6 for the foreslope and 1:3 for the backslope. Further increasing the batter steepness was identified as a safety hazard for road users travelling at high speeds. Main Roads was able to steepen the batters in conjunction with the use of barriers and reduction of table drain depths to save 15 potential breeding trees for black cockatoos (all trees identified within the project area) and retain at least 95% of identified TEC at an additional cost to the project of approximately $500,000.
- Kerbing has been designed where possible but will have limited impact on the construction footprint where trees are in close proximity to the road due to the offsets required for road safety and drainage requirements. Kerbing and the associated stormwater drainage under the road can increase the construction cost from approximately $400,000 per km to in excess of $1,000,000 per km. Kerbing has been considered and implemented in the design where possible. Kerbing has been installed for a 400m section of road and reduces the clearing foot print by 0.15ha.

Direct impacts to Carnaby's Cockatoo and Forest Red-Tailed Black Cockatoo are expected, with 5.5 ha of suitable foraging habitat to be cleared. The impact area has been minimised as far as practicable from an initial clearing footprint of 8.03 ha, with all 15 potential breeding trees to now be retained.

Design modifications to the project has reduced the clearing of the Wheatbelt Woodlands TEC to 0.035 ha from an initial clearing footprint of 0.71 ha. Indirect impacts are possible, resulting from edge effects and weed invasion. Main Roads sprays for weeds on an annual basis and significant indirect impacts are not expected as the proposed project is the widening of an existing road and the short lengths of TEC/widening project boundary.

Dieback is a significant hazard to natural landscapes in the State's southwest. Construction and earthmoving activities are considered to be 'high risk' for the spread of the pathogen and therefore the dieback status is assessed as part of the impact assessment process. The project is in a highly disturbed landscape with no significant protection assets (i.e. conservation reserves) adjacent and is considered 'unprotectable' from dieback. Standard construction hygiene will be applied as per the project Environmental Management Plan and include the requirement for all plant to arrive and leave site clean to prevent the potential spread of weeds and dieback.

No clearing of black cockatoo nesting trees is required for the project and therefore no installation of nesting boxes is not proposed.

2.2.3 Residual Impacts and mitigation

The residual impacts of the project to MNES are summarised below in Table 3.

Table 3 Residual Impacts to matters of National Environmental Significance

Aspect	Impact
Threatened fauna	5.5 ha of native vegetation will be cleared, which is suitable as foraging habitat for black cockatoo species.
Threatened Communities	0.035 ha of Wheatbelt Woodlands TEC will be cleared for the project.

An offset proposal has been developed to mitigate the residual impacts of the project and is summarised in Section 2.3.

Note that the offset for black cockatoo habitat also applies to the Wheatbelt Woodlands TEC as the TEC vegetation is habitat utilised by black cockatoo species. It is assumed that the land to be used as an offset will mitigate both cockatoo and TEC residual impacts.

2.3 Offsets

An Offset Proposal was prepared for the Department of Water and Environment Regulation (DWER) in March 2018 to offset the residual impacts of the project based on the Commonwealth's offset guide and policy (2012a and 2012b) and the State's offset policy and guidelines. The same offset is proposed to be utilised towards the Commonwealth impacts for the project, as there is overlap in legislated species.

The vegetation to be cleared includes 5.5 ha of black cockatoo foraging habitat and 0.035 ha of Wheatbelt woodlands TEC. An offset was calculated utilising the Offset Assessment Guide (DSEWPaC 2012b) to determine the area of offset required in hectares. If a financial offset is provided, the area in hectares will be multiplied by the market valuation of the vegetated land within the Shire of Kojonup obtained from the Western Australian Valuer-General (2016).

Table 4 Residual impact and offset

Residual Impact	Offset Type	Size of residual impact (ha)	% of residual impact offset	Size of offset (ha)
Loss of black cockatoo habitat	Land offset	5.5 ha	100%	39 ha
Loss of Wheatbelt Woodlands TEC				

2.3.1 Offset calculation

The Offset Assessment Guide was used to evaluate project impacts for clearing as detailed in Table 5.

Table 5 Offset Assessment Guide

Attribute	Value	Justification
Area of community/habitat impacted	5.5 ha	Loss of 5.5 ha of black cockatoo habitat including Wheatbelt Woodlands TEC.
Quality of impact area	8	Vegetation was mapped in Good to Degraded (EPA 2016) condition (Rathbone 2017)
Start quality of the offset area	8	It is assumed that the land protected, via a conservation covenant or transfer to DBCA, would be in Excellent or Pristine condition (Keighery 1994).
Future quality without offset	8	Unlikely to change over a period of one year
Future quality with offset	8	Acquisition only, therefore no change is expected to the quality of the offset site
Time horizon (security of land tenure)	20 years	Protection of land through purchase or conservation covenant so long term protection is afforded. Twenty years is the maximum value that can be input.
Time until ecological benefit	1 year	Short time-frame required for land to be protected.
Risk of loss without offset	25 %	Moderate risk of loss.
Risk of loss with offset	5%	Minimal risk of loss as the offset site will be placed into conservation estate or have a conservation covenant over the property.
Confidence in result	95%	High degree of confidence.

The offset was calculated using the Offset Assessment Guide to determine the area of the offset required in hectares (39 ha). If a financial offset is required, the hectares will be multiplied by the market valuation of the unimproved (vegetated) land $4,470 for a land parcel 20 ha in size within the Shire of Kojonup obtained from the Valuer-General (2016).

Main Roads proposes to protect approximately 39 ha within the same bioregion as the project, to compensate for the significant residual impacts associated with the project. If it is not possible to identify an offset property, Main Roads will provide $174,330 to DWER for the purchase of a 39 ha offset property within the Shire of Kojonup.

2.3.2 Application of EPBC Environmental Offsets Policy

The EPBC Environmental Offsets Policy (DSEWPaC 2012a) was applied to the proposed offset to assess its suitability under this policy (Table 6).

Table 6 Environmental Offset Policy Assessment

Offset Objective	Offset Assessment
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter.	Suitable offsets must improve or maintain the viability of the protected matter in comparison to the status quo. It is anticipated that, through a conservation covenant, Main Roads shall secure a parcel of privately owned land that contains the values that require offsetting. If a suitable parcel of privately owned land can't be identified and secured, funds shall be provided to DWER for the purchase of land by the Department of Biodiversity, Conservation and Attractions (DBCA), and managed by DBCA. Either option is considered to be an improvement on the status quo due to the following: • Land in the project area is linear in nature and subject to edge effects from the road. Land secured as part of an offset would typically be non-linear, resulting in less edge effects, better quality habitat and improved management outcomes. • Land secured as an offset would typically be adjacent to other vegetation in good condition, as well as watercourses and known foraging or breeding habitat for black cockatoo.
Suitable offsets must be built around direct offsets but may include other compensatory measures.	The offset proposed for this project has been built around a direct offset, in that, within one year of clearing commencing, Main Roads will establish a conservation covenant over privately owned land with suitable values, or provide funding to DWER to purchase land that is suitable as an offset for this project. The offset proposed for this project is to mitigate residual impacts that are the same under State and Commonwealth legislation.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter.	A suitable offset has been provided for the impacts resulting from this project, based on the EPBC Offset Assessment Guide which uses the International Union for Conservation of Nature data on the probability of annual extinction for different categories of threatened species. Therefore the offset size produced (in this case 39 ha) is influenced by a weighting factor directly related to the statutory protection that applies to the protected matter.

Offset Objective	Offset Assessment
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter	The size and scale of an offset required for each impact is determined by the: • Level of statutory protection that applies to the protected matter. • Specific attributes of the protected matter, or its habitat, being impacted. • Quality of the habitat affected. • Permanent or temporary nature of the impacts. • Level of threat (risk of loss) that a proposed offset site is under. • Time it will take an offset to yield a conservation gain for the protected matter. • Risk of the conservation gain not being realised. The above factors are included in the Offset Assessment Guide.
Suitable offsets must effectively account for and manage the risks of the offset not succeeding	The securing of privately owned land for the purpose of conservation through a conservation covenant is not considered to be a significant risk of failure. If a suitable privately owned offset site cannot be secured, MRWA will use the DWER Offset Fund facility. The Offset Fund has been utilised for several years and is managed by DWER, with land managed by DBCA.
Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs	The land secured for conservation purposes will be privately owned and not part of an existing offset, scheme or program. It should be noted that MRWA “banks” land for offset purposes and the land secured to offset the impacts of this project may be surplus to the offset needs of another project already delivered in the Great Southern Region.
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable	Offset land will be identified and secured within 12 months of the clearing commencing. Despite the constraints associated with purchasing or covenanting vegetated land in extensively cleared landscapes, securing an offset site is considered the most efficient and effective option.

Offset Objective	Offset Assessment
Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	The establishment of a conservation covenant over private land with high environmental values, as well as the transfer of offset funds to DWER, are both well established and transparent processes. The Offset Proposal was prepared for DWER in March 2018 to offset the residual impacts of the project based on the Commonwealth's offset guide and policy. The same offset is now proposed to be utilised towards the Commonwealth impacts for the project, in accordance with the state and commonwealth offset policies. It should be noted that all offsets approved by the WA state government are recorded within the Environmental Offsets Register. The Environmental Offsets Register provides a central public record of all offset agreements in Western Australia and ensures transparency and accountability.

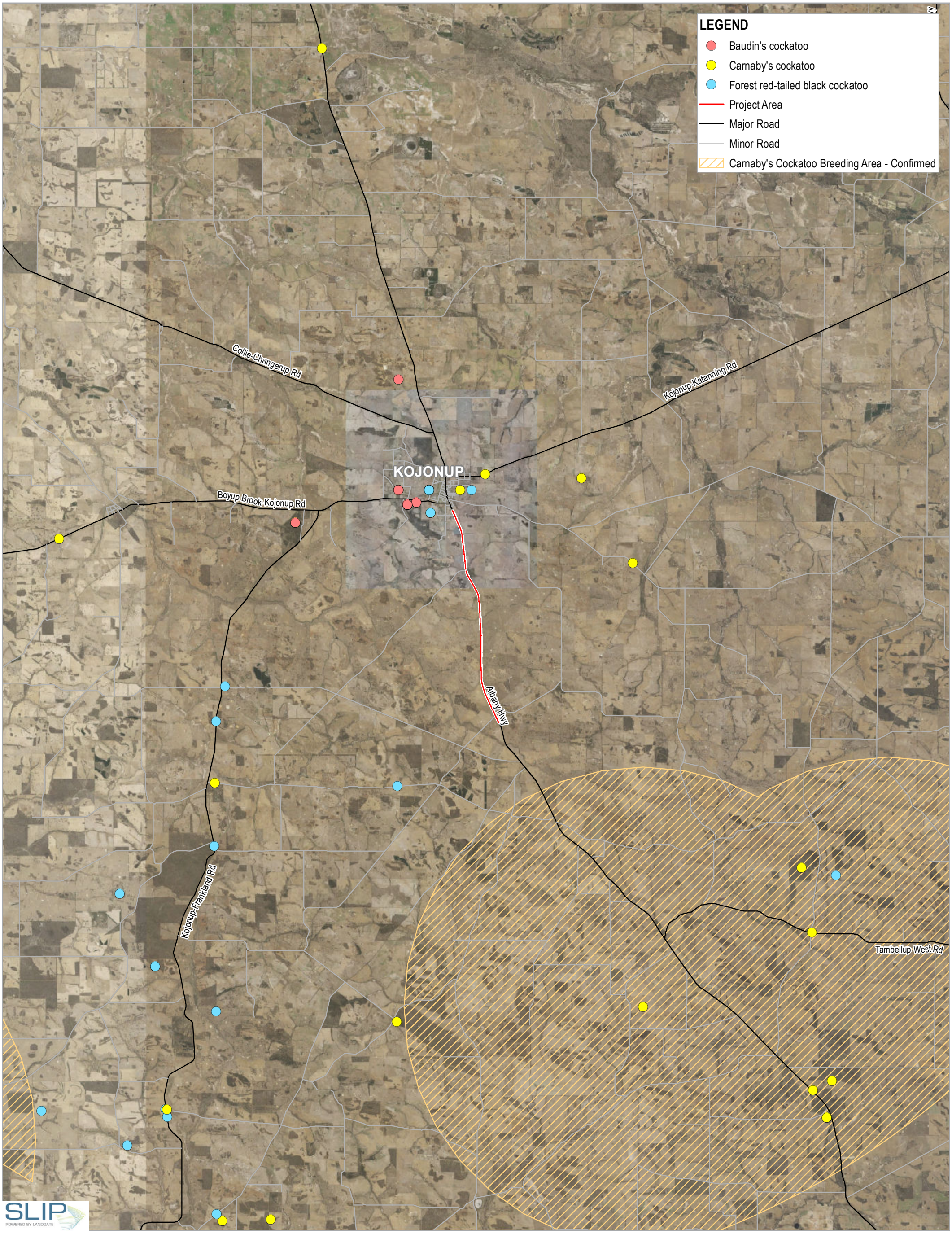
2.3.3 Application of Recovery Plan and Threat Abatement plans

The project is not inconsistent with the relevant recovery and threat abatement plans identified by DotEE as per Table 7 below.

Table 7 Assessment against Recovery and Threat Abatement plans

Recovery Plan/Threat Abatement Plan	Assessment against plan
Western Australian Department of Parks and Wildlife (2013), Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan	The objective of this Recovery Plan is to stop further decline in the distribution and abundance of Carnaby's cockatoo by protecting the birds throughout their life stages and enhancing habitat critical for survival throughout their breeding and non-breeding range, ensuring that the reproductive capacity of the species remains stable or increases (Department of Parks and Wildlife 2013). Activities that will adversely affect Carnaby's cockatoo should be avoided, and then minimized or mitigated if avoidance cannot be achieved. Habitat critical to survival for Carnaby's cockatoo includes: • Eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding. • Woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established. • In the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources.

Recovery Plan/Threat Abatement Plan	Assessment against plan
	Data obtained from the DBCA indicates that there are known breeding locations around the Kojonup town, with the nearest being 1 km north of the project (Figure 4). The road is also crossed by a number of creeks and drainage lines that could provide water for birds. Direct impacts to Carnaby's cockatoo are expected, with 5.5 ha of suitable foraging habitat to be cleared. The impact area has been minimised as far as practicable, and a total of 15 potential breeding trees will be retained that would have otherwise required removal. No breeding or roosting habitat will be cleared for the project. No Carnaby's cockatoo individuals were observed during the field survey, which was conducted in the cockatoo breeding season. An offset area 39 ha in size will be provided for this project. The offset land will provide foraging habitat for black cockatoos and is likely to also provide breeding trees. In addition, the proposed clearing is road side vegetation which is specifically mentioned as a hazard to black cockatoos in the Recovery Plan due to vehicle strikes.
Western Australian Department of Environment and Conservation (2008), Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan	Critical habitat has been identified in this Recovery Plan as areas: • currently occupied by the cockatoos • not currently occupied by the cockatoos due to recent fire but capable of supporting cockatoo populations when sufficiently recovered • of natural vegetation in which the cockatoos nest, feed and roost • of natural vegetation through which the cockatoos can move from one occupied area to another • of suitable vegetation within the recorded range in which undiscovered cockatoo populations may exist. No Baudin's cockatoo individuals were observed during the field survey, which was conducted in the cockatoo breeding season. Several flocks of Forest Red-tailed Black Cockatoos were observed perching or flying in the vicinity during the field survey, as well as evidence of foraging by this species. The proposed clearing is critical habitat by the above measures and therefore a suitable offset has been provided for the 5.5 ha of foraging habitat to be cleared.
Australian Government Department of the Environment (2014), Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi*.	The Threat Abatement Plan identifies road construction as a high risk activity requiring dieback education, restricting access to infected locations, and enforcing hygiene procedures to minimise the spread of dieback in the landscape. The project is in a highly disturbed landscape with no significant protection assets (i.e. conservation reserves) adjacent and is considered ‘unprotectable’ from dieback. Standard construction hygiene will be applied as per the project Environmental Management Plan and include the requirement for all plant to arrive and leave site clean to prevent the potential spread of weeds and dieback. Education will be included in the induction.



Paper Size ISO A3

0 1 2 3 4 5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Main Roads Western Australia
Kojonup South EPBC

Black Cockatoo Breeding Records

Project No. **61-37116**
Revision No. **0**
Date **26/04/2018**

FIGURE 4

G:\61\37116\GIS\Maps\Working\6137116_004_Fig4BlackCockatooBreedingRecords_Rev0.mxd
Print date: 10 May 2018 - 12:25

Data source: Landgate: Roads - 20180420; Main Roads: Project Area - 20180420, Fauna Data - 20180426, Imagery. Created by: afeeney

2.4 Economic and Social Impacts

A total of 793 people were killed or seriously injured in the Great Southern Region from 2004 to 2013, a rate of 135.8 people per 100,000 population persons. This is five times the state average. Most of the fatal and serious crashes that occur in the regional areas of Western Australia involve only one vehicle which has run off the road and/or collided with an object or rolled over. Almost half of accidents are cars hitting a stationary object, and over half occur on 110 kilometers per hour (km/h) roads. It is estimated that 30% of these accidents were caused by fatigue. Road widening increases the likelihood of driver recovery and reduces run off road collisions.

Ten accidents have occurred on the stretch of road from 255.21 to 266 SLK from 2012 to 2016. Five were classified as major accidents, and a further two required medical attention or hospitalisation. Fifty percent of the acceidents on this stretch of road were cars hitting objects. Widening is required to improve the safety features of this section of Highway and comply with the Austroads safety guidelines. The shoulder widths of this section of Highway are currently only 0.3 to 0.6 m which significantly reduces the likelihood of driver recovery. In addition, Albany Highway is predominantly used to carry long distance, high speed traffic where driver error and driver fatigue play a large role in accidents. According to the Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured (KSI) numbers by 64%.

The project is expected to cost approximately 5.5 million dollars, with a further $800,000 expected to be used towards minimising the environmental impact and offset (barrier installation and offset land). The project will employ up to 30 personnel through various stages of construction. These calculations are based on a number of sources, including the Road Safety Management Guideline, EPBC Offset Assessment Guide, Main Roads internal project management systems, contractor quotes, and information from similar past projects.

2.5 Stakeholder consultation

Stakeholder consultation was undertaken in August 2017 regarding the initial scope of works submitted to DoEE.

The agencies consulted included:

- Shire of Kojonup
- Conservation and Parks Commission
- Department of Water and Environmental Regulation.

No responses were submitted by any of the agencies consulted. Impacts resulting from the current scope of works are significantly less than the original proposed works, and therefore additional consultation was not considered necessary.

The project was subject to the state clearing permit process under Part 5 of the *Environmental Protection Act* 1986 and a clearing permit has been issued (CPS 7898/1). This process includes public advertisement and consideration by government agencies including the DBCA.

As of May 2018, DWER's decision regarding the clearing permit application is being considered by the WA Office of the Appeals Convenors. Two appeals were submitted by Western Australia Native Orchid Study & Conservation Group Inc. and the Wildflower Society of Western Australia Inc. Main Roads has provided the Office of the Appeals Convenor with its responses to the matters raised by both groups.

3. Conclusion

A summary of information requested by DotEE is provided below. The impacts of this project have been significantly reduced from the original scope, and an appropriate offset provided for the residual impacts that could not be avoided.

The proposed offset has been developed in accordance with the Commonwealth's guidelines and policies regarding offsets. It should be noted that the offset proposed is generally consistent with the offset that Main Roads must provide to comply with its recently issued clearing permit (CPS 7898/1).

Table 8 Summary of information requested for preliminary documentation

Information Requested	Summary
For the Wheatbelt Woodlands TEC, please provide the following: • mapping of the Eucalypt Woodlands within the project area • if there is more than one patch of the Eucalypt Woodlands in the project area (as defined in the Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt (Commonwealth of Australia, 2015) (conservation advice)), provide the size (in ha) of each patch • information detailing any potential indirect impacts to larger areas of the ecological community immediately surrounding the project area.	Mapping of the TEC within the project area is provided in Figure 3 The size of each patch and percentage of clearing is provided in Table 2. Significant indirect impacts to surrounding areas of TEC are not expected. The project is linear in nature and the widening of an existing road.
Describe and assess the likely effectiveness of measures proposed to avoid and/or mitigate the direct and indirect impacts the proposed action could have on the Eucalypt Woodlands and/or Carnaby's cockatoo and the forest red-tailed black cockatoo. This information must include, but is not limited to: • any measures proposed to avoid or mitigate the introduction and/or spread of weeds and dieback • further details on the installation of artificial nesting hollows for black cockatoos.	A number of avoidance and mitigation measures were identified for the project, including: changing the project design to remove the requirement to clear trees suitable as current or future black cockatoo breeding habitat, and reducing clearing of Woodlands of the Wheatbelt TEC to 0.035 ha (see Section 2.2). Dieback is a significant hazard to natural landscapes. Construction and earthmoving activities are considered to be 'high risk' for the spread of the pathogen and therefore the dieback status is assessed as part of the impact assessment process. The project is in a highly disturbed landscape with no significant protection assets and is considered 'unprotectable' from dieback. Standard construction hygiene will be applied as per the project Environmental Management Plan and include the requirement for all plant to arrive and leave

Information Requested	Summary
	site clean to prevent the potential spread of weeds and dieback. No clearing of black cockatoo nesting trees is required by the project and therefore no installation of nesting boxes is considered to be required.
In the event that impacts cannot be avoided or mitigated, please provide further details on all offset(s) proposed to compensate for the residual significant impacts on EPBC Act listed species and communities, including: • the type of offset (s) proposed • extent to which the proposed offset actions correlate to, and adequately compensate for, EPBC Act listed species and communities • suitability of the location of any proposed offset site for EPBC Act listed species and communities • conservation gain to be achieved by the offset i.e. positive management strategies that improve the site or averting the future loss, degradation or damage of the protected matter • time it will take to achieve the proposed conservation gain • level of certainty that the proposed offset will be successful • current land tenure of any proposed offset and the method of securing and managing the offset for the life of the impact.	The vegetation to be cleared includes 5.5 ha of black cockatoo foraging habitat and approximately 0.035 ha of Wheatbelt Woodlands TEC. The offset required for this project was calculated using the Offset Assessment Guide to determine the area of the offset required in hectares (39 ha). Main Roads will consult with private land owners within the vicinity of the project area to identify possible offset sites to purchase or apply a conservation covenant on the land to protect the values present. Main Roads has already identified a potential offset site with suitable environmental values and will commence consultation with the relevant land owners and government agencies once the necessary project approvals have been obtained. If establishing a conservation covenant over privately owned land does not prove successful, DWER's financial offset process will be used to assist in the purchase of suitable offset land. If utilised, it is expected that a suitable offset site will be purchased within 1 year of clearing commencing. Financial contributions are often used to purchase land that is added to the conservation estate through a State guaranteed scheme. A justification of the proposed offset is presented in Section 2.3.
Demonstrate how the proposed offset is consistent with the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (October 2012, Offsets Policy). Using guidance available on the Offsets Policy website, provide a completed Offsets Guide and justifications.	The proposed offset is consistent with the EPBC Environmental Offsets Policy (Section 2.3.2).

Information Requested	Summary
Demonstrate that the action is not inconsistent with relevant recovery plans and/or threat abatement plans including but not limited to: • Western Australian Department of Parks and Wildlife (2013), Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan • Western Australian Department of Environment and Conservation (2008), Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan • Australian Government Department of the Environment (2014), Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi*.	The project was assessed against the relevant recovery and threat abatement plans. Impacts to black cockatoo have been avoided as far as practicable, including the retention of 15 potential breeding trees that would have otherwise been cleared. Residual impacts have been mitigated where avoidance could not be achieved. Standard construction hygiene will be applied as per the project Environmental Management Plan and include the requirement for all plant to arrive and leave site clean to prevent the potential spread of weeds and dieback. Project induction will include dieback education.
Please provide further detail on the social and economic costs and/or benefits of undertaking the proposed action, including: • basis for any estimations of costs and/or benefits • potential employment opportunities expected to be generated at each phase of the proposed action • details of any public and stakeholder consultation activities, including the outcomes.	A total of 793 people were killed or seriously injured in the Great Southern Region from 2004 to 2013, a rate of 135.8 people per 100,000 population persons. This is five times the state average. Most of the fatal and serious crashes that occur in the regional areas of Western Australia involve only one vehicle which has run off the road and/or collided with an object or rolled over. Almost half of accidents are cars hitting a stationary object, and over half occur on 110 kilometers per hour (km/h) roads. It is estimated that 30% of these accidents were caused by fatigue. Road widening increases the likelihood of driver recovery and reduces run off road collisions. Ten accidents have occurred on the stretch of Albany Highway from 255.21 to 266 SLK, covered by this project, from 2012 to 2016. Five were classified as major accidents, and a further two required medical attention or hospitalisation. Fifty percent of the accidents on this stretch of road were cars hitting objects. Widening and turning lanes are required to improve the safety features of this section of Highway and comply with the Austroads safety guidelines. The shoulder widths of this section of Albany Highway are currently only 0.3 to 0.6 m wide, which significantly reduces the likelihood of driver recovery. In addition, Albany Highway is predominantly used to

Information Requested	Summary
	carry long distance, high speed traffic where driver error and driver fatigue play a large role in accidents. According to the Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured (KSI) numbers by 64%. The project is expected to cost approximately 5.5 million dollars, with a further $800,000 expected to be used towards offset works (barrier installation and offset land). The project will employ up to 30 personnel through various stages of construction. These calculations are based on a number of sources, including the Road Safety Management Guideline, Offset Assessment Guide, Main Roads internal project management systems, contractor quotes, and past project information. Stakeholder consultation was undertaken in August 2017.

4. References

Australian Government Department of the Environment (DotE) (2014), Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi,* *http://www.environment.gov.au/biodiversity/threatened/publications/threat-abatement-plan-disease-natural-ecosystems-caused-phytophthora-cinnamomi*

Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012a), Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy October 2012, http://www.environment.gov.au/system/files/resources/12630bb4-2c10-4c8e-815f-2d7862bf87e7/files/offsets-policy_2.pdf

Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012b), offsets assessment guide, http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy

Commonwealth of Australia (2015), Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt, http://www.environment.gov.au/biodiversity/threatened/communities/pubs/128-conservation-advice.pdf

Department of Environment and Conservation (DEC) (2008), Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan, http://www.environment.gov.au/system/files/resources/48e4fc8c-9cb7-4c85-bc9f-6b847cf4c017/files/wa-forest-black-cockatoos-recovery-plan.pdf

Department of Parks and Wildlife (2013), Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan, Western Australian Wildlife Management Program No. 52, Department of Parks and Wildlife October 2013, https://www.environment.gov.au/system/files/resources/94138936-bd46-490e-821d-b71d3ee6dd04/files/carnabys-cockatoo-recovery-plan.pdf

Keighery (1994), Bushland Plant Survey: a Guide to Plan Community Survey for the Community, Wildflower Society of Western Australia.

Main Roads (2018), Offset Proposal - Financial Contributions Albany Highway widening Kojonup South 254.9 to 266 SLK March 2018.

Rathbone (2017), Flora and Fauna Assessment Albany Highway, South of Kojonup Townsite 254.9-266 SLK, Prepared for Main Roads Western Australia, March 2017.

Appendices

Appendix A – Environmental Management Plan

Environmental Management Plan

ROAD WIDENING KOJONUP SOUTH

SLK 254.9 -266

Introduction

This Environmental Management Plan (EMP) has been developed for the project following the completion of the EIA. The aim of this EMP is to minimise the environmental impacts associated with the proposed works as well as to identify areas of responsibility required for the implementation of management strategies. This EMP includes vegetation management measures.

This EMP addresses specific issues that were identified during the impact assessment. The project management measures identified within this EMP are in addition to the standard environmental management contract specifications used for Category 2 projects. Main Roads' standard environmental contract specifications (Specifications 203, 204, 301, 302 and 304) are to be adhered to where appropriate.

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

- the timing of the management actions;
- the topic (e.g. vegetation);
- the actions that are necessary to minimise the impact; and
- the responsible party for implementing the action.

Communication Plan

Environmental issues specific to the project will be communicated as follows:

Method	Frequency	Participants	Record
Induction	Prior to construction	Project Personnel	Induction records
JSEA	Prior to construction	Project Personnel	JSEA paperwork
Toolbox Meetings	Weekly	Project Personnel	Minutes of Meeting
Prestart Meetings	As required	Project Personnel	Minutes of Meeting
Department of Water and Environment Regulation	As required	Main Roads' Project Manager and Contractor Project Manager	Minutes of meeting

External Communication and Complaints

A complaints register shall be maintained. All complaints received shall be forwarded to the Main Roads' Project Manager for action. Serious complaints shall be investigated within 24 hours of the complaint being received.

Contingency Measures

Should any significant non-conformance issues arise, the appropriate Department will be notified and contingency measures discussed.

Auditing

Auditing will be undertaken for this project, and will include one (or several) of the following:

- Project Manager auditing compliance with this EMP. Proof of compliance shall be provided to the Environment Officer.
- The project will be audited by the Environment Officer or delegate at designated intervals as required in the EMP e.g. checking of the clearing line prior to clearing.
- Main Roads may choose to have the project audited by an external third party to ensure that any Contractor EMPs are compliant with approvals and permit conditions (desktop audit), or to ensure that construction activities are in compliance with approvals and permit conditions (on-ground audit).

EMP Accountability

Persons name	Persons Role	Contact details
Emily Cranstoun	Environment Officer	9323 4144
TBA	Site Supervisor	TBA

ENVIRONMENTAL MANAGEMENT PLAN				
Project Component	**Management Action**	**Record Keeping/ Monitoring**	**Responsible Person**	**Completion Timeframe**
Standard Record Keeping Management				
Record Keeping and Inductions	• Ensure standard record keeping requirements are completed within 1 month of completion of the project activities.	Post-construction record maintenance.	Site Supervisor	Within 1 month of completion of the project activities.
	• All construction crew will be inducted into the EMP. • Weekly toolbox will raise areas of concern. • At prestart the requirements of the EMP will be reviewed by contractors. • Any tasks required by construction crew in relation to Black Cockatoos will be included in the JSA.	Induction notes and Toolbox meeting minutes and attendance records	Site Supervisor	Prior to works
Project Specific Aspects				
Vegetation	• The approved clearing boundary will be pegged to prevent impacts to adjacent vegetation outside the limitations of clearing. • The clearing area will be checked by the Environment Officer or delegate prior to commencement of clearing.	One surveillance monitoring will occur prior to clearing.	Site Supervisor Environment Officer or delegate	Prior to clearing commencing
	• Topsoil will be stockpiled and respread after works.	One surveillance monitoring will occur within two weeks once clearing has been completed.	Site Supervisor Environment Officer or delegate	Within two weeks once clearing has been completed
	• Mulched vegetation will be spread over and behind the backslopes to retain seed bank.	One surveillance monitoring will occur within two weeks once clearing has been completed.	Site Supervisor Environment Officer	Within two weeks once clearing has been completed
	• Burning of cleared vegetative materials or burning within the road reserve shall not be permitted under any circumstances	One surveillance monitoring will occur within two weeks once clearing has been completed.	Site Supervisor	Within two weeks once clearing has been completed
	• Clearing activities must be completed in accordance with Main Roads Specifications: 204 (Environment), 301 (Clearing), 302 (Earthworks).		Site Supervisor	

ENVIRONMENTAL MANAGEMENT PLAN				
Project Component	**Management Action**	**Record Keeping/ Monitoring**	**Responsible Person**	**Completion Timeframe**
• Avoid and manage impacts to fauna.	• Fauna are not to be fed or intentionally harmed or killed.	• Any fauna injured or killed on site will be recorded as an incident.	• Site Supervisor Environment Officer	• Project lifespan/ ongoing
	• In the event that sick, injured or orphaned native wildlife are found on the project site, the WILDCARE Helpline (08) 9474 9055) will be contacted for assistance.	• Any sick, injured or orphaned native wildlife found on site will be recorded as an incident.	• Site Supervisor	• Project lifespan/ ongoing
	• Restrict movement of machines and other vehicles to the limits of the areas cleared.		• Site Supervisor	• Project lifespan/ ongoing
	• A 'soft start' will be implemented prior to clearing to allow animals in the area to move away before clearing activities commence.		• Site Supervisor Environment Officer	• Prior to clearing
• Dieback and weed management.	• All equipment and machinery to arrive clean on site. • No vehicles are to go outside the approved clearing area for the project, so as to prevent the spread of dieback. • Weeds control will be incorporated into the yearly weed spray program. • Bridal Creeper will be specifically targeted prior to clearing to eradicate this weed and prevent its spread as a result of the project. Bridal creeper occurs between SLK 254.8 and 255.8 on both sides of the road. Creeper removal will be conducted over several phases by a qualified weed sprayer to ensure no propagules are allowed to spread.	• Vehicle cleaning records • Yearly weed spray program	• Contractor • Roadside Management Officer	• Prior to mobilisation • Yearly
Aboriginal Heritage Sites	• Ensure on-site construction personnel are aware of the location of the Heritage Sites and the requirement to avoid these sites during project construction. • In the event that human skeletal material is discovered, work will cease immediately and the Police will be contacted. If the skeletal remains are determined to be of Aboriginal origin, the Department of Aboriginal Affairs will be contacted as soon as practicable.	Incident reporting	Site Supervisor Contractor	Project lifespan/ Ongoing As required

ENVIRONMENTAL MANAGEMENT PLAN				
Project Component	**Management Action**	**Record Keeping/ Monitoring**	**Responsible Person**	**Completion Timeframe**
	• In the event that artefacts or material of Aboriginal origin is discovered, work will cease within 25 metres of the material and a qualified archaeologist will investigate the item(s) and take appropriate actions.			
Waste and pollution	• All waste materials from the project area will be removed from the site upon completion of the project and to the satisfaction of the Project Manager or Site Superintendent. • Construction waste and other rubbish will be contained in bins with lids (where practicable) and removed regularly. • Written pollution and wastage control measures and accidental response procedures are to be recorded.	Construction and post-construction maintenance Evidence of correct procedures at audit	Contractor	Completion of works
Hazardous Materials and Hydrocarbons	• Bulk fuel and hazardous material storage areas will be bunded and managed in compliance with applicable Australian Standards. • MSDS are to be on site. • Fuel pods are to be double bunded. Refuelling pods to be stored adequately overnight. Fuel can be stored offsite to prevent theft. • Regular vehicle servicing will be undertaken at designated areas, at least 50 m away from watercourses. • No refuelling within 50 m of the watercourse and refuelling will only be undertaken at the designated refuelling location by a person trained in refuelling. Refuelling activities must be covered by a SHEWMS. • Auto greaser to be set to correct setting so as not to drip grease. • Hydraulic hoses to be fastened to prevent risk of hydraulic hose tear. • Site personnel shall be trained in the use of emergency fire suppressant equipment.	Environmental Audit	Contractor Project Manager Environment Officer	Project lifespan

ENVIRONMENTAL MANAGEMENT PLAN				
Project Component	**Management Action**	**Record Keeping/ Monitoring**	**Responsible Person**	**Completion Timeframe**
	• Spill trays will be available near fuel storage or refuelling areas. Spill kits to be present with adequate supplies. • All hazardous material spills will be reported according to statutory requirements. • Bunded area to be used for concrete washdown if applicable. • Hazardous materials will be disposed of at an approved and certified facility. • Temporary storage of bitumen, asphalt, concrete or aggregate shall occur at designated depots or controlled hardstands located within the project area, and not within 50 m of the watercourse. • Oxy-acetylene gas bottles securely stored • Diesel-fuelled power generators on site are to be self bunded			
Dust	• Surface watering, spreading of hydromulch or similar will be used to protect loose surfaces or cleared areas. • Apply dust suppression techniques to sealed roads on or near the project site that are affected by excessive dust. • Water tankers will be made available to dampen exposed surfaces within construction and laydown areas, particularly during ground disturbing activities. • Minimise or cease project activities during periods of high wind or when excessive dust is generated. • Apply water, road sweeping and signage for suitable speed limits during vehicle movements.	Audit Complaints register	Site Supervisor	During works
Surface Drainage	• Disturbed areas will be stabilised soon after construction activities are completed. Stabilisation will be undertaken using bunds, sediment traps or similar, as required. • Erosion and sedimentation control plans to protect sensitive areas are to be developed and measures installed prior to commencing with earthworks	Audit	Site Supervisor	During works

ENVIRONMENTAL MANAGEMENT PLAN				
Project Component	**Management Action**	**Record Keeping/ Monitoring**	**Responsible Person**	**Completion Timeframe**
	• No on-site storage of fuel, oils and other contaminant materials will be permitted within 50 m of a watercourse. • Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted during project construction. • Works will be undertaken during the dry season where possible, so as not to impact surface water flows.			
Groundwater	• All chemical and/or hydrocarbon spills will be contained immediately and removed within 24 hours to minimise the potential for contaminants to enter groundwater.	Incident reports	Site Supervisor Environment Officer	As required
Fire	• No fires shall be lit within the project area. • Machinery will be fitted with approved spark arresting exhaust systems. • All vehicles, plant and equipment to be fitted with fire extinguishers and restricted to designated cleared areas. • All hot works will be undertaken in accordance with standard safety procedures • Construction personnel will extinguish and report fires occurring within the project area.	Incident Reports	Site Supervisor	During works

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6137116-91105/https://projects.ghd.com/oc/WesternAustralia1/mainroadsenvapproval/Delivery/Documents/6137116-REP-0_Preliminary Documentation.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	R Lupton	D Farrar		D Farrar		11/05/2018
1	R Lupton	D Farrar		D Farrar		5/6/2018
2	R Lupton		RLupton	D Farrar		9/7/18

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