South Coast Highway Kojaneerup Project 46 to 66 SLK

Environmental Impact Assessment

Clearing Permit
Supporting Information

September 2019

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Document History

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Author: Reviewer:	S Hawkins K Hawkins P West	Rev 1 (Draft)	12.09.2019
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Executive Summary

Project Information

Project Title:

South Coast Highway - Kojaneerup Project

Project Location(s):

H008 South Coast Highway
46.4 to 65.7 straight line kilometre (SLK)
Localities of Manypeaks and Green Range
City of Albany

Project Purpose:

The South Coast Highway Kojaneerup Project (herein termed the 'Project') involves the reconstruction of the Kojaneerup Section of the South Coast Highway, between Straight Line Kilometre (SLK) 46.4 and 65.7, generally bound between Cheyne Road (south) and Kojaneerup West Road (north) in the localities of Manypeaks and Green Range, located approximately 40km north-east of the City of Albany, as identified by Figure E-1.

The purpose of the Project is to improve the safety of the road by passenger vehicles and heavy-haulage vehicles, with a view to align with current road safety design standards. The Project forms part of a broader $30million State Government commitment to upgrade the South Coast Highway to improve road safety.

The reconstruction works will involve the removal of the existing road formation and the re-establishment of a new road structure, including a widened road formation, reduced vertical curves (undulation), a passing lane, intersection improvements and other associated infrastructure amendments (e.g. road surface drainage improvements). The works will also include a minor realignment of a section to improve horizontal road curvature and sight-lines, with the previous road area to be rehabilitated with native vegetation.

Area Proposed to be Cleared: up to 31ha

The Project will be implemented within an envelope area totalling approximately 136 hectares (ha), comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation, the Project is expected to remove up to 31ha of native vegetation (based upon an average up to 2m offset from the edge of the road earthworks).

The native vegetation clearing will occur as a narrow but long linear strip following the existing South Coast Highway, generally between 5m to 15m width on either side and for a length of approximately 19km.

The design of the Project has sought to minimise the area of native vegetation requiring clearing through the use of existing cleared areas where possible. Approximately 70% of the Project area comprises cleared land.

Area of Temporary Native Vegetation Clearing: Nil

Area of Native Vegetation Rehabilitation: 0.8ha

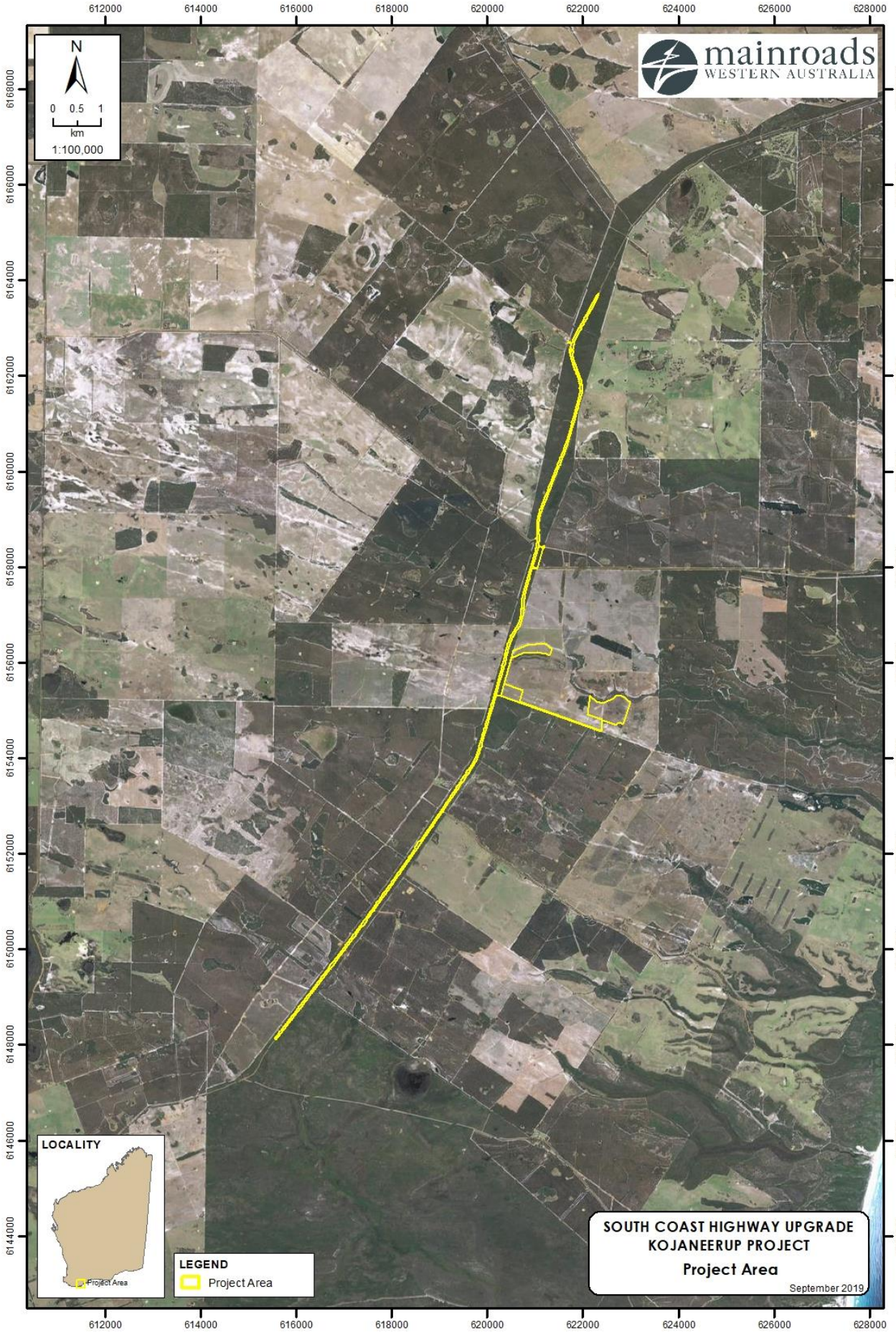

Figure E-1 Project Area

Effect to Environmental Values

The Project area and surrounds have been subject to a suite of biological surveys (flora, vegetation, fauna and Dieback *Phytophthora*) by suitably qualified environmental professionals to identify the environmental values present. The biological surveys covered a Survey Area of approximately 275ha, including the area of the Project and the surrounding land area.

The environmental surveys identified a range of environmental values of listed conservation significance, occurring both within the Project area and in the surrounding land areas. Based upon the identified environmental values coinciding with the Project, and in context with the extent and sensitivity of the values recorded, the Project is expected to result in environmental effects as described below:

1) Vegetation

   The Project will require the clearing of approximately 31ha of native vegetation, within the Project area which contains 41ha of native vegetation. The majority of the native vegetation to be cleared has been classified as being in *'Excellent'* to *'Very Good'* condition, however, noting the plant pathogen Dieback *Phytophthora cinnamomi* has been recorded within the native vegetation throughout the Project area (which can be expected to affect the vegetation condition in the long term).

   The native vegetation surrounding the Project is a large (>1,000ha) remnant, within a predominantly cleared rural landscape surrounded by traditional agriculture and 'blue-gum' *Eucalyptus* timber plantations. The existing South Coast Highway dissects this native vegetation remnant.

   Of the expected 31ha of native vegetation to be cleared by the Project, approximately 25ha has been mapped as being concordant with the listed 'Threatened Ecological Community' (TEC) *'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia'* (herein referred to as the *'Kwongkan TEC'*), which is protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (C'th). The Kwongkan TEC has also been classified by the State Department of Biodiversity, Conservation and Attractions (DBCA) as a 'Priority Ecological Community' (P3 level) (DBCA 2017). For context, the Kwongkan TEC has been mapped as extending >1,180,000ha across the south coast of Western Australia, of which >18,700ha occurs within a 10km radius of the Project. The environmental effect of the Project to the Kwongkan TEC (25ha) equates to <0.2% of the local distribution of the Kwongkan TEC (>18,700ha) and <0.01% its recorded regional distribution (>1,180,000ha). Having regard to the broad local and regional extent of the Kwongkan TEC, and in consideration with relevant environmental guidance as outlined within this assessment report (e.g. DEE (2013) *Matters of National Environmental Significance: Significant Impact Guidelines*), the effect of the Project to the Kwongkan TEC is not considered to be environmentally significant.

   Of the 31ha of native vegetation to be cleared by the Project, approximately 0.3ha of the vegetation has been mapped as concordant with the DBCA-classified PEC *'Swamp Yate (Eucalyptus occidentalis) woodland in seasonally-inundated clay basins (South Coast)'* (P3 level) (herein referred to as the *'Swamp Yate PEC'*) (DBCA 2017). To note, the DBCA-classified PEC does not have any formal statutory protection. The DBCA identifies the Swamp Yate PEC as occurring at 92 location records across a limited spatial distribution (80km) extending from Hassell

National Park (west) to Bremer Bay (east). A total of approximately 2.3ha of the Swamp Yate PEC was recorded at 2 locations in the Survey Area. Whilst noting the very restricted spatial distribution of the Swamp Yate PEC, as outlined within this assessment report, the effect of the Project to the Swamp Yate PEC is not considered to be environmentally significant.

2) Flora Taxa

The native vegetation to be cleared by the Project contains a variety of native flora taxa, including a number DBCA-classified 'priority' flora taxa (DBCA 2018a). The Project coincides with 14 DBCA-classified 'priority' flora taxa. The DBCA-classified 'priority' flora taxa do not have any formal statutory protection. Of note, the DBCA-classified 'priority' flora taxa include *Leucopogon* sp. Manypeaks (P1), which has a restricted spatial distribution, and is under future consideration by DBCA for listing as a 'Threatened' flora taxon under the *Biodiversity Conservation Act 2016* (WA). Targeted local and regional field surveys undertaken for the Project have increased the recorded known number of individuals and distribution of *Leucopogon* sp. Manypeaks, and specific modifications to the Project area have been made to reduce the environmental effect to this taxon. Having regard to the effect of the Project to the DBCA-classified 'priority' flora taxa, and the broader distribution of these taxa as outlined within this assessment report, the effect of the Project to the DBCA-classified 'priority' flora taxa is not considered to be environmentally significant.

3) Fauna Taxa

The native vegetation to be cleared by the Project provides habitat to a variety of native fauna taxa, including habitat for the listed 'Threatened Species' *Calyptorhynchus latirostris* (Carnaby's Cockatoo) which is protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) and the *Biodiversity Conservation Act 2016* (WA).

Whilst the Project is not expected to remove any individuals of *C. latirostris* (nil live individuals, nil nesting hollows), the Project is expected to remove approximately 29ha of native vegetation which has been mapped as potentially suitable as *C. latirostris* foraging (feeding) habitat. It is understood that the foraging habitat in the region supports a large flocks of *C. latirostris* (approximately 400 individuals) which visit the area annually (i.e. non-resident individuals).

For context, more than 200ha of *C. latirostris* foraging habitat has been mapped in the area immediately surrounding the Project (GHD 2016; Southern Ecology 2018; Astron 2019a). The extent of *C. latirostris* foraging habitat within the surrounding Hassell National Park is expected to be >1,200ha in area, with >16,000ha of *C. latirostris* foraging habitat mapped within a 12km radius of the Project.

Having regard to the extent of *C. latirostris* foraging habitat within the surrounding Hassell National Park (>1,200ha) and the broader local area (>16,000ha), and in consideration with relevant environmental guidance as outlined within this assessment report (e.g. DEE (2013) *Matters of National Environmental Significance: Significant Impact Guidelines*), the effect of the Project clearing of *C. latirostris* foraging habitat (29ha, <0.2% in local area, <3% within Hassell National Park) is not considered to be environmentally significant.

The nearest *C. latirostris* nesting-roosting sites are located approximately 1.7km and 3.2km south of the southern end of the Project; with a number other nesting-roosting sites also located between 6km to 16km from the Project. The presence of the nesting-roosting sites indicate that the recorded foraging habitat at the southern end of the Project may support this local nesting-roosting (noting that individuals forage within a 12km radius of nesting sites). Mapping of remnant native vegetation units indicates >7,700ha of remnant native vegetation within a 12km radius of these nesting-roosting sites which is likely to be suitable for *C. latirostris* foraging, with the effect of the Project in this radius area equating to <0.3% of the total >7,700ha of potentially suitable *C. latirostris* foraging habitat; such that Project would be unlikely to cause a long-term decrease on the population of *C. latirostris* due to the significant extent of remaining foraging habitat (>7,700ha) surrounding these identified nesting-roosting sites.

4) Conservation Areas

The Project currently coincides with part of the Hassell National Park, which is a narrow linear park that follows the alignment of part of the South Coast Highway, generally 200m to 600m in width and 39km in length. Whilst there is a dedicated Road Reserve for the South Coast Highway, the as-built South Coast Highway, in parts, meanders between the Road Reserve and the Hassell National Park.

The land tenure boundaries are currently being administratively reconsidered by the Department of Planning, Lands and Heritage (DPLH) in consultation with Main Roads and DBCA, with a view towards revising the land tenure boundaries such that the South Coast Highway will occur wholly within a revised Road Reserve (with no coincidence with the Hassell National Park). The administrative changes to the land tenure boundaries are expected to be completed by the end of the 2019 year.

Whilst noting the South Coast Highway will then occur wholly within the revised Road Reserve (with no coincidence with the Hassell National Park), the Project does include the rehabilitation of approximately 0.8ha of land areas from a realigned section of the South Coast Highway (redundant road areas) of which 0.3ha will occur within the final boundaries of Hassell National Park. The rehabilitation works within the Hassell National Park will be undertaken in consultation with DBCA.

Noting the majority of the vegetation directly adjacent to the existing South Coast Highway has been mapped as being in *'Excellent'* to *'Very Good'* condition, The Project for the reconstruction and widening of this section of the South Coast Highway is similarly not expected to result in an indirect effect to the vegetation condition of the Hassell National Park.

Environmental Management

The key environmental management actions relating to the Project relate to the following environmental aspects:

1) Land clearing, specifically –
    - Vegetation units;
    - Flora taxa;
    - Fauna taxa;
    - Dieback *Phytophthora cinnamomi*; and

2) Rehabilitation, specifically –
    - Rehabilitation of redundant road areas following realignment

In order to manage the potential environmental effects of the Project, prior to the commencement of construction, Main Roads will prepare and implement a:

1) Environmental Management Plan (EMP)

The EMP will be drafted consistent with Main Roads' documents *Specification 204 Environmental Management* (Main Roads 2018a) and Principal Environmental Management Requirements (Main Roads 2019a), and prepared in consultation with the Department of Water and Environmental Regulation (DWER) and DBCA.

Environmental Assessment Processes

Consideration has been given to the significance of the environmental effects of the Project, consistent with relevant regulatory guidance (e.g. DEE 2013, 2014). As outlined by this assessment report, whilst noting the Project coincides with environmental values of listed conservation significance, the effect of the Project, in context with the broader extent of these values, is not considered to be environmentally significant.

It is considered the environmental effects of the Project can be appropriately assessed through the following environmental assessment/approval processes:

1) Clearing Permit for native vegetation clearing under Section 51E of the *Environmental Protection Act 1986* (WA); and
2) Licence for works in the Hassell National Park under Section 101 of the *Conservation and Land Management Act 1984* (WA) (through the DBCA's Disturbance Approval System).

A Clearing Permit under s51E of the *Environmental Protection Act 1986* (WA) from DWER will be required to authorise Main Roads to clear the native vegetation for the Project. Section 4 *Environmental Assessment* within this EIA document provides an assessment of the clearing of native vegetation for the Project in accordance with the *Principles for the Clearing of Native Vegetation* outlined within Schedule 5 of the of *Environmental Protection Act 1986* (WA).

A Licence under s101 of the *Conservation and Land Management Act 1984* (WA) from DBCA is also expected to be required to authorise Main Roads to enter the land areas of the Hassell National Park for the Project works, including for the rehabilitation of the redundant road areas.

The assessment process for a Clearing Permit can appropriately consider the environmental effects of the Project, including the effect to –

- Kwongkan TEC;
- Swamp Yate PEC;
- DBCA- classified 'priority' flora taxa;
- foraging habitat for the Threatened Species *C. latirostris*; and
- Dieback *Phytophthora cinnamomi*.

Further, a granted Clearing Permit can specify the conditions necessary to control the environmental effects of the Project, such as the requirement for an EMP, and the rehabilitation of redundant road areas.

The assessment process for a Licence through the DBCA's Disturbance Approval System can further consider the environmental effects of the Project as outlined above, but additionally consider the effect to –

- Conservation Areas.

This Environmental Impact Assessment (EIA) has been prepared as a Supporting Information document to accompany the Clearing Permit application submission to DWE, in order to provide DWER with supporting assessment information as to the potential environmental effects and proposed environmental management for the Project.

This EIA document may also assist in the future assessment by DBCA of the application for a Licence for the Project works in the Hassell National Park.

Contents

1 INTRODUCTION

The South Coast Highway - Kojaneerup Project (herein termed the 'Project') involves the reconstruction of the Kojaneerup Section of the South Coast Highway, between straight line kilometre (SLK) 46.4 and 65.7 generally bound between Cheyne Road (south) and Kojaneerup West Road (north) in the localities of Manypeaks and Green Range, located approximately 40km north-east of the City of Albany, as identified by Figures 1 and 2.

The purpose of the Project is to improve the safety of the road in use by passenger vehicles and heavy-haulage vehicles, with a view to align to current road safety design standards. The Project forms part of a broader $30million State Government commitment to upgrade the South Coast Highway to improve road safety (Premier of Western Australia and Minister for Regional Development 2018).

This Environmental Impact Assessment (EIA) has been prepared as a Supporting Information document to accompany the Clearing Permit application submission to the Department of Water and Environmental Regulation (DWER), to provide DWER with supporting assessment information as to the potential environmental effects and the proposed environmental management of the Project.

2 PROJECT DESCRIPTION

The South Coast Highway Kojaneerup Project (herein termed the 'Project') involves the reconstruction of the Kojaneerup Section of the South Coast Highway, between 46.4 and 65.7 SLK generally bound between Cheyne Road (south) and Kojaneerup West Road (north) in the localities of Manypeaks and Green Range, located approximately 40km north-east of the City of Albany, as identified by Figures 1 and 2.

The reconstruction works will involve the removal of the existing road formation and the re-establishment of a new road structure, including a widened road formation, passing lanes, intersection improvements and other associated infrastructure amendments (e.g. road surface drainage improvements). The works will also include a minor realignment of a section of the South Coast Highway to improve road curvature and sight-lines, with the previous road area to be rehabilitated with native vegetation.

The native vegetation clearing will occur as a narrow but long linear strip following the existing South Coast Highway, generally between 5m to 15m width on either side and for a length of approximately 19km.

The Project will be implemented within an envelope area totalling approximately 136 hectares (ha), comprising 41ha of land containing native vegetation and 95ha of cleared land areas. The design of the Project has sought to minimise the area of native vegetation requiring clearing through the use of existing cleared areas where possible, with approximately 70% of the Project area comprising cleared land. The Project area includes all land requirements for the Project, including support infrastructure (equipment laydown, gravel supply, water supply).

The Project area has been defined as a 'development envelope', with an approximately 5m offset from the edge of road earthworks, however noting exceptions where specific environmental values have been identified (i.e. Swamp Yate PEC and *Leucopogon* sp. Manypeaks) in which the earthworks offset has been reduced to 1m. The 5m offset has been applied to conservatively account for any potential imprecision in the road planning process associated with geographical position systems and land contour data (e.g. noting cut/fill requirements), as well as to allow for a degree of flexibility during construction (e.g. to adjust batter angles, modify/relocate road drainage structures). Whilst noting the 5m offset in the Project area above, consistent with Main Roads

standard practices, it is expected the clearing of native vegetation will generally be restricted to 1m offset from the edge of earthworks; being the minimum area required for road construction works.

In order to provide for a conservative assessment of the potential environmental effects of the Project 'development envelope', the assessment data outlined in this EIA document has been based upon:

1) 2m nominal offset from the edge of earthworks for polygon data (i.e. vegetation, ecological communities and fauna habitats); and
2) 5m offset (i.e. Project area) for point data (i.e. flora taxa, habitat trees).

The assessment data presented in this EIA document therefore represents the conservative potential maximum environmental effect of the Project.

2.1 Project Location and Mapping

H008 South Coast Highway
46.4 to 65.7 SLK
Localities of Manypeaks and Green Range
City of Albany

Start
Latitude: 118.263439
Longitude: -34.802576

End
Latitude: 118.334825
Longitude: -34.661542

Figure 1 identifies the location of the Project as a regional scale, with Figure 2 identifying the Project area at a local scale.

Figure 3 identifies the Survey Area for the completed biological surveys. Figure 4 identifies the land tenure for the area of the Project and surrounds.

Figure 5 provides a 'before and after' composite image identifying the existing condition of the South Coast Highway Kojaneerup Section (left image) and the conceptual road formation following reconstruction works (right image). The composite image has been produced by merging photographs taken at the southern end of the Project area in two directions; east into the Project area, and west towards a recently reconstructed section of the South Coast Highway.

Further mapping for the Project identifying relevant environmental and heritage values described in this Environmental Impact Assessment (EIA) are provided in Section 9 *Project Mapping*.

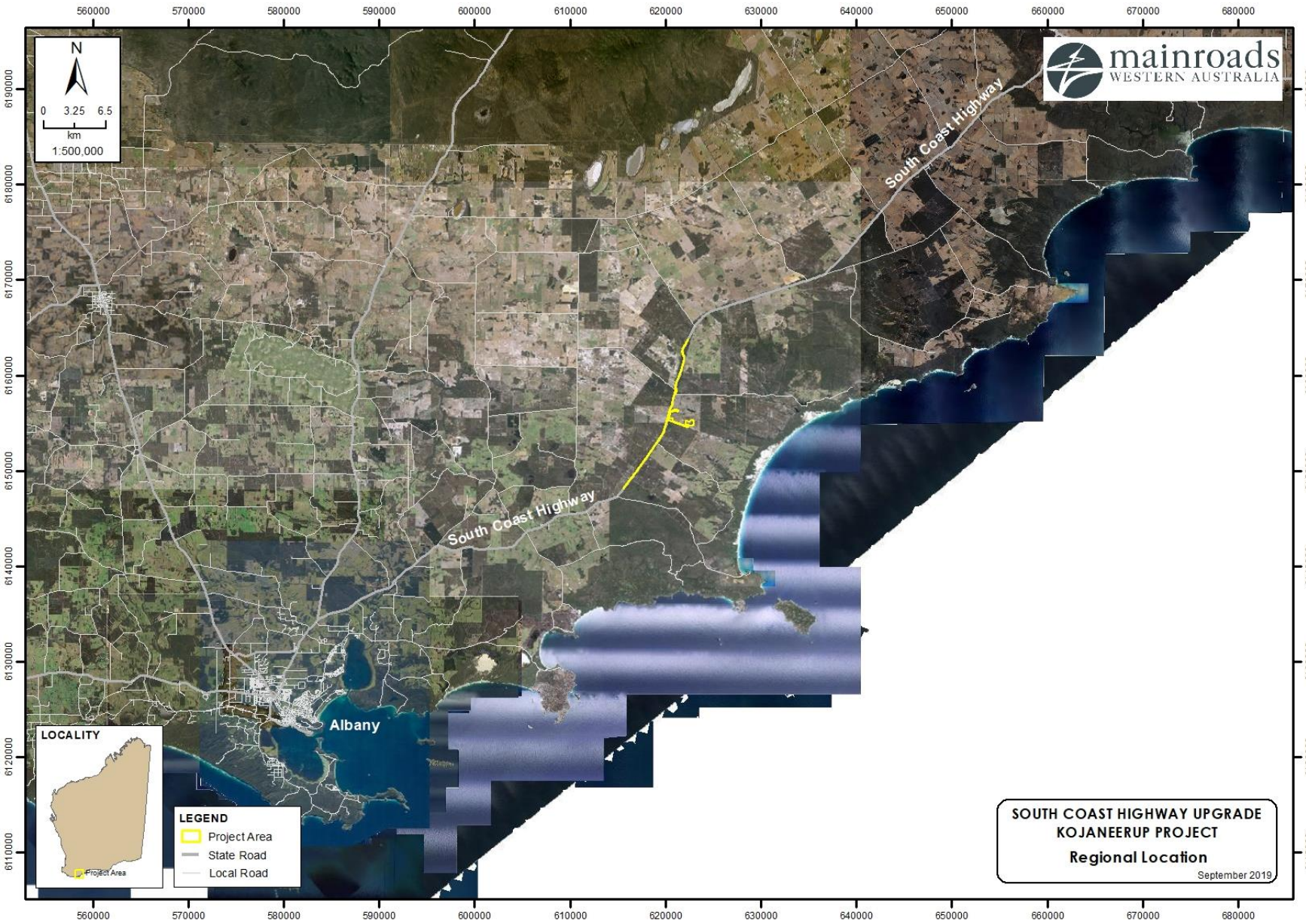

Figure 1 Regional Location

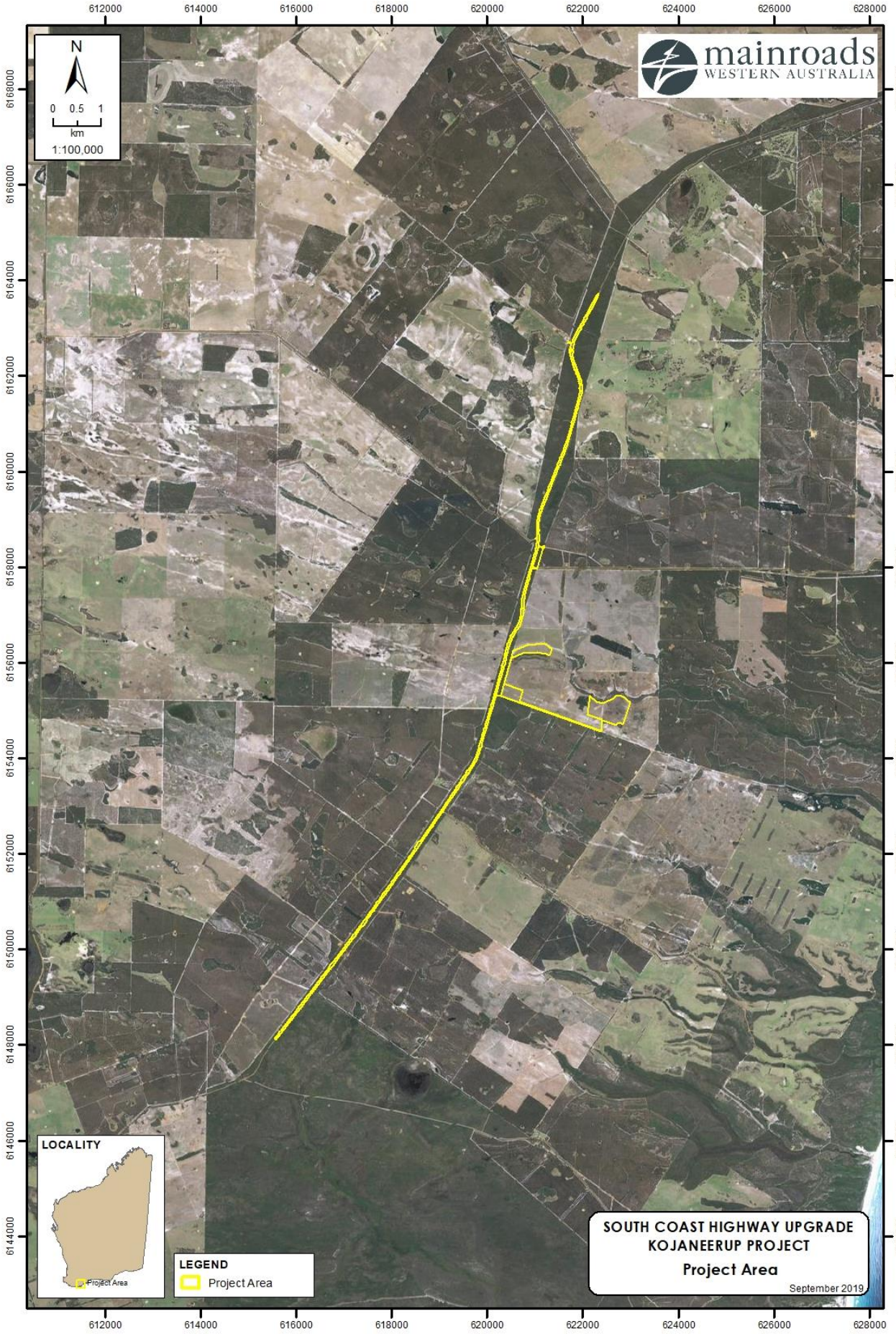

Figure 2 Project Area

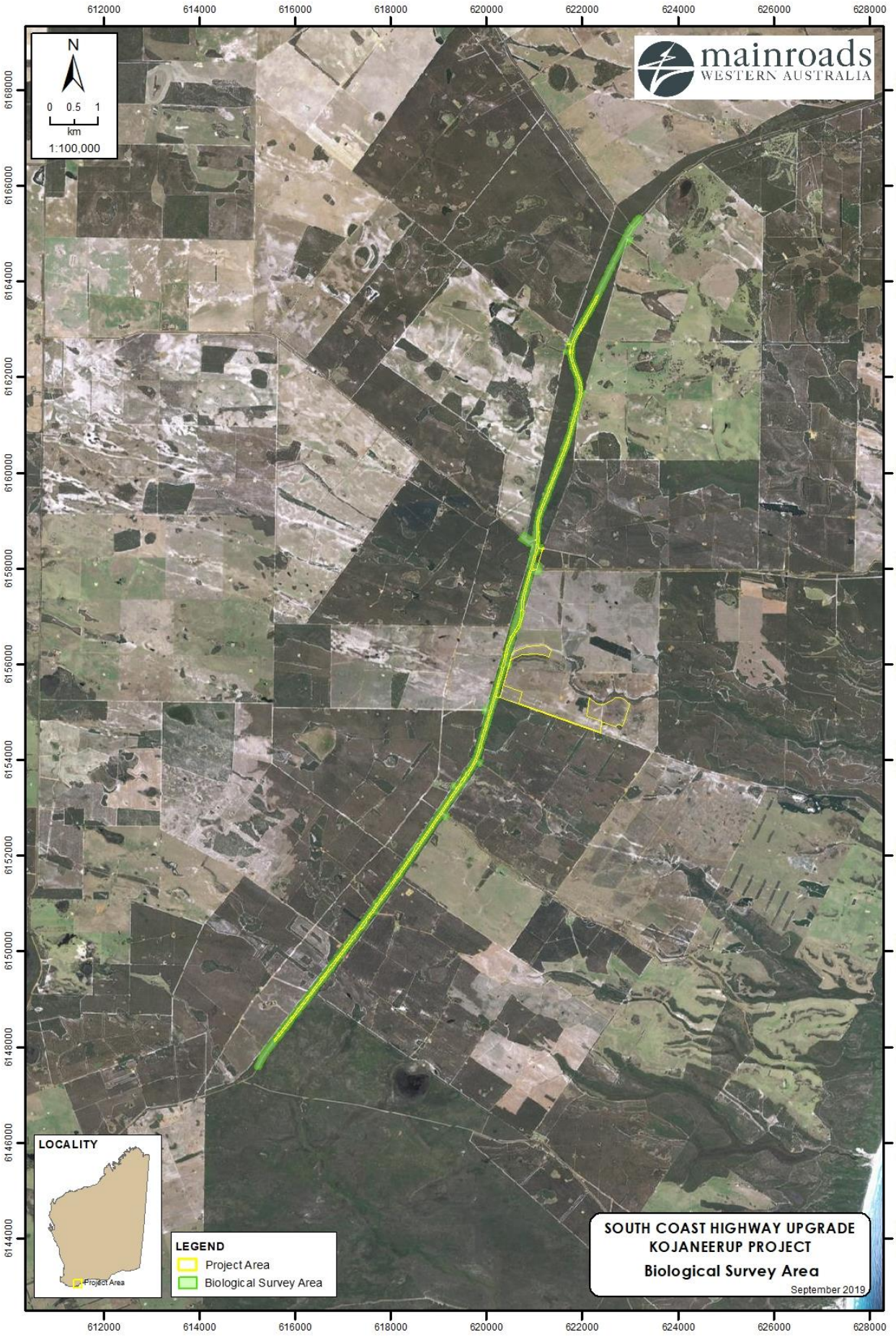

Figure 3 Survey Area

Figure 4 Land Tenure

Figure 5 Before and After. Composite image of the existing South Coast Highway Kojaneerup Section (left image) and proposed road formation following works (right image (from previously reconstructed section)).

3 ENVIRONMENTAL SURVEYS

3.1 Desktop Assessment and Field Surveys

3.1.1 Environment

The Project area and surrounds have been subject to a suite of biological surveys (flora, vegetation, fauna and Dieback *Phytophthora*) by suitably qualified environmental professionals to identify the environmental values present within the area of the Project and surrounds, as outlined in the following documents:

1) GHD Pty Ltd (2016) *South Coast Highway Kojaneerup Biological Survey*. Report prepared by Tindiglia J, Gaikhorst G and Gannaway M of GHD Pty Ltd for Main Roads Western Australia. Revision 1. March 2016.
2) Southern Ecology (2018) *Interim Report Biological Survey Kojaneerup Project South Coast Highway 46.4 to 65.7 SLK*. Report prepared by Rathbone D of Southern Ecology for Main Roads Western Australia. April 2018.
3) Astron Environmental Services Pty Ltd (2019a) *H008 South Coast Hwy Kojaneerup - Targeted Significant Flora Survey*. Report prepared by Rathbone D of Southern Ecology and Martinez G of Astron Environmental Services Pty Ltd for Main Roads Western Australia. Revision 0. June 2019.
4) Astron Environmental Services Pty Ltd (2019b) *H008 South Coast Hwy Kojaneerup Section SLK 46-66 Phytophthora Dieback Assessment*. Report prepared by Rathbone D of Southern Ecology on behalf of Astron Environmental Services Pty Ltd for Main Roads Western Australia. Revision 0. July 2019.

The above environmental surveys include both Desktop Assessment and Field Survey components. The purpose of the Desktop Assessments were to identify the environmental values that may be present within the Project area and surrounds, through a review of aerial imagery, Government environmental databases and in consulting with relevant stakeholders. The purpose of the Field Surveys were to identify the environmental values present within the Project area and surrounds, in order to inform of the potential environmental effects of the Project.

3.1.2 Aboriginal Heritage

The Project and surrounds have been subject to surveys for Aboriginal heritage by suitably qualified heritage professionals, as outlined within the following documents:

1) Brad Goode and Associates Pty Ltd (2014) Report of an Ethnographic Aboriginal Heritage Survey between SLK 46.3 & SLK 65.7 South Coast Highway Kojaneerup Western Australia. Report prepared by Goode B of Brad Goode and Associates Pty Ltd for GHD Pty Ltd on behalf of Main Roads Western Australia. July 2014.
2) Brad Goode and Associates Pty Ltd (2018) Report of an Aboriginal Heritage Survey of the Kojaneerup Section of the South Coast Highway SLK 46.4 to 65.7 Western Australia. Report prepared by Goode B, Huxtable L and Johnston S of Brad Goode and Associates Pty Ltd for Main Roads Western Australia. October 2018.

Similarly, the Aboriginal Heritage Surveys also included both Desktop Assessment and Field Survey components. Additionally, the Field Survey component included site inspections with identified Traditional Owners to inform the location and importance of the Aboriginal heritage values identified.

Within this EIA document herein, consistent with Main Roads (2018b), matters of Aboriginal heritage have been assessed in conjunction with the environmental matters.

4 ENVIRONMENTAL ASSESSMENT

4.1 Measures to Avoid and Minimise Project Effects

A number of mitigation measures have been implemented during planning for the Project in order to reduce the potential environmental effects. A description of the mitigation measures undertaken in the design of the Project are identified in Table 1.

It is acknowledged that several of the mitigation measures to be implemented to reduce the environmental effect will, concurrently, result in a sub-optimal safety outcome for road users (compared to preferred road engineering design standards). For example, the installation of safety barriers (where fill slopes are increased to reduce construction width) introduces a potential impact feature for road users. Whilst acknowledging this outcome, the current Project design will still result in a significant improvement to the current safety aspects of this section of the South Coast Highway, whilst achieving an appropriate balance with the effects to the recorded environmental values.

Table 1 Project Design and Management Measures.

DESIGN / MANAGEMENT MEASURE	DESCRIPTION
Steepen batter slopes and installation of safety barriers	Approximately 2km of steepened side batters with a 1:2 'fill' slope with a safety barrier (guard rail) has been incorporated into the Project design in order to reduce the road construction (fill) width. This approach compares to the preferred road engineering approach of 1:6 fill slopes that have a gentler profile to allow for driver recovery in the event of vehicle road run-off. For the remaining 17km of the Project length, 'fill' slopes have been steepened from a 1:6 slope to a 1:4 slope to further reduce the road construction (fill) width. Similarly, areas of 'cut' backslopes for the Project have been steepened with a 1:2 'cut' slope in order to reduce the construction (cut) width. This approach compares to the preferred 1:3 cut slopes profile.
Road alignment to existing road	The Project largely follows the existing South Coast Highway road alignment, except at the northern end where road safety standards dictate the road requires realignment to improve road curvature and sight-lines. This approach of following the existing South Coast Highway road alignment has resulted in approximately 70% of the Project occurring within existing cleared land areas, with the extent of new land areas requiring native vegetation clearing limited to approximately 30% of the Project area.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	The Project largely follows the existing South Coast Highway road alignment, except at the northern end where sections of the road will be realigned to improve road curvature and sight-lines. This approach of following the existing South Coast Highway road alignment has resulted in approximately 70% of the Project occurring within existing cleared land areas, with the extent of new land areas requiring native vegetation clearing limited to approximately 30% of the Project area. Consistent with standard Main Roads practices, the locations for raw materials sources and equipment laydown (e.g. machinery, offices) have been identified within adjacent cleared agricultural lands to avoid the need to clear native vegetation for such purposes. Following construction of the Project, the agricultural lands used will be rehabilitated to a standard suitable for continued agricultural use in consultation with the Landowner. Temporary by-pass roads (commonly termed 'side tracks'), which typically require additional native vegetation clearing for construction, will be avoided through a temporary diversion of traffic through local roads as agreed with the City of Albany.
Other design treatments considered as part of the mitigation/avoidance measures during the project design process.	The vertical design parameters of the road design have been reduced with the 'K' values for vertical curves at 83 for crest curves and 51 for sag curves. This compares with the preferred values of 97 for crest curves and 61 for sag curves. Whilst this modification of the vertical design parameters results in the road having greater vertical deviations, this modification allows for a reduced Project width in both 'fill' and 'cut' areas.

4.2 Environmental Aspects and Effects

An evaluation of the potential effects of the Project to key environmental and Aboriginal heritage aspects is provided in Table 2. The methodology for each aspect of evaluation is outlined within the Main Roads (2017b) document *Environmental Guideline: Guide to Preparing a Preliminary Environmental Impact Assessment (PEIA) and a Preliminary Clearing Impact Assessment (PCIA)*.

Table 2 Project Aspects and Effects.

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
Biodiversity - Flora and Vegetation	Context - The Project will be implemented within an area totalling approximately 136 ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. Biological Surveys - The Project area and surrounds have been subject to biological surveys to identify the flora and vegetation values present as outlined within GHD (2016), Southern Ecology (2018) and Astron (2019a, 2019b). The biological surveys covered a spatial area of approximately 275ha. A total of 224ha of native vegetation was mapped within the Survey Area immediately surrounding the Project (with the remaining 51ha of the Survey Area not containing native vegetation). The biological surveys recorded 12 vegetation units in which occurred >500 native flora taxa; indicating the area as having a high level of biological (floristic) diversity. The native vegetation extends beyond the Project area within the >1,200ha area of the Hassell National Park, as identified by Figure 4. The vegetation units recorded included vegetation concordant with the *'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia'*; being listed as a 'Threatened Ecological Community' (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) (DEE 2019a) and classified by DBCA as a 'Priority Ecological Community' (PEC) (P3) (herein referred to as *'Kwongkan TEC'*) (DBCA 2017). The vegetation also included vegetation concordant with the 'Swamp Yate (*Eucalyptus occidentalis*) woodland in seasonally-inundated basins (South Coast)' PEC (P3) classified by DBCA (herein referred to as *'Swamp Yate PEC'*) (DBCA 2017). The flora taxa included 20 flora taxa classified by DBCA as 'priority' (DBCA 2018a). Project Effects - Of the flora and vegetation values recorded, the Project coincides with the following values: ○ 11 vegetation units, including vegetation units concordant with: ○ Kwongkan TEC; and ○ Swamp Yate PEC. ○ A variety of flora taxa, including DBCA-classified 'priority' flora taxa: ○ *Leucopogon* sp. Manypeaks (P1); ○ *Petrophile carduacea* (P2);

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
	○ *Stenanthemum sublineare* (P2); ○ *Stylidium daphne* (P2); ○ *Gonocarpus trichostachyus* (P3); ○ *Latrobea recurva* (P3); ○ *Leucopogon altissimus* (P3); ○ *Sphaerolobium validum* (P3); ○ *Synaphea incurva* (P3); ○ *Synaphea preissii* (P3); ○ *Tetraria* sp. Blackwood River (P3); ○ *Drosera fimbriata* (P4); ○ *Stylidium gloeophyllum* (P4); and ○ *Xanthosia eichleri* (P4); The Project area contains approximately 41ha of native vegetation, of which up to 31ha of native vegetation will be cleared to enable to Project. Having regard to the area of native vegetation recorded locally in the Survey Area (224ha) and more broadly (>1200ha), and the area of native vegetation clearing required for the Project (31ha, <2%), the effect of the Project to the clearing of native vegetation is not considered to be environmentally significant. In relation to the native vegetation concordant with the Kwongkan TEC, >180ha of Kwongkan TEC was mapped within the Survey Area, representing approximately 80% of all native vegetation mapped within the Survey Area. It is expected that the Kwongkan TEC extends into the native vegetation beyond the Survey Area boundary within the >1,200ha area of the Hassell National Park. Based on the proportion of TEC recorded within the Survey Area, the extent of the Kwongkan TEC within the surrounding Hassell National Park can be expected in the order of >1,000ha. As outlined by DEE (2014), the extent of the Kwongkan TEC across south coast area is more than 1,180,000ha, of which approximately 50% is protected within conservation reserves. At a local scale, regional mapping by DEE (2015) indicates more than 18,700ha of the Kwongkan TEC occurring within a 10km radius of the Project. The Project will require the clearing of up to 25ha of the Kwongkan TEC, representing approximately <0.01% of the recorded regional distribution (>1,180,000ha) and <0.2% of the local distribution of the Kwongkan TEC (>18,700ha). Having regard to the broad distribution of the Kwongkan TEC at a regional scale (>1,180,000ha) and the local scale (>18,700ha), and the area of Kwongkan TEC clearing required for the Project (25ha, <0.01% regionally, <0.2% locally), the effect of the Project to the clearing of the Kwongkan TEC is not considered to be environmentally significant. Additional assessment information as to the effect of the Project to the Kwongkan TEC in accordance with the DEE (2013) document *Matters of National Environmental Significance: Significant Impact Guidelines* is provided in Section 4.5 *Assessment of the Matters of National Environmental Significance*.

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
	In relation to the native vegetation concordant with the Swamp Yate PEC, a total of 2.3ha of Swamp Yate PEC was mapped within the Survey Area at 2 locations, representing approximately 1% of all native vegetation mapped within the Survey Area. It is expected that the Swamp Yate PEC extends into the native vegetation beyond the Survey Area boundary within the surrounding Hassell National Park, however the extent of any extension has not been quantified and would be expected to be small (perhaps limited to an additional 2ha). Limited public information appears available on the extent of the Swamp Yate PEC, however, GHD (2011) has previously noted >40ha of the Swamp Yate PEC occurring in the local area (within approximately 30km). The DBCA (2017) indicates that the Swamp Yate PEC is poorly represented in conservation reserves in the region. In order to minimise the effect to the Swamp Yate PEC the Project area boundary has been reduced to a 1m offset from the edge of earthworks where the Swamp Yate PEC occurs. Following this change, the Project will require the clearing of 0.3ha of the Swamp Yate PEC at 1 location, representing approximately 15% of the extent recorded within the Survey Area and 1% of the recorded local distribution (>40ha). Having regard to the distribution of the Swamp Yate PEC within the Survey Area (2.3ha) and the local scale (>40ha), and the area of Swamp Yate PEC clearing required for the Project (0.3ha, 15% within Survey Area, 1% locally), the effect of the Project to the clearing of the Swamp Yate PEC is not considered to be environmentally significant. The Project coincides with 14 DBCA-classified 'priority' flora taxa (DBCA 2018a). The majority of the DBCA-classified 'priority' flora taxa were recorded both within and outside of the Project area, and having broader recorded regional distributions. One taxon, *Petrophile carduacea* (P2), was recorded only by 2 individuals within the Project area (not within the broader Survey Area), however as identified by DBCA (2019a) this taxon has been recorded at 16 additional locations across an 80km spatial area including records within the Stirling Range National Park. A second flora taxon, *Sphaerolobium validum* (P3), was recorded only by 7 individuals within the Project area (not within the broader Survey Area), however as identified by DBCA (2019b) this taxon has been recorded at 21 additional locations across an 220km spatial area. In consideration of the broad distribution of these DBCA-classified 'priority flora taxa, the effect of the Project to the DBCA-classified 'priority flora taxa is not considered to be environmentally significant. Whilst noting the above, a flora taxon of key consideration for the Project is the DBCA-classified 'priority' flora taxon *Leucopogon* sp. Manypeaks (P1). Current records indicate *Leucopogon* sp. Manypeaks is locally restricted to an approximately 11km range, with 1,094 total known individuals (Astron 2019a), however further survey is reasonably expected to yield additional individuals within the local area (pers. com. D Rathbone of Southern Ecology). The majority (85%) of individuals of *Leucopogon* sp. Manypeaks occur in habitat located beyond the Survey Area, with a lesser proportion of individuals (15%) occurring in habitats located within the Study Area. In order to minimise the effect to *Leucopogon* sp. Manypeaks (P1), the Project area boundary has been reduced where this taxon occurs, resulting in the Project coinciding with 13 recorded individuals (1% of population) which are unable to be avoided. Whilst noting the limited spatial distribution and limited known number of individuals of *Leucopogon* sp. Manypeaks (P1), having regard to the number of individuals coinciding with the Project (13 individuals, 1%), the effect of the Project to *Leucopogon* sp. Manypeaks (P1) is not considered to be environmentally significant. In addition to the native flora taxa recorded, more than 50 introduced flora taxa were recorded within the vicinity of the Project (GHD 2016). Standard hygiene management actions will minimise the risk of spreading introduced flora during Project implementation. Of specific note,

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
	the Project coincides with 1 record of the introduced flora taxon *Echium plantagineum* (Paterson's Curse) at the southern end of the Project, with this taxon being listed as a 'Declared Pest' under the *Biosecurity and Agriculture Management Act 2007* (WA). The location for this taxon was subject to control action (herbicide spraying) during Q1 2019 (pers. com. K Hawkins of Main Roads, February 2019) with a view towards eradicating this taxon prior to Project implementation. As outlined by Astron (2019b), the majority of the Project area (~60%) has been classified as 'infected' with the plant pathogen Dieback *Phytophthora cinnamomi*. A number of small areas classified as 'protectable' have been identified in which Dieback was not identified. Standard hygiene management actions will minimise the risk of Dieback spread during Project implementation. Environmental Management and Assessment Outcome - Main Roads proposes that the potential effects of the Project to vegetation and flora values can be readily managed through the management of land clearing, to be outlined though the preparation and implementation of a: o Environmental Management Plan (EMP) In consideration of the low potential environmental effect of the Project to vegetation and flora values, and the management actions proposed, the Project is not expected to result in a significant detrimental effect to vegetation and flora. Implementation of the above management action is expected to ensure that the potential environmental effects of the Project to vegetation and flora is minimised and controlled to an acceptable level.
Biodiversity - Fauna	Context - The Project will be implemented within an area totalling approximately 136 ha, which includes 41ha of land containing native vegetation which may provide habitat for a variety of native fauna taxa. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. Biological Surveys - The Project area and surrounds have been subject to biological surveys to identify the fauna values present as outlined within GHD (2016) and Southern Ecology (2018). The biological surveys covered a spatial area of approximately 275ha. A total of 224ha of native vegetation was mapped within the Survey Area immediately surrounding the Project, which provides habitat for a variety of fauna taxa (with the remaining 51ha of the Survey Area not containing native vegetation). The native vegetation extends beyond the Project area within the >1,200ha area of the Hassell National Park, as identified by Figure 4. The biological surveys recorded 7 broad fauna habitat types within native vegetation, comprising woodlands, shrublands, heathlands, sedgelands and swamps. The fauna habitats have been described as structurally diverse. More than 50 native fauna taxa were recorded by the surveys, including the fauna taxon *Calyptorhynchus latirostris* (Carnaby's Cockatoo) which is listed as a 'Threatened Species' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (C'th) and the State *Biodiversity Conservation*

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
	Act 2016 (WA), and the fauna taxon *Isoodon fusciventer* (Southern Brown Bandicoot) which has been classified by DBCA as a 'priority' (P4) fauna taxon (GHD 2016; Southern Ecology 2018; DBCA 2019c). In relation to *C. latirostris*, the majority of the native vegetation within the Survey Area (218ha, >95%) has been mapped as potentially suitable for foraging (feeding) (GHD 2016; Southern Ecology 2018). It is expected that this foraging habitat extends into the native vegetation beyond the Survey Area within the surrounding Hassell National Park, with the majority of the >1,200ha area of the Hassell National Park expected to provide suitable foraging habitat for this taxon. Mapping of remnant native vegetation units of DPIRD (2011, 2013) indicates >16,000ha[1] of remnant native vegetation likely to be suitable for *C. latirostris* foraging within a 12km radius of the Project area. Within the Survey Area no trees were identified as having hollows of a suitable size for nesting of *C. latirostris*, however 13 trees of *Eucalyptus marginata* (Jarrah) and *Corymbia callophylla* (Marri) were recorded of a suitable size (>500mm diameter at breast height (DBH)) which may (or may not), in the future, have the potential to form hollows that may (or may not) be suitable for nesting. The DBCA (2019d) identifies the regional distribution of *C. latirostris* extending at >1,000km across the greater south-west of Western Australia from Kalbarri (north) to Augusta (south) and eastwards beyond Esperance. In relation to *I. fusciventer*, whilst individuals of this taxon were not sighted during the biological surveys, diggings attributed to this taxon were recorded at various locations across the Survey Area within areas of dense undergrowth and low-lying damplands (note habitat mapping for *I. fusciventer* was not undertaken for the field surveys) (GHD 2016). It is expected that the areas of habitat used by *I. fusciventer* extend into the native vegetation beyond the Survey Area boundary within the surrounding Hassell National Park. The DBCA (2019e) identifies the regional distribution of *I. fusciventer* extending at >1,000km across the greater south-west of Western Australia from Kalbarri (north) to Augusta (south) and eastwards beyond Esperance. Project Effects - Of the fauna values recorded, the Project coincides with the following values: ○ 41ha of native vegetation providing habitat for a variety of native fauna taxa, including habitat recorded for: ○ *Calyptorhynchus latirostris* (Carnaby's Cockatoo) (T); and ○ *Isoodon fusciventer* (Southern Brown Bandicoot) (P4). The Project area contains approximately 41ha of native vegetation, of which up to 31ha of native vegetation will be cleared to enable to Project. Having regard to the area of native vegetation recorded locally in the Survey Area (224ha) and more broadly (>1,200ha), and the area of native vegetation clearing required for the Project (31ha, <2%), the effect of the Project to the clearing of native vegetation providing fauna habitat is not considered to be environmentally significant. In relation to *C. latirostris*, the Project will require the clearing of up to 29ha of the mapped area of *C. latirostris* foraging habitat; representing <0.2% of the >16,000ha of the *C. latirostris* foraging habitat in the local area and <3% of the *C. latirostris* foraging habitat within the surrounding Hassell National Park. The remaining 2ha of native vegetation within the Project area was assessed as not being suitable for *C. latirostris* foraging. The clearing for the Project will include the removal of 10 large trees (>DBH 500cm); however noting none of

[1] Inferred >16,000ha of *C. latirostris* foraging habitat within 12km of the Project area is based upon the area of extant (remnant) native vegetation for Vegetation Associations 980 and 994 only (i.e. the vegetation units within the Survey Area mapped as *C. latirostris* foraging habitat); excluding all other remnant vegetation. This value is considered conservative, noting a greater total of >29,000ha of extant native vegetation occurs within 12km of the Project area, of which a proportion may also be suitable for *C. latirostris* foraging.

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
	these large trees contain hollows that would be suitable for *C. latirostris* nesting. Whilst the nearest recorded *C. latirostris* nesting-roosting sites are located approximately 1.7km and 3.2km south of the southern end of the Project (indicating the recorded foraging habitat in the southern end of the Project may support this local nesting-roosting) the effect of the Project in this area equates to <0.3% (22ha) of the total >7,700ha[1] of suitable foraging habitat within the 12km radius of these nesting-roosting sites. Having regard to the broad regional distribution of *C. latirostris* (>1,000km), and the extent of habitat recorded within the Survey Area (218ha) and the local area (>16,000ha within 12km of the Project area; >7,700ha within 12km of identified nesting-roosting sites), the effect of clearing of *C. latirostris* habitat by the Project (29ha, <0.2% local area, <3% within Hassell National Park) is not expected to be environmentally significant. Additional assessment information as to the effect of the Project to *C. latirostris* in accordance with the DEE (2013) document *Matters of National Environmental Significance: Significant Impact Guidelines* is provided in Section 4.5 *Assessment of the Matters of National Environmental Significance*. In relation to *I. fusciventer*, the Project will require the clearing of up to 31ha of the native vegetation, of which a proportion can be expected to provide habitat for *I. fusciventer*. Having regard to the broad regional distribution of the *I. fusciventer* (>1,000km), and the extent and continuity of habitat recorded within the Survey Area and the greater Hassell National Park, the effect of the Project to *I. fusciventer* is not expected to be environmentally significant. Environmental Management and Assessment Outcome - Main Roads proposes that the potential effects of the Project to fauna values can be readily managed through the management of land clearing (i.e. clearing of fauna habitat), to be outlined though the preparation and implementation of a: o Environmental Management Plan (EMP) In consideration of the low potential environmental effect of the Project to fauna values, and the management actions proposed, the Project is not expected to result in a significant detrimental effect to fauna. Implementation of the above management action is expected to ensure that the potential environmental effects of the Project to fauna is minimised and controlled to an acceptable level.
Conservation Areas	Under the current land tenure, the Project coincides with part of the Hassell National Park. The Hassell National Park is a narrow linear park which follows the alignment of part of the South Coast Highway, generally 200m to 600m in width and 39km in length, and is managed by DBCA. Whilst there is a dedicated Road Reserve for the South Coast Highway, the as-built South Coast Highway, in parts, meanders between the Road Reserve and the Hassell National Park. The land tenure boundaries are currently being administratively reconsidered by the Department of Planning, Lands and Heritage (DPLH) in consultation with Main Roads and DBCA, with a view towards revising the land tenure boundaries such that the South Coast Highway will occur wholly within a revised Road Reserve (with no coincidence with the Hassell National Park). The administrative changes to the land tenure boundaries are expected to be completed by the end of the 2019 year.

[1] Inferred >7,700ha area of *C. latirostris* foraging habitat within 12km of the Birdlife (2016) nesting-roosting sites area is based upon the area of extant (remnant) native vegetation for Vegetation Associations 980 and 994 only (i.e. the vegetation units within the Survey Area mapped as *C. latirostris* foraging habitat); excluding all other remnant vegetation. This value is considered conservative, noting a greater total of >33,000ha of extant native vegetation occurs within 12km of the Birdlife (2016) nesting-roosting sites; of which a proportion may also be suitable for *C. latirostris* foraging (including the areas surrounding the Birdlife (2016) nesting-roosting sites which occur in Vegetation Associations 3 and 989).

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
	Whilst noting the Project will not occur within the reconciled Hassell National Park land tenure, the potential for an indirect effect to the Hassell National Park due to the proximity of the Project requires consideration. The existing South Coast Highway traverses the length of the Hassell National Park, generally being approximately 15m to 20m width (including road pavement, drains and batters), thereby effectively dissecting or 'fragmenting' the Hassell National Park. The Project will involve the reconstruction and widening of the South Coast Highway, generally following the existing alignment and extending an additional 5m to 10m either side, to result in a final width of generally between 30m to 40m wide. Although the Project will be confined to within the reconciled Road Reserve and the Hassell National Park is already fragmented by the existing South Coast Highway, the Project will result in an increase the separation distance between the vegetated habitat areas of the Hassell National Park. Theoretically, the increase in the separation distance between the vegetated habitat could have a negative effect of inhibiting the movement of some ground-dwelling fauna taxa (such as *Isoodon fusciventer* (P4)) between each side of the Hassell National Park. Conversely, there could also be a positive effect whereby fauna that are often seen foraging on roads and road shoulders (such as *C. latirostris* (T)) would be less exposed to vehicle strikes as a result of the increased road pavement and road shoulder width, as well as reduced pooling of water through improved road drainage. The potential for any negative or positive effects to fauna, and the significance of such effects, cannot be accurately quantified. In relation to vegetation, noting the condition of the vegetation adjacent to the existing South Coast Highway has been assessed as in 'Excellent' to 'Very Good' condition, the Project is similarly not expected to result in an indirect effect to the condition of the vegetation in the adjacent Hassell National Park. The Project includes a minor realignment of this section of the South Coast Highway, with the redundant sections to be rehabilitated. The rehabilitation will occur within 2 locations totalling approximately 0.8ha, of which approximately 0.3ha will occur within the revised boundaries for the Hassel National Park. The rehabilitation works will be undertaken in consultation with DBCA. To note, as outlined by Conservation and Parks Commission and DBCA (2017) and DBCA (1992) it is proposed that the Hassell National Park be reclassified to a lower-level 'Conservation Park' as the reserve *"does not meet the criteria for a national park"* and *"while having connectivity value, is largely insufficient in terms of habitat values for sensitive species"*. Whist noting this proposed reclassification, the environmental assessment has considered the potential effects of the Project to the recorded environmental values consistent with the current National Park land tenure. Main Roads proposes that the potential effect of the Project to conservation areas can be readily managed through the preparation and implementation of a: o Environmental Management Plan (EMP) In consideration of the low potential environmental effect of the Project to conservation areas, and the management actions proposed, the Project is not expected to result in a significant detrimental effect to conservation areas. Implementation of the above management action is expected to ensure that the potential environmental effects of the Project to conservation areas is minimised and controlled to an acceptable level.
Acid Sulfate Soils	The Atlas of Australian Acid Sulfate Soils database (CSIRO 2011) indicates the Project area as having a low risk of acid sulfate soils being present. The Project does not involve excavations below the groundwater table or groundwater dewatering which could expose acid sulfate soils (if present). Accordingly, the Project is not expected to result in any effect to acid sulfate soils.

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
Air Quality	Air emissions of dust are expected to occur from Project activities including land clearing, loading and unloading of soil materials, vehicle movements and from wind passing over cleared land areas. The dust emissions will be spatially and time limited (i.e. temporary) due to the confined area of the Project and the short construction period (<12 months). Gaseous emissions to air can be expected from the use of hydrocarbon fuels in construction machinery and power generation facilities, however are not expected to be environmentally significant. There are no existing land uses or residential dwellings in the vicinity of the Project that could be affected by changes in air quality. The air emissions of dust can be readily managed through the application of groundwater to minimise the potential for dust generation, to be outlined though the preparation and implementation of a: o Environmental Management Plan (EMP) In consideration of the low potential environmental effect of the Project to air quality, and the management actions proposed, the Project is not expected to result in a significant detrimental effect to air quality. Implementation of the above management action is expected to ensure that the potential environmental effects of the Project to air quality is minimised and controlled to an acceptable level.
Contamination	The Project occurs with land areas for road and native vegetation which do not have any known or recorded land use activities that have the potential to cause contamination of land or waters. The DWER (2019) identifies no contaminated sites within the Project area or surrounds listed under the *Contaminated Sites Act 2003* (WA). Accordingly, the Project is not expected to result in any effect from contamination.
Groundwater	The Project does not involve excavations below the groundwater table or groundwater dewatering. Accordingly, the Project is not expected to result in any effect to groundwater.
Hazardous Substances	The Project will require the storage and use of common hazardous materials (e.g. vehicle fuels and oils, bitumen) required for road construction works. In accordance with standard operational controls, all hazardous materials will be stored and used in accordance with the relevant Materials Safety Data Sheet. As a result of the management of hazardous materials in accordance with standard operational controls, the use of hazardous substances by the Project is not expected to result in a significant effect to the environment.
Heritage (Non-indigenous)	The Project does not coincide with any record of European heritage on the State Heritage Register maintained under the *Heritage of Western Australia Act 1990* (WA) or listed on the City of Albany's municipal heritage inventory (HCWA 2019).
Land Vesting	The existing South Coast Highway has a dedicated 'Road Reserve' land tenure in place, vested with Main Roads. Unfortunately, as is the case for many historical roads, the 'as-constructed' South Coast Highway does not align exclusively to the Road Reserve; with parts traversing into the 'National Park' land tenure for the Hassell National Park vested with the Conservation and Parks Commission (CPC) and managed by DBCA. Main Roads, CPC and DBCA are currently undertaking administrative processes to reconcile the 'Roads Reserve' and 'National Park' boundaries such that the South Coast Highway will fall wholly within the 'Road Reserve', with all other areas land to be converted to the 'National Park land tenure.

ASPECT	ASSESSMENT OF POTENTIAL EFFECTS
	In March 2019 the CPC (2019) endorsed the proposed land tenure changes. The final administrative processes to reconcile the land tenures is expected to be completed during Q4 2019 In order to facilitate the assessment and approval processes for the Project, in parallel with the land tenure changes, in May 2019 the DBCA (2019f) provided its authorisation to Main Roads to submit a Clearing Permit application on DBCA's behalf for the native vegetation clearing required within the area of the Hassell National Park.
Noise and Vibration	There are no identified sensitive receptors for noise or vibration in the vicinity of the Project. Construction works for the Project are expected to be undertaken during normal working hours and using standard plant and equipment. Accordingly, the Project is not expected to result in a significant effect from noise or vibration.
Surface Water/Drainage	The existing South Coast Highway coincides with 3 unnamed minor non-perennial watercourses (Geoscience Australia 2006). The Project will maintain this existing drainage regime through standard engineering design with no change to water flows.
Visual Amenity	Native vegetation adjacent to the road may be considered visually appealing by road users. The Project will increase to the cleared width of the South Coast Highway, resulting in the native vegetation being further away from the road edge. As the native vegetation will be more distant (rather than removed entirely), the effect of the Project to visual amenity is not considered to be significant.
Wetlands	The Project does not coincide with the mapped boundary of any wetland. Accordingly, a direct effect to wetlands by the Project is not expected. The Project occurs within approximately 10m of the boundary of a wetland named 'Sunday Swamp' which has been classified by the Department of Water and Environmental Regulation (DWER) as 'Conservation Category' (DBCA 2010). The potential for an indirect effect to this wetland can be managed through standard engineering design to ensure the local drainage water flows remain consistent with the existing South Coast Highway drainage regime (i.e. no change). To note, the effect of the Project to wetland-type vegetation of the Swamp Yate PEC is addressed above under 'Biodiversity - Flora and Vegetation'. The Swamp Yate PEC occurs in the same general location as the Sunday Swamp wetland.
Aboriginal Heritage	The Project area and surrounds have been subject to Aboriginal heritage surveys as outlined within Brad Goode & Associates (2014, 2018). The Project does not coincide with any Aboriginal heritage site or object registered under s5 or s6 of the *Aboriginal Heritage Act 1972* (WA) (DPLH 2019a, 2019b). Accordingly, the Project is not expected to result in any effect to Aboriginal heritage values. Whilst noting the above, s18 Consent under the *Aboriginal Heritage Act 1972* (WA) has been granted by the Western Australian Minister for Aboriginal Affairs (2019) for the area covered by Site ID 26295, named *'Archaeological Site 1 Manypeaks'*, which has been assessed as 'Not a Site" within the meaning of s5 and s6 of the *Aboriginal Heritage Act 1972* (WA) (DPLH 2019b). The Project is located in close proximity (<10m) to Site ID 37801, named '*Hassell Nature Reserve Artefact Scatter*', which is a Registered Site of Aboriginal heritage under the *Aboriginal Heritage Act 1972* (WA). Unauthorised access/disturbance to the area of Site ID 37801 will be prevented through identification of the area on construction drawings and physical demarcation of the area at the Project boundary (by flagging and/or physical barrier).

4.3 Assessment of Vegetation

4.3.1 Pre-European Vegetation Associations

Broad landscape-scale mapping of pre-European settlement vegetation associations indicates the Project occurs across 2 vegetation association types.

Table 3 identifies the spatial extent and condition of the pre-European vegetation associations coinciding with the Project. Table 4 identifies the original and current extent of each pre-European vegetation association type.

Table 3 Pre-European Vegetation Associations (Source: DPIRD 2013)

Pre-European Vegetation Association(s)	Project Clearing (ha)	Vegetation Condition	Comments
Low forest; Jarrah and *Casuarina* (probably *Allocasuarina fraseriana*) (Association 994)	7 ha	Majority is in Very Good – Excellent condition. Small pockets range from Degraded to Good due to Dieback presence and fire impacts.	Refer to GHD (2016) for vegetation description. Refer to Astron (2019a) for vegetation condition.
Shrublands; Jarrah mallee-heath (Association 980)	24 ha	Majority is in Very Good – Excellent condition. Small pockets range from Degraded to Good due to Dieback presence and fire impacts.	Refer to GHD (2016) for vegetation description. Refer to Astron (2019a) for vegetation condition.

Table 4a Pre-European Vegetation Representation (Source: DBCA 2018b)

Pre-European Vegetation Association 994 in:	Pre–European Extent (ha)	Current Extent (ha)	Project Clearing (ha)
IBRA Region - Jarrah Forest	4,506,660 ha	2,406,939 ha (53% [70% in reserve])	7 ha (<0.2%)
Statewide - Association 994	16,955 ha	4,808 ha (28% [32% in reserve])	
IBRA Region - Association 994 in the IBRA Jarrah Forest region	16,408 ha	4,527 ha (28% [32% in reserve])	
Local Government Authority - Assoc. 994 in City of Albany	16,955 ha	4,808 ha (28% [32% in reserve])	

Table 4b Pre-European Vegetation Representation (Source: DBCA 2018b)

Pre-European Vegetation Association 980 in:	Pre–European Extent (ha)	Current Extent (ha)	Project Clearing (ha)
IBRA Region - Esperance Plains	2,899,941 ha	1,494,449 ha (52% [55% in reserve])	24 ha (<0.1%)
Statewide - Association 980	162,152 ha	67,33 ha (42% [48% in reserve])	
IBRA Region - Association 980 in the IBRA Esperance Plains region	160,410 ha	65,822 ha (41% [47% in reserve])	
Local Government Authority - Assoc. 994 in City of Albany	109,991 ha	32,221 ha (34% [13% in reserve])	

4.3.2 Vegetation Units

The Project occurs in an area mapped as undulating plain with gentle rises and lower lying flats and drainage depressions. Biological surveys of the Project area and surrounds identified 5 broad floristic formations containing 12 vegetation units (GHD 2016; Southern Ecology 2018), being:

1) *Hakea* Shrublands
    - *Hakea* species complex * - this is the most structurally and floristically diverse vegetation unit within the Project area. It has been divided into four sub-types based on species dominance and location in the landscape.
2) *Banksia* Shrubland
    - *Banksia* species on sands *
3) *Eucalyptus* Woodlands
    - *E. marginata* and *Corymbia calophylla* Woodlands
    - Mixed Mallee Woodland *
    - *E. goniantha* Mallee Woodland
    - *E. decipiens* Mallee Woodland over Low Shrubland *
    - *E. adesmophloi*a Mallee Woodland over Sedgeland.
4) *Actinodium* Heath
    - *Actinodium* sp. Fitzgerald low heath on impeded drainage.
5) Swamps, Drainage lines and Sumps
    - *Taxandria parviceps* transitional drainage
    - *Eucalyptus occidentalis* Swamp **
    - Melaleuca Swamp – several sub-types were present including *Melaleuca preissiana* / *M. cuticularis* swamps, *Kunzea recurva* Shrubland, Sedgelands in swamps/sumps
    - Sedgeland Swamps

Notes:
* denotes vegetation units with areas concordant with the Kwongkan TEC

** denotes vegetation units with areas concordant with the Swamp Yate PEC.

The vegetation units form a series of mosaics, particularly in the undulating plain areas. The majority of the vegetation units were classified in 'Very-Good' to 'Excellent' condition, with the areas reported as impacted by Dieback Phytophthora cinnamomi dieback infestation and fire having a lower health condition.

4.3.3 Assessment of the Principles for the Clearing of Native Vegetation (*Environmental Protection Act 1986* (WA))

Projects seeking approval to clearing native vegetation through a Clearing Permit under s51E of the *Environmental Protection Act 1986* (WA) are assessed in accordance with the *'Principles for the Clearing of Native Vegetation'* as contained in Schedule 5 of the Act.

The purpose of the *'Principles for the Clearing of Native Vegetation'* is to assist in the identifying environmental values that may be of environmental significance, in order to ensure due consideration is given in an assessment of the significance of any effect to the environmental values of the native vegetation. Assessment of a Clearing Permit application by DWER must have regard to the *'Principles for the Clearing of Native Vegetation'* as guiding principles (Government of Western Australia 2002a, 2002b).

An assessment of the clearing of native vegetation for the Project in accordance to the *'Principles for the Clearing of Native Vegetation'* is provided in Tables 5a to 5j, below. In summary, the assessment identifies the Project is at variance, or may be at variance, with:

1) Principle 1(a) (biological diversity);
2) Principle 1(b) (significant habitat for fauna);
3) Principle 1(e) (remnant vegetation);
4) Principle 1(f) (watercourse or wetland); and
5) Principle 1(h) (conservation areas).

Table 5a Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(a)

'(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.'	
Outcome	Proposed clearing is at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. The Project area and surrounds have been subject to biological surveys to identify the flora and vegetation values present as outlined within GHD (2016), Southern Ecology (2018) and Astron (2019a, 2019b). The biological surveys recorded 12 vegetation units in which occurred >500 native flora taxa (including flora taxa of listed conservation significance); indicating the area as having a high level of biological (floristic) diversity. The Project area and surrounds have also been subject to biological surveys to identify the fauna values present as outlined within GHD (2016) and Southern Ecology (2018). Whilst the surveys recorded >50 native fauna taxa (including fauna taxa of listed conservation significance), the area has not been identified as having a high level of biological (faunal) diversity. Accordingly, the clearing of up to 31ha of native vegetation comprising a recorded high level of biological (floristic) diversity is considered at variance to Principle 1(a). The biodiversity values within the native vegetation to be cleared by the Project (up to 31ha) are well represented within the broader Survey Area (224ha of native vegetation), with these values expected to continue within the broader area of the Hassell National Park (>1,200ha), as well as other local areas of native vegetation (for example, the nearby Cheyne Road Nature Reserve (>350ha) (refer to Figure 4)). Environmental Effect: Whilst it is acknowledged the clearing of native vegetation for the Project is at variance to Principle 1(a), the environmental effect of the clearing of native vegetation to the biodiversity values present is not considered to be environmentally significant. The native vegetation clearing will occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. As such, the environmental effect to biodiversity values will be diffuse, and restricted to the immediate edge of the existing road. The biodiversity values within the native vegetation to be cleared by the Project (up to 31ha) are well represented within the broader Survey Area (224ha of native vegetation), with these values expected to continue within the broader area of the Hassell National Park (>1,200ha), as well as other local areas of native vegetation (for example, the nearby Cheyne Road Nature Reserve (>350ha) (refer to Figure 4)). In relation to the flora and fauna taxa of listed conservation significance, each of these taxa have broader distributions, and the effect of the Project to these taxa is not expected to result in a significant detrimental effect to their abundance, diversity, geographic distribution and productivity of flora at a species or ecosystem level.
References	GHD (2016); Southern Ecology (2018); Astron (2019a); DBCA (2019g)

Table 5b Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(b)

'(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.'	
Outcome	Proposed clearing may be at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. The native vegetation provides habitat for a variety of fauna taxa. The Project area and surrounds have been subject to biological surveys to identify the fauna values present as outlined within GHD (2016) and Southern Ecology (2018). The biological surveys recorded 7 broad fauna habitat types within native vegetation, comprising woodlands, shrublands, heathlands, sedgelands and swamps. The fauna habitats have been described as structurally diverse. More than 50 native fauna taxa were recorded by the surveys, including the listed 'Threatened Species' *Calyptorhynchus latirostris* (Carnaby's Cockatoo) which is protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) and the *Biodiversity Conservation Act 2016* (WA). All fauna taxa (and their habitats) have a significantly broader distribution than the Survey Area (GHD 2016; Southern Ecology 2018; DBCA 2019g). The native vegetation of the Project area forms part of a broader area of native vegetation which includes the Hassell National Park and the Cheyne's Road Nature Reserve (refer to Figure 4), with the combined area of native vegetation being >1,500ha. Whilst the area of this native vegetation is not particularly large (for example, in comparison to the nearby Stirling Range National Park at >100,000ha), the native vegetation may be considered to provide a 'significant habitat' for native fauna (and certainly being >1,200ha in area the native vegetation within the Hassell National Park could not reasonably be considered as 'insignificant'). Accordingly, the clearing of up to 31ha of native vegetation which may be considered to comprise part of a significant habitat for native fauna may be considered at variance to Principle 1(b). Environmental Effect: Whilst it is acknowledged the clearing of native vegetation for the Project may be at variance to Principle 1(b), the environmental effect of the clearing of native vegetation to the fauna habitat present is not considered to be environmentally significant. The native vegetation clearing will occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. As such, the environmental effect to fauna values will be diffuse, and restricted to the immediate edge of the existing road. The fauna habitats within the native vegetation to be cleared by the Project (31ha) are well represented within the broader Survey Area (224ha of native vegetation), with these values expected to continue within the broader area of the Hassell National Park (>1,200ha), as well as other local areas of native vegetation (for example, the nearby Cheyne Road Nature Reserve (>350ha) (refer to Figure 4)). In relation to the fauna taxa of listed conservation significance, each of these taxa have significantly broader distributions, such that the effect of the Project to the habitats used by these taxa is not expected to result in a significant detrimental effect to the abundance,

	diversity, geographic distribution and productivity of these taxa at a species or ecosystem level.
References	GHD (2016); Southern Ecology (2018)

Table 5c Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(c)

'(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.'	
Outcome	Proposed clearing is not at variance to this Principle
Assessment	Assessment: The Project area and surrounds have been subject to biological surveys to identify the flora values present as outlined within GHD (2016), Southern Ecology (2018) and Astron (2019a, 2019b). The biological surveys did not identify any flora taxa declared as 'Threatened Flora' under the *Biodiversity Conservation Act 2016* (WA) (note: formerly termed as 'Rare Flora' under the *Wildlife Conservation Act 1950*9 WA). Accordingly, the Project will not result in any effect to 'Threatened Flora' taxa. The Project is therefore not at variance to Principle 1(c). Environmental Effect: The Project will not result in any effect to 'Threatened Flora' taxa. Accordingly, the Project is not at variance to Principle 1(c). Note: The DBCA has identified the DBCA-classified 'priority' flora taxon *Leucopogon* sp. Manypeaks (P1) is to be subject to future consideration for future listing as 'Threatened Flora' under the *Biodiversity Conservation Act 2016* (WA) (DBCA 2018c; pers. com. S Barrett of DBCA April 2019). Should the future consideration result in this taxon being declared as 'Threatened Flora' under the *Biodiversity Conservation Act 2016* (WA), the Project may then be considered at variance with Principle 1(c). Whilst noting this potential future variance with Principle 1(c), and acknowledging the limited spatial distribution and limited known number of individuals of *Leucopogon* sp. Manypeaks (P1), having regard to the number of individuals coinciding with the Project (13 individuals; equating to 1% of 1,094 recorded individuals), the effect of the Project to *Leucopogon* sp. Manypeaks (P1) is not considered to be environmentally significant.
References	GHD (2016); Southern Ecology (2018); Astron (2019a)

Table 5d Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(d)

'(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.'	
Outcome	Proposed clearing is not at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. The Project area and surrounds have been subject to biological surveys to identify the flora and vegetation values present as outlined within GHD (2016), Southern Ecology (2018) and Astron (2019a, 2019b). The biological surveys recorded 12 vegetation units; of which a number of vegetation units are concordant with the listed Threatened Ecological Community (TEC) *'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia'* (herein referred to as the *'Kwongkan TEC'*) protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (C'th). At a State level, the Kwongkan TEC has also been classified by DBCA (2017) as a 'Priority Ecological Community' (P3 level). The Project does not coincide with any TEC listed under the State *Biodiversity Conservation Act 2016* (WA). Whilst acknowledging the presence of the Kwongkan TEC as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (C'th), for the purposes of assessment of the *'Principles for the Clearing of Native Vegetation'* as contained in Schedule 5 of the *Environmental Protection Act 1986* (WA), only TECs listed under the State *Biodiversity Conservation Act 2016* (WA) can be considered for the assessment of Principle 1(d).(refer to Schedule 5 Clause 2 of the *Environmental Protection Act 1986* (WA)). Accordingly, as the Project does not coincide with any TEC listed under the State *Biodiversity Conservation Act 2016* (WA), the Project is not at variance to Principle 1(d). Environmental Effect: The Project will not result in any effect to a 'Threatened Ecological Community' listed under the State *Biodiversity Conservation Act 2016* (WA). Accordingly, the Project is not at variance to Principle 1(d). Note: Principle 1(d) relates only to Threatened Ecological Communities protected under the *Biodiversity Conservation Act 2016* (WA). Accordingly, the assessment of Principle 1(d) above has not considered DBCA-classified 'Priority Ecological Communities' recorded by the biological surveys (i.e. Kwongkan TEC (PEC P3) and Swamp Yate PEC (PEC P3). Additional assessment information as to the effect of the Project to the Kwongkan TEC in accordance with the DEE (2013) document *Matters of National Environmental Significance: Significant Impact Guidelines* is provided in Section 4.5 *Assessment of the Matters of National Environmental Significance*.
References	GHD (2016); Southern Ecology (2018); Astron (2019a); Government of Western Australia (2005); (DEE 2014)

Table 5e Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(e)

'(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.'	
Outcome	Proposed clearing may be at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. Noting the term *'extensively cleared'* is not defined within the *Environmental Protection Act 1986* (WA), a conservative position has been taken using the guidance of Commonwealth of Australia (2001) which identifies a target to prevent the clearing of native vegetation that has an extent 30% or less of its original extent (i.e. pre-1750). Of the 31ha of native vegetation to be cleared for the Project, 7ha has been mapped at a regional scale as the Jarrah Forest IBRA Region Vegetation Association 994 (DPIRD 2013), occurring at the southern end of the Project. As identified by Table 4 (above), DBCA (2018b) identifies Vegetation Association 994 has approximately 28% remaining of its pre-1750 extent; being below the 30% target identified by Commonwealth of Australia (2001). Accordingly, the clearing of 7ha of Vegetation Association 994 may be considered at variance to Principle 1(e). The remaining 24ha of vegetation to be cleared for the Project has been mapped at a regional scale as the Esperance Plains IBRA Region Vegetation Association 980 (DPIRD 2013), occurring in the central and northern areas of the Project. As identified by Table 4 (above), DBCA (2018b) identifies Vegetation Association 980 has approximately 41% remaining of its pre-1750 extent; being above the 30% target identified by Commonwealth of Australia (2001). Accordingly, the clearing of 24ha of Vegetation Association 980 is not considered at variance to Principle 1(e). Environmental Effect: Whilst it is acknowledged the clearing of native vegetation for the Project in Vegetation Association 994 may be at variance to Principle 1(e), the environmental effect of the clearing of native vegetation to the Vegetation Association 994 is not considered to be environmentally significant. The native vegetation clearing in Vegetation Association 994, located at the southern end of the Project, will occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side, and across a length of approximately 4km. As such, the environmental effect to Vegetation Association 994 will be diffuse, and confined to the immediate edge of the existing road. As identified by Table 4, DBCA (2018b) identifies Vegetation Association 994 has a current regional extent of >4,500ha, such that whilst significantly reduced from below its pre-1750 extent, a significant spatial area of Vegetation Association 994 remains. The clearing of 7ha of Vegetation Association 994 by the Project will reduce the current extent by <0.2%; such that the effect of the Project is not considered environmentally significant.
References	GHD (2016); Southern Ecology (2018); Astron (2019a); Commonwealth of Australia (2001); DBCA (2018b); DPIRD (2013)

Table 5f Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(f)

'(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.'	
Outcome	Proposed clearing is at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. The Project coincides with the mapped boundaries of 3 non-perennial watercourses, and is in close proximity to a further 1 non-perennial watercourse, with each watercourse having a mapped length >10km (Geoscience Australia 2006). The Project also occurs in close proximity (<20m) of the mapped boundary of 1 wetland, named 'Sunday Swamp', which has been classified by DWER as a 'Conservation Category' wetland and occupies a mapped area of approximately 31ha (DBCA 2010). The biological surveys (GHD 2016; Southern Ecology 2018) identified 4 vegetation units within the Survey Area as associated with a watercourse or wetland (Vegetation units VT4, VT5, VT6 and VT9), totalling approximately 12ha in area. The Project coincides with approximately 2ha of native vegetation mapped as associated with a watercourse or wetland. The coinciding areas of wetland/watercourse-vegetation occur as small patches throughout the Project area (29 locations), including the locations of the identified watercourses and wetlands. Accordingly, the clearing of 2ha of native vegetation mapped as associated with a watercourse or wetland is considered at variance to Principle 1(f). Environmental Effect: Whilst it is acknowledged the clearing of native vegetation associated with a watercourse/wetland is at variance to Principle 1(f), the environmental effect of the clearing of the native vegetation by the Project is not considered to be environmentally significant. The native vegetation clearing will occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. As such, the environmental effect to native vegetation associated with a watercourse/wetland will be diffuse, and confined to the immediate edge of the existing road. The areas of watercourse/wetland vegetation do not appear to be restricted, with the Project area coinciding with 29 locations of watercourse/wetland vegetation of a total 49 locations of watercourse/wetland vegetation within the broader Survey Area (275ha). It is reasonable to expect that further locations/area of watercourse/wetland vegetation occur beyond the Survey Area within the greater Hassell National Park (>1,200ha), as well as more broadly in the local area. Having regard to the recorded extent of the watercourse/wetland vegetation units (12ha), and the expected broader extent of the watercourse/wetland vegetation in the local area, the effect of the Project to watercourse/wetland vegetation is not considered to be environmentally significant. Drainage for the Project will be managed through standard engineering design (e.g. use of culverts under the road) to ensure no change to local drainage water flows to either the minor non-perennial watercourses or the wetland, or to the vegetation it supports.

References	GHD (2016); Southern Ecology (2018); Astron (2019a); Geoscience Australia 2006); DBCA (2010)

Table 5g Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(g)

'(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.'	
Outcome	Proposed clearing is not at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. The native vegetation clearing for the Project will occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. The process for the clearing of the native vegetation will be short-term (i.e. time which the land may be susceptible to land degradation), with the cleared land areas to subsequently be covered by a hard-stand of bitumen (road surface) and gravels (batters) that will prevent any potential for long-term land degradation effects (such as soil erosion by water or wind). Due to the short-term nature of the native vegetation clearing, and the subsequent hard-stand treatment of the land area, the clearing of native vegetation by the Project is not expected to result in appreciable land degradation. Environmental Effect: The clearing of native vegetation for the Project is not at variance to Principle 1(g) as a result of the clearing of the native vegetation being short-term and being followed by a hard-stand formation of bitumen/gravels.
References	-

Table 5h Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(h)

'(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.'	
Outcome	Proposed clearing may be at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. Under the current land tenure, part of the Project (46ha) coincides with the Hassell National Park, which is a narrow linear park which follows the alignment of part of the South Coast Highway, generally 200m to 600m in width and 39km in length. Whilst there is a dedicated Road Reserve for the South Coast Highway, the as-built South Coast Highway, in parts, meanders between the Road Reserve and the Hassell National Park (DBCA 2018d;

	WALIA 2019). As a proportion of the total Project length (19km), approximately 5km (25%) of the as-built South Coast Highway occurs within the Hassell National Park (with the corresponding area of Road Reserve remaining vegetated and without a constructed road). Under the current land tenure, the Project would be considered at variance to Principle 1(h). The land tenure boundaries for the Road Reserve and the Hassell National Park are currently being administratively reconsidered by the Department of Planning, Lands and Heritage (DPLH) in consultation with Main Roads and DBCA (on behalf of the Conservation and Parks Commission). The land tenure boundaries are proposed to be adjusted such that the South Coast Highway will occur wholly within a revised Road Reserve (with no coincidence with the Hassell National Park). The vegetated areas within the current Road Reserve that occur outside of the revised Road Reserve will concurrently be incorporated into the Hassell National Park. In March 2019, the Conservation and Parks Commission (2019) endorsed the excision process for the administrative changes to the land tenure boundaries, with the final processes for the boundary changes expected to be completed by the end of 2019. As such, under the proposed land tenure boundaries, the South Coast Highway would not coincide with the Hassell National Park, and accordingly, the Project would not be considered at variance to Principle 1(h). To note, as outlined by Conservation and Parks Commission and DBCA (2017) and DBCA (1992) it is proposed that the Hassell National Park be reclassified to a lower-level 'Conservation Park' as the reserve *"does not meet the criteria for a national park"* and *"while having connectivity value, is largely insufficient in terms of habitat values for sensitive species"*. Whist noting this proposed reclassification, the environmental assessment has considered the potential effects of the Project to the recorded environmental values consistent with the current National Park land tenure. Environmental Effect: Under the current land tenure, the Project would be considered at variance to Principle 1(h) as part of the Project coincides with the Hassell National Park. Whilst noting the Project may be at variance to Principle 1(h), the effect of the Project to the environmental values of the Hassell National Park would not be considered environmentally significant. The environmental values of the Hassell National Park have been identified by the biological surveys (GHD 2016; Southern Ecology 2018) as including the DBCA-classified 'priority' flora taxa, Kwongkan TEC and the Swamp Yate PEC; all of which have been considered in the design of the Project to minimise the environmental effects to an acceptable (not significant) level. Further to the above, the revised land tenure boundaries for the Road Reserve and Hassell National Park boundaries will provide sufficient distance either side of the road formation that would prevent the clearing of native vegetation by the Project from having a potential indirect 'edge effect' to the adjacent Hassell National Park. This is evidenced by the majority of the vegetation directly adjacent to the existing South Coast Highway being in an *'Excellent'* to *'Very Good'* condition (GHD 2016; Astron 2019a); which suggests that the Project for the reconstruction and widening of this section of the South Coast Highway is similarly not expected to result in an indirect effect to the vegetation condition within the adjacent Hassell National Park. Under the proposed land tenure changes, which are expected to be completed by the end of 2019, the Project would not be considered at variance to Principle 1(h) as the Project would occur entirely within the Road Reserve for the South Coast Highway.

References	GHD (2016); Astron (2019a); Conservation and Parks Commission (2019); DBCA (2018d); WALIA (2019)

Table 5i Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(i)

'(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.'	
Outcome	Proposed clearing is not at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. In relation to surface water, the Project coincides with the mapped boundaries of 3 non-perennial watercourses, and is in close proximity to a further 1 non-perennial watercourse, with each watercourse having a mapped length >10km (Geoscience Australia 2006). The Project also occurs in close proximity (<20m) of the mapped boundary of 1 wetland, named 'Sunday Swamp', which has been classified by DWER as a 'Conservation Category' wetland and occupies a mapped area of approximately 31ha (DBCA 2010). Consistent with the drainage management applied to the existing South Coast Highway, drainage for the Project will be managed through standard engineering design (e.g. use of culverts under the road) to ensure no change to local drainage water flows that could cause a deterioration in the quality of the surface water to the minor non-perennial watercourses or the wetland. Accordingly, in relation to surface water, the Project is not considered at variance to Principle 1(i). In relation to groundwater (underground water), the Project will not require groundwater dewatering which could potentially result in a detrimental effect to the quality of the groundwater, nor does the Project involve any other activities which could otherwise affect the quality of the groundwater. Accordingly, in relation to groundwater, the Project is not considered at variance to Principle 1(i). Environmental Effect: The clearing of native vegetation for the Project is not at variance to Principle 1(g) as the Project is not expected to cause a deterioration in the quality of surface water or groundwater.
References	DBCA (2010); Geoscience Australia (2006)

Table 5j Assessment of the Principles for the Clearing of Native Vegetation – Principle 1(j)

'(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.'	
Outcome	Proposed clearing is not likely to be at variance to this Principle
Assessment	Assessment: The Project will be implemented within an area of approximately 136ha, comprising 41ha of land containing native vegetation and 95ha of cleared land areas. Of the 41ha of native

	vegetation within the Project area, clearing of up to 31ha of native vegetation will be required to enable implementation of the Project. The native vegetation clearing will occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. The removal of a strip of vegetation adjacent to the existing South Coast Highway is considered unlikely to affect the incidence or intensity of flooding. Consistent with the drainage management applied to the existing South Coast Highway, drainage for the Project will be managed through standard engineering design (e.g. use of culverts under the road) to ensure no change to the current local drainage water, such that the Project will not cause or exacerbate the incidence or intensity of flooding. Accordingly, the Project is not considered at variance to Principle 1(j). Environmental Effect: The clearing of native vegetation for the Project is not at variance to Principle 1(i) as the Project will not cause or exacerbate the incidence or intensity of flooding.
References	-

4.4 Additional Assessment Information

As identified above in Section 3.3.3 *Assessment of the Principles for the Clearing of Native Vegetation*, the Project coincides with the following environmental values listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (C'th) as *'Matters of National Environmental Significance'* (MNES), being:

1) 'Listed Ecological Communities' -
    - *Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia* ('*Kwongkan TEC*'); and
2) 'Listed Threatened Species' -
    - *Calyptorhynchus latirostris* (Carnaby's Cockatoo) (T).

Whilst not recorded by the biological surveys, a number of other Listed Threatened Species and 'Migratory Species' may also have a potential to occur in the area of the Project.

In addition to the assessment of the Project in accordance with the Principles for the Clearing of Native Vegetation contained in Section 3.3.3 above, Table 6 (below) provides an additional assessment of the effect of the Project to the environmental values listed under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th).

The assessment is based upon the results of the biological surveys outlined by GHD (2016) and Southern Ecology (2018), and in consideration of the results of a Desktop Assessment using the Department of the Environment and Energy's (DEE) 'Protected Matters Search Tool' (DEE 2018).

Specifically to note, the assessment of the potential for a significant environmental effect has been undertaken in consideration of the DEE (2013) document *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*. For the purpose of identifying whether a Project will

result in a *'significant impact'*, as outlined by DEE (2013) *'significant impact'* means an effect which is –

> *"….important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts."*

In summary, the assessment identifies that whilst Project coincides with a number of environmental values listed under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th), the Project is not expected to have a *'significant impact'* to these values. Following from the assessment contained within Table 6 (below), Main Roads has determined the Project does not require referral for assessment or approval under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th).

The outcomes of this additional assessment further supports the assessment in accordance with the Principles for the Clearing of Native Vegetation as contained within Section 3.3.3 *Assessment of the Principles for the Clearing of Native Vegetation*. Whilst not specifically required by DWER for its assessment of the Clearing Permit application, Main Roads has included this additional assessment information to provide DWER with additional confidence that the potential environmental effects have been thoroughly considered.

Table 6 Assessment of Matters of National Environmental Significance.

MNES	ASSESSMENT
Listed Threatened Species and Communities	**Assessment:** As identified by DEE (2018), the Project coincides with a number of records of Listed Threatened Species and Communities. Accordingly, the potential effect of the Project to Listed Threatened Species and Communities requires consideration. The Project area and surrounds have been subject to biological surveys to identify the flora, vegetation and fauna values present as outlined within GHD (2016), Southern Ecology (2018) and Astron (2019a). The biological surveys included specific consideration of *'Listed Threatened Species and Communities'* protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th). Of the flora and fauna values recorded, having regard to the *'Listed Threatened Species and Communities'* protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th), the Project coincides with the following values: ○ Listed Ecological Communities - ○ *Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia* (herein referred to as '*Kwongkan TEC'*); and ○ Listed Threatened Species - ○ *Calyptorhynchus latirostris* (Carnaby's Cockatoo) (T). An assessment of the environmental effect of the Project to each of the above is provide below. **Kwongkan TEC** More than 180ha of vegetation concordant with the Kwongkan TEC was mapped within the Survey Area by the biological surveys, representing approximately 80% of all native vegetation mapped within the Survey Area (224ha of native vegetation). It is reasonable to expect the Kwongkan TEC extends into the native vegetation beyond the Survey Area boundary within the >1,200ha area of the Hassell National Park. Based on the proportion of TEC recorded within the Survey Area, the extent of the Kwongkan TEC within the surrounding Hassell National Park can be expected in the order of >1,000ha. As outlined by DEE (2014), the extent of the Kwongkan TEC across south coast area is more than 1,180,000ha, of which approximately 50% is protected within conservation reserves (including the area of the Hassell National Park). At a local scale, regional mapping by DEE (2015) indicates more than 18,700ha of the Kwongkan TEC occurring within a 10km radius of the Project. The Project will require the clearing of up to 25ha of the Kwongkan TEC, representing approximately <0.01% of the recorded regional distribution (>1,180,000ha) and <0.2% of the local distribution of the Kwongkan TEC (>18,700ha). Having regard to the broad distribution of the Kwongkan TEC at a regional scale (>1,180,000ha) and the local scale (>18,700ha), and the area of Kwongkan TEC

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clearing required for the Project (25ha, <0.01% regionally, <0.2% locally), the effect of the Project to the clearing of the Kwongkan TEC is not considered to be environmentally significant.

The DEE (2013) document Matters of National Environmental Significance: Significant Impact Guidelines 1.1 identifies 'significant impact criteria' for TECs to assist in determining whether the environmental effects of a Project are likely to be significant. The criteria are in addition to the general test for significance as to whether an effect is 'important, notable or of consequence, having regard to its context or intensity' (DEE 2013). The table below provides an assessment of the potential effect of the Project to the Kwongkan TEC using the significant impact criteria.

<table>
<tr><th>SIGNIFICANT IMPACT CRITERIA (DEE 2013)</th><th>ASSESSMENT FOR KWONGKAN TEC</th></tr>
<tr><td>'reduce the extent of an ecological community'</td><td>
Not Significant

As outlined by IUCN (2017), the 'extent of occurrence' can be defined as "the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy' (IUCN 2001, 2012b cited in IUCN 2017).

As outlined by DEE (2014), the extent of the Kwongkan TEC across south coast area is more than 1,180,000ha, generally extending from the Stirling Range National Park in the west, eastwards to the Cape Arid National Park (approximately 650km west to east).

The Project is contained within the broader area of occurrence of the Kwongkan TEC, between the Stirling Range National Park in the west and the Cape Arid National Park in the east, such that the Project will not alter or reduce the extent of occurrence of the Kwongkan TEC (i.e. 650km west to east) at a regional level.

At a local level, whilst the Project will remove part of the Kwongkan TEC (25ha across 19km) mapped within the broader Survey Area (>180ha), with this extent expected to occur more broadly within the Hassell National Park (>1,000ha expected across 39km). Accordingly, the Project will also not alter or reduce the extent of occurrence of the Kwongkan TEC (i.e. 39km west to east) at a local level.
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MNES	ASSESSMENT		
		'fragment or increase fragmentation of an ecological community, for example by clearing for roads or transmission lines'	**Not Significant** The Project will involve the widening of the existing South Coast Highway; such that the Project will not introduce any 'new' fragmentation of the Kwongkan TEC. The clearing of the Kwongkan TEC will occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. Whilst the Project will increase the distance between the areas of the Kwongkan TEC occurring on either side of the South Coast Highway, the increase in the separation distance will not be significant to an extent that the values of the Kwongkan TEC will be detrimentally affected (i.e. not expected to affect the pollination / genetic transfer between *Proteaceae* species on either side of the South Coast Highway).
		'adversely affect habitat critical to the survival of an ecological community'	**Not Significant** Whilst the Project will remove part of the Kwongkan TEC (25ha), the Kwongkan TEC extends more broadly within the Survey Area (>180ha) and the Hassell National Park (>1,000ha expected), and regionally (>1,180,000ha); such that the Project is not expected to affect habitat critical to the survival of the Kwongkan TEC.
		'modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns'	**Not Significant** The construction of the existing South Coast Highway appears not to have resulted in modification or destruction of abiotic factors to an extent that the survival of the Kwongkan TEC has been detrimentally affected. The widening of the existing South Coast Highway by the Project can equally be expected not to result in a significant detrimental effect to abiotic factors which could affect the survival of the Kwongkan TEC. In relation to the specified example of *'groundwater levels'*, the Project will not involve the abstraction of groundwater which could affect the Kwongkan TEC. In relation to the specified example of *'surface water drainage patterns'*, road drainage for the Project will be managed through standard engineering design that is generally consistent with the existing drainage regime for that section of the South Coast Highway road formation.

MNES	ASSESSMENT		
		'cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting'	**Not Significant** The Project will involve the widening of the existing South Coast Highway; with the clearing of the Kwongkan TEC to occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. The removal of part of the Kwongkan TEC is spatially-based (i.e. removal of a specific area); rather than a targeting of specific taxa within the Kwongkan TEC. Accordingly, the Project is not expected to result in any change to the species composition (or species functionality) of the Kwongkan TEC. In relation to the specified example of *'burning'*, the Project will not involve any burning of in-situ Kwongkan TEC vegetation. In relation to the specified example of *'flora or fauna harvesting'*, the Project will not involve any flora or fauna harvesting for commercial or scientific purposes.
		'cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: ○ *assisting invasive species, that are harmful to the listed ecological community, to become established, or* ○ *causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community'*	**Not Significant** Whilst the Project will remove part of the Kwongkan TEC (25ha), the Kwongkan TEC extends more broadly within the Survey Area (>180ha) and the Hassell National Park (>1,000ha expected), and regionally (>1,180,000ha); such that the Project is not expected to cause a substantial reduction in the quality or integrity of the Kwongkan TEC. In relation to the specified example of *'invasive species'*, the biological surveys by GHD (2016) and Astron (2019b) identified >50 introduced flora taxa as well as the plant pathogen Dieback *Phytophthora cinnamomi* within the Survey Area. The potential for the introduction and/or spread of introduced taxa can be appropriately managed through standard hygiene management procedures (to be outlined within an Environmental Management Plan (EMP)). The implementation of standard hygiene management procedures can be expected to appropriately control the risk of introduction or spread of introduced taxa that could cause a substantial reduction in the quality or integrity of the Kwongkan TEC. In relation to the specified example of *'mobilisation of fertilisers, herbicides or other chemicals or pollutants'*, excepting for the standard hygiene management practices to be outlined within the EMP (such as selective spraying of identified introduced flora

MNES	ASSESSMENT

	taxa), the Project does not involve any actions which could cause a regular mobilisation of fertilisers, herbicides or other chemicals or pollutants that could result in a substantial reduction in the quality or integrity of the Kwongkan TEC.
'interfere with the recovery of an ecological community'	**Not Significant** The Project will involve the widening of the existing South Coast Highway; with the clearing of the Kwongkan TEC to occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. The removal of part of the Kwongkan TEC is not expected to interfere with any natural or Government-led recovery of the Kwongkan TEC.

***Calyptorhynchus latirostris* (Carnaby's Cockatoo)**

The DBCA (2019d) identifies the regional distribution of *C. latirostris* extending >1,000km across the greater south-west of Western Australia from Kalbarri (north) to Augusta (south) and eastwards beyond Esperance. The DEE (2019b) identifies *C. latirostris* as having an estimated area of occupancy of 1,000,000ha (10,000km^2).

The majority of the native vegetation within the Survey Area (218ha, >95%) has been mapped as potentially suitable for foraging (feeding) of *C. latirostris* (GHD 2016; Southern Ecology 2018). It is expected this foraging habitat extends beyond the Survey Area within the surrounding Hassell National Park, with the majority of the >1,200ha area of the Hassell National Park expected to also provide suitable foraging habitat for this taxon.

As outlined by GHD (2016), individuals of *C. latirostris* were noted flying and resting within the Survey Area during the biological surveys. Evidence of foraging by *C. latirostris* was also observed within the Survey Area at various locations.

The biological surveys (GHD 2016, Southern Ecology 2018) did not identify any trees with hollows of a suitable size for nesting of *C. latirostris* within the Survey Area. Accordingly, no impact to live nesting individuals of *C. latirostris* can be expected. Whilst noting this, the surveys recorded 13 trees of *Eucalyptus marginata* (Jarrah) and *Corymbia callophylla* (Marri) of size (>500mm diameter at breast height (DBH)) which may (or may not), in the future, have the potential to form hollows which may (or may not) be suitable for nesting in the future.

The Survey Area was considered unlikely to be used as a roosting site given the absence of nearby permanent fresh water sources (GHD 2016).

MNES	ASSESSMENT
	As the Survey Area does not contain any trees with hollows of a suitable size for nesting of *C. latirostris*, and the Survey Area is unlikely to be used as a roosting site, the *C. latirostris* recorded by the biological surveys can be considered as 'non-resident' (i.e. visitors) to the Survey Area. The foraging habitat in the region support large flocks of C. latirostris (approximately 400 individuals) which visit the area annually (pers. com. Kirkby T, July 2019). The Project will require the clearing of up to 29ha of the mapped area of *C. latirostris* foraging habitat, representing approximately 15% of the foraging habitat recorded within the Survey Area (218ha). It is expected that the foraging habitat extends into the native vegetation beyond the Survey Area boundary within the Hassell National Park, with the majority of the >1,200ha area of the Hassell National Park expected to provide suitable foraging habitat for this taxon. Mapping of remnant native vegetation units of DPIRD (2011, 2013) indicates >16,000ha of remnant native vegetation likely to be suitable for *C. latirostris* foraging within a 12km radius of the Project area. Having regard to the broad regional distribution of *C. latirostris* (>1,000km), the extent of foraging habitat recorded within the Survey Area (218ha) and expected within the surrounding Hassell National Park (>1,200ha) and the broader local area (>16,000ha), the effect of clearing of *C. latirostris* habitat by the Project (29ha, <0.2% in local area, <3% within surrounding Hassell National Park) is not expected to result in a loss of foraging habitat that could cause long-term decrease on the population of *C. latirostris*. The EPA (2019) identifies the importance of retaining foraging habitat which occurs in proximity to identified roosting and nesting habitat, noting individuals of *C. latirostris* may forage in areas up to 12km of identified roosting and nesting habitats, and with such foraging habitat assisting with habitat connectivity and movement of individuals across the landscape (Le Roux 2017 and Shah 2006 in EPA 2019). Regional data records held by DBCA (2011) identifies the nearest roosting or nesting habitat for *C. latirostris* occurring >20km from the Project, however, unpublished data from Birdlife (2016) (provided by DBCA) identifies the nearest nesting-roosting locations at approximately 1.7km and 3.2km south of the southern end of the Project, with a number of other nesting-roosting sites located between 6km to 16km from the Project. The presence of the nesting-roosting sites indicate that the recorded foraging habitat at the southern end of the Project may support this local nesting-roosting. Mapping of remnant native vegetation units of DPIRD (2011, 2013) indicates >7,700ha of remnant native vegetation occurs within a 12km radius of these nesting-roosting sites that is likely to be suitable for *C. latirostris* foraging. The area of native vegetation clearing for the Project within this 12km radius area is approximately 22ha; equating to <0.3% of the total >7,700ha of the available *C. latirostris* foraging habitat. The clearing by the Project of <0.3% of *C. latirostris* foraging habitat within the 12km radius of the Birdlife (2016) nesting-roosting sites would be unlikely to cause a long-term decrease on the population of *C. latirostris* due to the significant extent of remaining foraging habitat (>7,700ha), supported by other areas of remnant native vegetation (non-foraging habitats) which will continue to provide habitats for connectivity and movement of this taxon. Due to the high mobility of *C. latirostris* (i.e. can fly away from disturbance areas), and the absence of any suitably sized hollows for nesting, the Project is also not expected to directly affect any live individuals of this taxon.

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The DEE (2013) document Matters of National Environmental Significance: Significant Impact Guidelines 1.1 identifies 'significant impact criteria' for 'endangered' Threatened Species to assist in determining whether the environmental effects of a Project are likely to be significant. The criteria are in addition to the general test for significance as to whether an effect is 'important, notable or of consequence, having regard to its context or intensity' (DEE 2013). Consistent with the DEE (2012) document EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species, the assessment using the DEE (2013) significant impact criteria for considers significance in terms of the effect to 'habitat' of C. latirostris rather than a 'resident population' due to the mobility and wide distribution of this taxon. The table below provides an assessment of the potential effect of the Project to C. latirostris using the significant impact criteria[1].
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<tr><th>SIGNIFICANT IMPACT CRITERIA (DEE 2013)</th><th>ASSESSMENT FOR CALYPTORHYNCHUS LATIROSTRIS</th></tr>
<tr><td>'lead to a long- term decrease in the size of a population'</td><td>
Not Significant

The Project will require the clearing of up to 29ha of the mapped area of C. latirostris foraging habitat, representing approximately 15% of the foraging habitat recorded within the Survey Area (218ha). It is expected that the foraging habitat extends into the native vegetation beyond the Survey Area boundary within the Hassell National Park, with the majority of the >1,200ha area of the Hassell National Park expected to provide suitable foraging habitat for this taxon. Mapping of remnant native vegetation units of DPIRD (2011, 2013) indicates >16,000ha of remnant native vegetation likely to be suitable for C. latirostris foraging within a 12km radius of the Project area. Having regard to the broad regional distribution of C. latirostris (>1,000km), the extent of foraging habitat recorded within the Survey Area (218ha) and expected within the surrounding Hassell National Park (>1,200ha) and the broader local area (>16,000ha), the effect of clearing of C. latirostris foraging habitat by the Project (29ha, <0.2% in local area, <3% within Hassell National Park) is not expected to result in a loss of foraging habitat that could cause long-term decrease on the population of C. latirostris.

The EPA (2019) identifies the importance of retaining foraging habitat which occurs in proximity to identified roosting and nesting habitat, noting individuals of C. latirostris
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[1] Note the *'significant impact criteria'* within DEE (2013) are different for TECs (refer the Kwongkan TEC assessment above) and Threatened Species (*C. latirostris* assessment below)

MNES	ASSESSMENT		
			may forage in areas up to 12km of identified roosting and nesting habitats, and with such foraging habitat assisting with habitat connectivity and movement of individuals across the landscape (Le Roux 2017 and Shah 2006 in EPA 2019). Regional data records held by DBCA (2011) identifies the nearest roosting or nesting habitat for *C. latirostris* occurring >20km from the Project, however, unpublished data from Birdlife (2016) (provided by DBCA) identifies the nearest nesting-roosting locations at approximately 1.7km and 3.2km south of the southern end of the Project, with a number of other nesting-roosting sites located between 6km to 16km from the Project. The presence of the nesting-roosting sites indicate that the recorded foraging habitat at the southern end of the Project may support this local nesting-roosting. Mapping of remnant native vegetation units of DPIRD (2011, 2013) indicates >7,700ha of remnant native vegetation occurs within a 12km radius of these nesting-roosting sites that is likely to be suitable for *C. latirostris* foraging. The area of native vegetation clearing for the Project within this radius area is approximately 22ha; equating to <0.3% of the total >7,700ha of potentially suitable for *C. latirostris* foraging habitat. The clearing by the Project of <0.3% of *C. latirostris* foraging habitat within the 12km radius of the Birdlife (2016) nesting-roosting sites would be unlikely to cause a long-term decrease on the population of *C. latirostris* due to the significant extent of remaining foraging habitat (>7,700ha), supported by other areas of remnant native vegetation (non-foraging habitats) which will continue to provide habitats for connectivity and movement of this taxon. To additionally note, the Project does not coincide with any trees containing hollows of a suitable size for nesting of *C. latirostris*. Accordingly, no impact to live nesting individuals of *C. latirostris* can be expected. Due to the absence of any suitably sized hollows for nesting, and the high mobility of *C. latirostris* (i.e. can fly away from disturbance areas), the Project is not expected to affect any live individuals which could result in a long-term decrease on the population of *C. latirostris*.
		'reduce the area of occupancy of the species'	**Not Significant** As outlined by IUCN (2017), the *'area of occupancy'* can be defined as *"a scaled metric that represents the area of suitable habitat currently occupied by the taxon'*. The DEE (2019b) identifies *C. latirostris* as having an estimated area of occupancy of 1,000,000ha (10,000km^2) across south-western Australia, calculated by the sum

MNES	ASSESSMENT		
			of 1km grid squares in which the taxon is thought to occur, for the habitats used by *C. latirostris* for foraging, nesting and roosting. The Project will involve the widening of the existing South Coast Highway; with the clearing of native vegetation (including *C. latirostris* foraging habitat) to occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. The Project will not remove any single 1km grid square of the recorded area of occupancy of *C. latirostris*, with identified areas of *C. latirostris* foraging habitat to remain on either side of the South Coast Highway and throughout the surrounding Hassell National Park. Accordingly, the Project is not expected to reduce the total area of occupancy of this taxon.
		'fragment an existing important population into two or more populations'	**Not Significant** The Project will involve the widening of the existing South Coast Highway; such that the Project will not introduce any 'new' fragmentation of *C. latirostris* foraging habitat. The clearing of *C. latirostris* foraging habitat will occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. Whilst the Project will increase the distance between the areas of the *C. latirostris* foraging habitat occurring on either side of the South Coast Highway, the increase in the separation distance will not be significant to an extent that non-resident *C. latirostris* within the Project area would be fragmented into two or more populations, nor introduce fragmentation that would restrict the movement of *C. latirostris* between either side of the South Coast Highway.
		'adversely affect habitat critical to the survival of a species'	**Not Significant** The DEE (2019b) identifies *C. latirostris* as having an estimated area of occupancy of 1,000,000ha (10,000km^2) across south-western Australia, calculated by the sum of 1km grid squares in which the taxon is thought to occur, for the habitats used by *C. latirostris* for foraging (feeding), nesting and roosting. Locally, the majority of the native vegetation within the Survey Area (218ha, >95%) has been mapped as potentially suitable for foraging of *C. latirostris* (GHD 2016; Southern Ecology 2018), with the extent of foraging habitat expected to extend into

MNES	ASSESSMENT			
			the native vegetation beyond the Survey Area boundary within the surrounding Hassell National Park (>1,200ha). Mapping of remnant native vegetation units of DPIRD (2011, 2013) indicates >16,000ha of remnant native vegetation likely to be suitable for *C. latirostris* foraging within a 12km radius of the Project area. The foraging habitat in the region support a large flock of *C. latirostris* (approximately 400 individuals) which visit the area annually (i.e. non-resident individuals). The Project will require the clearing of up to 29ha of the mapped area of *C. latirostris* foraging habitat. The effect of the clearing of *C. latirostris* foraging habitat by the Project (29ha, <0.2% in local area, <3% within Hassell National Park) is not expected to result in an adverse effect that the survival of the taxon or its habitat. The EPA (2019) identifies the importance of retaining foraging habitat which occurs in proximity to identified roosting and nesting habitat, noting individuals of *C. latirostris* may forage in areas up to 12km of identified roosting and nesting habitats, and with such foraging habitat assisting with habitat connectivity and movement of individuals across the landscape (Le Roux 2017 and Shah 2006 in EPA 2019). Regional data records held by DBCA (2011) identifies the nearest roosting or nesting habitat for *C. latirostris* occurring >20km from the Project, however, unpublished data from Birdlife (2016) (provided by DBCA) identifies the nearest nesting-roosting locations at approximately 1.7km and 3.2km south of the southern end of the Project, with a number of other nesting-roosting sites located between 6km to 16km from the Project. The presence of the nesting-roosting sites indicate that the recorded foraging habitat at the southern end of the Project may support this local nesting-roosting. Mapping of remnant native vegetation units of DPIRD (2011, 2013) indicates >7,700ha [1] of remnant native vegetation occurs within a 12km radius of these nesting-roosting sites that is likely to be suitable for *C. latirostris* foraging. The area of native vegetation clearing for the Project within this radius area is approximately 22ha; equating to <0.3% of the total >7,700ha of potentially suitable for *C. latirostris* foraging habitat. The clearing by the Project of <0.3% of *C. latirostris* foraging habitat within the 12km radius of the Birdlife (2016) nesting-roosting sites would be unlikely to cause a long-term decrease on the population of *C. latirostris* due to the significant extent of remaining foraging habitat (>7,700ha), supported by other areas of remnant native vegetation (non-foraging habitats) which will continue to provide habitats for connectivity and movement of this taxon.	

MNES	ASSESSMENT		
			It is noted the DEE (2012) document *EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species* identifies additional guidance for where referral of a Project is recommended, including a recommendation for referral for any *"Clearing of more than 1ha of quality foraging habitat"* due to a *"High risk of significant impacts"*. The associated footnote for the 1ha 'rule' provides a qualifying specification as to the foraging habitat being within a 12km radius of breeding sites; which appears consistent with the more recent guidance outlined by EPA (2019). As identified above, whilst the Project meets the DEE (2012) level of >1ha of foraging habitat to be removed, and part of the Project occurs within 12km of a recorded nesting site, assessment of the environmental effect of the clearing of foraging habitat (in accordance with the DEE (2013) document *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*) identifies the Project will not result in a 'significant' effect to this taxon (i.e. the Project will not result in a high risk of significant impacts). The Project will involve the widening of the existing South Coast Highway; with the clearing of native vegetation (including *C. latirostris* foraging habitat) to occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. It is not expected the removal of a narrow but long linear strip of foraging habitat could adversely affect habitat critical to the survival of this taxon. To note, in addition to the assessment of *C. latirostris* foraging habitat above, with regard to *C. latirostris* nesting habitat, the biological surveys did not identify any large trees with hollows of a suitable size for nesting of *C. latirostris*. Accordingly, the Project is not expected to result in the removal of *C. latirostris* nesting habitat that could adversely affect habitat critical to the survival of this taxon. To further note, with regard to *C. latirostris* roosting habitat, the biological surveys did not identify any trees being used for night roosting of *C. latirostris*. Accordingly, the Project is not expected to result in the removal of *C. latirostris* roosting habitat that could adversely affect habitat critical to the survival of this taxon.
		'disrupt the breeding cycle of a population'	**Not Significant**

MNES	ASSESSMENT		
			The Project does not coincide with any trees containing hollows of a suitable size for nesting of *C. latirostris*. Further, no trees containing hollows of a suitable size for nesting of *C. latirostris* were identified within the broader Survey Area within which the Project is located. Accordingly, the Project is not expected to disrupt the breeding cycle of *C. latirostris*.
		'modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline'	**Not Significant** The Project will involve the widening of the existing South Coast Highway; with the clearing of native vegetation (including *C. latirostris* foraging habitat) to occur as a narrow but long linear strip following the existing South Coast Highway, nominally between 5m to 15m width either side and for a length of approximately 19km. The Project will require the clearing of up to 29ha of the mapped area of *C. latirostris* foraging habitat, representing approximately 15% of the foraging habitat recorded within the Survey Area (218ha). It is expected that the foraging habitat extends into the native vegetation beyond the Survey Area boundary within the Hassell National Park, with the majority of the >1,200ha area of the Hassell National Park expected to provide suitable foraging habitat for this taxon. Mapping of remnant native vegetation units of DPIRD (2011, 2013) indicates >16,000ha of remnant native vegetation likely to be suitable for *C. latirostris* foraging within a 12km radius of the Project area. Having regard to the broad regional distribution of *C. latirostris* (>1,000km), the extent of foraging habitat recorded within the Survey Area (218ha) and expected within the Hassell National Park (>1,200ha) and the broader local area (>16,000ha), the effect of clearing of *C. latirostris* foraging habitat by the Project (29ha, <0.2% in local area, <3% within surrounding Hassell National Park) is not expected to result in a loss of foraging habitat that could cause a decline in the population of *C. latirostris*.
		'result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat'	**Not Significant** The DEE (2019b) identify the potential threats to the survival of *C. latirostris* as including *inter alia* the introduced (invasive) species *Apis mellifera* (honey bee); which may compete for nest hollows with *C. latirostris*. The Project does not involve any actions which could potentially introduce *A. mellifera* into the Project area or surrounds, nor are there any trees with hollows of a suitable size for nesting of *C. latirostris* within the broader Survey Area in which *A. mellifera* may compete

MNES	ASSESSMENT		
			with *C. latirostris*. The Project is also considered unlikely to result in the introduction or spread of any other flora or fauna taxon known to be harmful to *C. latirostris* which could become established within the identified habitat.
		'introduce disease that may cause the species to decline'	**Not Significant** The DEE (2019b) identify the potential threats to the survival of *C. latirostris* as including *inter alia* the plant pathogens (disease) Dieback *Phytophthora cinnamomi* and Marri Canker *Quambalaria coyrecup*; which may infect tree species used by *C. latirostris* for foraging, nesting and roosting. As outlined by (Astron 2019b) the plant pathogen Dieback *Phytophthora cinnamomi* has been recorded throughout the Survey Area (including the Project area), with only limited areas considered free of this pathogen. The biological surveys (GHD 2016; Southern Ecology 2018; Astron 2019a, 2019b) did not specifically assess the presence or absence of Marri Canker *Quambalaria coyrecup* within the Survey Area. The potential for the introduction and/or spread of *P. cinnamomi* (and *Q. coyrecup*, if present) can be appropriately managed through standard hygiene procedures during land clearing to ensure plant pathogens are not introduced or spread. The implementation of standard hygiene procedures will ensure the Project will not introduce or spread disease to an extent which may cause a reduction in the quality of the *C. latirostris* foraging habitat present, which could in turn cause the taxon to decline. The DEE (2019b) also identifies that the disease status within *C. latirostris* remains unknown, although infectious diseases may potentially pose a threat to the *C. latirostris* population. The Project does not involve any actions which could potentially introduce infectious diseases within the *C. latirostris* population which could cause the taxon to decline.
		'interfere with the recovery of the species'.	**Not Significant** The Project will involve the widening of the existing South Coast Highway; with the clearing of native vegetation which provides *C. latirostris* foraging habitat to occur as a narrow but long linear strip following the existing South Coast Highway, nominally

MNES	ASSESSMENT
	between 5m to 15m width either side and for a length of approximately 19km. The removal of part of the *C. latirostris* foraging habitat is not expected to interfere with any natural or Government-led recovery of *C. latirostris*.

The DEE (2018) identifies the potential for a variety of other *'Listed Threatened Species and Communities'* to have the potential to occur in, or in proximity to, the area of the Project. Multiple biological surveys did not identify such values within the Survey Area. As a result of the absence of such values from within the Survey Area, an assessment of the potential for a significant effect of the Project to such values is not considered necessary.

Whilst noting the above, for completeness, additional comment on a number of 'Threatened Species' considered by the biological surveys is provided below:

- *Calyptorhynchus banksii* ssp. *naso* (Forest Red-tailed Black Cockatoo) (T)

  Calyptorhynchus banksii ssp. *naso* was not recorded by the biological surveys of the Survey Area; despite multiple years of field survey. GHD (2016) and Southern Ecology (2018) both document a potential for *C. banksii* ssp. *naso* to occur within the Project area given the presence of potentially suitable foraging habitat, however GHD (2016) also notes the Project area lies at the south-eastern most extent of the modelled distribution for this taxon. The DBCA (2019h) identifies no previous records of *C. banksii* ssp. *naso* within Project area, with the nearest records occurring between 5-10km from Project area. Based on the absence of records for *C. banksii* ssp. *naso* from the biological surveys, combined with the absence of previous database records of *C. banksii* ssp. *naso* in the Project area, it is expected that any potential use of the Project area by *C. banksii* ssp. *naso* would be opportunistic (infrequent and non-resident). Having regard to the above, the Project would unlikely to result in a significant effect to *C. banksii* ssp. *naso*, if present.

- *Calyptorhynchus baudinii* (Baudin's Black Cockatoo (T)

  C. baudinii was not recorded by the biological surveys of the Survey Area; despite multiple years of field survey. Whilst not identified by GHD (2016) or Southern Ecology (2018) as having the potential to occur within the Project area, the DBCA (2019i) identifies records of *C. baudinii* between 5-10km from Project area. Based on the absence of records for *C. baudinii* from the biological surveys, combined with the absence of previous database records of *C. baudinii* in the Project area, it is expected that any potential use of the Project area by *C. baudinii* would be opportunistic (infrequent and non-resident). Having regard to the above, the Project would unlikely to result in a significant effect to *C. baudinii*, if present.

- *Psophodes nigrogularis* (Western whipbird) (T)

  P. nigrogularis was not recorded by the biological surveys of the Survey Area; despite multiple years of field survey. GHD (2016) and Southern Ecology (2018) both document a potential for *P. nigrogularis* to occur within the Project area

MNES	ASSESSMENT
	given the presence of potentially suitable habitat. GHD (2016) notes a previous record of *P. nigrogularis* with the Project area, with DBCA (2019j) identifying this as a single record from the year 2000 (historical record ~20 years ago). The DBCA (2019j) identifies the local occurrence of *P. nigrogularis* as being concentrated to the vegetation areas along the southern coastline approximately 10km south and south-east of the Project; indicating the single record from the year 2000 may be a vagrant individual. As outlined by IUCN (2017), consideration of the *'extent of occurrence'* should exclude '*cases of vagrancy'* (IUCN 2001, 2012b cited in IUCN 2017). Based on the absence of records for *P. nigrogularis* from the recent biological surveys, combined with the only record of *P. nigrogularis* within the Project area being historical and indicative of a vagrant individual, it is expected that any potential use of the Survey Area by *P. nigrogularis* would be opportunistic (infrequent and non-resident). Having regard to the above, the Project would unlikely to result in a significant effect to *P. nigrogularis*, if present. **Environmental Effect:** Whilst the Project coincides with records of *'Listed Threatened Species and Communities'* protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th), as outlined by the assessment above, the Project is not expected to result in a significant environmental effect to these values. That the potential effects of the Project to these values can be readily managed through the management of land clearing, to be outlined though the preparation and implementation of a: o Environmental Management Plan In consideration of the low potential environmental effect of the Project to *'Listed Threatened Species and Communities'* protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th), and the management actions proposed, the Project is not expected to result in a significant detrimental effect to these values. Implementation of the above management action is expected to ensure that the potential environmental effect of the Project to *'Listed Threatened Species and Communities'* is minimised and controlled to an acceptable level. **References:** Astron (2019a, 2019b); DBCA (2019d, 2019h, 2019i, 2019j); DEE (2018, 2019b); GHD (2016); IUCN (2017); Southern Ecology 2018)
Listed Migratory Species	**Assessment:** As identified by DEE (2018), the Project coincides with a number of records of *'Listed Migratory Species'*. Accordingly, the potential effect of the Project to Listed Migratory Species requires consideration.

MNES	ASSESSMENT
	The Project area and surrounds have been subject to biological surveys to identify the flora, vegetation and fauna values present as outlined within GHD (2016), Southern Ecology (2018) and Astron (2019a, 2019b). The biological surveys included specific consideration of *'Listed Migratory Species'* protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th). The biological surveys did not identify the presence of any Listed Migratory Species protected under the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) within the Survey Area. Accordingly, the Project is not expected to result in a significant effect to Listed Migratory Species. Whilst DEE (2018) identifies the potential for Listed Migratory Species to occur within the area of the Project, any such taxa would be considered a non-resident (visitors), and due to the high mobility of migratory fauna taxa (i.e. ability to move away from disturbance), such taxa would unlikely be significantly affected by the Project Whilst noting the above, for completeness, additional comment on Listed Migratory Species as MNES is provided below: o *Merops ornatus* (Rainbow Bee-eater) (M) *M ornatus* was not recorded by the biological surveys of the Survey Area; despite multiple years of field survey. GHD (2016) and Southern Ecology (2018) document a potential for *M. ornatus* to occur within the Survey Area given the presence of potentially suitable habitat. The absence of *M. ornatus* from the biological survey records may be related to the timing of the biological surveys in relation to the migratory patterns of this taxon. As outlined by GHD (2016), *M. ornatus* is a common and widespread migrant throughout Australia with a large habitat range. Having regard to the migratory nature of *M. ornatus*, and the broad types of habitats occupied by this taxon, the Project would unlikely to result in a significant effect to *M. ornatus*, if present. **Environmental Effect:** The Project is not expected to result in significant environmental effect to Listed Migratory Species. **References:** DEE (2018); GHD (2016); Southern Ecology (2018)

5 ENVIRONMENTAL OFFSETS

The Government of Western Australia (2014) document *WA Environmental Offsets Guidelines* defines *'Environmental Offsets'* as:

> *"Environmental offsets are actions that provide environmental benefits which counterbalance the significant residual environmental impacts or risks of a project or activity. Unlike mitigation actions which occur on-site as part of the project and reduce the direct impact of that project, offsets are undertaken outside of the project area and counterbalance significant residual impacts"*

As outlined by the *Guidelines*, and consistent with the Government of Western Australia (2011) document *WA Environmental Offsets Policy,* the applicability of offsets is determined on a project-by-project basis, and with environmental offsets applied only where the residual effect of a project is environmentally significant.

The environmental effects of the Project have been minimised as far as practicable, with the residual environmental effect assessed in consideration of the biological survey results and relevant environmental guidance documents, as outlined within Section 4 *Environmental Assessment*. The environmental assessment identifies that whilst the Project coincides with a variety of environmental values (including values of conservation significance), the *impact* of the Project, given the narrow linear nature of the Project (with the environmental effects diffuse across a 19km length), in context with the broader extent of these environmental values, is not considered to be significant. Accordingly, consistent with the *Guidelines* and the *Policy*, environmental offsets are not considered to be applicable for the Project.

6 GOVERNMENT ASSESSMENT PROCESSES

Main Roads considers the environmental effects of the Project can be appropriately assessed through the following Government environmental assessment and approval processes:

1) Clearing Permit for native vegetation clearing under Section 51E of the *Environmental Protection Act 1986* (WA) (through DWER); and
2) Licence for works in the Hassell National Park under Section 101 of the *Conservation and Land Management Act 1984* (WA) (through the DBCA's Disturbance Approval System).

A description of these environmental assessment/approvals process is provided below.

6.1.1 Clearing Permit under s51E of the *Environmental Protection Act 1986* (WA)

The *Environmental Protection Act 1986* (WA) is the principal environmental protection legislation in Western Australia, and for the purposes of Part IV of the Act, is managed by DWER and the Western Australian Minister for Environment. The *Environmental Protection Act 1986* (WA) identifies that the clearing of native vegetation requires authorisation through a Clearing Permit (unless the clearing is of an exempt kind).

The Project requires the clearing of up to 31ha of native vegetation (which is not of an exempt kind), and accordingly, a Clearing Permit under s51E of the *Environmental Protection Act 1986* (WA) will be required.

The Clearing Permit assessment process by DWER is able to consider the key environmental effects of the Project, namely the effects to –

1) Kwongkan TEC (T, P3);
2) Swamp Yate PEC (P3);
3) Fauna taxon Carnaby's Cockatoo *Calyptorhynchus latirostris* (T);
4) Flora taxon *Leucopogon* sp. Manypeaks (P1), and other DBCA-classified 'priority' flora taxa; and
5) Plant pathogen Dieback *Phytophthora cinnamomi*.

The Clearing Permit assessment process provides for an assessment of the environmental effects of a Project, and conditions may be imposed by DWER to ensure the appropriate management of such effects. It is anticipated that the DWER will impose conditions on the Project in relation to:

1) Implementation of an EMP, outlining the management of:
    a) Land clearing, specifically –
        - Vegetation units;
        - Flora taxa;
        - Fauna taxa; and
        - Dieback *Phytophthora cinnamomi*

As identified above in Section 5 *Environmental Offsets*, it is not anticipated that DWER will seek to impose conditions requiring an environmental offset.

Further, it is not anticipated that DWER will seek to impose conditions relating to the rehabilitation of the redundant road areas, noting Clearing Permit conditions are intended to control native vegetation clearing proposed (and the redundant road areas have previously been cleared). It is anticipated the rehabilitation works will be managed through the Licence under Section 101 of the *Conservation and Land Management Act 1984* (WA (refer below).

The assessment and approvals processes for a Clearing Permit under s51E of the *Environmental Protection Act 1986* (WA) is considered an appropriate approval pathway through which the potential environmental effects of the Project can be considered.

6.1.2 Licence under s101 of the *Conservation and Land Management Act 1984* (WA) (through the DBCA's Disturbance Approval System)

The *Conservation and Land Management Act 1984* (WA) provides for the protection and management of public lands (such as National Parks) for biodiversity, and is managed by DBCA and the Conservation and Parks Commission. The *Conservation and Land Management Act 1984* (WA) identifies that a Licence under s101 is required for works in lands managed under the Act. Licences under the *Conservation and Land Management Act 1984* (WA) are processed through the DBCA's Disturbance Approval System.

The Project currently coincides with part of the Hassell National Park, which is a narrow linear park generally 200m to 600m in width and 39km in length, generally following the alignment of the South Coast Highway. Whilst there is a dedicated Road Reserve for the South Coast Highway, the as-built South Coast Highway, in parts, meanders between the Road Reserve and the Hassell National Park.

The land tenure boundaries are currently being administratively reconsidered by DPLH in consultation with Main Roads and DBCA, with a view towards revising the land tenure boundaries such that the South Coast Highway will occur wholly within a revised Road Reserve (with no coincidence with the Hassell National Park). The administrative changes to the land tenure boundaries are expected to be completed by the end of the 2019 year. A Licence under s101 of the *Conservation and Land Management Act 1984* (WA) will be required to authorise land access if the Project intends to commence prior to the completion of the land tenure boundary changes.

In addition to the above, the Project includes the rehabilitation of approximately 0.8ha of land areas from a realigned section of the South Coast Highway (redundant road areas), of which 0.3ha occurs within the revised Hassell National Park. The rehabilitation works will be undertaken to a standard agreed with DBCA. A Licence under s101 of the *Conservation and Land Management Act 1984* (WA) will be required to authorise land access for the rehabilitation works within the Hassell National Park.

The Licence assessment process by DBCA is able to consider the key environmental effects of the Project, namely the effects to –

1) Conservation Areas (Hassell National Park);
2) Kwongkan TEC (T, P3);
3) Swamp Yate PEC (P3);
4) Fauna taxon Carnaby's Cockatoo *Calyptorhynchus latirostris* (T);
5) Flora taxon *Leucopogon* sp. Manypeaks (P1), and other DBCA-classified 'priority' flora taxa; and

6) Plant pathogen Dieback *Phytophthora cinnamomi*.

The Licence assessment process provides for an assessment of the environmental effects of a Project, and conditions may be imposed by DBCA to ensure the appropriate management of such effects. It is anticipated that the DBCA will impose conditions on the Project in relation to:

1) Implementation of an EMP, outlining the management of:
    a) Land clearing, specifically –
        - Vegetation units;
        - Flora taxa;
        - Fauna taxa; and
        - Dieback *Phytophthora cinnamomi*
    b) Rehabilitation, specifically –
        - Rehabilitation of redundant road areas following realignment

The assessment and approvals processes for a Clearing Permit under s101 of the *Conservation and Land Management Act 1984* (WA) is considered an appropriate approval pathway through which the potential environmental effects of the Project can be considered.

7 STAKEHOLDER CONSULTATION

Stakeholder consultation is an integral component of Main Roads' planning, assessment and development processes. During the planning and assessment for the Project undertaken to date, Main Roads has consulted with a range of key Government stakeholders. Details of select consultations in relation to the environment and heritage aspects of the Project are provided in Table 7, below.

Table 7 Stakeholder Consultation.

STAKEHOLDER	DATE	ATTENDEES	ACTIONS
Department of Water and Environmental Regulation (DWER) (WA)	July 2019	Mincham R, Eto E	Meeting and Project Brief (written) outlining Project environmental effects to *Leucopogon* sp. Manypeaks (P1), Swamp Yate PEC, Kwongkan TEC, *C. latirostris* foraging and nesting and roosting habitat, Dieback *Phytophthora cinnamomi*, and Government assessment processes/timeframes including a Clearing Permit through DWER. Project and biological surveys results mapping included.
	May 2019	Gannaway M	Email communications regarding Clearing Permit application and assessment processes in relation to land tenure changes.
	May 2018	Rogers S	Site inspection of the Project area, with identification and discussion of identified environmental values. Project brief (written) also provided outlining Project objective, key results of the environmental surveys (including records for Kwongkan TEC and *C. latirostris*) and land tenure (conservation areas). Broad Project location map included.
Department of Biodiversity, Conservation and Attractions (DBCA) (WA)	August 2019	Utber D, Comer S	Meeting and Project Brief (written) outlining Project environmental effects to *Leucopogon* sp. Manypeaks (P1), Swamp Yate PEC, Kwongkan TEC, *C. latirostris* foraging and nesting and roosting habitat, Dieback *Phytophthora cinnamomi*, introduced flora taxa, and Government assessment processes/timeframes including an application through DBCA's Disturbance Approval System. Project and biological surveys results mapping included.
	May 2019	Mair G, Utber D	DBCA letter to Main Roads received for authorisation to apply for a Clearing Permit within Project areas coinciding with Hassell National Park.
	April 2019	Utber D, Barrett S, Hartley P	Meeting and Project Brief (written) outlining Project objective, key results of the environmental surveys (including records for *Leucopogon* sp. Manypeaks (P1), Swamp Yate PEC, Kwongkan TEC and *C. latirostris*), land tenure (Hassell National Park), and Government approval/assessment processes. Project location and flora/fauna mapping included.
	July-September 2018	Smith M, Barrett S	Email communications regarding *Leucopogon* sp. Manypeaks (P1) surveys and conservation status.
	April 2018 - ongoing	N Mincham, Ho B	Communications regarding land tenure changes associated with the Road Reserve and Hassell National Park.

STAKEHOLDER	DATE	ATTENDEES	ACTIONS
	September 2016	Utber D	Site inspection with meeting outlining Project design, biological survey progress and rehabilitation works.
Department of the Environment and Energy (DEE) (C'th)	July 2019	Whyte R, Gillman A, Agutter R	Project brief (written) outlining Project objective, key results of the environmental surveys (including records for Kwongkan TEC and *C. latirostris*) and land tenure (conservation areas). Broad Project location map included.
	February 2019	Whyte R, Rothenfluh D, Agutter R	Project brief (written) outlining Project objective, key results of the environmental surveys (including records for Kwongkan TEC and *C. latirostris*) and land tenure (conservation areas). Broad Project location map included.
	May 2018	Whyte R, Rothenfluh D, Kuntsi M	Site inspection of the Project area, with identification and discussion of identified environmental values. Project brief (written) also provided outlining Project objective, key results of the environmental surveys (including records for Kwongkan TEC and *C. latirostris*) and land tenure (conservation areas). Broad Project location map included.
Conservation and Parks Commission	March 2019	-	Conservation and Parks Commission endorsement of excisions to Hassell National Park to facilitate the Project received by Main Roads (received via DBCA)
Department of Planning, Lands and Heritage (DPLH)	November 2018	Registrar	Submission of s18 Consent application to DPLH (on behalf of Minister for Aboriginal Affairs) for Site ID 26295 Archaeological Site 1 Manypeaks.
	June 2018 - ongoing	Rule M, McKay B	Various communications regarding land tenure changes associated with the Road Reserve and Hassell National Park.
Minister for Aboriginal Affairs	April 2019	Wyatt B	Section 18 Consent approval for Project received from Minister for Aboriginal Affairs (with Site ID 26295 assessed as not a site (stored data)).

8 ENVIRONMENTAL MANAGEMENT

8.1 Environmental Management

The key environmental management actions relating to the Project relate to the following environmental aspects:

1) Land clearing, specifically –
    - Vegetation units;
2) Flora taxa;
    - Fauna taxa; and
    - Dieback *Phytophthora cinnamomi*
3) Rehabilitation, specifically –
    - Rehabilitation of redundant road areas following realignment

Appendix 1 provides a draft EMP outlining the proposed environmental management for the Project. The EMP has been drafted consistent with Main Roads' documents *Specification 204 Environmental Management* (Main Roads 2018a) and Principal Environmental Management Requirements (PEMR) (Main Roads 2019a).

The draft EMP comprises a series of PEMRs, including both standard and project-specific procedures, to address the management of the following aspects and impacts associated with the Project and road construction works:

1) Environmental Management Plan (EMP) -
    - Inductions;
    - Clearing;
    - Dieback;
    - Weeds;
    - Vegetation, mulch and topsoil;
    - Stockpiles;
    - Spoil;
    - Aboriginal heritage;
    - Dust;
    - Fauna;
    - Fire;
    - Hazardous materials;
    - Noise;
    - Spills;
    - Wastes;
    - Water abstraction and storage;

- Watercourses and wetlands; and
- Camps and site offices.

To specifically note, the EMP includes 'Hold Points' to be imposed by Main Roads on its Contractor in relation to the demarcation of the clearing area and the management of dieback / protectable areas and materials to ensure that the appropriate steps are implemented to ensure the protection of the adjacent environmental values.

The EMP is provided as 'draft', with a view that as part of the Government environmental assessment processes the DWER and DBCA will be consulted on the proposed management actions, with a view that the EMP will subsequently be amended to incorporate the DWER and DBCA advice.

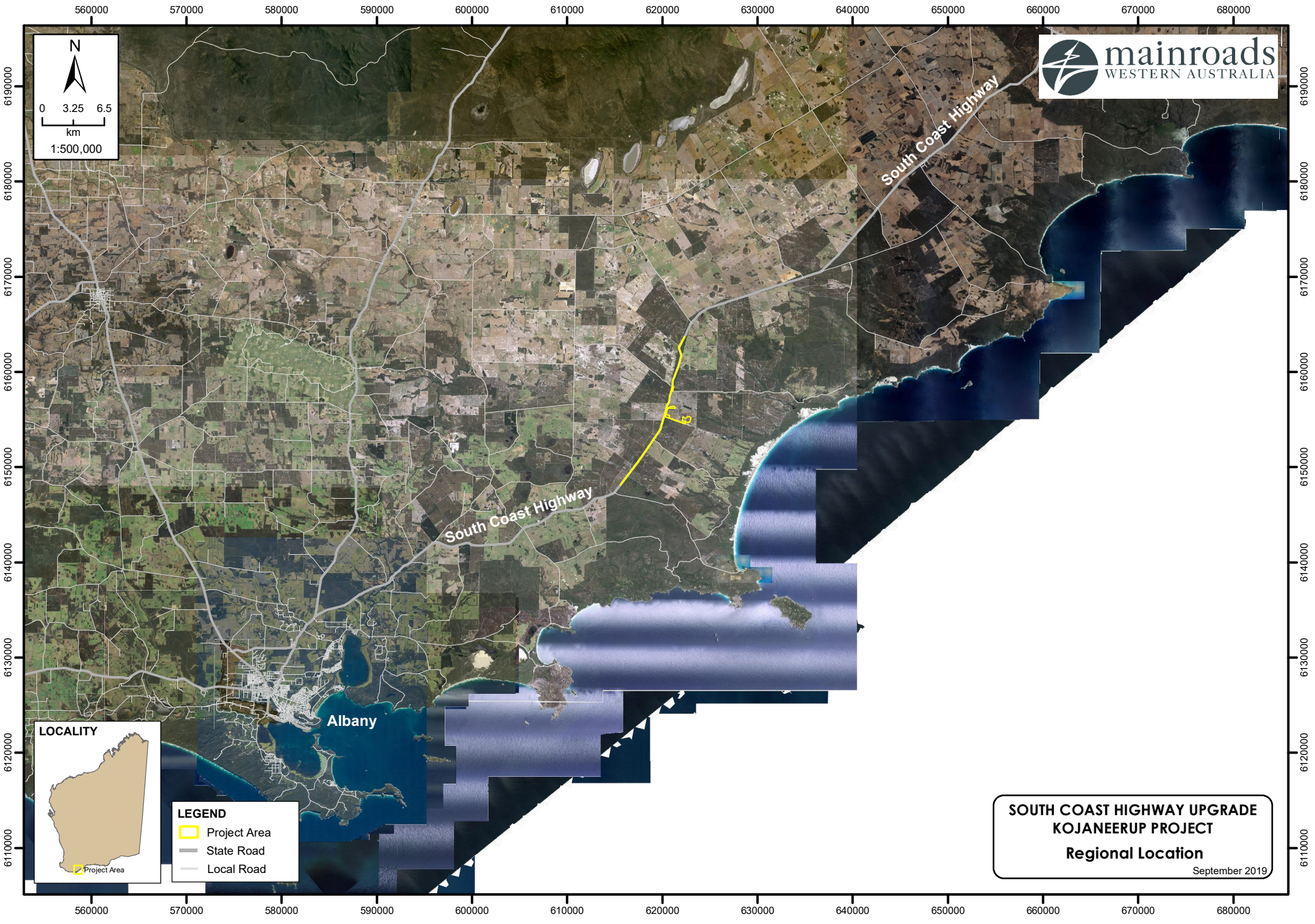
9 PROJECT MAPPING

Table 8 Project Mapping.

MAP SET	MAP TITLE
1	Regional Location
2	Project Area
3	Project Infrastructure
4	Land Tenure
5	Biological Survey Area
6	Flora Taxa
7	Introduced Flora Taxa
8	Vegetation Units
9	Kwongkan TEC
10	Swamp Yate PEC
11	Fauna Taxa
12	Dieback *Phytophthora cinnamomi*
13	Watercourses and Wetlands
14	Rehabilitation

MAP

Regional Location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South Coast Highway
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Project Area
State Road
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SOUTH COAST HIGHWAY UPGRADE
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Regional Location
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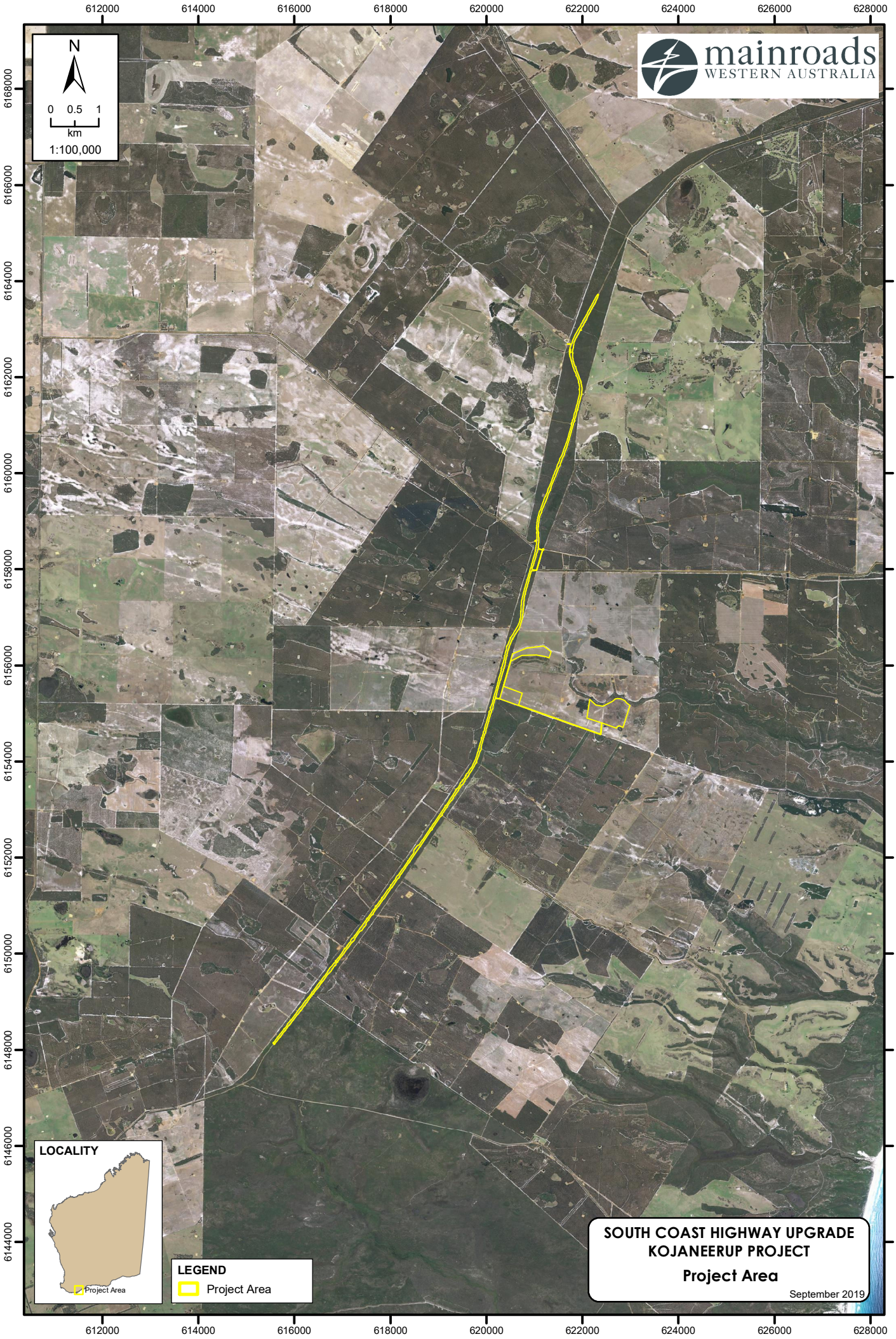
MAP

Project Area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Sheet 1 of 10
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June 2019


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Project Area
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June 2019