Preliminary Documentation

EPBC 2025/10309 Ripley Road & Fischer Road Upgrade

Ipswich City Council

Prepared by:

SLR Consulting Australia Pty Ltd

SLR Project No.: 620.041764.00011

Client Reference No.: Cultural Heritage and Environmental Management: Ripley Road & Fischer Road Upgrade: 27.3.2.1 (b) (i)

26 August 2026

Revision: V3.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	16 March 2026	Leigh Knight Emily Hancock	Dr Natalie Toon	Dr Natalie Toon
2.0	2 June 2026	Emily Hancock	Leigh Knight	Dr Natalie Toon
3.0	30 July 2026	Leigh Knight	Dr Natalie Toon	
3.0	26 August 2026	Leigh Knight	Dr Natalie Toon	

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Ipswich City Council (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Table of Contents

Basis of Report i
Acronyms and Abbreviations vii
1.0 Introduction 8
1.1 Background 8
1.2 Purpose of this Document 9
2.0 Description of the Action 18
2.1 Proposed action 18
2.2 Project components 18
2.2.1 Pre-construction 18
2.2.2 Construction 18
2.2.3 Relationship with adjacent roads and development 19
2.2.4 Access and associated works 20
2.2.5 Activities that may have an impact on the environment 20
2.2.6 Operational 21
2.2.7 Time frame for development 21
2.3 The Project footprint 29
2.3.1 Land within the proposed action area 29
2.3.2 Changes to the impact footprint since referral 31
2.4 Intended land use 37
2.5 Relevant planning legislation 37
2.5.1 Queensland Government 37
2.5.2 Local Government 38
3.0 Description of the environment and Matters of National Environmental Significance 39
3.1 Description of existing environment 39
3.2 Assessment of biodiversity values 41
3.2.1 Desktop assessment 41
3.2.2 Field surveys 42
3.2.3 Results 48
3.2.4 Updated likelihood of occurrence 51
3.3 Potential MNES within the proposed action area 54
3.3.1 MNES ecology and characteristics 54
3.3.2 Habitat for MNES species 55
3.3.3 Adequacy of survey 70

4.0 Impact Assessment 73
4.1 Extent and quality of habitat 73
4.1.1 South-eastern glossy black-cockatoo 73
4.1.2 Koala 73
4.1.3 Grey-headed flying-fox 74
4.2 Assessment of impacts 77
4.2.1 Direct impacts 77
4.2.2 Indirect impacts 78
4.2.3 Connectivity analysis 80
4.2.4 Intensification of indirect impacts 90
4.2.5 Cumulative impacts 90
4.3 Significant impact assessments 94
4.3.1 Koala 94
4.3.2 Grey-headed flying-fox 97
4.3.3 South-eastern glossy black-cockatoo 99
5.0 Avoidance, mitigation and management measures 102
5.1 Avoidance of MNES and habitats 102
5.2 General impact minimisation measures 108
5.3 Connectivity 114
5.4 Measures to minimise koala vehicle collision 114
5.4.1 Assessment of crossing locations 114
5.4.2 Assessment of management devices/strategies 123
5.4.3 Assessment of selected minimisation measures for the Project 135
6.0 Proposed offsets 148
6.1 Offset proposal 148
6.2 Offset Management Plan (OMP) 149
7.0 Habitat quality assessment 151
8.0 Economic and social matters 155
8.1 Public Consultation 155
8.2 Indigenous engagement 156
9.0 Ecologically sustainable development 158
10.0 Environmental record of the person proposing to take the action 159
11.0 Ecological data provision 160
12.0 References 161

Tables

Table 1-1 Table of specific content requested in the RFI 9
Table 2-1 Proposed action development stages 18
Table 2-2 Changes to the proposed disturbance footprint since referral 31
Table 3-1 Summary of PMST Report 41
Table 3-2 Fauna survey methods and survey effort 43
Table 3-3 Location and area of ground-truthed REs 48
Table 3-4 Likelihood of occurrence criteria 51
Table 3-5 MNES for consideration within the proposed action area 54
Table 3-6 Adequacy of survey for MNES within the proposed action area 71
Table 4-1 Area of habitat for MNES within and adjacent to the proposed action area 75
Table 4-2 Projects impacting on MNES in the surrounding area 91
Table 4-3 Significant impact assessment for the endangered koala 94
Table 4-4 Significant impact assessment for vulnerable grey-headed flying-fox 97
Table 4-5 Significant impact assessment for vulnerable south-eastern glossy black-cockatoo 99
Table 5-1 MNES habitat avoided by the Project 102
Table 5-2 Assessment of general mitigation measures 110
Table 5-3 Summary of potential crossing location assessment 115
Table 5-4 Assessment of fauna crossing locations 115
Table 5-5 Suitability assessment of options for fauna mortality mitigation within the Project 124
Table 5-6 Assessment of measures selected to minimise vehicle collision risk for koala 136
Table 6-1 Factors supporting the Proposed Offset site for koala 148
Table 7-1 Habitats and assessment units within the impact and offset sites 151
Table 7-2 Koala habitat quality assessment attributes 151
Table 7-3 Koala habitat residual significant impact 153
Table 7-4 Commonwealth OAG values for koala per utilisation type 154
Table 9-1 Principles of ecologically sustainable development 158

Figures

Figure 1-1 Location of the proposed action 17
Figure 2-1 Ripley Road and Fischer Road Upgrade staging plan 22
Figure 2-2 Adjoining development approved or under construction 28
Figure 2-3 Changes to the proposed disturbance footprint since referral 32

Figure 3-1 Watercourses within the proposed action area 40
Figure 3-2 Location of vegetation and flora surveys 46
Figure 3-3 Location of fauna surveys 47
Figure 3-4 Ground-truthed vegetation within the proposed action area 49
Figure 3-5 Potential biodiversity corridors 52
Figure 3-6 Location of potential south-eastern glossy black-cockatoo nest and foraging trees 53
Figure 3-7 Koala records and State mapped koala habitat in the study area 57
Figure 3-8 Ground-truthed koala habitat mapped within the proposed action area 58
Figure 3-9 Location of local and nationally significant flying fox camps 64
Figure 3-10 Mapped grey-heading flying-fox habitat within the proposed action area 65
Figure 4-1 Areas potentially subject to indirect impacts 76
Figure 4-2 Ecological corridors within the locality 82
Figure 4-3 Values identified under the Ripley Valley Priority Development Area Development Scheme 83
Figure 4-4 Potential koala habitat and corridors within 5 km of the Project area 84
Figure 4-5 Post-construction connectivity and mitigation measures 85
Figure 5-1 Areas of MNES habitat avoided by the Project 103
Figure 5-2 Cross sections of assessed crossing locations 118
Figure 5-3 Proposed location and design of koala mitigation measures 141
Figure 6-1 Proposed offset site 150
Figure 8-1 Structure Plan for Ripley Valley (source: PDA Development Scheme Amendment No 2) 157

Appendices

Appendix A Detailed plans of the proposed action
Appendix B Self-assessment – Variations to the footprint
Appendix C Updated PMST Report
Appendix D Terrestrial Ecological Assessment Report
Appendix E TEAR Addendums
E.1 TEAR Addendum – Additional vegetation survey and assessment of biodiversity corridors
E.2 TEAR Addendum – Glossy black-cockatoo survey
Appendix F Field data
Appendix G Offset Management Plan
Appendix H MNES likelihood of occurrence assessment

Appendix I Construction Environmental Management Plan

Appendix J Species Management Program Outline

Appendix K Code of Practice for Rehabilitation of Sick, Injured or Orphaned Koalas in Queensland

Appendix L Road Lighting Plan

Appendix M Ipswich City Council Enironmental Framework Documents

Acronyms and Abbreviations

ALA	Atlas of Living Australia
Biosecurity Act	*Biosecurity Act 2014* (Qld)
CEMP	Construction Environmental Management Plan
DBH	diameter at breast height
DCCEEW`	Department of Climate Change, Energy, the Environment and Water (Cwth)
DETSI	Department of Environment, Tourism, Science, and Innovation (Qld)
ED Act	*Economic Development Act 2012* (Qld)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
ICC	Ipswich City Council
MNES	Matters of National Environmental Significance
NC Act	*Nature Conservation Act 1992* (Qld)
PD	Preliminary Documentation
PDA	Priority development area
Proponent	Ipswich City Council
Planning Act	*Planning Act 2016* (Qld)
PMST	Protected Matters Search Tool
RE	Regional Ecosystem
RFU	Request for Information
SAT	Spot Assessment Technique
SLC	Special Least Concern
SPRAT	Species Profile and Threats (Database)
TEAR	Terrestrial Ecological Assessment Report
TEC	Threatened Ecological Community
VM Act	*Vegetation Management Act 1999* (Qld)
WoNS	Weeds of National Significance

1.0 Introduction

Ipswich City Council (the Proponent) is proposing the Ripley Road and Fischer Road Upgrade project in Ripley, south of Ipswich central business district, Queensland. The proposed upgrades incorporate sections of Ripley Road, connecting the Cunningham Highway and Centenary Highway, and a section of Fischer Road, which extends north from Ripley Road to Flinders View (Figure 1-1). The upgrades are being undertaken in three stages and this Preliminary Documentation relates to works proposed within Stage 2 and Stage 3 (the proposed action).

1.1 Background

The Ripley Valley, in South East Queensland, was declared an Urban Development Area by the Queensland Government in October 2010 and transitioned to a priority development area (PDA) in 2013. The PDA is expected to ultimately house 131,000 people within approximately 48,750 dwellings. This PDA is one of the largest urban growth areas in South East Queensland, with 649 new dwellings being added in 2025. New infrastructure, including arterial and sub arterial roads, regional bikeways and open spaces are required to support the population growth in the area. The Proponent has identified that the continued growth and development of the area is expected to exceed the transport network's capacity and safety of its users, and that Ripley Road and Fischer Road are key arterial roads to sustain development and population growth.

Stage 2 and Stage 3 of the proposed upgrades (the proposed action) were referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC 2025/10322) on 8 October 2025. The proposed action was declared a controlled action, to be assessed via Preliminary Documentation (PD), on 12 November 2025. Controlling provisions relevant to the proposed action are:

- Listed threatened species and communities (sections 18 and 18A).

The controlled action notice stated that "*the proposed action is likely to have a significant impact on the koala (Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)) through the removal of 3.33 ha of Koala habitat, adversely affecting habitat critical to the survival of the species and increasing the risk of mortality from vehicle strike causing a long-term decrease to the size of the population"*.

The referral was also accepted under section 74A of the EPBC Act. Stage 1 of the upgrade project was declared not a controlled action under a separate referral (EPBC 2025/10309).

A request for further information (RFI) was issued on 11 December 2025 outlining specific matters to be addressed in the PD, including:

- Further information on proposed avoidance and mitigation measures to address potential impacts on koala (*Phascolarctos cinereus*) resulting from the increased risk of vehicle strike associated with the proposed action.
- An assessment of the potential for significant impact to south-eastern glossy black-cockatoo (*Calyptorhynchus lathami lathami*) breeding habitat.
- Mitigation of impacts to protected matters during construction and operation.

An Offset Proposal and Offset Management Plan are also required to support the PD and surveys completed to inform the Offset Proposal are referenced in the PD where they provide data to inform discussion of habitats within the proposed action area.

1.2 Purpose of this Document

This PD has been prepared to present the information required by the guidance issued by DCCEEW with the RFI and to address the specific matters raised in the RFI. These matters, and the section where each is discussed in this PD, are identified in Table 1-1.

Table 1-1 Table of specific content requested in the RFI

No.	Matter and Requirement	Relevant Section
Attachment A - Request for further information required for assessment by preliminary documentation		
1	**Species specific information**	
1.1	**Koala**	
	Further information is required on proposed avoidance and mitigation measures to address potential impacts on koalas resulting from the increased risk of vehicle strike associated with the proposed action	5.4
	Mitigation of impacts to protected matters during construction and operation must be presented in accordance with Section 5 of Attachment B of the RFI.	5.0
1.2	**South-eastern Glossy Black-Cockatoo**	
	Additional information consisting of a significant impact assessment is required to determine whether the proposed action is likely to cause a significant impact to South-eastern Glossy Black-Cockatoo breeding habitat.	4.3.3
2	**Mitigation Measures**	
	Mitigation of impacts to protected matters during construction and operation must be presented in accordance with Section 5 of Attachment B of the RFI.	5.0
3	**Offsets**	
	For any residual significant impact to protected matters that cannot be avoided or mitigated, offsets must be provided (in accordance with Attachment B and C of the RFI and Attachment C1: Assessment Guidance on the use of the Modified Habitat Quality Assessment method).	6.0
Attachment B – General content for preliminary documentation		
1	**General content, format and style**	
1.1	Include a reference table indicating where to find information and links within the document to relevant sections.	Table 1-1
1.2	Where relevant information was provided in the referral, please incorporate, or cross-reference to this information as necessary in the preliminary documentation.	2.0
1.3	Contain sufficient information to allow the Minister (or delegate) to make an informed decision on whether to approve, under Part 9 of the EPBC Act, the taking of the action for the purposes of each controlling provision. Contain sufficient information to enable interested stakeholders to understand the environmental consequences of the proposed development on matters of national environmental significance (MNES).	This document
1.4	Ensure all work and conclusions:	

No.	Matter and Requirement	Relevant Section
	a) are presented clearly, unambiguously, succinctly and objectively. b) are evidence based, and the evidence is provided. c) are supported by peer reviewed literature, with references provided, or expert opinion. d) use scientifically robust methodologies appropriate to the purpose, including a justification of why the methodology/s was selected; details of the methodology described in a manner that allows an independent suitably qualified practitioners to apply the method; and state any limitations of the chosen approach. e) are supported by maps, plans, diagrams, baseline surveys or other descriptive detail. f) maps must clearly identify development footprints, buffer zones, and any conservation areas where impacts will be avoided, and areas of adjacent habitat that would be subject to indirect impacts, including areas that are to be retained within and adjacent to the site. g) use active language and state clear commitments (e.g., 'must' and 'will') where appropriate, particularly in describing avoidance, mitigation and management actions and outcomes. h) demonstrate the use of the most up to date statutory documents including Approved Listing Advice(s), Conservation Advice(s), Recovery Plan(s), Threat Abatement Plan(s) or comparable policy guidelines, and approved survey methods. i) demonstrate the use of up-to-date; policy guidelines, scientific methods, information, data and species-relevant survey methods. j) appropriately reference all sources using the Harvard standard. The reference list must include the address of any internet pages used as data sources.	All sections as appropriate
2	**Description of the action**	
2.1	The preliminary documentation must include:	
	a) A description of all components of the proposed action (such as pre-construction, construction and operational), including the staging, sequencing, duration and timing.	2.2.1
	b) A description of the anticipated start and completion dates of all actions such as the extent, staging and timing of clearing undertaken over the construction period.	2.2.7
	c) The location, extent, and size (in hectares) of the total project footprint, disturbance/impact footprint, and of any adjoining areas (beyond the impact area) that may be subject to indirect or facilitated impacts, including edge effects, noise or light spill, vehicle access or other associated activities.	2.3; 4.1, 4.2.2, 4.2.4
	d) A description, with supporting spatial information, detailing all site access roads and any other shared infrastructure with adjacent projects/areas to be constructed to facilitate the proposed action.	2.2.3, 2.2.4
	Please describe any changes to project or disturbance footprints that may have occurred since the original referral. Please note these changes may require a formal variation request.	2.3.2
2.2	Provide a description of the intended land uses proposed as part of the completed development, including of any proposed open space and/or conservation areas and associated ongoing activities, and details of the intended party that would be responsible for future management activities.	2.4

No.	Matter and Requirement	Relevant Section
2.3	Details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that applies or is likely to apply to the proposed action. Details should include, but are not limited to:	2.5
	a) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy	2.5
	b) application/approval numbers for existing applications where relevant	2.5
	c) obtained approvals or additional approvals that are required.	2.5
3	**Description of the environment and Matters of National Environmental Significance**	
3.1	A description of the environment more broadly including previous and current land use within and surrounding the proposed action area.	3.1
3.2	A description of any potential listed threatened species or ecological community (including but not limited to those listed in this request for information) that occur in the project area and adjacent areas.	3.2.4; Appendix H; 3.3
3.3	For listed threatened species and ecological communities that have the potential, or are likely, to be present at and in the vicinity of the project site, including but not limited to those listed in this request, please provide a likelihood of occurrence assessment including the following:	3.3
	a) Information on the abundance, distribution, ecology and habitat preference of the species or communities.	3.3.1
	b) Quantification of the extent of habitat (including maps identifying known or potential habitat) on site and, where feasible, in the broader landscape.	3.3.2
	c) Quality and importance of known or potential habitat for the species or communities.	3.3.2
	d) Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations.	3.3.2
	e) Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impacts outside the project site.	3.3
3.4	Up to date baseline and survey data at the impact site(s), and if relevant, the proposed offset site(s) site, including:	3.2; 3.2.2
	a) Information on the survey methodology or technique used (e.g., thermal detection, camera trapping, tree hollow search, SAT surveys etc) b) When surveys were conducted (e.g., dates, time of day, season, etc.) and survey effort (e.g., two hours for every one hectare within a 5-hectare area)	3.2.2; Table 3-6
	c) Map/s of survey points or transects and how the survey points or transects were selected.	3.2.2; Figure 3-2; Figure 3-3
	d) An assessment of the adequacy of any surveys undertaken with reference to any relevant scientific literature and/or statutory documents. In particular, the	3.3.3

No.	Matter and Requirement	Relevant Section
	extent to which these surveys were appropriate for the species and undertaken in accordance with relevant survey guidelines.	
	e) Results of all surveys undertaken. Include raw data sheets of all surveys undertaken as attachments to the documentation.	3.2.3; Appendix F
3.5	Based on survey data and with reference to relevant statutory documents, provide a clear description of the total extent and quality of habitat present within and surrounding the proposed action area for each species or ecological community potentially present or impacted by the action. For all species with residual significant impacts the method used to quantitatively assess the quality of habitat must be discussed and endorsed by the department before being applied.	4.1
4	**Impact Assessment**	
4.1	Include a clear description of the total extent and quality of the following:	
	a) project footprint (including the total extent of habitat present for each relevant protected matter)	4.1
	b) direct and indirect impact areas (including the total extent of habitat for each relevant protected matter to be impacted)	4.1; Table 4-1
	c) total areas proposed to be retained/avoided (including the total extent of habitat present for each relevant protected matter to be avoided).	5.1
4.2	To inform point 4.1, please provide an assessment of the direct, indirect, facilitated and cumulative impacts that may occur as a result of the proposed action at a local and regional scale. The assessment should include consideration of:	4.2
	a) the nature, likelihood, significance, and extent of impacts and whether any relevant impacts are likely to be unknown, unpredictable or irreversible.	4.2
	b) timing and whether the impact is temporary or permanent	4.2
	c) species specific habitat requirements such as hollow bearing trees, nest trees, refuge habitat, foraging and breeding habitat, sheltering or other microhabitat features relevant to the species within and surrounding the development footprint (if applicable).	4.2
	d) whether connectivity and movement opportunities in the surrounding area may be retained, removed or functionally lost or compromised.	4.2; 4.2.3
	e) adjacent areas of habitat that may or will be subject to intensification of ongoing impacts (for example, through increased human and vehicle presence)	4.2; 4.2.4
	f) indirect or facilitated impacts that may result from the proposed action including, but not limited to, the following: i) Edge effects – including the potential for the introduction of weed species and pathogens in the referral area and adjacent environment. ii) Vehicle movement – potential increase of vehicles to strike fauna in the pre-construction, construction, and operation phase of the project.	4.2.2

No.	Matter and Requirement	Relevant Section
	iii) Increased presence of dogs – pre-construction, construction and operation phases have the potential to increase dog presence in the referral area and adjacent environment. iv) Earthworks – potential to generate dust emissions from the removal of vegetation and movement of soil in the pre-construction and construction phase of the project. v) Disturbance from increased noise, artificial light, sediment generation and other relevant stressors during construction and operation of the residential development.	
	g) cumulative impacts, where potential project impacts on MNES are in addition to existing impacts of other activities (including current or future developments by the proponent and other proponents in the region and vicinity)	4.2.5
4.3	Include current maps and coordinates/shapefiles showing the total project footprint, total disturbance/direct and indirect impact areas, areas of habitat for MNES proposed to be retained.	Figure 2-1, Figure 3-8, Figure 3-10, Figure 5-1
4.4	Include details of any policy guidelines, relevant studies, surveys, or consultations with species experts/field specialists, which were not included in the referral or additional information provided in support of the referral.	Table 5-5
5	**Avoidance, mitigation and management measures**	
5.1	Demonstrate that you have applied the mitigation hierarchy and exhausted all options to avoid and mitigate harm to protected matters, before resorting to environmental offsets. In doing this, you must demonstrate that any avoidance or mitigation measures will provide ecological benefits to the species in the long-term. For example, on-site avoidance/conservation areas must be connected or provide connectivity opportunities for species in the broader landscape, and must include enduring mitigation of impacts from adjacent development.	5.0
5.2	Provide details (including a summary list or table) of avoidance and mitigation measures proposed to be undertaken to prevent or minimise impacts on protected matters (or their habitat) from the proposed action area, including:	5.0
	a) a description of avoidance measures that have been considered and applied. For example, project site selection to avoid valuable habitat, micro-siting of infrastructure to avoid impacts on habitat on site, or avoidance of any activity that may indirectly impact on essential lifecycle processes for species.	5.1
	b) a description of proposed safeguards and mitigation measures to minimise and manage relevant impacts of the action, with reference to relevant statutory or policy documents at the Commonwealth and State level (e.g., Guideline: State Development Assessment Provisions (State Code 25)).	5.2; 5.4
	c) pre-clearance and clearance procedures to ensure that species are detected and managed to minimise mortality, stress, injury, or introduction of disease.	5.2
	d) measures to address the risk of species, such as the koala, entering the residential area and becoming trapped/isolated without resources for shelter whilst in the residential area and safe movement opportunities to get out of the residential area, along with sufficient information on the location and design of these measures.	5.3; 5.4

No.	Matter and Requirement	Relevant Section
	e) ongoing management of direct and indirect impacts due to increased likelihood of human presence, attacks by domestic dogs, and injury caused by negotiating various fence types.	5.2; 5.3; 5.4
	f) details of how speed reduction is to be achieved (e.g., traffic calming devices) and plans showing the locations of each of these features and the manner in which they will be implemented).	5.4
	g) information on safe road design and placement, including installation of crossing warning signs, wildlife threshold marking on road (include maps and imagery).	5.4
	h) the locations and size of any proposed fauna movement solutions, fire breaks, no-go or buffer zones (including buffers between the construction footprint or remaining habitat in the referral area and adjacent to the site), and potential fencing, including: i) the location of any movement solutions, fire breaks, buffer zones, or fencing. ii) the characteristics of the fauna movement solutions, fire breaks, buffer zones and fencing, (i.e., height, length, wildlife proof measures etc) iii) whether the proposed measures, such as fencing will provide a wildlife barrier to/from/within the proposed action area.	5.4
	i) a description of the environmental outcomes the measures are expected to achieve including provision of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes.	5.4
	j) information on the timing, frequency, and duration of the measures to be implemented.	5.2; 5.4.3
	k) an actual or estimated cost of the mitigation measures.	5.4.3
5.3	Provide an assessment of the predicted effectiveness of each proposed avoidance or mitigation measure, noting that the effectiveness of a particular measure is a reflection of confidence in the anticipated outcome. The assessment of effectiveness should be evidence based and include examples of demonstrated success of a particular measure to achieve the desired avoidance/mitigation outcome.	5.2; 5.4; Table 5-4; Table 5-6
5.4	For each measure proposed, indicate the:	
	a) impacts that are being avoided and/or the significance of impacts being reduced through mitigation.	Table 5-4; Table 5-6
	b) Scientific basis for conclusions being drawn	Table 5-4; Table 5-6
	c) an evidence-based likelihood of success/risk assessment	Table 5-4; Table 5-6
	d) responsible party	Table 5-4; Table 5-6
	e) milestones / performance / completion criteria	Table 5-4; Table 5-6
	f) proposed monitoring and evaluation program.	Table 5-4;

No.	Matter and Requirement	Relevant Section
		Table 5-6
5.5	Proposed management plans need to be consistent with the Environmental Management Plan Guidelines - DCCEEW.	Table 5-4; Table 5-6
5.6	Describe any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advice, recovery plan or threat abatement plan, and a discussion on how the proposed measures are not inconsistent with relevant plans.	Table 5-4; Table 5-6
5.7	All proposed measures must consider the 'S.M.A.R.T' principle: S – Specific (protected matter-specific objectives, methods, outcomes, and repeatability) M – Measurable (baseline information, quantifiable, auditable) A – Achievable (timeframes, financial and human resources) R – Relevant (conservation advice, recovery plans, threat abatement plans) T – Time-bound (set implementation, performance and completion timeframes).	Table 5-4; Table 5-6
6	**Proposed offsets**	
	Where residual significant impacts to listed threatened species or ecological communities remain after application of all reasonable avoidance and mitigation measures, a compensatory environmental offset in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy (EPBC Offsets Policy) is required.	6.0
	If an offset is required, prior to publication, the preliminary documentation must include an:	
	Offset Proposal – The Offset Proposal must provide detail about the proposed offset site or sites including baseline survey information (for weed cover and pest species), habitat or vegetation quality scores, how the offset will be managed, and evidence that the protected matter is present or uses the offset site (baseline surveys for the protected matter). The Offset Proposal must demonstrate how the proposed offset is suitable and meets the principles of the EPBC Offsets Policy and must include sufficient information for the department to assess it using the EPBC Offsets Assessment Guide.	6.1 Included in Appendix G
	Offset Management Plan (OMP) – The OMP supports the Offset Proposal and must detail all the management activities to be undertaken at the offset site including setting environmental objectives, milestones, monitoring and reporting measures. Management plans and activities must be targeted towards the specific plant, animal or ecological community (protected matter) that is being offset. If there is more than one offset site, then a separate OMP must be prepared for each site.	6.2 Appendix G
7	**Habitat quality assessment**	
	A methodology that is suitable for each listed threatened species or threatened ecological community (i.e., endorsed by the department or supported by literature) where there is a residual significant impact must be used to assess habitat quality, noting the same scoring mechanism must be used at both impact and offset sites.	7.0
8	**Economic and social matters**	
	If not previously provided in the referral documentation, the preliminary documentation must:	8.0

No.	Matter and Requirement	Relevant Section
8.1	Provide details on the social and economic costs and/or benefits of undertaking the proposed action, including the basis for any estimations of costs and/or benefits. Where possible, please include the total economic capital investment and economic ongoing value of the project.	8.0
8.2	Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place.	8.0
8.3	Provide details of any public stakeholder consultation activities, including the outcomes of those consultations.	8.0
8.4	Indigenous engagement Identify existing or potential native title rights and interests, including any areas and objects that are of particular significance to Indigenous peoples and communities, possibly impacted by the proposed action and the potential for managing those impacts.	8.2
9	Ecologically sustainable development	9
10	Environmental record of the person proposing to take the action	10.0
11	Ecological data provision	11.0
Attachment C – Information requirements for EPBC Act Offset Proposals and Offset Management Plans		
1	Offset Proposal	6.1 Included in Appendix G
2	Offset Management Plan	6.2 Appendix G



Data Source:
Aerial Imagery: Nearmap captured on 20250331.
Project Area supplied by client.

0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:10,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

LOCATION OF THE PROPOSED ACTION

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 1-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F01-01_Location of the Proposed Action

2.0 Description of the Action

2.1 Proposed action

The proposed Ripley Road and Fischer Road Upgrade project will be undertaken in three stages, with all stages identified on Figure 2-1 to provide context. Stages 2 and 3 are summarised in Table 2-1.

Table 2-1 Proposed action development stages

Stage	Road Name	Start	End	Length
2	Ripley Road	Ripley Road / Monterea Road intersection	Ripley Road (extending 200 m beyond Brooking Rise) (including the Fischer Road / Wensley road intersection and the tie ins)	2,105 m
3	Fischer Road	Fischer Road / Monterea Road intersection (including the connections)	Fischer Road (to Monterea Road intersection) (including Nevis Road intersection and the interchange connection)	700 m
			Total	**2,805 m**

2.2 Project components

The proposed upgrade of Ripley Road will consist of widening the road from just north of Monterea Road to a point 200 m beyond Brooking Rise to the south east. The upgrade will increase the width of the road from a single lane in either direction to a four lane divided road, two lanes in either direction, with provision for up to six lanes in the future to accommodate traffic over the next 20 years.

The proposed upgrade of Fischer Road extends from the Fischer Road / Nevis Road intersection to the Fischer Road / Monterea Road intersection plus approximately 200 m of footpath. The proposed upgrade of Fischer Road will create a two-lane, two-way, sub-arterial section of road between Nevis Road and Monterea Road.

Detailed plans of the proposed works are provided in Appendix A.

2.2.1 Pre-construction

Preconstruction activities relate predominantly to design activities. Minor works not involving impacts on any identified biodiversity values will occur under the Stage 1 scope of works (declared not a controlled action).

2.2.2 Construction

Plans of the works involved, including alignment and cross sections, are provided in Appendix A. The development and construction of the proposed action will include the following works:

- Stage 2:
  - Widening of existing Ripley Road to four lanes (two each way)

- New drainage system consisting of a reinforced concrete box culvert (RCBC) to convey stormwater from Satterly retention basin to Scotts Park drainage easement, crossing Ripley Road south of McHales Basin
- Replacement of existing culvert near Jackson Court with new major RCBC which includes provisions for fish passage
- New continuous active transport facilities including a 1.5 m pedestrian path and 2.5 m cycle path
- New bus stops
- New signalised intersection at Monterea Road - including stub for future development
- New service roads to existing residential areas to limit direct access to Ripley Road
- New signalised intersection at Scotts Road - including stub for future development
- New signalised intersection at Fischer Road
- New fencing including different construction for fauna management and pedestrian safety
- New retaining wall at Monterea Road service road
- Upgrade of existing Parkview Parade intersection to include dedicated right turn
- Public utility plant relocations to facilitate road works
- New feature landscaping
- Works to accommodate access to adjacent private properties.

- Stage 3:
  - Straightening of Fischer Road, maintaining the current two lane (one each way) arrangement
  - New continuous active transport facilities including a 3.0 m shared path with raised crossings
  - 100 m long retaining wall north of Nevis Street to reduce project footprint
  - Replacement of existing culvert near Nevis Road with new major RCBC
  - Public utility plant relocations to facilitate road works
  - New fencing including different construction for fauna management and pedestrian safety
  - New feature landscaping
  - Works to accommodate access to adjacent private properties.

2.2.3 Relationship with adjacent roads and development

The works outlined in Section 2.2.2 are all located within the action footprint as shown on Figure 2-1. Details of all connections with side roads, access properties and infrastructure connections are shown on the detailed plans in Appendix A.

Stage 2 works commence just north of the Monterea Road intersection. Monterea Road will be upgraded for a distance of approximately 120 m to the west of the intersection.

Intersection upgrades of varying lengths are proposed at Falvey Street, Michels Street, Scotts Road, Rhea De Wit Drive and Lilium Street (opposite each other), Wensley Road, Brooking Rise and Fischer Road. Stage 2 works extend approximately 240 m along Fischer Road. New road junction points are proposed to continue Monterea Road to the east and opposite Scotts Road intersection.

Currently there are a number of properties with direct access to Ripley Road. To limit this direct access a service road will be built parallel to the eastern side of Ripley Road in Stage 2 between the Monterea Road intersection and the Scotts Road intersection. This will involve intersecting streets including Falvey Street, Michels Street and the access to 21 properties. South of Scotts Street a second shorter service road will provide access for three additional properties. Land parcels along the balance of Stage 2 along Ripley Road obtain access via other streets.

Details of these service roads, tie ins with existing intersections and proposed new roads are all shown on Appendix A, Roadworks and Setout Plan Sheets 5 – 19. Details of new footpaths, traffic management devises and drainage works are also identified on these plans.

Stage 3 works involve upgrades to Fischer Road including upgrades to intersections with Nevis Road, Daisy Street, Clarke Street and the eastern ends of Scotts Road, Michels Street and Falvey Street. Details of tie-ins with existing intersections and new footpaths, traffic management devises and drainage works are all shown on Appendix A, Roadworks and Setout Plan Sheets 19 – 24.

Works throughout Stages 2 and 3 have been designed to accommodate approved and under construction projects adjoining the Project footprint. Developments approved or under construction adjacent the Project footprint are shown on Figure 2-2.

2.2.4 Access and associated works

All construction activities will be limited to the Project footprint with no adjacent land to be used for laydowns, stockpiles or other temporary activities. These will be constructed as required and removed as part of the works and land reinstated where required.

Existing infrastructure within the Project footprint, where required to be relocated for construction, will be located within the Project footprint. Where required, provision has been made for connection to adjacent development or infrastructure upgrades, such as the electrical substation proposed between Binnies Road and Lilium Street.

2.2.5 Activities that may have an impact on the environment

The activities for the Proposed Action that may have a direct or indirect impact on the environment include:

- Demolition works including removal of existing kerb and channel, footpaths and signage
- Construction work adjacent to native vegetation
- Clearing areas of vegetation
- Earthworks to achieve required road footprint areas and grade
- Works within or impacting on drainage lines
- Widening of the constructed area of Ripley Road from one to two lanes in both direction

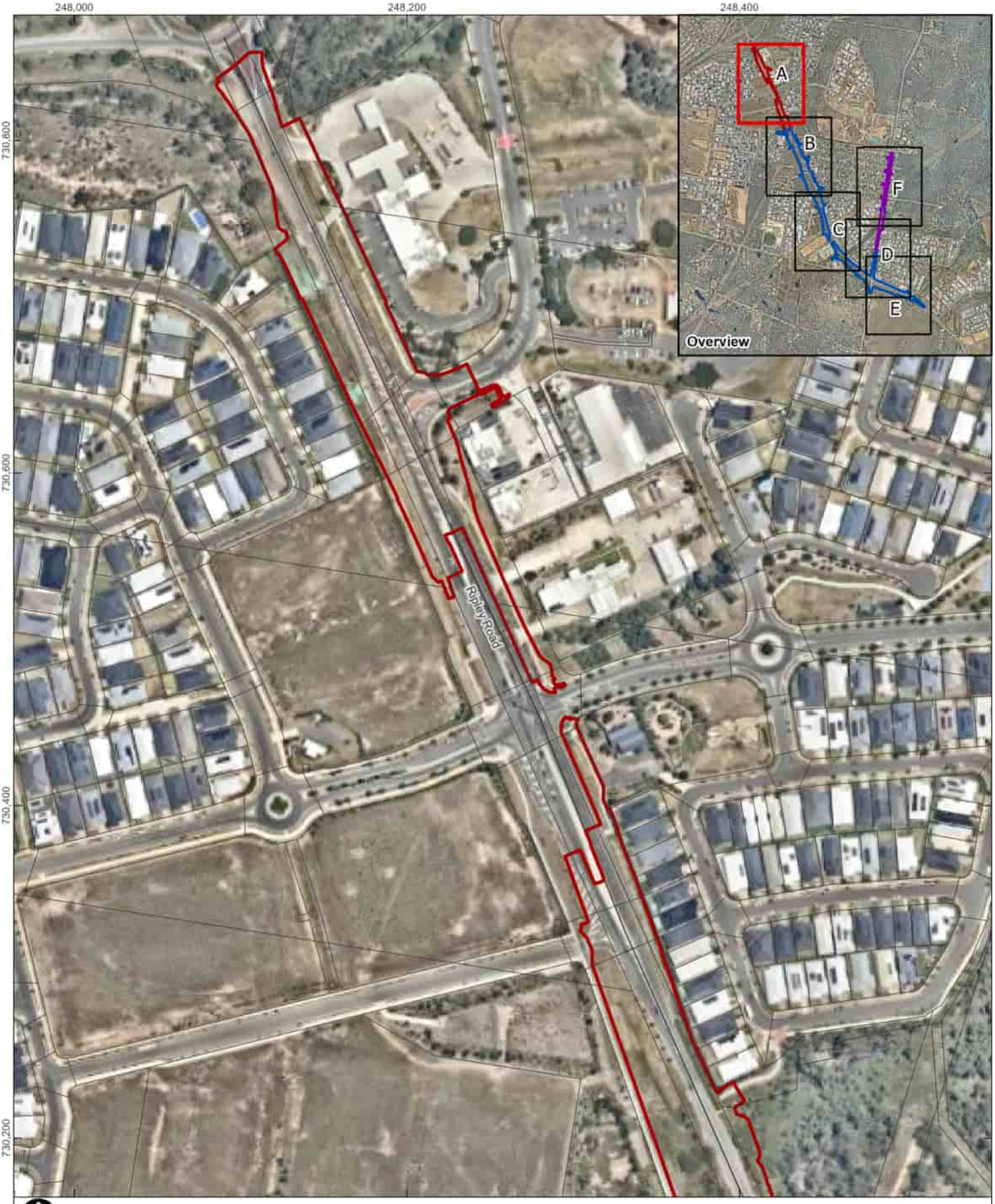
- Upgrading Fischer Road
- Drainage works including modification and installation of culverts and other stormwater management infrastructure
- Installation of fish passage infrastructure in drainage lines.

2.2.6 Operational

The road upgrades have been designed to accommodate traffic flows generated by growth in the Ripley Valley and adjacent areas over the next 20 years. Traffic volumes will increase significantly in response to urban development in the PDA and wider Ipswich region and it is proposed to widen Ripley Road to support four lanes of traffic, with provision for six lanes in the future. The Project occurs within a highly disturbed environment, surrounded by residential and industrial development and alongside existing roads with limited opportunity for fauna passage between areas of potential habitat. The widening of Ripley Road will increase the width of the current physical barrier to fauna movement and dispersal. The installation of fencing for fauna management and pedestrian safety increases the potential for wildlife entrapment within the road corridor and adjacent urban environment.

2.2.7 Time frame for development

The proposed action is anticipated to start construction in 2026 and is anticipated to be constructed within 36 months (subject to detailed design, weather and other external factors). The wider Ripley Road and Fischer Road Upgrade project is anticipated to be completed by December 2028.



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	5/22/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre

Project Area

- Stage 1

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

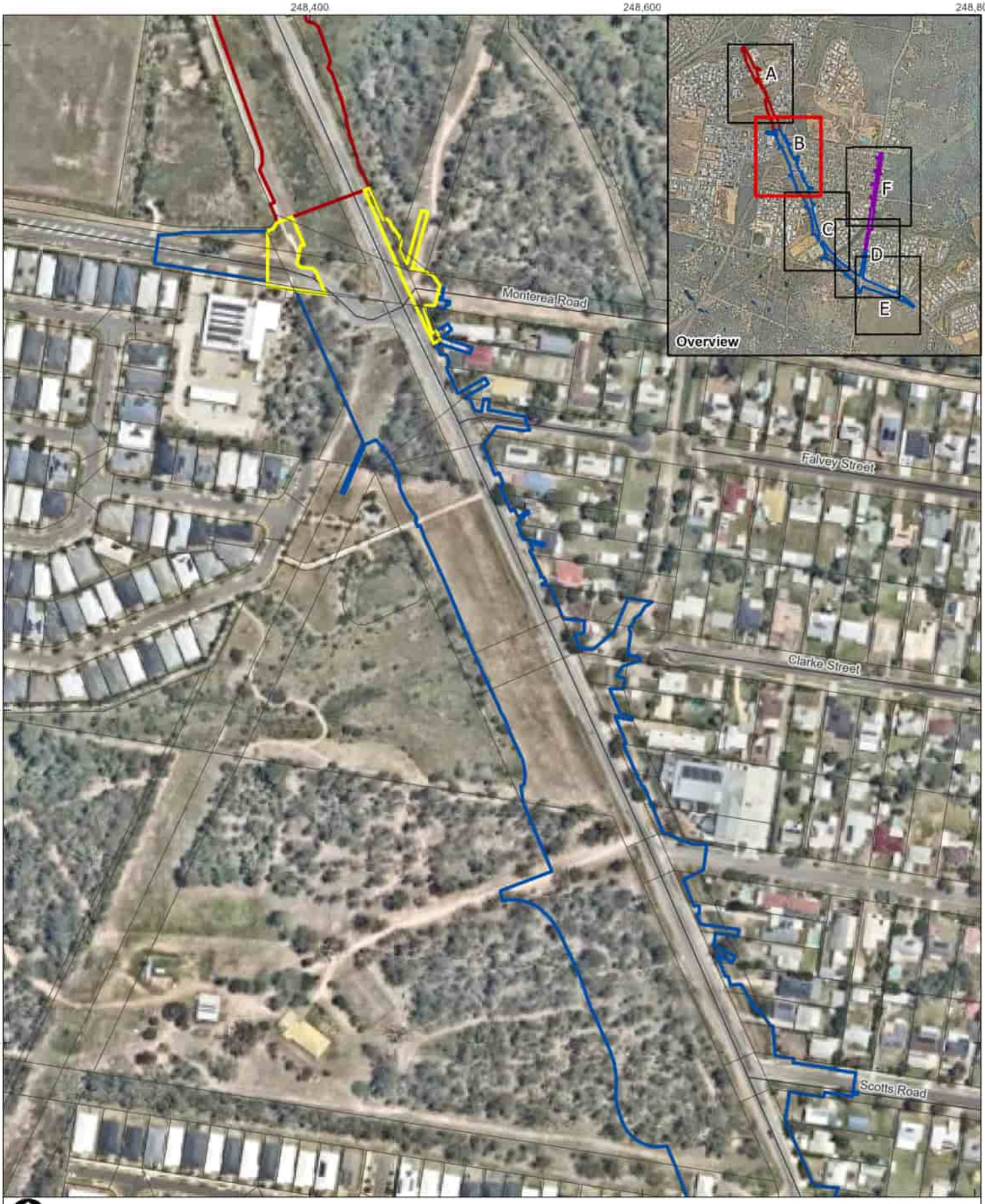
RIPLEY ROAD AND FISCHER ROAD UPGRADE STAGING PLAN

SLR

DISCLAIMER. All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-01_Ripley Road and Fischer Road Upgrade Staging Plan



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	5/22/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre

Project Area

- Self assessment area
- Stage 1
- Stage 2

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

RIPLEY ROAD AND FISCHER ROAD UPGRADE STAGING PLAN

SLR

DISCLAIMER. All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-01_Ripley Road and Fischer Road Upgrade Staging Plan



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	5/22/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre

Project Area

- Stage 2

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

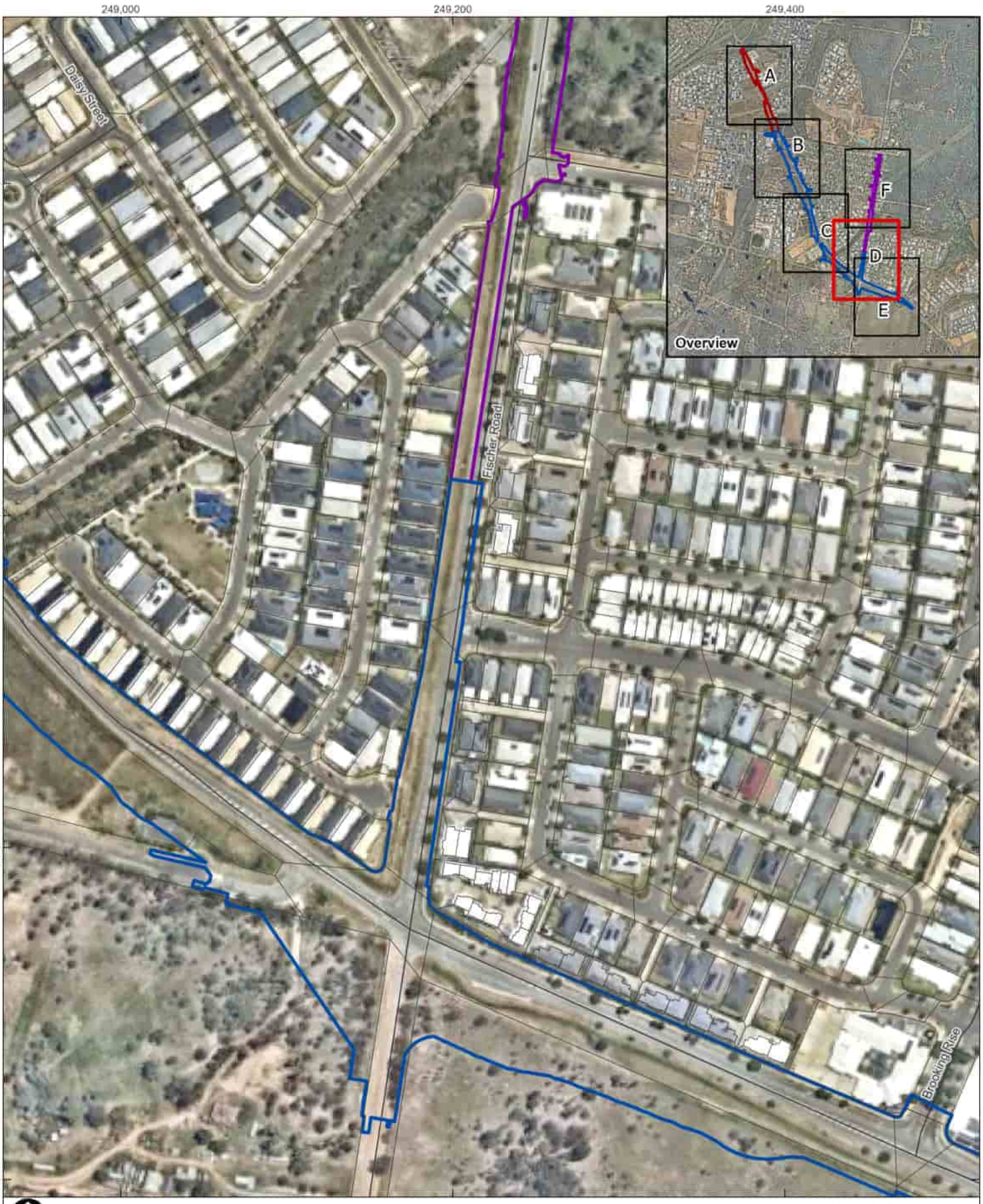
RIPLEY ROAD AND FISCHER ROAD UPGRADE STAGING PLAN

SLR

DISCLAIMER. All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-01_Ripley Road and Fischer Road Upgrade Staging Plan



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	5/22/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre

Project Area

- Stage 2
- Stage 3

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

RIPLEY ROAD AND FISCHER ROAD UPGRADE STAGING PLAN

SLR

DISCLAIMER. All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fisher Road Upgrade\ICC Ripley and Fisher Road Upgrade.aprx\620041764_ECO_PDR_F02-01_Ripley Road and Fischer Road Upgrade Staging Plan



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	5/22/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre

Project Area

- Stage 2

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

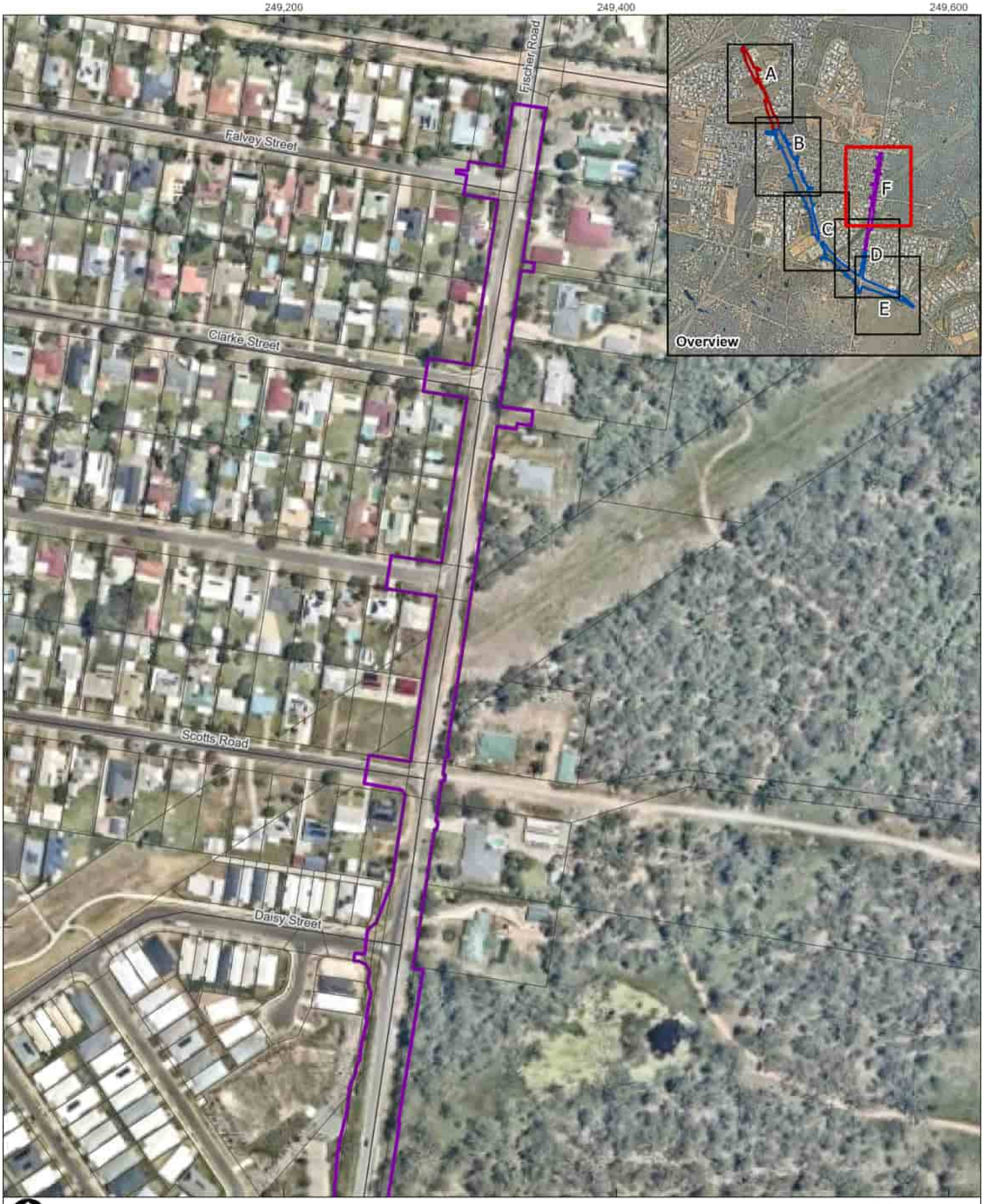
RIPLEY ROAD AND FISCHER ROAD UPGRADE STAGING PLAN

SLR

DISCLAIMER. All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-01_Ripley Road and Fischer Road Upgrade Staging Plan



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	5/22/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre

Project Area

- Stage 3

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

RIPLEY ROAD AND FISCHER ROAD UPGRADE STAGING PLAN

SLR

DISCLAIMER. All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-1



0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:14,000 at A4
Project Number:	620.041764
Date Drawn:	5/29/2026
Drawn by:	DC

LEGEND

- Road
- Cadastre
- Development approved or under construction
- Project Area

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

ADJOINING DEVELOPMENT APPROVED OR UNDER CONSTRUCTION

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-2

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-02_Adjoining development approved or under construction

2.3 The Project footprint

2.3.1 Land within the proposed action area

The Proposed Action will be established over the existing Ripley Road and Fischer Road formations, adjoining road easement and freehold properties, totalling 14.793 ha (Action Area). The following land parcels are included in the action area.

Lot	Plan	Address
N/A	N/A	Ripley Road and Fischer Road
N/A	N/A	Lilium Street
27	RP24410	1 Scotts Road
41	RP24410	432 Ripley Road
42	RP24410	434 Ripley Road
43	RP24410	436 Ripley Road
44	RP24410	438 Ripley Road
45	RP24410	440 Ripley Road
46	RP24410	442 Ripley Road
140	RP24410	420 Ripley Road
141	RP24410	422 Ripley Road
142	RP24410	424 Ripley Road
180	RP24410	410 Ripley Road
181	RP24410	412 Ripley Road
183	RP24410	2 Clarke Street
273	RP24410	400 Ripley Road
274	RP24410	402 Ripley Road
275	RP24410	404 Ripley Road
6	RP848627	33 Jackson Court
3	RP892012	39 Jackson Court
348	S3173	433 Ripley Road
359	S3173	2 Jackson Court
191	SL18	54 Wensley Road
178	SP141675	Lot 178 Fischer Road
173	SP197412	226 Fischer Road
174	SP197412	240 Fischer Road
175	SP197412	246 Fischer Road
176	SP197412	214 Fischer Road
600	SP265858	N/A
2	SP265917	10 Foxtail Road

Lot	Plan	Address
800	SP265917	13 Tuckeroo Street
902	SP291456	35 Carlos Street
67	SP293716	2 Rhea De Wit Drive
68	SP293716	1 Trevorrow Way
2	SP297416	7 Nevis Road
186	SP308509	11 Ebony Close
801	SP308509	35 Amber Circuit
803	SP308509	2 Blackberry Way
101	SP317384	1 Lilium Street
91	SP339104	
91	SP317407	7001 Binnies Road
9001	SP319185	99 Binnies Road
3	SP339922	140 Monterea Road
901	SP343542	59 Blackstone Crescent
376	SP343543	4 Goldleaf Court
377	SP343543	2 Goldleaf Court
91	SP343557	N/A
91	SP343557	N/A
91	SP343557	N/A
1600	SP343557	1 Binnies Road
3	SP343558	12 Binnies Road
600	SP265858	491 Ripley Road
912	SP346159	N/A
1	SP352294	N/A

The location of the proposed action is shown on Figure 2-1 with detail of the works proposed on each lot shown on the plans in Appendix A.

The proposed action is situated predominantly within existing road formation, degraded road verges and remnant and regrowth eucalypt woodland. Much of the adjoining land is developed for urban purposes however there are some areas where potential habitat for flora and fauna will be impacted. In the absence of mitigation, vegetation adjoining the areas of habitat to be impacted may also be affected by indirect impacts such as noise, general disturbance, weed incursion and other edge effects. However, these impacts will be localised and limited to vegetation and more disturbed dispersal habitats adjacent to the habitats identified in this PD. Best practice construction environmental management will be implemented to minimise and mitigate these impacts.

Access for construction will be from existing roads and managed to minimise impacts on adjacent habitats and residential development. Construction areas will be accommodated on existing disturbed land within the proposed action area. No shared infrastructure is proposed

other than essential upgrades of private driveways impacted by the design and necessary upgrades or relocation of public utilities.

2.3.2 Changes to the impact footprint since referral

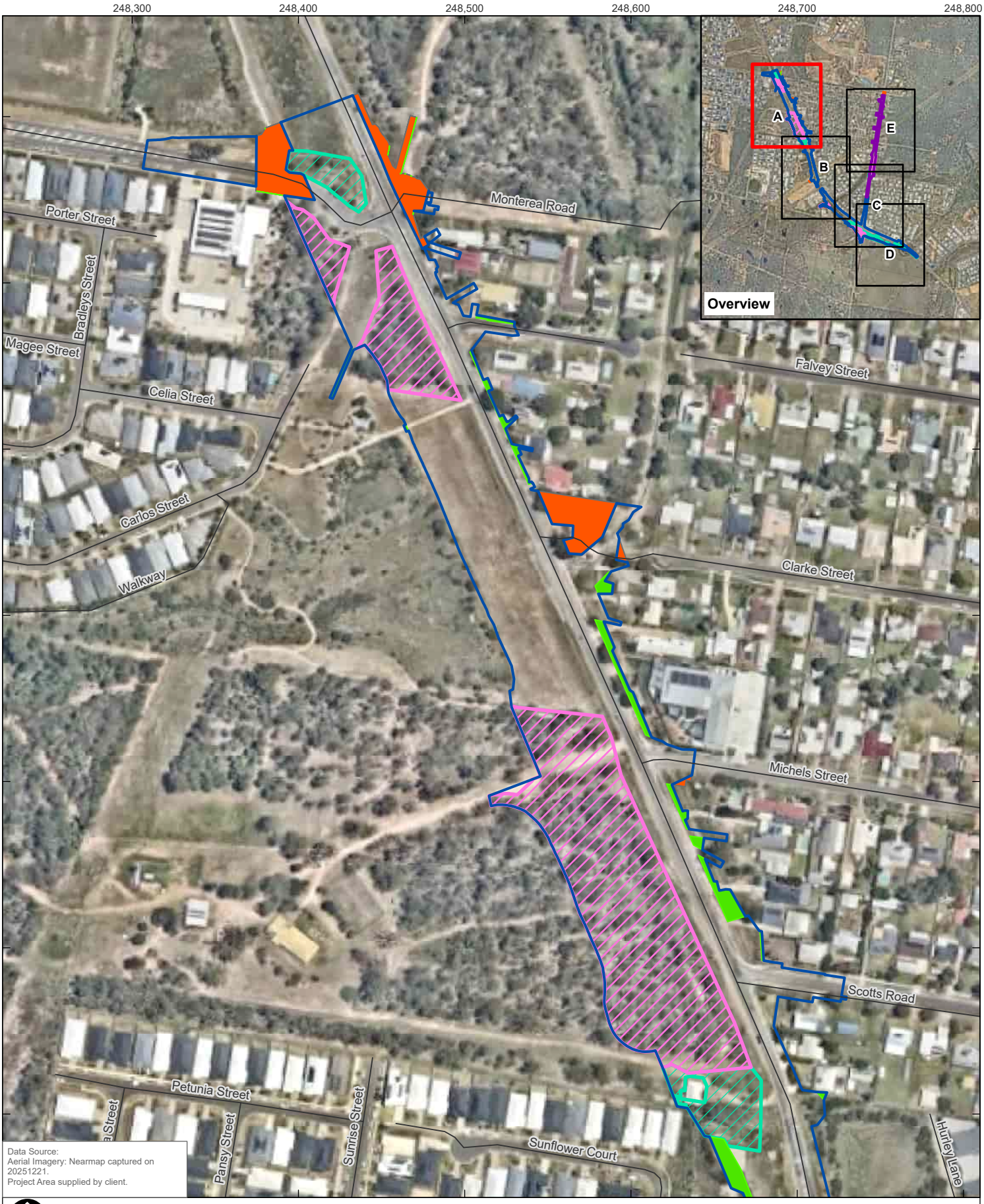
The detailed design process has continued since the referral was submitted. These relate to minor boundary shifts to accommodate site specific requirements such as individual residential driveway crossovers, pipe locations etc and to minimise impacts on habitat where possible. These minor amendments to the proposed action area are shown on Figure 2-3 and summarised in Table 2-2. Overall the proposed action area has decreased. This is reflected in a reduction in the area of habitat for matters of national environmental significance (MNES) discussed in Section 3.3 of this PD.

The northern boundary of the Stage 2 works has also altered slightly to facilitate the relocation of public utilities in advance of Project construction. This area (referred to as the Self-assessment area) has an area of 0.181 ha and does not contain any mapped MNES habitat or vegetation and the exclusion of this area from Stage 2 will not undermine the objectives of the EPBC Act. A self-assessment has been completed for the proposed variation to the Stage 2 boundary in accordance with the MNES Significant Impact Assessment Guidelines (DOE, 2013) and no significant impacts are considered likely (Appendix B).

Changes to the proposed action footprint are summarised in Table 2-2 and shown on Figure 2-3.

Table 2-2 Changes to the proposed disturbance footprint since referral

Stage	Referral Area (ha)	Revised Total (ha)	Variation (ha)
Stage 2	12.84	12.593	- 0.247
Stage 3	2.20	2.134	- 0.066
Total	15.04	14.73	- 0.31



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3
- Proposed action area added since referral
- Proposed action area removed since referral
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

CHANGES TO THE PROPOSED ACTION AREA SINCE REFERRAL

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-3A

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-02_Changes to the Proposed Action Area since Referral



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3
- Proposed action area added since referral
- Proposed action area removed since referral
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

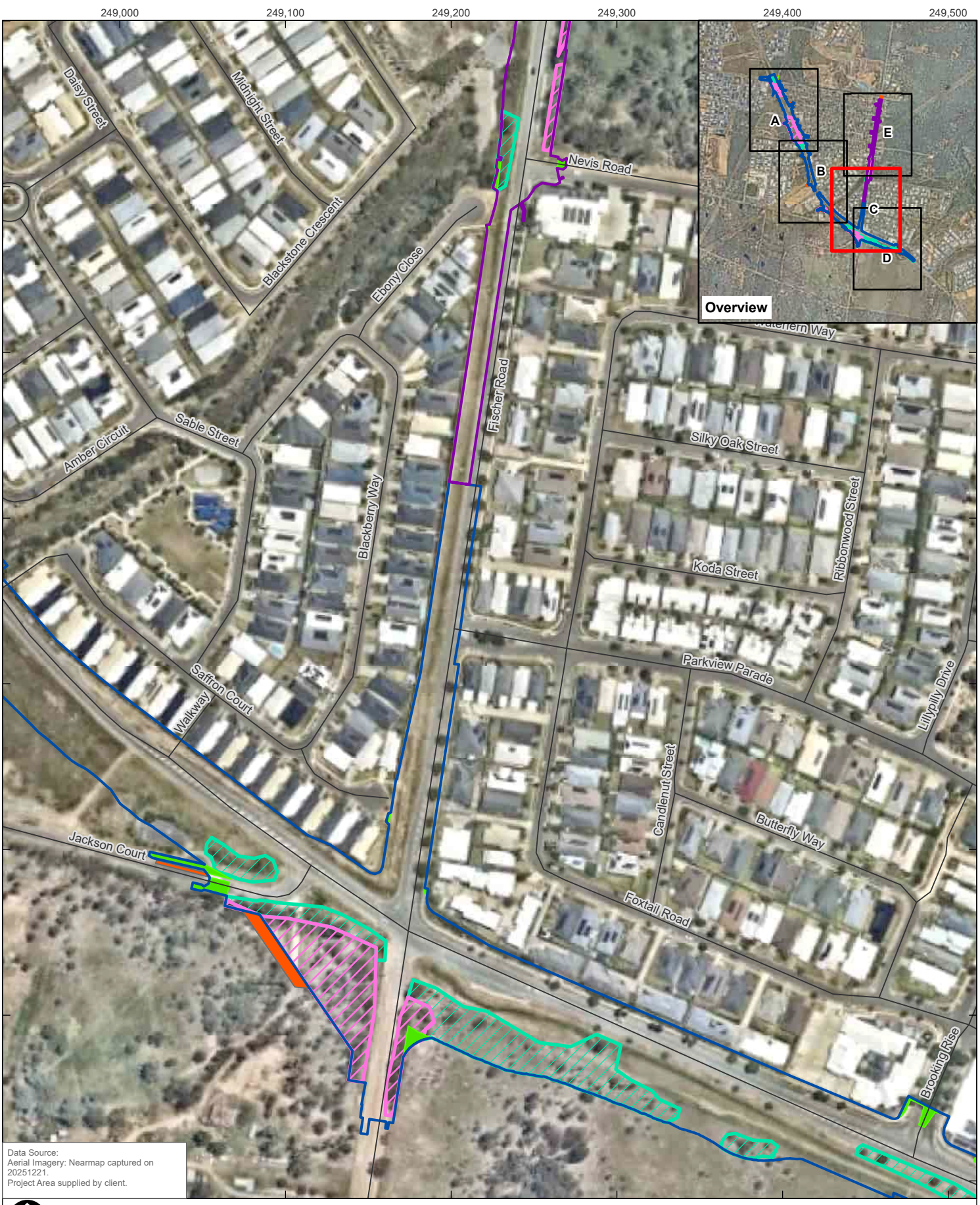
CHANGES TO THE PROPOSED ACTION AREA SINCE REFERRAL

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-3B

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-02_Changes to the Proposed Action Area since Referral



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3
- Proposed action area added since referral
- Proposed action area removed since referral
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

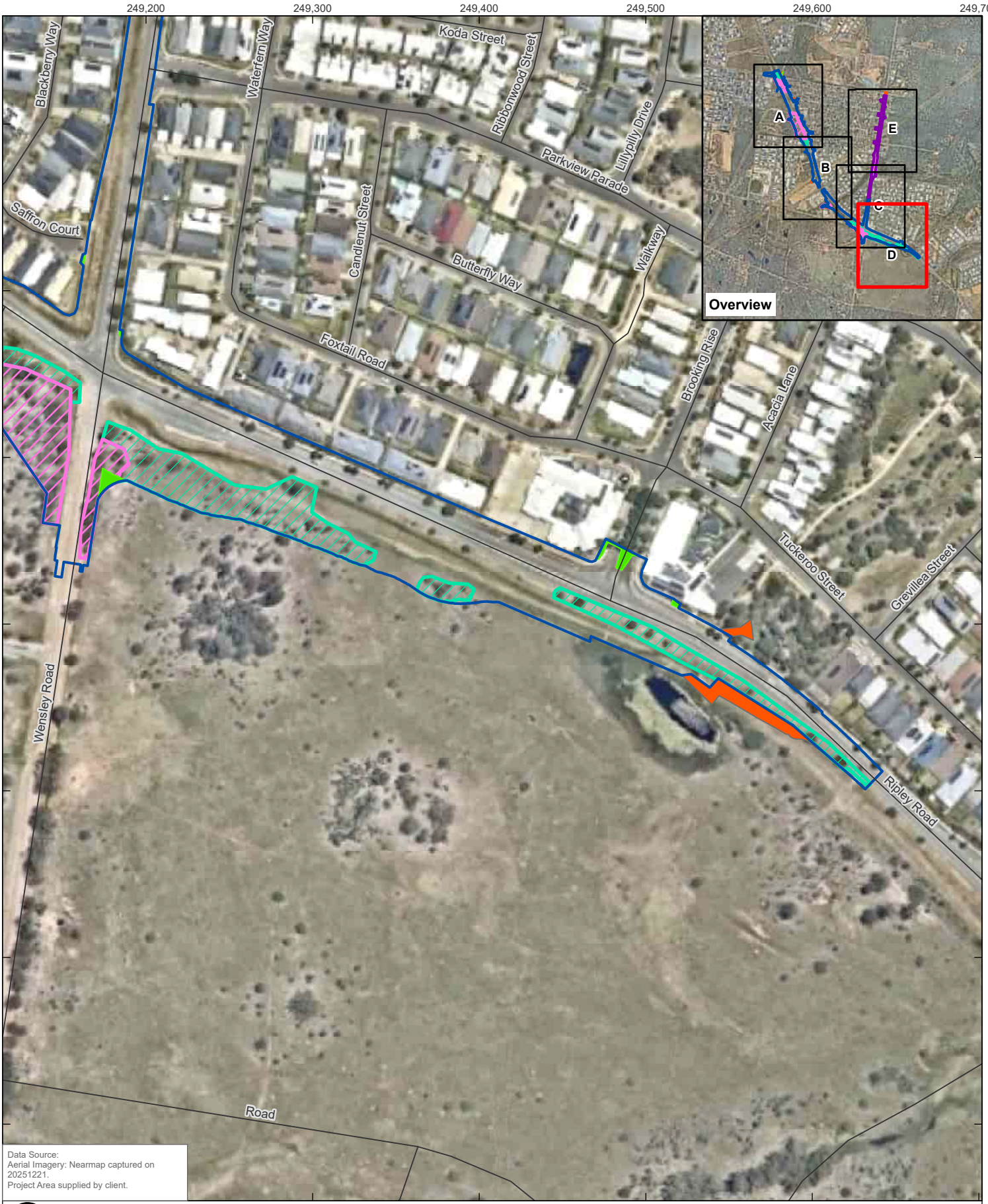
ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

CHANGES TO THE PROPOSED ACTION AREA SINCE REFERRAL

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-3C



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3
- Proposed action area added since referral
- Proposed action area removed since referral
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

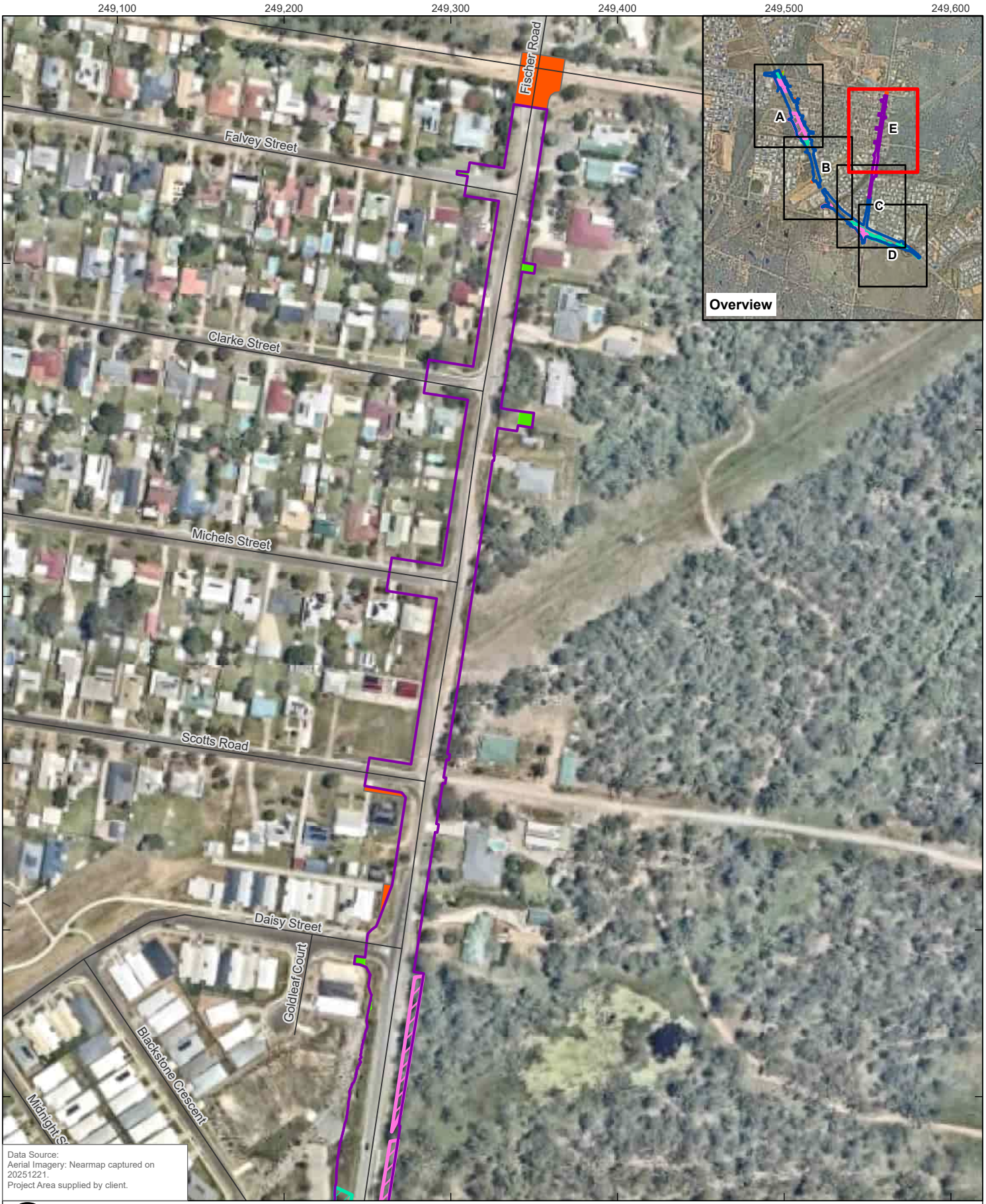
CHANGES TO THE PROPOSED ACTION AREA SINCE REFERRAL

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-3D

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-02_Changes to the Proposed Action Area since Referral



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3
- Proposed action area added since referral
- Proposed action area removed since referral
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

CHANGES TO THE PROPOSED ACTION AREA SINCE REFERRAL

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 2-3E

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F02-02_Changes to the Proposed Action Area since Referral

2.4 Intended land use

When complete the proposed action will be utilised as part of the Ripley Road and Fischer Road networks servicing the Ripley Valley and wider areas. These roads are managed by the Proponent.

2.5 Relevant planning legislation

The following legislation, planning frameworks and policies are considered relevant to the proposed action including:

2.5.1 Queensland Government

***Economic Development Act 2012* (ED Act)**

Ripley Valley was declared an Urban Development Area by the State Government in October 2010 and transitioned to a PDA in 2013. The Ripley Valley PDA Development Scheme commenced on 8 October 2011 and has been administered under the ED Act since 2013. The main purpose of the ED Act is to facilitate economic development, and development for community purposes, the provision of diverse housing, and provision for commercial and industrial uses. PDA related development is exempt development for the purposes of the Queensland *Planning Act 2016*, and no development approval is required for the proposed road upgrade works.

***Nature Conservation Act 1992* (NC Act)**

The NC Act provides the framework for the declaration and management of protected areas, and protection of wildlife listed under the Nature Conservation (Plants) Regulation 2020 or Nature Conservation (Animals) Regulation 2020. All native flora and fauna species are protected under the NC Act and permits ‘to take’ protected wildlife are required from the Department of Environment, Tourism, Science and Innovation (DETSI) to interfere with native wildlife. An approved species management program is required to interfere with the breeding place of protected wildlife, however koala is exempt from this requirement. Koala habitat clearing guidance is intended to manage impacts on breeding koalas. Part of the proposed action area is within an area mapped by the state as potentially containing protected plants. Surveys were undertaken to meet the requirements of the Nature Conservation (Plants) Regulation 2020 and no protected plants listed under the NC Act were identified.

***Vegetation Management Act 1999* (VM Act)**

The VM Act and its subordinate regulation (Vegetation Management Regulation 2023) are part of the Queensland vegetation management framework and, in conjunction with the *Planning Act 2016*, seeks to regulate the clearing of vegetation to prevent land degradation, prevent the loss of biodiversity and maintain ecological processes. Vegetation across Queensland has been mapped to identify regulated vegetation, which helps determine what can be cleared. This identifies vegetation as Category A (offset areas and other areas set aside for management that can’t be cleared), Category B (remnant vegetation), Category C (high value regrowth), Category R (reef regrowth watercourse vegetation) and Category X (generally exempt clearing). Field surveys confirmed the presence of category B vegetation within the Stages 2 and 3 action area and high value regrowth adjacent to Stage 2 however as the Proposed action is located within the area administered under the Ripley Valley PDA Development Scheme, the clearing of native vegetation does not require consent under the *Planning Act 2016* or associated regulation.

Planning Act 2016 **(Planning Act)**

A development application for Operational work that is constructing or raising waterway barrier works was approved by the Department of State Development, Infrastructure and Planning (State Assessment and Referral Agency). This application was formally referred to the Queensland Department of Primary Industries for approval under the *Fisheries Act 1994*.

Biosecurity Act 2014 **(the Biosecurity Act)**

The Biosecurity Act ensures a consistent, modern, risk-based and less prescriptive approach to biosecurity in Queensland. Under the Biosecurity Act, there are three types of invasive plant species including prohibited invasive plants, restricted invasive plants, and invasive plants. Everyone has a general biosecurity obligation to manage risks on land associated with introduced species. This is in addition to requirements to manage restricted species under the Biosecurity Act.

2.5.2 Local Government

No local government approvals are required for the proposed road works.

3.0 Description of the environment and Matters of National Environmental Significance

3.1 Description of existing environment

The proposed action area is located in a highly modified locality within existing road formation, degraded road verges and some areas of remnant and regrowth eucalypt woodland and cleared grassland. Much of the adjoining land is developed for urban purposes and potential habitats include remnant and regrowth vegetation, cleared areas with scattered trees and roadside vegetation.

Elevation within the proposed action area ranges from 45 to 65 m in elevation and the overarching proposed action area ranges from 45 to 70 m above sea level. The proposed action area is located within the Bundamba Creek catchment. The proposed action area and wider proposed action area crosses several small ephemeral drainage channels which are unnamed tributaries of Bundamba Creek and are typically dry throughout most of the year. At times of flow, these tributaries flow generally in a north easterly direction towards Bundamba Creek which flows north to the Bremer River. The catchment area upstream of Ripley Road is approximately 160 ha, consisting predominantly of urban development which has occurred in the last five years or approved development sites.

Detention basins associated with existing urban development are located adjacent to and upstream of the road alignment in the Proposed Action area and wider proposed action area. These detention basins are located South of Monterea Road (McHales basin), south of Lilium Street and north of Jackson Court. These basins temporarily detain water after rainfall events and control flows downstream of Ripley Road. The proposed action area generally slopes towards two drainage lines, through Scotts Park on the northern end of the proposed action area and a drainage line that intersects Sable Street on the southern end of the proposed action area. Watercourses within the proposed action are identified on Figure 3-1.



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:10,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

Road

Stream Order

1

2

Stage 2

Stage 3

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

WATERCOURSES WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-01_Watercourses within the Proposed Action Area

3.2 Assessment of biodiversity values

3.2.1 Desktop assessment

A current search of the DCCEEW PMST was completed to inform this PD to identify threatened (listed as critically endangered, endangered or vulnerable) or migratory species and threatened ecological communities listed under the EPBC Act that are predicted or known to occur in the proposed action area and surrounding 5 km radius study area (Appendix C).

A desktop likelihood of occurrence was completed to inform field survey effort using the following information sources:

- DCCEEW Protected Matters Search Tool (PMST) to identify threatened (listed as critically endangered, endangered or vulnerable) or migratory species and threatened ecological communities listed under the EPBC Act that are predicted or known to occur in the study area (refer to the TEAR in Appendix D for the PMST report used to inform survey)
- Queensland DETSI WildNet database search to identify MNES previously recorded in the study area
- Queensland Government's essential habitat mapping to determine the potential presence of essential habitat for threatened species
- Queensland Government's regulated vegetation mapping to confirm the extent of State mapped regional ecosystems (REs) and potential threatened flora habitat
- Atlas of Living Australia (ALA) to locate threatened species that have been previously recorded in the study area.

A summary of MNES identified in the PMST report is presented in Table 3-1.

Table 3-1 Summary of PMST Report

MNES	Present within study area
World Heritage Places	None
National Heritage Places	None
Wetlands of International importance	The study area is 30-40 km upstream from the Moreton Bay RAMSAR wetlands.
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	None
Threatened Ecological Community (TEC)	Eight TECs were identified as potentially occur in the proposed action area.
Threatened Species*	49 threatened species (excluding marine dependant species) have potential to occur in the study area, comprising: 19 birds 17plants 10 mammals three reptiles

MNES	Present within study area
	one fish one frog one insect.
Migratory Species*	12 migratory bird species have potential to occur in the study area. Six of these are also listed threatened species.

*Threatened and Migratory Species are not mutually exclusive.

A Terrestrial Ecological Assessment Report (TEAR) was completed for the proposed action which identifies and maps biodiversity values within the proposed action area (Appendix D). The TEAR includes the results of desktop and field assessment which utilised a range of databases and literature resources in conjunction with field survey to identify MNES present or potentially occurring within the proposed action area.

3.2.2 Field surveys

Details of field surveys undertaken are provided in Appendix D. Field surveys were conducted over three days between 26-28 May 2025 to verify the extent and composition of vegetation communities and habitats within the overall proposed action area and included targeted surveys for conservation significant flora, fauna and ecological communities likely to be present.

An additional one-day survey was conducted within areas adjacent to the wider proposed action area on 16 September 2025 to provide additional habitat data.

Further surveys were completed on 14 January 2026 to ground-truth vegetation within areas previously not accessible, and to assess the potential foraging and breeding habitat for south-eastern glossy black-cockatoo (*Calyptorhynchus lathami lathami*). The results of the two subsequent surveys in September 2025 and January 2026 are provided as addendums to the TEAR, and are presented in Appendix E of this PD, with a summary of the findings detailed in Section 3.2.2.3 and Section 3.2.2.4 (respectively) of this PD. Field data is provided in Appendix F.

A habitat quality assessment was completed in January 2026 to inform an Offset Proposal prepared in support of this PD and provided in the Offset Management Plan (OMP) in Appendix G to this PD.

3.2.2.1 Vegetation verification and flora survey

The purpose of the field verification survey was to determine the extent and type of vegetation communities and REs within the proposed action area. These surveys were conducted in accordance with the Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Neldner *et al*., 2022).

Quaternary and tertiary flora surveys were conducted across the proposed action area to ground-truth vegetation communities and RE boundaries. For TECs considered likely to occur within the proposed action area, a modified secondary flora survey was conducted. This included a 100 m transect to measure canopy, subcanopy and shrub crown cover, five 5 x 5 m quadrats to gather native perineal understorey vegetation cover, and a full species list. The diameter at breast height (DBH) of all large trees were measured within each plot. Vegetation and flora survey locations are shown on Figure 3-2.

Field verified vegetation communities and REs were mapped based on the results of the field surveys, using ESRI ARC GIS Version 10.4 software, and aerial imagery. The

combination of these products was used to trace polygons derived from geological mapping and vegetation extents in accordance with the Neldner *et al.* (2022).

Any invasive plants listed under the Biosecurity Act and Weeds of National Significance (WoNS) identified during site surveys were recorded with GPS locations.

Targeted threatened plant surveys were conducted for species identified as having a moderate or high likelihood of occurrence in the desktop assessment, however any additional threatened flora species were also recorded.

3.2.2.2 Fauna surveys

The location of fauna habitat assessments, general and targeted surveys are shown on Figure 3-3.

Habitat assessment

Basic observational habitat assessments were conducted at each site during the field investigations. The purpose was to identify the different habitat types that occur within and adjacent to the proposed action area, and to determine the presence/ likely absence of micro-habitat features and animal breeding places within each habitat type, such as:

- hollow bearing trees and stags
- arboreal termitaria
- fallen woody debris and hollow logs
- waterways, waterbodies, and riparian floodplains
- decorticating bark
- coarse and fine leaf litter
- native grasses
- dense vegetation and thickets
- soil cracks
- surface rock and rocky outcrops.

The habitat assessments also identified any evidence of habitat degradation, such as grazing, weed infestations and soil erosion.

Threatened fauna surveys

Searches for threatened fauna species listed under the EPBC Act determined to have a moderate or high likelihood of occurrence, were conducted in identified habitats that are typically known to support the target species. Fauna surveys incorporated guidelines listed in the *Terrestrial Vertebrate Survey Guidelines for Queensland* (Eyre *et al.*, 2022).

Fauna survey methods are detailed in Table 3-2 and survey effort is shown on Table 3-2.

Table 3-2 Fauna survey methods and survey effort

Survey type	Method	Survey effort
Diurnal bird surveys	30 person minutes per site at dawn plus incidental observations. Vocalisations and sightings recorded using the random meander survey technique.	4 sites

Survey type	Method	Survey effort
Diurnal active searches	30 person minutes active searches per site during hotter parts of the day to maximize opportunities for reptile sightings. Including raking of leaf litter, opening or turning over of deadfall timber and turning over rocks and other debris. Burrows investigated where safe to do so.	7 sites
Koala Spot Assessment Technique (SAT) surveys	The SAT survey method assesses a central Preferred Koala Food Tree ≥300 mm diameter at breast height (DBH) and the nearest 29 trees. A search for koala faecal pellets was undertaken in an area extending 1 m around the base of each tree trunk for a maximum of two minutes, or until koala faecal pellets are detected.	3 sites
Spotlighting and call playback	Spotlighting was conducted searching for presence of nocturnal fauna (e.g., gliders, koala (*Phascolarctos cinereus*), and frogs). Call playback was conducted for powerful owl (*Ninox strenua*) by calling for two minutes, listening for five minutes and repeating twice.	5 sites

Animal breeding places

Targeted fauna breeding place surveys were completed in habitats within the proposed action area for threatened, near threatened, SLC and colonial breeding least concern species. Examples of animal breeding places include, but are not limited to:

- hollow bearing and/or stag trees that may support colonial breeding or conservation significant microbat species, arboreal mammals, and hollow nesting birds
- hollow logs, burrows, log piles and course woody debris suitable for terrestrial mammals and reptiles
- waterbodies along creeks and drainage lines, including farm dams, that may support bird species that nest along creek banks and frog species
- wetlands and seasonally waterlogged woodlands, swamplands and shrublands that may support amphibian, snake, and wader bird foraging and/or breeding habitat.

Incidental records

Incidental fauna and flora observations were recorded during field assessments, with GPS locations recorded for any conservation significant or invasive species.

3.2.2.3 Additional flora survey and biodiversity corridor assessment

Additional surveys were conducted on 16 September 2025 to assess vegetation adjacent the land included in the Ripley Road Stage 1 upgrade footprint to determine suitability as habitat for koala (*Phascolarctos cinereus*) and grey-headed flying-fox (*Pteropus poliocephalus*). The assessment also included an inspection of potential fauna movement corridors identified in the TEAR.

3.2.2.4 Targeted south-eastern glossy black-cockatoo assessments

Following receipt of the RFI, additional surveys were conducted to assess for the presence of suitable foraging and breeding habitats for south-eastern glossy black-cockatoo (*Calyptorhynchus lathami lathami*). Surveys included:

- assessment of the proposed impact area for the presence of sheoaks (*Allocasuarina* spp. and *Casuarina* spp.)
- targeted searches for suitable nest hollows, specifically those meeting the following criteria:
  - located more than 8 m above the ground
  - located in branches more than 30 cm in diameter
  - branch or stem no more than 45º from vertical
  - minimum entrance diameter of 15 cm
  - within 200 m of a water source (wetlands, dams and stream order three or higher watercourses).

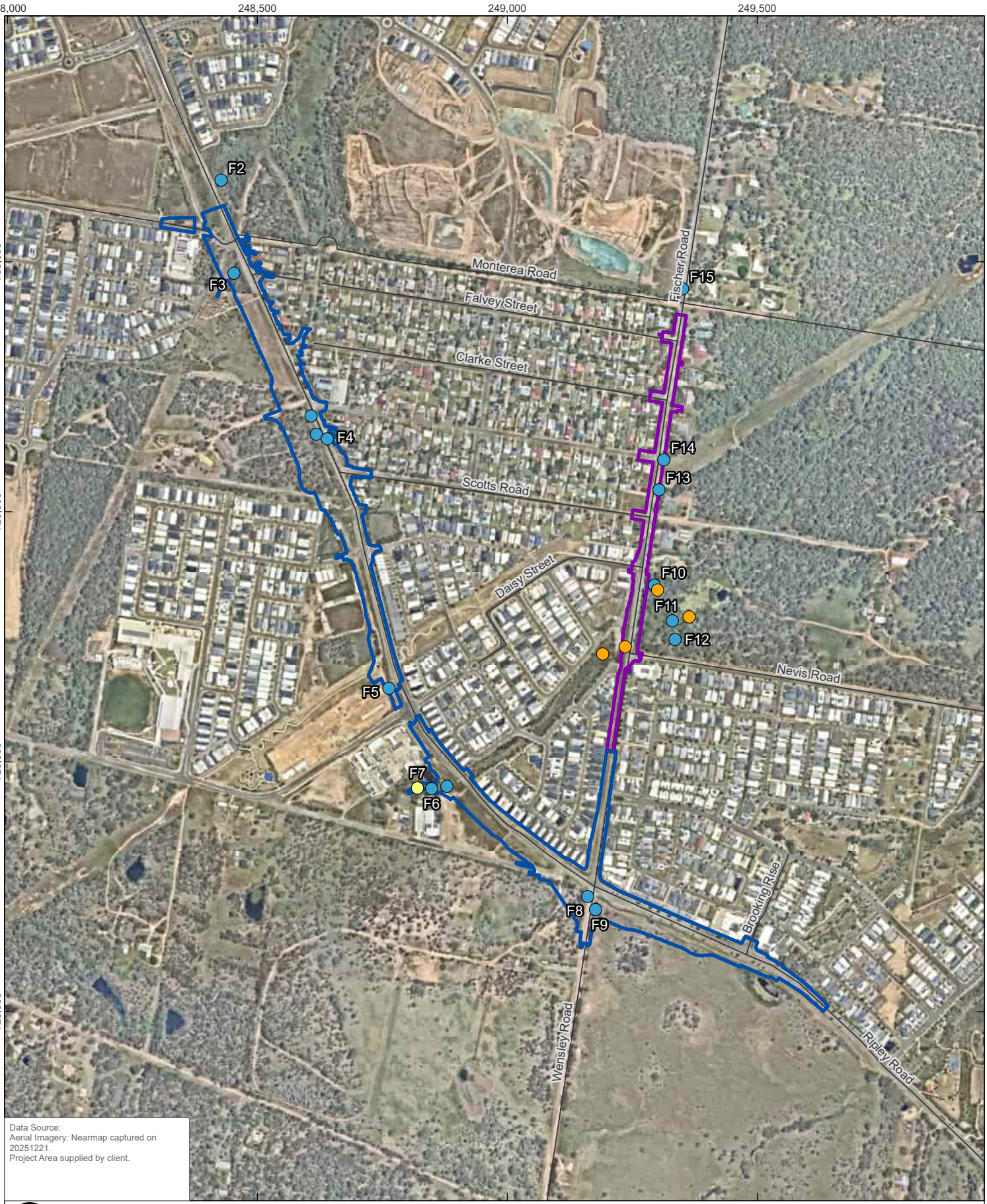
3.2.2.5 Habitat quality assessment to inform offsets

A draft Offset Proposal has been prepared for the proposed action to support the PD and is provided in the OMP at Appendix G. This Offset Proposal was prepared to assess the suitability of a proposed offset site for MNES impacted by the proposed action. Species initially considered to potentially require offsets, based on the controlled action decision and RFI, were koala and possibly south-eastern glossy black-cockatoo (dependent on additional field surveys). Grey-headed flying-fox was not specifically identified in the RFI but was self-assessed as unlikely to be a significant impact (as per the referral documentation) and no offset is proposed for this species. Regardless, the impact areas for grey-headed flying-fox and koala, and the proposed offset habitat requirements are the same as those for koala. No additional habitat quality assessment surveys are deemed necessary to address the grey-headed flying-fox.

Habitat quality assessments for koala within the proposed action area (and similarly at the proposed offset site) were conducted through field surveys in accordance with:

- BioCondition assessments following BioCondition: a condition assessment framework for terrestrial biodiversity in Queensland (Eyre et al. 2015);
- Guidance on the use of the Modified Habitat Quality Assessment (MHQA) method (DCCEEW 2025a) EPBC Offset Assessment Guide (DCCEEW 2022).

Details of habitat quality assessment surveys and the results of these assessments are presented in the Offset Proposal in the OMP at Appendix G to this PD and summarised in Section 7.0 of this PD. Targeted south-eastern glossy black-cockatoo surveys conducted simultaneously with habitat quality assessments concluded that there is no suitable habitat for that species within the proposed action area (refer Sections 3.2.2.4, 3.2.3.6 and 3.3.2.1) and therefore no offset would be required for this species.



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:10,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3

Flora Survey Site

- RE verification
- TEC assessment
- TMS

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

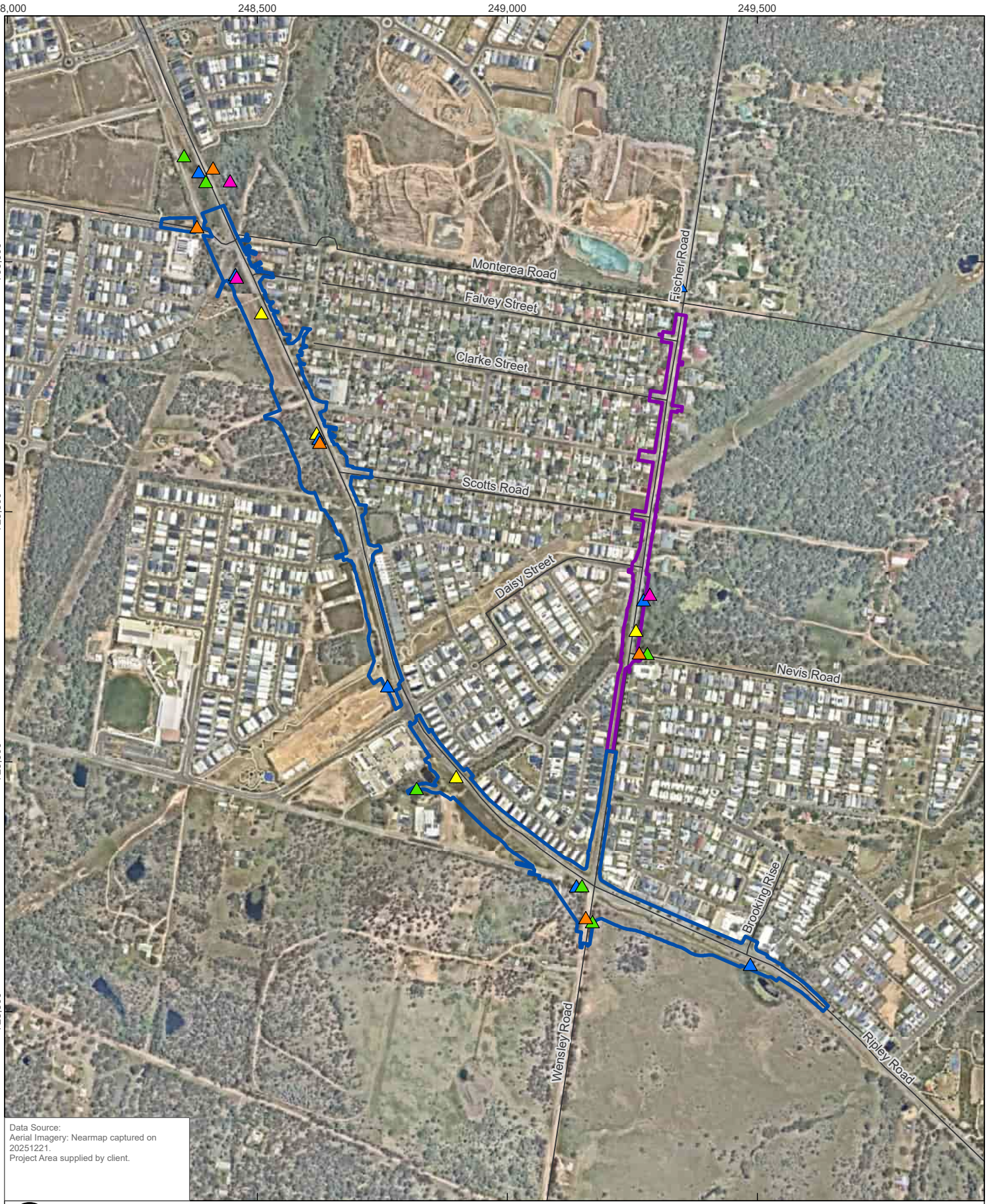
LOCATION OF VEGETATION AND FLORA SURVEYS

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-2

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-02_Location of Vegetation and Flora Surveys



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:10,000 at A4
Project Number:	620.041764
Date Drawn:	05-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3

Fauna Survey Site

- Bird survey
- Habitat assessment and herp search
- Incidental
- SAT survey
- Spotlighting and nocturnal call playback

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

LOCATION OF FAUNA SURVEYS

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-3

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-03_Location of Fauna Surveys

3.2.3 Results

Results of field survey are presented in Appendix D and Appendix E to this PD, including RE verification tables and assessment of TECs. Field data is provided in Appendix F to this PD.

3.2.3.1 Field verified vegetation

The proposed action is situated within existing road, degraded road verges and remnant and regrowth eucalypt woodland. Land adjoining the proposed action footprint is variously occupied by remnant vegetation, disturbed vegetation, residential development and urban parks and infrastructure. The proposed action area intersects patches of field verified remnant and regrowth vegetation including regional ecosystems (REs):

- 12.9-10.2: *Corymbia [Blakella] citriodora* subsp. variegata +/- *Eucalyptus crebra* open forest on sedimentary rocks
- 12.9-10.7: *Eucalyptus crebra* +/- *E. tereticornis*, *Corymbia [Blakella] tessellaris*, *Angophora* spp. and *E. melanophloia* woodland on sedimentary rocks
- 12.3.3: *Eucalyptus tereticornis* woodland on quaternary alluvium (regrowth).

Ground-truthed vegetation mapped within the proposed action area is presented in Figure 3-4. The location and area of ground-truthed remnant and regrowth vegetation within the proposed action area is shown in Table 3-3.

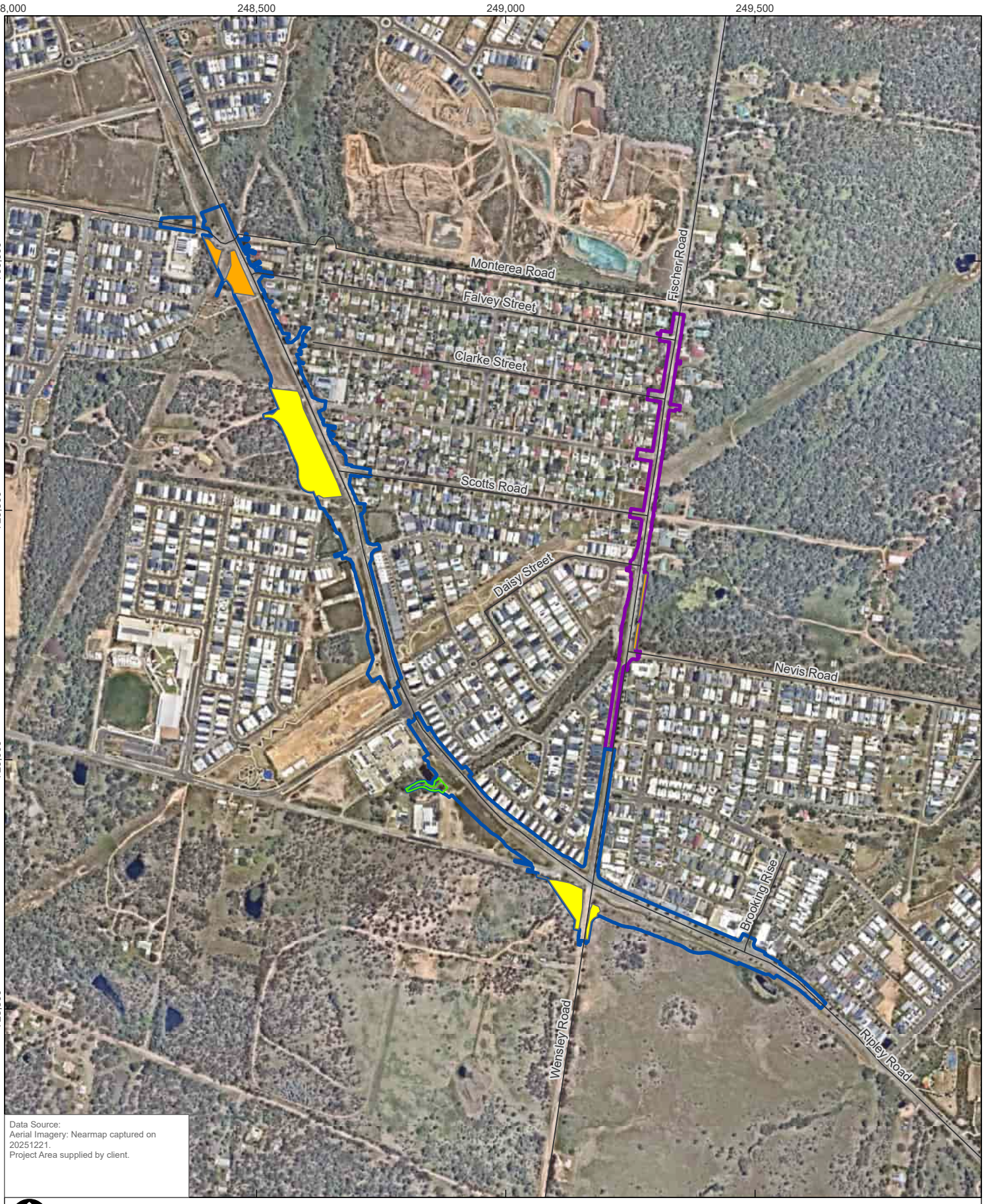
Table 3-3 Location and area of ground-truthed REs

RE	Locations	Area (ha)	
		Stage 2	Stage 3
Remnant RE 12.9-10.2	Lot 31 RP815608 either side of powerline easement (Stage 2). Lot 178 SP141675 along Fischer Road, near Nevis Road (Stage 3).	0.337	0.063
Remnant RE 12.9-10.7	Lot 348S3173, Lot 359S3173 and eastern side of Wensley Road corridor (Stage 2).	1.728	-
Regrowth RE 12.3.3	Lot 91 SP343557, Site V21 (adjacent to Stage 2).	0.101	-

The flora survey recorded 140 flora species, including 78 native species and 62 exotic species (Appendix D). Exotic flora species recorded during the field assessment are common throughout the broader region. Ten species are listed Category 3 restricted invasive plants under the Queensland Biosecurity Act, four of which are also WoNS.

3.2.3.2 Threatened ecological communities

RE 12.3.3 is a component RE of the EPBC Act listed TEC Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions (endangered) (Threatened Species Scientific Committee, 2021). Field surveys confirmed the patch of regrowth RE 12.3.3 within the proposed action area did not meet the diagnostic criteria and the minimum condition thresholds to be considered a TEC. Assessment against the diagnostic criteria is presented in the TEAR in Appendix D (Section 4.1.2 of Appendix D).



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:10,000 at A4
Project Number:	620.041764
Date Drawn:	06-Mar-2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3

Field Verified Regional Ecosystem

- 12.3.3, Regrowth
- 12.9-10.2, Remnant
- 12.9-10.7, Remnant

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

GROUND-TRUTHED VEGETATION WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-4

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-04_Ground-truthed Vegetation within the Proposed Action Area

3.2.3.3 Threatened flora observations

No MNES flora species were identified within the proposed action area.

3.2.3.4 Threatened fauna observations

The proposed action area contains four broad categories of fauna habitat, artificial wetlands and/or drainage lines, non-remnant cleared areas, non-remnant drainage lines and eucalypt open woodland. A description of each habitat type identified within the proposed action area is provided in Appendix D (Table 4 7 to Table 4 10 of Appendix C).

Fauna surveys confirmed the presence of 33 birds, four mammals and two reptiles within the proposed action area. One further reptile species was detected through skins that could not be identified down to species level.

Grey-headed flying-fox (listed as Vulnerable under the EPBC Act) was confirmed present foraging in vegetation within the proposed action area.

Koala (listed as Endangered under the EPBC Act) was considered highly likely to occur within the proposed action area on the basis of suitable habitat and records present within the study area. No koala were observed during any of the field surveys however there is one un-vetted record of koala within the Project area (near Amber Court) from 2024.

Targeted searches for foraging habitat and potential nest hollows for south-eastern glossy black-cockatoo (listed as Vulnerable under the EPBC Act) did not identify any individuals, foraging signs (i.e. orts) or suitable tree hollows.

No other MNES fauna species were identified during surveys. Three non-native fauna species were detected in the proposed action area, f.

3.2.3.5 Additional flora survey and biodiversity corridor assessment

The additional survey adjacent to the northern extent of the proposed action area confirmed that the vegetation is likely to provide koala dispersal habitat (rather than foraging/breeding habitat) and grey-headed flying-fox foraging habitat.

The TEAR (Appendix D) and TEAR addendum (Appendix E.1) identified potential biodiversity or fauna movement corridors in the landscape surrounding the proposed action area (Figure 3-5). Survey completed to inform the TEAR Addendum report (Appendix E.1) further investigated these potential fauna movement corridors and noted there is potential for use by koala however these areas lacked sufficient suitable trees and fencing to offer safe passage. The existing culvert at Scotts Creek contained standing water and was long and curved which could discourage koala use. It is possible that the use of the corridors would expose koalas to threats such as vehicle strike (when crossing the existing roads, as there is limited dry passage connectivity through existing low-lying wet culverts) and dog attack (when traversing through urban environments).

3.2.3.6 South-eastern glossy back-cockatoo

No south-eastern glossy black-cockatoo (*Calyptorhynchus lathami lathami*) were observed during general or targeted surveys. No potential foraging habitat for this species was identified other than isolated *Casuarinaceae* trees and two small patches (<15 trees), all less than 8 m tall, and predominantly planted in drainage detention basins or for landscaping. Although, these isolated trees and small patches may provide some suitable foraging, given the limited foraging sources in the area it is most likely these would only be used infrequently by individuals traversing the locality, if at all.

Targeted searches for tree hollows that may provide suitable nest sites were completed (Appendix E.2). No trees containing hollows that offer potential nest sites were identified within the proposed impact area. All surveyed trees containing suitable hollows are located outside the proposed action area. All trees assessed are identified on Figure 3-6. Although, these hollows were suitable there was no evidence of previous use.

3.2.3.7 Habitat quality assessment

The results of the habitat quality assessment are presented in the Offset Proposal at Appendix G to this PD.

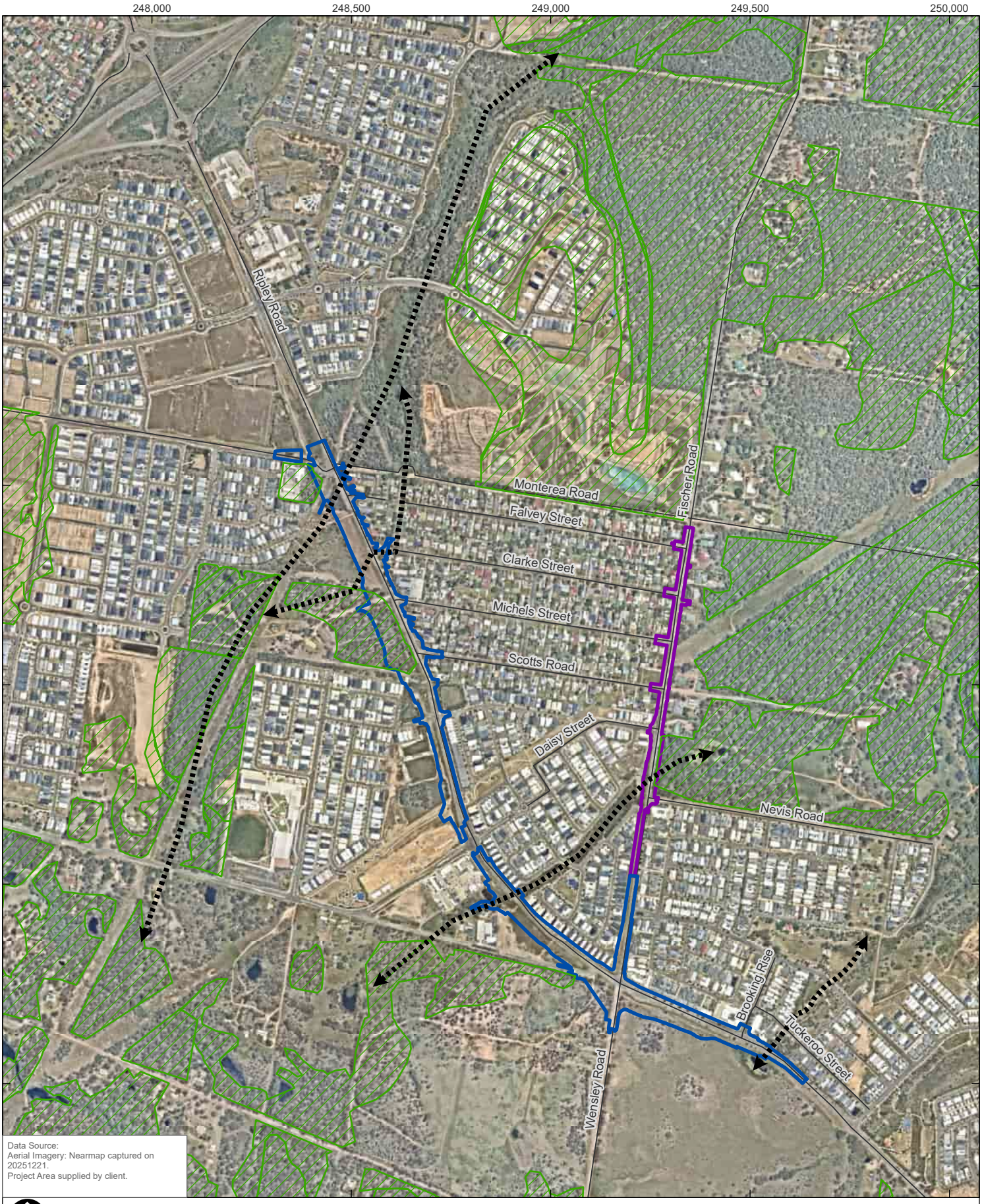
3.2.4 Updated likelihood of occurrence

Following the field survey, an updated likelihood of occurrence assessment was completed (Appendix H to this PD) to determine those MNES likely to occur within the proposed action area based on the ecological requirements of species, habitat availability and records of species in the vicinity of the proposed action using the likelihood of occurrence criteria in Table 3-4.

Table 3-4 Likelihood of occurrence criteria

Likelihood of occurring	Key criteria
Known to occur	Species positively identified during field surveys within the proposed action area.
High	Species previously recorded within the study area and the proposed action area contains habitat that is suitable for the species.
Moderate	Species previously recorded within the study area and the proposed action area contains marginal / low quality habitat for the species OR No previous records of the species within the study area, but the proposed action area contains suitable habitat for the species and is within the known range of the species.
Low	Species previously recorded within the study area, but the proposed action area does not contain suitable habitat for the species OR No previous records of the species within the study area and the proposed action area contains marginal / low quality habitat for the species or there is no suitable habitat in the proposed action area OR No previous records of the species within the study area and the study area is beyond the current known geographic range of the species.

Most species identified in the PMST report as potentially occurring within the study area were considered to have a low or moderate likelihood of occurrence within the proposed action area. Those species known or having a high likelihood of occurrence are discussed in Section 3.3.



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:12,500 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Stage 2
- Stage 3
- Core Koala Habitat Area
- Potential Fauna Movement Corridor

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

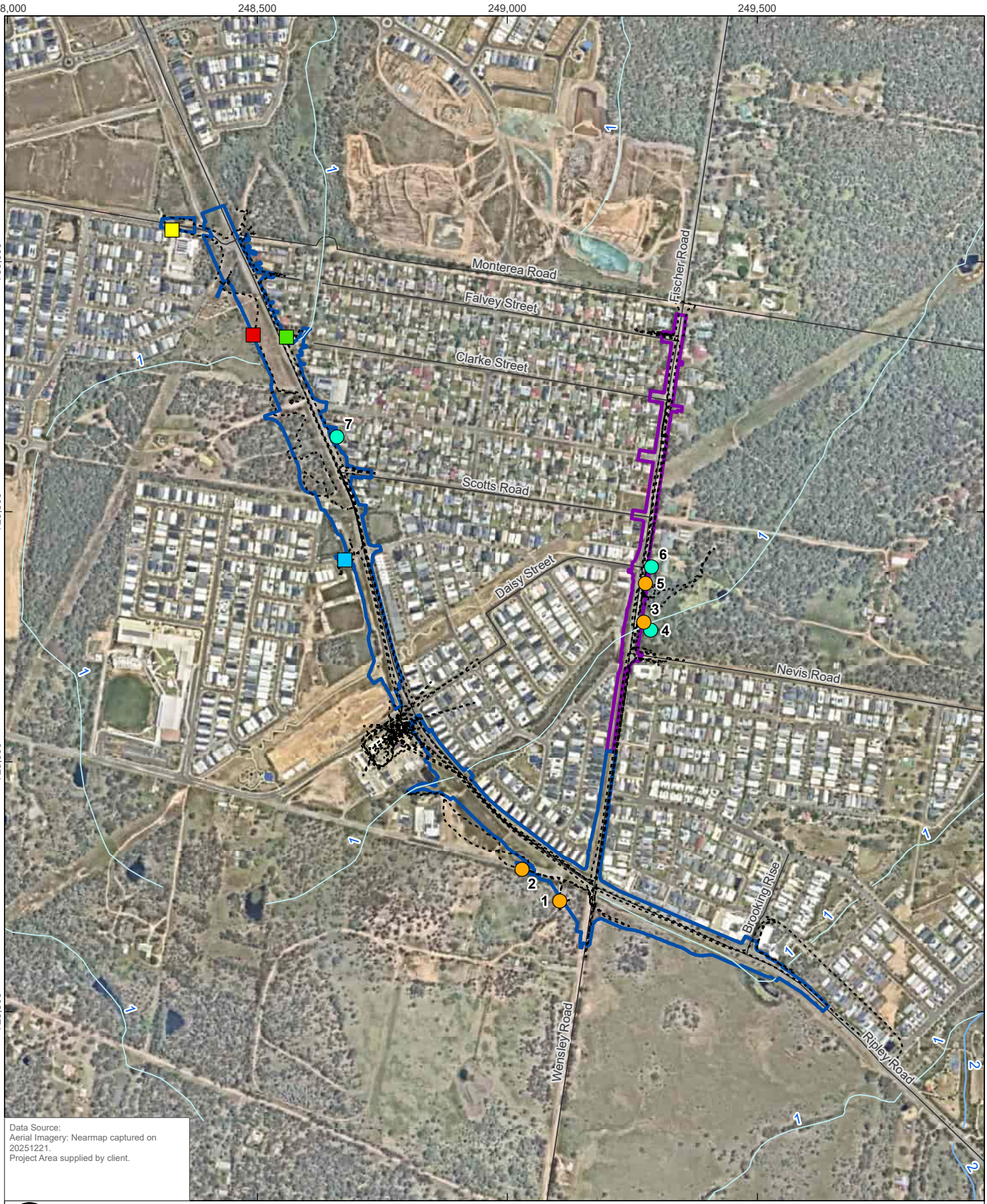
POTENTIAL BIODIVERSITY CORRIDORS

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-5

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-05_Potential Biodiversity Corridors



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:10,000 at A4
Project Number:	620.041764
Date Drawn:	06-Mar-2026
Drawn by:	RB

LEGEND

- GPS Track
- Road

Stream Order

- 1
- 2
- Stage 2
- Stage 3

- Hollow suitable or potentially suitable for breeding
- Hollow not suitable for breeding
- Isolated *Casuarina* tree
- Small patch of 10 *Casuarina* trees, less than 5 m tall
- Small patch of 15 *Casuarina* trees, less than 6 m tall
- Three *Casuarina* trees

ADDENDUM TO RIPLEY ROAD AND FISCHER ROAD UPGRADE TERRESTRIAL ECOLOGICAL ASSESSMENT REPORT

TARGETED GLOSSY BLACK-COCKATOO FIELD SURVEY RESULTS

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-6

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_TEAR_ADD_F01_Targeted Glossy Black-cockatoo Field Survey Results

3.3 Potential MNES within the proposed action area

The RFI issued by DCCEEW in relation to the PD identified two species requiring specific consideration, koala (*Phascolarctos cinereus*), and south-eastern glossy black-cockatoo (*Calyptorhynchus lathami lathami*). MNES considered in this PD, including those identified in the RFI and those identified in the updated likelihood of occurrence assessment as known or having a high likelihood of occurrence, are presented in Table 3-5.

Table 3-5 MNES for consideration within the proposed action area

Species Name	Common Name	EPBC Act Status[#]	Likelihood Summary
Calyptorhynchus lathami lathami	south-eastern glossy black-cockatoo	V	**Low** - No records exist of this species within the study area. The proposed action does not contain isolated trees of the casuarina species preferred by this species and targeted field surveys confirmed there are no suitable breeding trees present within the proposed action footprint. This species was identified in RFI.
Phascolarctos cinereus	koala	E	**High** - There were 206 records of this species returned within the study area, including numerous records located within the proposed action area (ALA, 2025). Koala was not observed during any of the field surveys however there is one un-vetted koala record within the project area and the proposed action area contains suitable habitat for this species. This species was identified in RFI.
Pteropus poliocephalus	grey-headed flying-fox	V	**Known** – This species was observed foraging within the proposed action area and there are 20 WildNet records recorded within the study area.

3.3.1 MNES ecology and characteristics

3.3.1.1 South-eastern glossy black-cockatoo

South-eastern glossy black-cockatoos feed almost exclusively on the seeds of she-oaks, extracting the seeds from closed cones and leaving characteristic feeding litter (orts) under feeding trees (Morcombe, 2004). Preferred feed tree species vary by region and season. The species also displays preference for individual feed trees and cones, despite the presence of suitable trees of the same species nearby (DCCEEW, 2022a). The south-eastern glossy black-cockatoo can spend up to 88% if its day foraging and feeding (Morcombe, 2004). They utilise large hollows in living and dead trees and usually occur in pairs or groups of three (Morcombe, 2004).

Areas for activities such as foraging, breeding, roosting, or dispersal – in SEQ preferred foraging habitats are those containing black she-oak (*Allocasuarina littoralis*) and forest she-oak (*A. torulosa*). Habitats providing the very specific nesting hollows required are also essential with this species preferentially selecting large old tree hollows, positioned 8 m above ground level in eucalypt trees. Preferred branches or stems are 30 cm in diameter, at

a branch/stem angle no more than 45 degrees from vertical and with a minimum entrance diameter of 15 cm (Cameron 2006, Glossy Black Conservancy 2010).

3.3.1.2 Koala

Koala (*Phascolarctos cinereus*) typically occurs in east Australian forests and woodlands predominately comprised of eucalyptus species (DAWE 2022b). Home ranges of koala vary significantly depending on habitat quality, life cycle stage and other factors affecting foraging resources. Predominantly tree-dwellers, koala spend significant periods of time moving across the ground between food and shelter trees (DAWE 2022b). Habitat for koala therefore includes trees for food and shelter as well as refugia from predators and extreme conditions and can include isolated trees and roadside vegetation as well as patches of remnant vegetation.

3.3.1.3 Grey-headed flying-fox

Grey-headed flying-fox (*Pteropus poliocephalus*) occurs in the coastal belt from Rockhampton in Central Queensland to Melbourne in Victoria. However, only a small proportion of this range is used at any one time, as the species selectively forages where food is available. Therefore, patterns of occurrence and relative abundance within its distribution vary widely between seasons and years. This species requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. Grey-headed flying-fox form permanent/semi-permanent colonies or camps, flying out each night to forage.

3.3.2 Habitat for MNES species

3.3.2.1 South-eastern glossy black-cockatoo (*Calyptorhynchus lathami lathami*)

No habitat for south-eastern glossy black cockatoo was identified within the proposed action area. Potential breeding habitats, in the form of individual trees with suitable hollows, were identified outside the proposed action area (Figure 3-6). An assessment of important population for south-eastern glossy black-cockatoo was not completed as the Project area is considered unsuitable to support the species.

3.3.2.2 Koala (*Phascolarctos cinereus*)

No individuals or evidence of koala activity was observed during targeted koala surveys within the proposed action area. However, there is one un-vetted record near Amber Court and numerous records of koala occur within the wider locality (Figure 3-7). Queensland government mapped core koala habitat area occurs within the proposed action area (Figure 3-7).

Suitable koala habitat trees, including locally important koala trees (LIKT) *Eucalyptus tereticornis, Eucalyptus crebra* and *Corymbia citriodora* and ancillary koala habitat trees *Corymbia intermedia* (Youngentob *et al*., 2021) were abundant throughout vegetated areas of the proposed action area and could provide suitable breeding and foraging habitat for koala. The limited evidence of koala presence within the proposed action area could indicate that if koalas are remaining within the broader region, any individuals would most likely be using the proposed action area in a transient nature. Connectivity between habitat patches does not require continuity of dense vegetation, as koalas can move large distances on the ground, however, koalas are more likely to rely on corridors where there is an availability of

refuge habitat (sparse treed vegetation such as paddock trees). The ground itself forms an essential component of koala habitat (Youngentob, Marsh and Skewes, 2021).

The Commonwealth government publication *Identifying habitat for the endangered koala* (DCCEEW, 2024) identifies koala habitat as areas with resources for koala including:

- forests or woodlands
- roadside and rail vegetation and paddock trees
- safe intervening ground matrix for travelling between trees and patches to forage, shelter and reproduce
- access to vegetated corridors or paddock trees to facilitate movement between patches.

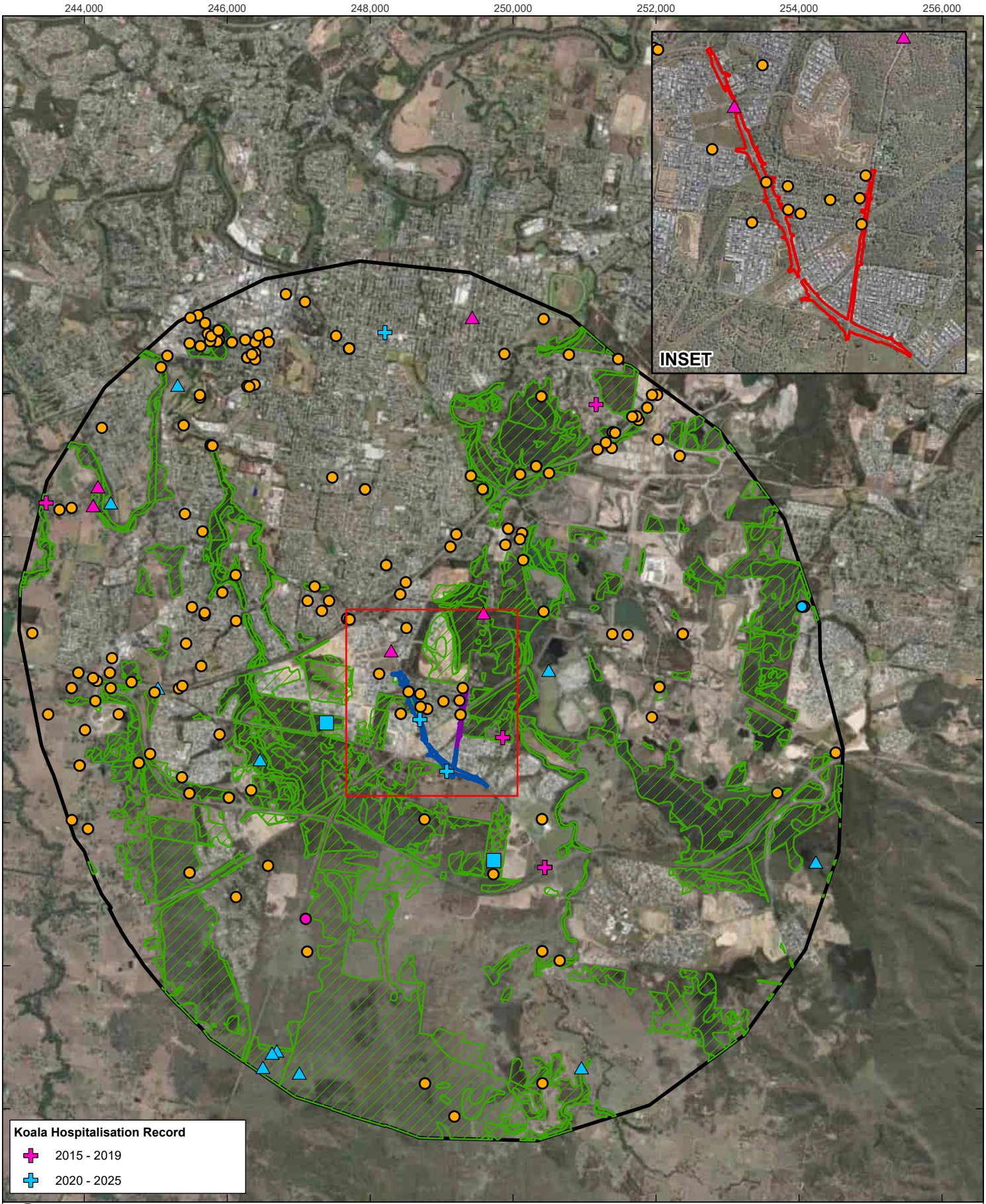
Habitat for koala has been mapped using these criteria. It has been refined to reflect:

- breeding/foraging habitat - areas of ground-truthed remnant eucalypt open forest and woodlands containing LIKF
- dispersal habitat - areas between and adjacent breeding/foraging habitat containing trees in sufficient densities to allow for the safe movement of koalas. This includes areas containing open grassed areas and sparser regrowth vegetation.

Ground-truthed vegetation included in mapping of breeding/foraging habitat includes:

- Of concern remnant RE 12.9-10.7
- Least concern remnant RE 12.9-10.2
- Endangered regrowth RE 12.3.3.

The proposed action area contains suitable 2.228 ha of foraging and possible breeding habitat in the remnant areas and 1.0343 ha of dispersal habitat between these remnant areas across the proposed action area (Figure 3-8).



0 1 2 km

Coordinate System:	ICC Terrain 2001
Scale:	1:70,000 at A4
Project Number:	620.041764
Date Drawn:	06-Mar-2026
Drawn by:	RB

LEGEND

- Stage 2
- Stage 3
- Study Area
- Core Koala Habitat Area

Evidence of koala scat detailed in previous EPBC referrals

- 2020 - 2025

Koala Record (WildNet)

- Older than 2014
- 2015 - 2019
- 2020-2025

Additional Koala Record (ALA)

- 2015 - 2019
- 2020 - 2025

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

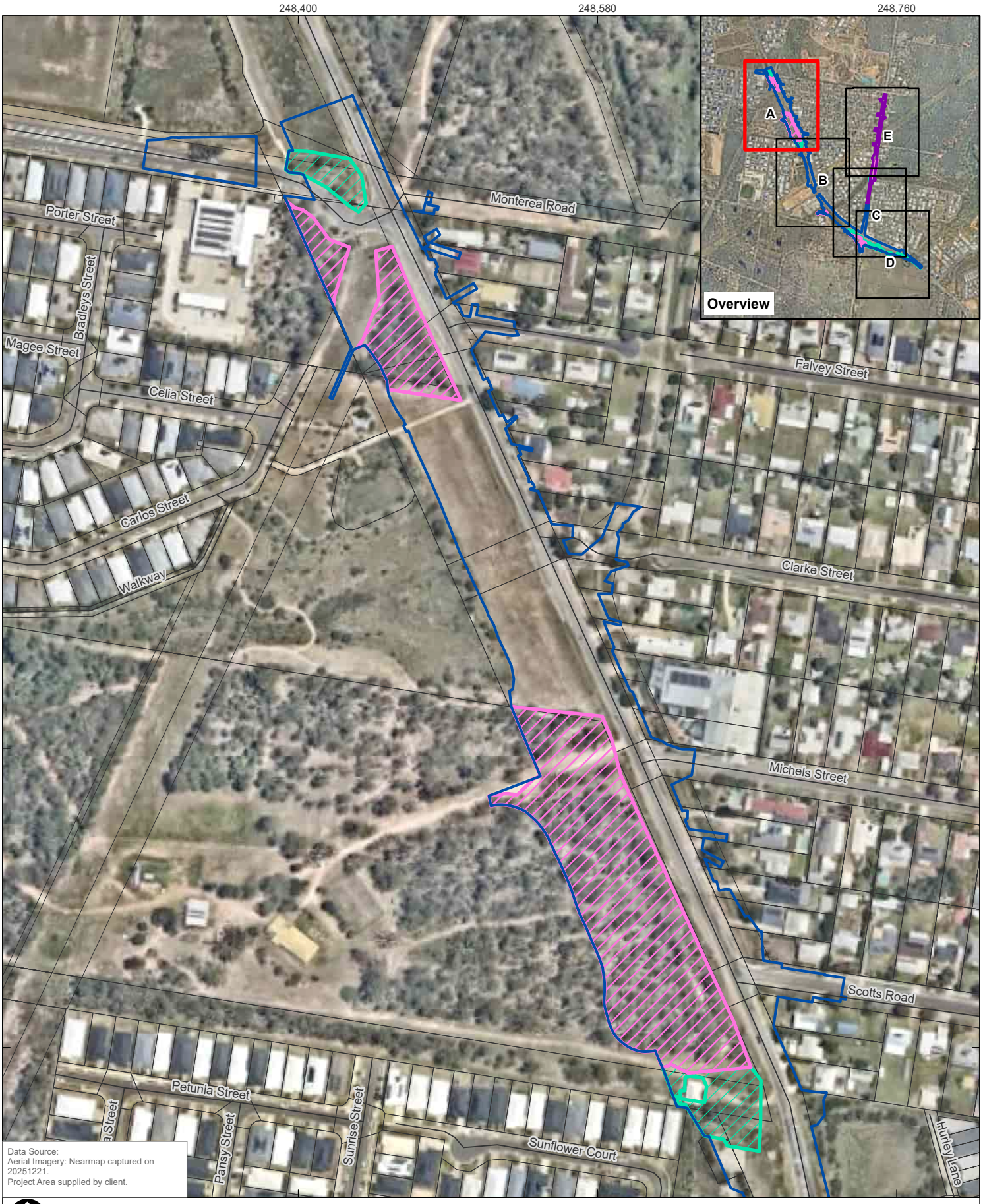
KOALA RECORDS AND STATE MAPPED KOALA HABITAT IN THE STUDY AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-6

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-06_Koala records and State mapped Koala Habitat in the Study Area



Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

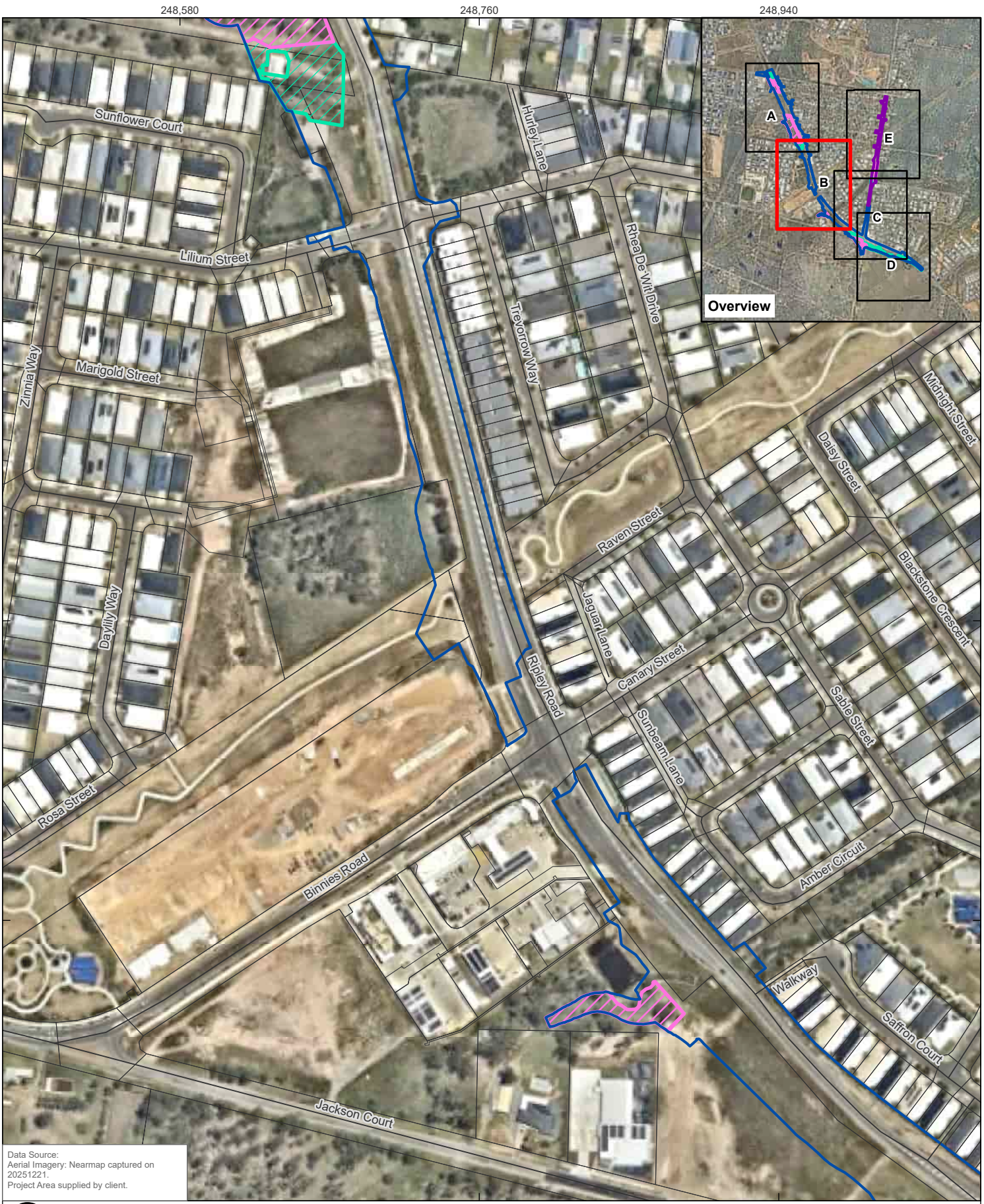
GROUND-TRUTHED KOALA HABITAT MAPPED WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-8A

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-08_Ground-truthed Koala Habitat mapped within the Proposed Action Area



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 2
- Stage 3
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

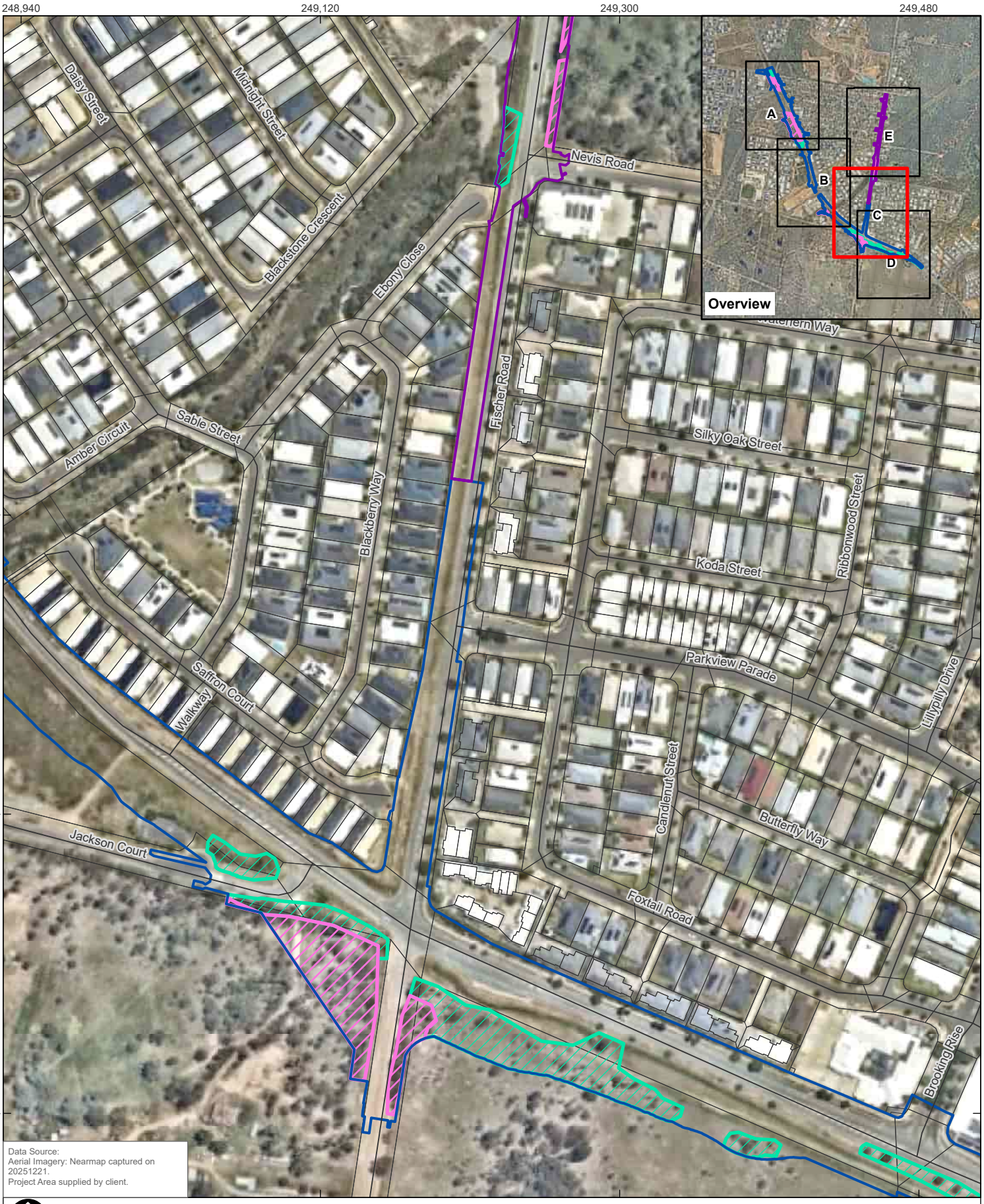
GROUND-TRUTHED KOALA HABITAT MAPPED WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-8B

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-08_Ground-truthed Koala Habitat mapped within the Proposed Action Area



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 2
- Stage 3
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

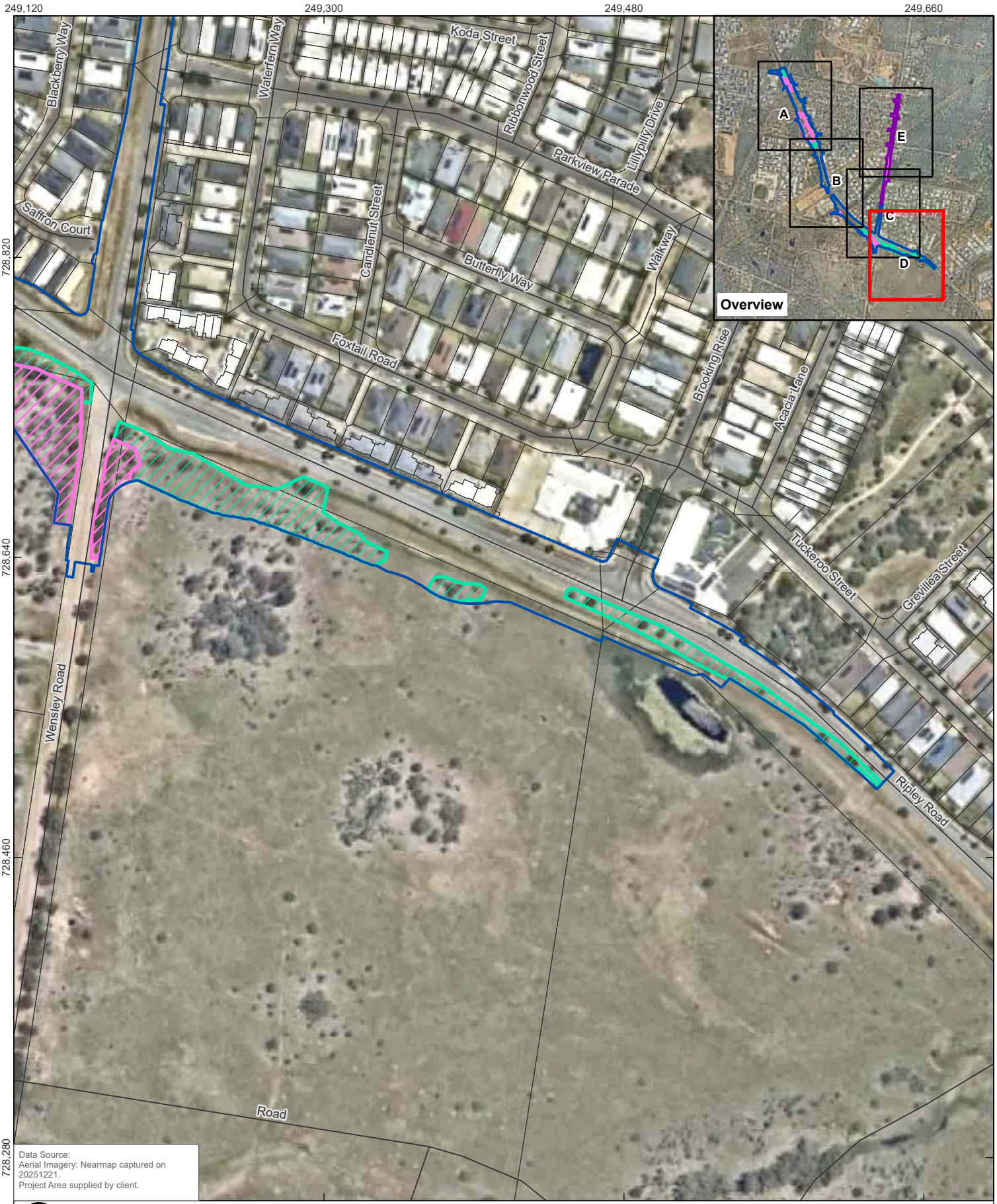
GROUND-TRUTHED KOALA HABITAT MAPPED WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-8C

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-08_Ground-truthed Koala Habitat mapped within the Proposed Action Area



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 2
- Stage 3
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

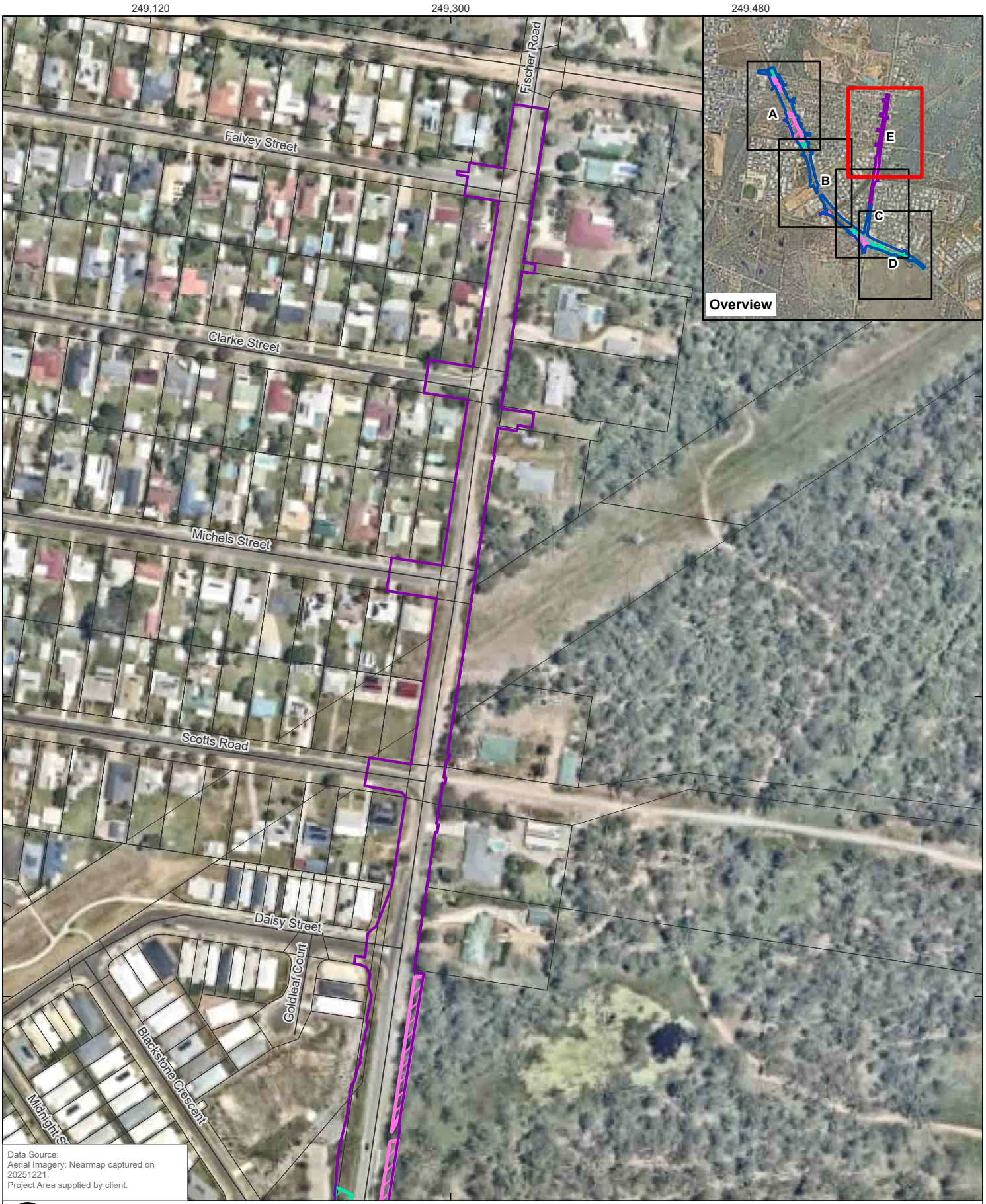
GROUND-TRUTHED KOALA HABITAT MAPPED WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-8D

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-08_Ground-truthed Koala Habitat mapped within the Proposed Action Area



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 2
- Stage 3
- Koala Dispersal Habitat
- Koala Foraging / Breeding Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

GROUND-TRUTHED KOALA HABITAT MAPPED WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-8E

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-08_Ground-truthed Koala Habitat mapped within the Proposed Action Area

3.3.2.3 Grey-headed flying-fox (*Pteropus poliocephalus*)

Grey-headed flying-fox was observed foraging on flowering eucalypts during the field survey. Potential habitat for grey-headed flying-fox within the proposed action area consists of mapped remnant and regrowth vegetation containing important winter and spring flowering vegetation. To estimate wider habitat availability, suitable mapped remnant and regrowth vegetation was mapped within the study area. Grey-headed flying-fox habitat has been mapped using the breeding/foraging habitat criteria for koala.

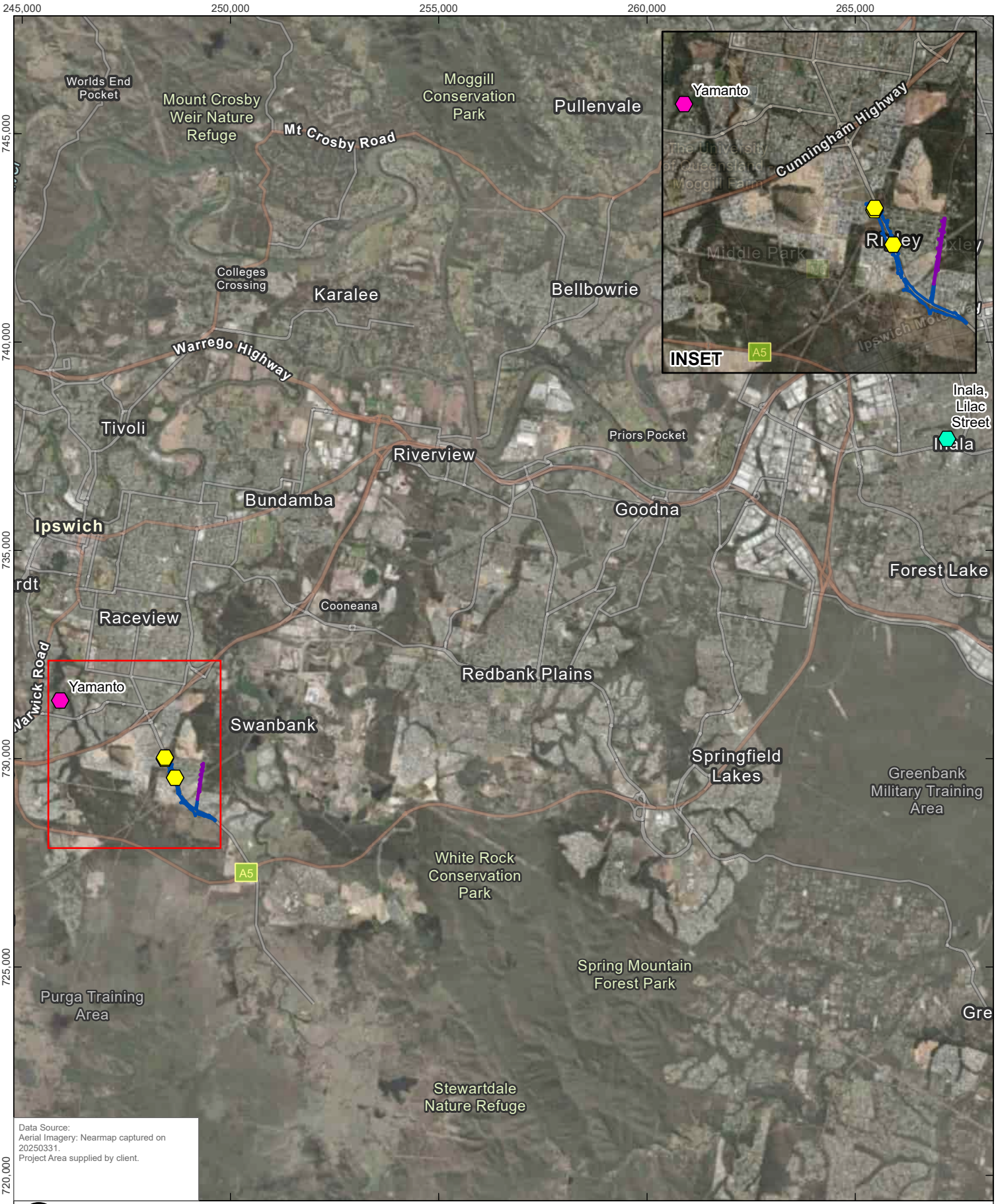
To avoid overestimating available habitat, recently cleared areas were excluded by cross-checking the vegetation mapping against current aerial imagery. This identified approximately 2,818 ha of potential grey-headed flying-fox habitat within the study area (based on the presence of REs known to contain the species identified above and proximity to known camps). Mapped habitat for grey-headed flying-fox within the proposed action area represents 0.08% of suitable mapped remnant and regrowth vegetation within the study area.

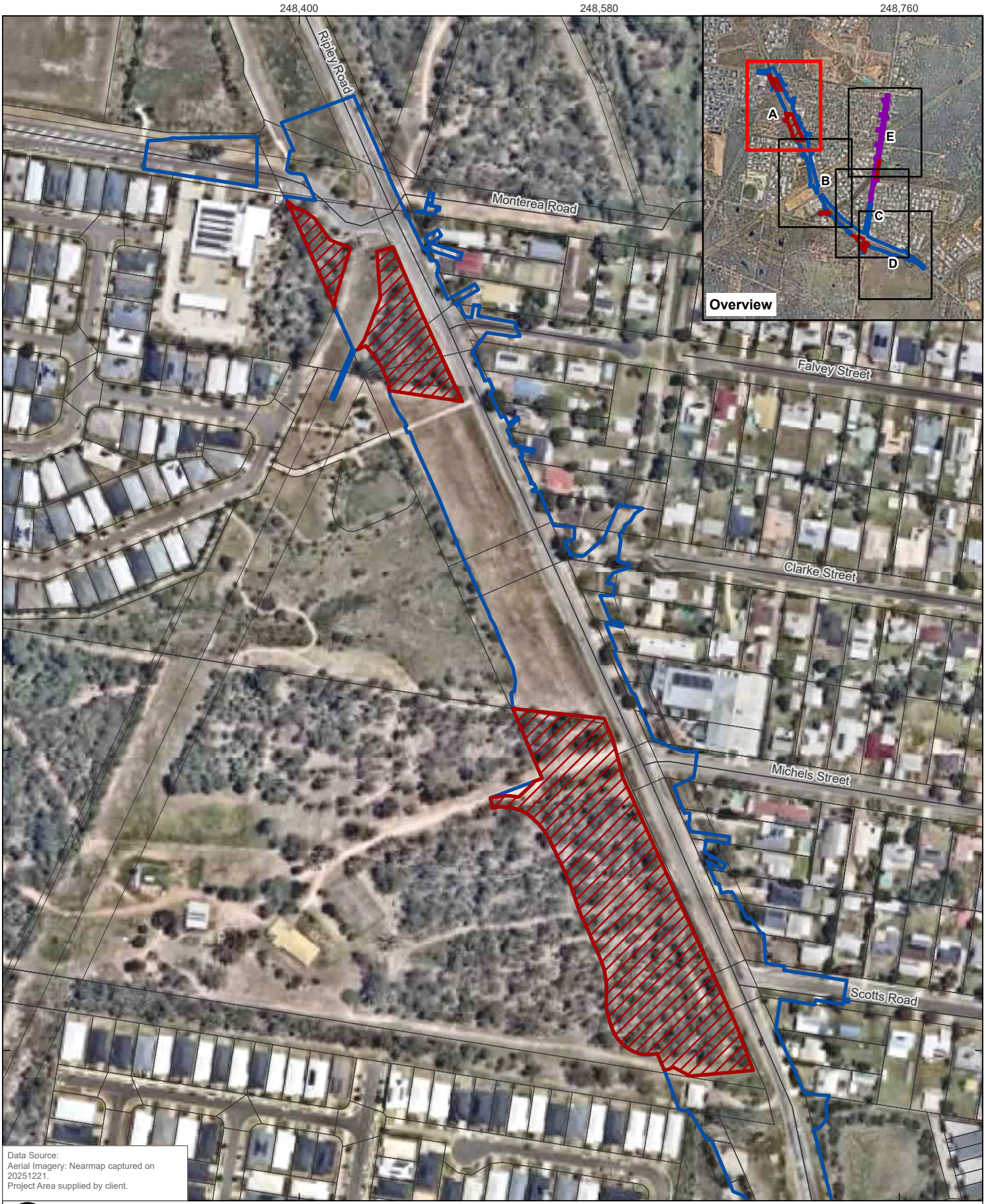
The following matters were considered to determine if an important population of grey-headed flying-fox is present within the proposed actions area:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity and/or
- populations that are near the limit of the species' range.

An important population of grey-headed flying-fox does not occur within the proposed action area, as there are no known camps within the proposed action area, it is a highly mobile species, ranging up to 50 km a night from camps, and the proposed action area is not at the limit of the species' range. It is likely however, that the foraging habitat identified within the proposed action area is used by individuals from the local Yamanto camp (approximately 2.5 km from the proposed action area) and the nationally significant camp located at Inala (approximately 20 km from the proposed action area). Local and nationally significant camps are shown on Figure 3-9.

Mapped grey-headed flying-fox habitat corresponds to the 2.228 ha of the mapped koala breeding and foraging habitat (Figure 3-10).


245,000
250,000
255,000
260,000
265,000
745,000
740,000
735,000
730,000
725,000
720,000
Worlds End Pocket
Mount Crosby Weir Nature Refuge
Mt Crosby Road
Moggill Conservation Park
Pullenvale
Colleges Crossing
Karalee
Bellbowrie
Warrego Highway
Tivoli
Riverview
Priors Pocket
Inala, Lilac Street
Bundamba
Goodna
Ipswich
Forest Lake
Cooneana
Raceview
Redbank Plains
Yamanto
Swanbank
Springfield Lakes
Greenbank Military Training Area
White Rock Conservation Park
A5
Spring Mountain Forest Park
Purga Training Area
Stewartdale Nature Refuge
INSET
Yamanto
Cunningham Highway
Middle Park
A5
Data Source:
Aerial Imagery: Nearmap captured on 20250331.
Project Area supplied by client.
0
1
2
km
Coordinate System: ICC Terrain 2001
Scale: 1:120,000 at A4
Project Number: 620.041764
Date Drawn: 06-Mar-2026
Drawn by: RB
LEGEND
Stage 2
Stage 3
Grey-headed flying-fox observed during field survey
Nearest local grey-headed flying-fox camp
Nearest nationally significant grey-headed flying-fox camp
ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT
LOCATION OF LOCAL AND NATIONALLY SIGNIFICANT FLYING FOX CAMPS
SLR
DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.
FIGURE 3-9
Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-08_Location of Local and Nationally Significant Flying fox Camps



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 2
- Grey-headed Flying-fox Foraging Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

GROUND-TRUTHED GREY-HEADED FLYING-FOX HABITAT WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-10

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-10_Ground-truthed Grey-headed Glying-fox Habitat within the Proposed Action Area



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 2
- Grey-headed Flying-fox Foraging Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

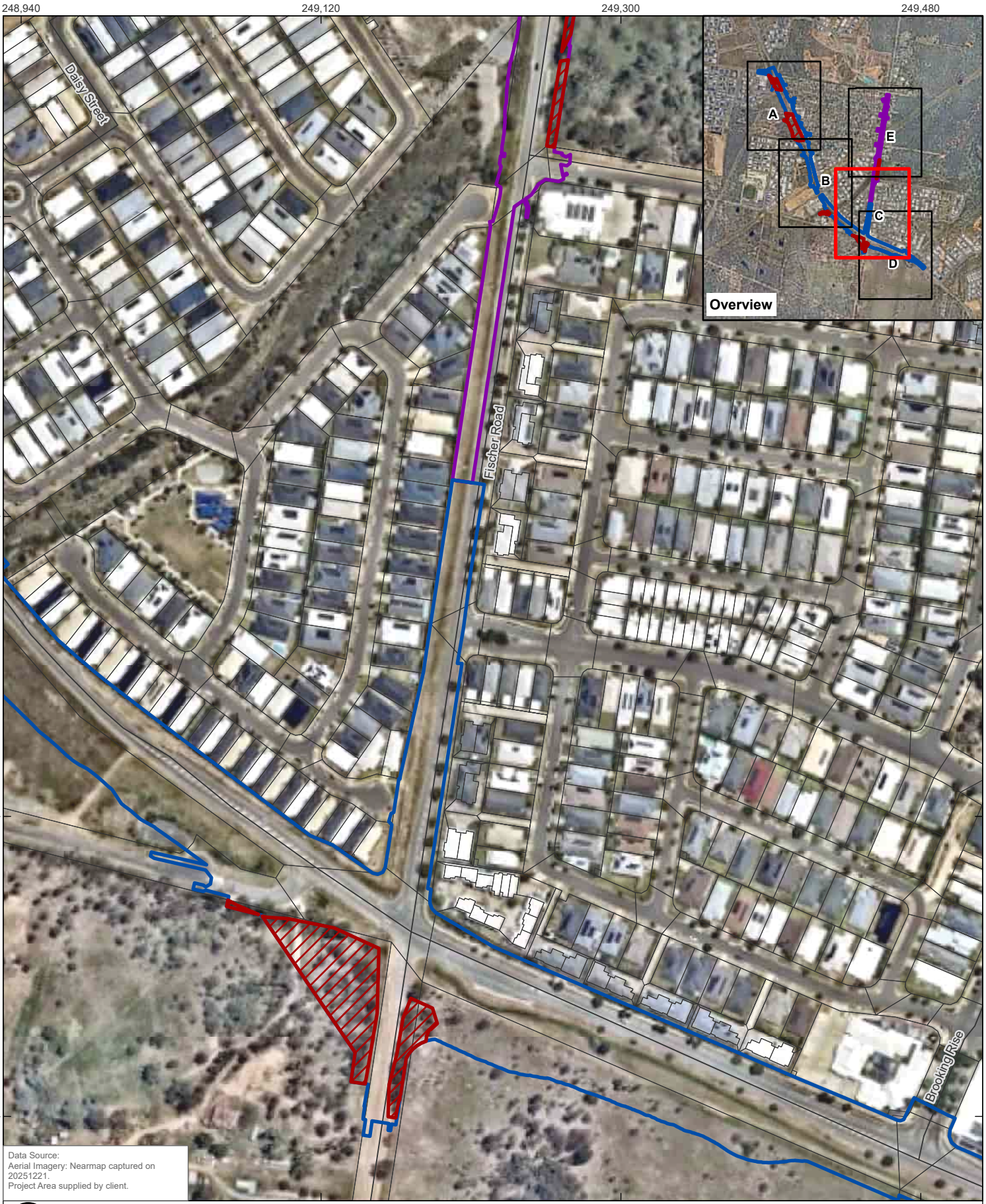
GROUND-TRUTHED GREY-HEADED FLYING-FOX HABITAT WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-10

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-10_Ground-truthed Grey-headed Glying-fox Habitat within the Proposed Action Area



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 2
- Stage 3
- Grey-headed Flying-fox Foraging Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

GROUND-TRUTHED GREY-HEADED FLYING-FOX HABITAT WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-10



Data Source:
Aerial Imagery: Nearmap captured on 20251221.
Project Area supplied by client.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 2
- Grey-headed Flying-fox Foraging Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

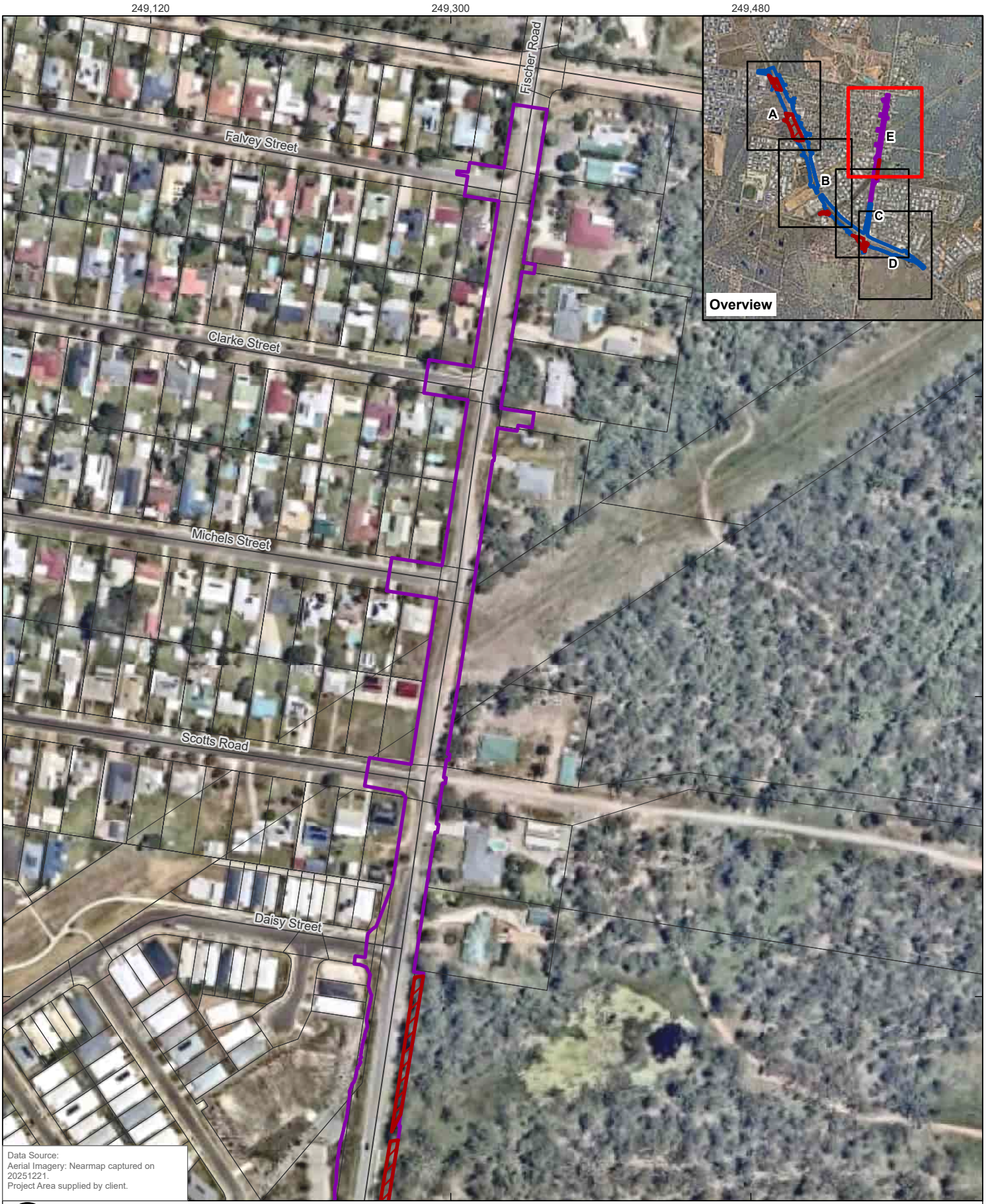
GROUND-TRUTHED GREY-HEADED FLYING-FOX HABITAT WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-10

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-10_Ground-truthed Grey-headed Glying-fox Habitat within the Proposed Action Area



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	RB

LEGEND

- Road
- Cadastre
- Stage 3
- Grey-headed Flying-fox Foraging Habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

GROUND-TRUTHED GREY-HEADED FLYING-FOX HABITAT WITHIN THE PROPOSED ACTION AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 3-10

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F03-10_Ground-truthed Grey-headed Glying-fox Habitat within the Proposed Action Area

3.3.3 Adequacy of survey

An assessment of the adequacy of any surveys undertaken for these species, with reference to relevant survey guidelines, conservation advices, etc is provided in Table 3-6.

Table 3-6 Adequacy of survey for MNES within the proposed action area

Species Name	Common Name	Survey methods (transects or grids)	Timing of survey – within recommended period?	Effort (hours & no. people)	Compliance
Calyptorhynchus lathami lathami	south-eastern glossy black-cockatoo	• Targeted breeding place random meander transect of entire proposed action area • Diurnal bird surveys • Bird census across site	Targeted breeding place random meander transect conducted on 14th January 2026. Diurnal bird surveys and bird census conducted between 26-28th May 2025. Surveys can be conducted at any time of the year, however surveys during breeding season (March to August) is recommended to detect if this species is nesting (Hourigan 2012). Therefore, survey timing is adequate.	30 person minutes of diurnal bird survey per site for four sites = 120 person minutes. Bird census over three days (approximately 2880 person minutes). Targeted breeding place and foraging habitat survey (approximately 450 person minutes).	Field survey was adequate to detect foraging or breeding habitat for the south-eastern glossy-black cockatoo within and directly adjacent to the Project footprint.
Phascolarctos cinereus	koala	• SAT surveys • Spotlighting random meander	Spotlighting and SAT surveys undertaken between 26th-28th May 2025. Spotlighting can be undertaken at any time of year. Scat detection conditions were favourable as little rain had fallen prior to the survey and no rain occurred during the survey period.	Three SAT surveys 228 person minutes of spotlighting across five sites.	Koala was not detected during surveys, but it has been assessed as likely to occur within the Project footprint.
Pteropus poliocephalus	grey-headed flying-fox	• Spotlighting random meander	Spotlighting undertaken between 26th-28th May 2025.	228 person minutes of spotlighting across five sites.	Species was detected and survey effort was compliant with the survey guidelines for

Species Name	Common Name	Survey methods (transects or grids)	Timing of survey – within recommended period?	Effort (hours & no. people)	Compliance
			Surveys undertaken while diet plants were flowering and the species was detected foraging on these species.		Australia's threatened bats (DEWHA 2010).

4.0 Impact Assessment

4.1 Extent and quality of habitat

Habitat for MNES species within the Project area are detailed in Section 3.3.2 and discussed in this section in the context of Project impacts.

4.1.1 South-eastern glossy black-cockatoo

The Conservation Advice for the south-eastern glossy black cockatoo (DCCEEW, 2022a) identifies the following as habitat critical to the survival of this species:

- Areas for activities such as foraging, breeding, roosting, or dispersal – in SEQ preferred foraging habitats are those containing black she-oak (*Allocasuarina littoralis*) and forest she-oak (*A. torulosa*). Habitats providing the very specific nesting hollows required are also essential for this species (refer Section 3.3.1.1).
- Areas for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators).
- Areas to maintain genetic diversity and long-term evolutionary development.
- Areas for the reintroduction of populations or recovery of the species – this includes areas that are currently not suitable but are capable of supporting future populations (such as bushfire affected areas).

The proposed action area and adjacent areas were shown to contain limited scattered foraging trees (*Allocasuarina* and *Casuarina cunninghamiana*) and some potential nesting trees (outside the project footprint) suitable for south-eastern glossy black-cockatoo. However, the remnant and regrowth areas do not contain an understory of these foraging tree species, nor are there stands of trees large enough to be considered suitable. As such the proposed action area does not contain habitat critical to the survival of the species. Land adjacent to the action area contains limited potential nesting habitat which could be subject to indirect impacts from the Project. These areas are mapped on Figure 4-1 and the area provided in Table 4-1. For the purposes of identifying areas subject to indirect impacts, an indicative buffer of 50 m from the Project area boundary has been mapped.

4.1.2 Koala

Koala habitat within the proposed action area is comprised of:

- foraging and potential breeding habitat - koala foraging/breeding habitat included remnant vegetation (RE 12.9-10.2 and RE 12.9-10.7) and regrowth vegetation (RE 12.3.3)
- high quality dispersal habitat with available refuge trees - non-remnant areas containing suitable refuge trees
- low grade dispersal habitat with no suitable refuge trees - open grassed areas that may be utilised by koala when moving between patches of habitat.

Habitat critical to the survival of a species is defined as the areas that the species relies on to avoid or halt decline and promote the recovery of the species (DAWE, 2012) and includes:

- habitat used during periods of stress (e.g. drought refugia)

- habitat to meet essential life cycle requirements (e.g. foraging, breeding and dispersal functions)
- areas used by important populations
- areas necessary to maintain genetic diversity or long term populations (through re-colonisation)
- areas used as movement corridors.

Koala habitat that meets these requirements and has been mapped across the proposed action area includes:

- Foraging/breeding defined as contiguous areas of ground-truthed remnant and high value regrowth eucalypt open forest and woodlands containing LIKT (consisting of Remnant RE 12.9-10.2, Remnant RE 12.9-10.7, and Regrowth RE 12.3.3) and
- Dispersal habitat defined as areas of modified forest or woodland containing species that are known koala food trees, or shrubland with emergent food trees. This includes non-remnant and considers recent clearing, canopy cover and patch size (consists of non-remnant areas with refuge trees).

These two habitats are considered to be habitat critical to the survival of the species and have been included in the impact assessment for koala. Areas of the proposed action area considered to be low grade dispersal are not considered habitat critical to the survival of the species and are not considered further in the impact assessment.

The proposed action area is predominantly road reserve and has been extensively modified over time for road and associated infrastructure. The habitat present within remaining vegetation is mapped on Figure 3-8 and the area of impacts confirmed in Table 4-1. Throughout the project design process impacts on habitats located adjacent the Project area have been reduced by changes in construction extents and modification of design (for example replacement of battered slopes with retaining walls to reduce the footprint area within potential koala habitat). This has reduced direct impacts on MNES and avoided the need for land acquisition. However, these habitats are still at potential risk of indirect impacts due to their proximity to the construction area. These areas are mapped on Figure 4-1 and detailed in Table 4-1.

4.1.3 Grey-headed flying-fox

Habitat for grey-headed flying-fox in the proposed action area is limited to foraging habitat. No camp is present within the proposed action area.

The National recovery plan for the grey-headed flying-fox (DEW 2021) considers habitat critical to the survival of the species to include the following:

- areas containing important winter and spring flowering vegetation (including *Eucalyptus tereticornis, E. albens, E. crebra, E. fibrosa, E. melliodora, E. paniculata, E. pilularis, E. robusta, E. seena, E. sideroxylon, E. siderophloia, Banksia integrifolia, Castanospermum australe, Corymbia citriodora citriodora, C. eximia, C. maculata, Grevillea robusta, Melaleuca quinquenervia* or *Syncarpia glomulifera)*
- areas which contain native species that are known to be productive as foraging habitat during the final weeks of gestation, and during the weeks of birth, lactation, and conception (August to May)

- areas which contain native species used for foraging and occur within 20 km of a nationally important camp as identified on the former national flying-fox monitoring viewer (DCCEEW, 2025a)
- areas which contain native and / or exotic species used for roosting at the site of a nationally important grey-headed flying-fox camp as identified on the national flying-fox monitoring viewer (DCCEEW, 2025a).

Grey-headed flying-fox were observed foraging on flowering eucalypts in May 2025, indicating the habitats within the proposed action area provide seasonal foraging resources. The proposed action area is located approximately 20 km from a nationally important camp at Inala and habitats present could be used by individuals from that camp. The remnant and regrowth habitats with suitable foraging species within the proposed action area are considered to be habitat critical to the species.

The nationally significant camp accommodates a key breeding/dispersal population and grey-headed flying-fox in the Inala camp could be considered an important population. The use of foraging resources within the proposed action area by this important population reinforces its status as habitat critical to the survival of the species.

The area of mapped habitat for grey-headed flying-fox within the proposed action area is shown in Figure 3-10. Changes to the Project to avoid potential koala habitat has reduced direct impacts on MNES including grey-headed flying-fox however, habitat adjacent to the proposed action area is still at potential risk of indirect impacts due to the proximity to the construction area. These areas are mapped on Figure 4 1 and detailed in Table 4 1.

Table 4-1 Area of habitat for MNES within and adjacent to the proposed action area

Species	Project Footprint		Adjacent to Project Footprint		Direct Impact Area (ha)
	Foraging /Breeding habitat (ha)	Dispersal Habitat (ha)	Foraging /Breeding habitat (ha)	Dispersal Habitat (ha)	
South-eastern glossy black-cockatoo *Calyptorhynchus lathami lathami*	0	0	4.62	-	0
Koala (*Phascolarctos cinereus*)	2.228	1.034	4.62	5.82	3.263
Grey-headed flying-fox *Pteropus poliocephalus*	2.228	0	4.62	-	2.228

In additional to MNES habitats, watercourses and other ecological values that could be subject to indirect impacts are also mapped on Figure 4-1.



0 100 200 m

Coordinate System:	ICC Terrain 2001
Scale:	1:10,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	DC

LEGEND

- Hollow suitable or potentially suitable for breeding
- Hollow not suitable for breeding
- Isolated *Casuarina* tree
- Small patch of 10 *Casuarina* trees, less than 5 m tall
- Small patch of 15 *Casuarina* trees, less than 6 m tall
- Three *Casuarina* trees
- Road
- Watercourse
- 50m Buffer

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

AREA POTENTIALLY SUBJECT TO INDIRECT IMPACT

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 4-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F04-01_Indirect impacts to MNES habitat

4.2 Assessment of impacts

The proposed action will involve the following activities.

- Road construction commences with pre-construction planning, survey establishment, and implementation of traffic management and environmental controls. Vegetation and trees to be cleared and to be retained are marked out. Clearance zones to any cultural heritage or environmental items of significance are established.
- Clearing and grubbing are undertaken within approved limits, followed by stripping and stockpiling of topsoil. Bulk earthworks then proceed, including cut-to-fill operations and construction of embankments in controlled layers to achieve the design subgrade levels. The exposed subgrade is proof rolled, assessed, and treated where required.
- Once the earthworks platform is established, underground works are undertaken, including Public Utility Plant (PUP) relocations and installation of drainage infrastructure such as culverts, pits, pipes, and subsoil drains. Structural elements, including custom drainage structures and retaining walls are constructed in accordance with the approved design.
- Following approval of the prepared formation, pavement construction commences, including placement and compaction of subbase, base, and temporary wearing course. Temporary pavement delineation shall be put installed until final trimming, final surface treatments, line marking, and ancillary works are then completed prior to practical completion.

4.2.1 Direct impacts

Potential direct impacts resulting from the above activities, in the absence of appropriate mitigation measures include:

- loss of vegetation communities (remnant, high value regrowth and non-remnant)
- fragmentation of local scale biodiversity corridors
- loss of breeding, foraging, roosting and resting habitat for fauna
- loss of habitat for conservation significant flora and fauna species
- unintentional fauna mortality or injury resulting from vegetation clearing and related works
- alteration of wetland / drainage line habitat and flow regime during and post works, with potential loss of woody structure
- decreased east-west connectivity across the project by widening the gap between vegetation patches.

4.2.1.1 Koala

The action area provides a source of food trees and shelter for koalas in the region and the proposed action will directly impact up to 3.262 ha of habitat resources considered critical to the survival of the species (2.228 ha of foraging and potential breeding habitat and 1.034 ha of dispersal areas containing refuge trees). Some low grade dispersal habitat occurs within the project footprint, however, this is degraded without suitable refuge trees and this habitat's ecological function will not be impacted by the proposed action.

While no signs of koala were recorded on site, it was determined there was a high likelihood of the species occurring within the proposed action area and the proposed works are likely to reduce the local area of occupancy of the koala population. Impacts on the koala population will be exacerbated by the increased potential for vehicle strike and the widening of the existing barrier to the movement of individuals across Ripley Road to habitat to the north-east and south-west (refer Section 4.2.2.1).

4.2.1.2 Grey-headed flying-fox

The proposed action area will directly impact approximately 2.228 ha of foraging habitat for the grey-headed flying-fox (including 2.158 ha of mapped remnant vegetation and 0.121 ha of regrowth vegetation). This is habitat which is also mapped for koala (refer Section 4.2.2.1).

4.2.2 Indirect impacts

The proposed action area is predominantly road reserve and has been extensively modified over time for road and associated infrastructure. Throughout the project design process impacts on habitats located adjacent the Project area have been reduced by changes in construction extents and modification of design. No laydowns or temporary construction areas will be located outside the Project footprint. While these measures have avoided direct impacts on MNES habitats adjacent the Project area, these areas, shown on Figure 4-1, are still at potential risk of indirect impacts due to their proximity to the construction area.

Potential indirect impacts of the proposed works in the absence of appropriate mitigation measures include:

- Flora:
  - introduction of new weed species or spread of existing weeds
  - contamination of land resulting from proposed works i.e. spills and introduced pathogens
  - generation of dust through construction activities leading to reduced photosynthesis or reproductive impairment
  - edge effects and disturbance to adjacent habitats.
- Fauna:
  - increased potential for vehicles to strike fauna in the pre-construction, construction, and operation phase of the project
  - loss of connectivity between local and landscape scale habitats
  - increased potential for fauna mortality due to entrapment within adjacent urbans areas and prolonged exposure to threats such as dogs, stress, etc.
  - increased noise, light and vibration
  - uncontrolled runoff into waterways impacting water quality and aquatic habitats
  - edge effects and disturbance to adjacent habitats
  - facilitating pest animal movement into new areas
  - introduction of new weed species or spread of existing weeds limiting fauna movement.

4.2.2.1 South-eastern glossy black-cockatoo

A number of hollow-bearing trees providing potential bird and arboreal mammal nest sites were identified adjacent to the Project area (Figure 3-6). These nests are not supported by areas of suitable foraging habitat for south-eastern glossy black-cockatoo but some met the specific nest requirements for the species and could potentially be utilised. Indirect impacts to south-eastern glossy black-cockatoo relate to noise and vibration (disturbance) and edge effects. Approximately 4.62 ha of potential habitat for south-eastern glossy black-cockatoo is mapped adjacent to the project area as shown on Figure 4-1.

4.2.2.2 Koala

The proposed action area provides limited potential breeding, foraging and dispersal habitat, however the works propose to widen the road significantly and install a median divider which is likely to fragment the landscape, impacting breeding movements of individuals and dispersal of sub-adults, and reducing potential breeding habitat by up to 2.228 ha within the area. The action occurs within a highly disturbed environment, surrounded by residential and industrial development and alongside existing roads. Koala do not have a defined breeding site and are known to breed in highly disturbed environments and the proposed action area is considered likely to support low quality breeding habitat.

There is one un-vetted koala observation within the project area, and there are records on adjacent land suggesting that koala may move between this area and other areas of habitat within the locality. Mapped dispersal habitat for koalas included areas containing suitable refuge trees and open areas that may be utilised by koala when moving between patches of habitat. Approximately 4.62 ha of potential breeding habitat for koala and 5.82 ha of dispersal habitat is mapped adjacent to the project area as shown on Figure 4-1.

The TEAR identified potential local fauna movement corridors within the Project area and adjacent lands as shown in Figure 3-5. Further investigation of these potential corridors is provided in Section 5.4, although it is likely that the use of these corridors in their current state would expose koalas to threats such as vehicle strike (required to cross the existing two lane Ripley and Fischer Road) and dog attack (traversing through urban areas and along waterway corridors that adjoin urban areas). The one un-vetted record of koala is associated with one of these identified corridors near Amber Court.

The duplication of the road as proposed will increase the distance individuals must travel between local habitat areas. The number of records across the wider locality (Figure 3-7) suggests there is movement between habitat to the west and east of the proposed action area. Increased traffic due to urban development and a wider crossing distance for koala on Ripley Road will likely result in an increase in vehicle strike risk which would lead to a long term decrease in the population.

The proposed action is likely to increase the fragmentation of the landscape, by widening Ripley Road and installing a dividing median, creating a hindrance to koala movement. The update to Fischer Road (Stage 3) will have minimal effects to fragmentation.

An assessment of impacts on connectivity over the wider landscape is provided in Section 4.2.3.

4.2.2.3 Grey-headed flying-fox

Indirect impacts on grey-headed flying-fox relate predominantly to edge effects (reduction of adjacent habitat values). Approximately 4.62 ha of potential foraging habitat for grey-headed flying-fox is mapped adjacent to the project area as shown on Figure 4-1.

4.2.3 Connectivity analysis

Clearing of vegetation within the road corridor and widening of the road formation has the potential to indirectly impact koalas by reducing any existing east–west connectivity between habitat patches within the broader landscape. To assess these potential indirect impacts, existing local and landscape-scale connectivity was examined in the context of koala movement behaviour, including the species' reliance on continuous or closely spaced tree cover to facilitate safe arboreal and ground movement.

Koalas are predominantly arboreal, with limited ground movement and relatively small daily movement distances; however, in fragmented landscapes individuals are required to travel further and undertake riskier movements between habitat patches, increasing exposure to threats (e.g. Sparkes et al. 2025; McLean et al. 2025).

A GIS-based habitat connectivity assessment was undertaken to evaluate both existing and post-construction connectivity for koalas within the Project area and the broader landscape. This assessment incorporated remnant vegetation mapping, aerial imagery interpretation, habitat patch analysis, identification of barrier within the Project area, and the identification and remapping of linear movement corridors across the wider landscape.

The connectivity assessment considered the area within approximately 5 km of the Project area. Key influences on connectivity across the wider landscape include:

- Mapped biodiversity corridors
- Extent of remnant and other native vegetation
- Mapped core koala habitat
- Previous and ongoing development
- Strategic land use intents under the PDA.

The Project area and the Ripley Valley PDA are located within a statewide biodiversity corridor and areas mapped as core koala habitat by the Queensland government (Figure 3-7). Remnant vegetation occurs as isolated patches, narrow linear corridors, roadside vegetation, riparian and drainage line vegetation, and scattered habitat trees on private land that function as stepping stones. Notwithstanding the strategic intention of the mapped corridor and habitat areas, the Project area is located within a highly modified landscape characterised by low to moderate habitat connectivity (Figure 4-2).

The Ripley Valley PDA is one of the largest urban growth areas in South East Queensland, with 649 new dwellings added in 2025. Land adjacent Ripley Road and Fischer Road is highly developed for urban purposes, with much of the remnant vegetation cleared. Existing developments and those under construction are shown on Figure 2-2 which demonstrates that land adjacent the Project area will be substantially developed in the short to mid-term.

An extract from the Ripley Valley Priority Development Area Development Scheme in Figure 4-3 identifies the natural values identified across the PDA area. These include riparian corridors, extending north south and generally aligning with the mapped regional biodiversity corridors. A third corridor (mapped in the PDA Structure Plan as Open Space) is mapped to the north of the Project area and includes a drainage reserve adjoining the northern extent of the project at the intersection with Ripley Road, where it transitions to piped drainage infrastructure. Portions of this corridor are retained as a drainage corridor within the development on the corner of Ripley Road and Monterea Road (development as shown on Figure 2-2) however there is limited connectivity to the west of Ripley Road. Land either side of the Project area is mapped in the PDA Structure Plan as Secondary Urban Centre with no conservation areas identified within the wider landscape.

The analysis confirmed that current connectivity through the Project area is limited, with movement opportunities largely confined to roadside vegetation and habitat patches to the east and west (Figure 4-4). At the broader scale, the GIS assessment highlighted that east–west connectivity is already constrained and reliant on fragmented corridors and stepping-stone habitats (Figure 4-4).

Connectivity is currently constrained by existing road infrastructure, traffic, cleared land associated with urban development, limited canopy continuity, and edge effects such as weeds, noise and artificial lighting.

Within the Project area, structural connectivity is limited and discontinuous. Vegetation generally occurs in small or isolated patches with minimal canopy linkage, and corridors are typically narrow and degraded. While koalas may utilise roadside vegetation and scattered trees, the existing road corridor already acts as a barrier to movement and presents a mortality risk due to vehicle strike.

The existing road corridor and associated infrastructure already contribute to habitat fragmentation, increased vehicle strike risk, and avoidance behaviour by koalas due to disturbance factors such as noise and lighting. The proposed road widening has the potential to further reduce roadside vegetation connectivity and marginally increase the barrier effect. However, given the already degraded and fragmented condition of the landscape, the Project unmitigated is expected to increase an existing barrier and mortality risk, rather than create a new one (Figure 4-4).

To minimise impacts and maintain safe movement opportunities for koalas and other terrestrial fauna, the Project will incorporate fauna-sensitive design measures, including fauna-friendly exclusion fencing and targeted signage, as part of the road upgrade as discussed in Section 5.3 and Section 5.4. The post-construction connectivity immediately adjacent to the Project will alter the ability for fauna to cross Ripley and Ficher Road (within the Project footprint) by installing exclusion fencing, but ultimately reduce the mortality risk by hindering access to the road (Figure 4-5).

Overall, while the Project will contribute to a localised reduction in connectivity, it is likely to reduce mortality risk and is unlikely to create a barrier within an important regional corridor or alter the movement patterns of koala within the broader landscape.



Data Source:
Aerial Imagery: Nearmap captured on 20250331.
Project Area supplied by client.

0 1 2 km

Coordinate System:	ICC Terrain 2001
Scale:	1:115,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	DC

LEGEND

- 10km Buffer
- Ecological Corridor

Project Area

- Stage 2
- Stage 3

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

ECOLOGICAL CORRIDORS WITHIN THE LANDSCAPE

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 4-2

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F04-02_Ecological corridors within the landscape

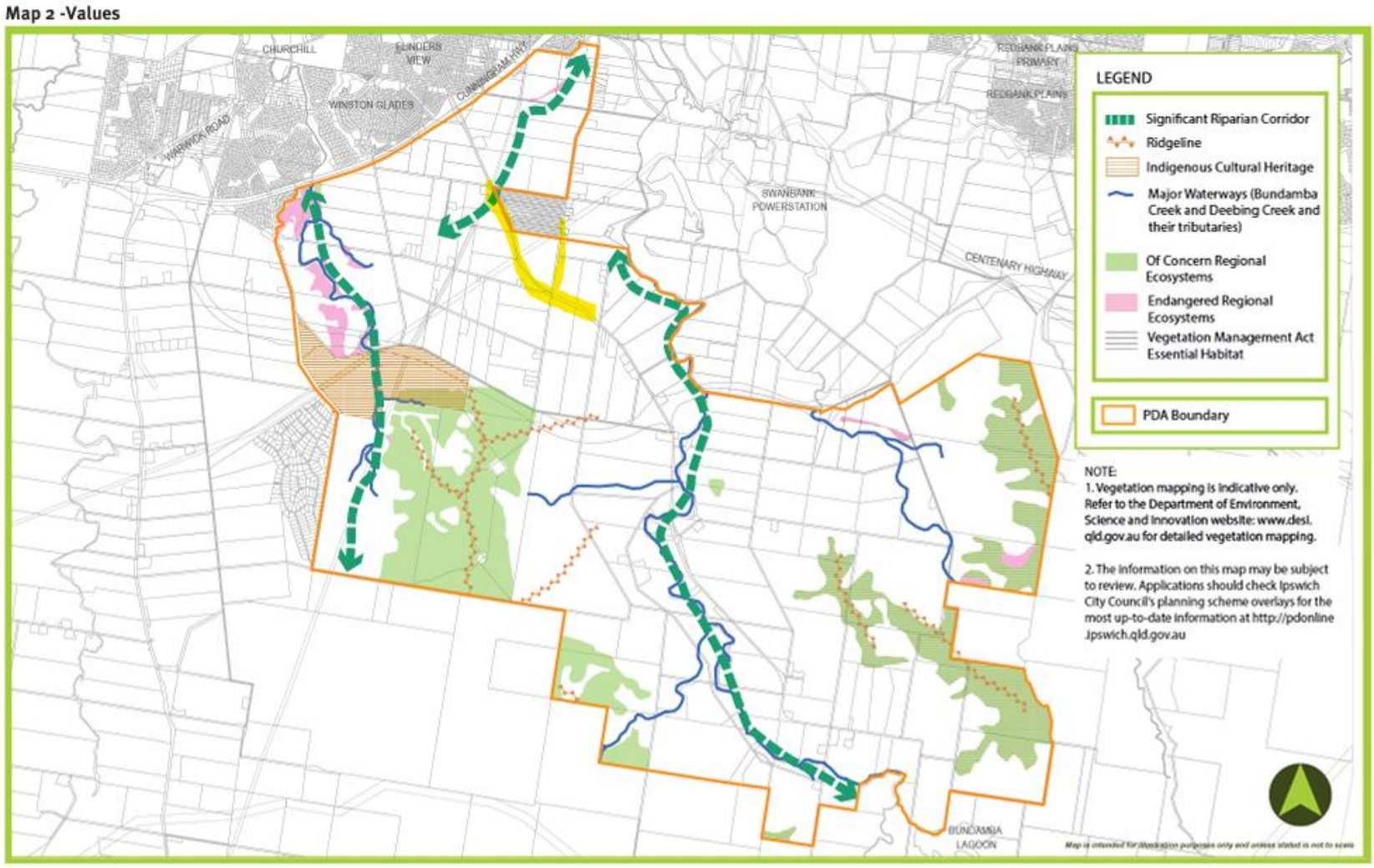


Figure 4-3 Values identified under the Ripley Valley Priority Development Area Development Scheme



Data Source:
Aerial Imagery: Nearmap captured on 20250331.
Project Area supplied client.

0 250 500 m

Coordinate System:	ICC Terrain 2001
Scale:	1:59,500 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	DC

LEGEND

5km Buffer

Project Area

Stage 2

Stage 3

Potential MNES habitat

Corridors and stepping-stones

Potential habitat (remnant vegetation)

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

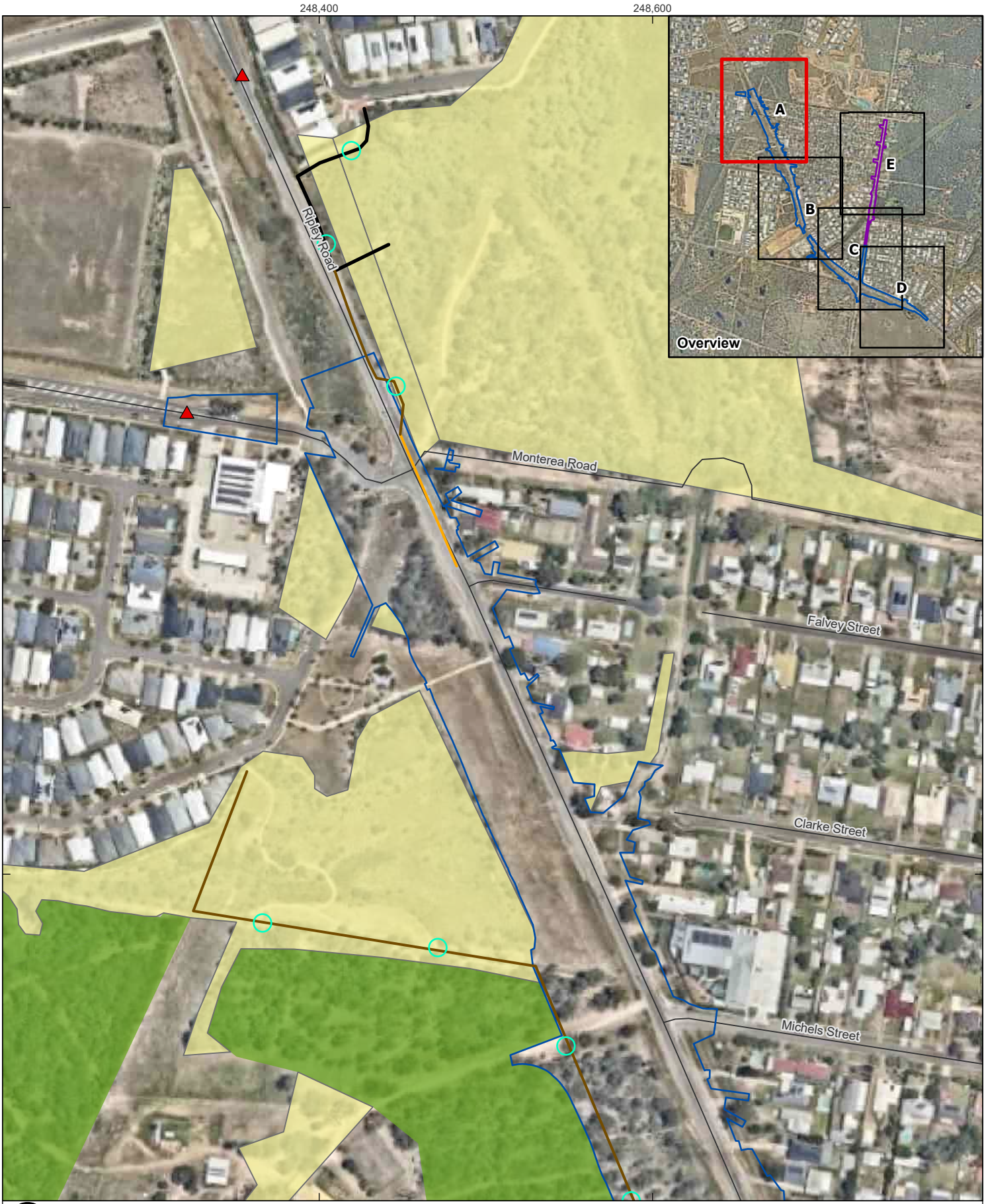
POTENTIAL KOALA HABITAT AND CORRIDORS WITHIN 5 KM OF THE PROJECT AREA

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 4-4

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F04-04_Potential koala habitat and corridors within 5 km of the Project area



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Static koala warning sign
- Road

Fauna Fencing

- Fauna escape hatch
- Long term fauna fencing
- Retaining wall
- Short term fauna fencing

Project Area

- Stage 2

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 4-5

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F04-05_Post construction connectivity and mitigation measures



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Static koala warning sign
- Road

Fauna Fencing

- Fauna escape hatch
- Long term fauna fencing
- Short term fauna fencing

Project Area

- Stage 2

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

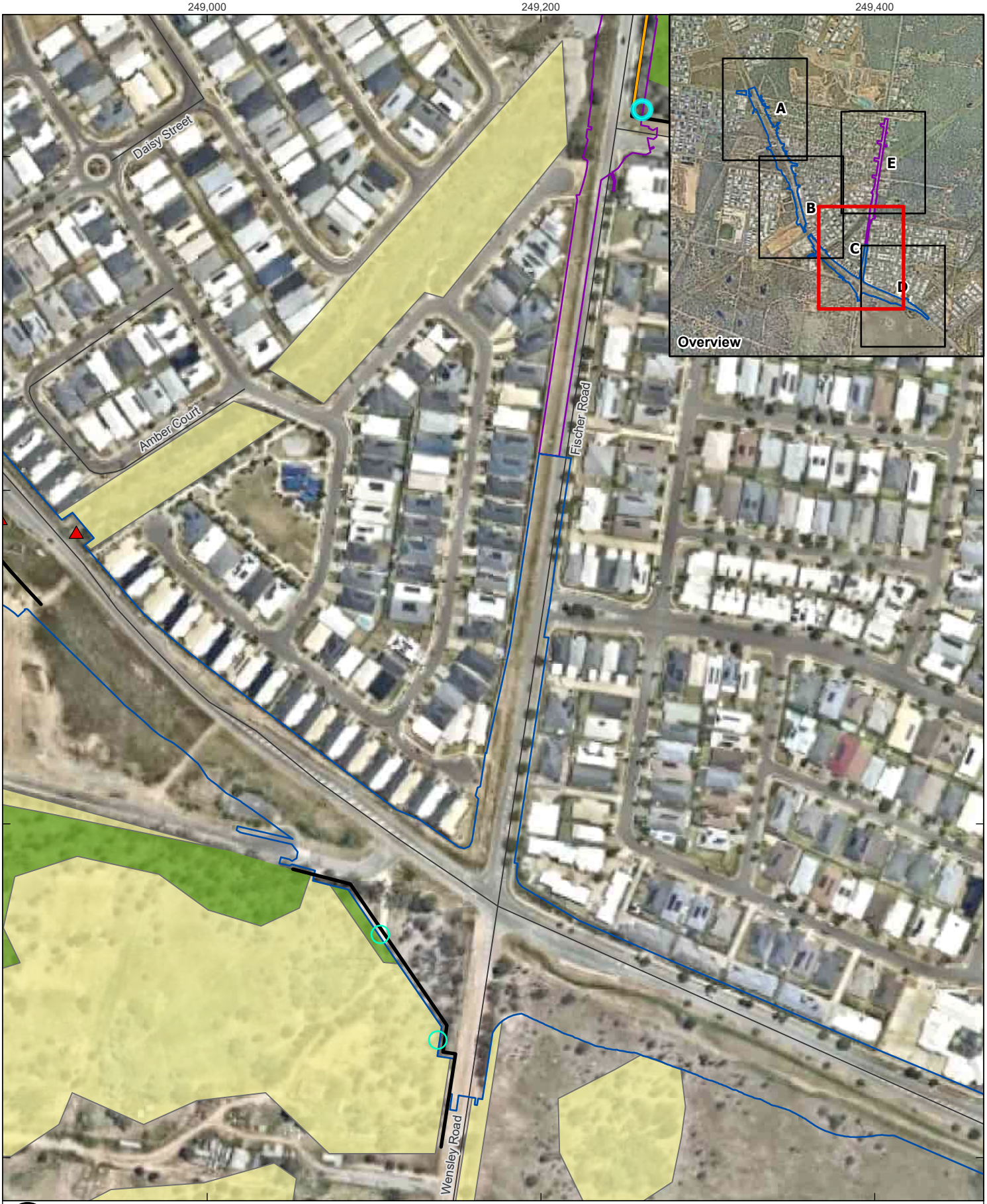
POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 4-5

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F04-05_Post construction connectivity and mitigation measures



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Static koala warning sign
- Road

Fauna Fencing

- Fauna escape hatch
- Long term fauna fencing
- Retaining wall

Project Area

- Stage 2
- Stage 3

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

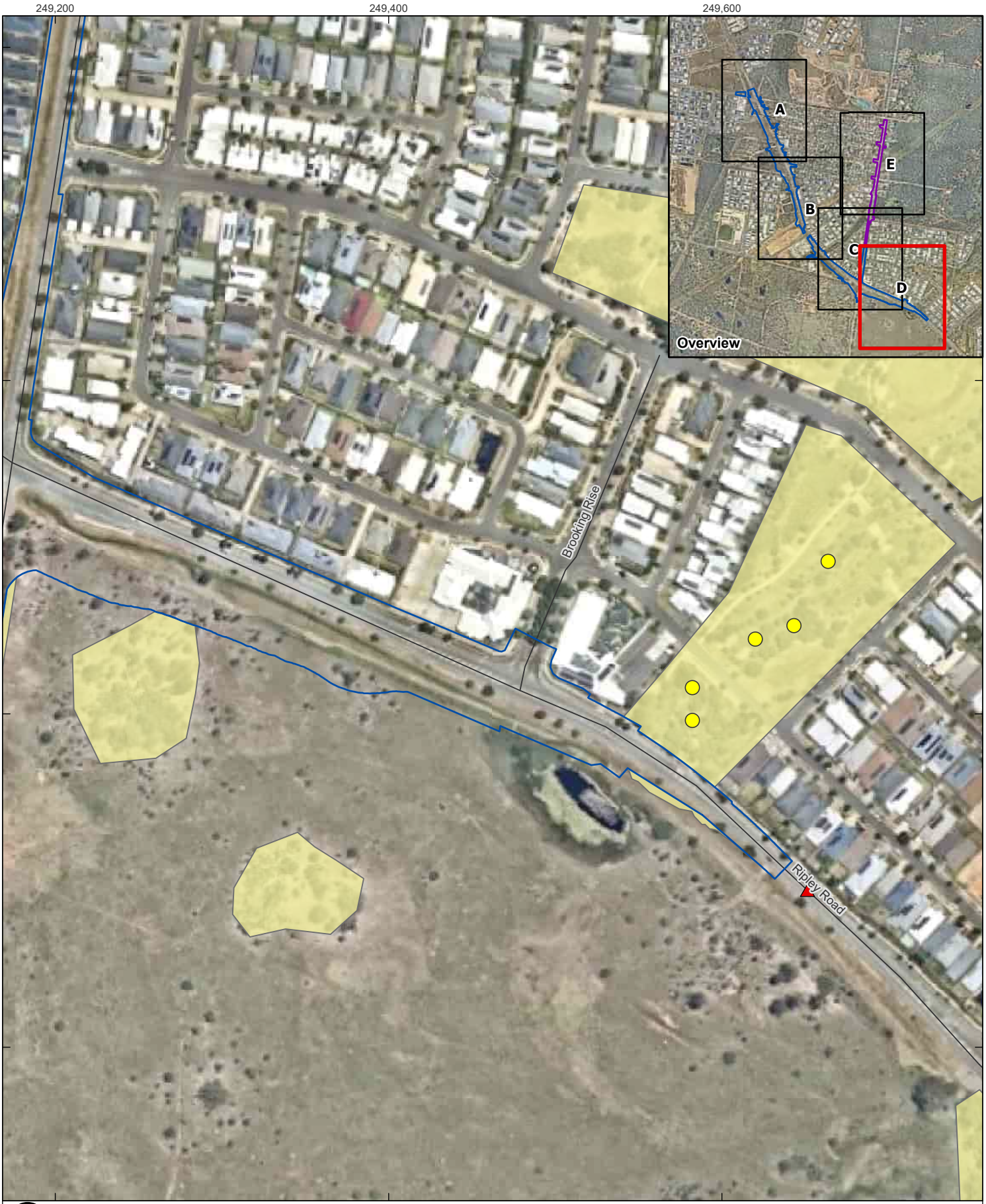
POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 4-5

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F04-05_Post construction connectivity and mitigation measures



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Koala Refuge Poles
- Static koala warning sign
- Road

Project Area

- Stage 2

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 4-5

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F04-05_Post construction connectivity and mitigation measures



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Static koala warning sign
- Road

Fauna Fencing

- Fauna escape hatch
- Long term fauna fencing
- Retaining wall

Project Area

- Stage 3

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 4-5

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F04-05_Post construction connectivity and mitigation measures

4.2.4 Intensification of indirect impacts

Areas of habitat adjacent to the Project area are shown on Figure 4-1. These areas are located either side of the existing Ripley Road and Fischer Road alignments and already subject to impacts from noise, lighting and human activity. The widening of Ripley Road will reduce the separation between these habitats and the road, resulting in potential intensification of these indirect impacts. Lighting will primarily illuminate the road and adjacent pathways for safety reasons. The Road lighting plan extract at Appendix L indicates the extent of light spill associated with the Project (indicated by contours representing lux levels) and demonstrates that lighting effects are largely confined to the road corridor with levels outside the corridor between 0.5 and 3.5 lux. For comparison, a full moon is typically 0.2 lux (Kyba, Mohar & Posch 2017). The National light pollution guidelines for wildlife (DCCEEW, 2023a) outline the most effective measures for mitigating the impact of artificial light on ecological communities including the following which are reflected by the lighting plan:

- maintaining naturally dark habitat patches and connecting corridors whenever possible – no significant areas of illumination are proposed which will intersect adjacent vegetated areas or habitats.
- avoiding the creation of ‘light barriers’ that can fragment an intact habitat patch – lighting is restricted to the corridor with adjacent impacts restricted to a narrow overflow area.

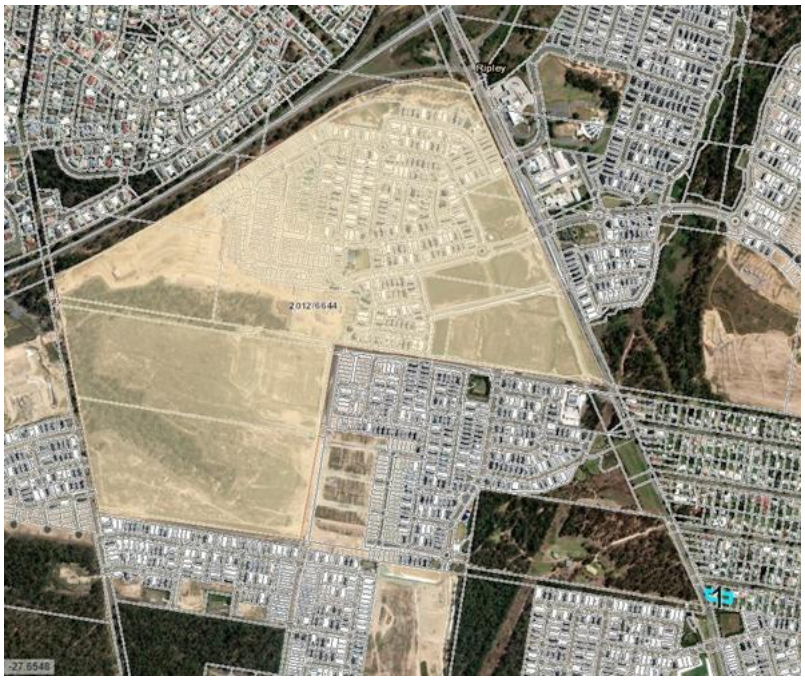
Levels of human activity are unlikely to increase as existing pathways are being replaced, rather than new paths being constructed. Noise levels will increase marginally due to the reduced separation between habitat areas and road traffic, however impacts are not likely to be significant due to the degraded nature of the habitats present.

4.2.5 Cumulative impacts

The proposed action area is located in the Ripley Valley where there is a landscape scale network of core koala habitat (State mapped) and regional state biodiversity corridors (Figure 4-4). A number of actions have been referred and/or assessed under the EPBC Act in recent years which has impacted koala habitat across the locality. These are summarised in Table 4-2. Other developments, not requiring assessment under the EPBC Act have also been completed or are under construction and are shown on Figure 2-2.

Table 4-2 Projects impacting on MNES in the surrounding area

EPBC No.	Location
2021/9070 Hayfield School Site Controlled action - not yet determined 900 m from Ripley Rd; 750 m from Fischer Road Proposal to clear 19.1 ha of vegetation and earthworks – habitat critical for koala. potential habitat mapped – low level koala activity recorded and no sightings.	
2019/8539 Ripley Road Residential Development (538 dwellings) Controlled action – development in progress and land cleared Koala and GHFF relevant matters Approval conditions: Clearing limit of 56.2 ha within development area Offsets required (66 ha) Koala awareness signs on Esplanade Road (internal road) Traffic calming devices and prominent signs – on residential roads	

EPBC No.	Location
2017/8095 Ripley Road residential development (408 dwellings) Controlled action – determined by PD Under construction Koala and GHFF relevant matters Design: To maintain wildlife habitat and connectivity for potential threatened species and local fauna, the site will retain a 36.35 ha of conservation along the two mapped waterway corridors. The central ecological corridor will maintain north-south connectivity to ensure fauna movement opportunities remain within and across the site The retained area is at the north east of the site and not adjacent Ripley Road Approval conditions Offset 61 ha	
2012/6644 Residential Subdivision on Monterea Road, Ripley Not a controlled action – under construction Located 650 m from Ripley Road Retains vegetation corridor from western boundary but doesn't extend through whole site	

Large tracts of land either side of Ripley Road have been developed or approved for development. These have impacted koala and grey-headed flying-fox habitats to varying degrees. Proposals resulting in direct impacts on habitat have been required to provide direct offsets. Some acknowledgement of koala (and fauna more generally) movement throughout the locality was made through the requirement of fauna signage and traffic calming devices in development to the west of Ripley Road and the retention of habitat areas within drainage reserves to the east.

Significant impacts have occurred or are approved and the additional direct impact as a result of the proposed action is relatively small by comparison and will be offset. Indirect impacts due to vehicle collision will occur as a result of the increased road width. This increase has been necessitated by the urban growth in the region and resultant traffic increases. While there are no observations of koala within the proposed action area, there are records throughout the study area and numerous fatality records. Koala will continue to move across the landscape and an assessment of localised fauna movement corridors is provided in Section 5.3 and Section 5.4. Mitigation measures intended to minimise the potential for koala vehicle collision are considered in Section 5.4. Currently the potential for vehicle collision is not managed and while the potential for collision and mortality is likely to increase as a result of the proposed action, it is expected that the proposed mitigation will reduce the number of individuals able to access the road corridor and prevent a portion of fatalities.

4.3 Significant impact assessments

Formal significant impact assessments were completed for koala and grey-headed flying-fox as species directly and indirectly impacted by the proposed action. An assessment was also completed for south-eastern glossy black-cockatoo as a precaution however there was no evidence of habitat for this species within the proposed action area. Assessments were completed in accordance with the MNES Significant Impact Guidelines 1.1 (DoE, 2013).

4.3.1 Koala

Koala habitat is present within the proposed impact area. A significant impact assessment for koala is presented in Table 4-3.

Table 4-3 Significant impact assessment for the endangered koala

Significant impact criteria	Assessment of proposed action area
Lead to a long-term decrease in the size of a population	**Likely** The proposed action will clear up to 3.262 ha of suitable koala habitat (2.228 ha of foraging/breeding habitat and 1.034 ha of dispersal habitat). While SLR's SAT surveys during the fauna survey did not find any evidence of koalas, the limited survey effort does not suggest the absence of koalas within the proposed action area, particularly given the species has been previously recorded (within 20 years) in the locality (Figure 3-7). The proposed action area is located within regional and local scale corridors for fauna movement (Figure 3-5 and Figure 4-4) and there are records on adjacent land suggesting that koala move between this area and another fauna corridor to the east. There is one un-vetted mortality record within the Project area. Measures to minimize injury/mortality will include pre-clear surveys, sequential clearing and use of fauna spotter catchers to identify and allow koalas to self-relocate during construction, fencing of sensitive areas during construction (i.e. no-go zones), traffic management procedures to minimize collisions during construction (i.e. toolbox talks and education for workers regarding the potential presence of koala). The duplication of Ripley Road as proposed will increase the distance individuals must travel to move between local habitat areas. The number of records adjacent the existing road suggests there is movement between the proposed action area and habitat to the west and east. Traffic volumes will increase in response to urban growth and this is the basis for the road upgrade. Increased traffic and a wider crossing will likely result in an increase in vehicle strike risk which would lead to a long term decrease in the population. Fischer Road traffic volumes will increase in response to urban growth within the PDA and this is the basis for the road upgrade. While the project will increase the width of the road, the level of vehicle traffic, both existing and resulting from future urban growth, contributes to the risk of vehicular strikes which would likely lead to a long term decrease in the size of the population.
Reduce the area of occupancy of the species	**Likely** The proposed works will clear a total of up to 3.262 ha of suitable koala habitat. Due to the linear nature of the proposed works (approximately 20-60 m wide) the majority of the vegetation within the proposed action area will be removed. While no signs of koala were recorded on site, the

Significant impact criteria	Assessment of proposed action area
	proposed works are likely to reduce the local area of occupancy of the koala population. This will be exacerbated by impacts on movement of individuals across Ripley Road to habitat to the east.
Fragment an existing population into two or more populations	**Likely**. Field surveys did not detect a resident population of koala within the proposed action area, however it is likely the area is used for dispersal. The project is likely to increase the fragmentation of the landscape, by widening the road and installing a dividing median, creating a hindrance to koala movement across Ripley Road. Installation of koala proof fencing to prevent koala accessing the road corridor will prevent the use of any of the current movement corridors and contribute further to this fragmentation. Any koala that do enter the road corridor and cross will use the road pavement or a potentially unsafe passage such as a culvert. As such, the proposed clearing and subsequent road works are likely to fragment koala populations in the area, and an existing population is unlikely to be fragmented into two or more populations.
Adversely affect habitat critical to the survival of a species	**Likely**. The proposed action area provides a source of food trees and shelter for koalas in the region and the proposed action will impact up to 3.238 ha of habitat resources considered critical to the survival of the species (foraging and potential breeding habitat and high quality dispersal with available refuge trees). Additional low grade dispersal habitat occurs within the project footprint, however, this is degraded without suitable refuge trees and alongside the remainder of the proposed action area (deemed unsuitable koala habitat), is not considered critical to the survival of the species.
Disrupt the breeding cycle of a population	**Likely** Koala home ranges vary widely from 3-500 ha, with the home range of the dominant male overlapping with home ranges of several females (DAWE 2022b). In QLD, koalas are most active during the breeding season from July to January with males seeking females and sub-adults dispersing from their mother's home range (Dique *et al*., 2003). During this period, they are at greater risk of mortality from predation (e.g. wild or free-roaming pet dogs) and vehicle strike, especially in fragmented landscapes. Koalas do not have a defined breeding site and are known to breed in highly disturbed environments. The proposed action area provides low quality breeding habitat due to the limited number and distribution of LIKT and ancillary koala habitat trees. Although, the proposed action area provides limited potential breeding habitat, the proposed action proposes to widen the road significantly and install a median divider which is likely to fragment the landscape, impacting breeding movements of individuals and dispersal of sub-adults and will reduce potential breeding habitat by up to 2.215 ha within the area. Traffic volumes will increase significantly in response to urban development in the PDA and wider Ipswich region which will increase the potential for mortality as a result of vehicle collision. The Project occurs within a highly disturbed environment, surrounded by residential and industrial development and alongside existing roads. Measures to mitigate impacts to breeding cycles will include traffic management procedures designed to minimise collisions during construction. This could include toolbox talks, education for workers

Significant impact criteria	Assessment of proposed action area
	regarding the potential presence of koala, establishment of no-go zones for the protection of adjacent vegetation. Clearing of potential koala habitat is recommended to be scheduled outside the breeding season (July – January) as far as possible.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**Unlikely**. While no evidence of koalas was detected during field surveys, the proposed action area contains suitable koala habitat and there will be an impact of a loss of 3.238 ha of this vegetation. The works contain habitat critical to the survival of the koala. Reduction in areas of koala habitat containing food tree species may reduce the availability of food resources for koalas and may lead to trees being unsustainably over-browsed or koalas leaving the area in search of new and higher quality food resources. These impacts, while possible on a local level, will not occur on a scale that will likely cause the species to decline. The upgrade to Fischer Road will only mildly increase edge effects (such as noise disturbance), and the vegetation patches to the east of the road remain accessible. Traffic volumes will increase in response to urban growth and while the project will only slightly increase the width of the road, the level of vehicle traffic, both existing and resulting from future urban growth, contributes to the risk of vehicular strikes. Measures to minimise impacts to habitat quality will include weed and pest animal management, erosion and sediment control, dust suppression and offsite rubbish disposal. While the widening of Ripley Road may impact connectivity between habitats to the east and west of the road, access is likely to remain to these areas from habitats located further away from the road, from the north-east and south-west. These vegetation patches will not become isolated, even though they will be fragmented.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat	**Unlikely**. Koalas are threatened by dogs (domestic and wild). Dogs are established within the region and although the increase in population in the PDA is likely to lead to an increase in domestic dogs, the proposed action itself will not result in dogs becoming further established in previously uninhabited sections of the proposed action area. However, the Project may increase population levels of introduced predators through an increase in available food resources (e.g. inappropriately disposed rubbish) and increase movement of weeds via clearing. SLR recommends weed and pest animals be managed in accordance with an approved CEMP. Provided pest animal and weed management is undertaken, introduced predator and pest populations can be managed to avoid impacts to the koala population.
Introduce disease that may cause the species to decline	**Unlikely**. Koalas have been impacted by Chlamydia and the disease is prevalent in some populations. It is likely that the disease is also prevalent throughout the local koala population and the proposed activity is unlikely to contribute to the spread of the disease.
Interfere substantially with the recovery of the species.	**Likely**.

Significant impact criteria	Assessment of proposed action area
	Key recovery targets in Queensland include stabilising koala populations in south-east Queensland, restoring and securing a net gain in koala habitat and introducing threat reductions programs (DES 2020; DAWE 2022b). Koala habitat, including locally important koala trees (LIKT) are present in the proposed action area. Approximately 2.215 ha of suitable koala habitat is proposed to be cleared as part of the works and while no evidence of koala was detected, the widening of Ripley Road will likely increase fragmentation of habitats and impede movement of individuals, potentially resulting in increased vehicle strike and koala mortality. This is likely to be significant at a local scale and is therefore likely to cause substantial interference with the species recovery.
The proposed project is likely to have a significant residual impact on koala, after all proposed impact mitigation measures are applied.	

4.3.2 Grey-headed flying-fox

Grey-headed flying-fox and associated habitat were confirmed within the proposed impact area. A significant impact assessment for grey-headed flying-fox is presented in Table 4-4.

Table 4-4 Significant impact assessment for vulnerable grey-headed flying-fox

Significant impact criteria	Assessment of the proposed action area
Lead to a long-term decrease in the size of an important population of a species	**Unlikely**. The grey-headed flying-fox is considered to exist within a single, national population due to its highly mobile and fluid nature between colonies. It is highly nomadic and disperses in response to food availability, which is patchy and depends on the flowering patterns of food species (Eby and Law, 2008), so seasonal and yearly fluctuations in camp sizes occur (DEW, 2021). An important population of grey-headed flying-fox does not occur within the proposed action area however there is a known grey-headed flying-fox camp within 2.5 km and a nationally significant camp within 20.2 km. Individuals from both these camps could potentially forage within the proposed action area. Foraging habitat within the proposed action area is considered habitat critical to the survival of the species due to the presence of winter and spring flowering food resources and the likely use of these resources by an important population. The project may clear up to 2.228 ha of foraging habitat representing 0.08% of the 2,818 ha of potential foraging habitat within the 5 km study area. There is approximately 2,818 ha of critical foraging habitat within the study area (including the proposed action area), therefore the impact of removal of up to 2.228 ha of critical foraging habitat (0.08% of available habitat within the study area) is considered minimal. This minimal loss of habitat is considered unlikely to lead to a long-term decrease in the population size of this species.
Reduce the area of occupancy of an important population	**Unlikely**. The project may clear up to 2.228 ha of foraging habitat critical to the survival of the species, representing 0.08% of the total 2818 ha of potential critical foraging habitat within the study area. There is a known grey-headed

Significant impact criteria	Assessment of the proposed action area
	flying-fox camp within 2.5 km and a nationally significant camp approximately 20 km of the proposed action area. The project will result in the loss of some critical foraging habitat, but large tracts of foraging habitat are present in the surrounding landscape, and there are no roosts present in the proposed action area. Therefore, the impact to this highly mobile species is minimal and unlikely to result in a significant reduction in area of occupancy.
Fragment an existing important population into two or more populations	**Unlikely**. The grey-headed flying-fox is a highly mobile species which occurs as a single national population due to its ability to move between colonies. The proposed action area provides only a small area of foraging habitat with sufficient alternative foraging resources available within 5 km of the proposed action area. No camps were detected within the proposed action area and as such the project is unlikely to fragment an existing important population of grey-headed flying-fox.
Adversely affect habitat critical to the survival of a species	**Likely**. Reliable foraging resources in spring are critical to the survival of grey-headed flying-fox to avoid poor reproductive success (DEW, 2021). The proposed action area contains eucalypt species that provide foraging resources when flowering and grey-headed flying-fox were observed foraging on *Eucalyptus tereticornis* and *E. crebra* in the proposed action area in winter. The project will clear up to 2.228 ha of foraging habitat but large areas of foraging habitat will remain in the surrounding landscape. The proposed action area is approximately 20 km from a nationally significant camp, as such the habitat is considered critical foraging habitat which will be adversely impacted by removal.
Disrupt the breeding cycle of an important population	**Unlikely**. The proposed works will remove foraging habitat, but large areas of foraging habitat will remain within the surrounding landscape. The proposed action area is linear and its clearing will not result in a noticeable increase in travel to foraging resources for grey-headed flying-fox which can travel up to 50 km per night to forage. Given the high mobility of this species and the abundance of flowering eucalypts in the region, and there are no camps supporting breeding individuals within the project footprint, the proposed works will not significantly reduce the availability of foraging resources during the breeding period. Given the retention of food resources within the wider landscape, the project is unlikely to disrupt the breeding cycle of grey-headed flying-fox.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**Unlikely**. No roosting grey-headed flying-fox have been observed during field surveys. The proposed works will only remove a small area of foraging habitat. Given the amount of foraging habitat remaining within the wider locality, the proposed clearing is unlikely to cause the species' population to decline.
Result in invasive species that are harmful to a vulnerable species	**Unlikely**. Clearing of any vegetation and earthworks has the potential to allow for weed species to establish in place. Provided appropriate mitigation

Significant impact criteria	Assessment of the proposed action area
becoming established in the vulnerable species' habitat	measures (e.g., adopting effective weed hygiene measures and progressive rehabilitation of disturbed areas) are implemented during the construction and operation of the road, it is highly unlikely an invasive species will impact the adjacent available foraging resources to the point that it would impact grey-headed flying-fox.
Introduce disease that may cause the species to decline	**Unlikely**. The impact of disease on flying-foxes is relatively unknown. Grey-headed flying-foxes generally exist in equilibrium with Lyssavirus, but population impacts have been observed when the species is under significant ecological stress (DEW, 2021). Grey-headed flying-foxes can be susceptible to Angiostrongylosis and a number of other diseases; however, the impact of these diseases at a population level is unknown (DEW, 2021). It is unlikely the proposed project works will result in significant ecological stress to the species causing increased rates of disease through the population.
Interfere substantially with the recovery of the species.	**Unlikely**. National key recovery targets focus on improving the national population trend of grey-headed flying-fox by reducing the impact of threats. Recovery objectives include protecting and increasing foraging habitat, improving management of camps and increasing public awareness (DEW, 2021). The proposed action area contains vegetation which provides foraging habitat for the species. Although foraging habitat is proposed to be cleared as part of the works, given the availability of large tracts of suitable alternative habitat within the wider landscape, this is not considered a substantial interference to this species' recovery.
There will be a loss of up to 2.228 ha of habitat critical to the survival of the species, as a result of the clearing of winter and spring flowering foraging resources. This represents 0.08% of approximately 2,818 ha of available habitat critical to survival of the species within the 5 ha study area. Given the availability of large tracts of suitable habitat within the wider landscape, the proposed project is unlikely to have a significant impact on grey-headed flying-fox.	

4.3.3 South-eastern glossy black-cockatoo

No individuals or habitat for south-eastern glossy black-cockatoo was identified within the proposed impact area. Adopting a precautionary approach, and to address the issues raised in the RFI, a significant impact assessment for this species has been completed and is presented in Table 4-5.

Table 4-5 Significant impact assessment for vulnerable south-eastern glossy black-cockatoo

Significant impact criteria	Assessment of the Project area
Lead to a long-term decrease in the size of an important	**Unlikely.** Important glossy black-cockatoo populations have not been identified on the proposed action area (Appendix E to this PD).

Significant impact criteria	Assessment of the Project area
population of a species	Although the project area contain isolated suitable foraging trees and potential nesting trees adjacent to the proposed action footprint, the construction will not clear any potential foraging trees within the Proposed action area and construction mitigation will mitigate any indirect impacts should the species visit the broader area. This species has not been recorded within 5 km of the Proposed action area, this along with the poor quality of foraging resources available the Proposed action area is unlikely to support the species, as such it is unlikely to lead to a long-term decrease in population size of the south-eastern glossy-black cockatoo.
Reduce the area of occupancy of an important population	**Unlikely.** The proposed action area is unlikely to support a population of south-eastern glossy black-cockatoo, due to the limited foraging resources available. An important population of glossy black-cockatoo does not occur within the proposed action area. No clearing of the limited foraging and nesting habitat will occur, therefore the area of occupancy in the broader region will not be reduced.
Fragment an existing important population into two or more populations	**Unlikely.** An important population of glossy black-cockatoo does not occur within the proposed action area. The proposed action area is unlikely to support south-eastern glossy black-cockatoo, due to the limited foraging resources available. The Project is unlikely to create barriers to movement or fragment populations of this highly mobile species.
Adversely affect habitat critical to the survival of a species	**Unlikely.** The proposed action will not clear any foraging and nesting habitat, therefore it is unlikely that this Project will adversely affect habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population	**Unlikely.** An important population of glossy black-cockatoo does not occur within the proposed action area. No suitable tree hollows were detected within the impact area, and those adjacent are limited in their suitability, therefore the Project is unlikely to disrupt the breeding cycle of an important population.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**Unlikely.** The proposed action will not clear any foraging or nesting habitat, therefore it is unlikely to cause the species' population to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	**Unlikely.** No invasive species are known to threaten the glossy black-cockatoo. However, invasive weeds can alter the characteristics of habitat, thereby changing foraging and nesting resource availability and some weeds may increase the flammability of the habitat, amplifying wildfire risks. The proposed action will implement appropriate weed management for the areas within and adjacent to the clearing footprint, therefore it is unlikely to result in the establishment of an invasive species that could harm glossy black-cockatoos or their habitat.

Significant impact criteria	Assessment of the Project area
Introduce disease that may cause the species to decline	**Unlikely.** Glossy black-cockatoos are not threatened by any known disease that could be brought into the species habitat by the proposed action.
Interfere substantially with the recovery of the species.	**Unlikely.** The proposed action area does not contain vegetation which provides foraging and nesting habitat for glossy black-cockatoo, therefore, it is unlikely that construction of this Project will significantly impact the species.
The proposed action is unlikely to have a significant impact on glossy black-cockatoo, assuming all practical impact mitigation measures are applied.	

5.0 Avoidance, mitigation and management measures

5.1 Avoidance of MNES and habitats

The proposed action relates to the upgrade of an existing road network and as such the footprint of the disturbance is limited to areas either side of the existing alignment. While this does limit design choices, the proposed action has been refined to avoid potential habitats wherever possible and has achieved a relatively small impact footprint. This includes substantial reductions in footprint since the preliminary design phase and the replacement of an embankment along Fischer Road (north of Nevis Road) with a 100 m retaining wall to reduce impacts on habitat. Habitat avoided by the proposed action is outlined in Table 5-1 and shown on Figure 5-1. This includes habitat avoided within the road reserve generally and as a result of revisions since the original footprint was developed. The original and current footprint are identified for comparison.

Table 5-1 MNES habitat avoided by the Project

Habitat type	MNES species specific habitat	Area of habitat avoided (ha)
Remnant and high-value regrowth vegetation	• Koala foraging and breeding habitat • Grey-headed flying-fox foraging habitat • Glossy black-cockatoo potential breeding habitat	0.17
Non-remnant corridor / stepping stone / dispersal habitat	• Koala dispersal habitat	0.40
	Total	0.57



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	DC

LEGEND

- Watercourse
- Road Reserve
- Original Project Area

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POTENTIAL MNES HABITAT AVOIDED

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-01_Potential MNES Habitat Avoided



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	DC

LEGEND

- Watercourse
- Road Reserve
- Original Project Area

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

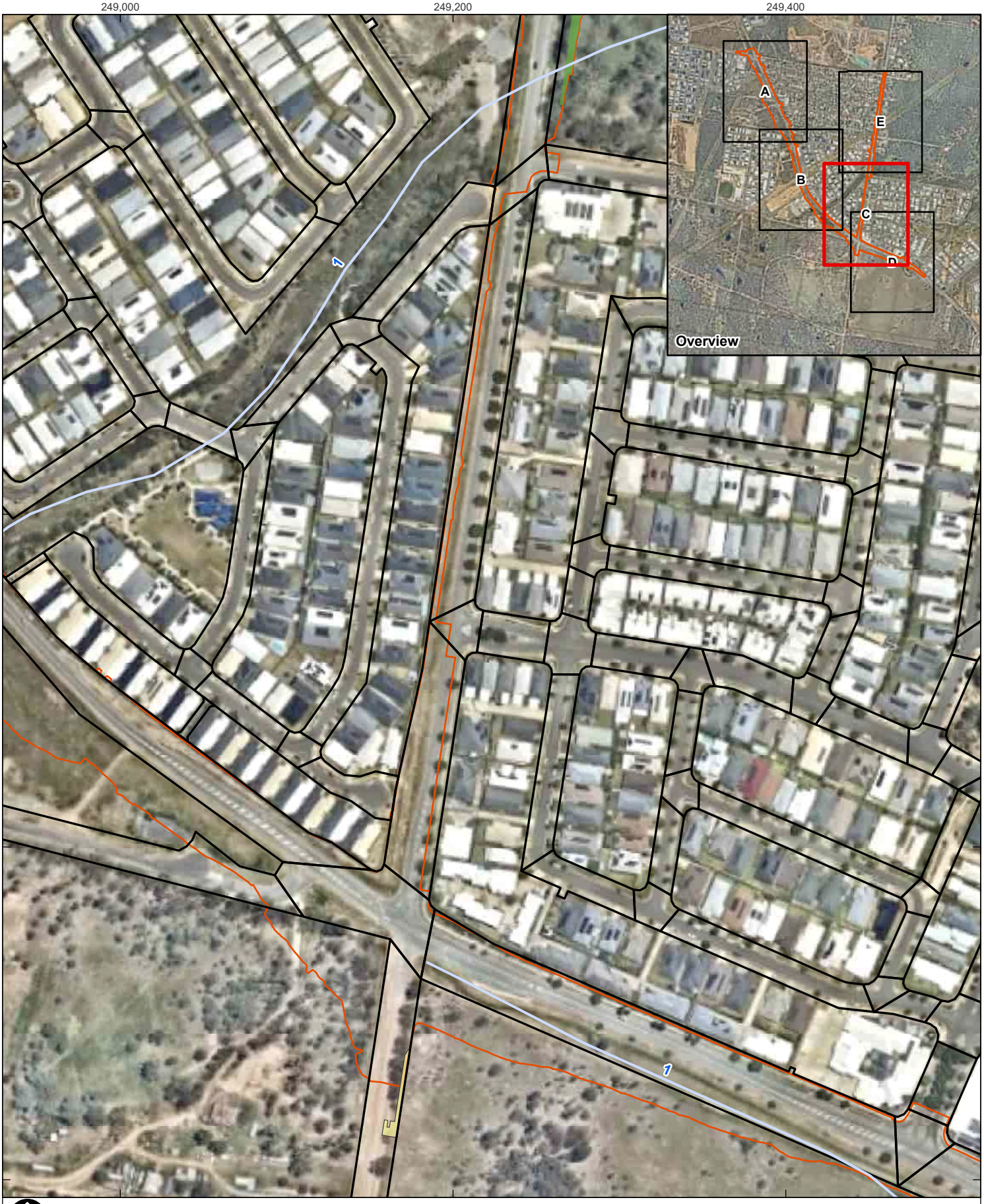
POTENTIAL MNES HABITAT AVOIDED

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-01_Potential MNES Habitat Avoided



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	DC

LEGEND

- Watercourse
- Road Reserve
- Original Project Area

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

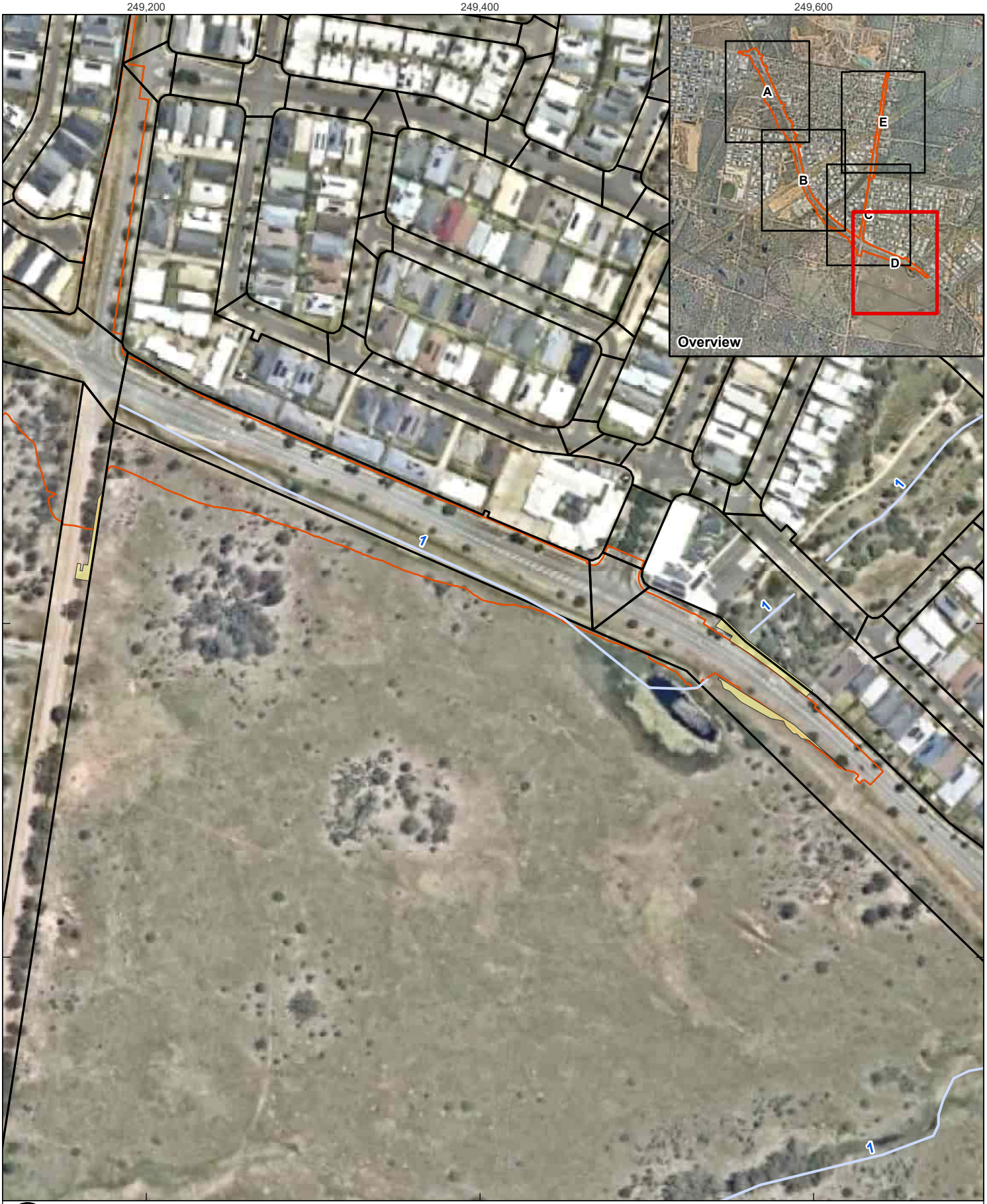
POTENTIAL MNES HABITAT AVOIDED

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-01_Potential MNES Habitat Avoided



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	DC

LEGEND

- Watercourse
- Road Reserve
- Original Project Area

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POTENTIAL MNES HABITAT AVOIDED

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-01_Potential MNES Habitat Avoided



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	6/2/2026
Drawn by:	DC

LEGEND

- Watercourse
- Road Reserve
- Original Project Area

Potential MNES habitat

- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POTENTIAL MNES HABITAT AVOIDED

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-1

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-01_Potential MNES Habitat Avoided

5.2 General impact minimisation measures

Measures will be implemented to minimise general impacts associated with construction and vegetation clearing such as loss of habitat, fauna mortality and disturbance, erosion and sedimentation and dust deposition. Project specific impacts relating to connectivity and the potential for vehicle strike involving koala are addressed in Section 5.3 and Section 5.4.

The following measures will be implemented as part of the proposed action to minimise impacts on MNES during the construction phase:

- An Environmental Management Plan (EMP) has been prepared for the Project (Appendix I) to minimise the potential for impacts associated with construction.
- A Flora and Fauna Management Plan, a subplan of the overarching (EMP), will incorporate vegetation and tree management measures to ensure the protection of the remaining vegetation and fauna. All vegetation to be retained will be clearly defined onsite. This includes all No-Go zones and areas not subject to clearing. Excavation works within the root zone or the tree protection zone of retained trees must be undertaken under the advice of a qualified arborist. An arborist will be consulted prior to the construction commencing to ensure impacts on vegetation to be retained are minimised.
- No go zones are to be established to ensure adjacent vegetation to be retained and the adjacent wetland and associated native vegetation is protected.
- Clearing areas are to be clearly demarcated before works commence to prevent unnecessary clearing of vegetation and minimise accidental damage.
- A koala spotter qualified fauna spotter catcher (FSC) must be present for all vegetation clearing activities within the proposed action area. A pre-clearance survey will be conducted prior to clearing. Vegetation clearing must adhere to sequential clearing methods to ensure fauna are able to disperse naturally if possible.
- Searching trees within/adjacent to the disturbance footprint for koala.
- Establishing a suitable buffer (10 m) around any tree or tree with connecting crown in the work area containing a koala to avoid disturbance from the work; and
- Ensuring any koala present are able to move to/from the disturbance footprint at their own pace.
- Construction and fauna exclusion fencing will be installed progressively throughout construction and will avoid overhanging vegetation which could allow fauna to climb into the Project area and road corridor.
- Engage a suitably qualified person (e.g., ecologist, FSC) to undertake pre-clearance surveys in areas where habitat removal is required to identify new fauna habitat values and potential breeding sites. If tampering with active breeding sites is unavoidable, a species management program (SMP) is required to be approved by the Queensland department of environment, tourism, science and innovation. Outlines for a SMP low risk of impact format and a SMP high risk of impact (for conservation significant species) is provided in Appendix J.
- Pre-clear surveys are to be completed at the following timeframes:
  - Within two weeks of clearing within each clearing area
  - Immediately prior to clearing.

- For all activities where potential fauna habitat and breeding sites are to be removed or disturbed (e.g. Vegetation clearing, culvert works), a FSC will be present to relocate fauna and take eggs, young and injured animals to a qualified carer. This will be undertaken in accordance with an approved relevant SMP and the Code of Practice for Rehabilitation of Sick, Injured or Orphaned Koalas in Queensland (DES 2023) (Appendix K).
- Where possible, the works should avoid the removal of habitat trees. If removal is required, any hollows (small or large) should be retained and used as ground resources in adjacent habitat.
- Weed hygiene measures will be included in the CEMP to minimise the introduction and dispersal of weeds listed as restricted matter.
- Significant weed species (Restricted or Prohibited invasive plants under the Queensland Biosecurity Act) will be treated prior to, during and post construction at designated intervals (treatment intervals to be determined by proposed activities and size and invasiveness of weed infestations) with waterway friendly herbicides. Weed management will be completed in accordance with a Biosecurity Management Plan which is a subplan of the CEMP.
- Known fire ant nests will be treated prior to construction to prevent spreading of this species.
- Interference with present wetland structure and continuity of drainage lines will be minimised.
- During construction, appropriate erosion and sediment controls will be installed and maintained to minimise impacts to the drainage channels and existing wetland areas. These are detailed in the EMP with plans developed progressively to address specific site requirements during construction in accordance with Transport and Main Roads Specifications MRTS52 Erosion and Sediment Control (DTMR, 2025a).
- Measures to reduce sediment runoff causing increased turbidity will be implemented. These measures are detailed in the EMP which contains water quality criteria applicable to construction.
- Noise and dust management measures are outlined in the EMP including triggers for monitoring and responses.

A summary of each general mitigation measure proposed for the development to demonstrate the basis and efficacy of each, as well as timing, responsibility and ongoing evaluation, is provided in Table 5-2. General mitigation measures follow industry best practice and will be implemented in accordance with the relevant advisory or legislative framework indicated in Table 5-2.

Table 5-2 Assessment of general mitigation measures

Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
Clearing of: Koala habitat GHFF habitat Habitats adjacent to the Project footprint Wetlands or watercourses adjacent to the Development footprint	Flora and Fauna Management Plan	Industry best practice; Nature Conservation (Koala) Conservation Plan 2017; State Code 25: Development in South East Queensland koala habitat areas	Proponent & contractors	Design–construction	High	Minimise habitat loss and provide an overarching plan that clearly articulates and provides implementation guidelines for the mitigation measures.	S – developed to provide clear, species-relevant management actions M – auditable procedures and compliance checks A – industry-standard and resourced approaches R – aligned with conservation advice and legislation T – implemented across defined project phases
Removal of native vegetation and habitat for koala and GHFF	No-go zones	Industry best practice; Nature Conservation (Koala) Conservation Plan 2017; State Code 25: Development in South East Queensland koala habitat areas	Proponent and their contractors	Pre-construction and during clearing	High effective avoidance measure	Avoid and minimise impacts to fauna during the clearing and construction phases.	S – spatially defined habitat protection measures M – mapped and verifiable exclusion zones A – standard and practical site control R – directly protects MNES habitat T – established prior to and maintained during works
	Pre-clearance surveys	Industry best practice;	Proponent and their contractors / suitably	Pre-clearing	Moderate–High	Reduce risk of harm to fauna during clearing. Identification of	S – targeted fauna detection prior to disturbance M – documented survey

Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
		Nature Conservation (Koala) Conservation Plan 2017	qualified ecologist		improves fauna detection	active breeding places prior to clearing.	outcomes A – routine ecological practice R – reduces risk to protected fauna T – undertaken immediately prior to clearing
Fauna mortality / injury	Fauna Spotter Catcher (FSC)	Nature Conservation (Koala) Conservation Plan 2017	Proponent and their contractors / suitably qualified FSC	During clearing	Moderate reduces but does not eliminate risk	Minimise fauna injury and mortality	S – active fauna management during clearing M – capture and relocation records A – widely implemented mitigation approach R – addresses key impact pathway T – applied during vegetation clearing
	Species Management Program (if required) – outline provided in Appendix J.	Requirement under the NC Act. If tampering with active breeding sites is unavoidable, a species management program is required to be approved by DETSI. (Not applicable to	Proponent	Pre-clearing where triggered	High regulatory oversight ensures mitigation	Manage impacts to active breeding sites	S – species-specific mitigation requirements M – approval conditions and reporting A – achievable through regulatory process R – aligned with legislative obligations T – triggered prior to disturbance

Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
		koala, but koala outlined above).					
Increase or establishment of weeds and pathogens in adjacent vegetation Invasive species (fire ants)	Weed Management	*Biosecurity Act 2014* general biosecurity obligation	Proponent and contractors	Pre-construction and construction	Moderate–High effective with compliance	Prevent spread of weeds and pathogens	S – defined hygiene and control measures M – monitoring and inspection protocols A – standard site management practice R – addresses indirect habitat degradation T – implemented throughout works
	Invasive species management (fire ants)	*Biosecurity Act 2014* general biosecurity obligation	Proponent and contractors	Construction	Moderate dependent on implementation	Control invasive species currently present within the site and limit spread. Avoid establishment of additional invasive species.	S – targeted invasive species controls M – monitoring and treatment records A – achievable with standard controls R – addresses regional ecological risk (general biosecurity obligation under the Biosecurity Act 2014) T – applied during construction phase
Surface runoff impacting water quality	Erosion and sediment control plan	Industry best practice	Contractor	Design - Delivery	High proven mitigation measures	Protect aquatic habitats and downstream water quality.	S – defined erosion and sediment measures M – inspection and performance criteria A – standard construction practice R – protects downstream

Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
							ecosystems T – implemented during construction
Dust pollution	Dust suppression measures	Industry best practice	Contractor	During construction	Moderate effective if applied consistently	Protect vegetation productivity and health	S – defined dust suppression methods M – observable compliance and monitoring A – standard implementation approach R – reduces vegetation stress T – applied during disturbance activities

5.3 Connectivity

The connectivity analysis in Section 4.2.3 determined that current connectivity through the Project area is limited. Although the Project will contribute to a localised reduction in connectivity, it is unlikely to significantly alter regional movement patterns or introduce a substantial additional barrier within the broader landscape context.

Notwithstanding this outcome, it is acknowledged that koala will potentially attempt to cross Ripley Road or Fischer Road. Given the extent of development existing and in progress, and the strategic land use intent for the PDA, there is no option to enhance connectivity through the provision of enhanced or increased habitat. The following sections assess the potential for provision of formal road crossing infrastructure within the Project and the suitability of other mitigation measures aimed at reducing the potential for collision risk and maintaining safe movement opportunities for koalas and other terrestrial fauna.

5.4 Measures to minimise koala vehicle collision

Koala habitat, including LIKT for foraging is present within the proposed action area. Approximately 2.228 ha of suitable koala foraging and breeding habitat deemed to be habitat critical to the survival of the species is proposed to be cleared as part of the works and while no evidence of koala was detected, the Project will likely increase fragmentation of habitats and impede movement of individuals potentially resulting in increased vehicle strike on Ripley Road in particular and koala mortality.

Increased traffic due to urban development and a wider crossing distance for koala on Ripley Road will likely result in an increase in vehicle strike risk which could lead to a long term decrease in the population. To minimise potential koala mortality as a result of vehicle collision, options for the installation of fauna crossings or other management measures are assessed.

5.4.1 Assessment of crossing locations

A review of current best practice fauna crossing design advice in Queensland has identified the following key design aspects for successful crossings. The following key considerations are taken from *Fauna Sensitive Transport Infrastructure Delivery manual* (Queensland Department of Transport and Main Roads, 2024) – Chapter 12 Koalas.

- Building an overpass is more difficult where the road is above grade as feasibility depends on the type of overpass and the relative height of the road.
- Arboreal mammals that predominantly move through the tree canopy are likely to attempt to cross a road in more wooded areas which supports the recommendations for establishment of suitable vegetation adjacent the entrances. Koalas are more likely to utilise land bridges or underpasses due to their movement patterns and habits.

Potential local corridors for fauna movement were identified in the TEAR as shown on Figure 3-5. Each of these locations was assessed to determine suitability for the installation of a fauna crossing, focusing on land bridges and fauna culverts as suggested by the points above. Key aspects of each site were considered to determine whether the location is suitable for fauna movement and whether there are topographic or other constraints to construction of a crossing. A summary of this assessment is provided in Table 5-3 with a detailed assessment provided in Table 5-4. Cross sections through the Project at each location are provided in Figure 5-2.

Table 5-3 Summary of potential crossing location assessment

Potential Location	Key Suitability Criteria		
	Alignment with potential corridor	Adjacent habitat availability	Constructability
Ripley Road and Monterea Road Intersection	Yes	No Eastern side of intersection only and limited ability to enhance	No No land for land bridge construction and undesirable topography. Fauna culvert length would be excessive (250 m) and if shorter length used insufficient depth is available to achieve minimum height standards
Scotts Park and Ripley Road - existing culvert	Yes	No Eastern side of road only and limited to drainage reserve and no ability to provide habitat to west	No Insufficient depth is available to achieve minimum height standards
Amber Court and Ripley Road – existing culvert	Yes	No Eastern side of road only and limited to drainage reserve and no ability to provide habitat to west	No Insufficient depth is available to achieve minimum height standards
Tuckeroo Street and Ripley Road – existing culvert	Yes	No Eastern side of road only and limited to drainage reserve. No long term potential to provide habitat on western side due to strategic land use plans.	No Insufficient depth is available to achieve minimum height standards

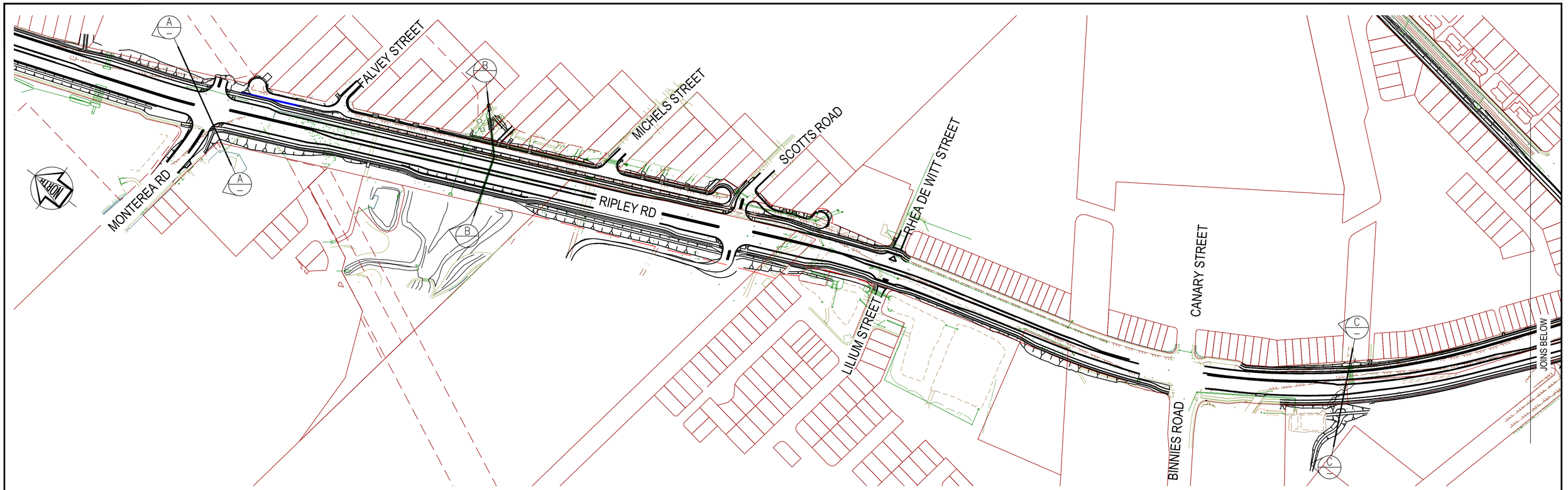
Table 5-4 Assessment of fauna crossing locations

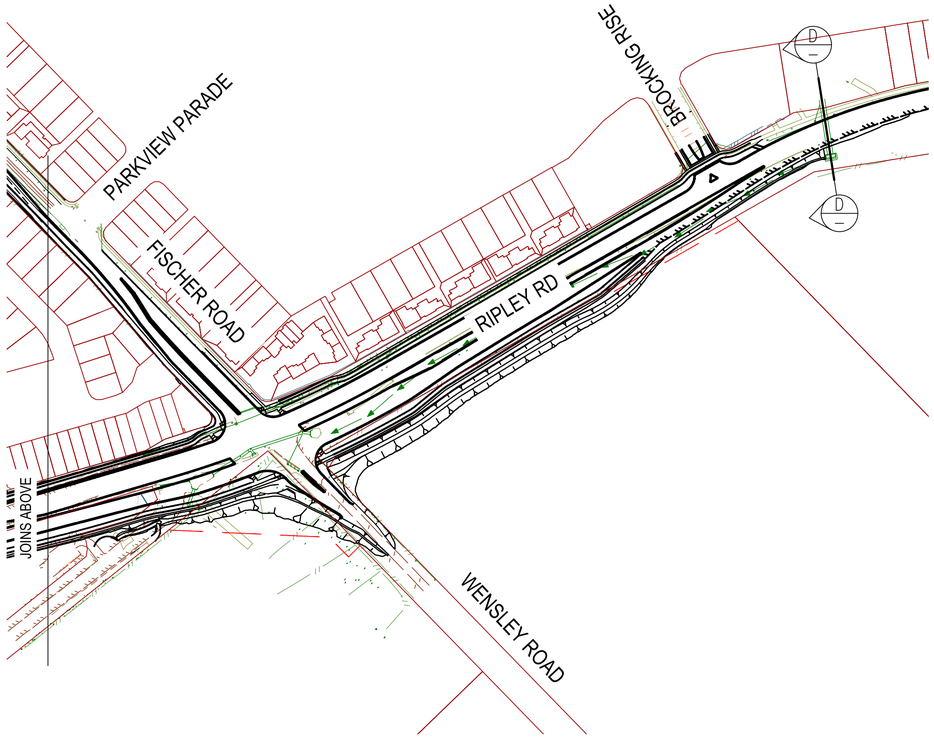
Potential Location	Assessment
Ripley Road and Monterea Road Intersection	The location is at the crest of a hill, being the highest point on the alignment. The potential corridor identified at this location follows the transmission line easement and would extend diagonally from the public open space to the southwest of the intersection to retained vegetation within a retained drainage reserve on the northeastern side. Vegetation on the south western side is highly modified and located within a public park, an undeveloped parcel of land and a detention basin. Provision of a crossing at this point is considered unsuitable for a number of reasons: • The required length of any overpass or vegetated land bridge and associated footprint would require significant works outside the current road boundaries and within an Energex Powerline Easement. There is

Potential Location	Assessment
	limited land available on either side for the construction of an above ground crossing. • Due to the preferred alignment and height of a culvert (1.8 m minimum), a culvert type crossing would be required to be over 250 m in length (Figure 5-2). This would be excessively long and located at depth making it unattractive to fauna. A shorter corridor, using a more direct route, would not have sufficient height with only 300-400 mm able to be achieved which is less than the recommended 1.8 m minimum. • There is limited land available for planting koala habitat trees to make the entry and exit locations more secure. Land on the southwest end would require significant revegetation and fencing to achieve safe connectivity with suitable habitat. This land is used as a neighbourhood park (no contained dog park) and is not fenced. • The efficiency and use of the crossing would be limited by gaps in connectivity to substantive habitat areas to the south west requiring significant planting of koala habitat trees to encourage koala movement to this point.
Scotts Park and Ripley Road - existing culvert	No work is proposed at the culvert at Scotts Park. Rather drainage lines to the west of Ripley Road and running towards Scotts Park and into the basin will be upgraded. This site is not currently a desirable fauna corridor and a culvert cannot be installed due to the detention basin needing to retain water. Any fauna culvert across Ripley Road will render the detention basin ineffective and potentially create flooding issues downstream. The existing surface levels of the road and surrounding land limit the height of any culvert to well below design guidelines and would result in a culvert which holds water for much of the time. This location would deliver koalas to the area adjacent a drainage basin on the western side of Ripley Road which currently has no vegetation. This option would require the creation of a suitable vegetated corridor to connect with identified habitat areas (using koala proof fencing, appropriate revegetation and installation of koala furniture for use until vegetation is mature) approximately 120 m away.
Amber Court and Ripley Road – existing culvert	An existing culvert at this location is being upgraded and the waterway realigned. The culvert design at this location is currently 0.9 m high with approximately 0.6 m of cover. Installation of an appropriate fauna culvert would require an additional 1.5 m-2 m of embankment depth to achieve a functioning height. Additional works would be required to achieve the flood protection required. These works are not possible without considerable additional redesign and significant property resumptions due to the proximity of properties, required road vertical geometry and local resident's access to footpath and bus stops. The resultant road would be physically higher than the surrounding residences decreasing their outlook and increasing potential for noise impacts. This location would deliver koalas to the area adjacent a drainage basin and park on the western side of Ripley Road which currently has a sediment dam, park and limited vegetation. This option would require the creation of a suitable vegetated corridor to connect with identified habitat areas (using koala proof fencing, appropriate revegetation and installation of koala furniture for use until vegetation is mature) approximately 150 m away.
Tuckeroo Street and Ripley Road – existing culvert	This is not a suitable fauna corridor. No work is proposed at the culvert at Tuckeroo St with drainage lines within Ripley Road to be modified. An appropriate fauna culvert would require additional embankment depth where currently only tie in works are planned.

Potential Location	Assessment
	Due to the significant residential development built and planned it is potentially harmful to encourage koala movement into this area. The current culvert includes a significant grate and drop structure which is not traversable. This location would deliver koalas to the area on the western side of Ripley Road which currently has no vegetation. This option would require the creation of a suitable vegetated corridor to connect with identified habitat areas (using koala proof fencing, appropriate revegetation and installation of koala furniture for use until vegetation is mature) approximately 500 m away. The drainage reserve extends north east from Ripley Road between areas of residential development. The reserve includes pathways that connect with the path running parallel to Ripley Road. The installation of exclusion fencing and associated gates for pedestrian access would impede access and potentially negatively impact pedestrian safety in this locality. ICC has requested that no fencing be installed in this locality on that basis.

Investigation of potential locations for koala crossing infrastructure on Ripley Road (Table 5-4) concluded that construction of a crossing is not possible given the topographical, spatial and engineering constraints of the action and the proposed action area.





ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POTENTIAL BIODIVERSITY CORRIDOR CROSS SECTIONS

FIGURE 5-2

Bielby
BG&E
BG&E Pty Ltd
Level 5, 180 Ann Street
Brisbane, 4000
Tel: +61 7 3167 3300
Email: projects.qld@bgeeng.com

REVISIONS			
Issue	Revisions/Descriptions	Drawn	Date
1A	Issue for Information		

SURVEY DATA					
Horiz. Datum	Terrain 2001	Vertical Datum	AHD	Level Book	Grid

Size: A1 - Scales before reduction:

A 0 2 4 6 8 10 1:200

B 0 10 20 30 40 50 1:1000

Dimensions shown in metres except where shown otherwise

DRAWING CERTIFICATION	
Classification	
Certifier Name	
Certifier No.	
Date	
Signature:	

Drawing Status: ISSUE FOR INFORMATION

COUNCIL APPROVAL

Approved By

(For) General Manager (I&E)

Date:

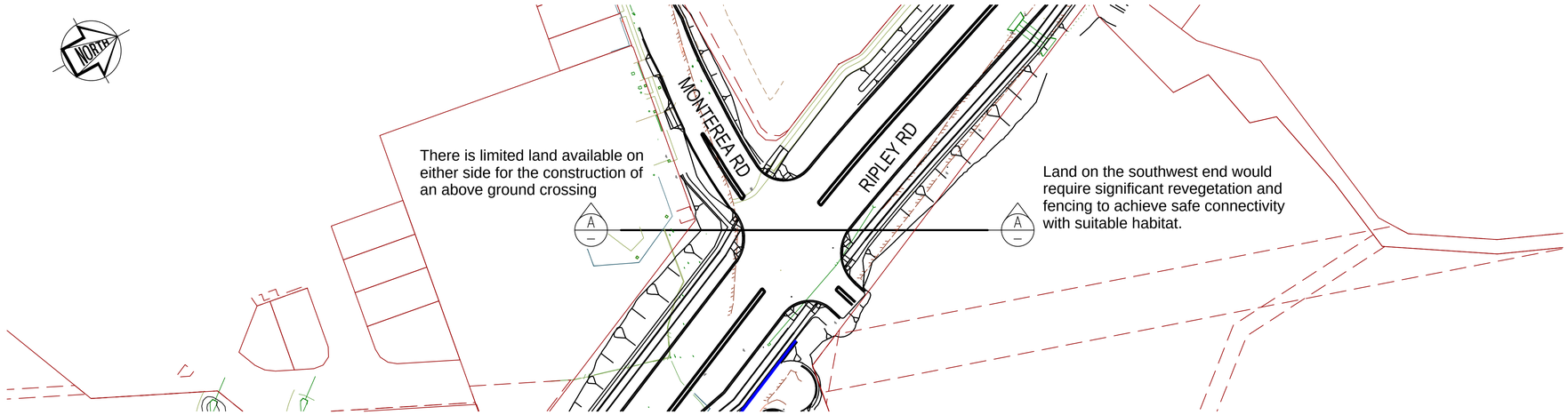
City of Ipswich
TECHNICAL SERVICES
P.O. Box 191 Ipswich QLD 4305 Australia
Telephone: (07) 3810 6666
Facsimile: (07) 3810 7963
e-mail: TechnicalServices@ipswich.qld.gov.au

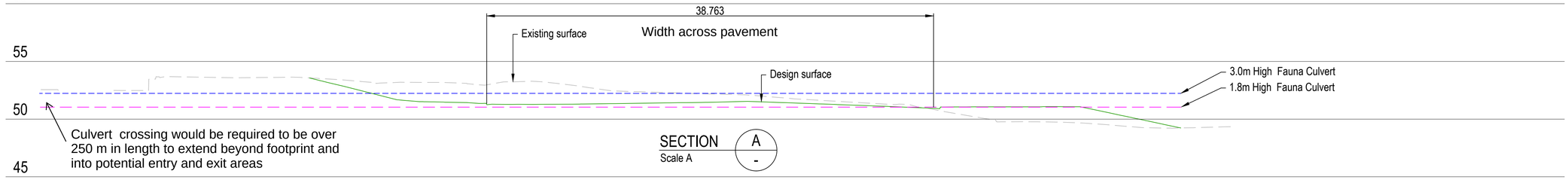
Project: RIPLEY ROAD UPGRADE STAGE 2

Drawing Title: KOALA CROSSING LOCATIONS (RIPLEY ROAD)

	Name	Date
Drawn	T.K	
Designed	T.K	28.05.2026
Checked	S.S	

Project No.	Sheet No.	Rev.
INF04658	00013	1A





ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POTENTIAL BIODIVERSITY CORRIDOR CROSS SECTIONS

FIGURE 5-2

Bielby
BG&E
BG&E Pty Ltd
Level 5, 180 Ann Street
Brisbane, 4000
Tel: +61 7 3167 3300
Email: projects.qld@bgeeng.com

REVISIONS			
Issue	Revisions/Descriptions	Drawn	Date
1A	Issue for Information		

SURVEY DATA					
Horiz. Datum	Terrain 2001	Vertical Datum	AHD	Level Book	Grid

Size: A1 - Scales before reduction:

A 0 2 4 6 8 10 1:200

B 0 10 20 30 40 50 1:1000

Dimensions shown in metres except where shown otherwise

DRAWING CERTIFICATION	
Classification	
Certifier Name	
Certifier No.	
Date	
A	
Signature:	.....

Drawing Status: ISSUE FOR INFORMATION

COUNCIL APPROVAL

Approved By

.....

(For) General Manager (I&E)

Date:

City of Ipswich
TECHNICAL SERVICES
P.O. Box 191 Ipswich QLD 4305 Australia
Telephone: (07) 3810 6666
Facsimile: (07) 3810 7963
e-mail: TechnicalServices@ipswich.qld.gov.au

Project: **RIPLEY ROAD UPGRADE STAGE 2**

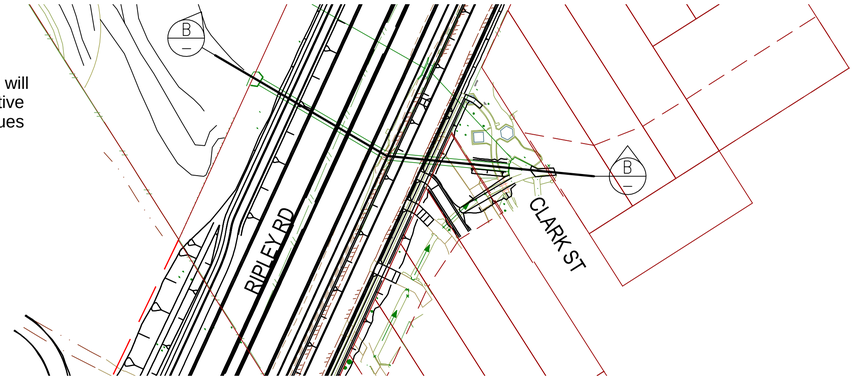
Drawing Title: **KOALA CROSSING LOCATIONS (RIPLEY ROAD)**

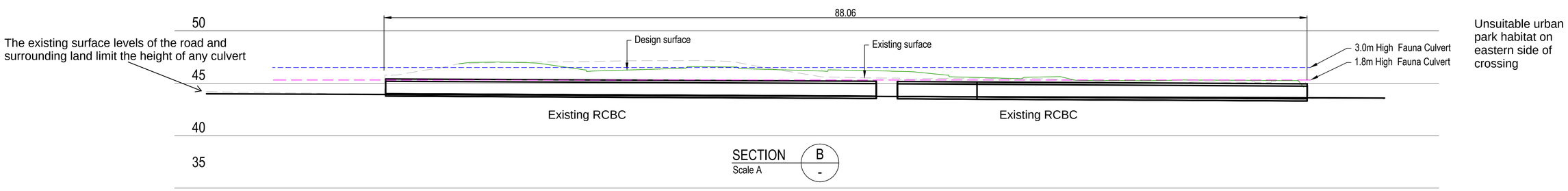
	Name	Date
Drawn	T.K	
Designed	T.K	28.05.2026
Checked	S.S	

Project No.	Sheet No.	Rev.
INF04658	00014	1A

Fauna culvert across Ripley Road will render the detention basin ineffective and potentially create flooding issues downstream.

This option would require the creation of a suitable vegetated corridor to connect with identified habitat areas approximately 120m away





Unsuitable urban park habitat on eastern side of crossing

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POTENTIAL BIODIVERSITY CORRIDOR CROSS SECTIONS

FIGURE 5-2

Bielby
BG&E
BG&E Pty Ltd
Level 5, 180 Ann Street
Brisbane, 4000
Tel: +61 7 3167 3300
Email: projects.qld@bgeeng.com

REVISIONS			
Issue	Revisions/Descriptions	Drawn	Date
1A	Issue for Information		

SURVEY DATA					
Horiz. Datum	Terrain 2001	Vertical Datum	AHD	Level Book	Grid

Size: A1 - Scales before reduction:

A 0 2 4 6 8 10 1:200

B 0 10 20 30 40 50 1:1000

Dimensions shown in metres except where shown otherwise

DRAWING CERTIFICATION	
Classification	
Certifier Name	
Certifier No.	
Date	

A

Signature: .....

COUNCIL APPROVAL

Approved By

.....

(For) General Manager (I&E)

Date:

Drawing Status: ISSUE FOR INFORMATION

City of Ipswich
TECHNICAL SERVICES
P.O. Box 191 Ipswich QLD 4305 Australia
Telephone: (07) 3810 6666
Facsimile: (07) 3810 7963
e-mail: TechnicalServices@ipswich.qld.gov.au

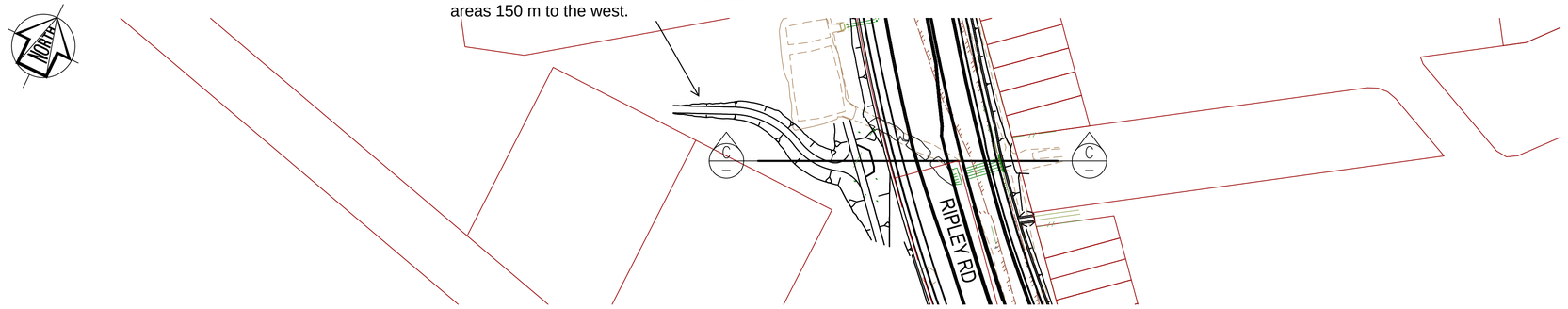
Project: **RIPLEY ROAD UPGRADE STAGE 2**

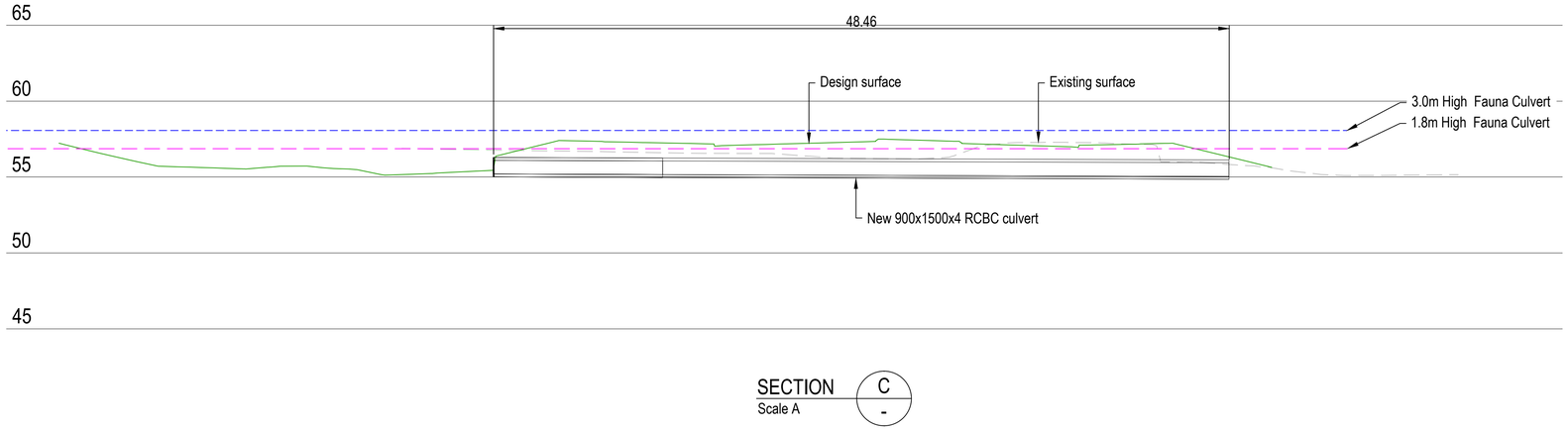
Drawing Title: **KOALA CROSSING LOCATIONS (RIPLEY ROAD)**

	Name	Date
Drawn	T.K	
Designed	T.K	28.05.2026
Checked	S.S	

Project No.	Sheet No.	Rev.
INF04658	00015	1A

This location would deliver koalas to the area adjacent a drainage basin and park on the western side of Ripley Road which currently has a sediment dam, park and limited vegetation. This option would require the creation of a suitable vegetated corridor to connect with identified habitat areas 150 m to the west.





SECTION C
Scale A -

The culvert design at this location is currently 0.9 m high with approximately 0.6 m of cover. Installation of an appropriate fauna culvert would require an additional 1.5 m-2 m of embankment depth to achieve a functioning height.

Unsuitable urban drainage habitat at downstream end.

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POTENTIAL BIODIVERSITY CORRIDOR CROSS SECTIONS

FIGURE 5-2

Bielby BG&E
BG&E Pty Ltd
Level 5, 180 Ann Street
Brisbane, 4000
Tel: +61 7 3167 3300
Email: projects.qld@bgeeng.com

REVISIONS

Issue	Revisions/Descriptions	Drawn	Date
1A	Issue for Information		

SURVEY DATA

Horiz. Datum	Terrain 2001	Vertical Datum	AHD	Level Book	Grid

Size: A1 - Scales before reduction:

A 0 2 4 6 8 10 1:200

B 0 10 20 30 40 50 1:1000

Dimensions shown in metres except where shown otherwise

DRAWING CERTIFICATION

Classification	
Certifier Name	
Certifier No.	
Date	

A

Signature: .....

Drawing Status: ISSUE FOR INFORMATION

COUNCIL APPROVAL

Approved By

.....

(For) General Manager (I&E)

Date:

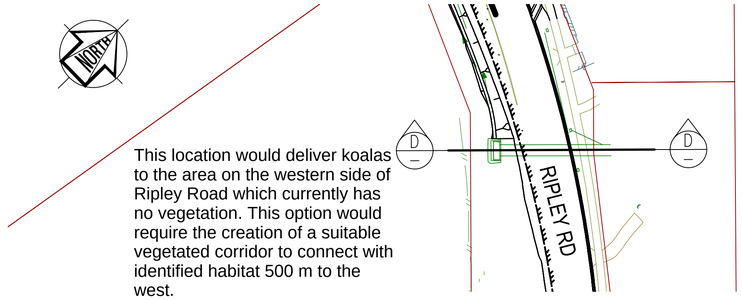
City of Ipswich
TECHNICAL SERVICES
P.O. Box 191 Ipswich QLD 4305 Australia
Telephone: (07) 3810 6666
Facsimile: (07) 3810 7963
e-mail: TechnicalServices@ipswich.qld.gov.au

Project: RIPLEY ROAD UPGRADE STAGE 2

Drawing Title: KOALA CROSSING LOCATIONS (RIPLEY ROAD)

	Name	Date
Drawn	T.K	
Designed	T.K	28.05.2026
Checked	S.S	

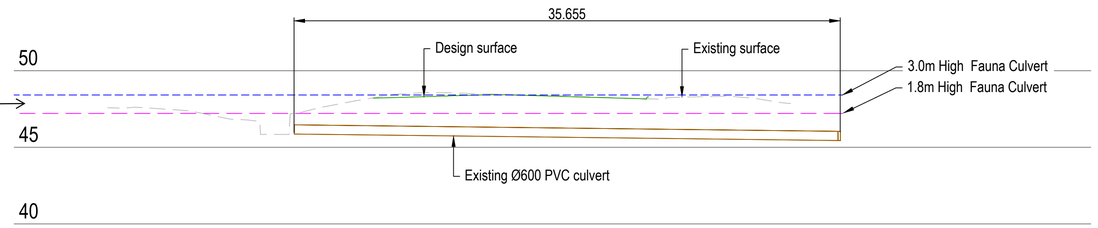
Project No.	Sheet No.	Rev.
INF04658	00016	1A



This location would deliver koalas to the area on the western side of Ripley Road which currently has no vegetation. This option would require the creation of a suitable vegetated corridor to connect with identified habitat 500 m to the west.

The installation of exclusion fencing and associated gates for pedestrian access would impede access and potentially negatively impact pedestrian safety

An appropriate fauna culvert would require additional embankment depth



SECTION D
Scale A -

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POTENTIAL BIODIVERSITY CORRIDOR CROSS SECTIONS

FIGURE 5-2

Bielby
BG&E
BG&E Pty Ltd
Level 5, 180 Ann Street
Brisbane, 4000
Tel: +61 7 3167 3300
Email: projects.qld@bgeeng.com

REVISIONS

Issue	Revisions/Descriptions	Drawn	Date
1A	Issue for Information		

SURVEY DATA

Horiz. Datum	Terrain 2001	Vertical Datum	AHD	Level Book	Grid

Size: A1 - Scales before reduction:
A 0 2 4 6 8 10 1:200
B 0 10 20 30 40 50 1:1000
Dimensions shown in metres except where shown otherwise

DRAWING CERTIFICATION

Classification	
Certifier Name	
Certifier No.	
Date	

Signature: .....

COUNCIL APPROVAL

Approved By

(For) General Manager (I&E)

Date:

Drawing Status: ISSUE FOR INFORMATION

City of Ipswich
TECHNICAL SERVICES
P.O. Box 191 Ipswich QLD 4305 Australia
Telephone: (07) 3810 6666
Facsimile: (07) 3810 7963
e-mail: TechnicalServices@ipswich.qld.gov.au

Project: RIPLEY ROAD UPGRADE STAGE 2

Drawing Title: KOALA CROSSING LOCATIONS (RIPLEY ROAD)

	Name	Date
Drawn	T.K	
Designed	T.K	28.05.2026
Checked	S.S	

Project No.	Sheet No.	Rev.
INF04658	00017	1A

5.4.2 Assessment of management devices/strategies

In the absence of a fauna underpass or overpass, individuals may still cross the road and be at increased risk of vehicle strike. The locations assessed above are still considered the areas most likely for animals to attempt to cross given the location of each on or adjacent to a potential corridor. Assessment of a range of management and mitigation measures was conducted to determine those which are suitable for implementation within the Project. The results of this assessment are presented in Table 5-5.

Chapter 5 of *Fauna Sensitive Transport Infrastructure Delivery* (DTMR, 2024) provides matters for consideration when assessing options for mitigation of vehicle collision including the following:

- Whether multiple species and/or ecosystem services can also benefit from the mitigation.
- The cost to construct and/or maintain the proposed mitigation measure(s).
- The net benefit of constructing more less-expensive mitigation measures or fewer more-expensive measures for the same total cost, such as a single vegetated land bridge or multiple terrestrial fauna culverts.
- The distribution and abundance of the priority species and its preferred habitat.
- The mode and speed of movement of the priority species and their sensitivity to noise, light, and other disturbances.
- Topography and whether the road is to be built at grade, in a cutting, or on a structure such as a culvert or bridge – as this influences what can feasibly be built.
- The tenure and long-term security of the land adjacent to a crossing structure and other types of mitigation (e.g. fauna fencing).
- The degree of certainty that the proposed mitigation measure will be effective and/or can be adaptively modified if ineffective.
- Whether the design already includes structures (e.g. bridges and culverts) for drainage that can be cost-effectively modified to also facilitate the movement of fauna.
- The degree to which the management strategy improves conservation outcomes for the target species relative to other threats on the population.

All infrastructure assessed will be located within the Project area and will be maintained by ICC as part of the road infrastructure. This provides long term security that any measures implemented will be maintained and that their use will be monitored as part of ongoing ICC management programs under the Koala Conservation and Habitat Management Plan (ICC, 2017). A number of the devices or strategies considered can be used by multiple species, including koala. Notwithstanding this, the Ripley Valley PDA has identified land along Ripley Road for urban development (Figure 4-3) which impacts the ability to establish additional habitats within undeveloped land. The management measures proposed include short and longer term measures which reflect the dynamic nature of the locality, with the Project proposed to proceed in parallel to development on adjacent land. There is limited habitat for koala within the project area and only one un-vetted record of the species occurring. While koala usage and the connectivity between habitats to the east and west is low, there is the potential for increase in vehicle collision risk as a result of the Project. The likely effectiveness of mitigation measures considered is assessed in Table 5-5.



Table 5-5 Suitability assessment of options for fauna mortality mitigation within the Project

Mitigation Measure	Description	Image	Assessment
Fauna culvert crossing	Terrestrial fauna culvert that allows dry passage for koala movement. Very long culverts (e.g. six to eight lanes wide) should ideally include an open median to allow light to reach the centre. Where possible, the floor of the culvert should be natural and dry most of the time. Shelves or ledges can be installed on the walls of culverts above water height if dry culverts are not feasible. Culvert entrances should be planted with koala feed species to encourage use.		There are no suitable locations within the Project area for installation of a fauna culvert – refer to Table 5-4. Modification of existing or proposed culverts to provide suitable passage is not possible. There is insufficient depth of embankments to allow culvert installation. The Project is located within an urban, at-grade road corridor which while meeting sight distance and other design safety requirements. Means that there is insufficient grade change within the corridor to accommodate a culvert of sufficient depth to act as fauna passage. The road corridor is part of a wider drainage network containing detention basis, formal drains and drainage reserves. This functionality has to be retained which limits the ability to modify drainage structures and surface levels without impacting downstream flooding. There is insufficient suitable habitat on both sides of the crossing points to encourage use of the culverts.

Mitigation Measure	Description	Image	Assessment
Vegetated land bridge	These include bridges, bored tunnels, and cut and cover tunnels, provide a continuous cover of natural vegetation from one side to the other and allow for uninterrupted movement of wildlife. Once established koalas will use these bridges frequently however they are also used by predator species and refuge poles should also be installed.		There are no suitable locations within the Project area for installation of a fauna overpass or land bridge – refer to Table 5-4. The topography of the alignment is not suitable for this construction. The land within the project area is identified for urban development under the Ripley Valley PDA which limits to ability to enhance roadside habitats or ensure their long term security.
Fauna canopy bridges	Canopy bridges use rope ladders, ropes or cables to provide a crossing structure.		Canopy bridges are not a suitable crossing structure for koalas and koalas have never been observed using them. An almost three-year trial of four different types of canopy bridge (Goldingay and Taylor 2017) failed to detect koala use, despite koalas occurring in nearby trees. Canopy bridges are not considered a suitable mitigation option for the Project.

Mitigation Measure	Description	Image	Assessment
Steel gantries	Gantry-style overpasses are essentially canopy bridges constructed from steel that are intended to provide a stable option to cross the road at canopy level.	 Source: © Rodney van der Ree, WSP in DTMR, 2024	Six months of monitoring at a new gantry (Jones et al. 2013) failed to detect a crossing. despite the presence of abundant habitat on either side of the road in question. This may have been influenced by the presence of multiple crossing location options and lack of need to cross. Gantries are not considered a suitable mitigation option for the Project due to the absence of suitable habitats on either side.
Fauna Fencing (permanent and temporary)	Fencing prevents fauna entering areas to keep them safe from vehicle strike and entrapment. Temporary construction fencing has anti-crawl bars at the bottom of the fence and an anti-climb strip at top of fence. To assist with mitigation of an increase in collisions, it is proposed to install koala exclusion fencing at strategic locations to encourage koala to stay within vegetated areas and prevent koala from accessing the road infrastructure. Given the number of individual driveways and service roads, it is not possible to install fencing along the full length of the proposed action. It is possible however to install fencing in proximity to the		The DTMR guidelines for fauna sensitive transport delivery states that roadside fencing can reduce wildlife mortality by 50% on average and up to 100% in some situations (Rytwinski et al. 2016). If installed without crossing infrastructure fencing can increase the barrier effect and lead to isolation of populations. In the case of Ripley Road however, connectivity across the project area is low and there are no identified suitable crossing locations. The fencing proposed aims to prevent access of individuals to the road corridor from the modified habitats present adjacent the road corridor. Fencing is not continual but escape

Mitigation Measure	Description	Image	Assessment
	potential fauna movement corridors identified and other vegetated areas. Temporary fencing is proposed where there is vegetation present on adjacent properties which may be subject to development. The temporary fencing will be utilised during construction until no later than 30 October 2028 which is 3 months prior to the planned project construction completion. If the land adjacent to temporary fencing is not developed and the adjacent trees remain, permanent fencing will be installed prior to Project completion. The proposed location of fencing is shown on Figure 5 1.		gates are proposed to minimise the risk of entrapment. Fencing is considered an appropriate mechanism for the reduction of vehicle collision risk on Ripley Road.
One-way fauna escape gates	These gates are designed to allow one-way movement away from high risk zones and infrastructure. These devices fit into standard fauna proof fencing to allow animals trapped within a corridor to safely exit. Designed based on koala behaviour—koalas are more likely to push through or under barriers than climb. Normally installed at high mortality points, it is proposed to install these gates in each section of fencing, at separations of 100 m in longer sections of fence.		Trials of the use of the escape gates have been undertaken across Brisbane City Council and Moreton Bay Regional Council in South East Queensland (Endeavour Veterinary Ecology, 2024-2026). These gates have proven successful in reducing koala mortality at vehicle strike hotspots. During the 12-month trial of 16 hatches across seven Council-managed roads, no koala fatalities were recorded at wildlife crossings where the devices had been installed on roadside fencing (Moreton bay Regional Council, 2026). Escape gates are considered an appropriate mechanism for the reduction of vehicle collision risk on Ripley Road.

Mitigation Measure	Description	Image	Assessment
		 Source: Endeavour Veterinary Ecology	
Jump-outs and climb-outs Escape poles	Jump-outs and climb-outs allow fauna trapped inside road corridors to escape. Particularly effective where fencing and embankments create containment risks. Refuge poles allow koala to climb over fencing to escape the corridor.		Installation of koala climb-outs and fauna escape structures adjacent Brisbane City Council road hotspots in conjunction with fencing and crossing infrastructure reduced entrapment risk (Brisbane City Council, 2023). The topography within the Project alignment does not favour this type of entrapment escape mechanism with trials conducted in NSW concluding that a vertical rise of 120-140 cm in height is required for effective use (DTMR, 2024). Assessment of escape gates by Endeavour Veterinary Ecology (2024 -2026) determined that koala will use gates preferentially over escape poles and as such escape poles are not considered the most appropriate mechanisms for the reduction of vehicle collision risk on Ripley Road.

Mitigation Measure	Description	Image	Assessment
			
Refuge poles	Refuge poles are installed in areas where there are fewer trees to provide additional opportunities for koala to climb to avoid predators or to rest during dispersal. Poles should be a minimum of three metres tall and should include a short cross-arm or fork to provide a spot for koalas to sit and sleep.		Refuge poles are proposed within the drainage reserve near Tuckeroo Street where there is no option to install exclusion fencing (see Table 5-4). This provides opportunities for koala to evade predators such as dogs and to rest during dispersal.

Mitigation Measure	Description	Image	Assessment
Fixed wildlife signage	Fixed signage is used to alert drivers to the potential presence of koala. This is to be installed at the approach to fencing and the locations are shown on Figure 5-3, at the entry to fenced areas at either end of Ripley Road, along Fischer Road, and along Monterea Road.		The DTMR guidelines state that evidence suggests that static signage is largely ineffective in changing driver behaviour however, it may increase driver awareness and may result in slight reductions in wildlife mortality. It is suggested in situations where fencing or crossing structures are not possible. In this instance fencing is not proposed for the length of the project area and signage is proposed in conjunction with fencing to supplement its effectiveness. Signage is proposed 50 m either side of the project entry on Ripley Road, Fischer Road and Monterea Road, plus at the point where a koala was observed near Amber Court.
Active signage	This includes the installation of active LED flashing signs that change based on nearby animal activity, seasonal changes in activity or vehicle speed.		Trials conducted on the Tallebudgera Connection Road koala zone found a 7% reduction in speeds, 21% reduction in speeds above 60 km/hr and a 10% reduction in speed during 6 pm-6 am (DTMR, 2025b). This is an area with high koala activity and vehicle strike. Notwithstanding the success of this signage elsewhere, ICC has expressed a concern that the use of active signage in areas where it is not warranted is likely to undermine the effectiveness of this type of signage in other parts of the LGA where it would be a more effective solution, for example road mortality hot spots identified

Mitigation Measure	Description	Image	Assessment
			in the Koala Conservation and Habitat Management Plan (ICC, 2017). Wildlife signage in Queensland is required to be installed in line with the Queensland Manual of Uniform Traffic Control Devices (DTMR, 2023). Activated flashing light signs are to be used selectively at critical locations where high impact wildlife warning signs need enhancement to improve driver compliance with speed limits. Critical locations are hotspot locations of areas with significant conservation value. Neither of these apply to Ripley Road. Activated signage is only to be used where static signage has been installed and there is non-compliance. It should not be installed as a first step or in isolation of static signage. Active signage is not considered an appropriate mechanism for the reduction of vehicle collision risk on Ripley Road.

Mitigation Measure	Description	Image	Assessment
Speed limit reduction	This involves speed reduction during peak koala movement periods (when sub-adults are dispersing or during mating season). Peak koala activity occurs at night time. This can be used in conjunction with active signage or illumination during periods of reduced speed which could be effective at reducing speeding at night.		Reduced speeds achieved during the Tallebudgera Road koala zone trials (DTMR, 2025b) resulted in reduced likelihood of vehicle strike. While this can be an effective mechanism to reduce wildlife mortality, speed limit reduction is not considered an appropriate mechanism for Ripley Road for the following reasons. Table 2.1 of the Australian Standard / Manual of uniform traffic control devices (AS 1742.4:2020) includes minimum speed zone lengths for different speed limits. Reducing the speed limit south of Monterea Road would also necessitate a corresponding reduction to the north of Monterea Road. Ripley Road will function as a high volume, high quality arterial road with both local and regional roles. The current design standards achieve a low road risk metric (DTMR, 2025c) which aligns with the currently proposed 70 km/h speed limit. The Queensland Road Safety Technical User Volumes (DTMR, 2025c) identifies when a lower speed limit may be justified, including wildlife activity. ICC investigates wildlife activity, including reported animal strikes, and there is only one un-vetted mortality record on this section of Ripley Road. There would need to be reasonable level of evidence of animal crossing and animal strikes to support / warrant a speed reduction.

Mitigation Measure	Description	Image	Assessment
			As a general principle, speed limits should align with the road environment, standard, and function. Speed limits that do not reflect these characteristics typically result in higher levels of non-compliance and will generally require on-going enforcement to achieve a lower operating speed. The reduction of speed limits where not warranted can undermine the effectiveness of this measure where it is actually required.
Lighting and visibility	Targeted road lighting upgrades can improve driver visibility at known wildlife strike hotspots. Design that removes visual obstructions on curves, crests and intersections where reaction time is limited can also reduce the risk of vehicle collision.		Schlagloth et al (2023) demonstrates that improved lighting increases visibility and can contribute to reduced risk of vehicle strike. The lighting plan prepared for the Project (Appendix L) demonstrates that lighting proposed will contribute to visibility across the width of the road along the alignment. The project has been designed to comply with sight distance and visibility requirements for road design minimising the potential for blind spots where koala mortality could occur. These are considered appropriate mechanisms for the reduction of vehicle collision risk on Ripley Road.

Mitigation Measure	Description	Image	Assessment
Painted signs/Traffic calming devices	This includes the installation of pavement treatments, raised thresholds or on-road signage. Review of previously approved controlled actions in the locality indicate that traffic calming measures have been required in conjunction with koala signage within residential developments, not on major roads.	 Source: Sunshine Coast News	Previous application in the locality has been limited to residential streets and is not appropriate on major roads where effective traffic flows and management are required. The levels of the design surface and surrounding land make the inclusion of raised traffic calming devices impractical and inclusion of these in the proposed action is not possible. This is not considered an appropriate mechanism for the reduction of vehicle collision risk on Ripley Road.

5.4.3 Assessment of selected minimisation measures for the Project

Based on the assessment of available management and minimisation measures in Table 5-5, the following were selected for implementation within the Project:

- lighting – to be installed along the length of the project as part of the base design. The lighting plan in Appendix L indicates that lighting id suitable for the Project, providing visibility along road side areas, while not impacting significantly on adjacent areas
- sight distances – the road upgrade follows the existing alignment but also complies with safety requirements for line of sight, minimising the potential for blind spots
- fencing – to be installed in strategic locations identified on Figure 5-3
- escape gates – as identified on Figure 5-3
- static signage – as identified on Figure 5-3
- monitoring – continued monitoring of koala mortality and occurrence in accordance with the Koala Conservation and Habitat Management Plan (ICC, 2017).

A summary of each mitigation measure proposed for the management of wildlife and intended to minimise the risk to koala from vehicle strike, demonstrating the basis and efficacy of each, as well as timing, responsibility and ongoing evaluation, is provided in Table 5-6. The management measures developed are project-specific and follow the SMART criteria as demonstrated in Table 5-6. The mitigation and management measures have been developed to ensure the SPRAT database and relevant approved conservation advice, recovery plan, or threat abatement plans are considered throughout. There are no notable inconsistencies between proposed measures and the relevant conservation advices and plans.

The avoidance and mitigation measures proposed for the Project are consistent with Objective 3 of the National Recovery plan whereby Partners, communities and individuals have a greater role and capability in listed Koala monitoring, conservation and management. The avoidance of habitat, where possible, and provision of offsets for unavoidable losses aims to achieve a nett gain in koala habitat in an appropriate landscape where conflict with urban development and loss of connectivity can be avoided. Ipswich City Council will implement measures aimed at protection of individuals that form part of a local fragmented population as part of its commitments under the Koala Conservation and Habitat Management Plan (ICC, 2017). The mitigation measures proposed are consistent with the performance criteria outlined in the National Recovery Plan relating to Objective 3 and demonstrates ICC leadership and a commitment to on-ground works to achieve koala conservation goals.

Table 5-6 Assessment of measures selected to minimise vehicle collision risk for koala

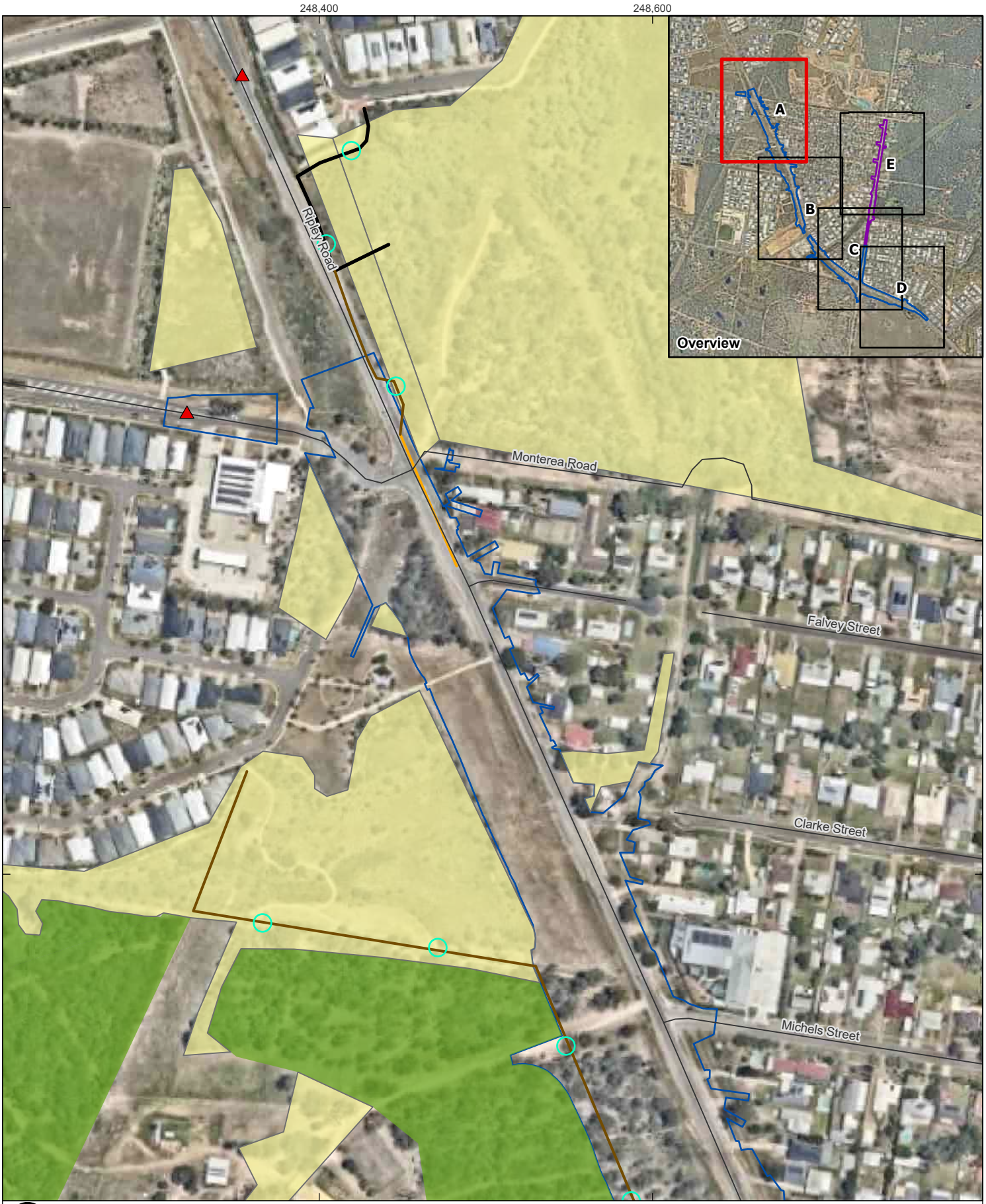
Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
Mortality or injury resulting from collision with vehicles - identified in the National Recovery Plan as a major threat at a local level.	Installation of koala proof fencing in identified areas to prevent access to the road corridor. Note that no exclusion fencing is proposed in the drainage reserve near Tuckeroo Street (Table 5-4) due to pedestrian safety concerns in this locality. **Project cost:** $416,000 (assumes 828 m of permanent fencing and 758 m of temporary fencing)	Koala conservation advice (DAWE 2022a); road ecology best practice; Fauna Sensitive Transport Infrastructure Delivery manual (TMR 2024).	Proponent and contractors	Design, construction and operation	High effective exclusion when properly installed and maintained.	Reduce likelihood of vehicle strike	S – defined exclusion of koalas from road corridor M – inspectable fencing installation and condition A – established and proven mitigation approach R – directly addresses vehicle strike risk T – installed prior to operation and maintained
	Installation of static signage to raise general awareness when travelling	Koala conservation advice (DAWE 2022a);	Proponent and contractors	Construction and operation	Low–Moderate dependent on driver behaviour	Increase driver awareness and reduce collision risk	S – targeted driver awareness measures M – signage installed and visible A – standard and low-cost

Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
	on roads entering the Project area. **Project costs** Static sign cost approx. $350 each for simple single post installations	road ecology best practice; Fauna Sensitive Transport Infrastructure Delivery manual (TMR 2024).					intervention R – supports broader mitigation framework T – installed prior to operation and retained
Entrapment within the road corridor leading to mortality, injury or stress	Installation of one-way fauna escape gates **Project cost:** $31,000 (15 proposed to be installed within the Project area)	Koala conservation advice (DAWE 2022a); road ecology best practice; Fauna Sensitive Transport Infrastructure Delivery manual (TMR 2024).	Proponent and contractors	Design, construction and operation	Moderate–High allows fauna to exit corridor if entrapment occurs. Monitoring programs have demonstrated effective use	Reduce entrapment-related mortality and injury	S – defined escape points within fenced road corridor M – location and function of gates verifiable A – incorporated into fencing design R – addresses residual entrapment risk T – installed with fencing prior to operation and maintained
Mortality or injury from unmaintained fauna infrastructure	Ongoing maintenance of fauna infrastructure including koala proof fencing and fauna escape gates. **Project cost:** Costs for maintenance of fencing are	Koala conservation advice (DAWE 2022a); road ecology best practice; Fauna Sensitive Transport Infrastructure Delivery manual (TMR 2024).	Proponent	Ongoing	High effectiveness of fauna infrastructure is dependent on regular inspection and maintenance	Maintain functionality of mitigation measures and reduce long-term mortality risk	S – defined maintenance requirements for fauna infrastructure M – inspection and maintenance records A – standard asset management practice R – ensures ongoing effectiveness of mitigation measures T – implemented

Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
	included in overall costs however will increase due to the need to maintain escape gates.						throughout operational phase
Mortality or injury resulting from entrapment within adjacent urban development	Installation of fencing to prevent access across Ripley Road or Fischer Road from habitat areas to urbanised environments **Project cost:** No additional	Koala conservation advice (DAWE 2022a); National recovery plan for the koala (DAWE 2022b).	Proponent and contractors	Design and operation	High reduces access to high-risk areas	Minimise movement across road into urban zones and road corridor	S – targeted restriction of high-risk movement pathways M – fencing/barrier installation verifiable A – achievable through design and planning R – directly reduces mortality risk pathways T – implemented prior to operation and maintained
	Provision of refuge poles in drainage reserve near Tuckeroo Street where exclusion fencing is not an option. **Project cost:** Low – recycled materials can be used and poles are easily	Fauna Sensitive Transport Infrastructure Delivery manual (TMR 2024).	Proponent and contractors	Design, construction and operation	Moderate improves ability of koala to escape predators and traverse open ground	Improved safety when traversing urban zone Improved safety from predators	S – defined refuge points within adjacent urban environment M – location and function of poles verifiable A – incorporated into construction design R – addresses residual entrapment risk T – installed with fencing prior to operation and maintained

Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
	installed during construction.						
	Maintenance of connection to wider habitat areas to the east and west. **Project cost:** No additional	Koala conservation advice (DAWE 2022a); South East Queensland Regional Plan 2023; State Code 25: Development in SEQ koala habitat areas (DES, 2022)	Proponent	Design and operation	Low maintains existing movement pathways and reduces urban interface risk. Remaining larger areas and stepping stones of habitat are identified on Figure 4-2. Development within the PDA is governed by the development scheme and most of the land within the locality of the Project area is identified for development.	Maintain habitat connectivity and reduce fragmentation. Retention of larger parcels of land identified as conservation areas and open space within the PDA scheme will contribute to the functioning of regional biodiversity corridors	S – defined habitat connectivity outcomes M – spatial retention of corridors A – achievable through design and planning R – aligned with conservation advice T – implemented in design and retained long-term
Impacts on local koala populations over time due to impacts from vehicle collision	Ongoing monitoring of ongoing presence and koala mortality	National recovery plan for the koala (DAWE 2022b).	Proponent	Ongoing	High identification of issues as they develop allows	Implementation of increased level of mitigation if required.	S – targeted conservation outcome for local government area

Impact	Commitment	Basis / Source	Responsibility	Timing	Likely Efficacy	Outcome	SMART Application
	within the local government area	ICC Koala Conservation and Habitat Management Plan			measures to be undertaken to prevent long term impacts.		M – ongoing monitoring programs collecting data over time A – existing commitment R – aligned with recovery plan and ICC monitoring T – long-term commitment



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Static koala warning sign
- Road

Fauna Fencing

- Fauna escape hatch
- Long term fauna fencing
- Retaining wall
- Short term fauna fencing

Project Area

- Stage 2

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-3



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Static koala warning sign
- Road

Fauna Fencing

- Fauna escape hatch
- Long term fauna fencing
- Short term fauna fencing

Project Area

- Stage 2

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

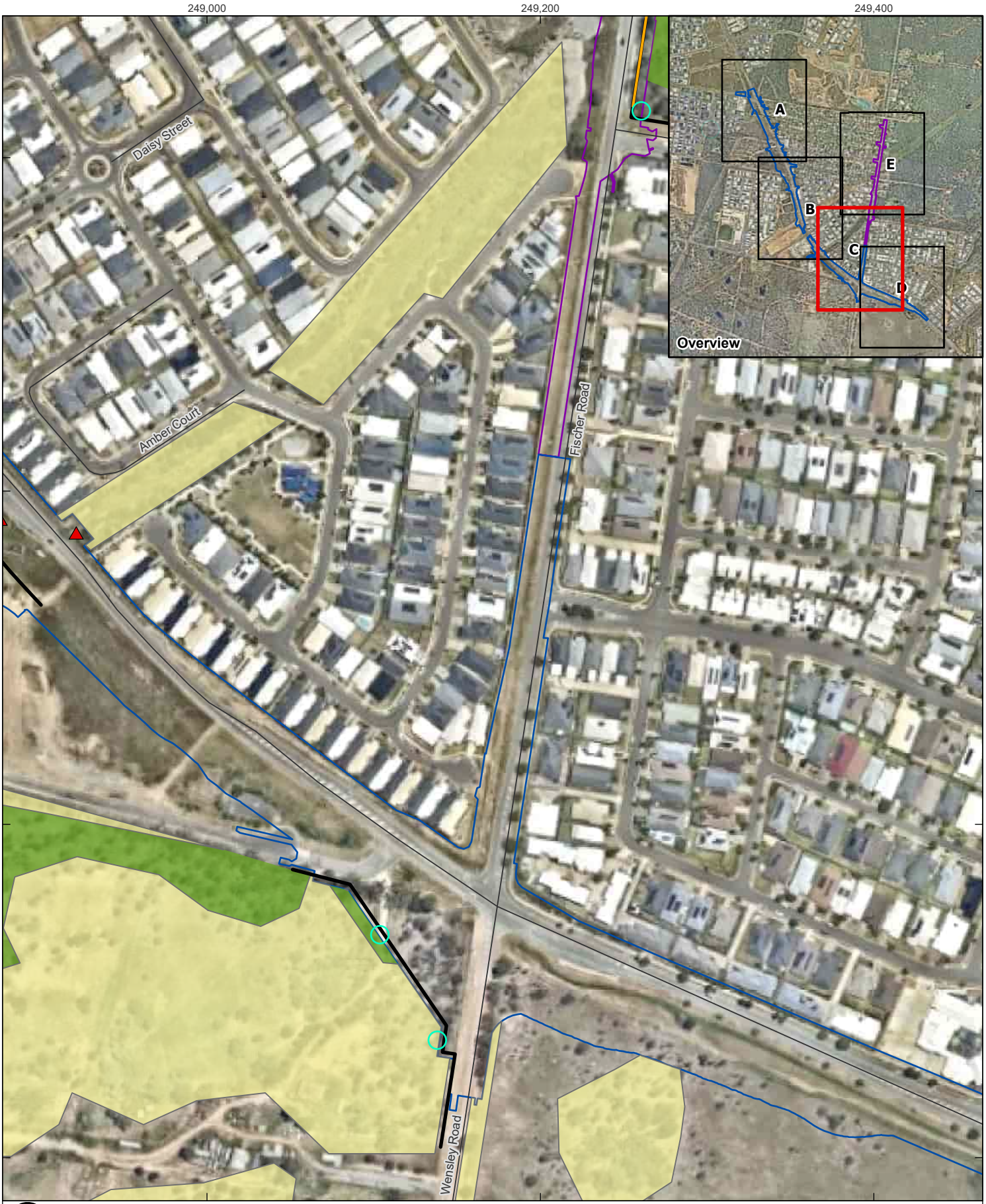
POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-3

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-03_Post-construction connectivity and mitigation measures



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Static koala warning sign
- Road

Fauna Fencing

- Fauna escape hatch
- Long term fauna fencing
- Retaining wall

Project Area

- Stage 2
- Stage 3

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

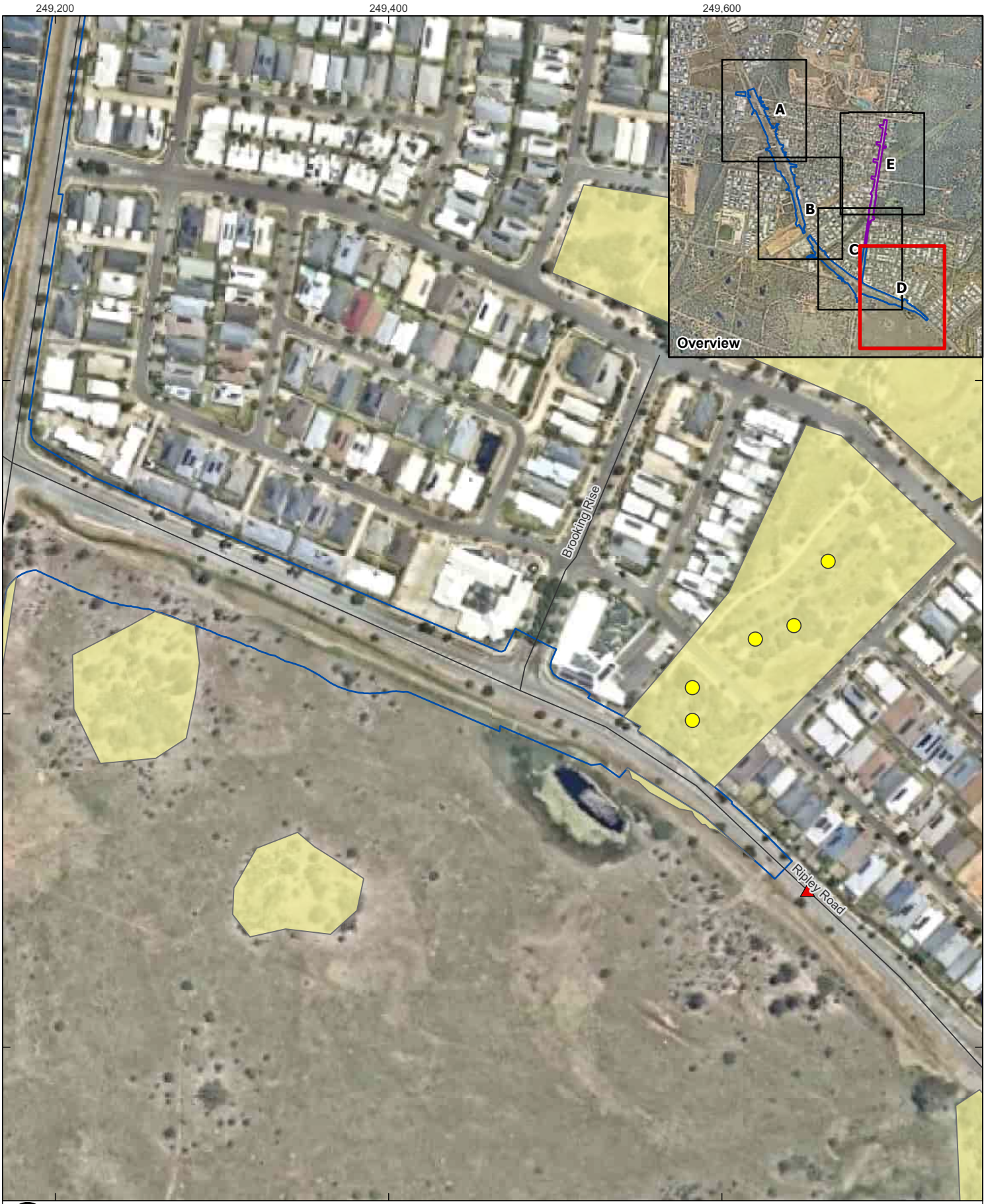
POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-3

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-03_Post-construction connectivity and mitigation measures



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Koala Refuge Poles
- Static koala warning sign
- Road

Project Area

- Stage 2

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-3

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-03_Post-construction connectivity and mitigation measures



0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:3,000 at A4
Project Number:	620.041764
Date Drawn:	7/21/2026
Drawn by:	DC

LEGEND

- Static koala warning sign
- Road

Fauna Fencing

- Fauna escape hatch
- Long term fauna fencing
- Retaining wall

Project Area

- Stage 3

Potential MNES habitat

- Potential koala dispersal habitat / other vegetation
- Potential koala foraging and breeding / GHFF foraging habitat

ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

POST-CONSTRUCTION CONNECTIVITY AND MITIGATION MEASURES

SLR

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

FIGURE 5-3

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F05-03_Post-construction connectivity and mitigation measures

6.0 Proposed offsets

The TEAR identified habitat for koala and grey-headed flying-fox within the proposed action area. Assessments in the TEAR and this PD confirmed that the proposed action will have a significant impact on koala and will directly impact:

- 2.228 ha of breeding and foraging habitat for koala
- 1.034 ha of dispersal habitat for koala.

No significant impact on grey-headed flying-fox is likely. No habitat was identified within the proposed action area for south-eastern glossy black-cockatoo.

Under the EPBC Act, environmental offsets are required to compensate for these impacts, after all reasonable efforts have first been made to avoid, minimise, mitigate and rehabilitate. To offset for the full residual impacts on koala, a land-based offset is proposed.

6.1 Offset proposal

A land-based offset is proposed to be provided for the direct impacts on koala on a site 8 km southeast from the proposed action area (Figure 6-1). The Proposed Offset site comprises a single property owned by the Proponent. The Proposed Offset site is described as Lot 76 RP892022, 1548-1592 Ripley Road, QLD and has an area of 32.13 ha. Two easements are mapped within the Proposed Offset site, and for the purposes of this Offset Proposal these easements do not contribute to the available offset areas.

A draft Offset Proposal has been prepared (Appendix G) which demonstrates that the proposed offset site can compensate more than 100% of the residual significant impacts to koala. Assessment against relevant criteria is demonstrated in Table 6-1.

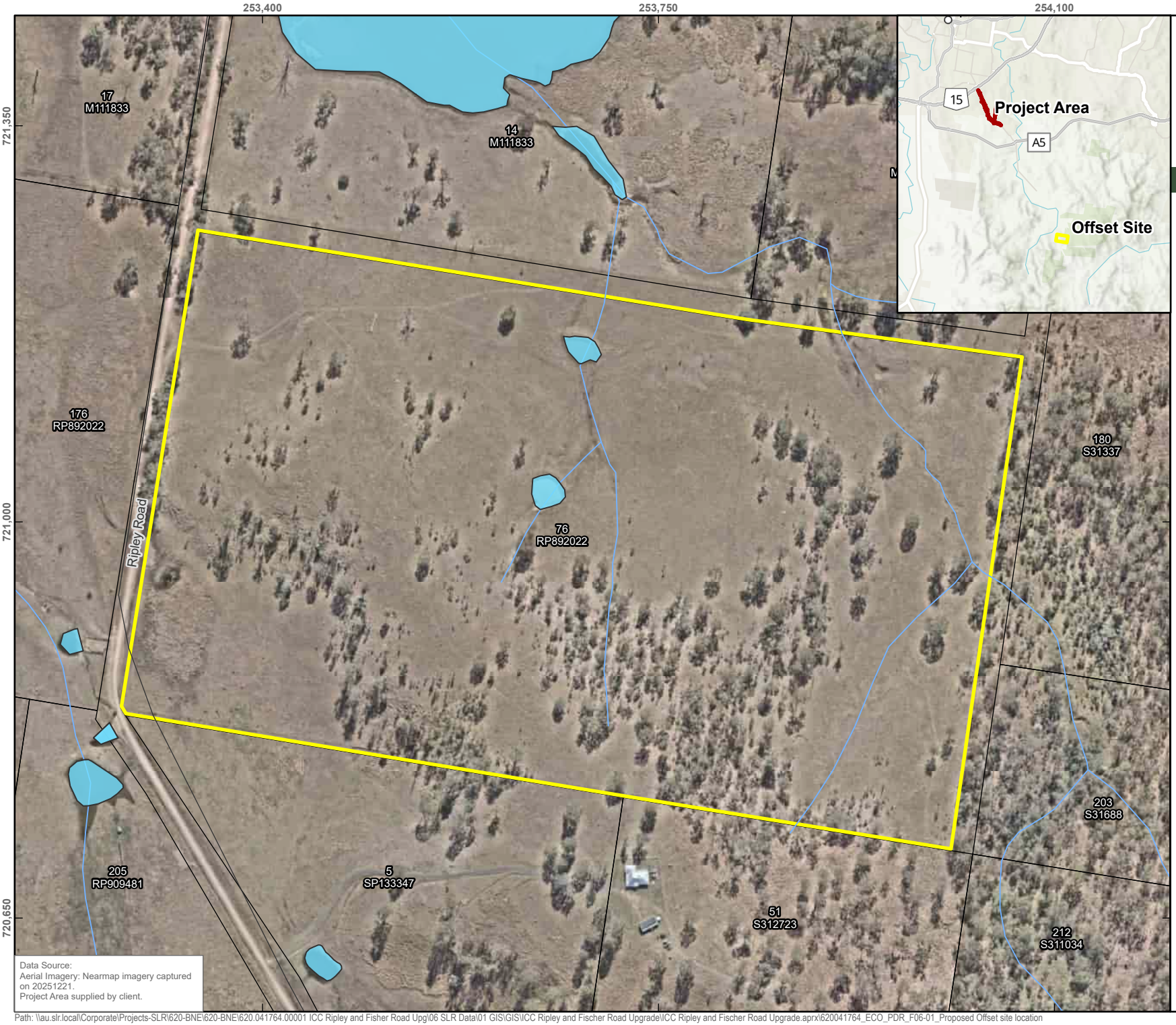
Table 6-1 Factors supporting the Proposed Offset site for koala

Criteria	Assessment
Presence of koala within or adjacent the Offset site	No koalas were detected within the Proposed Offset site. However, desktop assessments showed several records of koala in the region, including within Mount Perry Conservation Park (two in 2015), and White Rock -Spring Mountain Conservation Estate (one in 2020) within 2 km of the Proposed Offset site (ALA 2022). More recent records (2023) are present within neighbouring suburbs (including Flinders-Goolman Conservation Estate) (ALA 2022). These areas adjacent to the Proposed Offset site may hold populations of koala who may disperse into the Proposed Offset site.
Presence of suitable habitat for koala utilisation which is reflective of habitats within the Project Impact Area	There is suitable koala foraging, breeding and dispersal habitat within the Proposed Offset site. This is presented through the presence of remnant and regrowth RE 12.9-10.2, containing suitable LIKT and AKHT, as well as cleared areas adjacent to these patches of habitat providing for clear areas of dispersal for koala. There are no barriers to movement for koala across the Proposed Offset site that would impact this dispersal.
Presence of habitat features considered critical for the survival of	The Proposed Offset site has features considered critical to the survival of the koala including two LIKT species

Criteria	Assessment
koala (known LIKT and AKHT species)	(*Eucalyptus crebra* and *Corymbia citriodora*) and one AKHT species (*E. melanophloia*) (Youngetob *et al.* 2021).
Connectivity with suitable habitat adjacent to the Proposed Offset site	The Proposed Offset site lies adjacent to Stewartdale Nature Refuge, which covers 970 ha of protected land. This nature refuge has connectivity to Mount Perry Conservation Park and further to White Rock Conservation Park. These sites additionally have connectivity with other large areas of densely vegetated land, incorporating Spring Mountain Forest Park, Flinders Peak Conservation Park and further extending past the Ipswich region, approximately covering 5,500 ha of land. The Proposed Offset site is suitably situated within the broader landscape, achieving landscape-scale connectivity.
Proximity to the Project Impact Area	The Proposed Offset site is approximately 8 km southwest from the Project Impact Area. The Project Impact Area and Proposed Offset site are connected via regional and statewide Biodiversity Corridors as well as through the nature refuges and conservation parks and estates (including Mount Perry Conservation Park, Stewartdale National Refuge), and other adjacent vegetation.
Ease of future management to reduce threats (access, adjoining land uses etc.)	Adjoining land uses to the Proposed Offset site is largely freehold land, with mostly grazing properties. There is access to the Proposed Offset site off Ripley Road, ensuring for ease of future management.

6.2 Offset Management Plan (OMP)

An OMP has been submitted to DCCEEW for approval following endorsement of the Offset proposal.



ICC RIPLEY ROAD AND FISCHER ROAD UPGRADE PRELIMINARY DOCUMENTATION REPORT

PROPOSED OFFSET SITE LOCATION

FIGURE 6-1

LEGEND

- Road
- Watercourse
- Cadastre
- Proposed Offset Site
- Wetland / Farm Dam

Data Source:
Aerial Imagery: Nearmap imagery captured on 20251221.
Project Area supplied by client.

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

0 50 100 m

Coordinate System:	ICC Terrain 2001
Scale:	1:4,500 at A4
Project Number:	623.030643
Date Drawn:	6/2/2026
Drawn by:	RB

SLR

Path: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041764.00001 ICC Ripley and Fisher Road Upg\06 SLR Data\01 GIS\GIS\ICC Ripley and Fischer Road Upgrade\ICC Ripley and Fischer Road Upgrade.aprx\620041764_ECO_PDR_F06-01_Proposed Offset site location

7.0 Habitat quality assessment

Koala habitat quality was assessed at both the impact and offset site as part of the development of the Offset Proposal and OMP (Appendix G). For the purposes of the assessment of koala habitat was defined both within the Project Impact Area and proposed offset area as per Table 7-1.

Table 7-1 Habitats and assessment units within the impact and offset sites

Koala Habitat type	Project Impact Area	Proposed Offset Site
foraging/breeding habitat	remnant vegetation (RE 12.9-10.2 and RE 12.9-10.7) and regrowth vegetation (RE 12.3.3)	remnant vegetation (RE 12.9-10.2 and RE 12.9-10.7) and regrowth vegetation (RE 12.3.3)
dispersal habitat	non-remnant clear areas containing suitable refuge trees	non-remnant clear areas containing suitable refuge trees
Available assessment units	Remnant RE 12.9-10.2; Remnant RE 12.9-10.7; Regrowth RE 12.3.3; and Non-remnant with refuge trees.	Remnant 12.9-10.2 Regrowth 12.9-10.2 Non-remnant with refuge trees Non-remnant with no refuge trees

Each assessment unit was assessed in accordance with the attributes detailed Table 7-2. Multiple survey sites were completed within each assessment unit to provide a detailed understanding of the condition of each habitat type present on both the impact and offset site. Data collection methods included BioCondition assessments and collecting additional habitat attributes within each BioCondition plot specific to koala, such as diversity and abundance of LIKT in each plot.

Table 7-2 Koala habitat quality assessment attributes

Attribute	
Habitat quality assessment	
Quality and availability of food and foraging habitat	Food tree abundance
	Food tree diversity
Quality and availability of shelter	Shelter tree abundance
	Tree canopy cover
Species mobility capacity	Coarse woody debris
	Connectivity
Threats to species (lowest score)	Predators
	Fire
	Drought
	Vehicle collisions
	Disease
Role of site location to species overall population in the state	
Ecological corridors	

Attribute
BioCondition Assessment
Recruitment of woody perennial species in ecological dominant layer (EDL)
Native plant species richness - trees
Native plant species richness - shrubs
Native plant species richness - grasses
Native plant species richness - forbs
Tree canopy height (average of emergent, canopy, sub-canopy)
Tree canopy cover (average of emergent, canopy, sub-canopy)
Shrub canopy cover
Native grass cover
Organic litter
Large trees (eucalypt plus non-eucalypt)
Coarse woody debris
Non-native plant cover
Quality and availability of food and foraging habitat (derived from koala habitat quality assessment)
Quality and availability of shelter (derived from koala habitat quality assessment)
Site context
Size of patch
Connectedness
Context
Ecological Corridors (derived from koala habitat quality assessment)
Role of site location to species overall population in the state (derived from koala habitat quality assessment)
Threats to species (derived from koala habitat quality assessment)
Species mobility capacity (derived from koala habitat quality assessment)

Species stocking rate has been considered for koala and is in accordance with the MHQA method.

The koala habitat areas and the scores calculated for the habitat types present within the project impact area and proposed offset site are provided in Table 7-3. The score out of 10 is calculated by summing site condition out of 3, site context out of 3, and species stocking rate out of 4. Both the impact area and proposed offset site habitat quality scores are comparable for each koala habitat type.

Table 7-3 Koala habitat residual significant impact

Habitat utilisation type	Habitat description	Impact area (ha)[#]	Impact site condition score out of 10*	Available offset area (ha)	Current offset site condition score out of 10*
Foraging/ breeding	Contiguous areas of ground-truthed remnant and high value regrowth eucalypt open forest and woodlands containing LIKT	2.228	5.0	6.695	4.88
Dispersal	Areas of modified forest or woodland containing species that are known koala food trees, or shrubland with emergent food trees. This includes non-remnant and considers recent clearing, canopy cover and patch size	1.034	3.81	25.42	4.20

[#]due to minor development footprint variations the impact area is slightly less than that used in the OMP however this does not alter the outcomes of calculations used for the OMP.

*area weighted scores for all assessment units within each habitat type.

The Offsets Assessments Guide parameters used in the Proposed Offset calculations have been conservative to ascertain the minimum offset able to be achieved by the Proposed Offset site to acquit for the residual impacts of the Project. The parameters include:

- Annual probability of extinction, for endangered species (koala) is 1.2% per year;
- Total area of residual impact and available offset per habitat type (ha);
- Habitat quality is calculated using three components: site condition, site context, and species stocking rates (DES 2020);
- Time over which loss is averted (maximum 20 years), the proposed offset has selected to be managed for the maximum time period of 20 years;
- Time until Ecological Benefit, as the offset will include rehabilitation of native woodlands, activities will continue for 20 years;
- Risk of loss (%) without offset, risk of loss of 0% has been adopted;
- Risk of loss (%) with offset, risk of loss of 0% has been adopted; and
- Confidence in result (%), although a range of confidence scores can be attributed to various condition states dependent on the available management actions, a consistent conservative 60% confidence in result has been applied to all habitat types for this exercise.

The Offsets Assessments Guide calculator results for koala habitat are provided in Table 7-4. The results show that the offset can acquit for greater than 100% of the residual impacts to koala from the proposed action. An OMP (Appendix G) has been developed to provide management actions suitable to achieve these offset gains as a minimum.

Table 7-4 Commonwealth OAG values for koala per utilisation type

	Project Impact Area Foraging/breeding Habitat		Project Impact Area Dispersal habitat
Proposed Offset Site habitat type	**Foraging/breeding**	**Dispersal**	**Dispersal**
Project Impact Area (ha)	2.278		1.034
Project Impact Area quality	5		4
Offset site (ha)	6.69	6.2	3.4
Offset site Quality			
Offset site Start quality	5	4	4
Future quality without offset	5	4	4
Future quality with offset	6	6	6
Time until ecological benefit (years)	20	20	20
Confidence in quality scores (%)	70	80	80
Raw gain	1	2	2
Adjusted gain	0.7	1.6	1.6
Offset Risk of loss			
Risk of loss without offset (%)	0	0	0
Risk of loss with offset (%)	0	0	0
Time over which loss is averted (years)	20	20	20
Confidence in risk scores (%)	70	80	80
Raw gain	0	0	0
Adjusted gain	0	0	0
Offset Results			
Net present values	0.37	0.78	0.43
% impact offset	**32.39%**	**68.61%**	**101.07%**
% impact offset per habitat utilisation	**101%**		**101.07%**

No habitat quality assessment was completed for grey-headed flying-fox as no significant impact is considered likely (Section 4.3.2).

8.0 Economic and social matters

Ripley Valley was declared an Urban Development Area by the State Government in October 2010 and transitioned to a PDA in 2013. The PDA is expected to ultimately house 131,000 people within approximately 48,750 dwellings. New infrastructure, including arterial and sub arterial roads, regional bikeways and open spaces are required to support the population growth in the area. This PDA is one of the largest urban growth areas in South East Queensland, with 649 new dwellings being added in 2025.

Ripley Road and Fischer Road are key arterial roads to sustain the development and population growth of the area. Ripley Road is an essential transport corridor as it connects the Cunningham Highway in the north to the Centenary Highway in the south. Fischer Road connects Ripley Road to Flinders View and the Swanbank Industrial Area to the east. Ipswich City Council have identified that the continued growth and development of the area surrounding Ripley Road and Fischer Road is expected to exceed the transport network's capacity and safety of its users.

The proposed action has been awarded a grant under the State Government Residential Activation Fund - a competitive program designed to tackle Queensland's housing crisis by removing infrastructure barriers to residential development. The road upgrades are part of a strategic management intent to deliver a suitable road network within the PDA and will be required in the short term (next two to three years). This significant investment allows council to deliver essential trunk infrastructure that will service future neighbourhoods, create capacity for thousands of new homes, and provide certainty for developers and the community.

An extract from the Ripley Valley PDA Development Scheme (Economic Development Queensland, 2024) showing the strategic growth planned for this locality is provided in Figure 8-1 . This plan shows urban precincts, conservation areas and open space networks within the PDA. Ripley Road provides access to urban core, secondary urban centre and general residential neighbourhoods.

8.1 Public Consultation

Public consultation was undertaken for the wider project between 23 January 2024 and 23 January 2025, Project information was viewed 2,619 times and 15 submissions were received. Key issues raised by the community were:

- Ripley Road:
  - 54% prioritised traffic management, road safety, and alternative travel solutions.
  - 38% highlighted accessibility improvements.
  - additional suggestions included tree planting and improving the Cunningham Highway offramp (not within Council scope).
- Fischer Road:
  - 46% prioritised alternative travel solutions.
  - 38% focused on traffic management; 31% on accessibility.
  - other feedback included the need for a bridge to prevent flooding and more greenery.

Themes from general feedback:

1. Public and active transport – requests for protected bike/bus lanes, safe pathways, and improved walkability.

2. Safety – concerns about current road conditions and traffic speeds.

3. Communication – desire for more project updates and engagement opportunities.

Whilst the feedback for that round of engagement has closed and received a limited number of responses, ICC is continually seeking feedback and engagement through its Shape Your Ipswich page. Throughout the duration of the project ICC and Bielby have a number of community engagement sessions to ensure the community is aware of the project and can voice any concerns directly to the project team.

8.2 Indigenous engagement

Searches of the Australian Heritage Database and Queensland Heritage Register indicate that there are no national or state heritage listings within the proposed action area. No indigenous cultural heritage areas are identified on the PDA Development Scheme values mapping.

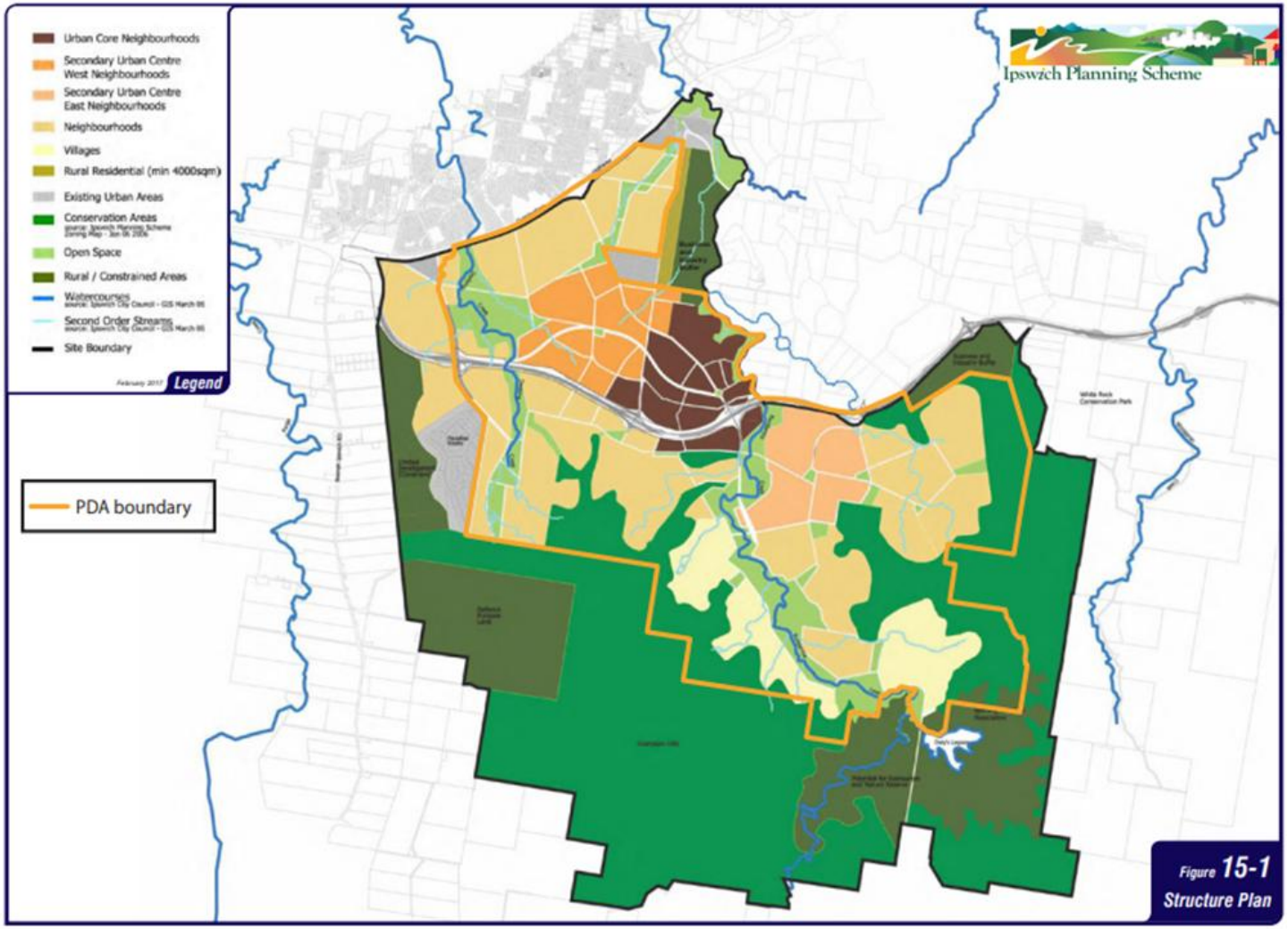


Figure 8-1 Structure Plan for Ripley Valley (source: PDA Development Scheme Amendment No 2)

9.0 Ecologically sustainable development

Table 9-1 demonstrates how the proposed action meets the principles of ecologically sustainable development, as defined in section 3A of the EPBC Act.

Table 9-1 Principles of ecologically sustainable development

Principle		Response
a	decision making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations	Ripley PDA is one of the largest urban growth areas in South East Queensland and will deliver a strategically planned residential growth area which provides urban precincts, conservation areas and open space networks. The proposed action relates to the provision of road infrastructure upgrades to meet transport needs for the next 20 years. Funding for the proposed action has been awarded a State Government Residential Activation Fund grant as part of a program designed to tackle Queensland's housing crisis by removing infrastructure barriers to residential development. The proposed action has been designed to minimise impacts on biodiversity values, including MNES, while meeting overarching long term needs of the community for housing and supporting facilities.
b	if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation	A precautionary approach has been adopted throughout the design and assessment of impacts associated with the proposed action. Although only a small area of direct impact to MNES will result, the indirect impacts associated with the creations of barriers to connectivity and potential wildlife collision mortality have been considered in detail. Mitigation and management measures are assessed in the PD and solutions proposed to address these impacts. Significant impact assessments for all species known or considered likely to occur have been completed and the need for the offset of residual impacts has been addressed through the Offset Proposal and OMP (Appendix G).
c	the principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations	The proposed action is intended to provide for safe and efficient transport throughout the Ripley PDA over the next 20 years. The proposed action is located within a highly modified environment and will impact only a small area of habitat for MNES. No additional direct impacts are likely through the operational phase of the proposed action. Consolidation of the long term upgrades into one project reduces long term costs to the community and future environmental values by limiting direct impacts to the one construction period. Longer term indirect impacts associated with the creation of barriers to connectivity and potential koala mortality resulting from vehicle collisions are proposed to be managed with the installation of koala proof fencing to exclude koala from the road corridor. This will be supplemented by fencing to raise driver awareness.
d	the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making	The proposed action is located within a highly modified environment and will impact only a small area of habitat for MNES. Notwithstanding that, the design of the proposed action has taken into account mapped habitat for koala and grey-headed flying-fox wherever possible and incorporates fauna management infrastructure to reduce the potential for ongoing indirect impacts associated with road use.

10.0 Environmental record of the person proposing to take the action

Ipswich City Council manages land within its jurisdiction and associated biodiversity values in accordance with relevant legislative and policy documents. It enforces the environmental protection objectives of the Queensland Planning Act as required and has recently amended its local planning scheme to incorporate provisions specific to biodiversity. Council has acquired large areas of land for biodiversity conservation with a focus on the protection of habitats for koala within the LGA.

Council operates under an extensive environmental management framework which includes the following documents (Appendix M):

- Natural Environment Policy (and underpinning Natural Environment Strategy)
- Environmental Protection Policy
- Environmental Offsets Policy
- Ipswich City Council Planning Scheme which includes planning scheme policies relating to conservation of biodiversity, assessment and offsets).

Council has been involved in one matter involving the clearing of vegetation within a threatened ecological community listed under the EPBC Act (reference CAS4093). That matter was responded to by Ipswich City Council and has been resolved.

11.0 Ecological data provision

The required species observation data form is provided separately.

12.0 References

BoM (2025) Climate Data Online.

Brisbane City Council (2023). https://www.abc.net.au/news/2023-11-15/new-koala-fencing-on-boundary-road-brisbane/103105614

DAWE (2008a) Approved Conservation Advice for *Arthraxon hispidus* (Hairy-joint Grass).

DAWE (2008b) Approved conservation advice for *Notelaea lloydii*. Available at: http://www.epa.qld.gov.au/REMAP (Accessed: 13 June 2025).

DAWE (2008c) Approved Conservation Advice for *Plectranthus habrophyllus*. Available at: http://www.dpi.qld.gov.au/cps/rde/xbcr/dpi/IPA-Lantana-Nsplan.pdf (Accessed: 13 June 2025).

DAWE (2021) Approved Conservation Advice for the Coastal Swamp Sclerophyll Forest Of New South Wales And South East Queensland. Available at: https://www.environment.gov.au/biodiversity/threatened/communities/pubs/171-conservation-advice.pdf

DAWE (2022a) Conservation Advice for *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory. Canberra.

DAWE (2022b) National Recovery Plan for the Koala *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory). Canberra.

DCCEEW (2022a) Approved Conservation Advice for the Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions. Canberra.

DCCEEW (2022b) Conservation Advice for *Petauroides volans* (greater glider (southern and central)). Canberra.

DCCEEW (2022c) National Recovery Plan for the Australian Painted Snipe (<i>*Rostratula australis*<i/>). Canberra. Available at: www.environment.gov.au/cgi-bin/sprat/public/sprat.pl. (Accessed: 5 March 2025).

DCCEEW 2023a, *National Light Pollution Guidelines for Wildlife*, Department of Climate Change, Energy, the Environment and Water, Canberra

DCCEEW (2023b) Draft Referral guidelines for the nationally listed Brigalow Belt reptiles. Canberra. Available at: www.environment.gov.au/epbc/.

DCCEEW (2025a) National Flying-fox monitoring viewer.

DCCEEW (2025b) Species Profiles and Threats Database (SPRAT), Department of Climate Change, Energy, the Environment and Water. jurisdiction=Commonwealth of Australia; corporateName=Department of the Environment. Available at: https://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl (Accessed: 5 March 2025).

DEHP (2014) Queensland Environmental Offsets Policy Significant Residual Impact Guideline. Brisbane.

DERM (2011) National recovery plan for the Large-eared Pied Bat *Chalinolobus dwyeri*. Canberra.

DES (2020) Guideline: State Development Assessment Provisions - State Code 25: Development in South East Queensland koala habitat areas.

DETSI (2025) Flora Survey Guidelines-Protected Plants version 2.03. Brisbane.

DEW (2021) National Recovery Plan for the Grey-headed Flying-fox. Adelaide. Available at: https://www.environment.gov.au/ (Accessed: 13 June 2025).

DEWHA (2008) Approved Conservation Advice for *Delma torquata* (Collared Delma). Canberra.

DEWHA (2010) Survey guidelines for Australia's threatened bats.

Dique, D.S. *et al*. (2003) 'Dispersal patterns in a regional koala population in south-east Queensland', Wildlife Research, 30(3), pp. 281–290. Available at: https://doi.org/10.1071/WR02043.

DoE (2013a) Approved Conservation Advice for *Thesium australe* (austral toadflax). Canberra. Available at: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/white-.

DoE (2013b) Matters of National Environmental Significance Significant impact guidelines 1.1.

DoE (2016) National Recovery Plan for the Regent Honeyeater (Anthochaera phrygia). Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

DoEE (2017) Draft National Recovery Plan for the Australian lungfish (Neoceratodus forsteri). Canberra. Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

DPIE (2020) Saving our species: Spotted-tailed quoll *Dasyurus maculatus*. Parramatta: Environment. Available at: www.environment.nsw.gov.au/SOS.

DTMR (2023) Queensland Manual of Uniform Traffic Control Devices. State of Queensland.

DTMR (2024) Fauna Sensitive Transport Infrastructure Delivery Chapter 12: Species profile – Koalas. State of Queensland.

DTMR (2025a) Transport and Main Roads Specifications MRTS52 Erosion and Sediment Control. State of Queensland

DTMR (2025b) (/_/media/projects/t/tallebudgera-connection-road-koala-zone trial/tallebudgera-connection-road-koala-zone-trial-location-map.jpg?rev=e08fcbc91b2444319ac3bcdc7b8ef216&extension=jpg&size=561697) (https://www.tmr.qld.gov.au)

DTMR (2025c) Queensland Road Safety Technical User Volumes (QRSTUV) Guide to Speed Management. State of Queensland.

Economic Development Queensland (2024) Ripley Valley Priority Development Area Development Scheme Amendment No. 2. Queensland Government.

Eby, P. and Law, B. (2008) Ranking the feeding habitats of Grey-headed flying foxes for conservation management.

Eyre, T.J. *et al*. (2022) Terrestrial Vertebrate Fauna Survey Guidelines for Queensland, version 4.0.

Goldingay, R. L., and B. D. Taylor. 2017. Targeted field testing of wildlife road-crossing structures: koalas and canopy rope-bridges. Australian Mammalogy 39:100-104.

Glossy Black Conservancy (2022) Glossy Black-Cockatoo Conservation Guidelines for South-eastern Queensland and Far North-eastern New South Wales. Cleveland, Queensland. Available at: www.glossyblack.org.au.

Hill, B.M. and Ward, S.J. (2010) National Recovery Plan for the Northern Quoll *Dasyurus hallucatus*. Darwin. Available at: www.environment.gov.au.

Hourigan, C. (2011) Ghost bat, *Macroderma gigas* Targeted species survey guidelines. Brisbane.

Hourigan, C. (2012). Glossy black-cockatoo, *Calyptorhynchus lathami* Targeted species survey guidelines. Queensland Herbarium, Department of Environment and Science, Brisbane.

Ipswich City Council (2017) Koala Conservation and Habitat Management Plan. Ipswich.

Ipswich City Council (2025) City of Ipswich Significant Flora and Fauna, https://www.ipswich.qld.gov.au/about_council/initiatives/environment/enviroplan/significant-flora-and-fauna.

Jones, D., C. Dexter, L. Bernede, and J. Scott. 2013. Koala Retrofit Works Program. Evaluation Monitoring for Koala–Specific Overpass Structure. Final Report. Environmental Futures Centre, Griffith University.

Kyba, CCM, Mohar, A & Posch, T 2017, How bright is moonlight? *Astronomy and Geophysics,* vol. 58, 1.31–31.32, DOI: http://doi.org/10.1093/astrogeo/atx025

Loyn, R., Mcnabb, E. and Machunter, J. (2011) Approved Survey Standards: Powerful Owl *Ninox strenua.* Melbourne.

McLean, K., *et al.* (2025) 'Home range and movement of the koala (*Phascolarctos cinereus*) in fragmented high-quality coastal habitat', Austral Ecology.

Menkhorst, P. and Hynes, E. (2010) National Recovery Plan for the Brush-tailed Rock-wallaby *Petrogale penicillata*. East Melbourne. Available at: www.environment.gov.au.

Neldner, V.J. *et al*. (2022) Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland, version 6.0. Brisbane: Queensland Herbarium, Department of Environment and Science.

Nicol, S. and Andersen, N.A. (2007) 'The life history of an egg-laying mammal, the echidna (*Tachyglossus aculeatus*)', Ecoscience, 14(3), pp. 275–285.

Rowland, J. (2012) Grey snake, *Hemiaspis damelii* Targeted species survey guidelines. Brisbane.

Rytwinski, T., K. Soanes, J. A. G. Jaeger, L. Fahrig, C. S. Findlay, J. Houlahan, R. van der Ree, and E. A. van der Grift (2016). How effective is road mitigation at reducing road-Kill? A meta-analysis. PLOS ONE 11:e0166941.

Schlagloth R, Santamaria F, Harte M, Keatley MR, Geddes C, Kerlin DH. (2023). Landscape Homogeneity May Drive the Distribution of Koala Vehicle Collisions on a Major Highway in the Clarke-Connors Range in Central Queensland, Australia. Animals (Basel). 2024 Oct 8;14(19):2902. doi: 10.3390/ani14192902. PMID: 39409851; PMCID: PMC11475133.

Smyth, A.K. and Young, J. (1996) 'Observations on the endangered black-breasted button-quail *Turnix melanogaster* breeding in the wild', Emu - Austral Ornithology, 96(3), pp. 202–207. Available at: https://doi.org/10.1071/MU9960202.

Sparkes, J., et al. (2025) 'Ground use by koalas (*Phascolarctos cinereus*) reveals limited terrestrial movement and implications for conservation', Animals, 15(24), pp. 3537.

Taylor, B.D. and Rohweder, D.A. (2020) 'Yellow-bellied gliders use glide poles to cross the Pacific Highway at Halfway Creek, north-east New South Wales', Australian Mammalogy, 42(3), pp. 385–387. Available at: https://doi.org/10.1071/AM20015.

TSSC (2013) Commonwealth Listing Advice on *Marsdenia coronata* (slender milkvine). Canberra.

TSSC (2015) Conservation Advice *Geophaps scripta scripta* Squatter pigeon (southern). Canberra. Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

TSSC (2017) Conservation Advice *Argynnis hyperbius inconstans* Australian fritillary. Canbeera. Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

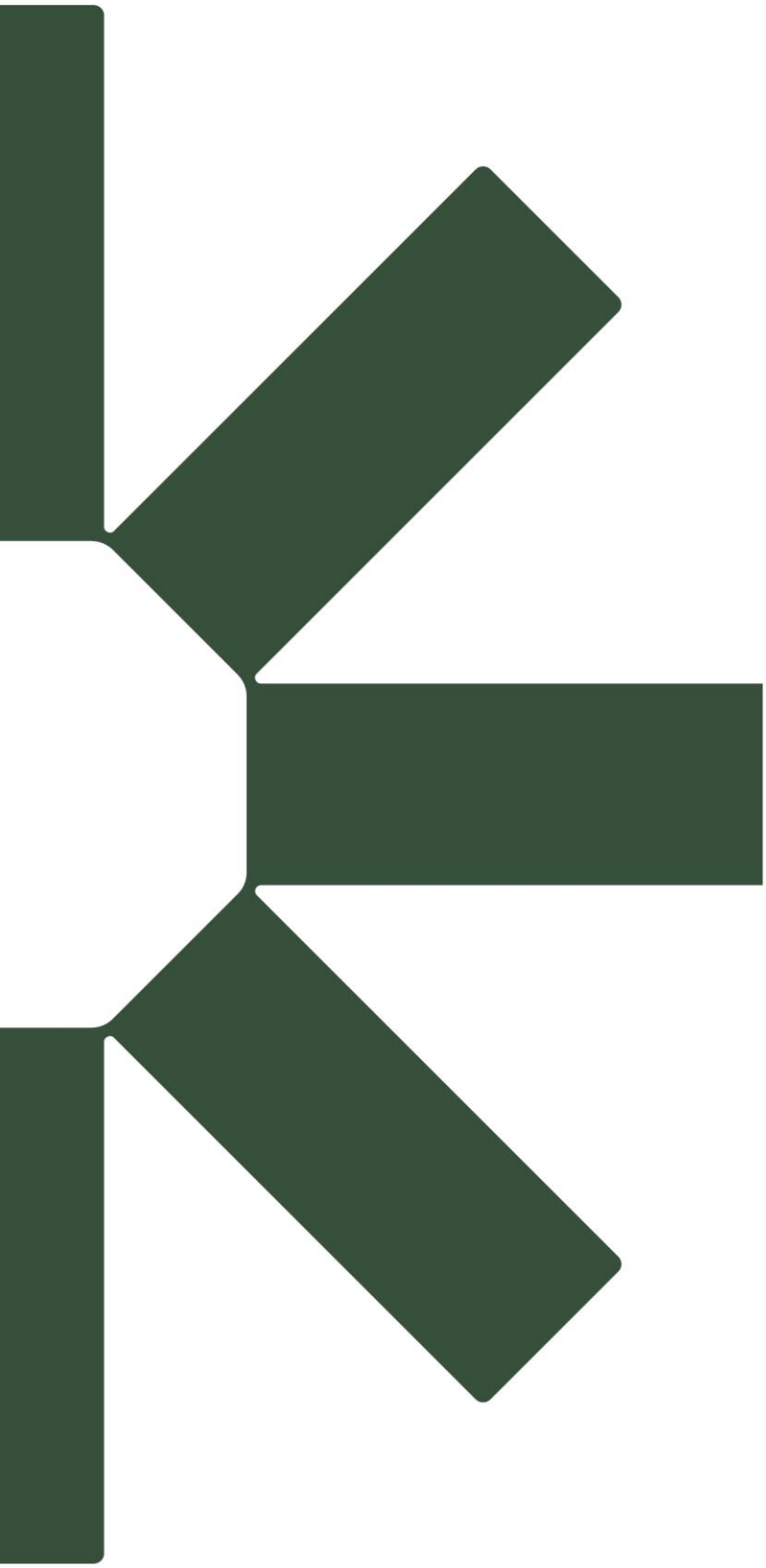
TSSC (2019a) Conservation Advice *Hirundapus caudacutus* White-throated Needletail. Canberra. Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

TSSC (2019b) Conservation Advice *Potorous tridactylus tridactylus* Long-nosed potoroo (SE Mainland). Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl (Accessed: 13 June 2025).

TSSC (2020a) Conservation Advice *Falco hypoleucos* Grey Falcon. Canberra. Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

TSSC (2020b) Conservation Advice *Rhodamnia rubescens* Scrub turpentine. Available at: http://www.environment.gov.au/biodiversity/threatened/cam (Accessed: 13 June 2025).

White, N.A. (1999) ‘Ecology of the koala (*Phascolarctos cinereus*) in rural south-east Queensland, Australia’, Wildlife Research, 26(6), pp. 731–744. Available at: https://doi.org/10.1071/WR98002.



Making Sustainability Happen