EPBC Act Koala Management Plan

ECCO Ripley Residential Development (2015/7513)

Bcove 4 Pty Ltd and Ripley Town Holdings Pty Ltd

November 2018

Document Control

Document: EPBC Act Koala Management Plan – ECCO Ripley Residential Development (EPBC 2015/7513) (Part A), prepared by Saunders Havill Group for Bcove 4 Pty Ltd and Ripley Town Holdings Pty Ltd, November 2018

Document Issue

Issue	Date	Prepared By	Checked By
A	07.11.2018	KG	AD
B	16.11.2018	KG	AD
C	30.11.2018	KG	AD

Prepared by

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Table of Contents

Figures

Tables

Acronyms and Abbreviations

Legislation, Policies and Guidelines

EPBC	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
NCA	*Nature Conservation Act 1992* (Qld)
VMA	*Vegetation Management Act 1999* (Qld)

Government Departments

DEE	Department of the Environment and Energy (Cth)
DES	Department of Environment and Science (Qld)
DTMR	Department of Transport and Main Road (Qld)
EDQ	Economic Development Queensland
ICC	Ipswich City Council
NRME	Department of Natural Resources, Mines and Energy (Qld)

General Terms

SAT	Koala Spot Assessment Technique Survey
KMP	Koala Management Plan
MNES	Matters of National Environmental Significance
RE	Regional Ecosystems
SHG	Saunders Havill Group
TEC	Threatened Ecological Community
VCFMP	Vegetation Clearing and Fauna Management Plan
WPMP	Wildlife Protection and Management Plan
WHIMP	Wildlife Habitat Impact Mitigation Plan
UDADS	*Ripley Valley Urban Development Area Development Scheme*

1. Introduction

Saunders Havill Group (**SHG)** have been appointed by **Bcove 4 Pty Ltd and Ripley Town Holdings Pty Ltd** (the approval holder) to prepare a Koala Management Plan (KMP) to meet conditions of the ECCO Ripley Residential Development (2015/7513) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval issued by the Commonwealth **Department of the Environment and Energy (DEE**).

This KMP specifically addresses the below conditions listed in the 2015/7513 EPBC Act approval:

2. *The approval holder must ensure a pre-clearance survey is undertaken by a suitably qualified person immediately prior to any clearing of vegetation within the project site to identify any Koalas present.*

3. *The approval holder must not clear any vegetation supporting any Koalas until such time that any present Koalas vacate the vegetation or are relocated by a suitable qualified person.*

4. *Prior to the commencement of the action, the approval holder must develop and implement a Koala Management Plan. The Koala Management Plan must describe measures to be implemented for the life of the approval to minimise Koala mortality attributable to dog attack and vehicular strike within the project site.*

5. *The approval holder must publish the Koala Management Plan in its website prior to the commencement of the action and the Koala Management Plan (or any subsequent revised versions) must remain on the approval holder's website for the life the approval.*

This KMP has been prepared in accordance with the document *Environmental Management Plan Guidelines, prepared by the Commonwealth of Australia, 2014* (EMP Guidelines). The purpose of this KMP is to provide a single explanatory management document for the inclusion in the design, construction and operation of the ECCO Ripley residential development. The objectives of this document are:

1) To highlight the existing flora and fauna values on the subject site and in surrounding areas;
2) Describe key results from survey data, including Koala occurrence and the availability and quality of habitat;
3) Identify key direct and indirect impacts on Koalas and describe proposed avoidance and mitigation measures;
4) List out actions and legislative requirements to be put in place to manage construction impacts;
5) Provide a framework for a number of operational management measures including:
    a. Conservation areas set aside for Koala usage
    b. Incorporation of education and prohibition signage within open space and road reserves
    c. On-lot education campaigns to raise consumer awareness of local Koala populations; and
    d. Provide ongoing resources and facilities for monitoring the success of this management plan.

2. Declaration of Accuracy

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the regulations. This offence is punishable on conviction by imprisonment for not more than 1 year, a fine not more than 60 penalty units, or both. An extract of section 491 of the EPBC Act is attached.

Signed: _____

Full Name: Andrew Davies

Organisation: Saunders Havill Group

Date: 30-11-2018

491 Providing false or misleading information to authorised officer etc.

(1) A person is guilty of an offence if the person:
  (a) provides information or a document to another person (the ***recipient***); and
  (b) knows the recipient is:
    (i) an authorised officer; or
    (ii) the Minister; or
    (iii) an employee or officer in the Department; or
    (iv) a commissioner;
  performing a duty or carrying out a function under this Act or the regulations; and
  (c) knows the information or document is false or misleading in a material particular.

(2) The offence is punishable on conviction by imprisonment for a term not more than 1 year, a fine not more than 60 penalty units, or both.

Note: Subsection 4B(3) of the *Crimes Act 1914* lets a court fine a body corporate up to 5 times the maximum amount the court could fine a person under this subsection.

3. Project Description

Contextually, the site is located north and south of the intersection between Ripley Arterial Road and the Centenary Highway, approximately 8.5 km south-east of Ipswich City. The Cunningham Highway to the north currently divides Ipswich City from the site locality. The Ripley Valley is located in one of the largest industry growth areas in Australia and in recent years has undergone significant development in accordance with the *Ripley Valley Urban Development Area Development Scheme* (UDADS).

Surrounding land has mostly been cleared of vegetation values for pastoral purposes and is also slated for urban development under the UDADS. Significant residential developments have been completed approximately two (2) km north and four (4) km south-west of the site. Nearby features include Swanbank power station and Box Flat Mine and the suburbs of Yamanto, Deebing Heights, and Flinders View. Refer to Figure 1 for the site context and Figure 2 for the site aerial.

The ECCO Ripley Residential Development is to be developed in accordance with the 'Urban Core' zoning of the UDADS. The zoning determines building heights, residential densities, and indicative floor areas to be implemented within the ECCO Ripley Residential Development project.

The land use brief is based around the development of a robust, flexible and dynamic Ripley Urban Core, which will operate as the economic and social heart of the Ripley Valley community. Proposed features include:

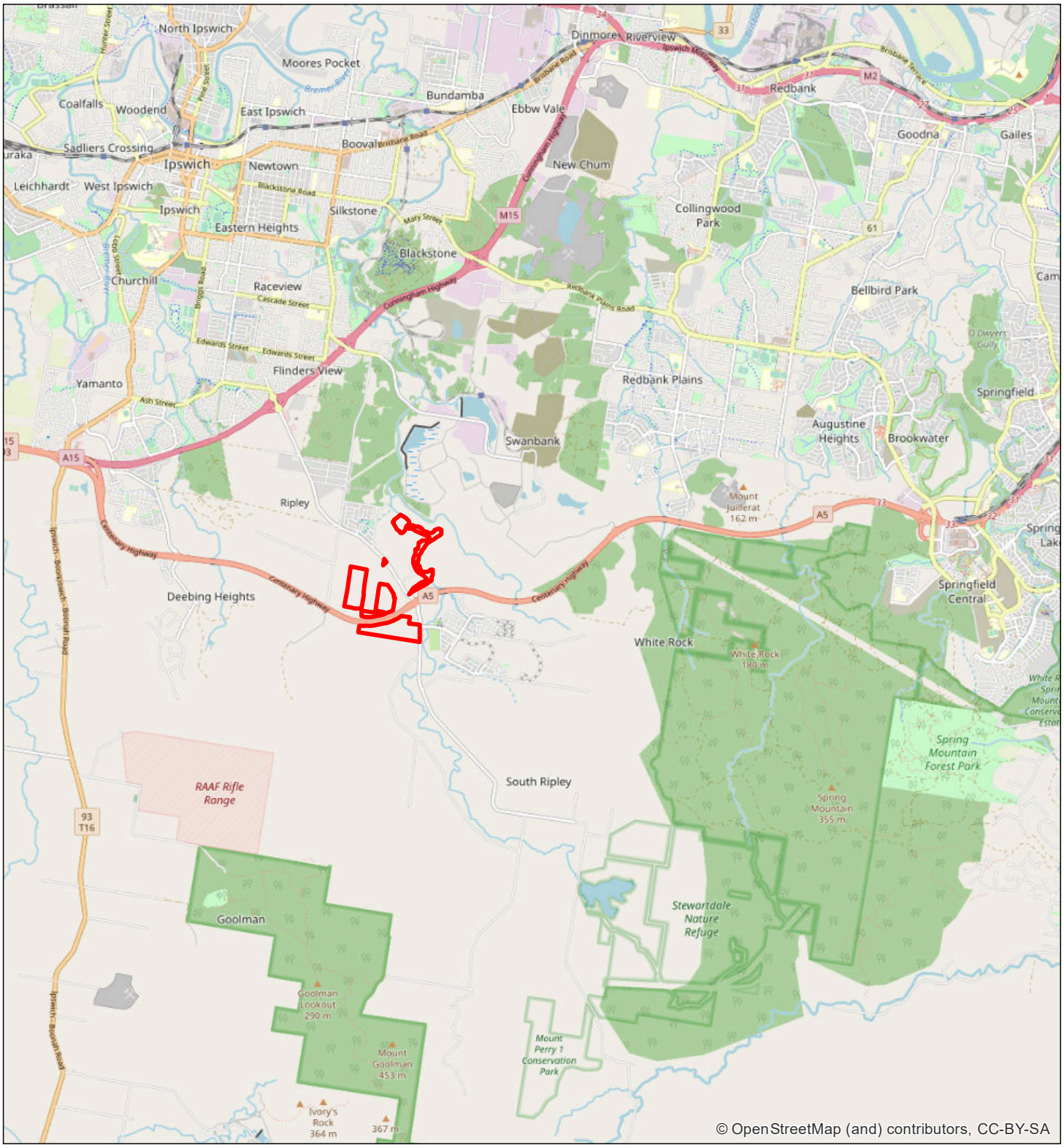
- 2,500 lots, terraces units and apartments
- 6 neighbourhoods based on listed design principles
- An open space network of district and linear parks complementing neighbourhood, local and edge parks comprising 41.6 hectares
- State of the art storm water management systems

The development layout is shown on Plan 1.

3.1. Approval History

The adjoining Ripley Town Centre proposal was referred to the **DEE** in April 2015 (2015/7471), with the proposal determined to be not a controlled action under the EPBC Act on 28 May 2015.

The ECCO Ripley residential development will be established in accordance with requirements set out in the UDADS and the Material Change of Use Development Permit issued by Ipswich City Council (ICC) (DEV2012/23). The approved *Community Greenspace Infrastructure Master Plan* defines the area of open space within the Ripley Urban Core to be 81.5 ha (41.6 within the proposed ECCO Ripley development), with the balance of the Ripley Urban Core set aside for development (refer Plan 1: Development Layout and Figure 3).



Legend

Project Area

Figure 1

Site Context

Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

File ref. 6982 E Figure 1 KMP Site Context B
Date *6/11/2018*
Project *ECCO Ripley*

0 0.5 1 2 *km*

N

Scale (A4): 1:100,000 [GDA 1994 MGA Z56]

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Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2018.

Legend

Project Area

Figure 2

Site Aerial

Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

File ref. 6982 E Figure 2 KMP Site Aerial B
Date *6/11/2018*
Project *ECCO Ripley*

0 100 200 400 600 *m*

N

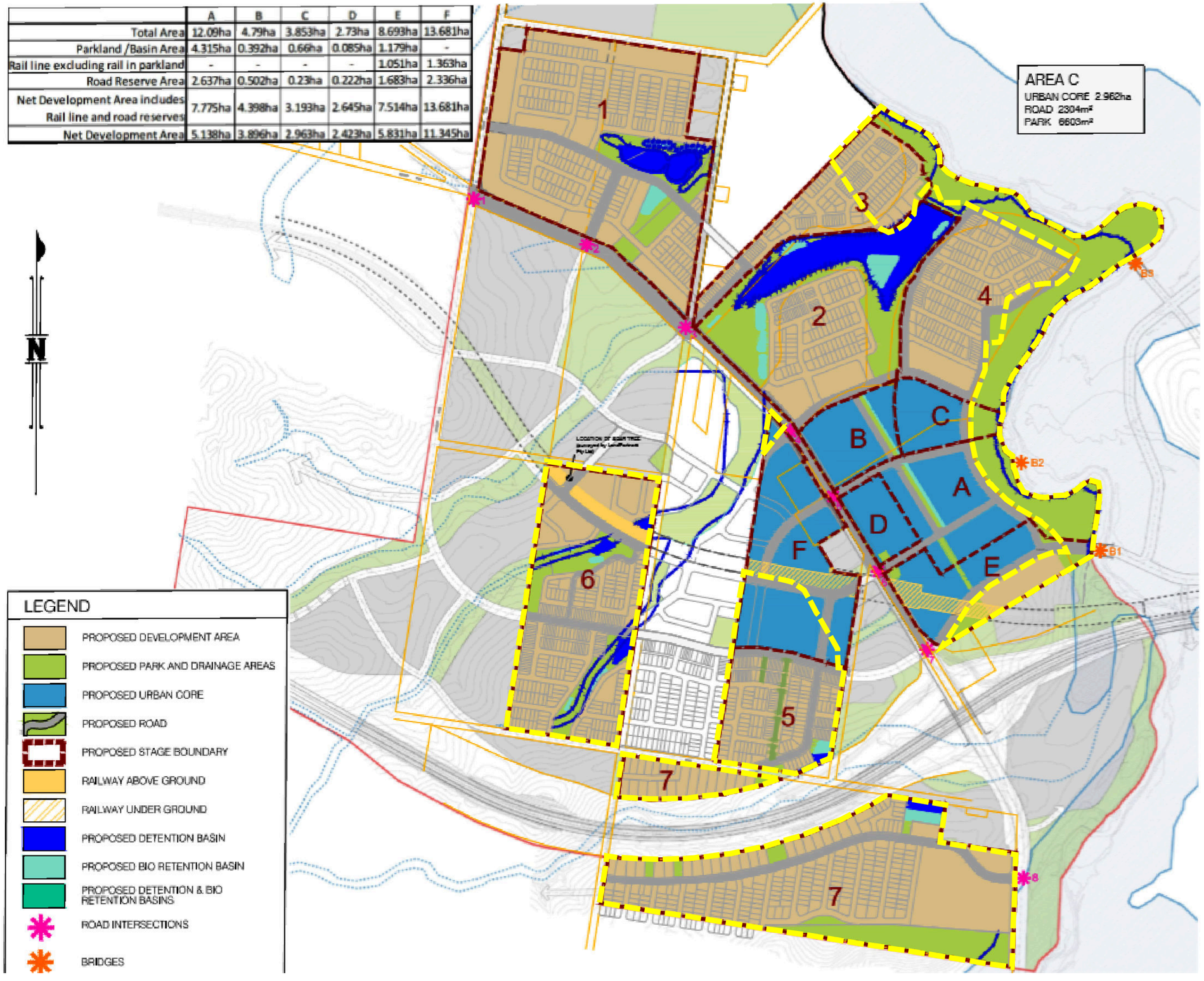
Scale (A4): 1:13,500 [GDA 1994 MGA Z56]

saunders havill group

Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2018, Aerial (Google 2018)

1. DEVELOPMENT LAYOUT

	A	B	C	D	E	F
Total Area	12.09ha	4.79ha	3.853ha	2.73ha	8.693ha	13.681ha
Parkland /Basin Area	4.315ha	0.392ha	0.66ha	0.085ha	1.179ha	-
Rail line excluding rail in parkland	-	-	-	-	1.051ha	1.363ha
Road Reserve Area	2.637ha	0.502ha	0.23ha	0.222ha	1.683ha	2.336ha
Net Development Area includes Rail line and road reserves	7.775ha	4.398ha	3.193ha	2.645ha	7.514ha	13.681ha
Net Development Area	5.138ha	3.896ha	2.963ha	2.423ha	5.831ha	11.345ha



NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2018. Updated data available at http://qldspatial.information.qld.gov.au/catalogue//
Aerial Imagery © Nearmap, 2018

*This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

Legend

Project Area

Issue	Date	Description	Drawn	Checked
A	22/08/2018	Preliminary	AL	AD

0 50 100 200 300 400 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:10,413 @ A3

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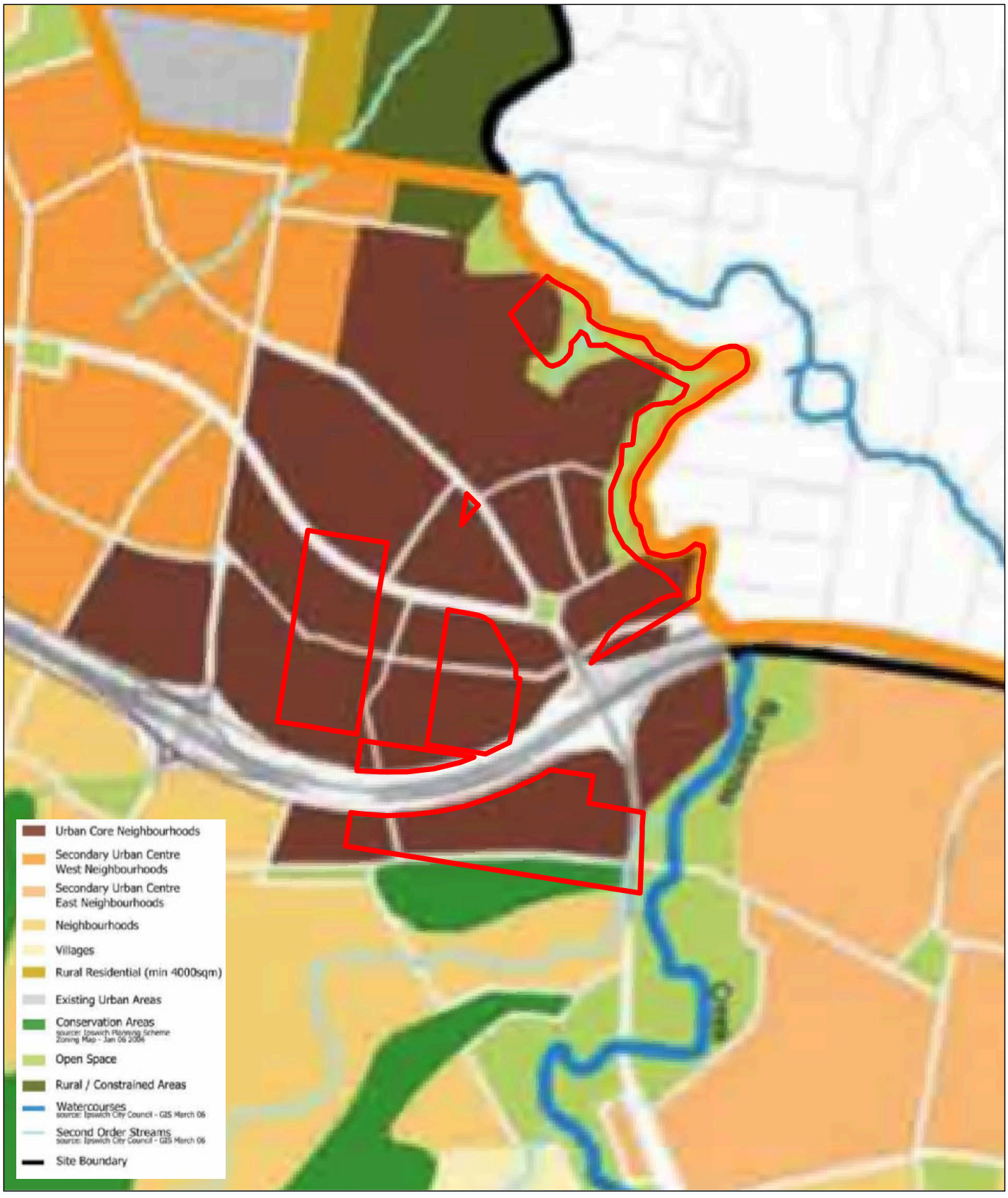
Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

Sekisui Ripley



Legend

Project Area

Figure 3 *Structure Plan - Ripley Valley Priority Development Area Development Scheme*

File ref. 6982 E Figure 3 KMP UDADS Greenspace B
Date *6/11/2018*
Project *ECCO Ripley*

0 100 200 400 600 *m*

Scale (A4): 1:20,000 [GDA 1994 MGA Z56]

N

Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

saunders havill group

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2018); Ripley Valley PDA Development Scheme (2011)

4. Ecological Values

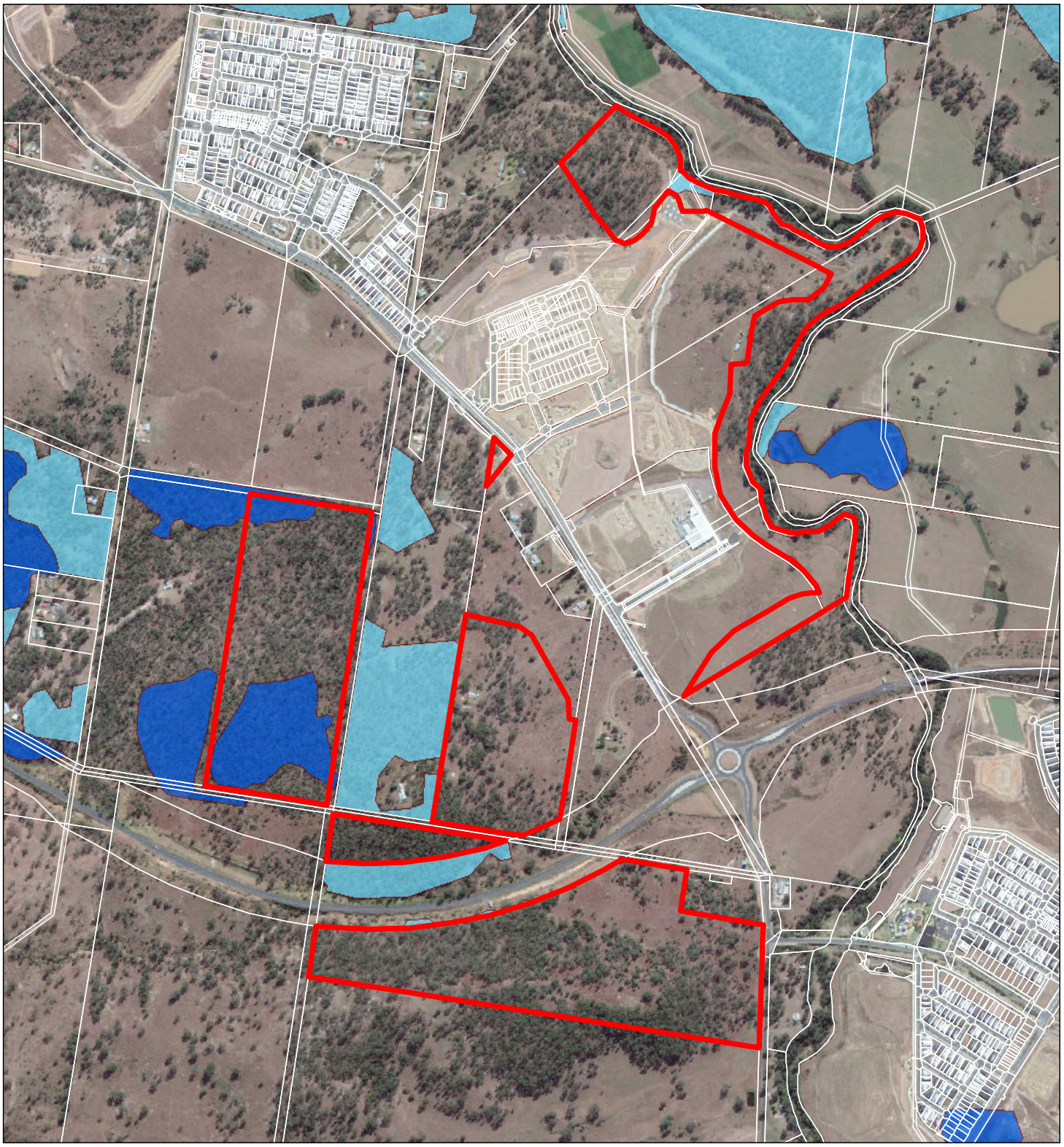
The proposed residential development site is located within areas previously cleared for agricultural activities containing mostly regrowth vegetation and open areas. Land immediately surrounding the site has mostly been cleared of vegetation values for pastoral purposes and is also slated for urban development under the UDADS. Significant residential developments have been completed approximately 2 km north and 4 km south-west of the site. Nearby features include Swanbank power station and Box Flat Mine and the suburbs of Yamanto, Deebing Heights and Flinders View.

Flora and fauna surveys conducted by Senior Ecologists from **SHG** in September 2013, July 2014, and May 2015, found the site to be relatively highly disturbed as a result of past agricultural practices, which have left the proposed development area largely devoid of significant vegetation and habitat values. Exotic flora were prevalent across the site, particularly in drainage depressions and along fire breaks.

No EPBC Act listed threatened flora or Threatened Ecological Communities were recorded on-site. Regulated Vegetation as mapped under the *Vegetation Management Act 1999* (VMA), shows the site is mapped as Category X (non-remnant) with relatively small isolated patches of Least Concern Regional Ecosystems (RE) 12.9-10.2 mapped on Lot 192 on S151860 (refer to Figure 4 and Figure 5). This RE is described as *"Corymbia citriodora subsp. variegata open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, E. moluccana, E. acmenoides and E. siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 10b)".* This RE is not considered to provide 'essential habitat' for the Koala.

One species listed as vulnerable under the *Nature Conservation Act 1992* (NCA), *Melaleuca irbyana*, was observed comprising individual specimens, so not a Threatened Ecological Community, at three locations on different properties within the referral area. *Eucalyptus* and *Corymbia* species dominate the site canopy and the broader landscape, in particular, *Eucalyptus tereticornis* (Forest Red Gum), *Corymbia citriodora* (Spotted Gum), and *Eucalyptus crebra* (Narrow-leaved Ironbark).

No EPBC protected fauna species were observed on-site, however, evidence in the form of scats did suggest low usage of the site by Koalas. The site was considered to have limited ability to support listed threatened fauna species which are generally highly sensitive, specialised, and require particular habitat features. Rocky outcrop features observed on-site contained little to no habitat value due to the absence of suitable overhangs, crevices or hollows. The site contained numerous weed species, including nine (9) weed species listed under the *Biosecurity Act 2014, Baccharis halimifolia* (Groundsel Bush), *Lantana camara* (Lantana), *Lantana montevidensis* (Creeping Lantana), *Asparagus aethiopicus* (Asparagus Fern), *Ambrosia artemisiifolia* (Annual Ragweed), *Bryophyllum pinnatum* (Live Leaf), *Opuntia tomentosa* (Velvety Tree Pear), *Senecio madagascariensis* (Fireweed) and *Sporobolus pyramidalis* (Giant Rats Tail Grass).



Legend

- Project Area
- Qld DCDB

Regulated Vegetation

- Category A area - *Vegetation Offset/Compliance notices/VDecs*
- Category B area - *Remnant vegetation*
- Category C area - *High value regrowth vegetation*
- Category R area - *Reef regrowth watercourse vegetation*
- Category X area - *Vegetation not regulated under the VMA*
- Water
- Area not categorised

Figure 4

Regulated Vegetation Management Map

Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

File ref. 6982 E Figure 4 KMP RVMM B
Date *6/11/2018*
Project *ECCO Ripley*

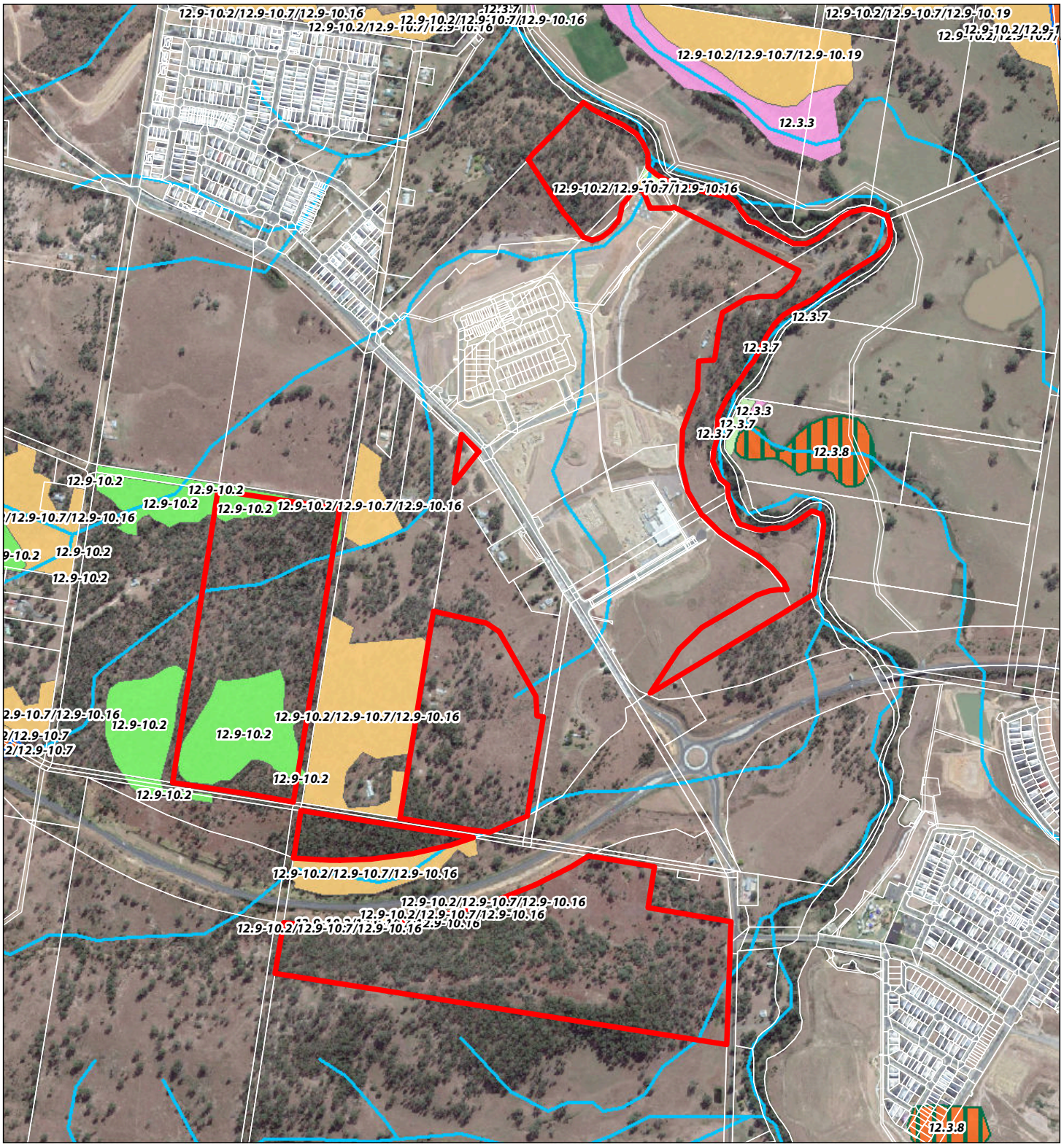
0 50 100 200 300 400 *m*

N

Scale (A4): 1:13,500 [GDA 1994 MGA Z56]

saunders havill group

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2018), Aerial (Google 2018)



Legend

- Project Area
- Qld DCDB
- VM Watercourses
- VM Essential Habitat
- VM Wetland

Regional Ecosystems mapping

- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem

Figure 5

Regulated Vegetation Supporting Map

Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

File ref. 6982 E Figure 5 KMP RVSM B
Date *6/11/2018*
Project *ECCO Ripley*

0 50 100 200 300 400 *m*

N

Scale (A4): 1:13,500 [GDA 1994 MGA Z56]

saunders havill group

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2018), Aerial (Google 2018)

4.1. Vegetation & Habitat Zones

The site is comprised of multiple, non-adjoining allotments. Vegetation and habitat assessments were broken up over the allotments / development areas (refer Figure 2).

The following has been extracted from the *Ecological Assessment Report EPBC Act Referral ECCO Ripley Residential Development, prepared by Saunders Havill Group, May 2015.*

4.1.1 Lots 1-4 on SP246466

The following general observations were made over Lots 1 to 4 on SP246466. These properties were broken up for survey purposes into five (5) distinct vegetation categories depending on landscape topography and flora species composition:

- Riparian Vegetation (Bundamba Creek)
- Rocky Outcrops
- Ridgelines
- Drainage Depressions
- Regrowth Vegetation near Infrastructure

Native flora species composition varied between 49.9% and 80.0% of the species identified dependent on location within these properties (refer to Table 1).

Table 1: Percentage native and introduced flora within each vegetation category

Vegetation Category	Native Flora (%)	Exotic Flora (%)
Riparian Vegetation	49.9	50.9
Rocky Outcrops	80.0	20.0
Ridgelines	58.8	41.2
Drainage Depressions	64.7	35.3
Regrowth near Infrastructure	66.7	33.3

A large proportion of these properties is heavily disturbed within the proposed development area. The majority of this area was formerly utilised for cattle production. A large number of exotic/introduced common garden weeds are present, usually associated with fire trail construction.

Riparian Vegetation (Bundamba Creek)

Heavy infestations of *Cestrum parqui* (Green Cestrum), *Lantana camara* (Lantana) and *Celtis sinensis* (Chinese Elm) were observed throughout the Bundamba Creek system abutting the eastern boundaries of these properties. Large areas of erosion and disturbance were observed along creek slopes due to cattle access for watering. A number of large *Eucalyptus tereticornis* (Forest Red Gum) were identified along the banks of Bundamba Creek. Many of these trees contained large hollows and nests and were heavily utilised by avifauna.

Photos: Riparian vegetation bordering Bundamba Creek

Rocky Outcrops

Areas of rocky outcrops were observed in proximity to Bundamba Creek, and in various isolated locations along ridgelines. These areas were highly disturbed from cattle grazing and historical clearing and agricultural practices. The rocky outcrop areas were generally dominated by *Eucalyptus crebra* (Narrow-leaved Ironbark) with scattered *Corymbia citriodora* (Spotted Gum). The shrub and ground layers in these areas were sparse to absent.

Photos: Rocky outcrop areas

Ridgelines

Lightly timbered ridgelines were identified in the northern portion of these properties and were dominated by mostly regrowth *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Corymbia citriodora* (Spotted Gum) with a sparse shrub layer and dense understory of native grasses. Some signs of historical clearing and cattle usage were observed.

Photos: Vegetated ridgelines

Drainage Depressions

Drainage depressions were associated with the lower areas at the base of a number of ridgelines throughout these properties. Large *Eucalyptus tereticornis* (Forest Red Gum) were observed sparsely scattered throughout these areas. These trees were seen to contain nests and hollows and were being actively utilised by avifauna. Small pools of water were observed within the drainage areas and contained numerous aquatic flora including *Typha orientalis* (Bullrush) and *Juncus usitatus* (Common Rush). Deep depressions and areas of erosion associated with cattle use were observed in various locations along flow paths.


Photos: Drainage depression areas

Regrowth Vegetation near Infrastructure

An area of regrowth vegetation was observed in close proximity to sheds and yards in the central portion of the properties. Species observed included small *Eucalyptus crebra* (Narrow-leaved Ironbark), *Corymbia citriodora* (Spotted Gum) and *Eucalyptus tereticornis* (Forest Red Gum). Two (2) individual *Melaleuca irbyana* (Swamp Tea-tree) specimens were identified growing in this area.


Photos: Regrowth vegetation near infrastructure

4.1.2 Lot 195 on SP193441

The following general observations were made on this property. This property was broken up for survey purposes into two (2) distinct vegetation categories depending on landscape topography and flora species composition:

- Sloping Ridgelines
- Dams and Drainage Depressions

Native flora species composition varied between 62.2% (Sloping Ridgelines) to 75% (Dams and Drainage Depressions) of the species identified dependent on location within the property. A single specimen of *Melaleuca irbyana* (Swamp Tea-tree) was observed on the north-eastern property boundary.

Sloping Ridgelines

Vegetation observed along ridgelines and lower slopes was dominated by *Corymbia citriodora* (Spotted Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark) within the T1 and T2 layers. The shrub and ground layers were very sparse and signs were evident of extensive grazing within this area. The ground layer was less than 0.5 m in height and highly disturbed. Areas of exposed rock were observed at the top of the ridgeline to the east and at the top of drainage features.

Photos: Sloping ridgelines on this property

Dams and Drainage Depressions

Two (2) constructed dams and depressions were located within the assessment area. These areas contained aquatic plant species including *Eleocharis dulcis* (Water Chestnut), *Typha orientalis* (Bullrush), *Juncus usitatus* (Common Rush) and *Nymphaea caerulea* (Water Lilly). Some exotic weed species were observed in proximity to the dams and damp depressions. Signs of cattle usage were observed around the periphery of these areas.


Photos: Dams and drainage depressions

4.1.3 Lot 3 on SP193441

The following general observations were made on this property. Native flora species comprise 46.4% of the species identified whilst exotic/introduced flora species comprised 53.6%. Areas cleared for pastoral purposes are largely devoid of significant vegetation values. A large number of exotic/introduced common garden weeds were associated with the house and infrastructure areas toward the western property boundary.


Photos: Lot 3 on SP193441

Vegetation observed at this assessment site contained a mosaic of vegetation types including open pastoral areas and sparse woodland. The wooded areas contained open patches of *Eucalyptus crebra* (Narrow-leaved Ironbark), *Corymbia citriodora* (Spotted Gum) and *Eucalyptus tereticornis* (Forest Red Gum). A number of hollows and nests were observed in the larger tree specimens observed. Large patches of dense weed infestation were observed on the cleared eastern portion of this property and contained a number of Class 2 and 3 weed species including *Baccharis halimifolia* (Groundsel Bush), *Lantana camara* (Lantana), *Lantana montevidensis* (Creeping Lantana) and *Senecio madagascariensis* (Fireweed). A number of houses and sheds are located throughout the central portion of the investigation area.

4.1.4 Lot 192 on S151860

The following general observations were made on this lot. Native species comprised 55% and exotic/introduced species comprised 45% of flora observed. Large areas of disturbance were observed throughout the property caused by past historical logging practices. Some regrowth vegetation was observed within the assessment area. Species observed are consistent with RE mapping.

Photos: Lot 192 on S151860

A polygon of remnant vegetation is mapped across the northern boundary and southern section of this property. This community is mapped as Least Concern Regional Ecosystem 12.9-10.2. Vegetation observed was consistent with mapping, and was dominated by *Corymbia citriodora* (Spotted Gum), *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark). The understorey contained a mix of both exotic and native grasses and shrub species. A small patch of isolated *Melaleuca irbyana* (Swamp Tea-tree) was identified in the north-western portion of the property, as well as a single specimen further south. The majority of these individuals exhibited signs of heavy grazing pressure. Historical clearing and grazing was evident across the majority of this property.

5. Koala Habitat Assessment

5.1. Desktop Assessment

With regard to Koala habitat, *Queensland's Koala Habitat Mapping* shows the site as almost devoid of Koala Bushland Habitat and predominately mapped as entirely suitable for Rehabilitation Habitat. Of note, Rehabilitation Habitat mapping extends over Bundamba Creek, with only two small isolated patches of Medium Value Bushland Habitat mapped within the southern-most allotment (refer Figure 6).

Overall, there is very limited evidence of Koala activity within the vicinity of the site, and negligible if any recognised habitat connectivity linking the site to surrounding Koala habitat values. Despite the lack of mapped connectivity, Bundamba Creek is considered to provide the greatest opportunity to maintain and enhance connectivity opportunities for fauna dispersal through the surrounding landscape, with the remainder of the site less attractive when you consider its relative disturbance and fragmentation and the likely influence of encroaching urban development and major arterial thoroughfares on Koala persistence and survival.

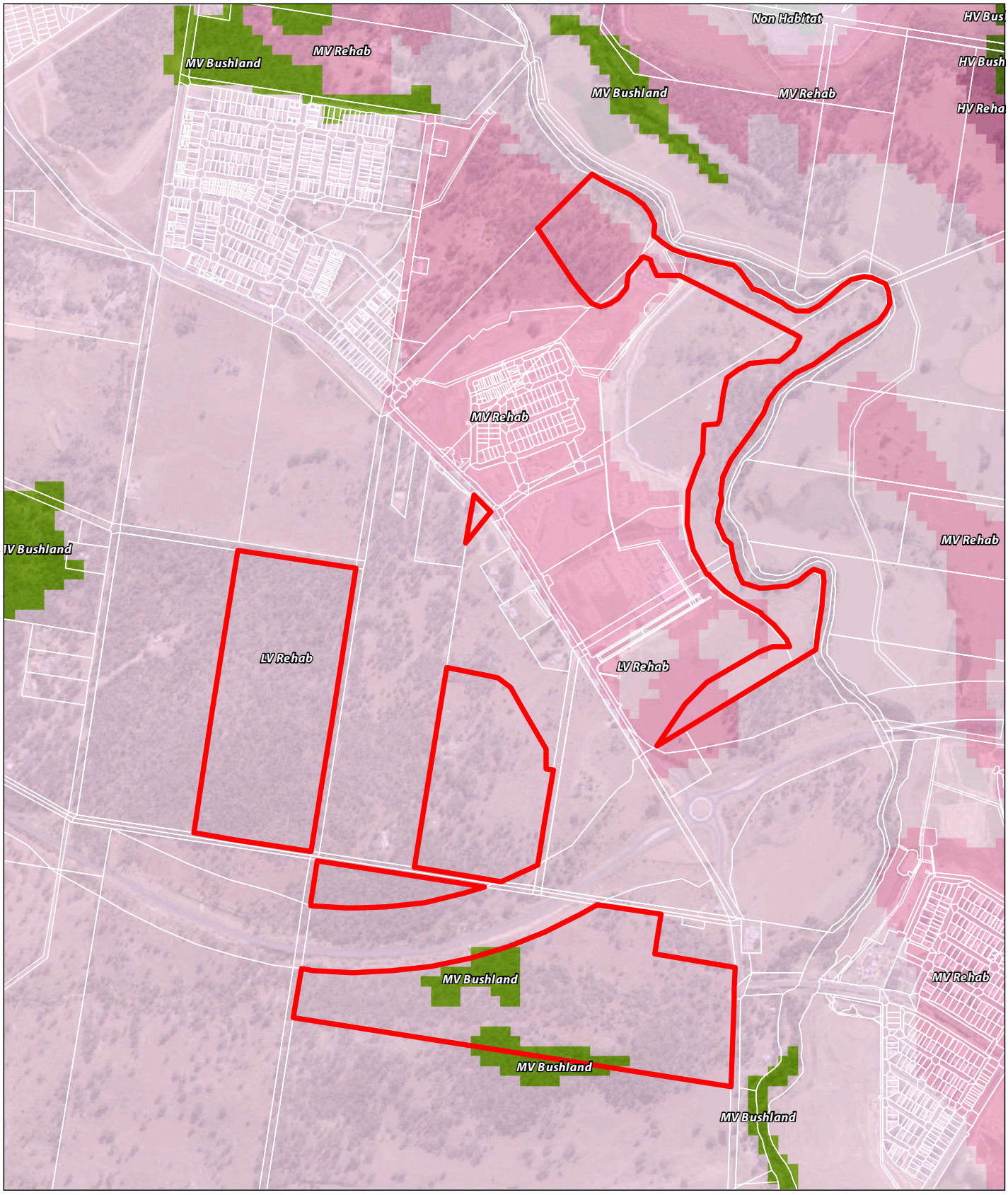
5.2. Site Assessment

The development area has been subject to a number of on ground surveys by **SHG** to identify existing ecological values at the site. Specific studies include:

- Flora and Fauna surveys (13th and 17th September 2013)
- EPBC Act Koala SAT Surveys and Habitat Assessments (13th and 17th of September 2013)
- EPBC Act Flora and Fauna assessment (30th July 2014)
- Specific EPBC Act MNES assessments (11th to 13th May 2015)

The majority of site survey effort focussed on the 73 hectares of woodland habitat on-site, especially in that bordering Bundamba Creek. Opportunistic searches as part of general site surveys covered the entire site and included searches for evidence of Koala activity amongst other targeted species and covered approximately 80 person hours during winter of 2013 and autumn 2015. In addition, Koala specific surveys as per EPBC Act Guidelines were conducted in spring of 2013. These surveys included scat and Koala activity search meandering transects, the application of the Spot Assessment Technique (SAT) and Koala habitat assessments as described in the sections below.

A total of approximately 120 person hours were expended during site surveys. Of these, 40 hours, or one third, were allocated specifically to Koala SAT and Habitat assessments as per EPBC Act Guidelines, with the remainder encapsulating opportunistic searches for Koala activity during general site surveys. The amount of survey effort for Koala and Koala habitat that was employed is considered ample given the extent and relative disturbance and quality of site woodland habitat.



Legend

- Project Area
- Qld DCDB

Koala SPP Habitat Values

Bushland Habitat

- High Value Bushland
- Medium Value Bushland
- Low Value Bushland

Suitable for Rehabilitation

- High Value Rehabilitation
- Medium Value Rehabilitation
- Low Value Rehabilitation

Other Areas of Value

- High Value Other
- Medium Value Other
- Low Value Other
- Generally not suitable
- Water

Figure 6 *QLD Koala Habitat Values Mapping*

File ref. 6982 E Figure 6 KMP Koala Habitat Values B
Date *6/11/2018*
Project *ECCO Ripley*

0 50 100 200 300 400 *m*

Scale (A4): 1:13,500 [GDA 1994 MGA Z56]

N

Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

saunders havill group

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2018), Aerial (Google 2018)

At no time during any of these multiple surveys were Koala identified as utilising the site. Koala specific surveys were carried out by two ecologists from **SHG** on 13th and 17th September 2013, with the objective of these surveys being to apply methods specified in the *EPBC Act Referral Guidelines for the Vulnerable Koala*, specifically the Spot Assessment Technique (SAT, following Phillips & Callaghan 2011) and Koala Habitat assessment transects utilising **Australian Koala Foundation** Koala habitat tree species recognised for the local region. Eight (8) SAT surveys and fourteen (14) Koala Habitat Assessment surveys were carried out at the site (refer Figure 7). Details for SAT and Koala Habitat Assessment surveys are detailed in the following sections.

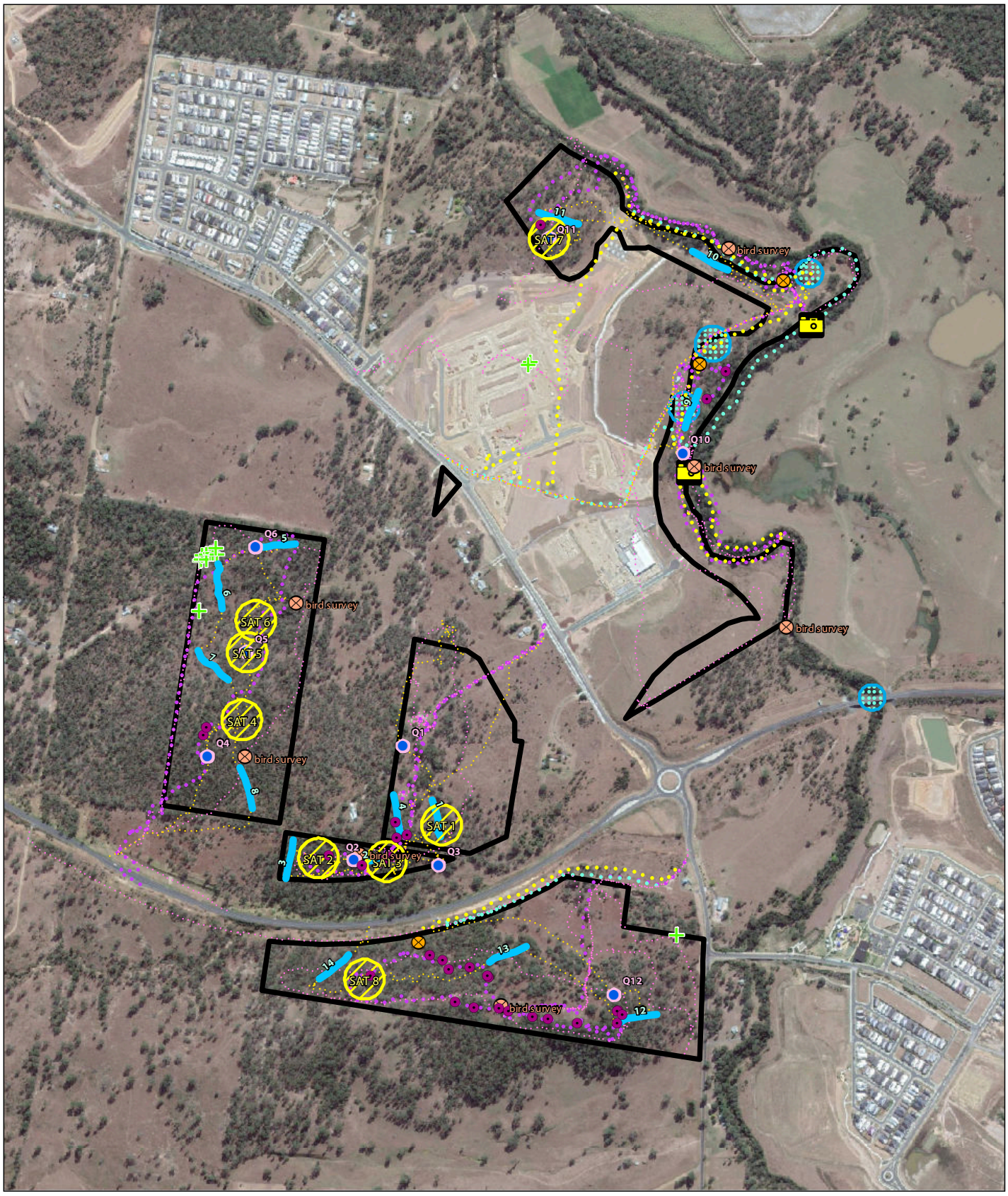
5.2.1 Spot Assessment Technique Surveys

The SAT method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage. The SAT involves identifying a non-juvenile tree of any species within the site that is either observed to have a Koala or scats or known to be food trees or otherwise important for Koalas and recording any evidence of Koala usage. The nearest non-juvenile tree is then identified and the same data recorded. The next closest non-juvenile tree to the first tree is then assessed and so on until 30 trees have been recorded. The number of trees showing evidence of Koalas is expressed as a percentage of the total number of trees sampled to indicate the level of Koala usage. Assessment of each tree involves a systematic search for Koala scats beneath the tree within 1 metre radius of the trunk. After approximately 2 person minutes of searching for scats, the base of the trunk is observed for scratches

A summary of the SAT results are provided in Table 2. No Koalas were sighted during all field surveys. Evidence of Koala usage in the form of scats was Low for almost all of the site, with Medium usage recorded only at site 8. These estimates are taken from the **Australian Koala Foundation** Koala activity level classification table (Phillips & Callaghan 2011) using the East Coast (med-high) Activity Category, which is applicable in habitats dominated by residual, transferral or alluvial type landscapes considered med-high nutrient soils with good water holding capacity (Steve Phillips, personal communication). Chromosols and Dermosols are mapped across the application area and suit this landscape description.

Table 2: Summary of SAT Surveys

SAT (Spot Assessment Technique) Assessment No.	Evidence of Koala Use (%)	Koala Use (High / Medium / Low)
1	6.66	Low
2	6.66	Low
3	13.33	Low
4	10.00	Low
5	3.33	Low
6	3.33	Low
7	3.33	Low
8	23.33	Med



Legend

- Project Area
- Quaternary site
- Bird survey site
- Melalauca Irbyana
- Koala Habitat Assessment
- Koala SAT
- Stationary ultrasonic bat detection survey
- Rock outcrops - searches for Collared Delma & Plectranthus
- Motion sensor camera
- Tracklog (July 2014)
- Tracklog (September 2013)
- Tracklog (May 2015)

Figure 7 *Environmental Field Surveys*

Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

File ref. 6982 E Figure 7 KMP Field Survey Effort B
Date *6/11/2018*
Project *ECCO Ripley*

0 50 100 200 300 400 500 *m*

Scale (A4): 1:13,500 [GDA 1994 MGA Z56]

N

saunders havill group

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2018), Aerial (Google 2018)

While a total of approximately 128 ha of vegetation will be cleared as part of the development, only some of this area is considered of habitat value to Koala and it shows mostly low signs of Koala usage. All habitat assessment sites contained either Primary or Secondary Koala habitat tree species, as per **Australian Koala Foundation** guidelines. SAT surveys also indicated predominantly Low Koala usage of the site. The evidence suggests that while the site is utilised by Koalas at times, the bulk of the area to be cleared would not be considered optimal habitat for the species.

5.2.2 Koala Habitat Assessment

The purpose of undertaking habitat assessments across the site was to identify and record the habitat features and vegetation values in relation to definitions for Critical Habitat as listed in the *EPBC Act Referral Guidelines for the Vulnerable Koala* (Koala Referral Guideline). These data were used to inform the vegetation composition attribute within the Koala Habitat Assessment below.

Under the Koala Referral Guidelines, Koala habitat is defined as:

> *"Any forest or woodland containing species that are known Koala food trees or shrubland with emergent food trees. This can include remnant or non-remnant vegetation in natural, agricultural, urban and peri-urban environments."*

A Koala Food Tree is defined within the Referral Guideline as:

> *"Species of trees whose leaves are consumed by koalas. Koala food trees can generally be considered to be those of the following genus: Angophora, Corymbia, Eucalyptus, Lophostemon and Melaleuca. Note that food trees may vary spatially and temporally and information specific to the local area is likely to be most accurate. Also note that 'primary' and 'secondary' food trees (as defined by some resources) are all considered to be 'food trees' for the purposes of assessment using the guidelines. For some lists of koala food tree species, refer to the scientific literature, or the:*
>
> - *NSW Office of Environment and Heritage koala habitat web page;*
> - *QLD Department of Environment and Heritage Protection koala habitat webpage; or*
> - *The New South Wales Recovery Plan for the Koala."*

As discussed in Section 4, RE mapping (refer Figure 5) shows that only a very small portion of the site contains isolated patches of remnant vegetation described as Least Concern RE12.5-10.2 which is not essential habitat for the Koala. Queensland's Koala Habitat Values Map (refer Figure 6), shows the site has been primarily mapped as identified as containing areas suitable for Low and Medium Value Rehabilitation and small portion of Medium Value Bushland.

A total of fourteen (14) habitat assessments were conducted across the site, as shown by the Field Survey Effort in Figure 7. This involved recording the trees species within randomised 50 x 20 metre transects across the site. The purpose of the Habitat Assessment was to assess the species composition of site trees to determine the value of site habitat for Koalas. The habitat assessment is based upon the **Australian Koala Foundation's** *National Koala Tree Protection List* for the Ipswich City area (extracted below). While it is acknowledged that reference to primary and secondary food trees is now no longer used by **DEE**, this method

of assessment was undertaken in accordance with the Interim Advice Note for Koala (current at the time of survey) and results have been included within this documentation to provide a description of vegetation composition and potential habitat for Koala based on Koala 'food trees' local to the Ipswich City area.

Local Government Area	Elevation*	Scientific Name and/or subspecies	Common Name	Soil and Location
IPSWICH CITY	2-800	*E. biturbinata*	Grey Gum	slopes on soils of medium fertility, annual rainfall>1000 mm
IPSWICH CITY	2-1000	*E. crebra*	Narrow-leaved red ironbark, Ironbark, Narrow-leaved ironbark	well-drained shallower or sandy/sandy clay soils of medium fertility, >550 mm rainfall
IPSWICH CITY	2-800	*E. exserta*	Queensland peppermint, Yellow messmate, Messmate, Bendo	sandy drier soils on hills and stony rises
IPSWICH CITY	2-1000	*E. grandis*	Flooded Gum, Rose Gum	moist, fertile, well-drained, deep, loamy soils of alluvial or volcanic origin, 725-3500 mm
IPSWICH CITY	2-850	*E. major*	Grey Gum	wet coastal forests on soils of low to medium fertility
IPSWICH CITY	2-900	*E. melanophloia*	Silver-leaved ironbark	moderately fertile silts, loams, sandy clays on foothills
IPSWICH CITY	2-1200	*E. melliodora*	Yellow box, Honey box, Yellow ironbox	gentle slopes, foothills or on flats near watercourses. Soils include alluvials, loams and clays, frost and drought tolerant, 500-1400 mm
IPSWICH CITY	2-950	***E. microcorys***	**Tallowwood**	on slopes in deeper moderate to fertile soils, well-drained but moist
IPSWICH CITY	2-1050	*E. moluccana*	Coastal Grey Box, Grey box, Gum-topped box	loam soils of moderate to high fertility on coastal plains and ranges, tolerates saline soils
IPSWICH CITY	2-850	*E. propinqua*	Small-fruited Grey Gum	wet coastal forest on soils of low to medium fertility. Drought and frost tolerant
IPSWICH CITY	2-700	*E. resinifera ssp. hemilampra*	Red mahogany	sandy or well drained fertile soils, Drought and frost tolerant
IPSWICH CITY	2-200	*E. seeana*	Narrow-leaved Red Gum	poorly drained shallow soils, swampy sandy soils
IPSWICH CITY	2-700	*E. siderophloia*	Ironbark, Broken Back Ironbark	wet forest on soils of moderate fertility
IPSWICH CITY	2-800	***E. tereticornis ssp. tereticornis***	**Forest red gum, Blue gum, Red irongum**	alluvial soils, 600-2500 mm, tolerates salt-laden coastal winds, tolerates saline soils, medium-heavy clays, does not tolerate waterlogged soils

Extract: Australian Koala Foundation Koala Food Trees (Ipswich City)

For the purpose of the habitat assessment, critical habitat has been defined as per the Koala Referral Guidelines as being "an impact area that scores five or more using the habitat assessment tool in the koala guidelines" which may consist of either or both primary and secondary Koala food trees.

Table 3, below, includes a summary of the results of the Koala habitat assessments as per the **Australian Koala Foundation** guidelines. It shows that all transects conducted contained known Koala habitat trees, however, none contained greater than 50% **Australian Koala Foundation** classed Primary species indicative of habitat capable of sustaining a resident Koala population (McAlpine et al. 2006).

Table 3: Summary of Habitat Assessment Results

Habitat Assessment No.	Percentage of Primary Species (%)	Percentage of Secondary Species (%)	Percentage Total Primary and Secondary Koala Food Trees (%)
1	7.69	21.15	28.84
2	1.92	5.77	7.69
3	2.44	14.63	17.07
4	3.95	25.00	28.95
5	7.94	33.33	41.27
6	2.56	46.15	48.71
7	0.00	45.59	45.59
8	0.00	7.69	7.69

Habitat Assessment No.	Percentage of Primary Species (%)	Percentage of Secondary Species (%)	Percentage Total Primary and Secondary Koala Food Trees (%)
9	9.46	21.62	31.08
10	37.37	0.00	37.37
11	1.89	33.96	35.85
12	0.00	32.08	32.08
13	5.98	45.30	51.28
14	6.35	25.40	31.75

5.2.3 Koala Habitat Analysis

The site fragmentation analysis conducted as part of *ECCO Ripley EPBC Act Preliminary Documentation* Submission, *prepared by Saunders Havill Group, July 2017* (ECCO Ripley PD) (refer Plan 2) confirmed that the site is surrounded by disturbed rural, urban and mining areas and suffers from debilitating disturbance and fragmentation. It is anticipated that the levels of fragmentation will increase significantly with ongoing development of the Ripley Urban Core and surrounds as per planning intent (refer Figure 3).

Vegetation and habitat assessments undertaken over the site by **SHG** and as documented in the ECCO Ripley PD, broadly breaks the site into a number of distinct Koala Habitat zones:

- Paddocks / homestead –cleared areas
- Zone 2 – Bundamba Creek Buffer
- Zone 3 – Southwest Area
- Zone 4 – Southeast Area
- Future Rail Corridor

<u>Zone 1 – Open Paddocks</u>

This zone consists of areas containing open paddocks cleared of canopy trees and homestead areas. No Koala habitat values are present.

<u>Zone 2 – Bundamba Creek Buffer Area</u>

Zone 2 flanks the vegetated area between Bundamba Creek and Zone 1. Given the riparian nature of this vegetation, a high mix of different flora species were recorded. Habitat Transects 9, 10 and 11 were undertaken in this zone, which showed one area containing a relatively high proportion of Primary *Eucalyptus tereticornis* (37%). While *Corymbia citriodora* maintained a notable presence, other species recorded in this zone included *Corymbia tessellaris, Acacia concurrens, Eucalyptus crebra, Casuarina cunninghamii* and *Lophostemon suaveolens*. While this zone contained evidence of disturbance, its adjacency to Bundamba Creek provides for potential connectivity to other vegetation patches within the landscape. This zone is considered to provide potential Koala habitat.

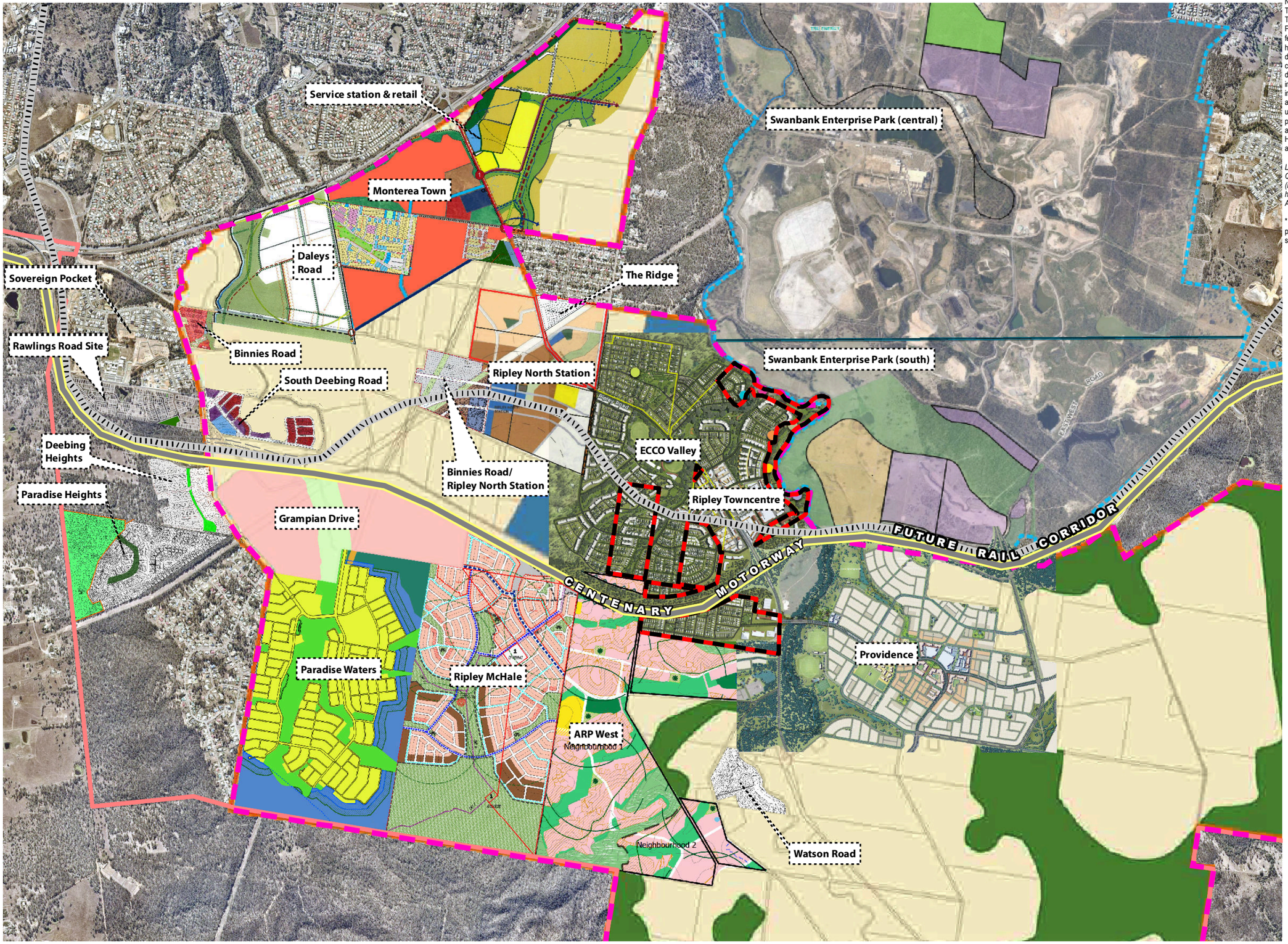
Zone 3 – Southwest Area

The southwest area contained a much higher vegetation cover compared to the Open Paddocks and contains small polygons of Least Concern remnant vegetation described as Regional Ecosystem 12.9-10.2 (refer Plan 3). Habitat transects 1 to 8 were undertaken in this zone, however, none contained a high proportion of Primary and/or Secondary Koala Food Trees. Rather, the transect results show that these areas were largely dominated by *Corymbia citriodora* (61 to 91% within transects 1, 2, 3, 4 and 8), which is not a Primary or Secondary Koala Food Tree. *Eucalyptus crebra* was recorded to be a sub-dominant species within this zone and made up between 13 and 33% of trees within the habitat transects. Transects 6 and 7 recorded a higher proportion of *Acacia concurrens*, which correlated with more disturbed areas within the Zone. Overall, this zone provided potential habitat for Koalas.

Zone 4 – Southeast Area

Zone 4 is separated from the remainder of the site by the Centenary Highway and Ripley Arterial Road. Again, this zone was generally dominated by a high proportion of *Corymbia citriodora*, however, *Eucalyptus crebra* made up between 11 and 45% of trees. Other species recorded in this zone included low densities of *Eucalyptus tereticornis, Corymbia tessellaris and Eucalyptus melanophloia*. Habitat transect 13 recorded a relatively high proportion of Primary and Secondary Koala Food Trees. The vegetation composition within this zone was characteristically different from Zone 3 Southwest Area given its additional fragmentation and higher proportion of eucalypt species.

2. CONNECTIVITY ANALYSIS



NOTES
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LEGEND

- Project Area
- Future Ipswich-Springfield rail-line
- Centenary Motorway
- Ripley Valley PDA - Urban Living Areas
- Ripley Valley PDA - Environmental Protection

Issue	Date	Description	Drawn	Checked
A	22/08/2018	Preliminary	AL	AD

Transverse Mercator | GDA 1994 | Zone 56 | 1:20,000 @ A3

0 100 200 400 600 800 m

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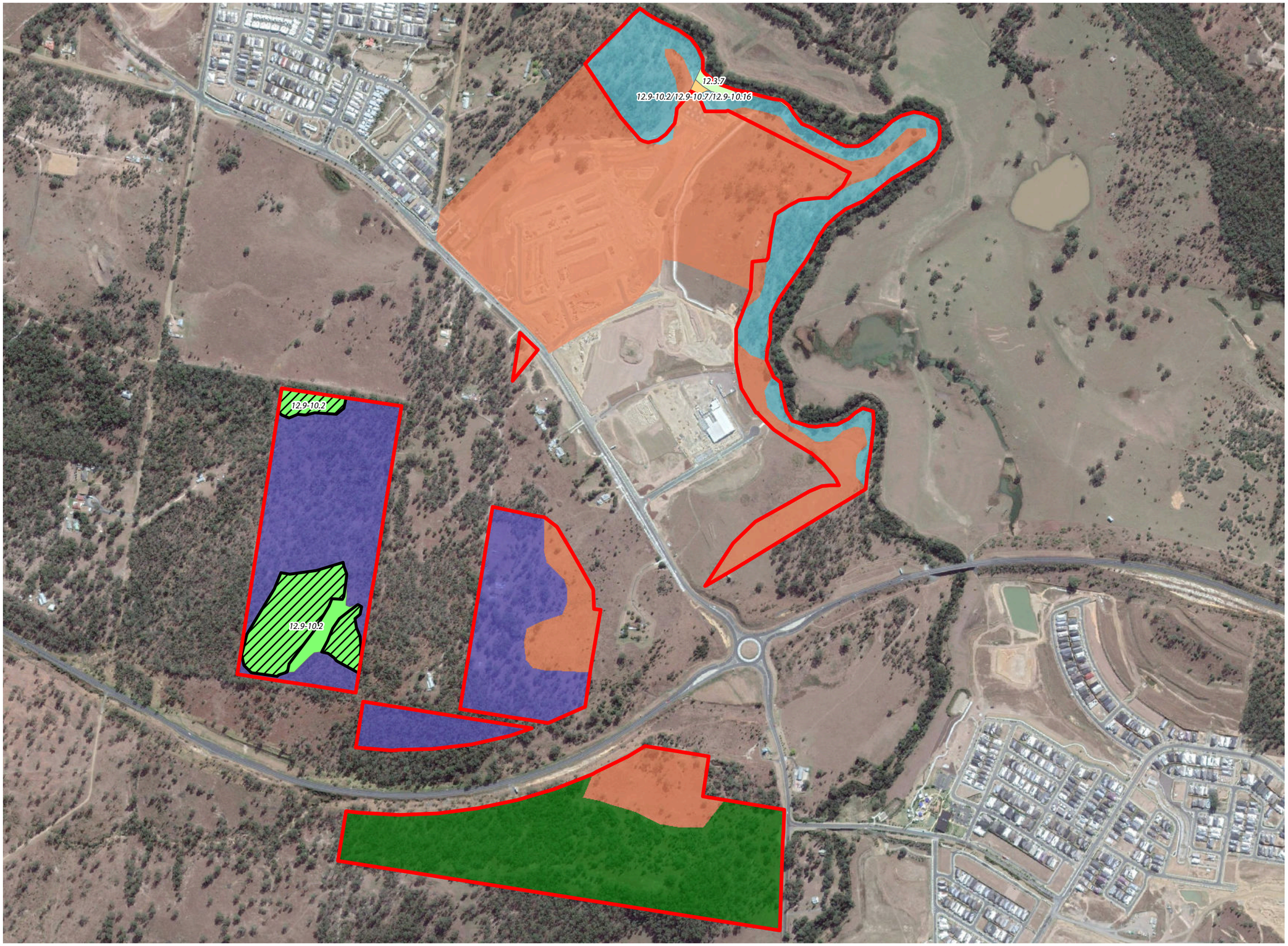
Sekisui Ripley

ADDRESS/RPD: Ripley Road, Ripley 22/08/2018 6982 E Plan 2 Connectivity B

3. REMOVAL AND RETENTION (REMNANT)



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LEGEND

Project Area

Regional Ecosystems mapping

- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem
- Remnant clearing areas

Survey Zones

- Zone 1 (55 ha) Open paddocks
- Zone 2 (14 ha) Bundamba Creek buffer area
- Zone 3 (35 ha) Southwest area
- Zone 4 (24 ha) Southeast area

Issue	Date	Description	Drawn	Checked
B	6/11/2018	Internal update	TC	AD

Transverse Mercator | GDA 1994 | Zone 56 | 1:20,000 @A3

0 100 200 400 600 800 m

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Sekisui Ripley

ADDRESS/RPD: Ripley Road, Ripley | 6/11/2018 | 6982 E Plan 3 Clearing and Retention B

5.3. Critical Habitat Assessment

Under the *EPBC Act Referral Guidelines for the Vulnerable Koala* (Koala Referral Guidelines) modelled distribution of the Koala, the referral site is located within the "coastal context." South East Queensland is known to support Queensland's highest density of Koalas and the animal is known to occur within the broader Ripley Valley area. As such, a detailed assessment against the Koala Referral Guidelines Koala Habitat Assessment Tool to determine the extent of critical habitat across the site was undertaken.

5.3.1 Koala Habitat Assessment Tool

In accordance with the Koala Referral Guidelines, any habitat which receives a score of 5 or more using the Koala Habitat Assessment Tool is considered to be critical habitat.

While a detailed explanation of this assessment is provided within the referral and refined in the ECCO Ripley PD submission, a summary of this assessment is provided below with respect to the koala habitat assessment zones shown in Plan 3.

Bundamba Creek Buffer and Southwest Woodland

At the referral stage, the woodland adjoining Bundamba Creek (Zone 2) and the Woodland southwest of the proposed Ripley Town Centre (Zone 3) achieved a habitat score of 6 according to the habitat assessment table within the Koala Referral Guidelines / On assessment of Preliminary Documentation, the **DEE** determined the Bundamba Creek corridor, considered to provide the greatest opportunity for ongoing connectivity, to be effectively fragmented and so functionally lost to the Koala for connectivity purposes. Thus the portion of the referral area north of the Centenary Highway that originally achieved a score of 1 for 'Habitat Connectivity' in the habitat assessment table is entirely fragmented from any substantial nearby habitat. Therefore, in the absence of effective connectivity, the habitat score for these areas has logically been revised to a habitat score of 5.

Southern Woodland

The woodland area to the south of Ripley Town Centre on the southern side of the Centenary Highway (Zone 4) achieved a habitat score of 5 according to the habitat assessment table within the Koala Referral Guidelines due largely to the levels of associated fragmentation.

Table 4 provides a summary of Koala Habitat Assessment (detailed in full within the ECCO Ripley PD) as per the Koala Referral Guidelines. It shows that overall, vegetated portions of the site (Zones 2, 3 and 4) are considered critical habitat for the Koala as they achieve a score of 5. Critical Habitat to be removed and retained is displayed by Plan 4. It is noted that portions of Zone 1 are not identified as containing critical habitat as these areas fail to achieve the definition of koala habitat in referral guidelines as being "forest" or "woodland" containing species that are known koala food trees or shrubland with emergent food trees' and thus are not included in the impact area.

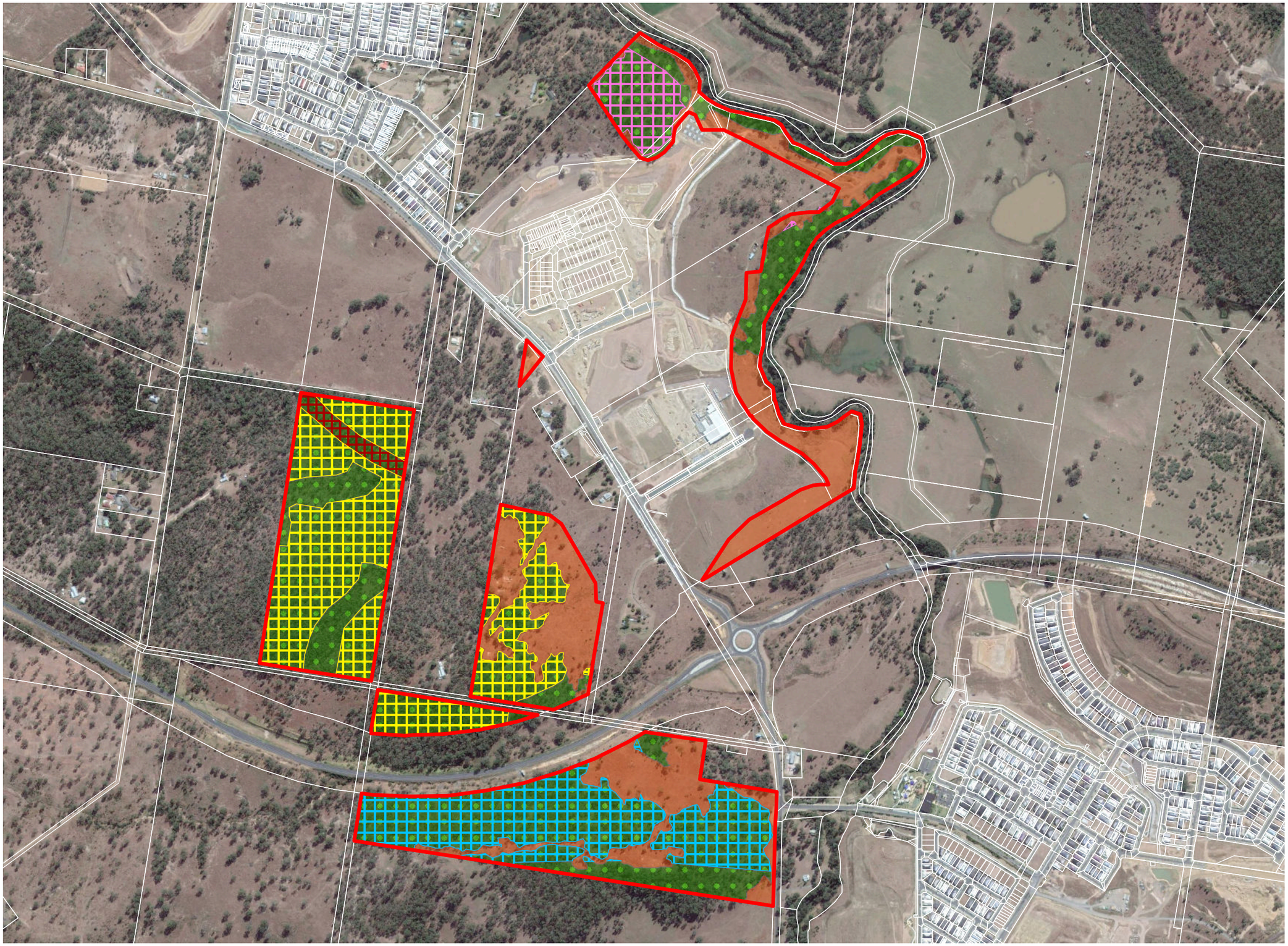
Table 4: Koala Habitat Assessment

Attribute	Score	Comment
Koala occurrence	+2	As there is evidence of Koala occurrence is the previous two years, this attribute has been scored 2.
Vegetation composition	+2	Two or more Koala food trees were identified in the canopy, resulting in an attribute score of 2.
Habitat connectivity	+0	As the site forms part of a contiguous landscape <500 hectares but >300 hectares, this attribute is scored 0.
Key existing threats	+1	A medium risk of key existing threats has been identified, warranting an attribute score of 1.
Recovery value	+0	As the referral site does not meet the interim recovery objectives, the attribute has been scored 0.
Total	**5**	**Critical Habitat**

The following statistics for Critical Habitat (refer Plan 4) are summarised below. Clearing and retention of remnant areas are shown in Plan 3.

Total area of Critical Habitat	=	53.6 hectares
Total Critical Habitat to be removed	=	46.3 hectares
Total Critical Habitat to be retained	=	17.2 hectares

4. CRITICAL HABITAT IMPACT AREAS



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LEGEND

- Project Area
- Qld DCDB
- Paddock/homstead - cleared area (26.7 ha)
- Vegetated area (63.5 ha)
- Zone 2 - Vegetated area to clear (4.5 ha)
- Zone 3 vegetated area to clear (24.5 ha)
- Zone 4 - vegetated area to clear (17.3 ha)
- Future rail corridor (1.4 ha)

Issue	Date	Description	Drawn	Checked
B	6/11/2018	Internal Update	TC	AD

Transverse Mercator | GDA 1994 | Zone 56 | 1:20,000 @ A3

0 100 200 400 600 800 m

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6. Impacts to the Koala

The following direct and indirect impacts have been identified as having potential to occur as a result of the development proposal:

Construction Impacts

- Loss of 46.3 hectares of critical habitat
- Potential for injury or mortality caused by vegetation clearing
- Potential for injury or morality caused by vehicle use during construction
- Species displacement into surrounding areas

Operational Impacts

- Loss of habitat
- Increase in density of residential roads, which increase the threat of injury and mortality to Koalas from vehicle strike
- Increase in domestic dog ownership, which poses the potential for injury or mortality from dog attacks
- Barriers to movement caused by roads, fences and expansion of housing
- Dispersal of Koalas into residential areas
- Species displacement

6.1. Risk Assessment

Each of the identified potential impacts were analysed in the context of the proposed action within the Risk Assessment Table (refer Table 5**)** to identify where avoidance and mitigation measures should be focused.

Table 5: Risk Assessment

Impact	Likelihood	Consequence	Risk Rating
Construction Phase			
Loss of habitat	Almost certain (A)	Minor (2)	**High**
Loss of 46.3 hectares of critical habitat	Almost certain (A)	Minor (2)	**High**
Injury and mortality due to vegetation clearing	Unlikely (D)	Major (4)	**High**
Injury and mortality due to increased vehicle usage	Unlikely (D)	Major (4)	**High**
Species displacement into other habitat areas	Possible (C)	Minor (2)	**Moderate**
Operational Phase			
Loss of habitat	Almost certain (A)	Minor (2)	**High**
Injury and death from dogs	Possible (C)	Major (4)	**Extreme**
Injury and death from cars	Possible (C)	Major (4)	**Extreme**
Barriers to dispersal	Likely	Minor (2)	**High**
Dispersal of koalas into residential areas	Possible (C)	Moderate (3)	**High**
Species displacement	Possible (c)	Minor	**Moderate**

As identified from the risk assessment above, management measures will focus on avoiding and mitigating impacts caused by:

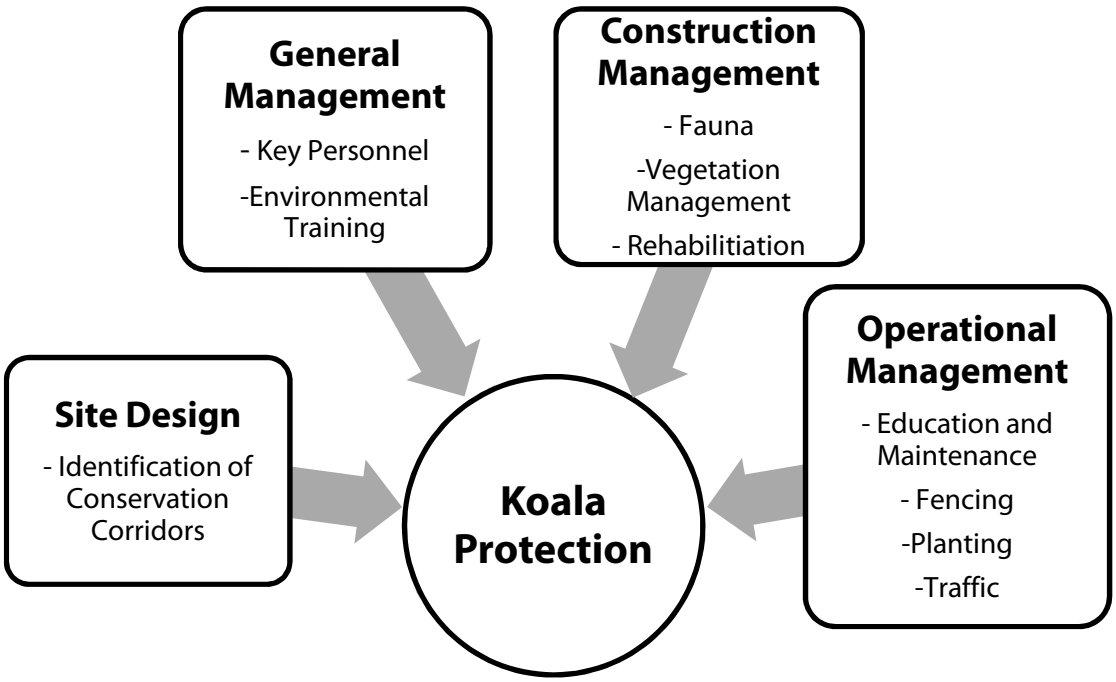
- Loss of habitat
- Risk of injury and death caused by:
    - Vegetation clearing
    - Dog attack
    - Vehicle strike
- Dispersal into residential areas
- Barriers to dispersal into surrounding habitat areas

7. KMP Framework

This KMP focuses on the long term management and safety of Koalas during the final design, construction and operation of the project site. The objectives of the KMP are:

1) To highlight the existing flora and fauna values on the subject site and in surrounding areas;
2) Describe key results from survey data, including Koala occurrence and the availability and quality of habitat;
3) Identify key direct and indirect impacts on the Koala and describe proposed avoidance and mitigation measures;
4) List out actions and legislative requirements to be put in place to manage construction impacts;
5) Provide a framework for a number of operational management measures including:
    a. Conservation areas set aside for Koala usage;
    b. Incorporation of education and prohibition signage within open space and road reserves;
    c. On-lot education campaigns to raise consumer awareness of local Koala populations;
6) Outline management activities, timing, responsibility, measurable targets, reporting and corrective actions; and
7) To comply with all conditions imposed within approvals, including conditions 2-4 of the EPBC Act approval, including:
    a. To ensure pre-clearance surveys are undertaken by a suitably qualified person immediately prior to any clearing of vegetation within the project site to identify any Koalas present.
    b. To control the sequential removal of site vegetation in accordance with leading practice fauna management protocols.
    c. To include stop works procedures which allow Koalas to vacate vegetation or be relocated by a suitable qualitied person.
    d. Provide mitigation and management measures which minimise Koala mortality attributable to dog attack and vehicular strike within the project site.

These objectives will be achieved through the implementation of a number of actions at each stage of project design, construction and operation. Management task and actions relevant to the project are explained through Section 7 of this KMP. Specific actions are converted to schedules within Section 8 and documented using the S.M.A.R.T criteria (Specific, Measurable, Achievable, Reasonable and Time Specific)



Components of KMP Flow Chart

7.1. Site Design – Bundamba Creek Corridor

Ecological assessments were undertaken to identify areas across the site that contain higher ecological values. These values generally included remnant vegetation, and watercourses and drainage lines. Areas containing highest ecological values, being Bundamba Creek, identified during surveys by field Ecologists have been designated as conservation within the development layout, ensuring that impacts on these areas were avoided.

The design of the ECCO Ripley Residential Development has incorporated principles of ecologically sustainable development through the balancing of environmental, social, economic, and equitable outcomes. **Bcove 4 Pty Ltd** and **Ripley Town Holdings Pty Ltd** are subsidiaries of **Sekisui House**, a company that employs an environmental policy that emphasises the integration of the natural and built environment. There is a strong emphasis on the construction of low emissions housing, which will be implemented at the ECCO Ripley site. Sekisui House applies the *Gohon no ki* Landscaping Concept to their community design. This concept follows sustainable *Satoyama* landscapes ('fingers of green' within peri-urban or environmental/urban fringe) and focuses on retention of the natural environment and the use of indigenous species in landscaping. Following this principle, the design of the residential development has set aside 41.6 hectares, or one third of the referral site, as open space, including along the Bundamba Creek riparian corridor. Weed management activities and replanting of approximately 5,300 Koala habitat trees within the Bundamba Creek riparian corridor will help ensure that the site continues to provide ongoing Koala habitat values.

The site layout has been designed to retain high value areas of habitat which includes the retention and rehabilitation of 17.2 ha of Critical Habitat for the Koala along Bundamba Creek. Bundamba Creek is

considered to provide the greatest opportunity to maintain and enhance connectivity opportunities for fauna dispersal through the surrounding landscape, with the remainder of the site less attractive when you consider its relative disturbance and fragmentation and the likely influence of encroaching urban development and major arterial thoroughfares on Koala persistence and survival.

Retention and rehabilitation of the Bundamba Creek corridor will provide a variety of benefits to Koalas, as well as other local native fauna species that occur within the local area A primary function of this corridor will be to facilitate connectivity between and across the site and to provide habitat opportunities to dispersing fauna. This would also deter fauna from dispersing into residential areas where they are more susceptible to injuries or mortality.

Other elements of the site design that will provide for Koala protection include the designation of fenced "dog off-leash" areas throughout the park and the integration of recreational open space pockets within residential areas. This will encourage residents and visitors to utilise designated parks rather than conservation corridors. This will reduce potential disturbances of conservation areas by people and will limit the impacts from edge effects.

A number of measures will be imposed to provide for the long term management and protection of the conservation corridors. These are discussed further in **Section 7.3 Operational Management** and include protocols for planting and corridor rehabilitation, fencing, traffic and public education.

7.2. General Management

7.2.1 Roles and Responsibilities

The successful implementation of this KMP requires a number of key personnel to complete various roles. While many of the contractors for the project are yet to be appointed, these will be specified within on-site working versions of the KMP.

Proponent / Project Coordinator

Bcove 4 Pty Ltd and Ripley Town Holdings Pty Ltd is the Proponent for the works as the EPBC approval holder.

Environmental Coordinator

Saunders Havill Group (SHG) is the Environmental Coordinator for the project and is responsible for the development of this KMP and documentation for overarching environmental management. SHG will be responsible for managing non-compliance by appointed contractors and sub-contractors, including establishing additional management procedures and determining if DEE notification should be made

Administering Authority

Department of the Environment and Energy (DEE) is the government authority and issuer of EPBC Approval conditions requiring this KMP.

Ipswich City Council (ICC) is the government approval authority for the Ripley Valley PDA and issuer of development and operational approvals for the project

Site Coordinator

The Site Coordinator is a representative of the project team (typically the project engineer) and is responsible for coordinating the project consultants and construction contractor.

Site Supervisor

The Site Supervisor is a representative of the Construction Contractor (to be appointed) and responsible for overseeing all pre-clearing, clearing and construction activities are undertaken in accordance with the KMP and subsequent environmental management documentation. The Site Contractor will be responsible for engaging and the commission of the DES approved Fauna Spotter Catcher.

Fauna Spotter Catcher

A **Department of Environment and Science (DES)** approved Fauna Spotter Catcher is a person who holds a rehabilitation permit with an extended authority issued by DES specifying the holder may take, keep or use an animal whose habitat is about to be destroyed by a human activity. A DES approved Fauna Spotter Catcher will be engaged by the Proponent for pre-construction and construction stages of the project. It is noted that the Fauna Spotter Catcher must hold a Rehabilitation Permit and a copy of this permit along with their contact details will be passed on to the Environmental Coordinator. The engaged Fauna Spotter Catcher will be responsible for undertaking pre-clearing surveys of the site and preparing all required pre-clearing and post-clearing reporting. The Fauna Spotter Catcher must be present on site during all clearing activities and is responsible for the relocation of native fauna.

A list of key contacts for the project is contained in Table 6.

Table 6: Key Management Personnel

Role	Nominated Person	Company
Proponent/ Project Coordinator	Frank Galvin	Bcove 4 Pty Ltd and Ripley Town Holdings Pty Ltd
Environmental Coordinator	Andrew Davies	Saunders Havill Group
Commonwealth Contact	Peter Blackwell	Department of the Environment
ICC Contact	TBA	Ipswich City Council
Site Coordinator	TBA	TBA
Principal Site Contractor	TBA	TBA
Registered Fauna Spotter	TBA	TBA

7.2.2 Environmental Training

The KMP will be issued to all site contractors and sub-contractors and will be made available within the site construction office. Elements of compliance with the KMP will form part of the responsibility of the Principal

Site Contractor. Training on the KMP will be incorporated as part of the broader environmental management and workplace health and safety procedures for the site. This will include:

Management Plans Actions:

1) Providing a copy of the KMP to all site contractors and sub-contractors;
2) Requirements of the KMP discussed during site induction;
3) Making available the final copy of the KMP within the site construction office;
4) Requirements of the KMP to be incorporated into workplace checklists, work method statement and toolbox talks; and
5) Monthly review and report on compliance with the KMP as part of the Principal Contractor's role.

7.3. Construction Management

7.3.1 Fauna

In accordance with Conditions 2-4 of the EPBC Act approval, the sequential clearing of site vegetation will be undertaken in accordance with fauna management protocols implemented by a Fauna Spotter Catcher registered by Queensland's **Department of Environment and Environment (DES)**. Additionally, the Proponent committed to adopt a leading practice fauna management model to guide works prior, during and post construction. This model is cited as the Draft Code of Practice for the Welfare of Animals Affected by Land-clearing and Other Habitat Impacts, endorsed by the **Australia Zoo Wildlife Warriors** and **Voiceless**. Under this Code, the following procedures will apply to all clearing works:

Action 1- Engagement of Fauna Spotter Catcher

This action requires that the developer engage a Fauna Spotter Catcher with full registrations and licences provided in accordance with the **DES**.

Action 2- Fauna Spotter Catcher to prepare a Wildlife Protection and Management Plan (WPMP)

The WPMP will be submitted to **DES** and include the following information:

- Description of the project with reference to impacts on wildlife and wildlife habitat
- Pre-development plan of the site showing habitat areas, features, corridors, riparian habitats and adjacent areas;
- Results of any fauna surveys including pre-clearance surveys; and
- A wildlife and habitat impact assessment based on the proposed development works.

Action 3- Prepare a Wildlife and Habitat Impact Mitigation Plan (WHIMP)

Following the completion and endorsement of the WPMP, the Fauna Spotter Catcher will prepare a more detailed WHIMP, which will provide details on:

- Measures required to be completed to minimise wildlife and habitat impacts during operational works;

- Wildlife capture and removal plan;
- Contingency plan for wildlife requiring euthanasia, other veterinary procedures or captive care;
- Wildlife storage and housing plan;
- Wildlife release and disposal plan;
- Post works measures to minimise impacts on wildlife.

Action 4- Role of Fauna Spotter Catcher at Pre-Start Meeting

Prior to the commencement of any construction works, a pre-start meeting is to be held between the project manager, site foreperson, plant operators and Local Government representatives (if required). At the pre-start meeting, the Fauna Spotter Catcher is to outline the clearing process and the requirements of the WPMP.

Action 5- During Construction

The Fauna Spotter Catcher is to be on-site during all phases of construction which involve potential impacts on wildlife or habitat. This will enable to the Fauna Spotter Catcher to make any necessary adjustments to the WPMP to cater for any specific issues encountered during the clearing works.

Action 6- Post Works Reporting (Wildlife Management Report)

During the course of all site works, including the pre-clearance surveys, the Fauna Spotter Catcher is to keep an accurate record of all animals encountered, captured, incidents and disposals for each stage of the project. The records should form part of the post-works Wildlife Management Report to be issued under licence requirements to **DES**. The Wildlife Management Report should consist of the following 3 sections:

1. ***Wildlife Habitat Management Plan*** – Aspects of the planning, design, construction and ongoing operation of the project in which risks to wildlife have been identified. This plan should also include recommendations and outline the type, frequency and timeframes for monitoring

2. ***Wildlife Capture and Disposal Plan*** – Should contain the following details for each captured animals:
    a. Species
    b. Identification name or number
    c. Sex (M, F or unknown)
    d. Approximate Age or Age Class (neonate, juvenile, sub-adult, adult)
    e. Time and date of capture
    f. Method of capture
    g. Exact point of capture (GPS coordinates)
    h. State of health
    i. Incidents associated with capture likely to affect health
    j. Veterinary intervention or treatments
    k. Time held in captivity
    l. Disposal method (euthanasia, translocation, re-release)
    m. Date and time of disposal
    n. Detailed of disposal (GPS points of release)
    o. For released animals, location relative to point of capture

3. ***Animal Injury and Euthanasia Report*** – similar details for the Wildlife Capture and Disposal Plan should be included in this report.

7.3.2 Vegetation Management / Sequential Clearing

In accordance with commitments made in the referral, vegetation clearing over the development footprint will occur in a series of small stages, sequentially in accordance with an endorsed Vegetation Clearing and Management Plan and Fauna Management Plan (VCFMP). VCFMP's will detail fauna exclusion fencing to be erected around construction areas to prevent fauna from dispersing into these hostile areas.

Sequential clearing means the clearing of vegetation that:

- Is carried out in a way that ensures any Koalas in the area being cleared have sufficient time to move out of the clearing zone without human intervention. For sites with an area of more than 3ha, involves:
    i. Carrying out the clearing in stages; and
    ii. Ensuring not more than one of the following is cleared in any one stage:
        - For clearing site with an area of 6ha or less – 50% of the site's area;
        - For a clearing site with an area of more than six hectares – 3ha or 30% of the site's area, whichever is greater, and
        - Ensuring that between each stage and the next, there is at least one period of 12 hours that starts at 6 pm on a day and ends at 6 am the following day, during which no trees are cleared on the site.
        - Ensuring that no tree in which a Koala is present, or a tree with a crown overlapping a tree in which a Koala is present, is cleared until the tree is vacated by the Koala.
- Ensures that vegetation clearing is directed away from threatening processes, or hostile environments, and towards any retained vegetation or habitat links, ensuring that:
    iii. Koalas are not pressured, through loss of habitat, to cross roads or move through developed or disturbed areas, such as residential areas or areas that require movement of greater than 100m over cleared ground to reach suitable habitat;
    iv. Koalas are not left occupying an "island" of habitat between hostile environments, such as road and cleared areas, unless there are no other more suitable habitat areas in which direct Koalas; and
    v. Koalas can safely leave the site of clearing and relocate to adjacent habitat.

In accordance with Condition 2-3 of the EPBC approval, the following additional controls for the appointed **DES** Fauna Spotter Catcher during vegetation clearing include:

1. No vegetation clearing is to commence or continue without the presence of the appointed **DES** Fauna Spotter Catcher.
2. All trees scheduled for removal will be checked on the day of their removal (prior to the start of operations) for the presence of Koalas by the appointed **DES** Fauna Spotter Catcher.
3. The appointed **DES** Fauna Spotter Catcher is responsible for ensuring, throughout the duration of the clearing operations, that no tree in which a Koala is present, or a tree with a crown overlapping a tree

in which a Koala is present, or a tree identified as being a risk to Koalas, should not be felled, damaged or interfered with until the Koala has moved from the clearing zone or its own volition.

4. Where a Koala is present within a clearing zone, the tree will be marked with distinctive flagging (and other advisory means as required) and machinery operators will be briefed on the location of the area. No clearing works can occur within 20m of the tree retaining a Koala until the animal has moved on via its own volition (where the strategy is to allow the Koala to move of its own accord, overnight). On the following day, the tree and retained area, are to be checked again prior to their removal. If necessary, the procedure is repeated until the Koala has moved.
5. In the event that the Koala is sick or injured and needs medical attention, **DES** will be contacted and trapping by the Fauna Spotter Catcher may be required to allow the Koala to receive medical attention. Actions will be guided by **DES** and the Fauna Spotter Catcher.

7.3.3 Adaptive Management and Management Strategy

An adaptive management strategy is to be applied to this KMP to enable it to alter as necessary to better protect koala from injury or mortality. As a part of this strategy the following minimal protocols are to be applied in the event of koala injury or mortality as a result of clearing or construction:

1. Clearing and construction is immediately ceased
2. The **DEE** is notified in writing within 48 hours of the koala injury or mortality occurring
3. Measures for minimising impacts to koalas as a result of clearing and construction are revised, in consultation with a suitably qualified person to reduce the likelihood of koala injury or mortality before clearing and construction recommences.

7.3.4 Bundamba Creek Rehabilitation

The locations of weed management measures and plantings for rehabilitation have been clearly set out to industry standard in the **EDQ** and **Ipswich City Council** endorsed Bundamba Creek Rehabilitation Plan at Attachment A8 of the ECCO Ripley PD, DWG 6982 E 02 L to 05 L and 08 L to 011 L.

Weed Management

Weed management will comprise a major part of the site works within the corridor areas and will provide a basis of aiding natural regeneration. Where significant disturbance occurs, infill tubestock planting will be utilised to aid stabilisation and native vegetation succession. Weed removal will be undertaken in three stages: primary weed removal stage, secondary or follow-up weeding and maintenance weeding phase. This, along with monitoring, will provide effective weed management within rehabilitation areas. Full details are provided within Attachment A8 of the ECCO Ripley PD.

Revegetation

Post weed-removal, rehabilitation areas will undergo revegetation to varying degrees, depending on the level of disturbance. It involves the cultivation and planting of native species and maintenance in the form of watering, continued weed removal, erosion control and ongoing management. The replanted species used within rehabilitation areas will be species endemic to the local area and will reflect the naturally occurring regional ecosystems. This will include a high proportion of primary and secondary Koala food trees. The full

list of tree planting species, prescribed densities and numbers are provided in tables at, DWG 6982 E 08 L, and extracted below.

6982 BUNDAMBA CREEK, RIPLEY - PRIMARY KOALA REVEGETATION AREA - PLANT SCHEDULE

Recommended Species List Total. Approximate Area = 24000m2

(Overall density approximately 1 plant per 1.5m2)

NOTES:

1) Species selected from site and local species mix

2) Setback trees 3m min from all property boundaries, sewer and service alignments.

3) Refer to additional plans for general locations and additional details for planting notes.

4) Distribute plants in groups on site in random arrangement to be confirmed with superintendant on site.

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY OVERALL @ 1 PER 1.5M²	QUANTITY
SMALL TREES				**1 per 5 m2**	
Acmena smithii	Creek Lillypilly	Tree	Tube	1/55m2	440
Callistemon viminalis	Weeping Bottlebrush	Tree	Tube	1/55m2	440
Corymbia citriodora	Spotted Gum	Tree	Tube	1/55m2	440
Corymbia intermedia	Pink Bloodwood	Tree	Tube	1/55m2	440
Corymbia tessellaris	Moreton Bay Ash	Tree	Tube	1/55m2	440
Eucalyptus cebra	Narrow Leaf Red Ironbark	Tree	Tube	1/55m2	440
Eucalyptus siderophloia	Grey Ironbark	Tree	Tube	1/55m2	440
Eucalyptus tereticornis	Queensland Blue Gum	Tree	Tube	1/55m2	440
Grevillea robusta	Silky Oak	Tree	Tube	1/55m2	440
Lophestmon suaveolons	Brush Box	Tree	Tube	1/55m2	440
Melaleuca quinquinervia	Broad Leaved Paperbark	Tree	Tube	1/55m2	440
				SUBTOTAL	**4840**
GROUNDCOVERS				**1 per 2m2**	
Dianella caerulea	Flax Lily	Ground	Tube	1/12m2	2000
Gahnia aspera	Razor Grass	Ground	Tube	1/12m2	2000
Goodenia rotundifolia	Star Goodenia	Ground	Tube	1/12m2	2000
Lomandra hystrix	Mat Rush	Ground	Tube	1/12m2	2000
Lomandra longifolia	Mat Rush	Ground	Tube	1/12m2	2000
Themeda triandra	Kangaroo Grass	Ground	Tube	1/12m2	2000
				SUBTOTAL	**12000**
				TOTAL	**16840**

Extract of koala revegetation area plant schedule from DWG 6982 E 08 L

7.4. Operational Management Measures

7.4.1 General

The ECCO Ripley project incorporates a number of operational fauna management procedures and features to be incorporated into the ongoing role of the project in maintaining wildlife function and movement once development has been completed (refer Plan 5). The operational measures cover a range of areas including the road reserves and open space areas through to specific on lot advice for new residents.

Maintenance of Bundamba Creek Corridor

Bundamba Creek corridor will undergo rehabilitation during the construction phase. Once rehabilitation is complete, the corridors will be transferred to **ICC** for the long term maintenance of the corridors.

Lifestyle Guidelines Package

The "Lifestyle Guideline" documentation will be issued to each new resident and is designed to help promote a range of ecological sustainable living principles. The Lifestyle Guidelines will be used to directly educate and raise awareness of a large audience towards the management of the Bundamba Creek Corridor and Koala habitat values. Topics included within the education documents include:

- Appropriate plant selection on allotments
- Inappropriate planting species (known local or declared weed species)
- Management of household scale run off
- Protection of native animals and the types of native animals residents could expect to see within Conservation Corridor
- Understanding storm water devices
- Appropriate management of domestic animals
- Location of dog on-leash and off-leash areas
- Key local and state phone numbers to contact if distressed or orphaned fauna are located.

Through raising awareness, the Lifestyle Guidelines will help new residents take direct ownership of the local streetscapes and the existing vegetated and recently rehabilitated portions of the Open Space. Lifestyle Guidelines will be distributed to new residents as part of sales material from Stage 13 onwards.

7.4.2 Traffic Management

The primary corridor on the periphery of the site is the Bundamba Creek corridor that is to be rehabilitated as per **Section 5.4.3**. As per the endorsed Community Greenspace Infrastructure Master Plan, the entire Bundamba Creek corridor will be buffered from the development area by an open greenspace network, with no proposed allotments directly adjacent to this primary Koala habitat area. As such, it is anticipated that the greenspace buffer will mitigate direct interaction between Koala, should they utilise the Bundamba Creek corridor, and proposed allotments, and therefore the utility of fauna exclusion fencing within the greenspace network is considered impractical.

No road crossings or similar potentially fragmentary structures are proposed for the Bundamba Creek corridor in the short term. Open space areas where vegetation is to be retained within the referral area are in areas

adjacent to roads. It is anticipated that, should crossing structures be required within potential fauna habitat areas at detailed design, fauna connectivity will be augmented in accordance with best practice methods outlined in the Queensland **Department of Transport and Main Roads** (DTMR) *Fauna Sensitive Road Design Volume 1: Past and Existing Practices* and *Fauna Sensitive Road Design Manual Volume 2: Preferred Practice* (DTMR 2010) to obtain all necessary approvals.

A number of measures will be imposed to avoid and mitigate the risk of Koalas being hit by vehicles. These measures include:

- Separation of conservation areas and residential areas. Koala habitat will not form part of the primary landscaping of the development footprint so that Koalas are not enticed to enter residential areas.
- Imposition of low vehicle speeds (i.e. 50km/hr) to reduce the risk of collisions where adjoining conservation land. Under Queensland traffic laws, vehicle speed limits are restricted to 50km/h on built up residential roads.
- Erection of Koala awareness signage adjoining proposed conservation areas.
- Avoiding roads intercepting corridors.
- Integration and construction of fauna movement solutions and signage should roads intercept corridors.
- New residents will be issued with a "Lifestyle Guideline" to raise awareness about local wildlife and to educate residents about the protection of Koalas in the area.

The purpose of these avoidance and mitigation measures is to minimise the risk of injury or death to Koalas from vehicle strike. It will be important to minimise the incentive for Koalas to enter residential areas by restricting the availability of habitat in these areas. As such, street scaping will not be planted with suitable Koala habitat, which will in turn encourage Koalas to stay within conservation areas. Importantly, low vehicle speeds will be imposed along residential roads, minimising the risk of high-speed vehicle strikes which are recognised to account for a large proportion of vehicle related deaths. In addition, awareness signage and traffic calming devices will ensure motorists are aware that Koalas have potential to occur in the area, making them more conscious of potentially dispersing Koalas and encouraging them to maintain a low vehicle speed. The distribution of "Lifestyle Guidelines" has the purpose of instilling stewardship of the issue amongst residents, encouraging them to actively protect native wildlife and making them aware of the types of fauna that could disperse onto roads.

Wildlife movement solutions have been identified as an effective tool to mitigate the effects of fragmentation caused by roads. In essence, wildlife crossings if ultimately required will include the following elements:

- Reduced vehicle speed limits (≤50 km/h)
- Wildlife crossing signage
- Vegetation adjoining the road
- Demarcated road treatment surface to raise driver awareness
- Where seen supportive of the crossing outcomes the inclusion of specific lighting regimes.
- Exclusion fencing funnelling animals towards the safest road crossing point.

Overall, these tools are considered to be effective measures to reduce the risk of injury or death of Koalas from vehicle strike. They have been officially adopted numerous times by the Queensland State Government in potential road conflict scenarios and are espoused as one of the effective solutions. The purpose of these measures is to enable the objective of no injury or death to Koalas as a result of vehicle strike.

7.4.3 Dog Management

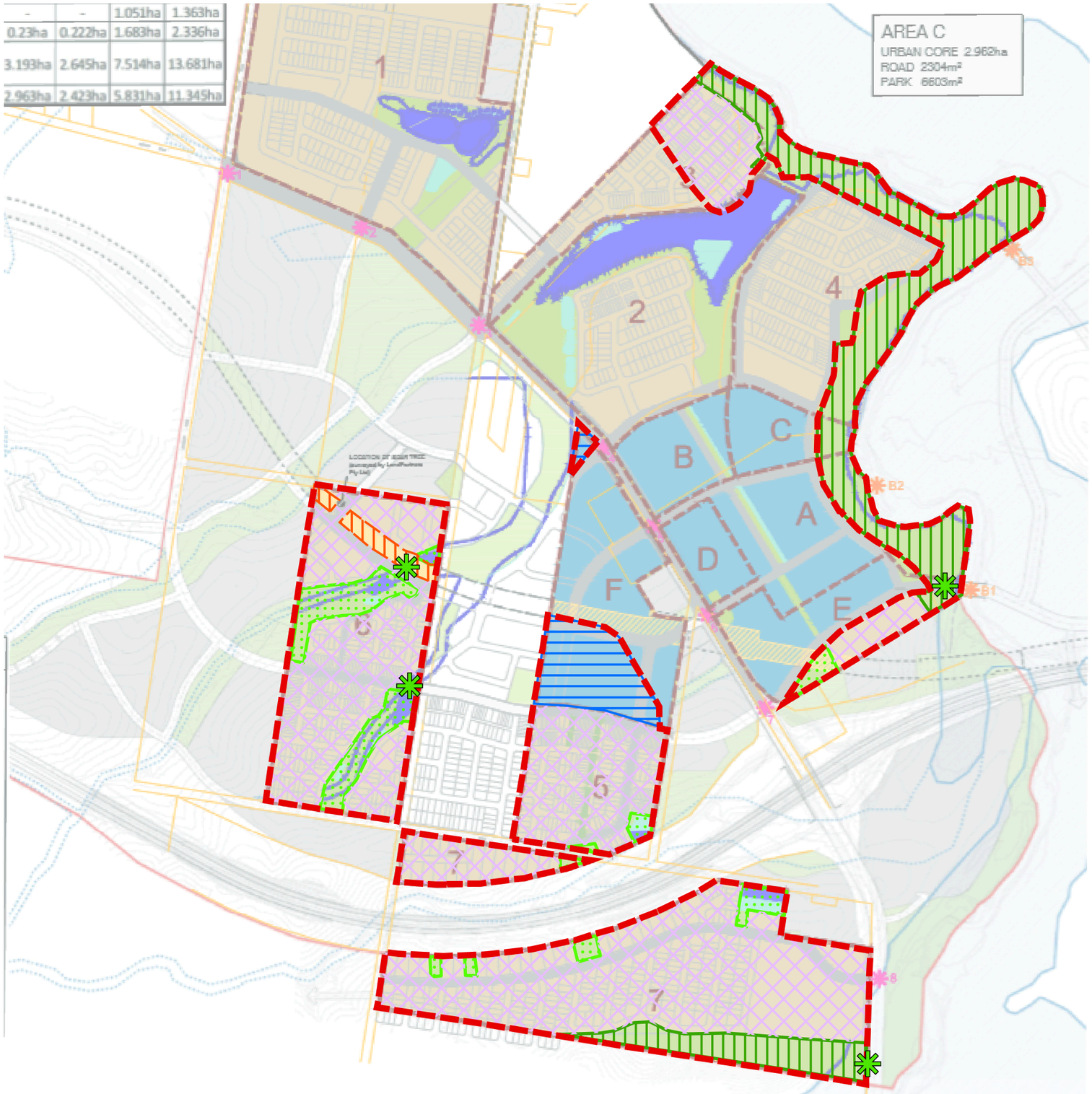
The development of a residential estate is likely to increase the number of dogs entering the area. However, strong evidence of current dog and dingo activity was recorded on-site. With appropriate governance and guidance to new home buyers, such as lifestyle guidelines, signage and community engagement via social media fact sheets and presentations to raise awareness, minimise threats and encourage reporting of dog threats, it is not expected that dog attacks on Koalas will increase as a result of the development.

The following specific measures will be employed to mitigate potential threats from dogs:

- Dogs will be restricted from entering conservation areas unless they are controlled on a lead.
- Fenced 'off-leash' areas / dog facilities will be constructed within recreational parkland in the estate, to counter balance conservation land being strictly 'dog on leash' areas.
- New residents will be issued with a 'Lifestyle Guideline' to raise awareness about local wildlife and to educate residents about the protection of Koalas in the area and appropriate dog management.

As mentioned, while dogs already occur within the local area, and have historically occupied the site as part of the rural land uses, the project is likely to increase dog ownership numbers in the area. As such, the education of residents has been identified as a key management tool in reducing the risk of injury from dog attacks on Koalas. The Lifestyle Guidelines will make residents aware of the risk dogs pose to Koalas and other native fauna and will clearly identify 'off leash' parks. The guidelines, along with awareness signage throughout the estate, will make it clear that dogs should be left on a lead at all other times when they are outside of residential housing lots, particularly when in or adjacent to conservation areas. Again, instilling stewardship and ownership of the issue amongst residents is an effective way of ensuring compliance with dog on-lead restrictions. The Lifestyle Guidelines will allow residents to become aware of the issue and will encourage them to pro-actively manage and protect native fauna in the local area.

5. OPERATIONAL MEASURES MANAGEMENT PLAN



-	-	1.051ha	1.363ha
0.23ha	0.222ha	1.683ha	2.336ha
3.193ha	2.645ha	7.514ha	13.681ha
2.963ha	2.423ha	5.831ha	11.345ha

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2017. Updated data available at http://qldspatial.information.qld.gov.au/catalogue//
Aerial Imagery © Nearmap, 2017

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LEGEND

- Project Area
- Fauna Friendly Road Movement Solutions
- Retained corridor areas
- Retained park and drainage areas
- Core allotment and local road areas
- Core urban areas
- Railway

Issue	Date	Description	Drawn	Checked
B	16/11/2018	Internal Update	TC	AD

Transverse Mercator | GDA 1994 | Zone 56 | 1:20,000 @ A3

0 100 200 400 600 800 m

saunders havill group

Bcove 4 Pty Ltd & Ripley Town Holdings Pty Ltd

Sekisui Ripley

ADDRESS/RPD: Ripley Road, Ripley | 16/11/2018 | 6982 E Plan 5 OMMP B

8. Management Schedules, Monitoring, Reporting & Review

A number of management activities have been identified within this KMP and broadly explained through Section 7. Table 7 includes additional specific details on proposed management actions relating to timing, funding, responsible parties, monitoring and reporting for each of these management activities. Each suite of management activities are categorised into pre-construction, during construction and operational measures. This KMP will be reviewed annually or at the completion of each phase of the project and where necessary edited.

Table 7: Management Roles and Responsibilities

Environmental Management Commitment	Responsibility	Timing	Funding	Monitoring / Frequency	Reporting
PRE COMMENCEMENT MANAGEMENT ACTIONS					
1. **Provide Copy of KMP to all contractors and subcontractors and retain final copy within the site construction office at all times**	Proponent to provide to principal contractor. Principal Contractor to all sub-contractors	As part of contractor appointment and throughout construction	Contractor costs associated with action to be included in tender scope funded by Proponent.	Provision for supplying the KMP to the Principal Contractor will occur with contractual appointment. The Principle Contractor is responsible for providing evidence that each appointed sub-contractor has been provided the KMP.	Evidence of KMP being provided to contractors and subcontractors working on the site to be included in EPBC Annual Compliance Report (ACR).
2. **Key KMP Criteria to be included on the Workplace Health and Safety and Environmental Management work method statement**	Prepared by the principal contractor as part of other site induction checklists	Checklist to be completed prior to commencement and issued as part of all site inductions.	Principal Contractor via Proponent	The site induction process requires all visitors and works at the site to read and acknowledge work method statements as part of a signed checklist. This is provided to and signed by each new entrant to the site as part of induction procedures.	A copy of the site induction checklist inclusive of KMP criteria will be provided with the first EPBC ACR for the project.

Environmental Management Commitment	Responsibility	Timing	Funding	Monitoring / Frequency	Reporting
3. **Contractor will review project compliance with the KMP on a monthly basis.**	Principal Contractor in their role as Superintendent for the project.	Monthly	Principal Contractor via Proponent	Review of compliance on a monthly basis. Any non-compliances must be reported immediately.	Compliance will be reported within the EPBC ACR.
4. **Engagement of DES approved Fauna Spotter Catcher -** ensure Fauna Spotter Catcher retains all necessary licences and accreditations	Proponent (or as passed onto Principal contractor)	Before clearing commences on any stage of works and during construction including any post construction reporting	Proponent	Pre-clearance report issued to the Environmental Coordinator prior to commencement of works. Fauna Spotter Catcher on site during all works. Pre-clearance reports to be posted on project website.	Copies of the pre-clearance reports for each stage of works will be included in the EPBC Annual Compliance Report. Evidence the pre-clearance reports have been posted for public access on the project website will be provided in the EPBC ACR.
5. **Develop Wildlife Protection and Management Plan** (Prepared in accordance with the Draft Queensland Code of Practice for the Welfare of Animals affected by Land Clearing)	Fauna Spotter Catcher	Before construction commences	Proponent	Prior to commencement of clearing in any stage.	Copies of the WPMP for each stage of works will be included in the EPBC ACR. Evidence the WPMP have been posted for public access on the project website will be provided in the EPBC ACR.
6. **Develop Wildlife and Habitat Impact Mitigation Plan** (Prepared in accordance with the Draft Queensland Code of Practice for the Welfare of Animals affected by Land Clearing)	Fauna Spotter Catcher	Before construction commences	Proponent	Prior to commencement of clearing in any stage	Copies of the WHIMP for each stage of works will be included in the EPBC ACR. Evidence the WHIMP have been posted for public

Environmental Management Commitment	Responsibility	Timing	Funding	Monitoring / Frequency	Reporting
					access on the project website will be provided in the EPBC ACR.
7. Attendance of Fauna Spotter Catcher at Pre-Start Meeting	Fauna Spotter Catcher / Principal contractor	At the pre-start meeting for each new stage of clearing and construction works	Proponent	Fauna Spotter Catcher to sign pre-start attendance checklist.	Evidence of Fauna Spotter Catcher at project pre-start to be submitted with EPBC ACR (copy of signed attendance sheet)
8. Install temporary fauna exclusion fence or other suitable barrier around construction areas to prevent koala access into construction zone	Contractors	After the clearing is completed and prior to construction occurring within the development area.	Proponent	Fence is to be monitored monthly by the Principal Contactor.	Photographic evidence of the fence / barrier installation during construction to be provided as part of EPBC ACR.
DURING CONSTRUCTION MANAGEMENT ACTIONS					
9. All clearing of koala habitat is to occur in a staged and sequential pattern enabling the directional flushing of native animals to retained vegetation areas.	Principal Contractor and or appointed clearing sub-contractor.	At the time of clearing works for each stage	Proponent	Management Action 9 for staged and sequential clearing will be guided by the endorsed Vegetation Clearing and Fauna Management Plans (VCFMP). Monitoring occurs as part of pre-start and completion inspections if required by officers from Ipswich City Council.	Copies of approved VCFMP will be included in the EPBC ACR – these plans will show the implementation of clearing in a staged and sequential process.
10. Stop works procedures for clearing vegetation supporting any Koalas until such time that any present Koalas vacate the vegetation or are relocated by a suitable qualified person.	Fauna Spotter Catcher / Principal Contractor and or appointed clearing sub-contractor.	During clearing no tree in which a Koala is present, or a tree with a crown overlapping a tree in which a Koala is present, or a tree identified as being a risk to Koalas, to be felled, damaged or interfered with until the Koala has	Proponent	Where a Koala is present within a clearing zone, the tree will be marked with distinctive flagging (and other advisory means as required) and machinery operators will be briefed on the location of the area. No clearing works can occur within 20 m of the tree retaining a	Any actions relating to Management Action 10 will be reported by the Fauna Spotter Catcher in the post-clearing Wildlife Management Report which is sent to DES. Copies of the Wildlife Management Report

Environmental Management Commitment	Responsibility	Timing	Funding	Monitoring / Frequency	Reporting
		moved from the clearing zone of its own volition.		Koala until the animal has moved on via its own volition (where the strategy is to allow the Koala to move of its own accord, overnight). On the following day, the tree and retained area, are to be check again prior to their removal. If necessary, the procedure is repeated until the Koala has moved. In the event that the Koala is sick or injured and needs medical attention, DES will be contacted and trapping by the Fauna Spotter Catcher may be required to allow the Koala to receive medical attention.	for each stage of works will be included in the EPBC ACR.
11. A Post clearing and construction works Wildlife Management Report is to be prepared by the appointed Fauna Spotter Catcher at the completion of each stage of works. (Prepared in accordance with the Draft Queensland Code of Practice for the Welfare of Animals affected by Land Clearing)	Fauna Spotter/Catcher	Records to be kept during construction and final report submitted at completion of works	Proponent	Within 10 working days of the conclusion of each stage of construction and clearing.	Copies of the Wildlife Management Report for each stage of works will be included in the EPBC ACR. Evidence the Wildlife Management Report will be posted for public access on the project website.
OPERATIONAL MANAGEMENT ACTIONS					
12. All road crossing / retained vegetation intersection points will include fauna signage and movement solutions as	Principal contractor under the	Required fauna movement and signage devices must be installed as part of the road construction	Proponent	Signage and wildlife movement solutions will be documented upon construction.	Photographic and other documented evidence of the signage and wildlife movement solutions

Environmental Management Commitment	Responsibility	Timing	Funding	Monitoring / Frequency	Reporting
documented in the DTMR Fauna Sensitive Design Guidelines.	direction of the Proponent.	and prior to the actual operation (or use) of the road access.		Monitoring of the continuation of these devices will occur annually for the life of the approval.	installation is to be provided within the EPBC ACR for the period in which it is constructed. Evidence the signage and wildlife movement solutions have been maintained will be provided in each subsequent EPBC ACR.
13. Construct dog off-leash facilities within recreational open space areas.	Landscape Contractors appointed by the Proponent.	As part of the construction works for the relevant open space area	Proponent	N/A	Photographic and other documented evidence of the dog off-leash park facility installation is to be provided within the EPBC ACR period in which it is constructed.
14. Prepare and distribute a copy of the Lifestyle Guidelines containing environmental education material to each new resident. .	Consultant on behalf of Proponent or by the Proponent.	As part of the purchase material for new residence.	Proponent	As each new stage is completed and residents commence moving in.	Copy of Lifestyle Guidelines provided within relevant EPBC ACR.

8.1. KMP Audit and Review

KMP management actions are to be audited in accordance with timeframes specified with the management schedules in Table 7 or as a minimum annually. Specific KMP criteria will form a subset of the broader EPBC approval Annual Compliance Reports (ACR).

Review of the KMP should be as required based on non-compliance and in accordance with the adaptive management procedures. If an event based review or schedule review period results in any changes to the KMP which does not result in a new or increased risk of impact the proponent must notify the **DEE** in the next ACR of:

1. The changes made in the revised KMP.
2. The reason for the changes.
3. The date of issue of the revised KMP.

Formally:

a. notify the **Department** in writing that the approved plan has been revised,

b. implement the revised plan from the date that the plan is uploaded to the project website, and

c. for the life of this approval, maintain a record of the reasons the approval holder considers that taking the action in accordance with the revised plan would not be likely to have a **new or increased impact**.