

environmental
management



Rawlings Road, Deebling Heights EPBC Act Referral



Defence Housing Australia – Property Provisioning Group

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13 June 2016
8122

Referral of proposed action

Project title: Rawlings Road Development, Deebing Heights

1 Summary of proposed action

1.1 Short description

This referral pertains to a proposed residential development located within Ripley Valley, adjacent to the Ripley Valley Priority Development Area (designated by **Economic Development Queensland**). The proposed action is for a residential development consisting of 295 new lots with 332 dwellings, with a development footprint of 25.37 hectares located in one of the fastest growing residential areas in Australia. The development will result in the clearing of approximately 15 ha of vegetation already disturbed by existing agricultural uses.

1.2 Latitude and longitude

Id	Longitude (east)	Latitude (south)
Area 1		
1	152.746068373	-27.674264170
2	152.756930880	-27.675842755
3	152.757194869	-27.678165652
4	152.747935392	-27.676814020
5	152.747238010	-27.676118806
6	152.746662110	-27.675375968
7	152.746191375	-27.674576156
Area 2		
8	152.744483009	-27.674034588
9	152.745645361	-27.675644601
10	152.745855170	-27.675935208
11	152.746166423	-27.676366322
12	152.746359624	-27.676586047
13	152.744749673	-27.676353104

1.3 **Locality and property description**

The site is located on Rawlings Road, within Ripley Valley, approximately seven kilometres south of Ipswich City. The site is bound by existing roads, with the Centenary Highway (which connects the Springfield area to the Ipswich and Cunningham Highways) to the west and south, Rawlings Road to the north, and South Deebing Creek Road to the east. The Cunningham Highway is approximately 1 km north of the site.

The Ripley Valley is one of the largest residential growth areas in Australia, with significant development in recent years, in accordance with the Ripley Valley Urban Development Area Development Scheme (UDADS). The site is surrounded by recently developed residential areas, such as those immediately north of Rawlings Road, immediately south of the Centenary Highway, and east of the site, on the other side of South Deebing Creek Road, with many more developments, in the wider landscape. These developments have resulted in the clearing of these surrounding properties resulting in a fragmented landscape throughout much of the Ripley Valley.

The proposed development site is located across two properties previously cleared for agricultural land use, which now largely contain cleared paddocks, with some scattered regrowth and remnant vegetation. The vast majority of land surrounding the site has also been cleared of vegetation for agricultural purposes, or residential development, or are earmarked for urban development in keeping with planning intent.

The referral area covers a development footprint of approximately 25.37 hectares. Refer to **Figure 1** for the site context and **Figure 2** for the site aerial.

1.4 **Size of the development footprint or work area (hectares)**

The total development footprint is approximately 25.37 hectares.

1.5 **Street address of the site**

Rawlings Road, Deebing Heights 4306, Queensland

1.6 **Lot description**

The referral area is made up of two allotments:

Lot Number	Tenure	Proponent
Part of Lot 194 on SP193445 – 10.8 ha	Freehold	DHA
Lot 195 on S3157	Freehold	DHA

1.7 **Local Government Area and Council contact (if known)**

Ipswich City Council – Brett Davey (Team Leader)

1.8 **Time frame**

The project is currently in the process of completing the required State and Local Government approvals. It is anticipated that the subdivision works will be complete by late 2017, with construction beginning in 2017 and continuing through until mid-2019.

1.9	Alternatives to proposed action	X	No. The site is located within the area strategically designated as Future Urban by Ipswich City Council , and is adjacent to the Ripley Valley Priority Development Area under the <i>Ipswich Planning Scheme</i> . The site has efficient and safe access, being located on Rawlings Road, and immediately adjacent to South Deebing Creek Road, and Grampian Road. The site will also be serviced by other proposed infrastructure, such as the Springfield to Ipswich Rail Corridor extension, which has been put in place in association with the expected expansion of the Ripley Valley area. An alternative location would disregard the proposed Ripley Valley infrastructure, and there are no suitable alternative locations currently within the proponent's land holdings.
			Yes, you must also complete section 2.2
1.10	Alternative time frames etc	X	No. There are no alternative timeframes proposed. In keeping with planning intent, there is an increasing and immediate need for urban development in this region.
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	State assessment	X	No. The project is not subject to a state environmental impact assessment.
			Yes, you must also complete Section 2.5
1.12	Component of larger action	X	No. The project is not being developed as part of a component of a larger action.
			Yes, you must also complete Section 2.7
1.13	Related actions/proposals	X	No. This referral is not related to any other actions in the region.
			Yes, provide details:
1.14	Australian Government funding	X	No. The proponent has not received funding from the Australian Government to undertake the project.
			Yes, provide details:
1.15	Great Barrier Reef Marine Park	X	No. The proposed action is not located inside the Great Barrier Reef Marine Park.
			Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

2.1 Description of proposed action

The proposed action is for a residential development within an area identified as important for future growth. The action would establish a large residential development as per the Ipswich City Council zoning intent for the area, and in accordance with the Ripley Valley Urban Development Area Development Scheme (UDADS). Further, the site is adjacent to the *Ripley Valley Urban Development Area Development Scheme* as designated by **Economic Development Queensland**.

The Ripley Valley is located approximately five kilometres (km) southeast of Ipswich City business district and 30 km southwest of the Brisbane CBD, within the western growth corridor of South East Queensland. In 2009, Ripley Valley was identified under the South East Queensland Regional Plan 2009-2031 (SEQR) by the State Government because of its potential to absorb a vast portion of the regional area's population over the two-decade timeframe. The SEQR indicates a serious population influx to the region, with projections of 120,000 residents needing to be accommodated in more than 50,000 dwellings.

The site relevant to this referral is located on Rawlings Road, Deebing Heights. The referral area is 25.37 ha, constituting the entire lot 195 on S3157 (14.57 ha) and part of Lot 194 on SP193445 (10.8 ha). The proposed development will provide 295 new residential lots with 332 dwellings (refer to **Attachment 1**). The majority of the site is highly disturbed, with historical clearing and agricultural grazing. The development area includes the clearing of 15 ha of this disturbed vegetation, and includes the allocation of over 4 ha as Open Space, which is centred around drainage features in the north and the southeast of the site (**Plan 1**). These Open Space areas will retain existing vegetation, and allow for weed management and infill planting works. Additionally, a small portion of Lot 194 on SP193445 exists to the west of the Centenary Highway, and is not included in the development footprint. This portion of the land represents the most densely vegetated area of the site, and the retention of the vegetation on this site will allow for continued connectivity west of the Centenary Highway which fragments the area. As well as the two large areas of Open Space, there will be additional park areas, trees and landscaping within the development area.

The area surrounding the proposed development site is highly impacted and fragmented. The site to the north of Rawlings Road has been completely cleared and has construction of the residential development has commenced (refer to **Plan 2**). There are also numerous surrounding residential developments proposed and under construction, such as Paradise Heights, Paradise Waters, and Ripley McHale which have all received approval under the EPBC Act to proceed (**Plan 2**). In addition, there are currently proposals for sites to the south of Centenary Highway, and on both sides of Grampian Drive (to the south of the subject site) which are in the process of applying for EPBC Act approvals with several more likely to occur within the next few years. These developments are in line with the State and Local Government planning intent for the area, however, it is noted that the proposed developments surrounding the subject site significantly limit the connectivity and vegetation values remaining in the landscape. Furthermore, the vegetation currently existing on-site is isolated on all sides by highways and roads and is likely to become increasingly isolated as future development occurs.

In terms of environmental impacts and potential impacts on *Matters of National Environmental Significance* (MNES), the action can be described as:

- a) Clearing of 15 ha of disturbed vegetation, including only 1.84 ha of remnant Least Concern vegetation, with the remainder being regrowth and scattered trees;
- b) Removal of some Koala food trees;
- c) Earthworks linked to creating grades to support roads, new allotments and drainage patterns;
- d) Establishment of hard stand areas on land which is currently used for rural purposes; and
- e) Expansion of surrounding land uses by increasing the available property lots by 295, which will potentially increase the number of domestic pets and exotic garden plant species in the area.

2.2 Alternatives to taking the proposed action

There are no alternatives proposed (refer to response 1.9).

2.3 Alternative locations, time frames or activities that form part of the referred action

There are no alternatives proposed (refer to response 1.10).

2.4 Context, planning framework and state/local government requirements

Context

The proposed site is adjacent to the Ripley Valley Priority Development Area, which was declared by the **Department of State Development, Infrastructure and Planning** on 8 October 2010.

Planning Framework

The proposed development site is located within the **Ipswich City Council** Local Government area, in South East Queensland. Accordingly, the project is subject to the provisions of the *Ipswich Planning Scheme* and the Ripley Valley Master Planned Area Structure Plan, as well as Queensland's *Sustainable Planning Act 2009*. It is also zoned as Future Urban under the Ipswich Planning Scheme, therefore is earmarked for residential development.

Current Approvals

There are no current approvals within the referral area.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

No environmental impact assessments are required under Commonwealth or State legislation (refer to response 1.11).

2.6 Public consultation (including with Indigenous stakeholders)

It is proposed that public consultation (such as public notification) will be undertaken as part of the Local Government development application process.

2.7 A staged development or component of a larger project

Not applicable. Refer to response to 1.12 and 1.13.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

3.1 (a) World Heritage Properties

Description

Not applicable. Refer to Attachment 2.

Nature and extent of likely impact

Not applicable

3.1 (b) National Heritage Places

Description

Not applicable. Refer to Attachment 2.

Nature and extent of likely impact

Not applicable

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

Not applicable. Refer to Attachment 2.

Nature and extent of likely impact

Not applicable

3.1 (d) Listed threatened species and ecological communities

Description

The Protected Matters Search Tool using a two kilometre radius around the site identified the following matters protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as having potential to occur on site:

- Three Threatened Ecological Communities (TECs):
 - Lowland Rainforest of Subtropical Australia* (critically endangered) – community may occur
 - Swamp tea-tree (Melaleuca irbyana) Forests of South-east Queensland* (critically endangered) – community likely to occur
 - White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (critically endangered) – community may occur;
- Six listed threatened flora species; and
- Eighteen listed threatened fauna species.

Table 1 provides a summary of these search results, with the full search results provided in **Attachment 2**.

Table 1: EPBC Act Protected Matters Search Tool Results

Threatened Ecological Communities		
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur in the area
Swamp Tea-tree (<i>Melaleuca irbyana</i>) Forest of South-east Queensland	Critically Endangered	Community likely to occur in the area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may to occur in the area
Threatened Species		
Scientific Name	Common Name	Status
Birds		
<i>Anthochaera phrygia</i>	Regent Honeyeater [82338]	Critically Endangered
<i>Botaurus poiciloptilus</i>	Australasian Bittern [1001]	Endangered
<i>Dasyornis brachypterus</i>	Eastern Bristlebird [533]	Endangered
<i>Erythrorhynchus radiatus</i>	Red Goshawk [942]	Vulnerable
<i>Geophaps scripta scripta</i>	Squatter Pigeon (southern) [64440]	Vulnerable
<i>Grantiella picta</i>	Painted Honeyeater [470]	Vulnerable
<i>Lathamus discolor</i>	Swift Parrot [744]	Endangered
<i>Poephila cincta cincta</i>	Black-throated Finch (southern) [64447]	Endangered
<i>Rostratula australis</i>	Australian Painted Snipe [77037]	Endangered
<i>Turnix melanogaster</i>	Black-breasted Button-quail [923]	Vulnerable
Mammals		
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable
<i>Dasyurus hallucatus</i>	Northern Quoll [331]	Endangered
<i>Dasyurus maculatus maculatus</i> (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered
<i>Petrogale penicillata</i>	Brush-tailed rock-wallaby [225]	Vulnerable
<i>Phascolarctos cinereus</i>	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox [186]	Vulnerable
Plants		
<i>Arthraxon hispidus</i>	Hairy-joint Grass [9338]	Vulnerable
<i>Bosistoa transversa</i>	Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable
<i>Notelaea ipsviciensis</i>	Cooneana Olive [81858]	Critically Endangered
<i>Notelaea lloydii</i>	Lloyd's Olive [15002]	Vulnerable
<i>Phebalium distans</i>	Mt Berryman Phebalium [81869]	Critically Endangered
<i>Thesium australe</i>	Austral Toadflax, Toadflax [15202]	Vulnerable
Reptiles		
<i>Delma torquata</i>	Collared Delma [1656]	Vulnerable
<i>Furina dunmalli</i>	Dunmall's Snake [59254]	Vulnerable

An assessment of the likelihood of occurrence was conducted for threatened species and ecological communities and migratory species identified by the PMST search as potentially occurring on-site. The assessment included desktop and field survey methods including searches of relevant database and mapping tools, review of historical ecological reports for the site and region, review of aerial photography and targeted searches for listed species and suitable habitat features. The assessment is detailed in the Ecological Assessment Report (EAR) provided as **Attachment 3** to this referral. Field surveys were conducted across the site in January and February 2016 to assess the habitat features of the site and any potential MNES fauna or flora or suitable habitats. Field survey effort is shown on **Plan 3**.

The assessment ruled out the potential for most of these listed matters to occur. This was primarily due to the combined impacts from:

- The relatively disturbed and cleared nature of the site;
- Lack of suitable niche habitat across the site, such as large undisturbed waterbodies, rocky outcrops, and coastal habitats;
- Influences from surrounding rural-residential developments as well as the increasing and expanding large residential developments within the local area, including immediately adjacent;
- Fragmentation of the site by major roads and highways, such as the Centenary Highway, Rawlings Road, and South Deebling Creek Road;
- Presence of introduced and weed flora species on-site, and high likelihood of dogs in the surrounding areas; and
- Disturbances caused by historic and existing agricultural grazing practices which have resulted in the majority of the proposed development area constituting paddock with some scattered native trees and some patches of regrowth, largely devoid of significant vegetation and significant habitat values.

Overall, the assessment identified the potential for Grey-headed Flying-fox (Vulnerable), Swift Parrot (Endangered), and Koala (Vulnerable) to occur on-site due to the availability of potential habitat or food sources when eucalypts are flowering. No other listed threatened species or TECs are considered likely to occur on-site (refer to the Likelihood of Occurrence Schedule contained in **Attachment 3 – Appendix E**).

Koala (*Phascolarctos cinereus*)

Conservation Status

Under the EPBC Act, Koala populations in Queensland, New South Wales, and the Australian Capital Territory are listed as Vulnerable. Koalas are also listed as Vulnerable under Queensland's *Nature Conservation Act 1992* (NCA). The site is located within the modelled distribution of the Koala, within the 'coastal context,' as per the EPBC Act Referral Guidelines for the Vulnerable Koala.

Habitat

As described in the Koala SPRAT species profile, Koalas inhabit a wide range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by eucalypt species. 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.*'

Distribution

Koalas are endemic to Australia and have a known distribution from north-eastern Queensland to south-east South Australia. They are widespread within coastal and inland areas, however, densities of Koalas are higher within coastal areas with higher average annual rainfalls. South-east Queensland is known to support Queensland's highest density of Koalas.

Threats

The three main threats to Koalas have been identified within the SPRAT profile as:

- Habitat loss and fragmentation;
- Vehicle strike; and
- Predation by domestic or feral dogs.

In addition, the prevalence of disease such as the *Chlamydia* virus in many Koala populations has led to symptoms such as infections of the eyes, urinary tract, respiratory tract, and reproductive tract, with the latter having the potential to lead to infertility in females. More recently, Koala Retrovirus (KoRV) has had an increasing impact on most Queensland Koala populations. While most Koalas carry the disease, environmental stresses such as poor nutrition and overcrowding lead to conditions caused by KoRV such as leukaemia and immunodeficiency syndrome.

Field Assessment

In January and February 2016 Senior Ecologists from **Saunders Havill Group** conducted targeted Koala field surveys across the site with weather conditions fine with intermittent showers. The purpose of the survey was to determine the level of Koala usage across the site and to assess the availability of suitable habitat. The assessment involved the following methods:

- Spot Assessment Technique (SAT) developed by Phillips and Callaghan (2011);
- Site flora assessments; and
- Opportunistic searches.

SAT Survey Results

Overall, evidence of Koala usage in the form of scats was low to medium across the site although no individuals were observed throughout the survey period. Four SAT surveys were conducted as shown by the Field Survey Effort presented in **Plan 3**. As provided in **Table 2**, Koala usage across the site was considered to be “Low” in three locations, and “Medium” in one based on the **Australian Koala Foundation** Koala activity level classification table using the East Coast (med-high) Activity Category (**Table 3**). Refer to **Attachment 3 – Appendix G** for the full SAT results. The East Coast (med-high) Activity Category 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). The soil type mapped across the subject site is chromosols (refer to **response 3.3(c)** and **Attachment 3**), which have medium water-holding capacity and chemical fertility. Additionally, the presence of low-lying land associated with the two mapped waterways on-site would suggest Koala density could be medium to high in this area, supporting the activity category applied.

Table 2: SAT Survey Results

SAT (Spot Assessment Technique) Assessment No.	Evidence of Koala Use (%)	Koala Use (High / Medium / Low)
1	23.33	Medium
2	16.67	Low
3	13.34	Low
4	20.00	Low

Table 3: AKF Koala Activity Level Classification Table

ACTIVITY CATEGORY	LOW USE	MEDIUM (NORMAL) USE	HIGH USE
Area (density)			
East Coast (low)	< 9.47%	≥ 9.47% but ≤ 12.59%	> 12.59%
East Coast (med – high)	< 22.52%	≥ 22.52% but ≤ 32.84%	> 32.84%
Western areas (med – high)	< 35.84%	≥ 35.84% but ≤ 46.72%	> 46.72%

Habitat Assessment Results

Queensland's Koala Habitat Values Map (see **Attachment 3 – Figure 5**), shows that the site contains a mixture of vegetation, with less than half of the site classified as Medium Value Bushland Habitat, approximately one third as Low Value Rehabilitation Habitat, and the remainder as medium Value Rehabilitation Habitat. A small amount is mapped as Non-Habitat. A small patch in the south is mapped as Least Concern RE 12.9-10.2, with the remainder of the site mapped as Category X non-remnant vegetation (refer to **Attachment 3 – Figure 4**). This Least Concern RE is not mapped as providing 'essential habitat' for the Koala or any other listed species.

Site assessment included a GPS Tree Plot of all native trees with a DBH of 300 mm or greater across the site, resulting in the recording of 665 trees, refer to **Attachment 3 – Plan 2**). The flora species recorded during the tree plot included species identified in the **Australian Koala Foundation's National Koala Tree Protection List** for the Ipswich City Local Government area, shown below. Species shown in bold text are considered to be primary Koala Food Trees while the other listed species are Secondary Koala Food Trees. The tree plot recorded three Eucalypt species considered to be Koala Food Trees – including the primary species *E. tereticornis*, and the two secondary species *E. crebra*, and *E. siderophloia*. Refer to **Attachment 3 – Section 4.4** for further detail. It is recognised that for Koalas to viably persist in a given landscape the vegetated area should exceed 100 ha

and contain more than 50% primary food tree species (McAlpine et al. 2006). The number of *E. tereticornis* specimens (primary food trees) recorded on-site made up approximately 15% of the total abundance, therefore did not make up more than 50% of total species abundance, nor does the project site represent a vegetated area exceeding 100 ha, nor is it part of a larger patch of vegetation, beyond the site's boundaries. Consequently, it is considered that Koala activity on-site is likely to be transient, and the site would not allow for a viable *in situ* Koala population.

Local Government Area	Elevation*	Scientific Name and/or subspecies	Common Name	Soil and Location
IPSWICH CITY	2-800	<i>E. biturbinata</i>	Grey Gum	slopes on soils of medium fertility, annual rainfall > 1000 mm
IPSWICH CITY	2-1000	<i>E. crebra</i>	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	<i>E. exserta</i>	Queensland peppermint, Yellow messmate, Messmate, Bendo	sandy drier soils on hills and stony rises
IPSWICH CITY	2-1000	<i>E. grandis</i>	Flooded Gum, Rose Gum	moist, fertile, well-drained, deep, loamy soils of alluvial or volcanic origin, 725-3500 mm
IPSWICH CITY	2-850	<i>E. major</i>	Grey Gum	wet coastal forests on soils of low to medium fertility
IPSWICH CITY	2-900	<i>E. melanophloia</i>	Silver-leaved ironbark	moderately fertile silts, loams, sandy clays on foothills
IPSWICH CITY	2-1200	<i>E. melliodora</i>	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	<i>E. microcarpa</i>	Tallowwood	on slopes in deeper moderate to fertile soils, well-drained but moist
IPSWICH CITY	2-1050	<i>E. maluccana</i>	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	<i>E. propinqua</i>	Small-fruited Grey Gum	wet coastal forest on soils of low to medium fertility, Drought and frost tolerant
IPSWICH CITY	2-700	<i>E. resinifera</i> ssp. <i>hemilampra</i>	Red mahogany	sandy or well drained fertile soils, Drought and frost tolerant
IPSWICH CITY	2-200	<i>E. seiana</i>	Narrow-leaved Red Gum	poorly drained shallow soils, swampy sandy soils
IPSWICH CITY	2-700	<i>E. siderophloia</i>	Ironbark, Broken Back Ironbark	wet forest on soils of moderate fertility
IPSWICH CITY	2-800	<i>E. tereticornis</i> ssp. <i>tereticornis</i>	Forest red gum, Blue gum, Red iron gum	alluvial soils, 600-2500 mm, tolerates salt-laden coastal winds, tolerates saline soils, medium-heavy clays, does not tolerate waterlogged soils

Bolded entries indicate primary tree species

Weeds and Disturbance

Due to past land clearing and agricultural practices, the site contained a high number of introduced and weed species (50 species), including seven species declared under state government (seven) and 15 local government listed environmental weeds. The declared pests under the *Land Protection (Pest and Stock Route Management) Act 2002* (LPA) include four Class 2 weeds identified as *Ambrosia artemisiifolia* (Annual Ragweed), *Baccharis halimifolia* (Groundsel Bush), *Bryophyllum delagoense* (Mother-of-millions), and *Senecio madagascariensis* (Fireweed). The other three declared pests are Class 3 weeds and identified as *Asparagus africanus* (Ornamental Asparagus), *Lantana camara* (Lantana), and *Lantana montevidensis* (Creeping Lantana). Other disturbances included significant vegetation clearing for pastoral purposes (refer to **Figure 2**), establishment of residences and associated buildings, roads on three sides of the site, and significant impacts from surrounding land uses and development. Refer to **Attachment 3** for more detail.

Summary of Findings

The key findings from the field assessment are:

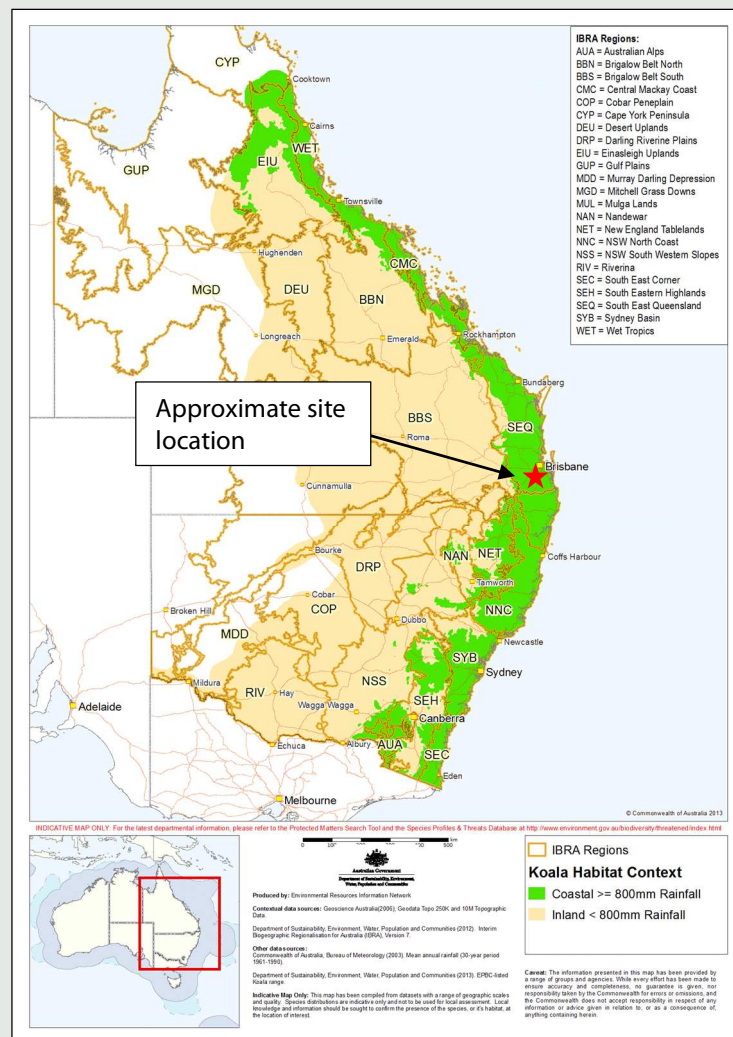
- No Koalas were observed on or surrounding the site;
- SAT surveys suggest Low to Medium usage throughout the entire site;
- Flora assessment did not return a high proportion of primary Koala food trees considered suitable for Koala persistence;
- Overall, the site was significantly disturbed as a result of historical vegetation clearing and thinning, disturbance from ongoing grazing activities, and impacts from surrounding development; and
- The site is not considered to provide ideal habitat for Koalas.

The following analysis is an assessment against the EPBC Act Referral Guidelines for the Vulnerable Koala.

What is the geographic context of the proposal site?

A search of the EPBC Protected Matters Search Tool within a 2 km buffer lists the Koala as potentially located on-site (refer to **Attachment 2**). As per the EPBC Act Referral Guidelines for the Vulnerable Koala, the site is therefore considered to fall within the modelled distribution of the Koala.

The Koala Referral Guidelines separate the geographical context into two zones, inland and coastal, based on the 800 mm per annum rainfall isohyet. The Rawlings Road site is mapped within a “coastal” area as per the distribution map (below). Therefore, the coastal habitat attributes contained in the Koala Referral Guidelines are relevant when using the Habitat Assessment Tool.



Does the site contain habitat critical to the survival of the Koala?

The site contains disturbed vegetation of a 15 ha area, which largely consists of regrowth vegetation, with a small patch (1.84 ha) of remnant (Least Concern) vegetation. The remnant vegetation is RE 12.9-10.2, with the short description *Corymbia citriodora subsp. variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks. This RE is not considered to be Essential Habitat for the Koala under the Queensland *Vegetation Management Act 1999* (VMA) (refer to **Attachment 3 - Figure 4**). Of the vegetation on-site, primary food trees (*E. tereticornis*) make up approximately 15% of the canopy, therefore, non-primary and secondary food tree species made up the remaining 85% (primarily including *Corymbia citriodora* (43%), with *Eucalyptus crebra* (31%), *Corymbia intermedia* (5%), *Corymbia tessellaris* (3%) *Acacia disparrima* (1%), *Eucalyptus siderophloia* (0.5%), and dead trees (2%).

Assessments

In accordance with the EPBC Act Referral Guidelines for the Vulnerable Koala, any habitat which receives a score of **5 or more** using the Koala Habitat Assessment Tool is considered to be critical habitat. The proposed site has scored a habitat assessment score of 5 based on the calculations and descriptions in **Table 4**.

Table 4: Koala Habitat Assessment Tool

Attribute	Score	Comment
Koala occurrence	+2 (High)	<u>Desktop</u> A Protected Matters Search (PMST) within a two kilometre radius of the subject site identified the Koala as having potential to occur. The Species Profile and Threats Database (SPRAT) for the Koala identifies that the highest density of Koala populations within Queensland occurs within the South-East Queensland region. Population estimates have focused on the Koala Coast and Pine Rivers area, however, Koalas are known to occur within the Ipswich City Council area. A Wildlife Online point search with a 2 km buffer generated under the Queensland <i>Nature Conservation Act 1992</i> (NCA) identified 36 Koala records within a two kilometre radius of the study area. The date pertaining to these observations is unknown. The Atlas of Living Australia shows only one preserved Koala specimen within a 5 km radius of the study area. Applying a 10 km radius search area results in three records, all dating to 1972 or 1975, suggesting there have been no recent records listed. Further, the site is not mapped as containing essential habitat for the Koala under the VMA, and the VMA Vegetation Management Supporting Map does not show any Koala records on, or in proximity to, the site. <u>On-ground</u> An assessment for Koala usage was conducted during site investigations in January and February 2016. No Koalas were observed on or surrounding the site. Koala scats were found on-site and four SAT surveys were conducted. Applying the SAT methodology (Phillips & Callaghan 2011) and the east coast (med-high) population density category (Table 3 above) due to the prevailing landscape and vegetation structure, three of the four sites where scats were found showed 'Low Use' (< 22.5%) and one found 'Medium Use' (≥ 22.52 but < 32.84). Refer to Table 2 above for full SAT results and Attachment 3 – Appendix G. As there is evidence of one or more Koalas within two kilometres of the zone within the last five years, the 'Koala Occurrence' attribute has been given a score of +2 (High).
Vegetation composition	+2 (High)	<u>Desktop</u> The Queensland Government Vegetation Management Supporting Map (Regional Ecosystem 8.0 (RE)) identifies the study area as containing 1.84 ha of Category B (Least Concern) remnant vegetation RE 12.9-10.2 which is described as <i>Corymbia citriodora subsp. variegata</i> +/- <i>Eucalyptus crebra</i> open forest on sedimentary rocks. The remaining 23.5 ha of the site contains non-remnant vegetation with some patches of regrowth vegetation. Site surveys confirmed the mapped RE to be accurate, with the majority of the site not considered to be remnant vegetation (refer to Attachment 3). <u>On-ground</u> On-ground surveys identify the site as woodland with <i>Corymbia citriodora</i> being the dominant species, followed by <i>Eucalyptus</i> and other <i>Corymbia</i> species making up the rest of the canopy species across the site. Non-remnant areas on-site were highly disturbed, containing regrowth from historical clearing. Large areas of the site have relatively young tree canopy regrowth present, with scattered larger mature trees. The GPS Tree Plot (refer to Attachment 3 – Section 4.4.1) recorded only 15.3% of trees with a DBH over 300 mm to be primary Koala food trees (<i>E. tereticornis</i>), with approximately 31.4% being secondary food tree species (<i>E. crebra</i> and <i>E. siderophloia</i>). No other species within the AKF food tree list as primary or secondary occurred on-site.

		For the majority of the referral area, non-primary and secondary food tree species made up 85% of the canopy cover, and this primarily included <i>Corymbia citriodora</i>, followed by <i>Corymbia intermedia</i>, <i>Corymbia tessellaris</i>, <i>Eucalyptus crebra</i>, <i>Eucalyptus siderophloia</i>, and <i>Acacia disparrima</i>. As the site contains forest or woodland with 2 or more known Koala food tree species in the canopy, the 'Vegetation Composition' attribute is given a score of 2 (High).
Habitat connectivity	0 (Low)	The application area is bordered by the Centenary Highway to the west, Rawlings Road to the north, and South Deebling Creek Road to the east. The Centenary Highway is also south of the site, approximately 200 m away. These major roads, with Koala exclusion fencing, act as significant physical barriers for Koala movement and remove opportunities for safe passage between the site and potential habitat patches to the east and south. Land west of the site is generally cleared land used for grazing and rural residential areas with limited remnant vegetation. The property immediately to the south contains some remnant vegetation (the rest of the Least Concern RE polygon), however the Centenary Highway bounds the south and west of the property and South Deebling Creek Road bounds the east, thereby reducing any connectivity vegetation on this site retains. As mentioned previously, the majority of land covered by the Ripley Valley PDA and adjoining the PDA is slated for development, with many projects within approvals or site preparation phases (refer to Plan 2). As a result, connectivity values surrounding the project site will only further decrease. While the 1.84 ha patch of remnant vegetation on-site is part of the patch existing on the property to the south, the polygon is fragmented by the Centenary Highway to the south and west, South Deebling Creek Road to the east, and Rawlings Road to the north (see image below). Therefore, this vegetation is not considered a connectivity feature (or part of a corridor connecting habitats) and this site does not augment existing connectivity or movement of Koalas across the landscape. Both mapped watercourses on-site (shown in image below) are considered to represent drainage features, not watercourses. They are both highly modified, with no waterway-associated vegetation present, and the northern mapped water feature constitutes of a constructed dam. Neither are considered to provide an effective riparian corridor for Koala movement due primarily to the lack of riparian vegetation present, and the fragmentation by the highway and surrounding roads. It is noted, however, that the drainage feature does provide limited connectivity values beyond the site boundary. The proposed development layout includes the establishment of Open Space in the areas of both mapped watercourses which will retain vegetation and include rehabilitation activities.



The site is not considered to be within a contiguous landscape of ≥ 300 ha, and as such, the 'Habitat Connectivity' attribute is given a score of 0 (Low).

Key existing threats

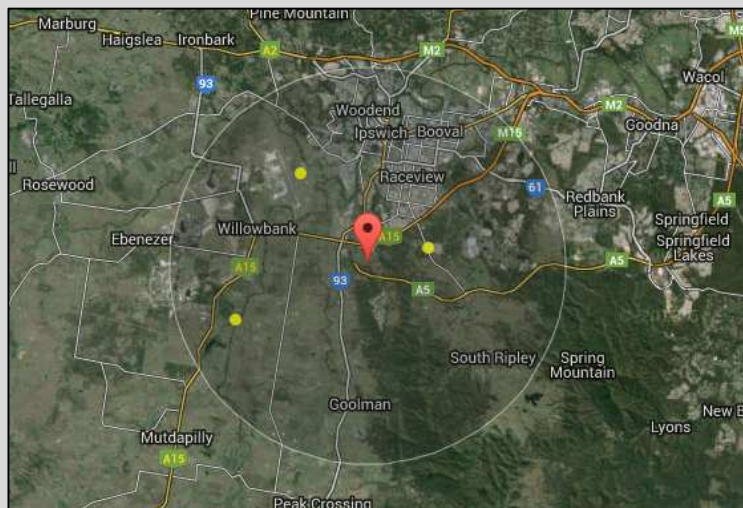
+1 (Medium)

Desktop

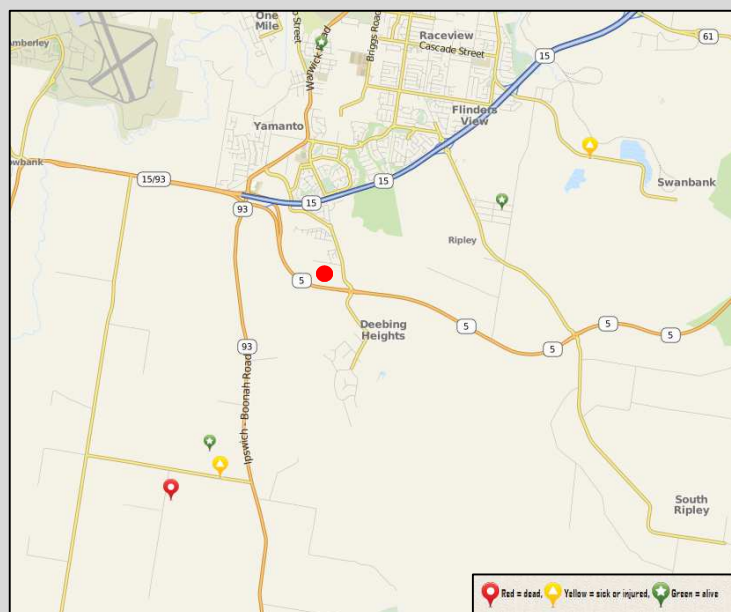
There are a number of obvious threats to the survival of the Koala on and around the project site. Such threats include vehicle strikes and dog attacks, associated with the location of nearby main roads, and the increasing residential development in the adjacent areas. These threats will increase as the Ripley Valley area is further developed, as per State and Local Government planning intent.

The **Atlas of Living Australia** map of Koala records (below) shows three records of Koalas within a 10 km radius of the site, however these are dated in 1972 and 1975, therefore, are not contemporary. **Koala Tracker** is a crowd sourced National Koala sighting record. Records from the Koala Tracker National Koala Map (below) show three records of live Koala sightings within 5 km of the project site – approximately 3.3 km northeast in September 2012, 4.1 km north in September 2012, and 3.8 km southwest in June 2010. There are two records nearby of sick / injured Koalas, one sick by disease approximately 5.6 km to the northeast in September 2012, and one injured by car approximately 4.2 km southwest in August 2013. One record shows a Koala dead by disease, in March 2010, approximately 5.1 km to the southwest.

Atlas of Living Australia Map



Koala Tracker Map



On-ground

The site is surrounded by busy roads, including highways, which suggests high vehicle usage in the area, which is presumed to increase as development within (and adjacent to) the PDA increases. In addition, there appears to be a significant level of dog ownership on residential lots in the nearby vicinity, which may also increase with increased population in the area. Data provided within the **Ipswich Koala Protection Society (IKPS)** newsletters indicate that dog attacks and vehicle strikes on Koalas are frequent within the surrounding areas of Amberley and Willowbank. As such, the area surrounding the proposed action site is considered to contain a number of existing threats which diminish the value of the habitat on the site. In addition, disease appears to be prevalent in the local Koala population, with many Koalas listed in **IKPS** newsletters as suffering from pneumonia, diseased ovaries and uterus, cystitis, conjunctivitis, and kidney failure. While there is evidence of threats to Koalas within the extended local landscape, there were no records of Koala rescues from Deebling Heights, however, there are also limited records of healthy Koalas in this area. It is anticipated that as the area continues to develop, vehicle strikes could be more prevalent if Koalas are drawn close to the major road networks and residential areas.

As there is evidence of infrequent or irregular Koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for Koala occurrence, the “Key Existing Threats” attribute has been given a score of +1 (Medium).

Recovery value

0 (Low)

The vegetation on the proposed development site is considered unlikely to be important in achieving the Interim Recovery Objectives for the coastal context given its foundation on the ability to protect and conserve large connected areas of Koala habitat. Koala Context Attributes listed under Interim Recovery Objectives in *Table 1* of the Guidelines for coastal areas are to:

1. Protect and conserve large, connected areas of Koala habitat, particularly large connected areas that support Koalas that are:
 - of sufficient size to be genetically robust or operate as a viable sub-population, or;
 - are free of disease or have a low incidence of disease, or;
 - are breeding.
2. Maintain corridors and connective habitat that allow movement of Koalas between large areas of habitat.

		The site does not contain any large areas of connected Koala habitat. While there is some remnant vegetation on-site (1.84 ha), which is part of the polygon mapped on the neighbouring property, this polygon is completely isolated and fragmented from other vegetation, by highways and main roads on all sides. Furthermore, there is encroaching urban development on the other side of the roads to the north, east, and south (refer to Plan 2), and cleared rural agricultural grazing properties to the west. The remainder of the proposed site contain paddock with scattered trees. Aerial imagery confirms that most of the land surrounding the site (particularly to the north, east, and west) has been subject to clearing and retains very few scattered trees, resulting in providing low value Koala habitat. The roads and development surrounding the site dramatically limits connectivity and movement opportunities to and from the site. Further, the site does not serve as a corridor due largely to fragmentation by Centenary Highway to the west and south, Rawlings Road to the north, and South Deebling Creek Road to the east. There are two stream order 1 watercourses mapped on-site. These watercourses were confirmed during site investigations to constitute drainage features (under the <i>Water Act 2000</i>) as they did not contain defined bed and banks. There was also no waterway-associated vegetation present. However, the proposed development includes the establishment of approximately 4.2 ha of Open Space, centred around these mapped drainage lines, which will include the retention of native vegetation present, and rehabilitation and planting activities (refer to Plan 1). The retention and rehabilitation of these Open Spaces has the potential to provide for tenuous connectivity throughout the mostly disturbed broader landscape. The site is located within the Ripley Valley, adjacent to the Ripley Valley PDA. As such, the site is proposed to occur within one of the largest industry growth areas in Australia, and an area that has undergone significant development in recent years. The majority of land surrounding the site has been historically cleared of vegetation values for pastoral purposes, and is now also slated for urban development in light of the Ripley Valley PDA designation. Given this planning intent, it is highly unlikely that the site retains recovery values outlined in the Interim Recovery Objectives. The proposed residential developments and highways and roads surrounding the site significantly limit connectivity and movement opportunities to and from the site, resulting in the site remaining as an isolated patch of remnant and regrowth vegetation. Overall, the site is considered to retain little opportunity to achieve the interim recovery objectives for coastal areas, which is based primarily on maintaining large areas of Koala bushland and connectivity. Given the habitat present on site is not considered to be important for achieving the interim recovery objectives for the relevant context, the "Recovery Value" attribute has been given a score of 0 (Low).
Total	5	As the habitat score is five or more, this site is considered to provide Critical Habitat for the Koala.

Will the action adversely affect habitat critical to the survival of the Koala?

The above assessment concludes that the site contains areas of critical habitat. The Koala Referral Guidelines also require the adversity of impacts to be assessed. This process follows a "yes/no" flowchart as shown in the Guidelines, with responses provided below:

1. Does your impact area contain habitat critical to the survival of the koala (habitat score ≥5).

Yes. The proposed development area contains habitat that received a habitat score 5 (refer to **Table 4** and **Plan 4**).

2. Does the area proposed to be cleared contain known Koala food trees?

Yes. Habitat assessments conducted across the site found that site canopy trees contain species that are considered to be Secondary Koala Food Trees with some Primary Koala Food Trees.

3. Are you proposing to clear ≤ 2 hectares of critical habitat?

No. The action requires the clearing of approximately 15 ha of critical habitat as defined by the koala referral guidelines (refer to **Plan 4**).

4. Are you proposing to clear ≥ 20 hectares of habitat that scored ≥ 8 ?

No. The action requires the clearing of approximately 15 ha of defined critical habitat that scored less than 8.

5. Assessment on Characteristics

Reviewing the site against the characteristics outlined in the flowchart indicates the proposed action displays characteristics that reduce adverse effects including:

- 15 ha is considered to be a smaller area of habitat (< 20 ha);
- Although the proposal requires the clearing of approximately 15 ha of habitat of variable quality, the vast majority is non-remnant vegetation, with only 1.84 ha of remnant vegetation to be cleared;
- The habitat score of 5 for the site is the lowest-range score for “critical habitat”;
- Only historical evidence of Koala activity in the form of scats was recorded on-site, with no Koalas recorded within 3 km, and records from within 5 km being over two years old;
- The mapped watercourses represent drainage features on-site, and do not contain riparian vegetation. Notwithstanding, these two water features will be retained with the proposed development within the Open Space areas to be rehabilitated; and
- The required clearing will not result in fragmentation of a habitat area from a larger habitat area as the vegetation on-site forms a small patch of remnant vegetation that is completely isolated and fragmented from any other remnant vegetation by major arterial roads and highways on all sides, and encroaching residential development on most sides.

Overall, the adversity of impacts that may occur as a result of the proposed development on Rawlings Road are minimised due to the very low-range habitat value score of critical habitat on the site, the total area to be cleared (15 ha), no Koalas being recorded on-site, and the significant existing barriers to Koala dispersal to and from the site.

Could the action interfere substantially with the recovery of the Koala?

In addition to considering adverse impacts on critical habitat, the potential for the action to interfere with the recovery of the Koala must also be considered as per the Koala Referral Guidelines. Possible impacts listed in the guidelines that must be considered include:

- Introducing or increasing koala fatalities due to dog attacks;
- Introducing or increasing the risk of vehicle strike;
- Facilitating the introduction or spread of disease and pathogens;
- Creating a barrier to movement; and
- Degrading critical habitat due to hydrological changes.

These impacts, as well as mitigation measures to address impacts, are discussed in **Table 5**.

Table 5: Potential Impacts**Dog Attack**

The development of a residential estate is likely to increase the number of dogs entering the area. However, it is expected that dog activity already occurs on surrounding properties, and possibly on the subject site. The residential development will implement appropriate governance and guidance regarding dog ownership to new home buyers, ensuring interaction between dogs and Koalas is mitigated, and therefore it is not expected that dog attacks on Koalas will increase as a result of the development.

No residual impacts are identified.

Vehicle Strike

Vehicle activity will increase in the area, and through the site, as a result of the development. However, given the site is surrounded by Major roads and highways, as well as various forms of urban development, no Koalas were recorded on-site and very few Koalas have been recorded in the last few years within 5 km of the site, and the relatively small size of the proposed development, lack of interaction between vehicles and Koalas is considered unlikely to increase significantly as a result of the development. Road design, signage, and the imposition of a low vehicle speed will help mitigate any potential risks to Koalas.

No residual impacts are identified.

Disease and Pathogens

Most of South East Queensland's Koala populations (including within the Ipswich area) are already known to have a high prevalence of *Chlamydia* infection and Koala Retrovirus. The symptoms of these diseases are often observed within Koala populations undergoing environmental stresses, such as overcrowding and poor nutrition. The project is unlikely to cause pressure on a local Koala population (noting that no Koalas have been seen on-site or in close proximity to the site) to the point where these diseases manifest. Further, the project is extremely unlikely to introduce or spread disease or pathogens into any Koala habitat areas.

No residual impacts are identified.

Barriers to Dispersal

While the proposal will restrict Koala movement through the site, given that the vegetation existing on-site is already highly isolated and fragmented from any other vegetation due to surrounding roads on all sides of the vegetation, it is arguable that this will not result in impacts to dispersal. As it currently stands, the site is largely fragmented from other habitat patches due to these roadways and encroaching development, and therefore there is no means currently for the safe movement of the Koala to or from the site. In addition, the surrounding properties are earmarked for residential development in line with planning intent, with properties to the north of Rawlings Road already established. This surrounding development will further isolate any vegetation on-site. As such, the impacts caused by potential barriers to dispersal within the development area are considered to be minimal.

No residual impacts are identified.

Hydrological change

There will be an increase in hardstand areas across the site, due to the establishment of a residential development. Such increase in hardstand areas has the potential to affect the hydrology currently on-site, however management plans will be implemented to address the requirements of State and Local government guidelines to ensure that impacts are minimised. The proposed development will retain Open Space areas where the watercourses are mapped on-site, which will assist to minimise changes to hydrology in these areas. It is anticipated that the project is unlikely to result in hydrological changes that will further degrade the site or impact neighbouring areas of potential Koala habitat.

No residual impacts are identified.

Field and desktop assessments against the Referral Guidelines for the Vulnerable Koala were utilised for the following Significant Impact Assessment (**Table 6**) based on the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*.

Table 6: Significant Impact Assessment – Koala

Significant Impact Criteria	Description	Impact
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
1. Lead to a long term decrease in the size of an important population of a species.	While the site does contain some habitat assessed to be critical habitat for the Koala, the potential impact area is approximately 15 hectares of habitat with a score of 5, which is the lowest range score on the spectrum. Of relevance, the proposed location for the referred action is adjacent to the Ripley Valley Priority Development Area, which means that the site will become more fragmented from the surrounding landscape due to current and future urban development. In addition, field assessments have failed to locate the Koala on-site, despite targeted searches, with only evidence of Low to Medium Koala usage, recorded in the form of scats. Available databases did not have records of the Koala being sighted within 3 km of the site, and the site is completely isolated from other vegetation. As such, Koalas that might utilise the site would be considered transient and more likely to inhabit more optimal habitat to the south of the site. It is considered unlikely that an important population is present on-site, and so the action is not expected to decrease the size of an important population.	No significant impact likely
2. Reduce the area of occupancy of an important population.	An important population is not considered present on the subject site for the following reasons: ▪ No Koalas have been recorded on-site, or immediately adjacent to the site (only evidence of their activity has been recorded) ▪ The site contains critical habitat scored as the lowest-range quality, with more optimal habitat south of the site ▪ The vegetation on the site is severely fragmented by highways and roads on all sides, and encroaching development in the wider landscape ▪ Koala records in the vicinity of the site include specimens carrying disease Further, the exclusion of any development occurring on the western portion of the property (to the west of the Centenary Highway – refer to Plans 1 and 4) will facilitate continued connectivity in a north - south direction, outside of the majority of proposed development areas. As such, the proposal is not considered to reduce the area of occupancy of an important population.	No significant impact likely
3. Fragment an existing important population into two or more populations.	The action is proposed to occur on a site which is already significantly fragmented from surrounding habitat (Plan 2). Vegetation on the subject site adjoins some vegetation on the property to the south, however, these properties are isolated from any other vegetation, due to roads on all sides. At best, the site provides disjointed vegetation with no connectivity value on any side due to the adjacent Centenary Highway, Rawlings Road, and South Deebling Creek Road. Furthermore, an important population of the Koala is not considered to utilise the site given the low number of specimen records in the vicinity, and no evidence of the Koala recorded on-site. Regardless, it is anticipated that the retention of the western area and of the Open Spaces within the development will maintain current connectivity values for the site and mitigate further potential fragmentation.	No significant impact likely
4. Adversely affect habitat critical to the survival of a species.	While the proposed action results in the removal of Koala habitat, this habitat is disturbed by historical pastoral practices, and current grazing activities. It is also subject to edge effects from surrounding major arterial roads and increasing urban development. Further, this habitat is not considered to be unique or of special value (refer to Attachment 3). The retention of the Open Space areas within the development and the western portion of the property will ensure that areas with the potential to provide connectivity value are protected, and not developed. Given the disturbed nature of the site and zoning as Future Urban, adjacent to a Priority Development Area, the habitat on-site is not considered of importance to the interim recovery objectives for the Koala. Although it is acknowledged that 15 ha of critical habitat for the Koala (score of 5) as assessed under the Guidelines will be cleared, site habitat is not considered to constitute high or unique value, and, given the extent of more optimal habitat in the surrounding Beaudesert-Ipswich landscape, it is considered that the extent of potential loss will not adversely affect the survival of the species.	No significant impact likely

5. Disrupt the breeding cycle of an important population.	Detailed surveys on site did not identify any breeding Koalas. Evidence of Koala activity on-site was recorded in the form of scats, however, no individuals were recorded despite targeted searches. As such, the site is considered to most likely support transient individuals unlikely to constitute a breeding population or an important population. The development layout excludes development on the property to the west of the Centenary Highway, and includes two areas of Open Space within the development, therefore, it is considered that these areas will maintain current connectivity values for potential dispersal. It is considered unlikely that the breeding cycle of an important population will be disrupted by the proposed action.	No significant impact likely
6. Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	The habitat on this site was not recorded to contain any special or unique values. The removal of habitat at the site habitat is unlikely to have a significant impact on the availability of habitat throughout the broader landscape, given the vast quantity and availability of Koala habitat to the south which is a large area of more than 10,000 hectares of vegetation, with a range of habitat and landscape features. Individuals utilising the proposed development site are considered to be transient and not part of an important population. Further, the retention of vegetation as Open Space within the development, and as undeveloped land to the west of the development will provide continued connectivity values to the Koala, if present. As such, the proposal is not considered likely to lead to species decline.	No significant impact likely
7. Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	Domestic dogs have the potential to become feral, are considered a major threat to Koala survival. Dogs are known to be present in the surrounding landscape. The proposed action is expected to result in an increase in the density of domestic dogs in the area, however, their potential to increase impacts on Koalas will be mitigated by effective governance. Neighbouring residential developments will also result in an increase in the number of dogs in the area. Evidence of invasive <i>Lantana camara</i> (a recognised hindrance to Koala dispersal) is present on-site, with the properties to the south noted as having significant infestations. It is likely that this invasive plant will be suppressed under the required rehabilitation efforts for the ongoing approval of the proposed development on the subject site. It is unlikely that the proposal will augment invasive species impacts already present in the area.	No significant impact likely
8. Introduce disease that may cause the species to decline.	Most of South East Queensland's Koala populations are recorded as having a high prevalence of Chlamydia infection and Koala Retrovirus (KoRV). Sick and dead by disease Koalas have been recorded in the vicinity of the referral area. As such, the project is considered unlikely to cause pressure on the local Koala population to the point where these diseases manifest. Further, the project is extremely unlikely to introduce or spread disease or pathogens into Koala habitat areas.	No significant impact likely
9. Interfere substantially with the recovery of the species.	Assessment has concluded that the proposed action is unlikely to interfere substantially with the recovery of Koala (refer to Tables 4 and 5), primarily due to the relatively disturbed nature of the site, its current relatively high level of fragmentation, encroaching development (in line with planning intent) and the lack of records of the Koala utilising the site, or areas immediately adjacent.	No significant impact likely

Koala summary

Targeted field surveys (as per EPBC Act guidelines) were conducted across the site and resulted in no Koala observations on, or surrounding, the referral area. In addition, four SAT transects were performed and found Low to Medium Koala usage levels for the site (refer to **Table 2**). This suggests that the site has a low usage by Koalas, corresponding with the isolated and fragmented nature of the vegetation available on-site. Flora assessment and tree plots concluded that the site is dominated by species that are not identified as Koala Food trees, however some Primary and Secondary Koala Food Trees were recorded throughout the site. The critical habitat on the site was given a habitat assessment score of 5 using the Koala Referral Guidelines (refer to **Table 4**).

As discussed above, a number of factors diminish the adversity of impacts caused by the proposed clearing of 15 ha of score 5 critical habitat as defined by the koala referral guidelines. These factors are summarised as:

- Although the proposal requires the clearing of approximately 15 ha of habitat of variable quality (see **Plan 4** and **Attachment 3** for data), only 1.84 ha of Least Concern remnant vegetation will be cleared, and approximately 4 ha of critical habitat will be retained (refer to **Plan 4**);
- 15 ha is considered a smaller area of clearing (<20 ha);
- The habitat score of 5 for the site is the lowest possible score for “critical habitat”;
- The western portion of the property, across the Centenary Highway, is not proposed to be developed as part of this action (refer to **Plan 4**). Additionally, two areas of Open Space (totaling 4.2 ha) are proposed for inclusion in the development and will retain existing vegetation and include rehabilitation activities. These three areas will assist to provide connectivity values through the landscape and ensure long-term habitat viability should Koalas be present;
- No Koalas were observed on-site; only historical evidence of Koala activity in the form of scats was recorded;
- The two mapped watercourses (in the north and the southeast of the site) will be retained and rehabilitated as Open Space (see **Plan 1**);
- As vegetation on this site and the neighbouring property is completely isolated from any other vegetation due to roads and highways on all sides, the clearing of this vegetation will not result in fragmentation of a habitat area from a larger habitat area; and
- Vegetation clearing will be undertaken sequentially under the guidance of a fauna spotter-catcher. This will ensure that the potential for injury or death to Koalas, if present, as a result of clearing is minimised.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

Pteropus poliocephalus (Grey-headed Flying-fox) requires foraging resources and roosting sites to persist. The species is known to use a wide variety of habitats including subtropical and temperate rainforests, tall sclerophyll forest and woodlands, heaths, swamps and also urban and agricultural areas where food trees have been cultivated. The species is highly adaptive with its diverse native diet, which it can supplement with introduced species. The species is known to forage within a variety of habitats and locations as each resource does not consistently produce food throughout the entire year. The closest known roost site to the proposed development site is located at the end of Box Street, Yamanto, along Deebling Creek. This roost is approximately 2.6 kilometres north of the application site and was confirmed as utilised by Grey-headed Flying-fox in May 2015.

A small amount (1.84 ha) of the referral site is mapped as containing Least Concern remnant vegetation (RE 12.9-10.2), with the remainder of the site consisting of non-remnant vegetation. *Pteropus poliocephalus* (Grey-headed Flying Fox) was not recorded during site surveys. The habitat characteristics of the site are considered to provide only marginal foraging resources for this species, as follows:

- Regrowth and remnant vegetation patches on-site are dominated by *Corymbia citriodora* (Spotted Gum) and *Eucalyptus crebra* (Narrow Leaf Ironbark), with *Eucalyptus tereticornis* (Forest Red Gum), and *Corymbia intermedia* (Pink Bloodwood) food trees scattered throughout.
- It is considered likely that foraging by *Pteropus poliocephalus* (Grey-headed Flying Fox) could occur on the application site at various times throughout the year, depending on flowering. The dominant flora species observed throughout the application site are shown below with the period that species is expected to flower:
 - Corymbia citriodora* (Spotted Gum) – July to September
 - Corymbia intermedia* (Pink Bloodwood) – December to May
 - Eucalyptus crebra* (Narrow Leaf Ironbark) – March to May
 - Eucalyptus tereticornis* (Forest Red Gum) – June to November
- There is an abundance of winter flowering resources in the broader landscape which would suggest that the habitat provided by the subject site represents only a small proportion of these available resources. It is therefore considered unlikely that individuals would be exclusively reliant on the resources supported by the subject site.

A Draft EPBC Act Policy Statement – camp management guidelines for the Grey-headed and Spectacled Flying-fox (Draft Guidelines) is available and summarises the decision process in considering the likelihood of a significant impact on the Grey-headed Flying-fox or Spectacled Flying-fox schematically. The Draft Guidelines are specifically for the assessment of impacts on Flying-fox camps. No roosting sites are known to be on-site or in the near vicinity. Further, no roosting sites were recorded during field surveys. It is therefore considered highly unlikely that the proposed action will involve impacts to the Grey-headed Flying-fox as per the Draft Guidelines. However, the Draft Guidelines also state that:

- *Maintaining a network of flying-fox camps and foraging habitat across both species' national range is important for their recovery.*
- *Actions that will impact on the foraging habitat of EPBC Act listed flying-foxes may also result in a significant impact. This is beyond the scope of this policy.*

As the site does contain known potential foraging habitat for the Grey-headed Flying-fox, an assessment against the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* was performed (see **Table 7**) to ascertain whether or not the action could potentially impose a significant impact on the species.

Table 7: Significant Impact Assessment – Grey-headed Flying-fox

Significant Impact Criteria	Description	Impact
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
1. Lead to a long term decrease in the size of an important population of a species.	While the proposed referral site contains potential foraging habitat for the Grey-headed Flying-fox, no individuals or roost camps were seen on or adjoining the site during field works in January and February 2016. Further, there are no recorded roost camps on or in close proximity to the site. South East Queensland has a permanent and relatively abundant population of Grey-headed Flying-foxes and available habitat is relatively abundant and spread throughout the region, given the high prevalence of flowering eucalypts. It is noted that the Grey-headed Flying-fox has potential to visit the site during foraging activities, however it is recognised that their nightly commuting distance spans up to 20 km, and as a result includes a vast area of suitable habitat within the surrounding landscape. The site is not considered to support an important population of the species and, subsequently, the proposed action is not considered to lead to a long-term decrease in the size of any local or important populations of the Grey-headed Flying-fox.	No significant impact likely
2. Reduce the area of occupancy of an important population.	No roost camps were observed across the site, and none are known on, or in proximity to, the site. While the proposed action will remove some potential foraging habitat, given the abundant availability of flowering eucalypts in the surrounding landscape and within the greater region, the development proposal is unlikely to have a significant impact on the area of occupancy of the species, or of the occupancy of an important population of the species.	No significant impact likely
3. Fragment an existing important population into two or more populations.	The SPRAT species profile outlines that, while there are spatially structured colonies of Grey-headed Flying-fox, there are no separate or distinct populations due to the constant genetic exchange and movement between camps throughout the species' geographic range. In addition, the species is considered highly mobile and capable of foraging over relatively vast distances. Due to the lack of a roosting camp on or adjacent to the subject site, the site is not considered to contain an important population of the Grey-headed Flying-fox. It is not expected that the proposed action will fragment an important population into two or more populations.	No significant impact likely
4. Adversely affect habitat critical to the survival of a species.	While the removal of some potential foraging habitat will occur as a result of the proposed action, this habitat has been relatively disturbed by clearing and grazing practices on-site, is isolated from other vegetation by roads and highways, and is subject to edge effects from surrounding development. Further, this habitat is not considered to be unique or of special value. The South East Queensland landscape provides abundant Eucalypt and similar genera, which are available for Grey-headed Flying-fox foraging. Of note, the proposed development will retain two areas of Open Space within the layout, and excludes any development on the (vegetated) western portion of the site, which will maintain foraging resources post-development. Given its relatively disturbed nature, potential foraging habitat	No significant impact likely

	to be cleared is not considered to be critical habitat to the survival of the Grey-headed Flying-fox.	
5. Disrupt the breeding cycle of an important population.	Site surveys did not identify any evidence of breeding Grey-headed Flying-fox. Mating normally occurs within autumn, and females generally give birth in October, when they carry their young to feeding sites for four to five weeks after giving birth. No individuals or roosting camps were observed on-site or on adjoining properties, and as such, the proposed action is unlikely to disrupt the breeding cycle of an important population.	No significant impact likely
6. Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	The habitat on-site did not contain any special or unique values. The removal of this habitat is unlikely to have a significant impact on the availability of habitat throughout the broader landscape, given the vast quantity and availability of eucalypts in the surrounding area. It is not expected that the removal of this site habitat will be of an extent that the species is likely to decline.	No significant impact likely
7. Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	The proposed action will be governed by management plans, including those for invasive species. The action is unlikely to result in the introduction of invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	No significant impact likely
8. Introduce disease that may cause the species to decline.	The proposed project is considered unlikely to introduce disease into the area that may cause the species to decline.	No significant impact likely
9. Interfere substantially with the recovery of the species.	Recovery of the Grey-headed Flying-fox has specifically targeted broad-scale culling. In addition, conservation efforts for the species have led to the protection of known roosting sites and associated important habitat. The subject site has not been identified as an important habitat or containing a roosting site. The action is considered unlikely to interfere with the recovery of the species.	No significant impact likely

As per the assessment against the *Significant Impact Guidelines 1.1* (**Table 7**), the proposed action is considered unlikely to have a significant impact on the Grey-headed Flying-fox.

In summary, it is considered that an abundance of suitable foraging habitat for the Grey-headed Flying-fox exists in the surrounding landscape, suggesting that the retention of Open Space areas and the western portion of the site would likely mitigate any potential negligible impact on Grey-headed Flying-fox.

Swift Parrot (*Lathamus discolor*)

Lathamus discolor (Swift Parrot) is considered very distinctive. It undertakes the longest migration of any parrot species in the world, with breeding occurring only in Tasmania, and migration to mainland Australia occurring within the wintering months to the box-ironbark forests and woodlands as far north as southeast Queensland. This species has been recorded within woodland and forest patches containing *Eucalyptus crebra* (Narrow Leaf Ironbark), *Eucalyptus tereticornis* (Forest Red Gum) as well as yellow box forests, and it feeds mostly on nectar and mainly from eucalypts. Although records of this species have come from the Gold Coast, Noosa, Toowoomba, Warwick and Lockyer Valley, a search of Wildlife Online for species records does not include *Lathamus discolor* as being observed within a ten kilometre radius of the site.

There is 1.84 ha of Least Concern remnant vegetation mapped on the subject site. The remainder of the site consists of non-remnant vegetation (cleared paddock and some patches of regrowth). No *Lathamus discolor* (Swift Parrot) individuals were recorded during site surveys, and based on the availability of *Eucalyptus crebra* (Narrow Leaf Ironbark) and *Eucalyptus tereticornis* (Forest Red Gum), the site is considered to provide marginal foraging resources for this species. However, as the site does contain known foraging habitat for the Swift Parrot, an assessment against the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* was conducted (refer to **Table 8**) to ascertain whether or not the action could potentially impose a significant impact on the species.

Table 8: Significant Impact Assessment – Swift Parrot

Significant Impact Criteria	Description	Impact
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
1. Lead to a long term decrease in the size of an important population of a species.	While the site contains potential foraging habitat for the Swift Parrot, no individuals were seen during the site surveys. Known records of the Swift Parrot come from the Gold Coast, Noosa, Toowoomba, Warwick, and Lockyer Valley. The available habitat is relatively abundant and spread throughout the region given the high prevalence of Eucalypts. Whilst Swift Parrots have potential to visit the site for foraging, they are highly mobile and their regular commuting activities include a relatively vast area. The site is not considered to support an important population of the species, and subsequently, the proposed action is considered unlikely to lead to a long-term decrease in the size of any Swift Parrot populations.	No significant impact likely
2. Reduce the area of occupancy of an important population.	No individuals or evidence of Swift Parrots were observed on-site, and it is not considered that an important population exists on-site or in close proximity. The proposed action will remove some potential foraging habitat, however, given the abundance of flowering eucalypts in the surrounding landscape and within the greater region, the proposed action is unlikely to have a significant impact on the area of occupancy of the species, or on the area of occupancy of an important population.	No significant impact likely
3. Fragment an existing important population into two or more populations.	The SPRAT species profile outlines that the Swift Parrot population occurs as a single population, although it migrates annually. The population is not considered to be fragmented, or separated. During non-breeding times, their movements cover hundreds of kilometres. No important population is considered to exist on, or adjacent to, the project site. The proposed action is considered unlikely to fragment a population into two or more populations.	No significant impact likely
4. Adversely affect habitat critical to the survival of a species.	While the proposed action will result in the removal of potential foraging habitat for the Swift Parrot, the habitat on-site is relatively disturbed due to past clearing and current grazing practices. It is also isolated from other vegetation, and subject to edge effects from surrounding residential development. The habitat on-site is not considered to be unique or of special value. The SPRAT species profile states that while the Swift Parrot habitat is fragmented, this has not caused the populations to fragment, due to their highly mobile lifestyles. The South East Queensland landscape provides abundant eucalypt and similar species, which are available as food sources for the Swift Parrot. Additionally, the retention of Open Spaces on-site and the vegetated western portion of the property will maintain foraging resources for this species post-development. Given its relatively disturbed nature, potential foraging habitat to be cleared is not considered to be critical habitat for the survival of the Swift Parrot.	No significant impact likely
5. Disrupt the breeding cycle of an important population.	The Swift Parrot breeds in Tasmania, and none were observed on-site. Therefore, the proposed action will have no impact on the breeding cycle of an important population.	No significant impact likely
6. Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	The habitat on-site did not contain any special or unique values. The removal of some vegetation as required for the development is unlikely to have a significant impact on the availability of habitat for the Swift Parrot throughout the broader landscape, given the vast quantity and availability of eucalypts in the surrounding area. The removal of a small area of foraging habitat on-site is not likely to lead to species decline.	No significant impact likely
7. Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	The proposed action is unlikely to result in the introduction of invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat. Further, the project will be carried out in accordance with management plans which will include measures to avoid establishment of invasive species in the area.	No significant impact likely
8. Introduce disease that may cause the species to decline.	The project is unlikely to introduce disease into the area that may cause the species to decline.	No significant impact likely
9. Interfere substantially with the recovery of the species.	Recovery of the Swift Parrot has specifically focused on identifying extent and quality of habitat; managing habitat at the landscape scale; reducing incidents of collision; population and habitat monitoring; community education and	No significant impact likely

	information; and managing the recovery process. The subject site has not been identified as an important habitat or population and the action is considered unlikely to interfere with the recovery of the species.	
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As per the assessment against the *Significant Impact Guidelines 1.1* (see **Table 8**), the proposed action is considered unlikely to have a significant impact on the Swift Parrot.

In summary, it is considered that the abundance of foraging habitat in the surrounding landscape suitable for the Swift Parrot, and the inclusion of Open Spaces in the development, and the retention of the western portion of the property would likely mitigate any potential negligible impact on Swift Parrot.

Nature and extent of likely impact

Except for evidence of Koala activity (in the form of scats), no other EPBC Act listed threatened species were observed on or in areas adjoining the site. As stated above, it is considered that the abundance of suitable foraging habitat in the surrounding landscape indicates that the retention of the two Open Space areas in the development layout (which are centred around the mapped watercourse features) and the undeveloped western portion of the site would likely mitigate any potential negligible impact on these species, should they visit the site.

Field surveys conducted across the site targeted for the Koala as per the EPBC Act guidelines resulted in no observations of Koala on or surrounding the referral area. In addition, of the four SAT transects conducted, three found Low usage and one found Medium usage of the site by the Koala. This suggests that the entire site has a low usage by Koalas, reflecting the fragmented nature of the site, the isolated vegetation, and the lack of state Koala mapping on the majority of the site. Flora surveys found that the site is generally dominated by species that are not identified as Koala Food trees, however, lower proportions of Primary and Secondary Koala Food Trees were present. An assessment of critical habitat on-site using the Koala Referral Guidelines resulted in a habitat score of 5.

In terms of impacts on MNES, the project will result in the following:

- Removal of 15 hectares of habitat defined as critical by the koala referral guidelines (score of 5) (**Plan 4**);
- Potential harm to individuals if they are present on site during vegetation clearing; and
- Increased vehicle use during and after construction, which may pose potential threats to Koalas.

As discussed above, a number of factors diminish the adversity of impacts caused by the proposed clearing of 15 hectares of critical habitat. These factors can be summarised as:

- Although the proposal requires the clearing of approximately 15 ha of habitat of variable quality (see **Plan 4** and **Attachment 3** for data), only 1.84 ha of Least Concern remnant vegetation will be cleared, and approximately 4 ha of critical habitat will be retained (refer to **Plan 4**);
- 15 ha is considered a smaller area of habitat (<20 ha);
- The habitat score of 5 for the site is the lowest possible score for “critical habitat”;
- The western portion of the property, across the Centenary Highway, is not proposed to be developed as part of this action (refer to **Plan 4**). Additionally, two areas of Open Space (totalling 4.2 ha) are proposed for inclusion in the development and will retain existing vegetation and include rehabilitation activities. These three areas will assist to provide connectivity values through the landscape and ensure long-term habitat viability should Koalas be present;
- No Koalas were observed on-site; only historical evidence of Koala activity in the form of scats was recorded;
- The two mapped watercourses (in the north and the southeast of the site) will be retained and rehabilitated as Open Space;
- As vegetation on this site and the neighbouring property is completely isolated from any other vegetation due to major roads on all sides, the clearing of this vegetation will not result in fragmentation of a habitat area from a larger habitat area; and
- Vegetation clearing will be undertaken sequentially under the guidance of a fauna spotter-catcher. This will ensure that the potential for injury or death to Koalas, if present, as a result of clearing is minimised.

As such, the proposal is considered unlikely to impose a significant impact on any MNES, including the Koala.

3.1 (e) Listed migratory species

Description

An EPBC Act Protected Matters Search Tool with a two kilometre radius identifies 14 migratory species as having potential to occur on-site (**Attachment 2**). During the field survey, the Rainbow Bee-eater (*Merops ornatus*) and Cattle Egret (*Ardea ibis*) were observed. These species are both common species, often observed throughout eastern and northern Australia. It is considered possible that the White-throated Needle-tail (*Hirundapus caudacutus*) and Osprey (*Pandion haliaetus*) could be fly-over species at the site, however it is not anticipated that they would be impacted by the project. Optimal habitat for these species and the other listed migratory species was considered lacking on-site, and the surrounding environment provides an abundance of suitable habitat (**Attachment 3 – Appendix D**).

Nature and extent of likely impact

The proposed action is not considered to have a significant impact on migratory species given the lack of significant habitat on-site, and abundance of habitat in the surrounding landscape.

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description

Not applicable. Refer to Attachment 2.

Nature and extent of likely impact

Not applicable

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

Description

Not applicable. Refer to Attachment 2.

Nature and extent of likely impact

Not applicable

3.1 (h) The Great Barrier Reef Marine Park

Description

Not applicable. Refer to Attachment 2.

Nature and extent of likely impact

Not applicable

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development

Description

Not applicable. Refer to Attachment 2.

Nature and extent of likely impact

Not applicable

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

3.2 (a)	Is the proposed action a nuclear action?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?		
		X	Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

The development has a proposed footprint of approximately 25 ha. However, the clearing footprint is estimated to be 15 ha, of disturbed and fragmented vegetation, of variable condition. It is not expected that the proposed action would have a significant impact on the whole environment. Refer information contained within this document and in the supporting EAR (**Attachment 3**) for further details on the environment and potential impacts.

3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

3.2 (d)	Is the proposed action to be taken on Commonwealth land?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

3.2 (e)	Is the proposed action to be taken in the Great Barrier Reef Marine Park?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

3.3 Other important features of the environment

3.3 (a) Flora and fauna

The following provides a brief description of other flora and fauna values found on-site during desktop and field surveys (further information is contained within **Attachment 3**).

Flora

The proposed site is highly modified due to past land use, including vegetation clearing and agricultural grazing practices (refer **Response 3.3(g)**). Although historically disturbed, the application area contains a patch of remnant Least Concern Regional Ecosystem community in the south with the remainder of the site considered to contain non-remnant vegetation including some areas of regrowth vegetation. This vegetation was confirmed on-site to be RE12.9-10.2 (refer to **Attachment 3 – Figure 4**). The majority of the proposed development area has previously been cleared of vegetation values and used for agricultural purposes. This RE community is described as *Corymbia citriodora* subsp. *variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks. Site survey confirmed species within this remnant patch to be dominated by *Corymbia citriodora* (Spotted Gum) and consistent with the current regional ecosystem mapping. The regrowth recorded on-site contained patches dominated by either *Corymbia citriodora* (Spotted Gum) or *Eucalyptus crebra* (Narrow Leaf Ironbark), which were largely devoid of understorey species with a very sparse sub-canopy layer. Species within this layer included *Corymbia citriodora* (Spotted Gum), *Eucalyptus crebra* (Narrow Leaf Ironbark), *Corymbia intermedia* (Pink Bloodwood), *Corymbia tessellaris* (Moreton Bay Ash), *Acacia disparrima* (Hickory Wattle), and *Alphitonia excelsa* (Soap Tree).

Despite targeted surveys, no threatened flora species under the EPBC Act or NCA were observed on-site, nor any of the three TECs considered potentially occurring on-site. Due to previous and continuing disturbances on the property, and within the surrounding area, it is unlikely that the subject site provides the necessary habitat to support listed flora species and TECs.

Ninety-nine flora species were observed on-site, consisting of 49 native species and 50 introduced species (refer to **Attachment 3, Table 4** and **Table 7**). A number of the native species have been planted in the constructed garden beds. Of the introduced species, 7 are listed as declared pests under the *Land Protection (Pest and Stock Route Management) Act 2002* (LPA), while 15 are classified as environmental weeds by **Ipswich City Council**. The majority of declared weeds were observed as isolated individuals or within small isolated clumps, however *Lantana montevidensis* (Creeping Lantana) was observed in greater densities throughout the site. Severe infestations of *Lantana camara* (Lantana) were observed within the adjacent properties located along the southern property boundary, but it was noted that this weed was being managed on the subject site.

There are two watercourses (stream order one drainage lines) mapped on the site – one in the central north portion of the site, and one traversing the south eastern corner. Upon site assessment, both watercourses were considered to reflect “drainage features” as defined under the *Water Act 2000*. Neither watercourse had a defined bed or banks, nor waterway-associated vegetation. The watercourse mapped through the north of the site largely consisted of a constructed dam. Refer to **Attachment 3 – Section 4.5** for further detail and photos. Further, the mapped watercourses were not considered to contain suitable habitat for threatened species given the high disturbance from a natural waterway state, the lack of waterway-associated flora species, and the surrounding cleared lands.

Open Space

Approximately 4.2 ha of Open Space has been incorporated in the proposed development layout (refer to **Plan 1**). The Open Space area is largely around mapped watercourses, in the central north portion and the southeast of the site. These Open Space areas will undergo weed management activities and infill planting, as required, resulting supplementing and enhancing the existing natural ecological functions of the site, and the waterway flow paths. A rehabilitation plan will be developed for this area, including the specification of appropriate native flora species to be planted.

Fauna

Thirty-seven fauna species were observed on-site (including 28 bird species, two mammal species, five reptile species, and two amphibian species) – refer to **Attachment 3** Section 4.6. No threatened species listed under the EPBC Act or NCA were observed on-site. Utilisation of the site is considered to be limited to fauna that can adapt to a highly modified and disturbed landscape containing anthropogenic influences. A variety of common avi-fauna were observed utilising the site as part of a broader home range. A large number of *Macropus gigantues* (Eastern Grey Kangaroo) were observed utilising the western portion of the site and within the regrowth vegetation east of the central mapped watercourse.

Out of the 665 native trees observed with a DBH 300 mm or larger, only 12 trees contained bird nests and nine trees contained hollows, however, these were not observed to be occupied by significant fauna species. The nests appeared to be utilised by *Corvus orru* (Torresian Crow), *Manorina melanocephala* (Noisy Minor), and *Gymnorhina tibicen* (Australian Magpie), while some of the hollows were being utilised by families of *Trichoglossus haematodus* (Rainbow Lorikeet).

No Koala sightings were recorded within the proposed development area. Koala habitat and usage assessments as per EPBC Act Guidelines found Low to Medium evidence of Koala usage (refer to **Section 3.1d** of this document).

Despite searches as per EPBC Act Guidelines (refer Response **3.1(d)**), no threatened fauna species listed under the EPBC Act were recorded during field studies.

3.3 (b) Hydrology, including water flows

Two mapped watercourses (stream order one) are mapped on-site – one in the central north portion, and one in the east – which both connect into Deebing Creek. These are both highly disturbed from natural condition, with the northern one constituting a constructed dam, and neither having waterway-associated vegetation. Any overland flow across the site due to soil saturation during high rainfall events is likely to run into these drainage features. The proposed development retains large areas of Open Space (see **Plan 1**) which will incorporate the majority of these drainage features. Any existing vegetation in these areas will be retained, and infilled, to allow for natural function and to minimise the potential for hydrological changes to impact watercourses.

Stormwater Management Plan

As per anticipated approval requirements, all works will be carried out and completed in accordance with a Stormwater Management Plan which will be developed and approved. The implementation of the Stormwater Management Plan will ensure that water quality standards set by State and Local governments are achieved.

3.3 (c) Soil and Vegetation characteristics

Vegetation values across the site are limited due to previous clearing for grazing purposes. Remaining vegetation is a mixture of remnant vegetation and regrowth of compromised habitat value. Site survey confirmed the remnant vegetation to be Least Concern RE 12.9-10.2.

The Australian Soil Resource Information System (ASRIS) maps the entire site as containing Chromosols, which are considered a component of Land Zone 9-10 Regional Ecosystems which is mapped on-site. Chromosols have a strong contrasting texture. They are not strongly acidic or sodic in the upper B horizon. The parent material of Chromosols ranges from highly siliceous, siliceous to intermediate in composition. These soils are found in imperfectly drained and well-drained sites. These soils have moderate agricultural potential with moderate chemical fertility and water-holding capacity. They can be susceptible to soil acidification and soil structure decline. Refer to **Attachment 3 – Figure 6** and **Section 3.8**.

3.3 (d) Outstanding natural features

No outstanding natural features have been identified across the site. In particular, the site's proximity to main roads and highways, and the surrounding residential development has severely fragmented it from other habitat areas in the greater landscape (refer to **Plan 2**). Previous disturbances in the wider landscape have significantly reduced any ecological value of the site and its immediate surrounds, resulting in no outstanding natural features identified.

3.3 (e) Remnant native vegetation

The site contains one patch of mapped Category B Least Concern remnant RE, which was confirmed during site assessment. It adjoins the mapped RE patch on the property to the south, however, the RE patch is highly fragmented due to roads or highways on all sides. Further, this RE is not considered essential habitat for threatened species.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

The site contours vary by approximately 30 metres, with a peak in the very west and near the east portion of the site, before dropping down to a drainage line further east.

3.3 (g) Current state of the environment

The site was found to be largely disturbed as a result of the property being largely cleared and used as a grazing land. There is a small patch of remnant vegetation, as described above, with the rest of the site being cleared, or having some regrowth vegetation.

The majority of the site is classified as Category X non-remnant vegetation, under the *Vegetation Management Act 1999* (refer **Attachment 3 – Figures 3 and 4**). No vegetation mapped or recorded on-site is classified as Endangered or Of Concern Regional Ecosystem, or as Essential Habitat. The site contained seven state listed weed species, and 15 local government listed environmental weeds.

In its current condition, the site is not considered to provide any unique or significant habitat features or values to the broader landscape. The presence of some flowering eucalypt trees which provide potential foraging habitat for the Swift Parrot and the Grey-headed Flying-fox is not considered significant within the broader landscape and habitat availability.

In addition, contextually, the site is located within a highly fragmented landscape, immediately adjacent to a large area zoned as a Priority Development Area, which will continue to increase the fragmentation in the surrounding area. **Plan 2** shows the future developments surrounding the project site, which are currently proposed or approved through the EPBC Act application process.

Refer to **Attachment 3** for further results of the site assessment.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

Not applicable (refer to **Attachment 2**).

3.3 (i) Indigenous heritage values

There are no known cultural heritage values on the site.

3.3 (j) Other important or unique values of the environment

The site is not located near other notable environmental features that are likely to be affected by the proposed action.

3.3 (k) Tenure of the action area (eg freehold, leasehold)

The entire extent of the site is freehold land.

3.3 (l) Existing land/marine uses of area

The site is currently rural residential land, used for grazing land. Surrounding land uses are rural residential and arterial roads, with a vast amount of increasing residential development.

3.3 (m) Any proposed land/marine uses of area

The proposed use of the land is for a residential development as per the Ripley Valley Master Planned Structure Plan (mapped as “neighbourhoods”).

4 Environmental Outcomes

The proposed residential development on Rawlings Road, Deebling Heights will result in the removal of some Koala habitat trees from the site area to establish the development. As highlighted throughout this referral, the vegetation on-site is impacted and fragmented by previous and current land uses and proposed developments, including being completely isolated from other vegetation due to roads existing on all sides. While site investigations recorded evidence of Koala on-site, any Koala habitat on-site is limited by the current and proposed expansion of approved development on land adjoining the project area, in keeping with planning intent of the Ripley Valley region. The area has been designated as a Priority Development Area, with the referral site zoned as Future Urban. Based on this context, while the property contains some Habitat defined as critical for the Koala by the referral guidelines, this is fragmented and isolated and will become more so with the planned encroaching development. Consequently, the proposed action is not considered to result in a Significant Impact on a *Matter of National Environmental Significance*.

Further, a number of environmental management plans will be developed as part of the required approvals and will include mitigation measures to be implemented. Such plans will include (but not limited to):

- Fauna Management Plan;
- Vegetation Management Plan;
- Pre-clearing Fauna Assessment & Management Plan; and
- Rehabilitation Plan.

The proposed development layout (refer to **Attachment 1** and **Plan 1**) incorporates two areas of Open Space, totalling 4.2 ha. These Open Areas capture the mapped watercourses on the site, and will undergo rehabilitation activities. Additionally, there is no development planned for the portion of the property to the west of the Centenary Highway. It is considered that these three areas will provide continuation (and enhancement) of the compromised environmental values and functions on-site and in the surrounding area.

A Rehabilitation Plan will be developed for the Open Spaces and will be presented to Council during the approvals process. The overarching purpose of this Plan will be to protect and retain existing vegetation, and enhance these areas where required. All rehabilitation works will be conducted in accordance with best management practices, including assisting to stabilise and reverse negative effects of habitat fragmentation. Proposed rehabilitation works within the Open Space areas will include weed management and replanting of native species consistent with mapped Regional Ecosystems for the site. These activities aim to strengthen ecological values and maintain connectivity. Additional strategies such as propagule sourcing and installation of fauna habitat components (i.e. nest boxes) and fauna awareness signage will also be implemented as required during the stages of the development. Further, the exclusion of the vegetated portion of the property, west of the Centenary Highway, from the development footprint is considered to provide a noteworthy environmental outcome for any threatened species that may infrequently utilise the site as part of a broader home range.

This assessment has determined that the proposed action for this residential development will not have a significant impact on any listed species under the EPBC Act. Specifically regarding the Koala, the assessment of the site resulted in no significant impact on the Koala due to the lower amount of vegetation (15 ha) with a low score of Critical Habitat (5) to be cleared, existing threats to the Koala in the area, and the lack of potential impact on the recovery of the Koala. Therefore, we consider that the action should be made Not a Controlled Action.

Should the Department disagree with this decision and consider the action a Controlled Action, a draft set of outcomes based conditions for the Grampian Drive residential development will be prepared in accordance with DoE's draft Outcomes-based Conditions Policy 2015 and Outcomes-based Conditions Guidance 2015.

5 Measures to avoid or reduce impacts

It is anticipated that the primary impact on the natural environment that will occur as a result of the project is the clearing of native trees (both mature and regrowth) within non-remnant and remnant (1.84 ha) vegetation. A number of management measures will be employed during the construction stages of the development that firstly avoid environmental impacts, and if not avoidable, reduce, minimise, and mitigate any environmental impacts. It is likely that mitigation and management measures will be conditioned by **Ipswich City Council (ICC)** as part of the project approvals. The measures that will be included are summarised below:

1. Vegetation Management Plan

A Vegetation Management Plan must be included as part of the Operational Works application to **ICC** and include the following information:

- Location of protected vegetation, vegetation to be retained, and vegetation to be removed;
- Details on vegetation types;
- Location of significant vegetation (remnant vegetation, significant species, etc.);
- Particulars on how vegetation is proposed to be cleared (clearing sequence plan);
- Methods for protecting or relocating plants; and
- Disposal methods.

2. Fauna Management Plan

All works must be undertaken in accordance with an approved Fauna Management Plan, which is submitted as part of the Operational Works package. This Plan includes details on:

- Species surveyed as using the site;
- A plan showing existing habitat areas;
- Details of threats to existing fauna;
- Vegetation clearing sequence plan;
- Management and mitigation measures (e.g. temporary fauna exclusion fencing);
- Fauna spotter role, contacts, and certification; and
- Specific fauna management procedures for potential or known habitat trees.

3. Stormwater Management Plan

All works must be carried out and completed in accordance with an approved Stormwater Management Plan which will provide details on:

- Stormwater quality improvement devices; and
- Mechanisms for monitoring and reporting.

The Stormwater Management Plan will ensure that water quality standards set by State and Local governments are achieved.

4. Erosion and Sediment Control Plan

Operational works applications must be accompanied by an Erosion and Sediment Control Plan, to be approved by Council. It must contain details on:

- Catchment boundary and overland flow path;
- Estimated soil loss from each catchment;
- Length, width, and depth of each sediment basin;
- Spillway details and levels;
- Energy dissipation / scour protection;
- High flow bypass;

- Cross section, capacity, and spacing of each catch / diversion drain;
- Location and spacing of silt fences;
- Frequency and location of water quality monitoring;
- Maintenance requirements and frequency;
- Maintenance access; and
- Contingency measures in case of failure to achieve water quality objectives.

Rehabilitation Plan

A Rehabilitation Plan will be developed and submitted to **ICC**. The aim of the Plan will be to retain and enhance the ecological values and functions of the Open Spaces on the site (refer to **Plan 1**). The Plan will outline:

- The removal of weed infestations and the suppression of weedy regrowth;
- Stabilisation of any erosion prone areas with weed matt and mulching;
- The encouragement of native plant regeneration; and
- The establishment of native plants and recognised Koala habitat trees as required.

Mitigation of impacts on the Koala

The project will result in the removal of 15 hectares of critical habitat for the Koala. A number of factors diminish the adversity of impacts caused by the proposed clearing of critical habitat. These factors can be summarised as:

- The proposal requires the clearing of approximately 15 ha of habitat of variable quality, with only 1.84 ha considered to be remnant vegetation, and only one primary Koala food tree species was found;
- Although the proposal requires the clearing of approximately 15 ha of habitat of variable quality (see **Plan 4** and **Attachment 3** for data), only 1.84 ha of Least Concern remnant vegetation will be cleared, and approximately 4 ha of critical habitat will be retained (refer to **Plan 4**);
- 15 ha is considered a smaller area of habitat (<20 ha);
- The habitat score of 5 for the site is the lowest possible score for “critical habitat”;
- The western portion of the property, across the Centenary Highway, is not proposed to be developed as part of this action (refer to **Plan 4**). Additionally, two areas of Open Space (totalling 4.2 ha) are proposed for inclusion in the development and will retain existing vegetation and include rehabilitation activities. These three areas will assist to provide connectivity values through the landscape and ensure long-term habitat viability should Koalas be present;
- No Koalas were observed on-site; only historical evidence of Koala activity in the form of scats was recorded;
- The two mapped watercourses (in the north and the southeast of the site) will be retained and rehabilitated as Open Space;
- As vegetation on this site and the neighbouring property is completely isolated from any other vegetation due to roads and highways on all sides, the clearing of this vegetation will not result in fragmentation of a habitat area from a larger habitat area; and
- Vegetation clearing will be undertaken sequentially under the guidance of a fauna spotter-catcher. This will ensure that the potential for injury or death to Koalas, if present, as a result of clearing is minimised.

Summary

Each of the above management measures and plans are specifically aimed at avoiding and reducing impacts on the natural environment that may occur as a result of the development. In particular, the use of a fauna-spotter catcher during clearing and construction phases will ensure that impacts to Koalas, if present, are avoided.

6 Conclusion on the likelihood of significant impacts

6.1 Do you THINK your proposed action is a controlled action?

☒	No, complete section 6.2
☐	Yes, complete section 6.3

6.2 Proposed action IS NOT a controlled action.

The construction of the proposed residential development at Rawlings Road, Deebling Heights is not considered to have a significant impact on Matters of National Environmental Significance (MNES) and as such, we do not believe it warrants a 'controlled action' determination. As detailed in this referral, no MNES are considered to be impacted by the proposal. In particular, the proposed action is not considered to have a significant impact on Koalas as a result of the clearing of vegetation due to the following conclusions:

- No Koalas were observed on-site;
- Evidence of Koala activity was Low to Medium usage across the site;
- The site is completely isolated from any surrounding bushland areas due to the presence of roads on all sides;
- Vegetation is to be preserved and rehabilitated throughout the development site in the areas nominated as Open Space (including weed management and infill planting of native and Koala habitat trees), and in the western portion of the property;
- Critical habitat on the site achieved a habitat score of 5 which is the lowest score for critical habitat using the Koala Referral Guidelines Habitat Assessment Tool, and multiple characteristics that reduce adverse effects to habitat critical to the survival of the Koala are evident suggesting that referral is not recommended.

Management measures will be imposed through the development approvals process which will ensure that injury to Koalas, if present, as a result of vegetation clearing is avoided or minimised. This will include the use of a fauna spotter-catcher during all stages of clearing and the implementation of sequential clearing to allow fauna to disperse away from clearing areas.

Given these factors, it is considered unlikely that the proposed action will have a significant impact on MNES and as such, is **not considered to be a controlled action**.

6.3 Proposed action IS a controlled action

Not applicable

7 Environmental record of the responsible party

	Yes	No
7.1 Does the party taking the action have a satisfactory record of responsible environmental management? Provide details 	X	
7.2 Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources? If yes, provide details		X
7.3 If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework? If yes, provide details of environmental policy and planning framework DHA implement an Environmental Management Guideline which has the purpose to "describe how DHA addresses its environmental management obligations and seeks to improve the performance of its housing portfolio by design, equipment specification and construction processes. This also applies to its administration facilities." The Guideline has been included as Attachment 4 .	X	
7.4 Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act? Provide name of proposal and EPBC reference number (if known) 2015/7591 – Lee Point Master-planned urban development, Darwin, NT 2011/6163- North Weston Residential Development 2010/5525 – Muirhead Subdivision 2001/374 – Duntroon Residential Development 2011/218 – Residential Housing Estate 2001/163 – Residential Complex – Lots 6575 and 6576	X	

8 Information sources and attachments

(For the information provided above)

8.1 References

- **Australian Koala Foundation**, *The Spot Assessment Technique: determining the importance of Habitat Utilised by Koalas (Phascolarctos cinereus)*, available online <https://www.savethekoala.com/sites/default/files/docs/conserve/The%20Spot%20Assessment%20Technique.pdf>
- **Australian Koala Foundation** 2012, *National Koala Tree Protection List; Recommended Tree Species for Protection and Planting of Koala Habitat*.
- **Australian Soil Resource Information System**, <http://www.asris.csiro.au/>
- **McAlpine, Callaghan, Lunney, Bowen, Rhodes, Mitchell & Possingham** 2006, *Conserving Southeast Queensland Koalas: How much habitat is enough?* In: *Biodiversity Conference Proceedings* (eds G. Siepen and D. Jones), pp 11-17, University of Queensland, Gatton.
- **Phillips & Callaghan** 2011, *The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus*. ***Australian Zoologist* 35(3)**: 774-780.
- **Urban Land Development Authority** 2011, *Ripley Valley Urban Development Area Development Scheme*, available online <http://www.dsdip.qld.gov.au/resources/plan/pda/ripley-valley-development-scheme.pdf>

8.2 Reliability and date of information

Refer to response at 8.1

8.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	- Project locality – Figures 1 & 2 - GIS file - Attachment 1 – Proposed Layout - Plan 1 – Development Assessment - Plan 2 – Fragmentation map
	GIS file delineating the boundary of the referral area (section 1)		
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	- Project locality - Figures 1 & 2 - Plan 2– Fragmentation map
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)	N/A	
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)	N/A	
	copies of any flora and fauna investigations and surveys (section 3)	✓	- Attachment 2 – Protected Matters Search Results - Attachment 3 – Ecological Assessment Report - Plan 3 – Field Survey Effort
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 5)	✓	- Attachment 3 – Ecological Assessment Report - Plan 2– Fragmentation map - Plan 3 – Field Survey Effort - Plan 4 – Potential Koala Habitat
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	N/A	

9 Contacts, signatures and declarations

Project title: Rawlings Road Development, Deebing Heights

9.1 Person proposing to take action

1. Name and Title: Rob Winters, Senior Development Manager

2. Organisation:
Defence Housing Australia

3. EPBC Referral
Number:

4: ACN / ABN: 72 968 504 934

5. Postal address: 26 Brisbane Avenue, Barton, ACT, 2600

6. Telephone: 07 33558860

7. Email: rob.winters@dha.gov.au

8. Name of designated
proponent (if not the
same person at item 1
above:

As above

9. ACN/ABN of
designated proponent (if
not the same person
named at item 1 above):

As above

I qualify for exemption
from fees under section
520(4C)(e)(v) of the
EPBC Act because I am:

N/A

If you are small business
entity you must provide
the Date/Income Year
that you became a small
business entity:

N/A

I would like to apply for a
waiver of full or partial
fees under Schedule 1,
5.21A of the [EPBC
Regulations](#). Under sub
regulation 5.21A(5), you
must include information
about the applicant (if
not you) the grounds on
which the waiver is
sought and the reasons
why it should be made:

N/A

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I agree to be the proponent for this action.

Declaration I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature 

Date 09/06/2016

9.2 Person preparing the referral information (if different from 9.1)

Name Murray Saunders

Title Director

Organisation Saunders Havill Group Pty Ltd

ACN / ABN (if applicable) 24 144 972 949

Postal address 9 Thompson Street, Bowen Hills, QLD 4006

Telephone (07) 3251 9415

Email murraysaunders@saundershavill.com

Declaration I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.

Signature 

Date 09/06/2016