



Coomera Woods Koala Assessment Report

49 & 51 George Alexander Way, Coomera



Polaris Coomera Pty. Ltd.

Planning and Development

Polaris Coomera Pty Ltd

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Executive Summary

This Koala Assessment Report (KAR) provides a document for the presentation, analysis and assessment of data and guidelines relative to the Koala species and the Coomera Woods project. The analysis completed within each chapter supports the overall conclusion that in direct consideration against the legislative parameters of the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) the Coomera Woods Project is unlikely to result in a Significant Impact on the Vulnerable listed Koala species.

This report reviews the extensive broader area studies and estimates on Koala populations and densities completed by **Biolink** dating back to 2006. The data and numbers underpinning these broad area estimates are compared against the accountable numbers of animals captured, tracked and or translocated by the **City of Gold Coast Council** under a scientific permit issued by the **Queensland State Government**. Significant reductions in the numbers of actual animals occur generally versus the predicted estimate with collated evidence showing the pre-translocation population and calculated densities being notably lower for the impact site and immediately surrounding area. This represents an important fact when considering the numbers of animals removed and the potential for Koalas to remain.

The KAR provides the results of an indirect Koala survey and 2 direct Koala surveys completed over the impact site. The evidence collected suggests that the site supports very low numbers of Koalas, infrequently observed during abundance site survey. The site survey findings are comparable with and supported by fauna spotter catcher reports provided from adjoining projects, which have been recently cleared.

The impact site does not contain habitat critical to the survival of the species as defined by the Commonwealth Government's *EPBC Act referral guidelines for the vulnerable koala* (Koala Referral Guideline). This assessment position has been previously acknowledged by the **Department of Environment & Energy** and is unchanged within this KAR. Additionally, a detailed assessment against the specific criteria for Vulnerable species listed in the *Matters of National Environmental Significance – Significant Impact Guidelines 1.1* (Significant Impact Guideline) has been completed. Most notably, the impact site and the broader study area, being the Urban Koala Area (UKA), was determined not to support an 'important population' as defined by the Significant Impact Guideline. This position is consistent with the reporting contained within other EPBC Act determinations in the UKA.

Although the impact site is predominantly a bushland property, the results of this assessment on significant impacts, when measured against criteria established in the EPBC Act and supporting guidelines, are expected given:

- The direct removal of 180 Koalas from the study area, translocated to other conservation locations within the Gold Coast's Local Government jurisdiction. This included 19 animals directly removed from the Coomera Woods referral site.



- The land surrounding the site has been under development as part of the Coomera Town Centre since 2006, with at least a 634 ha reduction in vegetated areas in the last decade.
- The Coomera Woods site occurs central to the Coomera Town Centre with development land either constructed or under construction in all orientations.
- Despite a number of referrals made within the Coomera Town Centre area, including on nearly all sides of the project, only a single Controlled Action determination has ever been determined, which related to a site on the periphery of the UKA interfacing within the retained East Coomera Koala Conservation Area. Nearly all of the referrals lodged from the Coomera area have outlined the influence of the **City of Gold Coast Council's** designation of the Urban Koala Area and direct physical translocations of animals as resulting in the broader study area not supporting an important population.



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I. Introduction

I.1. Background

The *Environmental Management Division* of **Saunders Havill Group** were engaged by **Polaris Coomera Pty Ltd** to undertake a number of preliminary and detailed ecological investigations in relation to the Coomera Woods Project located at 49 & 51 George Alexander Way, Coomera (Lot 1 on SP165374 and Lot 44 on SP207822). This Koala Assessment Report (KAR) has been prepared to accompany a referral application to the **Department of the Environment and Energy** (DEE) and responds directly to criteria outlined in the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and associated guidelines linked to the assessment of impacts on the Koala species.

Coomera Woods is a proposed master-planned approved development covering approximately 137 hectares of the 147 hectare land holding, located approximately 30 km north of central Gold Coast within the suburb of Coomera. In accordance with the in place Local Government approvals for the land, approximately 10 hectares of the site will be designated for two (a major and a minor) ecological corridors that are intended to retain open space and existing wildlife dispersal within the site and the broader Coomera Town Centre planning area. The surrounding landscape contains a patchwork of completed and under-construction urban residential land uses, mixed with small areas of commercial and educational facilities. The site is bound by the Gold Coast Railway Line to the west, residential development and housing adjoining the Pimpama State Secondary School to the north, Bloom Residential Development to the east, and the proposed Coomera Activity Centre and Transport Hub associated with the existing Coomera Train Station and Bus Interchange to the south. Major arterials, including the Pacific Motorway approximately 350 metres to the west and Foxwell Road approximately 400 metres to the south, frame the application area. The site context is displayed in **Figure 1** and site aerial in **Figure 2**.

The Coomera Woods Project site is predominantly covered with a mix of non-remnant and remnant mapped vegetation. The site is dominated by Eucalypt Woodland/Open Forest. The understory across the majority of the site is routinely slashed and typically dominated by regenerating eucalypts, native shrubs and grasses. A number of low order drainage lines traverse the site and the topography is described as gentle ridgelines and converging contours forming minor gullies. The site has been subject to several flora and fauna assessments addressing various Local Government assessment and approval processes. The results of these previous assessments as well as contemporary field surveys specific to MNES and the Koala species by the **Saunders Havill Group** have informed the analysis contained within this Koala Assessment Report.

I.2. Key Site Details

Address	49 & 51 George Alexander Way, Coomera, Gold Coast
RPD	Lot 1 on SP165374 Lot 44 on SP207822
Area	147.331 hectares
VMA 1999	Category B remnant vegetation, made up of Least Concern and Of Concern remnant vegetation and Category X non-remnant vegetation.



I.3. Purpose of this Report

The purpose of this Koala Assessment Report (KAR) is to provide an assessment document containing relevant available material for consideration of impacts on the Koala species as defined and outlined in Commonwealth Government Legislation, Guidelines and Policies. This purpose is further defined in this document by:

- 1) Providing a broad explanation of previous studies, programs and active management plans employed by the **City of Gold Coast Council** (CGC) within the East Coomera area relative to Koala.
- 2) Present the findings, analysis and conclusions from a number of indirect and direct detailed Koala surveys completed within the impact area.
- 3) Outlining a detailed assessment against the *EPBC Act referral guidelines for the vulnerable koala* (Koala Referral Guideline)
- 4) Providing assessment against scheduled assessment criteria for Vulnerable Species as listed in the *Matters of National Environmental Significance – Significant Impact Guidelines 1.1* (Significant Impact Guideline)
- 5) For reference in the completion of section 3.1(d) of the EPBC Act Referral form relating to the description of threatened species and the nature and extent of likely impacts.

I.4. KAR Methodology

The broad methodology for the Koala Assessment Report deliberately commences with a review of available literature prepared on the Koala populations for the Coomera and Pimpama areas as completed as a lead in to the application and implementation of Council's Koala Conservation Program. The **City of Gold Coast Council** have made a number of reports, programs and management plans available as part of the capture, translocation and monitoring of Koalas in the area, which have formed part of this literature review. The purpose of this review was to test the accuracy of the original estimates versus actual data extracted during the physical capture and translocation. Additionally, the estimates and translocation numbers were considered in light of more contemporary reporting from registered fauna spotter catchers involved in recent clearing activities surrounding the impacts site.

Statements, data and analysis from the literature review were used in the design and implementation of the more contemporary Koala site surveys. The methods, purpose and results of these surveys are documented in this report and form the underlying basis for assessment and determination against set criteria for determining Significant Impacts under the EPBC Act.

In summary the following components of review and assessment have been undertaken in this report:

Literature Review - Contextual studies / Council Translocation & Management / Development Activity and Determinations in the Coomera Urban Koala Area:

- **Biolink Reports** (2006 / 2007)
 - Broad estimates over large areas primarily established through indirect Koala survey techniques
 - Showed a high range of variation in estimates and localities
- **City of Gold Coast Council** – Koala Conservation Program
 - State Government Permit Reports – outline permitted number of Koalas for translocation
 - Council reports – Show total numbers of animals captured, monitored and translocated from the area



- Council Maps and Emails to Land Owners – generally show lower Koala densities for actual animals located, captured and translocated when compared to predicted numbers based on pre-translocation estimates
- **City of Gold Coast Council's** Koala Conservation Plan for East Coomera
 - Establishes controls for the ongoing protection of Koalas in East Coomera Conservation Areas
- Development Approvals & EPBC Referral Determinations within the Coomera UKA
 - Standard Development Assessment Conditions of approval – requiring sequential clearing of vegetation, flushing of animals towards dispersal avenues, mandated use of registered fauna spotter / catchers for all clearing works
 - Application Reports, Supporting Ecological Assessment Reports and EPBC Act Referral Determinations within the UKA
 - As per above review of available pre and post works fauna spotter / catcher audit reports on animals encountered during vegetation removal
- Vegetation Clearing & Development within the Urban Koala Area over the past decade:
 - GIS analysis shows that over 630 ha of land within the Urban Koala Area retaining a bushland cover in 2006 has been cleared and either replaced by housing or is under construction
 - Most of the cleared areas now developed or under development no longer provide any suitable habitat values for Koalas
 - Increased and expanding operational impacts associated with new residents – new roads, upgraded roads, increased traffic on existing roads, increase in dog ownership in the local area

Detailed Site Koala Surveys (Impact area)

- Indirect Spot Assessment Technique (SAT) – showing mixed levels of Koala usage via scat evidence analysis
- Direct Koala audit transects 1 and 2 – shows the site supports very low numbers of animals infrequently observed during extensive site surveys

Koala Referral Guideline Assessment (*EPBC Act referral guidelines for the vulnerable koala*)

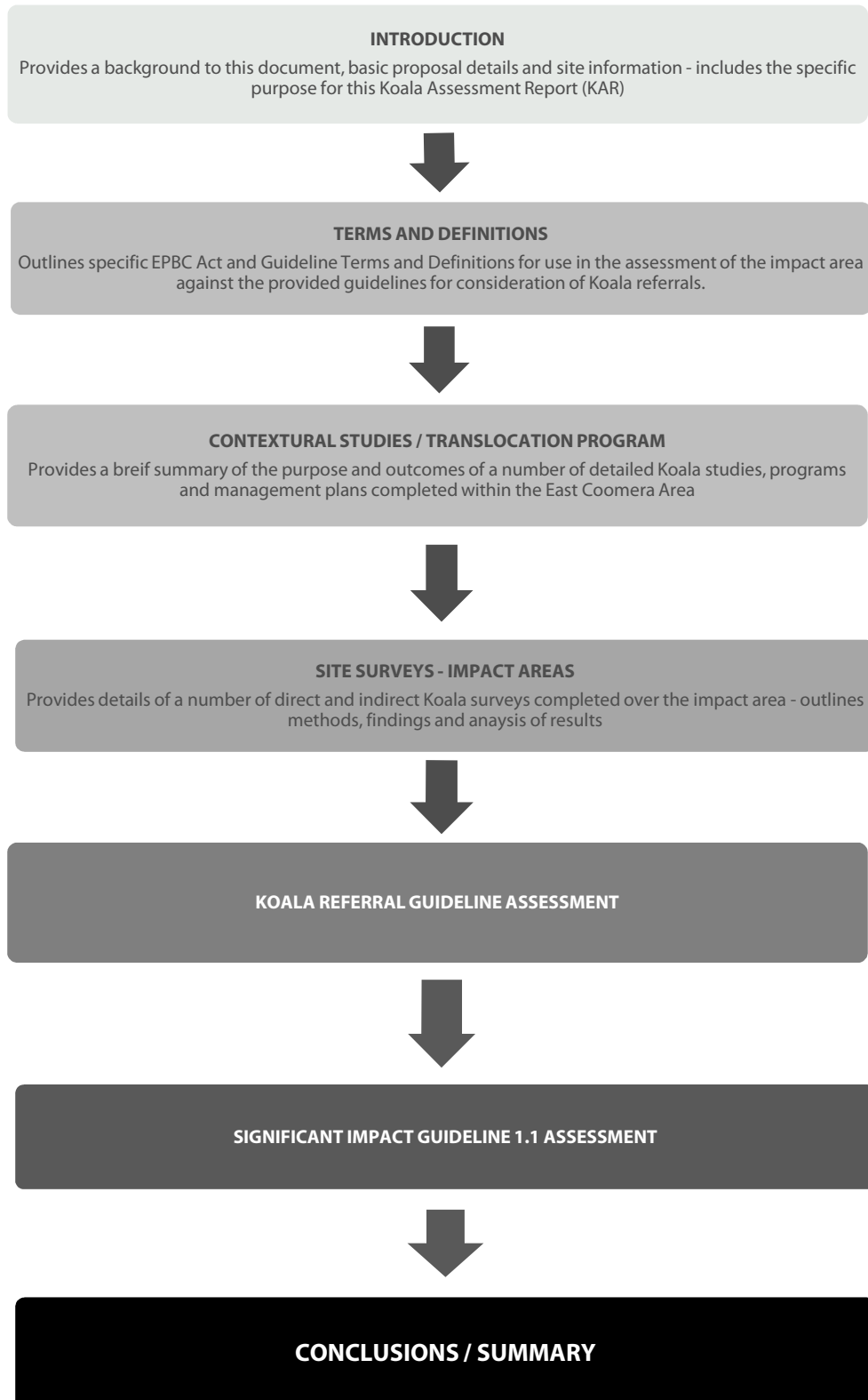
- Detailed assessment of the site against the Koala Referral Guideline – shows the site does not contain habitat critical to the survival of the Koala
- This assessment position has been previously issued and agreed with the **Department of Environment and Energy** and is unchanged in this KAR

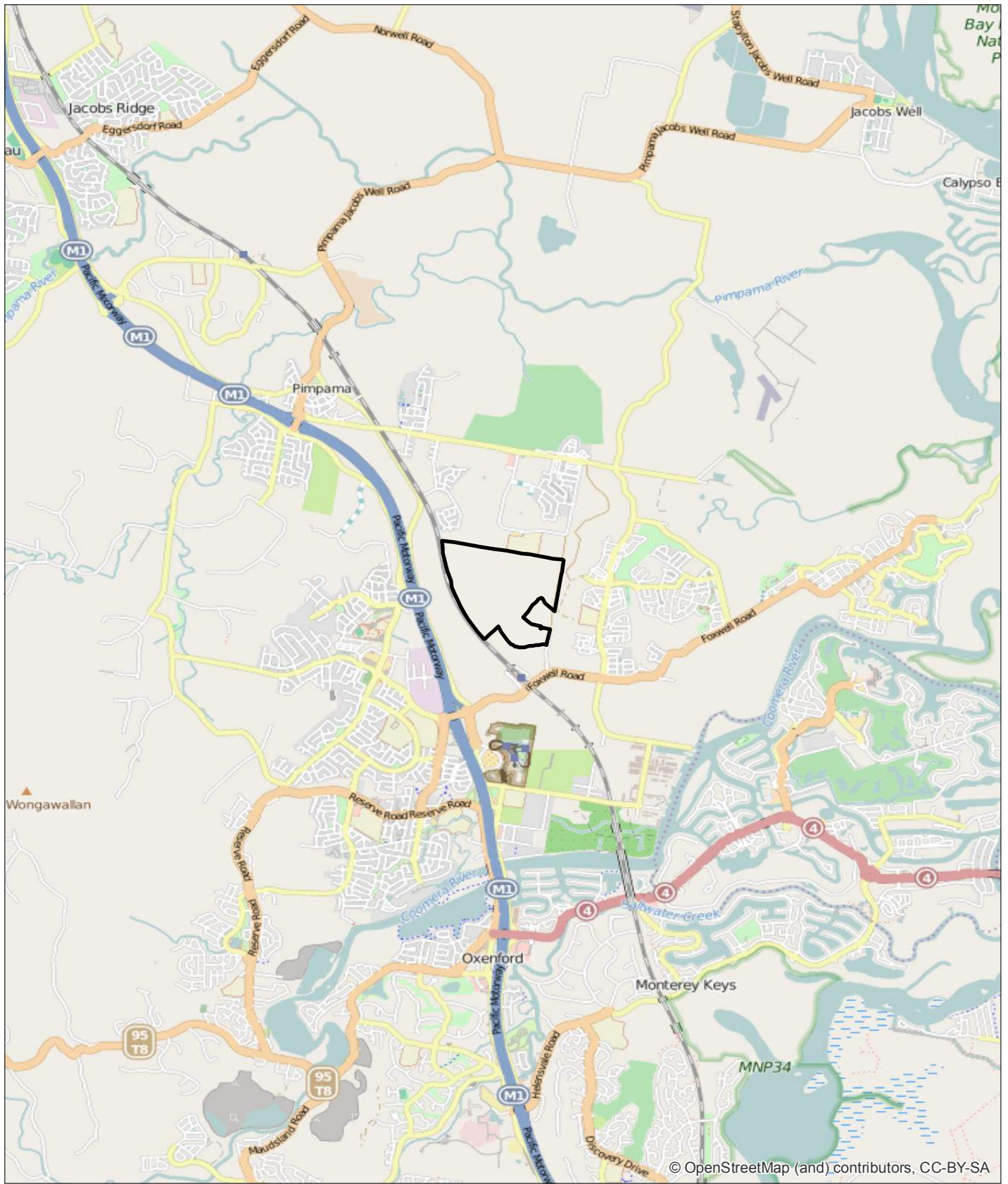
Significant Impact Guideline Assessment (*Matters of National Environmental Significance – Significant Impact Guidelines 1.1*)

- Completes a detailed assessment against criteria established for the assessment of Significant Impacts on threatened species listed as Vulnerable
- Determines the study area does not support an 'important population' of Koalas as defined by the Significant Impact Guideline and as previously considered within surrounding referral application reports and determinations



I.5. Structure of this KAR





Legend

 Referral area

Figure 1 Site Context

File ref. 7390 E Figure 1 Site Context A
Date 15/07/2015
Project Polaris - Coomera

0 500 1,000 1,500 m

Scale (A4): 1:75,000 [GDA 1994 MGA Z56]



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Legend



Referral area



Gold Coast DCDB

Figure 2 Site Aerial

File ref. 7390 E Figure 2 Site Aerial A

Date 24/01/2017

Project Polaris - Coomera

0 50 100 200 300 m

Scale (A4): 1:12,000 [GDA 1994 MGA Z56]



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2. Terms and Definitions

2.1. Study Area

The *EPBC Act referral guidelines for the vulnerable koala* (Referral Guideline) define the *study area* as:

An area that includes the impact area and any other areas that are, or may be, relevant to the assessment of the action. When determining the study area, consideration should be given to the extent of the koala habitat, koala records, likely koala home range, connectivity of habitat, control sites, comparison sites, etc. (where this information is known or relevant). In some circumstances the study area may be confined to the impact area. It may be necessary to revise the study area during the assessment if the need for additional information becomes apparent. (p.6: Referral Guideline).

The *study area* adopted for this Koala Assessment Report (KAR) is the Urban Koala Area (UKA) described and mapped within the **Gold Coast City Council's** (now **City of Gold Coast**) East Coomera Koala Conservation Project and as included in the **Biolink** Reports.

The *study area* extends over 2,148 hectares of land and contains the *impact area*.

The selection of the Urban Koala Area (UKA) as the *study area* for this referral is based on:

- 1) Extensive direct and predictive surveys and studies have been completed within the UKA since 2006
- 2) A number of estimates on the Koala population within the UKA have been undertaken prior to, during and post Council's Koala Translocation Program
- 3) Like the referral site, the UKA occurs in a locality designated for development outcomes and contains a mosaic of land owners who have progressively cleared and developed since 2006
- 4) The UKA has been previously utilised as the *study area* for other EPBC Act referral applications and determinations completed in East Coomera
- 5) The implementation of a Koala Translocation Program by CGC from 2009 through to 2013 directly removed animals from the *study area* inclusive of the referral site

The *study area* for this referral is the 2,148 ha Urban Koala Area defined in the East Coomera Koala Conservation Project for East Coomera and depicted in **Figure 3 – Urban Koala Area / Study Area**. It is noted that the Urban Koala Area continues to be depicted in Figure A1.1 of the Koala Conservation Plan for East Coomera, however, is titled "urban footprint".

2.2. Impact Area

The *EPBC Act referral guidelines for the vulnerable koala* (Referral Guideline) define the *impact area* as:

The area in which direct, indirect and facilitated impacts on the koala will, are likely to, or may occur.

The *impact area* adopted in this Koala Assessment Report (KAR) and for explicit assessment against the Koala Referral Guideline and Significant Residual Impact Guideline is the cadastral extents of the referral project. The *impact area* is outlined by the referral coordinates and occurs completely within the *study area*. The *impact area* is depicted in **Figure 4 – Impact Area**.



Legend


 Urban Koala Area / Study area

Figure 3
Urban Koala Area / Study Area

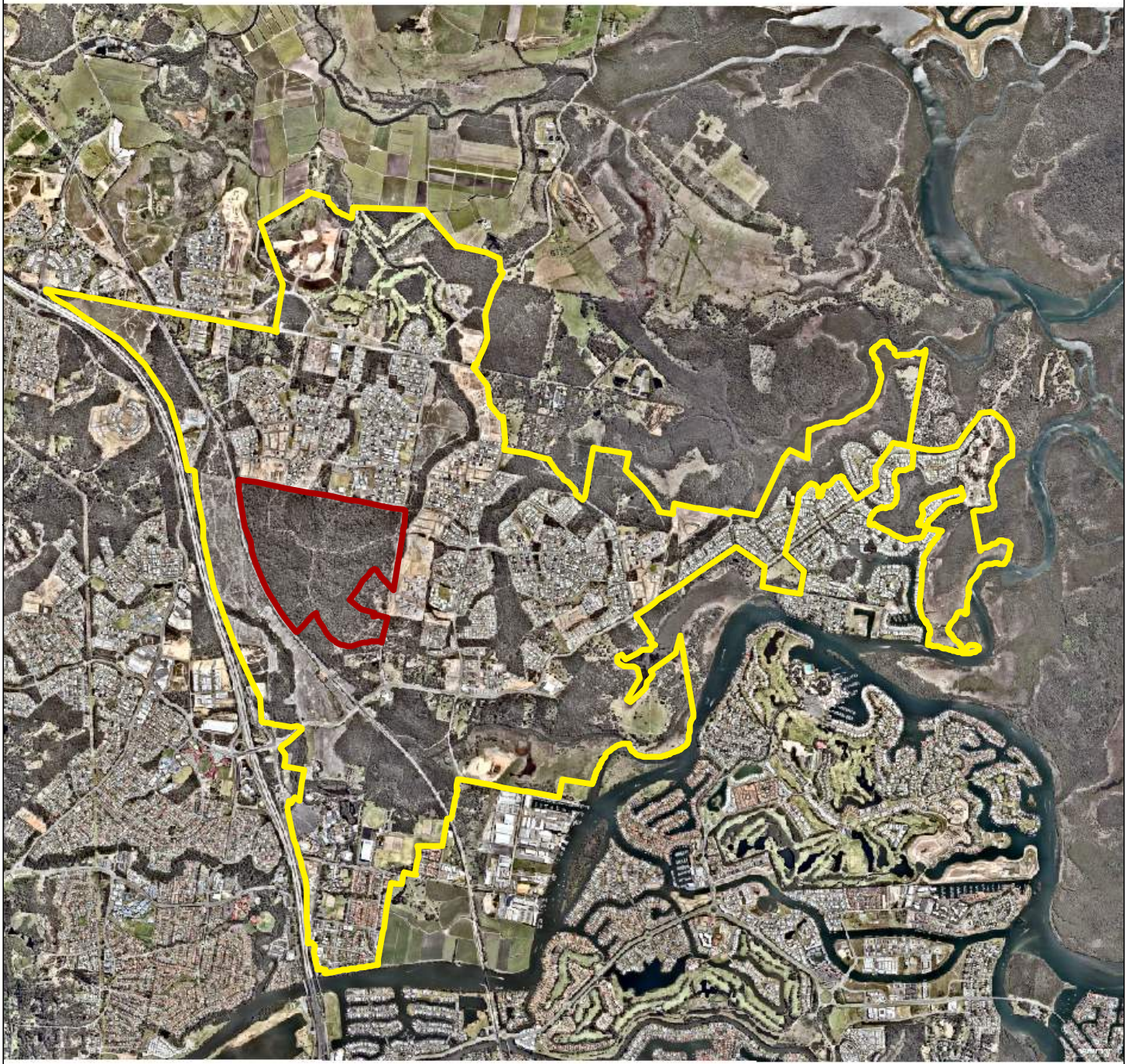
File ref. 7390 E Figure 3 Urban Koala Area A
Date 5/12/2016
Project George Alexander Way, Coomera



Scale (A4): 1:53,000 [GDA 1994 MGA Z56]



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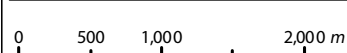


Legend

- Urban Koala Area / Study area
- Impact area

Figure 4
Impact Area

File ref. 7390 E Figure 4 Impact Area A
Date 5/12/2016
Project George Alexander Way, Coomera



Scale (A4): 1:53,000 [GDA 1994 MGA Z56]



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2.3. Habitat Critical to the Survival of the Koala (Critical Habitat)

The EPBC Act referral guidelines for the vulnerable koala (Referral Guideline) defines *habitat critical to the survival of the koala* as:

Koala habitat that is considered to be important to the species' long-term survival and recovery. An impact area that scores a 5 or more using the habitat assessment tool for koala in Table 4 of these guidelines (Koala Referral Guideline) is likely to contain habitat critical to the survival of the koala.

2.4. Important Population

The Matters of National Environmental Significance – Significant Impact Guidelines 1.1 (Significant Impact Guideline) define an important population as:

An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

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

2.5. Significant Impact

The Significant Impact Guideline defines a Significant Impact as:

A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. You should consider all of these factors when determining whether an action is likely to have a significant impact on matters of national environmental significance.

2.6. Titles, Labels and Areas (Inconsistencies)

As part of the literature review on historical and recent Koala data in the Pimpama – East Coomera Area, at least 5 key documents were reviewed and considered. These documents were completed between 2006 and 2014 and contain a range of inconsistencies and changes in the titling and demarcation of areas. For example, the original Koala Conservation Area (KCA) of the 2006 **Biolink** Report has evolved to become the Priority Koala Conservation Precinct in Council's 2014 Koala Conservation Management Plan. In addition to the variation in name, the demarcated area has also adjusted over time. The inconsistencies, which are predominantly minor, cause confusion during a summary review and make it difficult to compare evolving data as baseline areas from which it is collected have changed. Predominantly, the areas and titles included in this section of the KAR should be used as the default. References are provided to reviewed reports which can provide additional descriptions.



3. Contextual Studies / Translocation Program

As part of reviewing the available literature, a number of studies and programs are summarised in this Koala Assessment Report (KAR) because they provide contextual or direct relevance to current day outcomes on the study area and / or the impact area. These reports are briefly summarised in the opening sections of this chapter before further analysis and factual data on the East Coomera Koala population and density is extracted for review in part 3.2. Initial estimates on the likely Koala numbers and densities in East Coomera completed in 2006 continue to be referenced in the Koala Conservation Management Plan for East Coomera prepared in 2014, despite far more detailed knowledge on the actual numbers and densities being available from the translocation records and reporting. This section of the KAR provides a comparison between the estimated numbers with the actual numbers testing the difference by using the findings of a number of smaller site assessments where clearing and development has since occurred.

3.1. Biolink Studies / Reports and Council's Plans

Commencing in 2006, and occurring over the next few years, the **City of Gold Coast Council** engaged environmental consultants **Biolink** to complete the following studies:

- 1) *Koala Habitat and Population Assessment for the Gold Coast – Interim Report on the Coombabah and Pimpama-Coomera KHAs* (2006: Biolink – Interim Coomera Report)
- 2) *Conserving Koalas in the Coomera-Pimpama Koala Habitat Area: a view to the future* (Final Report Prepared for Gold Coast City Council, March 2007: Biolink)
- 3) *Koala Habitat And Population Assessment for Gold Coast City Council* (Final Report – July 2007: Biolink)

Further to the **Biolink** studies and reports, the **City of Gold Coast Council** (CGC) completed the following program and management plan:

- 1) *East Coomera Koala Conservation Program* (Commenced 2008 – Completed 2013) – Primarily revolved around the acquisition of State Government Approved Scientific permits for the capture, translocation and monitoring of Koalas within the East Coomera Urban Development Area
- 2) *Koala Conservation Plan for East Coomera – July 2014 to June 2018* – Current management document for the area

3.2. Koala Population and Densities

The initial estimates for the East Coomera and Pimpama Koala population and densities prepared by **Biolink** in 2006 / 2007 are extracted within and underpin Council's 2008 capture and translocation program and remain referenced within the 2014 Koala Conservation Management Plan for East Coomera. For the Coomera area, the estimates were correlated primarily through indirect surveys, data analysis and predictive modelling. Despite the extensive direct physical search, capture and translocation completed by the **City of Gold Coast Council** through the Coomera UKA between 2008 and 2013, there are no publically available data or studies that seek to rectify the early population estimates with the actual Koala numbers encountered.



The number of Koalas located and removed from the impact site and surrounding area is directly known from Council's capture and translocation records and reporting. For selected sites, the number of Koalas encountered during the sequential clearing is directly known from the pre-clearance and post audit reporting provided by registered fauna spotter catchers. These numbers are compared with the estimates made for these areas through a range of indirect survey techniques.

The following statements are extracted directly from the available reports.

1. Koala Population Estimates by Biolink

a. **Biolink made the following statements / assumptions on the Koala population and Koala densities within the Coomera – Pimpama Area in 2006 and 2007:**

- i. There are approximately 510 +/- 129 animals within the C-PKHA that covers approximately 3,640 Ha
- ii. Resultant overall average animal density of 0.23 animals per ha.
- iii. Koalas are predominantly residing in bushland
- iv. There is approximately 1,035ha of bushland in the UKA
- v. The bushland areas referenced above are not clearly identified or mapped in any of the reports considered in this KAR or located in other publically available material
- vi. Approximately 70% of Koalas reside in the UKA

b. **Calculations using the statements and figures in the Biolink Reports reviewed:**

1 Table 3.1 - Estimated Koala Numbers				
Area		Upper Limit	Average	Lower Limit
C-PKHA	3,640	639	510	381
UKA (70%)	2,148	447	357	267

2 Table 3.2 - Estimated Koala Densities				
Area		Upper Limit	Average	Lower Limit
C-PKHA	3,640	0.18	0.14	0.10
UKA	2,148	0.21	0.17	0.12

3 Table 3.3 - Range in Koala numbers				
Area	Upper Limit	Lower Limit	Range – No.	Range - %
C-PKHA	639	387	258	67 %
UKA	447	267	180	67 %

c. **Observations from the statements and figures in the Biolink reports**

- i. The estimated Koala numbers within the UKA range from 267 to 447. This is a variation of 180 Koalas or 67% more than the lower limit
 - The estimated Koala density within the UKA ranges from 0.12 to 0.21 if the entire UKA is considered
- ii. There is significant variation in the estimated numbers and densities within the report



- iii. Within the reports, some of the numbers and estimates are contradictory with other statements and summaries. Without more background data, it is difficult to understand how these conflicts are explained
- iv. The **Biolink** Reports serve the important purpose of identifying the future issue and using estimates and predictive analysis in an attempt to quantify the potential size of the issue. This value has been important in underpinning the preparation, management and implementation of the East Coomera Koala Conservation Program and in particular the action of acquiring permits to capture and translocate animals
- v. The data are not a direct accurate audit of the site specific Koala population of any particular area within East Coomera

2. Koala Captures and Translocations by City of Gold Coast Council

- a. Council's Koala Conservation Plan for East Coomera, version 5 includes the following statements and information:
 - i. The Conservation Plan relates to the East Coomera project area (Fig A1.1 in the Plan – Shown as **Figure 6** in this KAR)
 - ii. The Koalas "*most at-risk*" from urban development were relocated to other secure areas external to the East Coomera area
 - iii. A total of 180 koalas were relocated by the CGC. These Koalas were relocated to Lower Beechmont Conservation Area and Wongawallan Conservation Area
 - iv. Council translocation permit provided for the capture and translocation of up to 260 animals from the UKA
 - v. Council expect that once the area is fully developed, approximately 170 koalas will remain beyond the urban footprint - within the Conservation Area and rural areas in East Coomera-Pimpama
 - vi. There is no statement in the Conservation Plan that a certain number of Koalas will remain within the UKA
 - vii. Figure C1.1. of the Conservation Plan shows Koala capture locations (Shown as **Figure 7** in this KAR)
- b. Observations and calculations from the statements in the Council's Conservation Plan
 - i. The 180 koalas translocated from the UKA represents a density of 0.174 koalas per ha across the estimated 1,035 ha of bushland in the UKA
 - ii. From Figure C1.1 – Koala capture locations it is evident that Koala densities vary across the UKA (Shown as **Figure 6** in this KAR)
- c. Impact Site and Surrounding Area Analysis
 - i. From Figure C1.1 in the Conservation Plan, the area surrounding the Impact Area appears to be predominantly densely vegetated (bushland) (Shown as **Figure 8** in this KAR)
 - ii. The Impact Area and a further analysis area surrounding the site were isolated for further assessment and quantification. The area analysed is 376 ha (made up of the immediate site 157 ha and a surrounding 219 ha – Tables 3.4 and 3.5 show areas of land compared with numbers of capture records from CGC translocation reports)
 - iii. The landholdings surrounding the Impact Area were identified (**Figure 8**) and the land areas obtained. The total area for the surrounding land analysis equals 219 Ha. This area was selected because of the post development data available for consideration and timing of the completed projects



- iv. From the Conservation Plan Figure C1.1 (**Figure 8** in KAR) the number of Koalas captured on this land surrounding the Impact Area amounts to 38 (inclusive of joeys). This equates to a density of 0.17 Koalas per ha
- v. Of the 219 ha, more than 190 ha has been cleared, developed or is under development
- vi. There is no evidence that Koalas remain within the developed portions (184 ha area) of land and projects surrounding the Impact Area
 - It follows that the density of 0.174 was the actual Koala density on the cleared land surrounding the Impact Area during the period in which translocation and clearing occurred
 - This actual Koala density (0.17) is substantially lower than the estimated Koala density (0.23) stated in the **Biolink** report
- vii. From the abovementioned facts, it is evident that the high Koala population and density numbers derived from the **Biolink** report were not accurate in relation to the land surrounding the Impact Area at the time it was cleared

4 Table 3.4 – Impact Area				
	Area Ref	Ha	Koala Captures	Koala No# - inc Joeys
	1	8.543	2	2
	2	19.547	5	6
	3	14.723	4	7
	4	53.99	7	8
	5	7.307	4	5
	6	3.391	1	1
	7	44.979	4	4
	8			
	9	23.548	2	2
	10	42.985	2	3
	11	32.624	0	0
	Total	219	31	38
	Koala Capture Densities		0.14	0.17

- d. Conclusions from the Koala Conservation Plan for East Coomera include:
 - i. Actual Koala populations and densities can be derived from the fact that
 - the number of Koalas captured on cleared & developed land are reported, and
 - there is no evidence of Koalas remaining on cleared & developed land
 - ii. The actual Koala numbers and densities are significantly lower than the estimated population numbers and densities in the **Biolink** report
 - iii. From the actual Koala numbers and densities observed on the land surrounding the Impact Area, it is reasonable to conclude that the 19 Koalas translocated from Lot 44 & Lot 1 represents the predominant volume of the Koala population previously utilising the site



3.3. Bloom Estate Clearing Fauna Surveys

The Bloom Estate is a large master planned community adjoining the Coomera Woods project to the immediate east (refer **Figure 9 – Bloom Estate**). The land has been the subject of two separate EPBC Act Referral Applications and determined Not a Controlled Action on both occasions. In July 2016, the Bloom Estate was cleared of vegetation, which included a remnant polygon that continued onto the Coomera Woods site and retained the same age, structure and diversity of tree species. In accordance with a Council Approved Fauna Management Plan, prepared by **Planit Consulting, Tomewin Wildlife Consultancy** were engaged as the registered Fauna Spotter / Catchers for the project. During June and July 2016, **Tomewin** were on-site for the following timeframes and tasks:

- Installing nest boxes in retained vegetation areas (14-06-16)
- Completed pre-clearance and fauna reduction surveys (24-06-16 through till 14-07-16 – 3 weeks)
- On—site during active clearing works (29-06-16 to 20-07-16 – 3 weeks)
- Post clearing monitoring (15-07-17 – 24-07-16)

While being on-site for greater than a 5-week period, **Tomewin** did not locate a Koala on the Bloom Estate site, despite it retaining identical characteristics and sharing a boundary with the Coomera Woods project site. A Koala was observed once offsite. It is noted the purpose of the Fauna Spotter Catcher was to ensure the clearing zone did not contain any Koalas prior to and at the time the clearing was occurring.

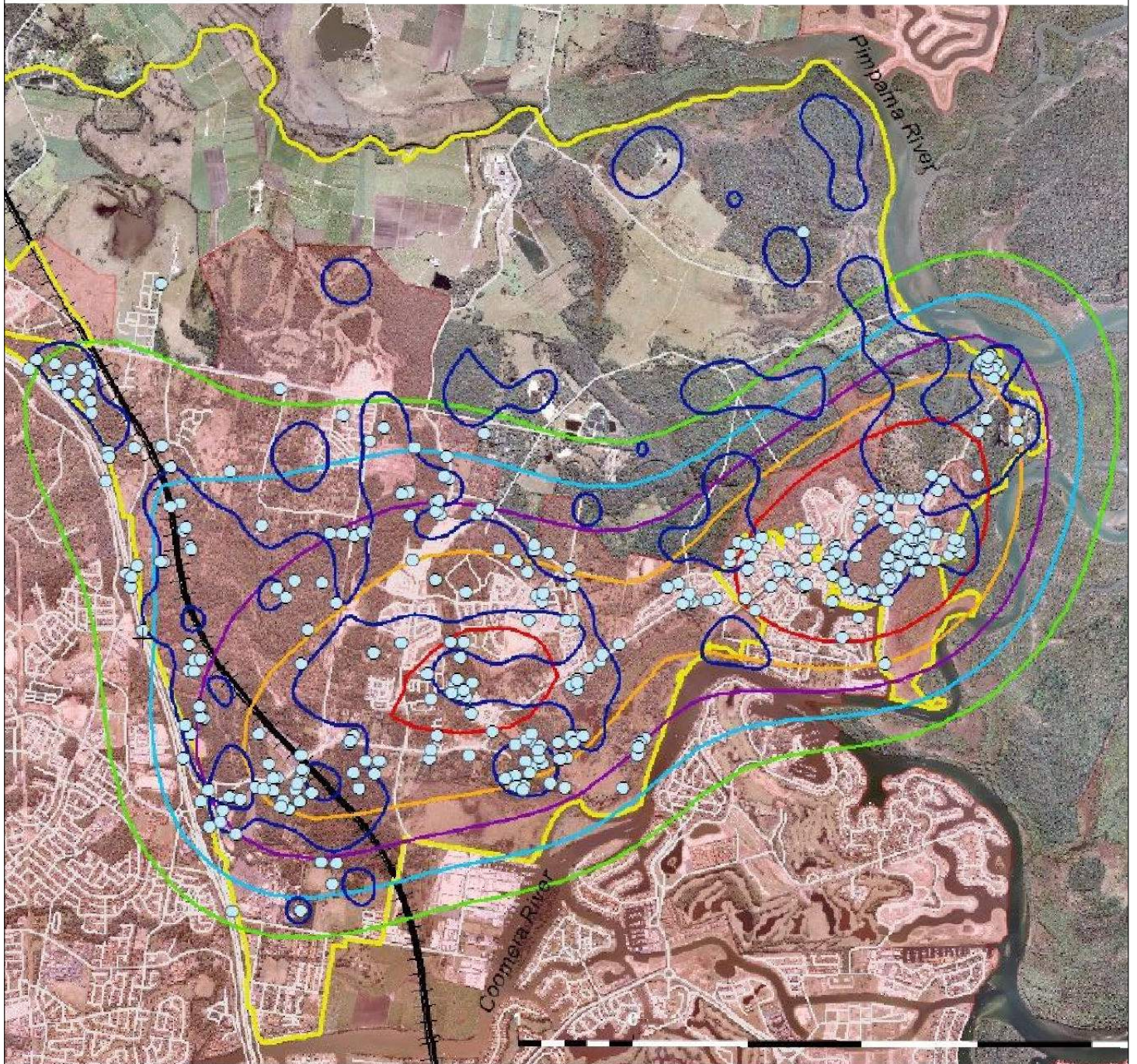
Although smaller in size, the Bloom Estate clearing occurred on land directly adjoining the project site with mirroring habitat characteristics and thus is considered to provide a real time example of the low levels of Koala numbers expected, despite the clear felling of approximate 40 hectares of land.

3.4. Population & Density Summary

Within the information made publically available, there is no direct confirmation that estimates made in 2006 and 2007 on the Koala population numbers and densities through East Coomera are accurate and or closer to the higher or lower ranges provided in the early studies. A review of the translocation records suggests that the actual numbers and densities were lower than estimated. This is also concluded through information provided in surrounding land fauna spotter catcher reports. What is certain is that numbers and densities of Koalas within East Coomera have been under constant reduction based on the following known factors:

1. 180 koalas being captured and translocated away from the local area
2. Over 63 0ha of vegetated land being cleared and transitioned into development uses over the past decade
3. Additional land areas fragmented by development and or reduced in suitability through indirect impacts of construction and operation of residential areas
4. The expansion and construction of the road network reducing access to and from remaining vegetated areas

At the time of drafting this report, the **City of Gold Coast** was preparing a revised Koala Consultation Management Plan to be published to community consultation later in 2017. This document would be expected to provide more contemporary findings on actual Koala numbers considered still relevant to the UKA and considered as part of any future assessment.



- Koala records - City of Gold Coast, Wildcare Australia Inc., other reports (2006-2013)
- 50% kernel contour
- 70% kernel contour
- 90% kernel contour
- 99% kernel contour
- Project area
- Roads
- Urban footprint
- Biolink metapopulation boundaries (2006)
- 30% kernel contour
- Railway

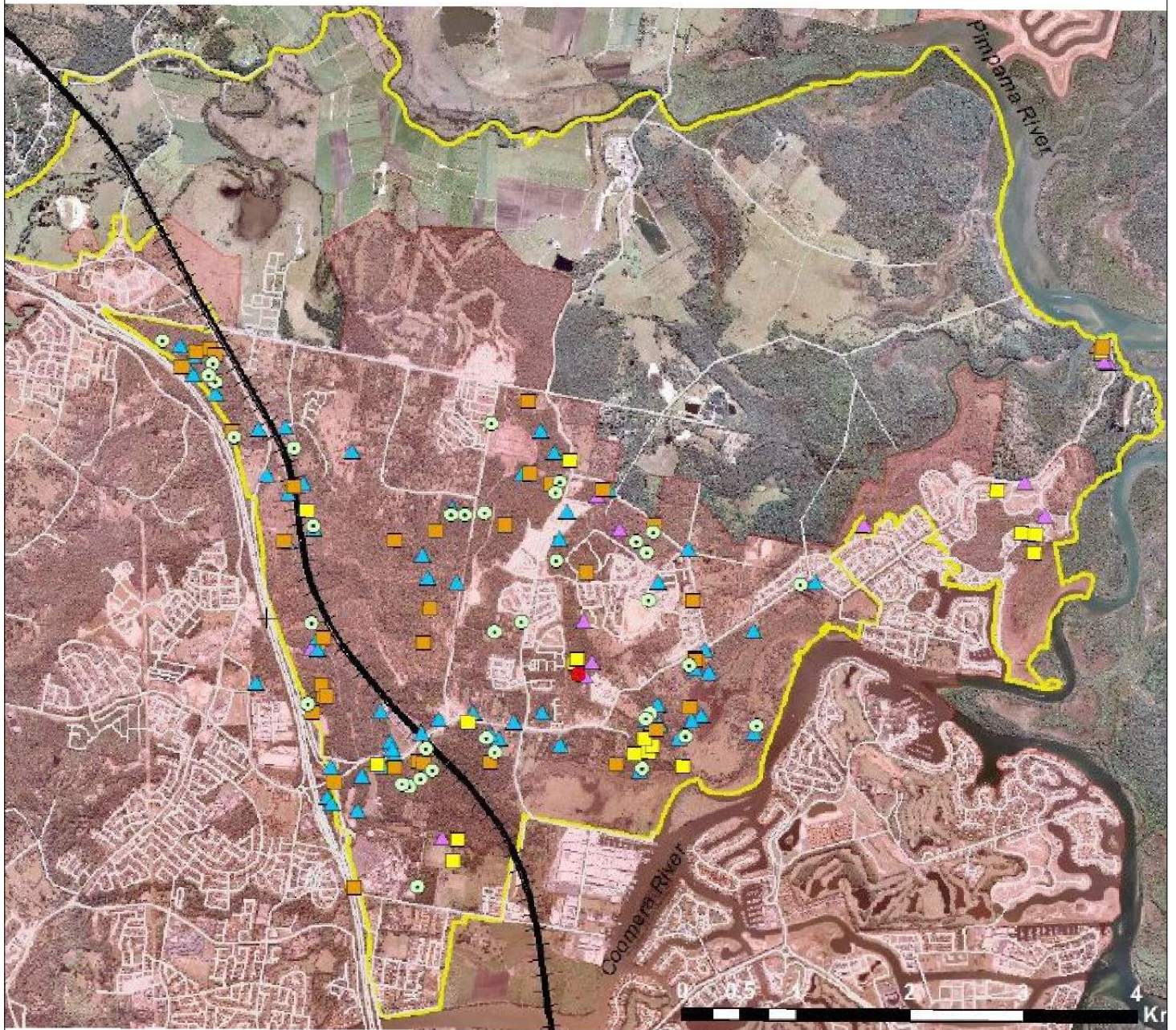
Figure 5
Koala Density Contours (City of Gold Coast)

File ref. 7390 E Figure 2 Redline Areas A
Date 24/01/2017
Project George Alexander Way, Coomera

0 500 1,000 2,000 m
 Scale (A4): 1:51,381 [GDA 1994 MGA Z56]



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- | | | | |
|---------------------------------------|--|-----------|-------------------|
| ○ Female with joey - translocated | ■ Female without joey - not translocated | ✈ Railway | ■ Urban Footprint |
| ● Female with joey - not translocated | ▲ Male - translocated | — Roads | □ Project area |
| ■ Female without joey - translocated | ▲ Male - not translocated | | |

Figure 6

Koala Capture Locations (City of Gold Coast)

File ref. 7390 E Figure 3 Capture Locations A

Date 24/01/2017

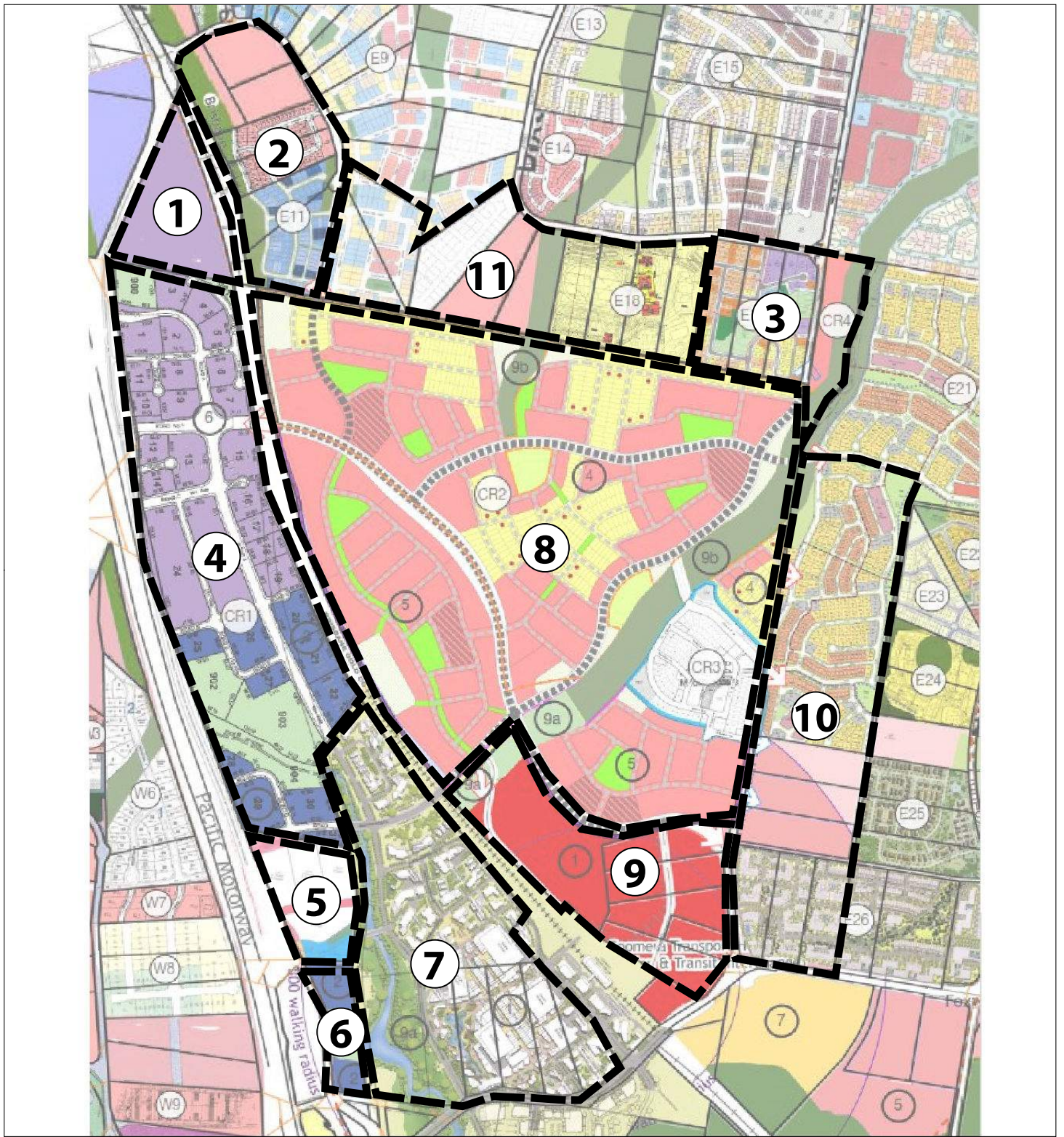
Project George Alexander Way, Coomera

0 500 1,000 2,000 m

Scale (A4): 1:53,851 [GDA 1994 MGA Z56]



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Legend

 Development Areas

Figure 7

Development Area Plan

File ref. 7390 E Figure 5 Development Area A

Date 24/01/2017

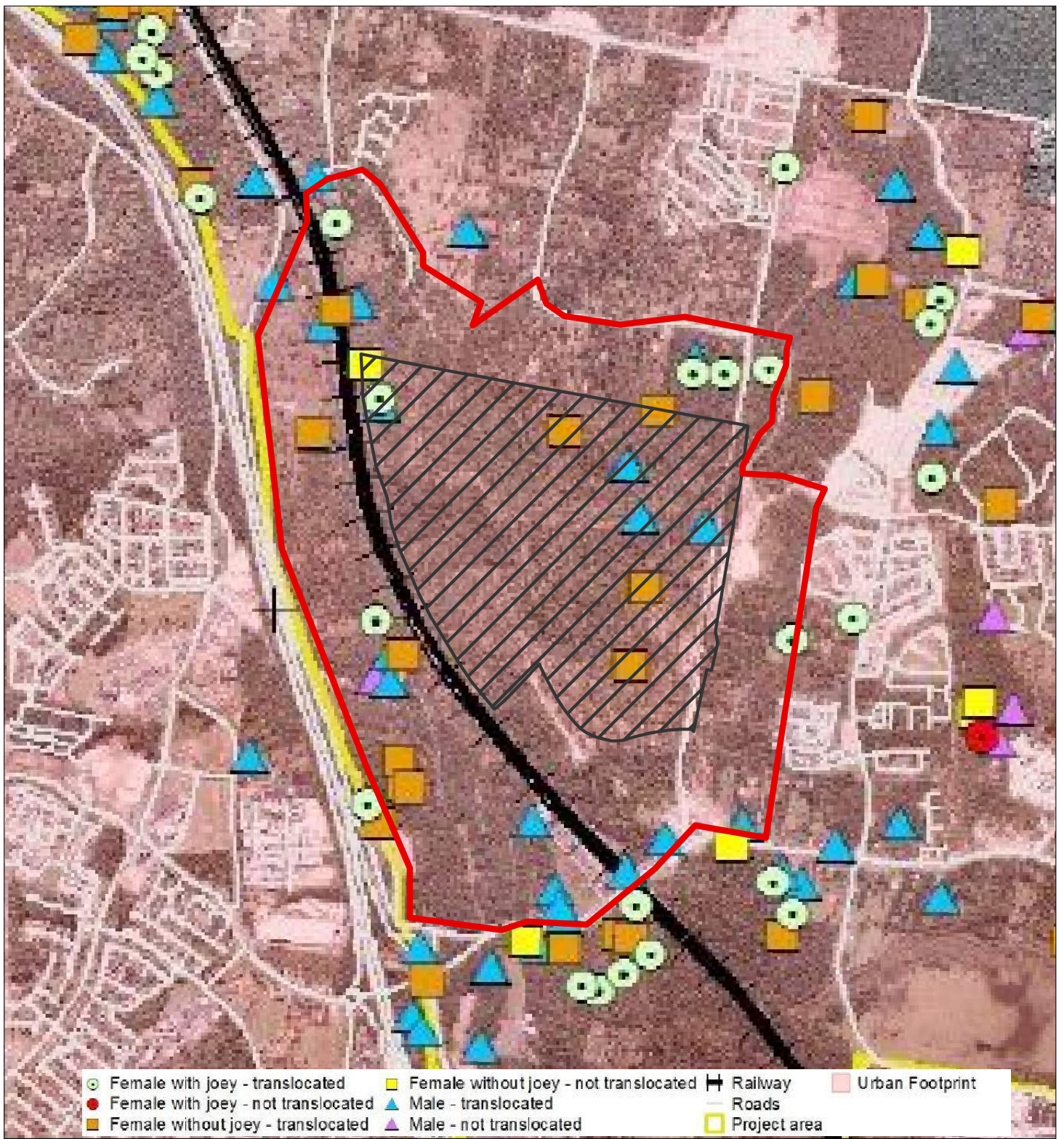
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Legend

- Analysis area (376 ha)
- Impact area (155 ha)

Figure 8

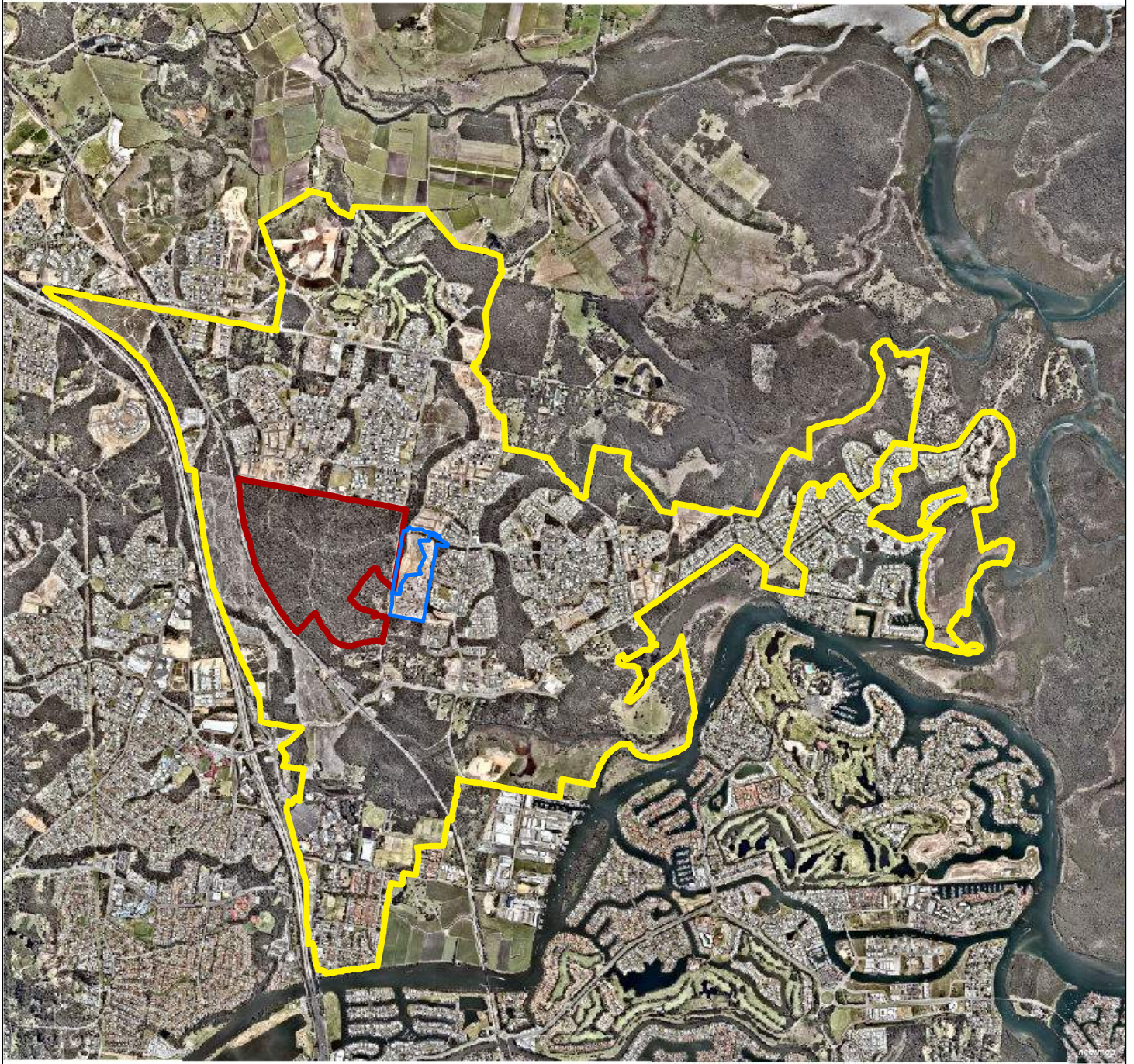
Koala Capture Locations (City of Gold Coast) - Site Area

File ref. 7390 E Figure 4 Capture Locations_Site Area A
Date 24/01/2017
Project George Alexander Way, Coomera

0 250 500 1,000 m
 Scale (A4): 1:21,446 [GDA 1994 MGA Z56]



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Legend

- Urban Koala Area / Study area
- Impact area
- Bloom Estate locality

Figure 9
Bloom Estate Locality

File ref. 7390 E Figure 9 Bloom Estate Locality A
Date 24/01/2017
Project George Alexander Way, Coomera

0 500 1,000 2,000 m

Scale (A4): 1:53,000 [GDA 1994 MGA Z56]



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4. Koala Surveys

Section 4 of this Koala Assessment Report (KAR) provides a summation of historical and contemporary Koala surveys that are relevant to the 'impact area'. These include area-wide estimates utilised during the development of regional Koala conservation strategies, EPBC referral targeted surveys, **DEE** compliance surveys under a monitoring warrant, recent comprehensive direct observational studies and results from surveys on adjoining sites. **The net conclusion is that the Coomera Woods Referral site supports a very low number of Koalas infrequently observed during intensive field surveys.**

4.1. Pre-development

The Coomera Town Centre area has long been slated for development culminating in the urban designation under the **SEQRP 2009-2031**. Concern with respect to potential impacts on resident Koala populations prompted CGC to commission population assessments in the area as early as 2006. The intention was to ensure that adequate management plans be put in place to preserve the viability of regional Koala populations despite the requirement for future development.

4.2. Pre-translocation Population Estimates

As noted in Section 3 of this KAR, **Biolink** were commissioned by CGC in 2006 to investigate Koala habitat values and provide population estimates to underpin future management plans. These estimates are analysed in Section 3.0 of this Koala Assessment Report. The section provides an analysis against the estimates made pre-translocation and the numbers encountered during the capture and translocation period between 2008 and 2013. Based on the numbers analysed it is concluded that the Koala population and resultant density within the Urban Koala Area is more accurately expressed through the lower range estimates. A more detailed analysis for the immediate area in which the impact area occurs shows numbers located further again below the range estimates in the **Biolink** Report.

4.3. Post-translocations Estimates

It is noted that the CGC completed a Koala conservation project for the East Coomera area in June 2014 (Commenced in 2009), in accordance with the provisions of a Scientific Purpose Permit issued by the Queensland **Department of Natural Resources and Mines** (DNRM) and corresponding Animal Ethics Committee approval issued by the then **Queensland Department of Employment, Economic Development and Innovation** (DEEDI), now **Department of Agriculture and Fisheries** (DAF).

As highlighted in Section 3 of this report, the East Coomera Koala Conservation Project (ECKCP) involved:

- Relocation of the most at-risk Koalas from areas where habitat will be cleared (Study area) to other areas of secure habitat in the Gold Coast Local Government area. Recipient sites included Lower Beechmont Conservation Area and Wongawallan Conservation Area
- Monitoring Koalas in the East Coomera area as well as those relocated to external areas
- Habitat restoration in the Pimpama River Conservation Area to enhance available Koala habitat north of the new town centre
- Engagement with landowners, residents and the broader community



- Preparation and implementation of a Koala Conservation Plan (KCP) for East Coomera. The KCP was adopted by CGC in November 2014 and is currently being implemented

Nineteen (19) Koalas were captured and relocated from the 'impact area' in accordance with Phase 1 of the ECKCP with 180 Koalas relocated from the broader 'study area' in locations of imminent danger in the East Coomera Urban Koala Area. Thirty (30) Koalas have been recruited into the in-situ monitoring program for East Coomera and eighteen (18) for Lower Beechmont Conservation Area.

4.4. Indirect Koala Surveys

Koala specific surveys were undertaken by SHG as per relevant EPBC Act Guidelines over the project area. From 15 to 18 April 2015, Senior Ecologists from **SHG** conducted field surveys across the site with weather conditions fine and sunny. The purpose of the survey was to determine the level of Koala usage across the site and to assess the availability of suitable Koala habitat. The assessment involved the following methods:

- Spot Assessment Technique (SAT) development by Philips and Callaghan (2011)
- Opportunistic Searches

4.4.1 Direct Observations

Site specific observations recorded the presence of one (1) relatively small juvenile Koala within the north eastern drainage line on only the first day of the four (4) day survey period. The animal was not sighted during any subsequent survey days, despite deliberate return searches on remaining days within proximity of the observation area. No other Koalas were observed during the referral application surveys.

4.4.2 SAT Surveys

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

Within the impact area, scats were located primarily along gully lines and foothills. Sixteen (16) SAT surveys were conducted across the application area, as shown by the Field Survey Effort presented in **Plan 1** and summarised in **Table 1**. While SAT surveys traditionally rely on the identification of a scat to complete the assessment, three (3) of the sixteen (16) SAT surveys were conducted at locations under suitable habitat trees to ensure a thorough assessment of the entire impact site was undertaken. In most locations (6 of the 16), SAT surveys recorded evidence consistent with the "low" category for Koala use (<22.52% of trees with scats) in coastal regions as defined by the **Australian Koala Foundation's** Koala Activity Level Classification Table, extracted below as **Table 2**. This assessment was based on the East Coast (Medium- High) Density Area threshold which is applicable in habitats dominated by residual, transferral or alluvial type landscapes considered med-high nutrient soils with good water holding capacity (Steve Phillips, personal communication). Four (4) of the SATs recorded evidence consistent with



the “high” use category (>33.84% of trees with scats), while three (3) SATs recorded evidence consistent with the “normal” use category ($\geq 22.52\%$ but $\leq 33.83\%$ of trees with scats).

Table 1: SAT Survey Results

SAT Survey	Scats	%of Trees with Scats	Usage Level
SAT 1	Yes	36.3	High
SAT 2	Yes	13.3	Low
SAT 3	Yes	13.3	Low
SAT 4	Yes	23.3	Normal
SAT 5	Yes	20.0	Low
SAT 6	Nil	-	No Use
SAT 7	Yes	23.3	Normal
SAT 8	Nil	-	No Use
SAT 9	Yes	50.0	High
SAT 10	Yes	43.4	High
SAT 11	Yes	3.33	Low
SAT 12	Yes	16.6	Low
SAT 13	Yes	23.3	Normal
SAT 14	Yes	33.3	High
SAT 15	Yes	13.3	Low
SAT 16	Nil	-	No Use

Table 2: AKF Koala Activity Level Classification Table

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



4.5. Detailed Direct Observational Surveys

To complement primarily indirect surveys undertaken on-site in 2015, direct observational surveys based on the methodology of Dique et al. 2003 as per the Koala Referral Guideline were applied over a period of five (5) days on two separate occasions (Surveys 1 and 2). The applied methodology involved two Ecologists searching all trees within 100 X 20 m polygons in parallel linearly stratified transects spaced so as to ensure the entire site was covered within the 5-day period. Habitat composition and the presence or evidence (scats) of Koala was recorded within each polygon, however, the primary focus was for the direct sighting of Koalas via a census count of animals.

4.5.1 Survey 1

All trees within a total of ninety-five (95) sample polygons spaced across the site were individually observed for the presence of Koala between 20 and 24 June, 2016 (refer **Plan 2**). It is noted that this site survey occurred post the substantial clearing of the adjoining Bloom Estate to the direct east. A thermal scope was used in support of binoculars and other direct observation methods employed for each transect. No Koala were observed within the transects, however, opportunistic searches revealed a Koala utilising the drainage corridor on the eastern site boundary, and this Koala was visually tracked utilising the same corridor off-site on a daily basis for the survey period.

During this survey event, efforts were bolstered by the application of motion detection cameras in strategic potential linkage locations (**Plan 2**), however, no Koala were recorded by the cameras, despite being left in continual locations during the extent of the survey period (day and night).

4.5.2 Survey 2

The direct observational survey was repeated between 30 August and 2 September 2016 with polygons positioned to ensure that all areas of the site had been searched during the application of this methodology. Again, no Koala were observed utilising any of the trees within the ninety-five (95) designated transect polygons, however, one Koala was opportunistically observed between polygons 31 and 34 on one occasion only, and not sighted again despite targeted searches (refer **Plan 3**). Motion detecting cameras were not deployed during this survey period given they did not detect Koala during the previous survey.



4.5.3 Direct Observation Summary

Detailed and relatively comprehensive direct observational surveys further support the assertion that the proposal site only supports a low number of Koalas, infrequently observed during survey and does not contain defined critical habitat. As per the 2015 EPBC Act Referral surveys, only one Koala was observed utilising the site during each survey period. It is noted that no animals were directly observed using the actual direct survey system designed to quantify animal presence, rather, all records occurred as opportunistic observations made due to the extensive volume of time on-site and not through the prescribed survey methods. Given the extensive coverage of the site during the direct observational surveys, the results are considered to provide robust support for low number of Koalas utilising the site.

4.6. Summation on Koala Usage – Impact Area

Evidence from extensive surveys both direct observation and indirect evidence based suggest that the proposal site supports a low number of Koalas and it does not provide critical habitat for the Koala species when assessed against species specific guidelines developed and implemented by the Commonwealth DEE. Direct contemporary evidence from fauna spotter / catcher reports on adjoining developments support this assertion of low Koala numbers.

The Coomera Town Centre continues to be developed for urban purposes, further exacerbating the extent of detrimental influences on Koala persistence in the locality. For these reasons, it is considered unlikely that the loss of vegetation that is not considered critical habitat from this fragmented site in an increasingly urbanised area would adversely impact the sustainability or the recovery of the Koala species.



5. Koala – Referral Guideline Assessment

Section 5 of this Koala Assessment Report (KAR) provides a detailed analysis of the impacts of the project against assessment criteria outlined for the Koala species within the Koala Referral Guideline. The assessment utilises information contained within Section 2 – Terms and Definitions, Section 3 Studies and Translocation and draws on the findings of Koala surveys as outlined in Section 4 of this report.

Conservation Status of Koala

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

Habitat of the Koala

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 (p.5), 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 and non-remnant vegetation in natural, agricultural, urban and peri-urban environments. Koala habitat is defined by the vegetation community present and the vegetation structure; koalas do not necessarily have to be present”.

Distribution

Koalas are endemic to Australia and have a known distribution from north-eastern Queensland to south-eastern South Australia. The species is 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 (3) main threats to Koala have been identified within the SPRAT profile as:

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

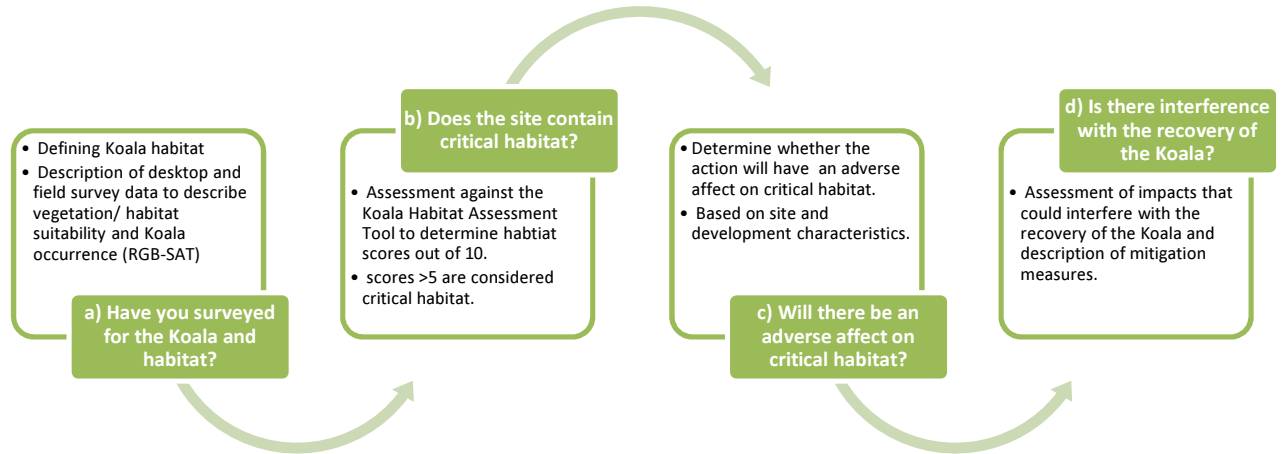
In addition, the prevalence of disease such as the *Chlamydia* virus in many Koala populations has led to symptoms such as infections of the eyes, urinary tract and reproductive tract, with the latter having the potential to lead to infertility in females. More recently, Koala Retrovirus (KoRV) has had an increasing impact on most of Queensland's 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.

Assessment Against the EPBC Act Referral Guidelines for the Vulnerable Koala

The study area and impact site is located within the Koala Referral Guideline modelled distribution as 'known/likely to occur' and within the 'coastal context'. As stated above, South East Queensland is known to support Queensland's highest density of Koalas. Further the species is well known within the East Coomera area and surrounding



landscape. As such, Section 5 of the KAR provides a detailed assessment against the Koala Referral Guideline to determine whether or not the proposed action, being Coomera Woods, will have a significant impact on the Koala or Koala habitat. The Koala Referral Guideline provides an assessment approach using the following processes displayed in the flow chart below:



Flow Chart: EPBC Koala Assessment Process

5.1. Translocation Program – City of Gold Coast

CGC completed the East Coomera Koala Conservation Project in June 2014, in accordance with the provisions of a Scientific Purpose Permit issued by the Queensland **Department of Natural Resources and Mines** (DNRM) and corresponding Animal Ethics Committee approval issued by the then **Queensland Department of Employment, Economic Development and Innovation** (DEEDI), now **Department of Agriculture and Fisheries** (DAF). The details of this capture and translocation program are outlined further in Section 3.0 of the Koala Assessment Report, with the following statements important in this guideline assessment:

- A total of 216 Koalas physically captured under the Council Koala Conservation Program
- Relocation of 180 the most at-risk Koalas from areas where habitat will be cleared to other areas of secure habitat in the Gold Coast Local Government area. Recipient sites included Lower Beechmont Conservation Area and Wongawallan Conservation Area
- Monitoring Koalas in the East Coomera area as well as those relocated to other areas
- Habitat restoration in the Pimpama River Conservation Area to enhance available Koala habitat north of the new town centre

Sixteen (16) Koala capture records cover nineteen (19) animals with the inclusion of joeys that were relocated from the impact area in accordance with Phase 1 of the East Coomera Koala Conservation Program. 180 Koalas were relocated from development sites and locations of imminent danger in the East Coomera area.

5.2. Site Survey (indirect) – Saunders Havill Group

As discussed in **Section 4.4**, between 15-18 April 2015, senior ecologists from **SHG** conducted a field survey across the site with weather conditions fine and sunny. The purpose of the survey was to determine the level of Koala usage across the site and to assess the availability of suitable Koala habitat. The assessment involved the following methods:



- Spot Assessment Technique (SAT) development by Philips and Callaghan (2011)
- Opportunistic Searches

5.2.1 SAT Survey Results

As discussed in **Section 4.4.2**, site specific searches observed the presence of one (1) small juvenile Koala within the north eastern drainage line on Day 1 of the four (4) day survey period, which was not resighted over the remaining three (3) days. Scats were also located in several locations over the site, primarily along gully lines and foothills. Sixteen (16) SAT surveys were conducted across the application area, although it is noted that three (3) of the sixteen (16) SAT surveys were conducted at non-scat locations to ensure a thorough assessment of the entire referral site was undertaken. Refer to Field Survey Effort presented in **Plan 1** and summarised in **Table 1** in **Section 4.4.2** for further detail. Overall, SAT surveys predominantly recorded evidence consistent with the “low” category for Koala use (<22.52% of trees with scats) in coastal regions as defined by the **AFK** Koala Activity Level Classification Table

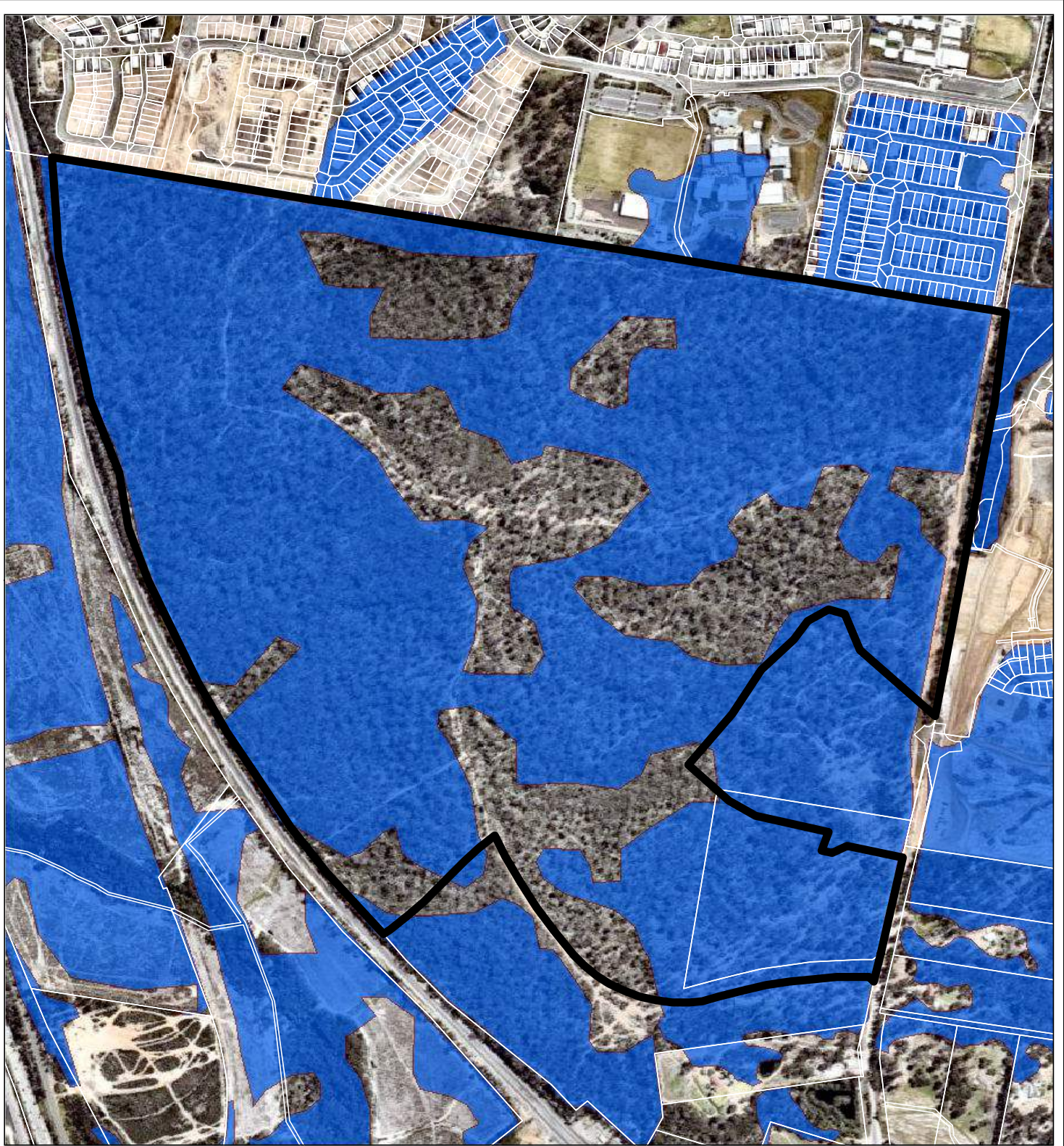
5.2.2 Flora and Koala Habitat Results

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 and non-remnant vegetation in natural, agricultural, urban and peri-urban environments. Koala habitat is defined by the vegetation community present and the vegetation structure; koalas do not necessarily have to be present”.

Queensland’s Koala Habitat Values Map, attached as **Figure 10**, shows the site has been identified as containing areas of Medium and Low Value Bushland and Medium and Low Value Rehabilitation. A small area to the east is mapped as Generally Not Suitable for the species. Regional Ecosystem (RE) Mapping, attached as **Figure 11**, shows that the majority of the site is mapped as containing Least Concern RE12.11.5 which is mapped as containing areas of essential habitat for Koala. Small patches of Of Concern RE12.3.11 are mapped in the eastern drainage line and along the western boundary. The remainder of the site, predominately along ridgelines, is mapped as Category X (non-remnant). This is a result of a history of disturbance across the site due to fire, grazing and slashing.

Field surveys confirmed that the site contained a high abundance of invasive weeds including four species declared under the former *Land Protection (Pest and Stock Route Management) Act 2002*. These include Groundsel (*Baccharis hamifolia*) – Class 2, Fireweed (*Senecio madagascariensis*) – Class 2, Camphor Laurel (*Cinnamomum camphora*) – Class 3, and Lantana (*Lantana camara*) – Class 3.



Legend

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

Figure 10
Regulated Vegetation Management Map

File ref. 7390 E Figure 10 RVMM A
Date 24/01/2017
Project Polaris - Coomera

0 50 100 200 300 m

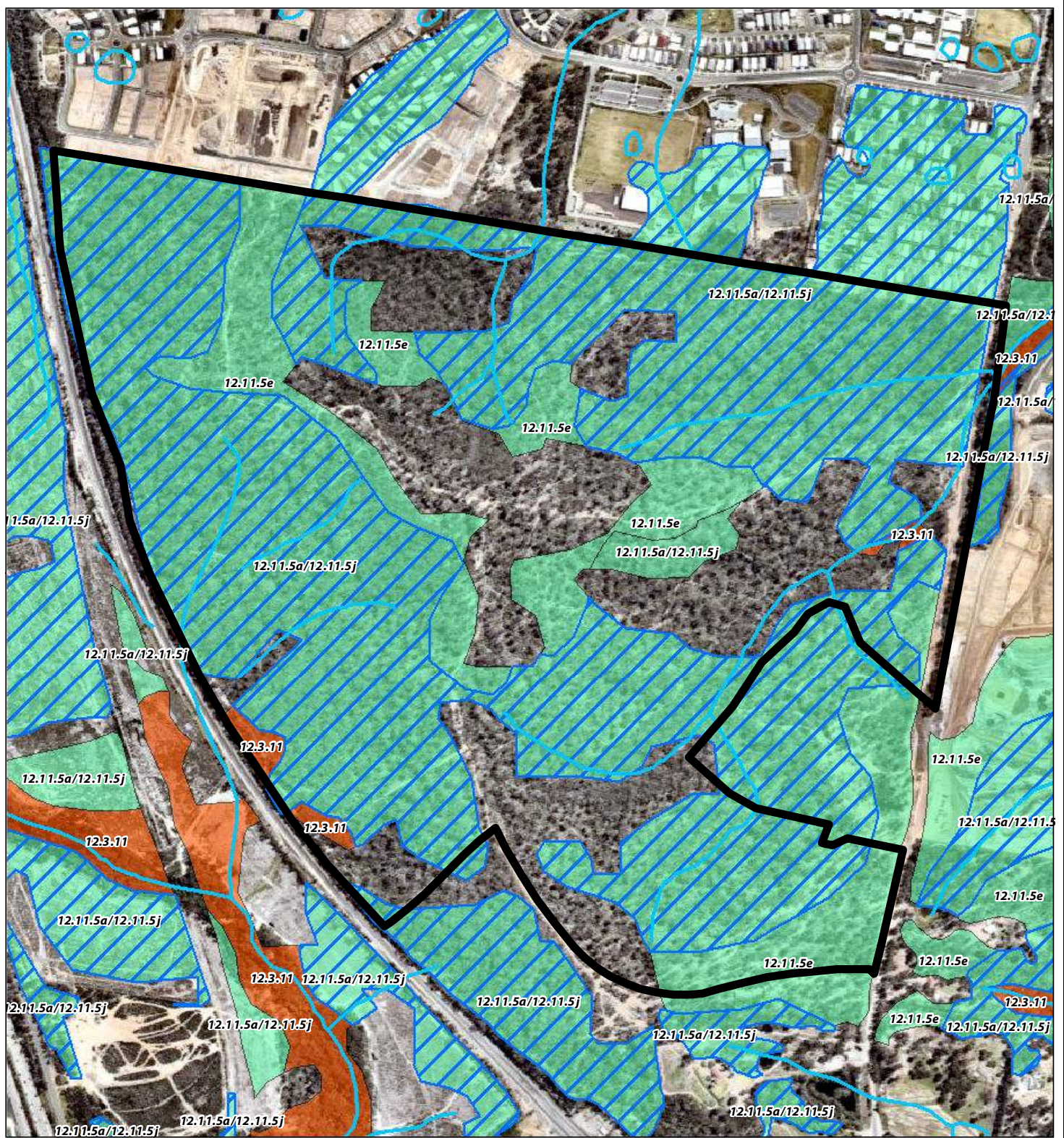
Scale (A4): 1:9,815 [GDA 1994 MGA Z56]



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Legend









- | | | |
|--|----------------------|---|
|  | Site DCDB | Regional Ecosystems mapping |
|  | Qld DCDB |  Category A or B area containing endangered regional ecosystems |
|  | VM Watercourses |  Category A or B area containing of concern regional ecosystems |
|  | VM Essential Habitat |  Category A or B area that is a least concern regional ecosystem |
|  | VM Wetland | |

Figure 11
 Regulated Vegetation Supporting Map

File ref. 7390 E Figure 11 RVSM A
 Date 24/01/2017
 Project Polaris - Coomera

0 50 100 200 300 m

Scale (A4): 1:9,815 [GDA 1994 MGA Z56]



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Overall, the site is dominated by Eucalypt Woodland/Open Forest located on minor alluvial deposit, or on metamorphosed sedimentary rocks associated with the Neranleigh-Fernvale formation beds. The understory across the majority of the site is routinely slashed and typically dominated by regenerating eucalypts, native shrubs and grasses. Three broad eucalypt associations were identified across the site (refer **Plan 4**):

1. Forest Red Gum/Ironbark/Bloodwood Association (Broad Gullies and Drainage Lines)
 - Existing canopy vegetation includes predominately stems of *Eucalyptus tereticornis*, *E. siderophloia* and *Corymbia intermedia* within the lower flowpath and *E. tindaliae*, *E. resinifera*, *E. propinqua*, *E. carnea*, *C. citriodora*, *Angophora leiocarpa*, *E. fibrosa* and *E. acmenoides* on the gully banks. Common elements of the small tree (T2) layer include *Lophostemon suaveolens*, *Melaleuca quinquenervia*, *Allocasuarina littoralis*, *Acacia spp.*, *Alphitonia excelsa* and *Callistemon salignus*.
2. Tallowood/White Mahogany/Grey Gum Association (Mid-slope Areas)
 - The canopy varies in composition but is mostly dominated by White Stringybark (*Eucalyptus tindaliae*) and Broadleaved White Mahogany (*E. carnea*) in association with varying sub-dominance of Ironbarks (*E. siderophloia* and *E. fibrosa*), Pink Bloodwood (*Corymbia intermedia*), Smoothbarked Apple (*Angophora leiocarpa*) and Grey Gum (*Eucalyptus propinqua*). In the moister parts and on the more sheltered slopes it includes some Tallowood (*Eucalyptus microcorys*) and a greater proportion of Grey gum. The drier areas include some Spotted Gum and Brush Box (*Lophostemon confertus*) with Blue Gum sporadically occurring on the lower slopes.
3. Spotted Gum/Ironbark Association (Ridgelines and Balance Areas)
 - The canopy is dominated by Spotted Gum (*Corymbia citriodora*) and Broad-leaved Ironbark (*Eucalyptus fibrosa*)/or Grey Ironbark (*E. siderophloia*) with White Stringybark (*E. tindaliae*), Broadleaved White Mahogany (*E. carnea*), Narrow-leaved Ironbark (*E. crebra*), Smoothbarked Apple (*Angophora leiocarpa*), Pink Bloodwood (*Corymbia intermedia*) and Grey Gum (*Eucalyptus propinqua*) common.

5.3. Detailed Direct Observational Surveys

As discussed in **Section 4.6**, to complement primarily indirect surveys undertaken on-site in 2015, direct observational surveys based on the methodology of Dique et al. 2003 as per the Koala Referral Guideline were applied over a period of five (5) days on two separate occasions (Surveys 1 and 2 – discussed in **Sections 4.6.1-4.6.2**). The applied methodology involved two Ecologists searching all trees within 100 X 20 m polygons in parallel linearly stratified transects spaced so as to ensure the entire site was covered within the 5-day period. Habitat composition and the presence or evidence (scats) of Koala was recorded within each polygon, however, the primary focus was for the direct sighting of Koalas via a census count of animals.

Survey 1 was completed between 20 and 24 August, 2016 (refer **Plan 2**), post the substantial clearing of the adjoining Bloom Estate to the direct east. No Koala were observed within the transects, however, opportunistic searches revealed a Koala utilising the drainage corridor on the eastern site boundary, and this Koala was visually tracked utilising the same corridor off-site on a daily basis for the survey period. Survey 2 was repeated between 30 August and 2 September 2016 with polygons positioned to ensure that all areas of the site had been searched during the application of this methodology. Again, no Koala were observed utilising any of the trees designated within the targeted transect polygons, however, one Koala was opportunistically sighted on the site (refer **Plan 3**).

Given the extensive coverage of the site during the direct observational surveys, the results are considered to provide robust support for a very low number of Koalas potentially using the project site.



5.4. Summation on Koala Usage – Impact Area

Evidence from extensive surveys both direct observation and indirect evidence based suggest that the proposal site supports a low number of Koalas and it does not provide critical habitat for the Koala species when assessed against species specific guidelines developed and implemented by the **DEE**. Direct contemporary evidence from fauna spotter / catcher reports on adjoining developments support the assertion that the remaining areas on and around the site support low numbers of animals.

The Coomera Town Centre continues to be developed for urban purposes further exacerbating the extent of detrimental influences on Koala persistence in the surrounding area. For these reasons, it is considered unlikely that the loss of vegetation that is not considered critical habitat from this fragmented site in an increasingly urbanised area would adversely impact either the sustainability or the recovery of the Koala species.

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

In accordance with the Koala Referral Guideline, habitat which receives a score of **5 or more** using the Koala Habitat Assessment Tool is considered to be critical habitat. As assessment of the site using the Koala Habitat Assessment Tool has been undertaken in **Table 3** and indicates that the site has been given a critical habitat score of **4** and therefore is **not** considered to be critical habitat for Koala. The Habitat Assessment Tool score and justification were discussed with **DEE** through meetings prior to the lodgement of this referral and since confirmed in writing via a range of correspondence. While the site is **not** considered to contain critical habitat in this assessment for the Koala, due to its size and known Koala populations in the area, the action warranted referral to the Department.

Table 3: Koala Habitat Assessment Tool

Attribute	Score	Comment
Koala occurrence	2	<p>The EPBC Act Protected Matters Search Tool identified the Koala as having potential to occur on site. A search of Queensland's Wildlife Online Search Tool using a 10 kilometre radius found 372 records of the Koala, while 11 sightings had been recorded within a 1 kilometre radius of the site.</p> <p>While there is evidence of Koala occurrence on the site, it is noted that East Coomera Koala Conservation Project has involved the relocation of 180 'at risk' Koalas out of the imminent Coomera development area. This has included the removal of 19 Koalas off the referral site as well as surrounding areas as part of the East Coomera Koala Conservation Project, significantly reducing the number of Koalas in the area. The East Coomera Koala Conservation Project is now complete having relocated 180 species from the area.</p> <p>Recent survey of the site, since the relocation of Koalas, noted a single juvenile male was observed on Day 1 of the 4 day field survey completed in 2015 and was not resighted on the following three (3) days. In addition, while scats were observed in several locations across the site, these were concentrated to gully lines and foothills and overall use of the site by the species is considered to be "low". Further, while scats were observed across the site, it is unknown how long they have been on site (i.e. prior to relocation in June 2014), with survey noting in many locations scats as being 'old'.</p> <p>Additional comprehensive direct Koala surveys were completed in August and again in October 2016. Both surveys occurred post the clearing of vegetated areas associated with the Bloom Estate on the land adjoining to the immediate east. In both surveys, a single Koala was observed either on or adjacent to the project site.</p>



Attribute	Score	Comment
		<p>As there is evidence of Koala occurrence in the previous two years, this attribute has been scored 2.</p>
Vegetation composition	2	<p>A detailed description of the vegetation composition on site is provided in earlier sections of this report, and based on the results from 2004, 2008 and 2015 ecological field survey. Overall, the site was found to be dominated by species that achieve the definition of 'woodland' and 'forest' as referenced in the Koala Referral Guidelines. Ecological survey of the site shows the referral area is predominately dominated by <i>Eucalyptus</i> and <i>Corymbia</i> species. Specifically, these species included <i>Eucalyptus tereticornis</i> (Forest Red Gum), <i>Eucalyptus siderophloia</i> (Grey Gum), <i>Corymbia intermedia</i> (Pink Bloodwood), <i>Corymbia citriodora</i> (Spotted Gum) and Broad-leaved Ironbark (<i>Eucalyptus fibrosa</i>) or Grey Ironbark (<i>E. siderophloia</i>). Further, there was a high dominance of <i>Allocasuarina littoralis</i> (Black She-oak), <i>A. torulosa</i> (Forest She-oak) and Wattles (<i>Acacia disparrima</i>, <i>A. leiocalyx</i>, <i>A. melanoxydon</i>) throughout the shrub layer and a number of weed species were identified. As vegetation composing of canopy species on site is made up of more than two species considered to be Koala food trees, this attribute has been given a score of 2.</p> <p>Two or more Koala food trees were identified in the canopy, resulting in an attribute score of 2.</p>
Habitat connectivity	0	<p>Contextually, the site is bound by the Gold Coast Railway Line to the west, Foxwell Road the south and existing and approved development to the north and east. While current aerial imagery shows vegetated patches to the south, southwest and east (refer Plan 5), connectivity to this vegetation is segregated by existing arterial and rail infrastructure and future development and EPBC approvals. Additionally, the Bloom Estate to the immediate east has now completed vegetation clearing removing the majority of vegetation adjoining the eastern boundary with the exception of the retained gully line. Urban development has expanded significantly in the wider Coomera area over the past decade, with residential estates now dominating the landscape to the east and west of the Pacific Motorway.</p> <p>A primary barrier to dispersal between the site and bushland directly to the west is the Gold Coast Railway Line and Coomera Train Station. Trains travel along this portion of the line between Brisbane and the Gold Coast roughly every half an hour between 5am and 12pm. The high frequency of train movements along the track poses significant threats of injury or death to dispersing Koalas. In addition, vegetation clearing of isolated pockets between the railway line and Pacific Motorway associated with Westfield's Northern Frame Precinct (EPBC2014/7291) and Shopping Centre (EPBC20147292) has now been completed.</p> <p>The State Government committed to \$47.4million, in addition to the existing \$410 million commitment from the Australian Government and \$17.3 million commitment from the developers of the Coomera Town Centre, for the upgrade of the existing interchange connected to the Pacific Motorway and Coomera Exit 54 located at Foxwell Road. This financial commitment demonstrates the obligation from all levels of Government for Foxwell Road to be developed as a major arterial. This upgrade is required to cater for continued growth of the Coomera Area and has recently been completed.</p> <p>The Coomera Town Centre Structure Plan, provided in Plan 5, shows that the surrounding Coomera area is expected to undergo even further development in the future. The subject site comprises a significant proportion of this development zone and, as such, will be surrounded by existing and future development. Consequently, the project area will become a completely isolated</p>



Attribute	Score	Comment
		<p>patch fragmented from habitat patches elsewhere in the landscape once surrounding development is complete. Operational clearing of the Bloom Estate to the east of the project has now been completed.</p> <p>No functioning viable corridors suitable to support the regular and ongoing movement of Koalas between habitat areas has been planned or retained within the Coomera Town Centre. Further, Council have taken direct action through the East Coomera Koala Conservation Project, to relocate the Koala population from the Urban Koala Area of the Coomera Town Centre to areas designated for Koala conservation within the broader jurisdiction of the Gold Coast.</p> <p>A minor network of lineal open space has been achieved in fragments through developments to the north and east. These areas range in width from 20 to 80 m. No conservation measures have been incorporated into this system (i.e. fencing, signage, Koala tree planting program). Additionally, the linear system is severed by several minor and major roads and in other locations the full width of open space caters for storm water treatment devices. This lineal system is not assessed as supportive of functional connectivity in relation to connecting habitat to and from the site (refer Plan 6). Although not providing functioning connectivity, the Koala Conservation Plan for East Coomera maintains these areas for provision of dispersal of any remaining Koalas in the Urban Koala Area to the Koala Conservation Area, which is to be retained and restored as permanent Koala habitat.</p> <p>Overall, the site is significantly disconnected from large contiguous patches of bushland. While limited movement opportunities currently exist to the east, future development intent and Council approvals over these areas will inevitably see this vegetation cleared for residential development. Once approvals are in place, contiguous vegetation within the landscape will be confined to the referral site and vegetated properties to the north and south, comprising 185 ha. In addition, no viable movement corridors or areas of Koala habitat are planned to be retained adjoining the site. As such, the attribute value for habitat connectivity has been determined to be 0.</p> <p>No habitat connectivity values will be retained in the short or long term surrounding the site, resulting in an attribute score of 0.</p>
Key existing threats	0	<p>Detailed knowledge is known about the existing threats to Koalas in the East Coomera area as extensive monitoring and research was completed during 2012 and 2013 as a lead in to implementing the Council's translocation strategy. The following data are provided from Council's Reports surrounding this strategy and reports on threats at a time when East Coomera was substantially less developed than the current day.</p> <p>Vehicle Strike:</p> <p>Between 2012 and 2013, Wildcare Australia recorded six (6) Koala fatalities from vehicle strike within East Coomera. In the same period, CGC recorded a further two (2) Koala fatalities taking the total deaths from vehicle strike to 8 for the period. The majority of these strikes occurred along Foxwell Road to the south of the project site. Additionally, thirteen (13) Koala vehicle strike records were made along the Pacific Motorway as it traverses the Coomera area. Substantial development expansion and vehicle usage on existing and new roads has occurred since this period. Additionally, it is noted that the project area includes two new large scale "trunk" road corridors partially funded by the Council and State Government.</p>



Attribute	Score	Comment
		<p><u>Dog Attack:</u></p> <p>There are 60,000 registered dogs within the Gold Coast area with the majority of these residing in urban settings and occurring through the entire East Coomera area. In 2012, fifteen (15) Koalas were rescued or recovered from the East Coomera Area by Wildcare Australia. Many of these were due to threats of or actual suspected attacks by dogs.</p> <p>Substantial evidence of both frequent and regular Koala mortality from vehicle strike and dog attack is known within the immediate proximity of the project site. These threats along with the removal of habitat are in essence why the CGC commenced the unorthodox strategy of physically capturing and relocating the Koalas from the East Coomera area. The Coomera Woods site is almost completely surrounded by these threat factors, either through already constructed residential areas and roads or through approved and under construction areas, the majority of which also retain EPBC approvals.</p> <p>Due to the existence of key threats, the attribute has been scored 0.</p>
Recovery value	0	<p>The interim recovery objective for coastal areas is based upon protecting and conserving large, connected areas of Koala habitat, particularly where Koalas are genetically diverse/ distinct, free of disease or have a low incidence of disease or where there is evidence of breeding. None of these elements are considered to be present on the referral site and as such its recovery value is assessed as being 0. This is primarily because, as shown in Plan 6, the site is heavily fragmented and will inevitably be completely isolated from large, continuous patches of Koala habitat, as local development expands in accordance with the Coomera Town Centre Structure Plan. Further, the site makes up a significant proportion of the Coomera Town Centre development area and adjoins the Activity Centre Precinct and Rail Station. If the development does not proceed, it dramatically effects all existing development and proposed development in the Coomera area.</p> <p>The referral site is already highly fragmented and isolated by surrounding roads and rail lines, and while some connectivity remains to the east, future approvals will remove connectivity opportunities between the site and areas of potential Koala habitat. Further, this development will result in an isolated site surrounded by increased key threats to the species including roads and domestic pets.</p> <p>The site is not considered large enough in isolation to function and sustain Koala populations. While a small juvenile male was observed on the site during the first day of field surveys, it was not resighted on the remaining 3 days by field ecologists suggesting it, or other potential individuals, are not confined to the project site. This assumption is further supported by two census style direct Koala surveys completed in 2016 (August and October). Both surveys noted only a single Koala infrequently, despite targeted efforts to capture records during 160 person hours of survey and over 100 hours of motion camera footage.</p> <p>Further, while evidence of scats on site indicated a predominantly 'low' level of usage by the species, the age of these scats cannot be ascertained and it is likely that a portion of the scats recorded as part of the SATs were left prior to</p>



Attribute	Score	Comment
		<p>relocation of Koalas off the site as part of the East Coomera Koala Conservation Project in June 2014. Further, previous field work as well as research undertaken as part of the East Coomera Koala Conservation Project indicates the site in isolation does not support a viable subpopulation of Koalas.</p> <p>As shown in Plan 5, the Coomera Town Centre Structure Plan, planning intent is for the area to be completely developed, with no conservation linkages proposed to be retained within the landscape. While two slithers of Conservation land are mapped over the referral site, and are to be retained by the development, these have been designated due to topographical constraints and reflect drainage lines. They will not, in isolation, support viable movement corridors for the species and were not designed to form part of conservation linkages for Koala movement in the Coomera Town Centre. The western slither of conservation land adjoins and mapped Recreational Open Space/Urban Parkland linkage, which connects the site to parkland associated with Oxley Creek to the west of the railway line. This corridor is intended as a recreational linkage for residents and visitors and will be embellished with amenities. No Environmental Corridors or meaningful areas of conservation are mapped within or adjoining to connect the site with external Koala habitat areas. Further, over 180 Koalas have been relocated from the area as part of the East Coomera Koala Conservation Project, including nineteen (19) individuals from the site itself due to it being identified as a 'high risk' development area. Planning intent and actions by Council do not support the retention of habitat for Koala or existing populations in the area.</p> <p>Overall, the site does not meet the interim recovery objectives for coastal regions and as such, is given an attribute score of 0.</p> <p>As the referral site does not meet the interim recovery objectives, the attribute has been scored 0.</p>
Total	4	NOT Critical Habitat



5.5. Will there be adverse impacts on critical habitat?

The assessment concludes that the site **does not** contain critical habitat for the Koala as it achieves a **habitat score of 4**. Field surveys have identified that the site is utilised by a small number of Koalas infrequently observed during detailed survey. Vegetation composition on the impact site is supportive of Koala habitat, consisting primarily of species considered to be Koala food trees. Potential impacts to the species under the Koala Referral Guideline therefore have been considered through the “yes/no” flowchart provided within the Koala Referral Guidelines as Figure 2 to determine if the action will adversely affect habitat critical to the survival of the Koala:

1. **Does your impact area contain critical habitat to the survival of the koala (habitat score ≥ 5)?**
 - No, the habitat on site has been given a score of 4.

2. **Does the area proposed to be cleared contain known Koala food trees?**
 - Yes. Overall, the site was found to be dominated by species that achieve the definition of ‘woodland’ and ‘forest’ as referenced in the Koala Referral Guideline. Ecological survey of the site identified canopy species within the referral area are dominated by *Eucalyptus* and *Corymbia* species including *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus siderophloia* (Grey Gum), *Corymbia intermedia* (Pink Bloodwood), *Corymbia citriodora* (Spotted Gum) and Broad-leaved Ironbark (*Eucalyptus fibrosa*)/or Grey Ironbark (*E. siderophloia*).

3. **Are you proposing to clear ≤ 2 hectares of critical habitat containing known Koala food trees in an area with a habitat score of 5?**
 - No. The action requires clearing 137 hectares of vegetation, however, scores derived using the Habitat Assessment Tool do not achieve the minimum requirements to be considered critical habitat for the Koala.

4. **Are you proposing to clear ≥ 20 hectares of critical habitat containing known Koala food trees with a habitat score of ≥ 8 ?**
 - No. The action requires clearing 137 hectares of vegetation which varies in condition. This vegetation, however, was assessed using the Habitat Assessment Tool and is not considered critical habitat for the Koala.

5. **Assessment on Characteristics**
 - There are a number of characteristics of the Coomera Woods site that reduce the adversity of impacts caused by the clearing of vegetation. These include:
 - The surrounding Coomera area has been subject to the East Coomera Koala Conservation Project, a translocation program aimed at removing Koalas from at risk development areas into protected conservation areas. Council has indicated a preference for removing Koalas from the Coomera Town Centre Structure Plan extents in response to the high level of development anticipated in the surrounding area. As such, approximately 180 Koalas have been removed from the surrounding area.
 - The vegetation on site is not considered critical habitat for Koala, as it achieves a habitat assessment score of 4.



- Site vegetation is surrounded by urban development, roads and rail with future expansion of the Coomera area intended to occur. Consequently, while a large vegetated patch, the site will be completely isolated from continuous areas of Koala habitat and no viable or safe Koala movement opportunities to and from the site will exist (refer **Plan 6**).
- As, conditioned by CGC, no clearing can occur on site without direct involvement of a registered Fauna Spotter Catcher. Further, an approved Fauna Management Plan has been prepared for the site, which details mitigation, management and monitoring actions proposed by the development.
- These characteristics restrict the site's ability to achieve the interim recovery objectives for the coastal areas. As such, the retention of site vegetation will not advance the objective of the Commonwealth to protect large and continuous areas of Koala habitat.
- Given these factors, the short and long term impacts on Koalas as a result of the proposed action are not considered to be significant.

Overall, the adversity of impacts as a result of the proposed development are minimal as the vegetation is not considered to achieve the definition of critical habitat. Existing barriers to functional Koala movement to and from the site coupled with current Local, State and Commonwealth approvals around the referral area drastically influence the long term ecological function of the site within the broader landscape.

6. 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 Guideline. Possible impacts listed in the guidelines that must be considered include:

- Introducing or increasing the risk of vehicle strike
- Introducing or increasing Koala fatalities due to dog attacks
- Creating a barrier to movement
- Facilitating the introduction or spread of disease
- Increasing the risk of high-intensity fires
- Degrading critical habitat due to hydrological changes

These impacts as well as mitigation measures to address these impacts are discussed in **Table 4**. In summary, the project is considered unlikely to interfere substantially with the recovery of the species.



Table 4: Potential Impacts

Impact	Likelihood	Comments
Dog attack	Unlikely	<p>While the proposed action introduces residential uses across the site, this will consist of medium to high density dwellings such as apartments and townhouses, which are unlikely to encourage a notable increase in dog ownership. In the context of the greater Coomera area, which is characterised by low density residential areas, the project will not increase the level of dog ownership to a point and in a location which is likely to increase the prevalence of dog attacks.</p> <p>No residual impacts are identified.</p>
Vehicle Strike	Potential	<p>The development will result in an increase in vehicle usage on the newly created residential roads, which includes trunk arterials. Given the already high level of vehicle usage on Foxwell Road, and expected increases in the future, risk of vehicle strike in the area is already high. As the site is to be surrounded by urban development, with remaining bushland on site predominately cleared, retained areas for Koala movement in the Coomera area will be greatly restricted as intended by CGC. Nevertheless, an increase in vehicle usage adjacent to bushland areas does create the potential for vehicle strikes. These impacts will be mitigated through road design principles and signage techniques encouraging high visibility and low speed limits.</p> <p>No residual impacts are identified.</p>
Barriers to Dispersal	Unlikely	<p>The site is already fragmented from other habitat areas as a result of existing barriers, including the Gold Coast Railway Line, Foxwell Road, existing urban development to the north and expanding residential to the east, which has resulted in the clearing of the majority of remaining vegetated properties adjoining the site. The proposed action will not result in further fragmentation of other habitat areas. No residual impacts are identified as the site will not result in the creation of fragmentation or barriers to dispersal.</p> <p>No residual impacts are identified.</p>
Hydrological change	Potential	<p>Two drainage lines, which flow north and northeast will be retained by the development in open space. These drainage features will be retained within open space/conservation corridors, in keeping with retained widths downstream, to maintain natural drainage and hydrology. These features are noted to be highly degraded and capture stormwater run-off from surrounding development downstream. While the development will result in an increase in impervious surfaces, detailed hydrological modelling, Bulk Earthworks Plans, Stormwater Management Plans and Erosion and Sediment Control Plans will be prepared to manage and mitigate impacts associated with run-off from the development to maintain water quality in accordance with State and Local water quality objectives and standards. Potential changes to hydrology are extremely unlikely to result in the degradation of critical habitat elsewhere.</p> <p>No residual impacts are identified.</p>
Fire	Unlikely	<p>The project is extremely unlikely to increase the frequency or intensity of bushfires as it primarily results in the removal of fuel load from the project area.</p> <p>No residual impacts are identified.</p>
Spread of Disease	Unlikely	<p>One of the primary threats to Koalas is the spread of disease, with disease making up a significant proportion of overall mortality in Koalas. South East Queensland Koalas are known to carry Koala Retrovirus (KoRV), which is spread by transmission of genetics from parent to offspring, and by close</p>



Impact	Likelihood	Comments
		<p>contact between Koalas. Almost half of South East Queensland's Koala population has been estimated to carry reproductive diseases that can lead to infertility caused by the <i>Chlamydia</i> virus. Again, this is passed on by Koala to Koala contact. Given the already high prevalence of disease and its transmission by close Koala to Koala contact, the proposed action is extremely unlikely to result in the spread of disease or pathogens into the existing Koala population.</p> <p>No residual impacts are identified.</p>

5.6. Summation of Against the Koala Referral Guideline

Section 9 of the Koala Referral Guideline states the decision as to whether a proposed action will have or is likely to have a significant impact on the Koala is derived from the following two key considerations:

Adversely affecting habitat critical to the survival of the koala (by reference to the Section 7 of the Guideline which contains the habitat assessment tool)

AND / OR

Interfering substantially with the recovery of the koala through the introduction or exacerbation of key threats in areas of habitat critical to the survival of the koala (Section 8).

The Coomera Woods site or the impact area of any future referral by way of detailed assessment against the criteria set out in the Koala Referral Guideline does not retain any areas of Habitat Critical to the Survival of the Koala (scores and 4 out of 10 on the habitat assessment tool). This score has been confirmed by the DEE, verbally and in writing, during pre-lodgement meetings and in the initial referral of the site.

Therefore, the project cannot be 'adversely affecting' critical habitat and does not result in the introduction or exacerbation of key threats into areas of critical habitat, which does not occur within the impact area.



6. Significant Impact Guideline 1.1

The Commonwealth **Department of the Environment and Energy** (DEE) released the *EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (Significant Impact Guideline) to provide overarching guidance on determining whether an action is likely to have a significant impact on a matter protected under national environmental law – the *Environment Protection and Biodiversity Conservation Act 1999*. The guideline is designed to assist any person who proposes to take an action to decide whether or not they should submit a referral to the DEE on whether assessment is required under the EPBC Act.

While the Koala Referral Guideline provides an assessment on if a referral is required primarily for the clearing of critical habitat for the survival of the Koala and or impacts on recovery of the species, the Significant Impact Guideline provides assessment criteria on whether or not an action will result in a ‘significant impact’ on MNES, which includes impacts on the survival of the species as a result of the action (e.g. impacts not necessarily linked to removal of habitat). As in Section 5 of this Koala Assessment Report, the project will not result in the removal of critical habitat, however, it is also important to understand if the project will result in a ‘significant impact’ on ‘an important population’ of the Vulnerable Koala.

In making this assessment, the Significant Impact Guideline seeks proponents review and answer the following questions in relation to impacts specific to species scheduled as Vulnerable under the EPBC Act:

- Lead to a long-term decrease in the size of an important population of a species
- Reduce the area of occupancy of an important population
- Fragment an existing population into two or more populations
- Adversely affect habitat critical to the survival of the species
- Disrupt the breeding cycle of an important population
- Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

As underlined, the concept of understanding impacts relative to a defined important population of Koalas is critical in determining if a significant impact is likely.

The Koala Referral Guideline mentions the significant impact assessment criteria that refers to “important populations” included in the Department’s Significant Impact Guidelines 1.1. The Koala Referral Guideline notes that the concept of ‘important populations’ is not used as assessment criteria in the Guideline as insufficient information is available to *adequately identify and separate the nature of important populations throughout the range of the listed species*. It further states that *this may be reviewed when the national recovery plan for the koala is finalised, particularly if it contains information on delineating important populations and provides further information on habitat critical to the survival of the koala*.

At the time of this referral, no Recovery Plan for the Koala species was available in draft or final format. A list of Interim Recovery Objectives are provided in the Koala Referral Guideline and assessed under this document (refer **Section 5**).

However, as outlined in Sections 3 and 4, the Koala population and Koala habitat within East Coomera Area (which includes the study area) has since 2006 been the subject of numerous detailed studies, surveys and scientific management programs, which culminate in the current Koala Conservation Plan for East Coomera (2014-2018). This



abundance of historical information combined with contemporary detailed ground-truthing surveys provides substantial base information for an accurate assessment in regard to whether or not there is an important population within the study area.

The *Matters of National Environmental Significance – Significant Impact Guidelines 1.1* (Significant Impact Guideline) defines an important population as:

An ‘important population’ is a population that is necessary for a species’ long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- *Key source populations either for breeding or dispersal*
- *Populations that are necessary for maintaining genetic diversity, and/or*
- *Populations that are near the limit of the species range.*

Of critical importance to assessing the impacts of the Coomera Woods Project against the Significant Impact Guideline criteria is the determination on if the Study Area (and by default the impact area) retains an important population of Koalas.

6.1. Remaining Bushland in the Study Area

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’. It is noted that this definition differs to that for ‘habitat critical to the survival of the Koala’ which was previously assessed in **Section 5** of this Koala Assessment Report (KAR). For the purposes of their assessment, **Biolink** adopted a similar definition of Koala habitat under the term ‘bushland’ based on the presence of eucalypts as at the time the Koala Referral Guidelines did not exist.

In 2006, **Biolink** estimated that approximately that 1,035ha of the 2,148 ha study area retained bushland.

At the time of writing this referral (10 years on from publication of the **Biolink** report), clearing for urban development has greatly reduced the extent of bushland within the UKA, as per planning intent. As noted in other sections of this Koala Assessment Report, no figure or map was provided within the **Biolink** Reports which specifically outlined where bushland as referenced in the report occurred inside of the study area. **Plan 6** shows an aerial of the Urban Koala Area in 2006 or at the approximate timeframe of the **Biolink** surveys. **Plan 7** shows a contemporary version of the same. Both maps show an approximate extent of vegetation cover and note a 634 ha reduction over the period.

In addition to the physical removal of vegetation, there has also been a dramatic increase in the fragmentation of remaining vegetated areas through sporadic clearing, new and increased road construction.

6.2. An important population assessment

The Significant Impact Guideline defines an ‘important population’ as ‘population that is **necessary** for the species’ **long term survival and recovery**’. An assessment against this definition for the Urban Koala Area (study area) has been undertaken to determine if the site contains habitat for, or individuals which are part of, an ‘important population’.



6.2.1 Is the population viable in the long term to aid survival and recovery of the species?

Research by McAlpine et al. (2006), suggests that for a long term population of Koalas to remain viable, it should consist of at least 500 individuals to ensure that small population effects such as genetic drift and homozygosity are offset. Additionally, McAlpine et al. (2006) suggests that to sustain a population of Koalas of this size, it is estimated that at least 4,00 0ha of Koala habitat is retained, depending on habitat quality and other threatening processes such as predation and road density. In landscapes with higher density of roads and domestic dogs and thus higher percentage of habitat which is considered only marginal habitat, a greater area of Koala habitat is required.

Between 2009 and 2013, 180 Koalas were relocated from the 'study area' which has resulted in a significant portion of the 'study area' population now removed. The purpose of translocating this portion of the population was to reduce the numbers of animals relying on the broader East Coomera Priority Koala Conservation Area surrounding the 'study area' reducing the overall population to the carrying capacity of the remaining habitat. Since the conclusion of the physical translocation program in 2013, the 'study area' has been under an escalated program of development by a range of land owners and proponents. While initially forming a patchwork of development sites amongst bushland and rural-residential areas, the 'Study Area' now retains a limited number of balance development sites fragmented by housing, roads and other services. A number of Local Government established corridors remain, which, although not providing for long term functional connectivity, have been used to enable transient Koalas to disperse from expanding development sites within the 'study area' to the surrounding Priority Koala Conservation Precinct.

Having regard to the listed criteria of minimum population size and minimum suitable Koala habitat required for the long term viability of a Koala population, the following is evident in relation to the study area.

- The suitable Koala habitat within the study area had been reduced from approximately 1,035 ha to approximately 401 ha, of which approximately 120 ha consists of small isolated patches or linear corridors ranging in width between 20 m and 100 m
- Remaining bushland areas are not contiguous and are in fact separated by multiple major roads, rail lines and large catchments of new allotments without open space or other even potential environmental linkage
- The clearing of this vegetation and fragmentation of yet to be developed parcels was consequential to Development Approvals for residential and commercial development issued under relevant Queensland planning legislation
- A large proportion of these development activities were referred to the DEE for assessment under the EPBC Act and determined not to have a significant impact on the Koala species and designated as Not a Controlled Action
- A large number of Koalas within the study area (UKA) have been translocated by the CGC to other conservation areas under the jurisdiction of the CGC in accordance with permits issued by the Queensland Government
 - The purpose of the CGC's Koala Conservation Plan for East Coomera is to provide for the ongoing survival of the East Coomera Koala population. It has for this purpose identified a Priority Koala Conservation Precinct (PKCP), which covers around 2,112 ha and is located to the north of the proposed urban development area/study area
 - Under the Conservation Plan, any Koalas that may remain within the Urban Koala Area (study area) could be dispersed to the PKCP

In summary, the vast majority of the Koala population that existed within the study area has been translocated to or dispersed to other conservation areas. Furthermore, the majority if not all of the habitat which could be assessed as achieving the definition of critical habitat to the survival of the Koala species has been lawfully and sequentially removed or fragmented from the study area as the land has been developed.

Consequently, there is no realistic prospect for the recovery of the population from the small number of individuals that may remain within the insufficient patchwork of unsuitable Koala habitat in the study area. This is particularly



the case given no Local or State Government planning or protection measures for long term Koala residence is proposed within the UKA.

6.2.2 Is the population a key source population either for breeding or dispersal?

Given a large proportion of the population within the UKA has been removed from the area, remaining individuals are not considered to be a key source population for either breeding or dispersal.

6.2.3 Is the population necessary for maintained genetic diversity?

As part of the East Coomera Koala Translocation Program, a monitoring a relocation program was undertaken in accordance with Animal Ethics Committee approvals (CA 2008/06/273 and CA 2011/06/19) and corresponding Scientific Purposes Permits (EISP 05591008 and WISP 1342313).

The ECKCP states, *"genetic analysis of samples collected from Koalas during the East Coomera Koala Conservation Project showed moderate genetic diversity in comparison to other sampled koala populations from SEQ (Seddon 2014). Cluster analysis of population structure suggested that the East Coomera koala population could be starting to genetically diverge from other local populations due to isolation effects."*

Further, the ECKCP states, *"of the Koalas examined for the project, around 40% had some clinical signs of illness or disease ranging from conjunctivitis, cystitis, reproductive tract disease, gingivitis, gastro-intestinal candidiasis, poor body condition, bacterial infection, toxemia/septicaemia anaemia and bone marrow disease."* Council go on to state, *"the health assessments have raised serious concerns regarding overall health of the local koala population, particularly in relation to chlamydial infection"* with 21% of Koala examined testing positive for Chlamydia.

Given the high proportion of disease and illness within the site population, the population is not considered necessary for maintaining genetic diversity within the species. Individuals relocated as part of the Translocation Program were treated (where appropriate) and will be monitored in their new habitat. Genetic diversity is thus not reliant on the remaining Koala population in within the East Coomera Urban Koala Area.

6.2.4 Is the population near the limit of the species range?

The range or distribution of a species is the geographical area within which that species can be found. The Coomera-Pimpama Koala population is considered to be limited to the extent of the Coomera-Pimpama Koala Habitat Area study area and some small additional surrounding land. The population under consideration in this assessment is located within the UKA. As such the site population is not near the limit of the species range.

6.2.5 Additional Considerations

Contemporary review of the C-PKHA Koala population was also undertaken by **Planit Consulting** as part of the reconsideration request under Section 78A of the EPBCA for the project on Lot 1 on SP209027 Old Pacific Highway, Coomera (EPBC 2013/6819). This site is located to the south of the referral area within the same study area (urban Koala Area). It is noted that the controlled action decision for this project was reconsidered and deemed 'not a controlled action' based on 'substantial new information', which included the completion of the translocation program. The Planit Reconsideration Report concluded *"it is clear that the Study Area does not contain an important koala population given the information provided in the referral and the substantial new information provided by Mr Callaghan that the koala population of the Study Area has been relocated."* **Planit** also state *"the Minister's decision for the brief for the Referral also relevantly states that 'based on the isolation of the Coomera-Pimpama population as a result of land clearing and major road construction, the department does not consider that an important population exists at the site"*. While it is acknowledged that each application is assessed separately, and on its own merits, it is noted that



precedence by the Department of acknowledgement that the UKA does not contain an important population has been set.

6.2.6 Important Population Summary

It is evident that there is no possibility for the long term survival of a sustainable Koala population within the study area, because of the fact that:

- The Koala population that existed within the study area had been predominantly translocated to other conservation areas elsewhere on the Gold Coast in accordance with permits issued by the State Government; and
- The majority of the Koala habitat essential for the long-term survival of the Koala within the study area had been lawfully and sequentially removed or fragmented as part of the development of the Coomera Town Centre and surrounding land

It is also considered extremely unlikely from the small number of Koalas considered to remain within the study area and the high rate of health issues (including high prevalence of Chlamydia) detected by the CGC during their translocation program that there is a population within the study area that is **necessary** as a **key breeding and dispersal source** for the **long term survival and recovery** of the Koala and for **maintaining genetic diversity**.

Overall, Section 6 of this Koala Assessment Report demonstrates that the UKA (study area) does not contain:

- A key source population for either breeding or dispersal
- A population necessary for maintaining genetic diversity
- A population near the limit of a species range.

Thus there is not an important population within the study area. This is consistent with previous positions raised in other EPBC Act Referral Reports as determined Not a Controlled Action by the **Department of Environment and Energy**.



6.3. Will the action have a significant impact on an important population?

As noted under the Significant Impact Guideline, an action is likely to have a 'significant impact' on a vulnerable species if there is real chance or possibility that the action will:

- Lead to a long-term decrease in the size of an important population of a species
- Reduce the area of occupancy of an important population
- Fragment an existing population into two or more populations
- Adversely affect habitat critical to the survival of the species
- Disrupt the breeding cycle of an important population
- Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

This criteria has been assessed in more detail through the following table:

Table 6: Significant Impact Guidelines 1.1 Assessment for the Vulnerable 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.	The site is not considered to contain critical habitat for the Koala as defined under the Koala Referral Guideline or an important population as defined under the Significant Impact Guidelines. As such the action will not lead to a long term decrease in the size of an important population. The UKA Koala population was largely removed from the site as part of the East Coomera Koala Conservation Project to allow for urban development. Detailed studies using both direct and indirect survey methods confirm Koalas on-site are low in numbers through the remaining un-cleared portions of the Urban Koala Area. Low records of direct observations for Koalas in these areas is predicted given the lack of surrounding functional linkages to critical habitat areas and the depletion in numbers as a result of the direct translocation.	No significant impact
2. Reduce the area of occupancy of an important population.	The action will not have a significant impact on an important population of the species. While the proposed action will remove suitable Koala habitat, this habitat is not considered critical habitat and is fragmented and subject to edge effects from surrounding current and future urban development and roads. Importantly, the UKA is intended for urban development which resulted in the UKA Koala population being removed from the site via another project completed by the Local Government Authority. Detailed site studies using direct census style survey methods conclude that the site supports a very low number of Koalas infrequently observed during three (3) separate survey periods. Thus, the proposal is unlikely to have a significant impact on an area of occupancy of the species.	No significant impact
3. Fragment an existing important population into two or more populations.	The site does not contain an important population. The Urban Koala Area Koala population was largely removed from the site as part of the East Coomera Koala Conservation Project to allow for urban development. Alterations to the existing population occurred through direct removal of animals from the study area. As the site is not considered to contain high numbers of Koalas permanently and does not maintain the critical habitat factors required to support a Koala population it cannot result in the severing of an existing population into two or more populations regardless of the measure of importance of the population.	No significant impact



<p>4. Adversely affect habitat critical to the survival of a species.</p>	<p>The proposed action results in the removal of suitable tree species known to be used by the Koala. As a collective, the habitat is disturbed, fragmented and retains no functional connectivity to areas of known critical habitat. As detailed in Section 5 of this Koala Assessment Report by assessment against the Koala Habitat Assessment Tool vegetated portions of the site retain a score of 4 out of 10, which registers below the threshold to be determined critical habitat. This low score was based on the lack of functional connectivity, the abundance of Koala death records and expanding risks in the locality and the absolute lack of potential for the land to support any recovery values for the species.</p> <p>The site does not contain any habitat critical to the survival of the Koala and therefore cannot adversely affect such areas.</p>	<p>No significant impact</p>
<p>5. Disrupt the breeding cycle of an important population.</p>	<p>The site does not support an important population of Koalas. Site survey events did not identify any evidence of breeding with a low number of individuals recorded infrequently. The proposed action is unlikely to disrupt the breeding cycle of an important population.</p>	<p>No significant impact</p>
<p>6. Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.</p>	<p>The quality of habitat on-site has been largely diminished by the approved actions of clearing and residential development, which have occurred around the site. Concerns around species decline were identified by Biolink in 2006 – 07 and led directly to Council’s intervention through the physical removal of animals from the study area between 2009 through to 2013. This activity was established to minimise the extent to which the species was likely to decline.</p>	<p>No significant impact</p>
<p>7. Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species’ habitat.</p>	<p>The proposal will add to a surrounding environment known to support a number of major threats to the Koala species, including domestic animals, roads and vehicle traffic. The project will not introduce these threats as they already occur in abundance immediately adjoining the project area on all orientations. Additionally, the site has been confirmed as not supporting critical habitat for a vulnerable species and is not near critical habitat which borders the broader development zone. So while the project will result in an increase in invasive species (being domestic animals) these will be limited to central areas of the Coomera Town Centre development zone where they are designed to occur.</p>	<p>No significant impact</p>
<p>8. Introduce disease that may cause the species to decline.</p>	<p>The project is unlikely to introduce disease into the area. As part of the East Coomera Koala Conservation Project Council completed detailed monitoring of Koala health. 21% of Koalas examined tested positive for Chlamydia, however all of those translocated were treated prior to relocation.</p>	<p>No significant impact</p>
<p>9. Interfere substantially with the recovery of the species.</p>	<p>At the time of drafting this Koala Assessment Report, no recovery plan (draft or final) had been released by the Department. The Koala Referral Guideline lists some interim objectives for Recovery of the species and these are discussed in Section 5 of this report, which concludes the project will not interfere with the recovery of the species.</p>	<p>No significant impact</p>



7. Summary

This supporting information report provides all relevant details on the survey, assessment and consideration of potential impacts on the Koala within the legislative context of the EPBC Act. The report is prepared in support an EPBC Act Referral application to the **Commonwealth Department of Environment and Energy** (DEE). The report concludes that the Coomera Woods project and facilitated works will not result in a significant impact on the Koala as listed and protected as a Matter of National Environmental Significance (MNES) under the EPBC Act. The core findings of this assessment, and on which the no significant impact determination is derived, are:

- 1) The project does not result in any direct or indirect impacts on habitat critical to the survival of the Koala (by detailed assessment against the criteria outlined in the Koala Referral Guideline no critical habitat occurs within the impact area. The Department has previously confirmed this position)
- 2) The study area, and by extension the impact area, does not retain or support an important population of Koalas by definition and criteria assessment listed in Significant Impact Guideline 1.1.
- 3) Indirect survey and direct census style survey methods documented within the Koala Referral Guideline have been extensively employed over the referral site and summarise that the area is used by a small number of Koalas infrequently observed over three survey events spanning a 12 month period. Given the low numbers and infrequent observations, a range of known management measures can be employed to mitigate short term clearing and construction impacts on any individual animals.
- 4) The *Koala Conservation Management Plan for East Coomera (2014-2018)*, implemented by the **Council of the City of Gold Coast**, combined with Council's Coomera Woods approval conditions mandating a range of fauna management measures adequately mitigates and safeguards against any incidental mortality, injury or threat to dispersing transient animals in the area. The mandated measures include:
 - a. Vegetation Management Plans – limiting the daily extent, sequencing and stages of clearing of the site to enable functioning flushing of all native animals
 - b. Compulsory use of fauna / spotter catchers holding registrations with the Queensland **Department of Environment and Heritage Protection** (EHP) to: complete pre-clearance reports, be on-site during all clearing works, dictate clearing mechanisms, monitor and report on all works during and after clearing events
 - c. Preparation and submission of a Fauna Management Plan for all native species providing scheduled controls inclusive of contractor education and training in relation to Koala protocols
- 5) The Coomera Woods site (impact area) occurs within the long planned regionally significant Coomera Town Centre. The site itself adjoins a rail line, train station, approved Westfield shopping centre and higher density living options. Roads and other infrastructure in support of these uses have already been upgraded or are under construction. Approved development, inclusive of determinations under the EPBC Act, have resulted in clearing on all sides of the project area. Long before the referral of this project, the CGC in recognition of the potential future impacts has invested significant resources into direct mitigation via translocation and ongoing management of the Koala surrounding the study area (Urban Koala Area)



Although the study area is predominantly a bushland property the results of this assessment on significant impacts, when measured against criteria established in the EPBC Act and supporting guidelines, are expected given:

- The direct removal of 180 Koalas from the study area, translocated to other conservation locations within the Gold Coast's Local Government jurisdiction. This included 19 animals directly removed from the Coomera Woods referral site
- The land surrounding the site has been under development as part of the Coomera Town Centre since 2006. The Coomera Woods site occurs central to the Coomera Town Centre with development land either constructed or under construction in all orientations
- Despite a number of referrals made within the Coomera Town Centre area, including on nearly all sides of the project, only a single Controlled Action determination has ever been made, which related to a site on the periphery of the UKA interfacing within the retained East Coomera Koala Conservation Area. Nearly all of these referrals have outlined the influence of the CGC's designation of the Urban Koala Area and direct physical translocations of animals as resulting in the broader study area not supporting an important population

The evidence collected and analysed on this project assessed against the provided criteria of the EPBC Act and Guidelines, concludes that the Coomera Woods Project will not result in a significant impact on the Koala.