Koala Referral Guidelines Assessment

On 30 April 2012, the Koala populations of Queensland, New South Wales and the Australian Capital Territory were scheduled as Vulnerable under the EPBC Act. This had the effect of making the Koala population in South East Queensland a MNES. As such, an action considered likely to have a significant impact on the Koala or Koala habitat must be referred for controlled action assessment. In December 2014, the '*EPBC Act Referral Guidelines for the Vulnerable Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)'* ('Koala Referral Guidelines') were released to guide proponents in determining whether an action will have an impact on the Koala and require referral.

Here we consider the environmental impacts against the Koala Referral Guidelines which support the Commonwealth Government scheduling of the Koala as a Vulnerable species under the provisions of the EPBC Act, and the Significant Impact Guidelines. The assessment methodology included site surveys and consideration of Commonwealth, State and Local Government environmental database searches.

To determine whether or not the proposed development will have an impact on the Koala, the flow chart in the Koala referral Guidelines has been responded to in the following sub-sections.

Stage 1

The Modelled Distribution of the Koala contained within the Koala Referral Guidelines encompasses most areas of Queensland, New South Wales and the Australian Capital Territory. A search of the EPBC PMST within a 3 km buffer lists the Koala as species or species habitat known to occur within area (refer **Att 3 - Appendix A**). As per the Koala Referral Guidelines (Map 1), the site is therefore considered to fall within the modelled distribution of the Koala.

The Koala Referral Guidelines separate the geographical context into two zones, inland and coastal, based on the 800 mm per annum rainfall isohyet. The site is mapped within the "coastal" area as per the Koala Referral Guidelines distribution map (Map 2). Therefore, the coastal habitat attributes contained in the Koala Referral Guidelines are relevant when using the Habitat Assessment Tool.

Because the site is located within the coastal context of the modelled distribution area and Koalas have been recorded within 2 km, it therefore requires further consideration under the assessment guidelines.

Stage 2

The Koala Referral Guidelines assess significant impacts on the Koala through the assessment of habitat critical to the survival of the Koala and actions that interfere substantially with the recovery of the species. A Koala Habitat Assessment Tool (KHAT) is contained within Section 6 of the Koala Referral Guidelines to help determine the sensitivity, value and quality of the impact area. This habitat assessment tool uses five primary Koala habitat attributes:

1) Koala occurrence;
2) Vegetation composition;
3) Habitat connectivity;

4) Key Existing threats; and

5) Recovery value.

Each of these Koala habitat attributes are scored between 0 and 2 and the scores are added together to give a total out of 10. Impact areas that score **5 or more** are considered to contain habitat critical to the survival of the Koala. **Table 2** below provides an assessment against the five primary Koala habitat attributes for the site.

The assessment is based on the field surveys carried out by the SHG, discussed in **Att 3 - MNES Report**.

Table 2: Koala Habitat Assessment Tool

Attribute	Score	Comment
Koala occurrence	**+1 (medium)**	**Desktop** The PMR using a 3 km radius identified the Koala as having the potential to occur on-site. The Wildlife Online extract identified 23 records of Koala within a 5 km radius of the site. A search of Atlas of Living Australia identified 9 records within a 3 km radius of the site. The closest and most recent record located is 500 m north-east of the site in 2020. **On-ground** Surveys conducted by SHG in May 2021 did not record any evidence of Koala in the form of scats, scratch marks or direct observations. **There is evidence of one (1) or more Koalas within 2 km of the edge of the impact area within the last five (5) years. This attribute has been given a score of 1.**
Vegetation composition	**+2 (high)**	**Desktop** The site contains a Property Map of Assessable Vegetation which identifies the project area as containing entirely Category X (non-remnant) vegetation. **On-ground** The site contains regrowth eucalypt woodland which is dominated by two (2) recognised Koala food and habitat tree species which are *Eucalyptus tereticornis* (Forest Red Gum) and *E. crebra* (Narrow-leaved Ironbark). Other species sparsely observed include *Eucalyptus moluccana* (Gum Topped Box), *Corymbia tessellaris* (Moreton Bay Ash),

Attribute	Score	Comment
		C. intermedia (Pink Bloodwood) and *C. citriodora* (Spotted Gum). The woodland area predominantly contains low diameter trees, with limited large habitat trees present due to historical clearing that has occurred throughout the site. **The site contains a 'woodland' or 'open forest' with two (2) or more known Koala food tree species, the vegetation composition attribute is given a score of 2.**
Habitat connectivity	**+2 (high)**	Connectivity is limited to the west due to the presence of residential development associated with the RVPDA. Vegetation to the south and east is limited by fragmented connectivity values which consists of a landscape containing scattered trees and dominated by large open areas. A future arterial road is currently in construction to the east which will run parallel to the eastern boundary of the site. In addition, land to the south and east is earmarked for development as it is zoned as 'Urban Living' under the RVPDA. The site retains fragmented connectivity to the north to adjoining high-value regrowth and remnant bushland. This bushland connects east to the White Rock Conservation Park and Flinders-Karawatha Bioregional Corridor (refer **Att 5 - Plan 5** for Contiguous Landscape Analysis). Considering the Department's position on high mobility of Koala from previous referrals and assessments, The vegetation on-site is potentially connected to > 500 ha of contiguous bushland habitat (**Att 5**). **As the site is connected to >500 ha of contiguous landscape, this attribute has been given a score of 2.**
Key existing threats	**0 (low)**	Two key existing threats pose a risk to survival of local Koala populations; vehicle strike and dog attack. A review of the Koala Hospital incident data shows that 15 incidences have occurred within a 5 km buffer of the referral area and connected by contiguous landscape (refer **Att 6 - Plan 6, Koala Hospital Records**).

Attribute	Score	Comment
		Evidence of wild dog and fox activity was recorded on-site by infra-red camera traps at multiple sites (refer **Att 3 – Section 4.2.6, pp 35**). It should be noted that many live sightings of the Koala in the broader region have been along or proximal to major road networks such as the Centenary Highway to the north or highly modified environments. The location of these sightings indicates the risk of motor vehicle strike is considerably high. Additionally, it is noted that anticipated growth and planned residential development surrounding the site will result in increased traffic flows. A recent study completed by Gonzalez-Astudillo *et al.* (2017) analysed the Queensland Koala hospital data from 1997-2013 and found that 1,561 Koalas had injuries associated with trauma from animals, namely dogs. Further, Ipswich City Council's *Koalas in Urban Ipswich* guide suggests dog attacks can account for 40% of total Koala mortalities within an area. The likelihood of a Koala attack is increased when more than one dog is in a backyard, and during the periods of dawn and dusk when Koalas are most active. Further, studies completed as part of the Moreton Bay Rail project (DTMR 2016) found that between 2013 and 2016, 113 koalas had been killed by wild dogs with an additional 38 koala deaths suspected as wild dog predation, 82 koala deaths caused by illness and nine (9) vehicle strike deaths. These figures indicate that the threat of wild dog predation is at the forefront, while disease and vehicle strikes are also ongoing contributors to Koala deaths. **As threats from vehicle strikes and dog attacks are present in the area, the key existing threats attribute has been given a score of 0.**
Recovery value	**+1 (medium)**	The interim recovery objective for coastal areas is based upon protecting and conserving large, connected areas of

Attribute	Score	Comment
		Koala habitat, particularly where Koalas are genetically diverse or distinct, free of disease or have a low incidence of disease or where there is evidence of breeding and maintained corridors and connective habitat that allows for movement of Koalas within large areas of habitat. The site is located within the RVPDA and retains fragmented connectivity values to bushland to the north of the site. Fragmented connectivity is also currently present to the east and south, however, this land is earmarked for development as 'Urban Living' under the RVPDA and a major arterial road is currently in construction, intersecting bushland in a north-south direction. As a result, connectivity in the surrounding landscape will in future be highly limited. The removal of vegetation on-site will not significantly exacerbate fragmentation or the creation of movement barriers between vegetation due to existing high levels of disturbance and fragmentation on and around the site and development planning intent in the adjoining properties. The referral area has been modified previously through historical logging and agricultural activities. Vegetation on-site is mapped as Category X (non-remnant) vegetation under the rectified PMAV mapping. However, the site contains some regrowth eucalypt woodland containing multiple Koala food species. Regardless, it is not considered that the site will be important in the recovery of the Koala. The site currently retains fragmented connectivity of bushland habitat, with the removal of the highly disturbed vegetation on-site and surrounding land earmarked for development not expected to impede the connectivity value of any bushland or significantly impact the dispersal capacity of Koalas if they are utilising it. The site vegetation is also of lower quality than vegetation in the surrounding landscape as evidenced in the non-remnant status. Due to the presence of the motorway to the north, existing residential developments to the west, proposed development to the south, and planning intent to the east

Attribute	Score	Comment
		the vegetation on-site if retained would become completely isolated from other bushland in the landscape and dominated by edge habitat due to the small size of the site, severely reducing suitability for and practical use by the Koala. Due to these factors and the prevalence of threats present on-site and in the landscape, the site is not considered to contain notable recovery value to the Koala. The local Koala population is not considered genetically distinct from other Koala populations in SEQ. While the health of the local Koalas is unknown and none were recorded, diseases such as Chlamydia and Koala Retrovirus are extremely prevalent amongst SEQ Koalas. In summary, the recovery value of the referral area is compromised by the RVPDA and masterplan area designation and existing high level disturbances and fragmentation from the intensification of planned residential development. However, it is acknowledged that the Department considers the presence of potential habitat as an uncertainty with respect to recovery value. **The 'recovery value' attribute has been given a score of 1 for uncertainty.**
Total	**6**	**As the habitat score is greater than five (5), the site is considered to provide habitat critical to the survival of the Koala.**

The KHAT score for the site is 6/10. As the habitat score is greater than five, the site is considered to provide habitat critical to the survival of the Koala.

Refining site values, desktop and detailed field analysis confirmed that the referral area contains 10.85 ha of habitat critical to the survival of the Koala with a score of 6/10 (refer **Att 7 - Plan 7**).

Habitat Clearing

The project is predicted to directly impact 15.51 ha of the 24.88 ha referral area. A breakdown of impacts including for habitat critical to the survival of the Koala is provided in Table 1 of the referral extracted below and depicted in **Att 8** - **Plan 8**.

Vegetation communities	Extent on the referral area (ha)	Impact (ha)
Open paddock – not habitat	14.03	9.34 ha
Non-remnant regrowth eucalypt woodland (representative of RE12.9-10.7) - habitat	10.85	6.17
Total	24.88	15.51

The proposal will clear 6.17 ha of habitat critical to the survival of the Koala. The development area also includes 9.34 ha of open paddock that is not considered part of a woodland nor critical habitat to the survival of the Koala, especially in the absence of their activity.

It is noteworthy that State and Council assessment for a trunk sewer to service future development within the local area is in the latter stages. This trunk sewer that services the local area associated with the State road catalyst to the east is considered separate to the residential development proposed herein and will be undertaken by a separate proponent. When you consider the clearing proposed across the referral area for the trunk sewer, the impact to rectified habitat critical to the survival of the Koala is reduced by 1.81 ha, with the balance impact attributable to the proposed residential action totalling only 4.36 ha (**Att 8 - Plan 8**). Although raised here, the continuing assessment against the Koala referral guidelines will rely upon the impact as specified within the above table, with the trunk sewer impacts discussed further in **Section 4**.

Stage 3

The next stage of assessment – assessing whether the action is likely to adversely affect habitat critical to the survival of the Koala – is applied in this Section. The methodology is set out in Section 7 of the Guidelines with a flowchart provided to help proponents make an assessment on whether the action should be referred. Assessment of the action at the site against the flowchart is described below.

- **Does your impact area contain habitat critical to the survival of the koala (habitat score ≥ 5)?** – Yes, the vegetation on the property was given a habitat score of 6, which is considered habitat critical to the survival of the Koala under the Koala Referral Guidelines.

- **Do the area(s) proposed to be cleared contain known koala food trees?** – Yes, the on-ground assessment found species considered Koala food trees as defined by the Koala Referral Guideline are present on-site.

- **Are you proposing to clear ≤ 2 ha of habitat containing known koala food trees in an area with a habitat score of 5?** – No, an area of greater than 2 ha with a habitat score of 6 is proposed to be cleared as part of the action.

- **Are you proposing to clear ≥ 20 ha of habitat containing known koala food trees in an area with a habitat score of ≥ 8?** – No, the area proposed to be cleared is 6.17 ha with a habitat score of 6.

Reviewing the site against the characteristics outlined in the flowchart indicates the impacts of the action are uncertain and therefore the nature of the action requires further consideration. The following characteristics apply:

- The proposal requires the clearing of 6.17 ha of habitat critical to the survival of the Koala with a score of 6, which places the referral in the lower end of the potential impact threshold.
- The habitat on-site is entirely non-remnant vegetation with open cleared areas historically disturbed from historical land uses.
- Clearing will not result in further fragmentation of a habitat area from a larger habitat area due to the location of the referral area within a PDA surrounded by existing and proposed development.
- The surrounding landscape contains a major movement barrier to the west that currently impedes Koala movement, in the form of existing residential developments. Future residential developments planned to the south and east in addition to a major arterial road under construction which will further impede potential for connectivity in the landscape. The removal of vegetation on-site will not exacerbate barriers to movement.
- Koalas have been recorded in the area, however, no evidence of Koala activity was found on-site in contemporary nor historical field surveys.
- The Koala referral guidelines in Figure 2 note that if 25 hectares of habitat scoring 6 or 7 was being completely cleared, a significant impact would be expected. In this case the development proposal area only covers 15.51 ha of which 6.17 ha is potential woodland habitat. As per the above table, 4.68 of potential woodland habitat remains outside of the development area, and makes up with open paddock 9.37 ha of the referral area that is to be retained.

While the clearing of approximately 6.17 ha of habitat critical to the survival of the Koala in an area with a habitat score of 6 may reduce some available habitat for the Koala in the region, the location of the site in between existing and future developments and absence of Koala activity suggests that the removal of this vegetation will not impact connectivity or further fragment Koala habitat or populations in the area.

Therefore, the action is not anticipated to adversely affect habitat critical to the survival of the Koala.

Stage 4

The next step is to ascertain whether or not the action could interfere substantially with the recovery of the Koala in areas of habitat critical to the survival of the Koala. The methodology is set out in Section 8 of the Koala Referral Guidelines to help proponents make an assessment on whether or not residual impacts are likely to be significant and therefore require referral.

Possible impacts listed in the Koala Referral Guidelines that must be considered include:

- Dog attack;
- Vehicle strike;

- Facilitating the introduction or spread of disease or pathogens;
- Barriers to dispersal and fragmentation; and
- Degradation of critical habitat due to hydrological changes.

These impacts, as well as mitigation measures to address them, if appropriate, are discussed in **Table 3** below with further detail on mitigation measures outlined in **Section 4** of this document. The mitigation strategy relies upon the fact that the site is not expected to provide significant connectivity to Koala habitat within the broader landscape, and the site is surrounded by existing residential development and land earmarked for development under the RVPDA. Further, according to the Koala hospital incident records and field evidence, major threats already exist within the area (**Att 6 – Plan 6**).

Table 3: Residual Impact Assessment

Impact Type	Residual Impact Assessment	Mitigation Measures
Dog Attack	As discussed in the field survey results (**Att 3**), multiple wild dogs were recorded within the referral area. As this threat already exists within the area, it is unlikely that the Action will significantly increase the number of dogs entering the area. Residential land use which is present in the adjoining lots generally represents a higher level of dog ownership per household.	No additional mitigation measures are proposed.
Residual Impact **Due to the confirmed presence of the dogs within the referral area, no residual impacts are identified.**		
Vehicle Strike	It is likely that vehicle activity in the area will increase to some degree as a result of the development on the site. Proposed development is located to the south of the site, while area designated for development is located directly east. As a result, the surrounding landscape will experience an increase in vehicle traffic. Due to the anticipated impact of the surrounding approvals, the referral area alone is not anticipated to significantly increase vehicular traffic. Further, major threats from vehicle strike are already present due to the close proximity of the site Centenary Highway to the north of the referral area (**Att 3 - Plan 1**). Koalas have been recorded in the area, therefore, interaction between vehicles and Koalas is considered to have potential to occur as a	Road design, signage, and the imposition of a low vehicle speed will help mitigate any potential risks to Koalas should they venture on to the site.

Impact Type	Residual Impact Assessment	Mitigation Measures
	result of the development, although impacts from this threat must be considered in terms of the broader landscape changes mentioned above. No evidence of Koala activity was recorded on site.	
Residual Impact **Due to the presence of significant vehicle threats with Centenary Highway in close proximity to the site and the surrounding planning intent for development, the landscape is anticipated to experience only a minor increase in vehicular traffic. The referral alone is not expected to significantly increase these impacts.** **No residual impacts are identified.**		
Disease and Pathogen	Most of South East Queensland's Koala populations have a high prevalence of *Chlamydia* infection and Koala Retrovirus (KoRV). The symptoms of these diseases are often observed within Koala populations undergoing environmental stresses, such as overcrowding and poor nutrition. Koala disease has been recorded near to the site (evidenced by sick Koala sighting reported in public databases and the media). The project is unlikely to cause pressure on the local Koala population to the point where these diseases manifest and the project is unlikely to introduce or spread disease or pathogens into significant Koala habitat areas. No evidence of Koala activity was recorded on site.	No mitigation measures are proposed.
Residual Impact **Due to current prevalence of disease among the Koala populations, the Action is not likely to cause an increase in disease among the populations.** **No residual impacts are identified.**		
Barriers to Dispersal	The referral area is surrounded by developed areas and areas that are approved for development within the RVPDA (**Att 3 - Plan 1**). Movement to the east and north-east of the site is currently limited by the new State Road and residential developments. To the south, movement is inhibited by Centenary Highway which is identified as a major barrier to movement.	As the development will not exacerbate fragmentation of habitat or the creation of barriers to movement, no mitigation measures are proposed.

Impact Type	Residual Impact Assessment	Mitigation Measures
	There is no Koala movement infrastructure present in the surrounding area. Further, there are no large patches of Koala habitat on either side of the referral area that would become isolated as a result of the development. The Action will result in the removal of 6.17 ha of habitat critical to the survival of the Koala; however, the removal of this habitat will not impede Koala movement due to the absence of any large habitat to the east, south and north of the referral area and the significant barriers to movement currently present in the adjoining landscape to the west.	
Residual Impact **As the development will not exacerbate fragmentation of habitat or the creation of barriers to movement, no residual impacts are identified.**		
Hydrological Change	The increase in hardstand areas across the site has the potential to affect site hydrology. Management plans will be implemented during operational works that will address the requirements of State and Local government guidelines and ensure that impacts are minimised. The flow paths on-site were found to be highly eroded. The potential for development that impacts the flow paths is assessed against State and Local Governmental requirements and as such any potential impacts will be appropriately managed and mitigated. The project is unlikely to result in hydrological changes that will result in the degradation of habitat critical to the survival of the Koala.	No mitigation measures are proposed.
Residual Impact **No residual impacts are identified.**		

Stage 5

SHG carried out an assessment of clearing at the site against the Koala Referral Guidelines. The assessment followed the process identified in Figure 1 of the Koala Referral Guidelines. The assessment against the Koala Referral Guidelines was based on relevant database searches and site surveys discussed in **Att 3**.

According to Section 9 of the Koala Referral Guideline, an action is required to be referred if it is determined to adversely affect habitat critical to the survival of the Koala (Section 7) and/or interferes 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). As discussed earlier, neither of these considerations apply. Therefore, under the Guideline, **referral is not recommended** (refer Figure extract below).

However, to demonstrate due diligence, SHG have proceeded with the referral on behalf of the proponent to confirm these assessments with the Department.

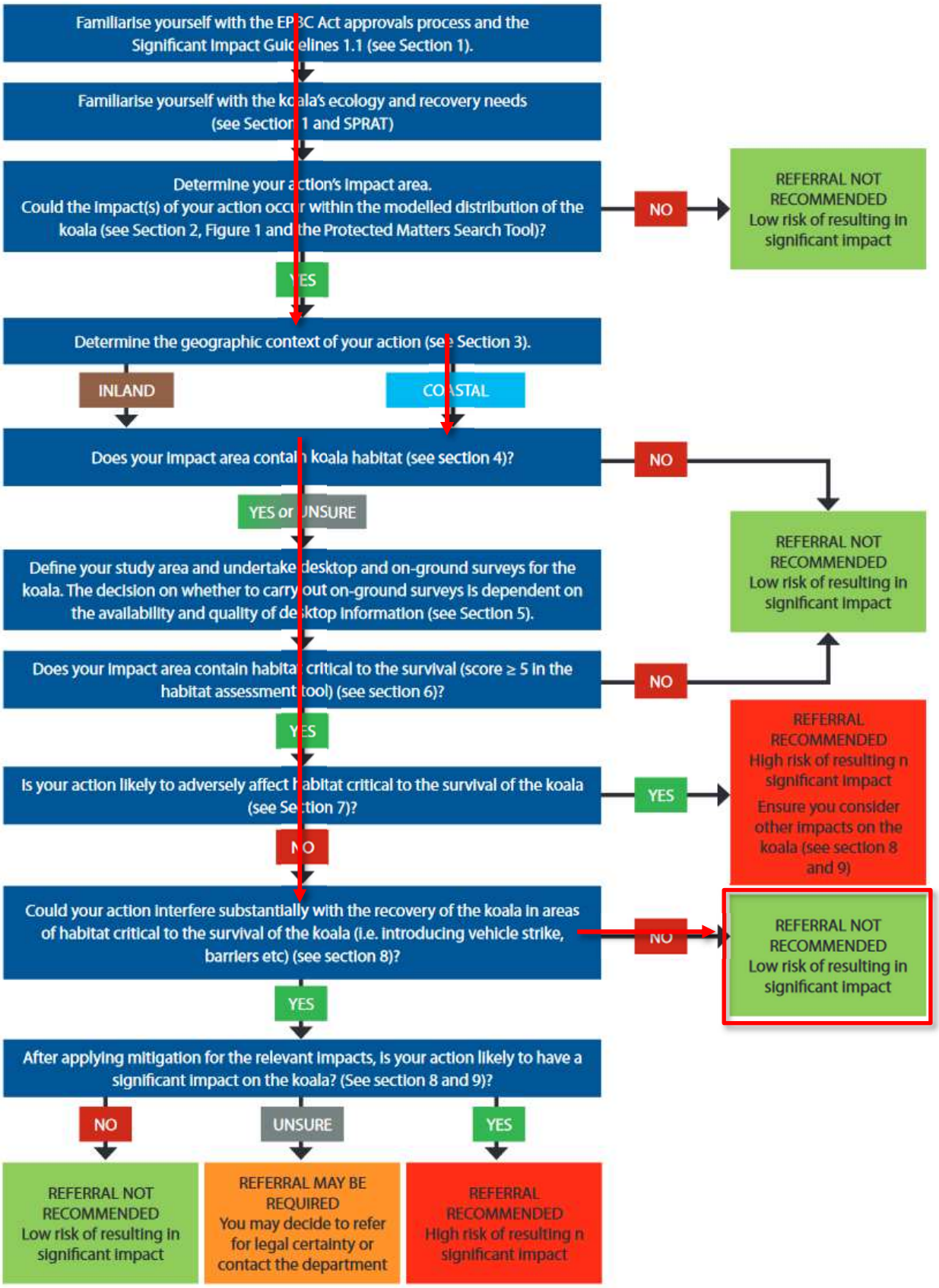

Figure: Summary of the EPBC Act referral guideline pathway for the Koala

Significant Impact Assessment

The Significant Impact Guidelines provides specific definitions for '*important population'* and '*habitat critical to the survival of a species or ecological community*'. This definition is a key consideration when conducting significant impact assessments for a threatened species or ecological community listed under the EPBC Act. The definitions are presented below.

Population of a Species

A 'population of a species' is defined by the Significant Impact Guidelines as:
"An occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- *A geographically distinct regional population, or collection of local populations*
- *A population, or collection of local populations, that occurs within a particular bioregion.*

Important Population

An '*important population'* is defined by the Significant Impact Guidelines 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*
- *Populations that are near the limit of the species range*

Habitat Critical to the Survival of the Species

The Significant Impact Guidelines provide the following definition for '*habitat critical to the survival of a species'*
"Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- *For activities such as foraging, breeding, roosting or dispersal*
- *For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)*
- *To maintain genetic diversity and long-term evolutionary development*
- *For the reintroduction of populations or recovery of the species or ecological community.*

Such habitat may be, but is not limited to:

- *Habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community*
- *Habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.*

Such habitat can be further explained as an identified area of viable habitat that contains habitat attributes that are essential for the conservation of a threatened species. These areas are typically under a regime of

special protection and management to ensure the critical habitat remains a stronghold for the species to ensure its long-term survival and viability in the wild. Such habitat may also include an area of land not currently occupied by the species, however, can act as a sanctuary by possessing the necessary habitat attributes to facilitate the recovery of a declining population of the species.

Koala Significant Impact Assessment

Conservation Status – The Koala is listed as Vulnerable under the EPBC Act.

Description – Koalas (*Phascolarctos cinereus*) are native Australian tree-dwelling marsupials with predominantly grey coloured fur.

Distribution – The Koala is found from north-east Queensland to the south-east corner of South Australia. As a consequence of translocations, the Koala are found outside their historic range, for example, Kangaroo Island. The distribution of the Koala is influenced by altitude, temperature and leaf moisture. The density of the Koala population in coastal regions is generally greater than inland areas. Koalas are known to naturally inhabit a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by *Eucalyptus* sp.

Habitat – Koala habitat can be broadly defined as any forest or woodland containing species that are known Koala food trees, or shrubland and emergent food trees. Preferred food and shelter trees are naturally abundant on fertile clay soils. Along the Great Dividing Range and the coastal belt throughout the species' range, Koalas inhabit moist forests and woodlands mostly dominated by *Eucalyptus* sp.

Koalas are highly territorial, and individuals maintain their own home range which may overlap with other individuals. Home ranges are variable depending on the location, with those in "poorer" habitats being larger than in higher quality habitats. There is little evidence for longer movements in most cases, though dispersing individuals, mostly young males, may occasionally cover distances of several kilometres over land with little vegetation. In SEQ, the average distance between natal and breeding home ranges was similar for males and females, at approximately 3.5 km. Maximum dispersal distances were up to approximately 10 km for males and females. Other studies have reported movement of up to 16 km in rural SEQ.

Threats – Habitat loss and fragmentation, vehicle strike and predation by domestic or feral dogs are the main threats to the Koala. Extreme environmental events, such as drought, can also cause significant mortality.

Significant Impact Assessment – The *EPBC Act referral guidelines for the vulnerable Koala* summarise the significant impact decision for the Koala. The following points help to summarise the guideline:

- Impacts on 'habitat critical to the survival of the species' and impacts that 'substantially interfere with the recovery of the species' are the focus of assessing significance;
- Habitat protection and impact mitigation is focused on areas of habitat that are large and well connected;

- The loss of 20 hectares or more of high-quality habitat critical to the survival (habitat score of 8) is highly likely to have a significant impact for the purposes of the EPBC Act;
- The loss of two hectares or less of marginal quality habitat critical to the survival (habitat score of 5) is highly unlikely to have a significant impact on the koala for the purposes of the EPBC Act;
- The loss of between 2 and 20 ha of habitat critical to the survival may have a significant impact on the koala for the purposes of the EPBC Act. Whether this is more likely or unlikely depends on the characteristics of your action.

To determine whether the proposed action is likely to have a significant impact on the Koala, an assessment against the *EPBC Significant Impact Guidelines 1.1* is provided in **Table 4** below. An assessment against the *EPBC Act referral guidelines for the vulnerable Koala* is provided earlier.

Table 4: Significant Impact Assessment – 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 maintain an important population of Koala. Vegetation on-site is considered to be predominantly cleared paddock with scattered trees with an area of regrowth eucalypt woodland. Field assessments did not detect any evidence of Koala on-site. The vegetation on-site identified as Koala habitat is connected to some bushland habitat. The vegetation on-site is dominated by regrowth eucalypt woodland, dominated by relatively small diameter eucalypt trees with only sparse larger diameter eucalypt trees present. Importantly, the site is surrounded by existing residential developments to the west and land proposed for development to the south and east under the RVPDA. It is not anticipated that the removal of vegetation on-site would affect the viability of the Koala population in the area.	No significant impact

Significant Impact Criteria	Description	Impact
2. Reduce the area of occupancy of an important population	Field surveys did not detect any evidence of Koala on-site, suggesting the vegetation on-site is not utilised by Koalas. In addition, there is no important population of Koalas recorded in the locality. The site has been historically disturbed and is located within a landscape intended for development under RVPDA to the south and east. Presently, there is residential development located to the west of the site. The site is also located to the south of fragmented bushland, retaining fragmented connectivity to the north. As Koala activity was not detected on-site, and as there is not an important Koala population in the locality, the removal of vegetation on-site is not considered to reduce the area of occupancy for Koalas.	No significant impact
3. Fragment an existing important population into two or more	Field surveys did not detect any evidence of Koala on-site, suggesting the vegetation on-site is not utilised by Koalas. The site is not considered to support an important population of Koalas. The site currently contains fragmented connectivity values in the form of regrowth eucalypt woodland. The surrounding landscape to the west, south and east has limited capacity for connectivity due to the open landscape, existing residential developments, proposed development and a major arterial road which is in construction to the east. The site is also located on the edge of the 'Environmental Protection' area designated under the RVPDA. The development will not impede connectivity values within the 'Environmental Protection' area to the north. As a result, the removal of vegetation on-site will not exacerbate existing fragmentation of adjoining Koala habitat. The project is not considered likely to fragment an existing important population.	No significant impact

Significant Impact Criteria	Description	Impact
4. Adversely affect habitat critical to the survival of a species	Field surveys did not detect any evidence of Koala on-site, suggesting the vegetation on-site is not utilised by Koalas. The site is not considered to support an important population of Koalas. Habitat critical to the survival of the species as identified in the risk averse Koala referral guidelines is located across the site. The proposed action will result in the local clearing of only 6.17 ha of habitat critical to the survival of the Koala, with no evidence of their activity recorded and a high level of threats present. The site is dominated by open paddock with an area of regrowth eucalypt woodland which is dominated by small diameter eucalypt trees with only sparse large diameter eucalypts. The site is surrounded by land earmarked for development under the RVPDA with a fragmented connection to bushland to the north of the site. The habitat on-site if retained would become isolated in a landscape surrounded by residential developments and would likely result in a higher level of exposure to threat due to the high proportion of edge habitat.	No significant impact
5. Disrupt the breeding cycle of an important population	Site surveys did not identify any breeding Koalas, and the site is not considered to support an important Koala population. No evidence of Koala was found on-site, suggesting it is not utilised by Koalas. The site is also not considered critical Koala habitat. As a result, the site is not considered critical for a breeding cycle of an important population.	No significant impact

Significant Impact Criteria	Description	Impact
6. Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Field surveys did not detect any evidence of Koala on-site, suggesting the vegetation on-site is not utilised by Koalas. The site is not considered to support an important population of Koalas. While some vegetation across the site has been classed as habitat critical to the survival of the species, its removal is unlikely to have a significant impact on the availability of habitat in the landscape, given its relatively small size and value and surrounding fragmentation. The removal of vegetation on-site would not isolate or fragment habitat as it is located near encroaching development to the west and proposed developments to the south and east. The removal of this habitat is considered highly unlikely to lead to species decline.	No significant impact
7. Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Field surveys did not detect any evidence of Koala on-site, suggesting the vegetation on-site is not utilised by Koalas. The site is not considered to support an important population of Koalas. Evidence of wild dogs and other pest species was observed on-site using motion sensor cameras. Threats to Koalas are therefore already present on-site. Due to the placement of the site on the edge of a residential development, there is a high likelihood that domestic or feral dogs will continue to use the site frequently. Domestic dogs have the potential to become feral, are considered a major threat to Koala survival and are present in the surrounding landscape. The proposed action is likely to increase the density of domestic dogs in the area, however, their potential to exacerbate impacts on Koalas will be mitigated by effective governance. It is unlikely that the proposal will augment invasive species impacts already present in the area.	No significant impact
8. Introduce disease that may cause the species to decline	Most of South East Queensland's Koala populations have a high prevalence of Chlamydia infection and Koala Retrovirus (KoRV), and sick Koalas have been recorded in the vicinity of the referral area. As such, the project is considered unlikely to cause pressure on the local Koala population to the point where these diseases manifest and the project is extremely unlikely to introduce or spread disease or pathogens into Koala habitat areas.	No significant impact

Significant Impact Criteria	Description	Impact
9. Interfere substantially with the recovery of the species	Field surveys did not detect any evidence of Koala on-site, suggesting the vegetation on-site is not utilised by Koalas. The site is not considered to support an important population of Koalas. The Action is unlikely to interfere substantially with the recovery of the Koala (refer previous **Section**). The site retains fragmented connectivity with bushland to the north and the removal of fragmented vegetation on-site will only marginally reduce available habitat. In addition, it occurs in an area that is already highly fragmented and disturbed and contains no evidence of current utilisation by Koalas. The vegetation is identified as lower quality habitat due to the dominance of regrowth, close proximity to dwellings and presence of threats to the species (*i.e.,* large domestic/wild dogs). Furthermore, the presence of existing developments to the west, proposed development to the south and land earmarked for development to the east reduces the overall suitability of the habitat.	No significant impact