TERRESTRIAL ECOLOGICAL ASSESSMENT AND PROTECTED PLANT SURVEY

NEW SCHOOL, COOMERA

Prepared for
Department of Housing and Public Works

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Project Author/s: Dr Jo Chambers, Shelley Trevaskis.

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Biodiversity Assessment and Management Pty Ltd

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EXECUTIVE SUMMARY

INTRODUCTION

This report has been prepared for the Department of Housing and Public Works (DHPW) to document the results of an ecological assessment and protected flora survey over land proposed for the construction of a new school within a portion of Lot 1 on SP236127 at Foxwell Road, Coomera (the 'Study Site').

The ecological assessment was undertaken to ensure all planned activities on the site are in keeping with the General Environmental Duty requirement stated in s.36 of the *Environmental Protection Act 1994* and any other relevant legislative requirements under the *Nature Conservation Act 1992* (NC Act), *Vegetation Management Act 1999*, *Planning Act 2016*, and *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

METHODOLOGIES

The ecological assessment combined a desktop review to broadly characterise the currently recognised ecological values of the Study Site, with a field survey to verify the ecological values and enable an informed assessment of potential impacts from the proposed actions. The survey involved the groundtruthing of vegetation and associated habitat values for potentially occurring significant species, with a particular focus on identifying and documenting Koala *Phascolarctos cinereus* habitat trees.

As the Study Site occurs within an area identified as high risk on the flora survey trigger map, a detailed flora survey was also undertaken in accordance with the *Flora Survey Guidelines - Protected Plants*.

GENERAL ECOLOGICAL VALUES

The Study Site supported a mosaic of remnant, native bushland interspersed with areas of non-remnant vegetation. Non-remnant vegetation included areas of native regrowth (generally dominated by *Allocasuarina* and *Acacia* species), as well as exotic pine (dominated by Slash Pine).

The Study Site supports a diversity of fauna habitats which include low-lying swampy areas, abundant leaf litter and fallen debris and a floristically diverse canopy, shrub and ground layer vegetation. Dusky Gungan *Uperoleia fusca* and Dwarf Eastern Sedgefrog *Litoria fallax* were heard calling within the wetter areas in the south of the Study Site. A small drainage line in the north-western portions of the Study Site does not support important frog habitats due to deep scouring of the banks and sediment-laden water. Fallen debris and deep leaf litter provide important refuge, foraging and breeding habitats for small mammals, reptiles and frogs. There were no old-growth or larger hollow-bearing trees observed, although evidence of Koala *Phascolarctos cinereus* utilisation of the Study Site in the form of scats was found at various locations, along with macropod and Common Ringtail Possum *Pseudocheirus peregrinus* scats.

SUMMARY OF ECOLOGICAL CONSTRAINTS AND LEGISLATIVE OBLIGATIONS

Commonwealth Considerations

The field survey has confirmed that the Study Site contains no Threatened Ecological Communities or threatened flora species listed under the EPBC Act. However, the Study Site supports habitats that are recognised as critical to the survival of Koala. Due to the level of habitat removal proposed and the known presence of Koala, the results of the impact assessment indicate there will be a moderate risk that the proposed development will have a significant impact on Koala. A referral to the Commonwealth in regards to Koala is recommended. The referral will need to include an assessment of impacts on other threatened and migratory species that have the potential to be present within the Study Site.

It is recommended site design restricts the area of native vegetation to be cleared to that absolutely necessary for the construction and operation of site infrastructure, whilst avoiding the fragmentation of existing habitat and minimising barriers to Koala movement across the landscape.

Weeds of National Significance were also recorded on the Study Site, the appropriate management of which is legally required by the landholders.

State Considerations

Matters of State Environmental Significance (MSES)

The Study Site supports regulated vegetation in the form of State-mapped remnant regional ecosystems, remnant vegetation intersecting and watercourse, and essential habitat. Proposed regulated vegetation mapping (that will become certified if the recently introduced *Vegetation Management and Other Legislation Amendment Bill 2018* is passed) also identifies a patch of high value regrowth within the Study Site. The extent of each remnant vegetation mapped by the State differed from that ground-truthed during the field assessment.

In this case, it is understood the proposed works are classified as exempt clearing work in accordance with Schedule 21 of the Queensland *Planning Regulation 2017*, such that State Code 16: Native vegetation clearing will not apply, and regulated vegetation will not represent a statutory constraint to the project.

It is understood the proposed development would be subject to the State Government Supported Infrastructure Koala Conservation Policy (July 2017) (EHP 2017), which requires the unavoidable clearing of non-juvenile Koala habitat trees (NJKHTs) from mapped bushland habitat to be offset in accordance with the Queensland *Environmental Offset Policy*. For the purposes of project planning, data obtained from the field survey indicates an estimate of 390 NJKHTs should be used to calculate potential offset requirements for every hectare of mapped bushland habitat to be removed.

Offsets for the removal of Koala habitat within south-east Queensland may be provided as a proponent-driven, land-based offset or a financial settlement offset, or a combination of both. Land-based offsets must establish three new Koala habitat trees for every one 'non-juvenile' tree removed within the same local government area as the impact site. The offset site must also be legally secured. Alternatively, the removal of each NJKHT would require a financial settlement of $920.

NC Act Obligations

No endangered, vulnerable or near threatened (EVNT) flora were recorded during the targeted flora survey. Consequently, an exempt clearing notification form is required to be submitted to the Department of Environment and Science (DES) (accompanied by this report) at least one week before clearing commences, but no later than one year after the completion of the flora survey that was undertaken for the report (i.e. by 4 April 2019). Following submission of the exemption form, the applicant will receive a receipt of the submission providing approval for the clearing to commence. Clearing under this exemption may be conducted within two years after the flora survey report is submitted.

No active animal breeding places were recorded during the field survey, although the Study Site supports potential animal breeding places for least concern species such as common frogs, nesting birds and possums. It is recommended all wet areas and trees to be removed are inspected prior to clearing to determine if any active animal breeding places are present and any necessary Species Management Program (SMP) or Damage Mitigation Permit (DMP) is obtained prior to works, as advised by DES.

State Restricted Weeds

The field survey has confirmed the presence of Category 3 restricted invasive plants on the Study Site, which will need to be appropriately managed during onsite works to ensure they are not spread within or outside of the site.

Local Considerations

It is understood the proposed development is likely to be exempt from the local government planning scheme and local laws, although should still have regard to their general requirements.

Under the Coomera Town Centre Structure Plan, much of the Study Site is mapped as Education Precinct, with the southern portions of the Study Site mapped as Conservation Precinct.

Based on the current zonings for the site and features mapped on the site under Gold Coast City Council's Environmental Significance Overlay, it is recommended site design restricts the area of native vegetation to be cleared to that absolutely necessary for the construction and operation of site infrastructure, and avoids and provides buffers to the locally mapped waterways and wetlands within the southern portion of the site wherever possible to maintain connectivity with downstream aquatic systems and habitats.

ECOLOGICAL ASSESSMENT

PROPOSED NEW SCHOOL, FOXWELL ROAD, COOMERA

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Table of Terms and Abbreviations

BAAM	Biodiversity Assessment and Management Pty Ltd
DES	Queensland Department of Environment and Science (formerly EHP)
DHPW	Department of Housing and Public Works
DMP	Damage Mitigation Permit
DNRME	Queensland Department of Natural Resources, Mines and Energy
EHP	Queensland Department of Environment and Heritage Protection (now DES)
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	Species listed as endangered, vulnerable or near threatened under the EPBC Act or NC Act
Koala Conservation Policy	State Government Supported Infrastructure Koala Conservation Policy (July 2017)
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
NC Act	Queensland Nature Conservation Act 1992
NJKHT	non-juvenile Koala habitat tree
PMAV	Property Map of Assessable Vegetation
RE	Regional Ecosystem
SMP	Species Management Program
TEC	Threatened Ecological Community

1.0 INTRODUCTION

This report has been prepared for the Department of Housing and Public Works (DHPW) to document the results of an ecological assessment and protected flora survey over land proposed for the construction of a new school within a portion of Lot 1 on SP236127 at Foxwell Road, Coomera (the 'Study Site') (**Figure 1.1**).

The assessment has been undertaken to ensure that all planned activities on the site are in keeping with the General Environmental Duty requirement stated in s.36 of the *Environmental Protection Act 1994* and any other relevant legislative requirements under the *Nature Conservation Act 1992* (NC Act), *Vegetation Management Act 1999*, *Planning Act 2016*, and *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The scope of the assessment includes:

- A desktop assessment to broadly characterise the currently recognised ecological values of the Study Site;
- A field survey to assess the ecological values of the Study Site and enable an informed assessment of potential impacts from the proposed actions, including the identification of vegetation communities on the Study Site, as well as associated habitat values for potentially occurring significant species, with a particular focus on identifying and documenting Koala habitat trees and the likely impacts on Koala habitat as a result of development;
- A field survey to locate any state listed protected flora species that occur on site or adjacent to the site; and
- An overview of legislative requirements and guidelines relevant to the proposed development.

As the area proposed to be cleared is identified as occurring within a high risk area on the Queensland Department of Environment and Science (DES) flora survey trigger map, the assessment included targeted searches for flora species listed as Endangered, Vulnerable or Near Threatened (EVNT) under the NC Act, undertaken in accordance with the Queensland *Flora Survey Guidelines - Protected Plants* (EHP, 2016), to inform the requirement for a clearing permit or exempt notification under the NC Act.

In accordance with the *Flora Survey Guidelines - Protected Plants* (EHP, 2016), the following information is provided in this report:

- A description of the location.
- A description of the survey methodology, including:
  - Survey techniques.
  - A statement to justify the suitability and qualifications of the person undertaking the flora survey.
  - Justification of the timing of the flora survey (and detail of any limitations associated with the timing of the survey).
- A description of the habitat types identified for the clearing impact area and a map of the GPS data showing the on-ground surveys undertaken.

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Client	Deptartment of Housing and Public Works		
Design	BAAM	12.04.2018	
Drawn	Bentline | MP	12.04.2018	
Scale	1:3500	# 0303-012	
Cad File	BAAM_Coomera01.dwg	NTP 155	

Project: Ecological Assessment and Protected Plant Survey New School Coomera

Title: Study Site Location

FIGURE: 1.1

2.0 METHODOLOGIES

2.1 DESKTOP

The desktop review comprised a search of online mapping and databases and an analysis of information for conservation significant vegetation communities and flora and fauna species with reference to the Study Site locality. Information reviewed included:

- The Commonwealth EPBC Protected Matters Search Tool to identify any matters of national environmental significance (MNES) protected under the EPBC Act that may occur within the Study Site (**Appendix 1**).
- The Queensland Wildlife Online database, to determine if any EVNT species have been previously recorded in the vicinity of the Study Site (**Appendix 1**).
- State mapping of regulated vegetation, habitats, wetlands and waterways, to identify any matters of state environmental significance (MSES) currently recognised as occurring within the Study Site (**Appendix 2**).
- Reference material on the target flora species for the protected flora survey (species profiles, etc.) to confirm habitat requirements and distinguishing features to assist field identification.

2.2 FIELD SURVEY

2.2.1 Ecological Survey

The ecological field survey involved a traverse of the Study Site undertaken by BAAM Senior Ecologists Dr Jo Chambers and Shelley Trevaskis over one day on 4 April 2018 during warm conditions with occasional showers. Heavy rainfall events had occurred on the morning of the site visit and in the preceding days.

The focus of the field survey was to verify State mapped ecological values, whilst searching for the presence of any conservation significant species and their preferred habitats, including animal breeding places.

Quaternary site data was recorded at representative locations (**Figure 2.1**) in accordance with the methodology prescribed in Neldner *et al.* (2012). Quaternary sites measure the height, canopy cover and dominant species present in each stratum of a vegetation community and inform the applicable remnant status and regional ecosystem (RE) type.

To inform potential Koala offset requirements, non-juvenile Koala habitat trees were counted along 10 x 100 m transects in representative areas of vegetation across the site.

A non-juvenile Koala habitat tree (NJKHT) is defined under the *Planning Regulation 2017* as:

- a food tree of the *Corymbia, Melaleuca*, *Lophostemon* or *Eucalyptus* genera, or a shelter tree species such as *Angophora;* and
- a height of more than four metres; or has a trunk circumference of >31.5 cm at 1.3 m above the ground.

Ecological values identified were recorded by GPS for subsequent mapping purposes. All work was performed in accordance with BAAM's Scientific Purposes Permit and Animal Ethics Approval.

2.2.2 Protected Flora Survey

The protected flora survey was to cover the entire Study Site, as well as a surrounding buffer area, together referred to as the 'clearing impact area'.

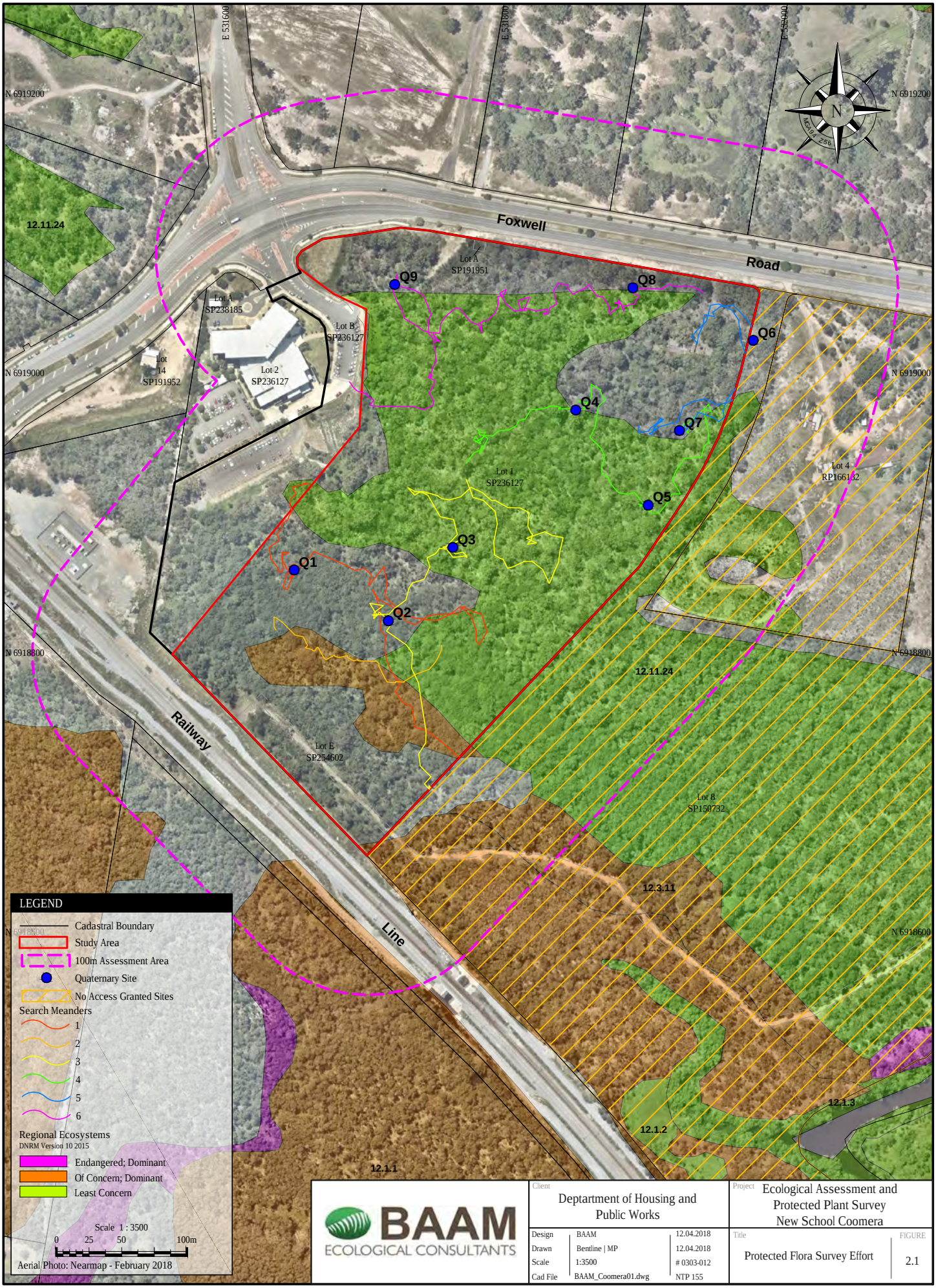
In accordance with the *Flora Survey Guidelines - Protected Plants* (EHP, 2016), access permission was sought for the following properties containing vegetation within 100m of the Study Site by way of a mailed letter:

- Lot 8/SP150732.
- Lot 14/SP19195.
- Lot 4/RP166182.

A template of the letter sent to these neighbouring properties prior to the survey requesting access permission is provided in **Appendix 3**.

Written access permission was not received for these neighbouring vegetated lots within the 100m buffer area and, therefore, this vegetation was excluded from the survey (**Figure 2.1**).

It is further noted that vegetation present on properties to the south and north of the Study Site is separated by a railway line and major road, respectively (**Figure 2.1**), both of which are greater than 30m wide and constitute a 'highly modified environment' in accordance with the *Flora Survey Guidelines Protected Plants* (EHP, 2016). Accordingly, this vegetation was not surveyed.



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Title	Protected Flora Survey Effort	FIGURE 2.1

In accordance with *the Flora Survey Guidelines - Protected Plants* (EHP, 2016), the survey involved a timed, random meander survey of vegetation communities within the clearing impact area.

For the random meander, a starting point was selected and the starting time noted. The area of interest was then traversed as a random meander, taking a GPS point every five minutes and all the while searching carefully for EVNT plant species. The random meander was terminated once no new species had been recorded for a period of 30 minutes or more.

The field survey identified two main habitat types within the clearing impact area, these being:

- Pine-dominated vegetation containing minor native elements (3.5ha); and
- Eucalypt open forest / woodland including remnant and regrowth patches (7ha).

Based on the type and size of the habitats represented, the minimum meander survey requirement was a total of two random meanders per habitat type, or four meanders overall. A total of six meanders were completed, including two in the pine vegetation and four in eucalypt bushland and regrowth.

Figure 2.1 shows the location of protected flora survey meanders.

Qualifications of Field Team

The targeted flora survey was led by Shelley Trevaskis (Senior Ecologist at BAAM). Shelley is suitably qualified to undertake protected plants assessments as prescribed under the Queensland Flora Survey Guidelines – Protected Plants (EHP, 2016) – her declaration letter and Curriculum vitae is provided in **Appendix 4.**

Survey Timing

The flora survey was undertaken on 4 April 2018 in order to achieve project timelines. All species targeted in this survey were expected to have identifiable foliage present following good rainfall. Therefore, it was determined that a survey in April was suitable to detect the species targeted.

2.3 Data Analysis and Reporting

Following the field survey, data were analysed and interpreted to enable an informed assessment of species presence/absence and the accuracy of current, statutory mapping of ecological values.

An assessment of the likelihood of conservation significant species occurring on the Study Site was informed by survey and database records, known distributions, and specific habitat requirements of each species.

Potential impacts to the identified values as a result of the proposed development of the Study Site were then identified.

3.0 RESULTS

3.1 VEGETATION COMMUNITIES

The Study Site supported a mosaic of remnant, native bushland interspersed with areas of non-remnant vegetation. Non-remnant vegetation included areas of native regrowth (generally dominated by *Allocasuarina* and *Acacia* species), as well as exotic pine (dominated by Slash Pine) mostly in the southern section of the Study Site. Remnant communities are described further in **Section 3.4.1**.

Weed invasion was evident across the Study Site, particularly around the edges of the existing TAFE campus and around the ruin of an old residence in the north-east corner of the Study Site; however, weeds also occurred sporadically across the balance of the Study Site.

Descriptions and photographs of representative vegetation recorded across the Study Site are provided in **Appendix 5**. Site locations where vegetation community type was recorded (as presented in **Appendix 5**) are shown on **Figure 2.1**.

3.2 FAUNA AND FAUNA HABITATS

The Study Site supports a diversity of fauna habitats which include low-lying swampy areas (**Photo 1**), abundant leaf litter and fallen debris (**Photo 2**) and a floristically diverse canopy, shrub and ground layer vegetation (**Photo 3**).

Fallen debris and deep leaf litter provide important refuge, foraging and breeding habitats for small mammals, reptiles and frogs.

Photo 1 showing standing water in the southern portions of the Study Site.

Photo 2 shows leaf litter and fallen debris which was present throughout much of the Study Site.

Photo 3 shows species and structural diversity of vegetation within the Study Site.

Dusky Gungan *Uperoleia fusca* and Dwarf Eastern Sedgefrog *Litoria fallax* were heard calling within the wetter areas in the south of the Study Site. A small drainage line in the north-western portions of the Study Site (**Photo 4**) does not support important frog habitats due to deep scouring of the banks and sediment-laden water.

Photo 4 shows deep scouring in northern drainage line.

Birds recorded during the site survey were typical of locally common bushland species such as, Grey Shrike-thrush *Colluricincla harmonica*, Brown Honeyeater *Lichmera indistincta*, Rainbow Lorikeet *Trichoglossus haematodus moluccanus,* Sulphur-crested Cockatoo *Cacatua galerita* and Rainbow Bee-eater *Merops ornatus.*

The Study Site lacked old-growth trees and trees displaying large hollows, although a small number of trees contained very small hollows.

Evidence of Koala *Phascolarctos cinereus* utilisation of the Study Site in the form of scats (**Photo 5**) was found at various locations (refer **Figure 3.1**). Macropod and Common Ringtail Possum *Pseudocheirus peregrinus* scats were also observed throughout the Study Site.

Photo 5. Koala scats were observed at a number of locations throughout the Study Site.

3.3 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (MNES)

3.3.1 Threatened Ecological Communities

The EPBC Protected Matters Search (**Appendix 1**) indicates two EPBC listed Threatened Ecological Communities (TECs) could potentially occur onsite, these being Lowland Rainforest of Subtropical Australia (currently listed as Critically Endangered under the EPBC Act) Subtropical and Temperate Coastal Saltmarsh (currently listed as Vulnerable).

No vegetation communities with species indicative of these TECs are identified on State vegetation mapping (**Section 3.4.1**), and no species characteristic of these TECs were identified during the field survey, confirming that these TECs do not occur within the Study Site.

3.3.2 Threatened Species

Flora

The field survey did not record any threatened flora species within the Study Site. The Study Site is disturbed by historic clearing and weed invasion and does not provide ideal habitat for any of the species listed as potentially occurring on site in the EPBC Protected Matter data search (**Appendix 1**). Accordingly, no EPBC listed threatened flora species are expected to occur.

Fauna

Koala (currently listed as Vulnerable under the EPBC Act) evidence (scats) was found at a number of locations throughout the Study Site (**Figure 3.1**). The results of a habitat assessment performed in accordance with the EPBC Act referral guidelines for Koala habitat assessment tool (DoE 2014) are summarised in **Table 3.1**. The total habitat score from this assessment is 6; as this total score is greater than 5, Koala habitat within the study area is recognised as 'habitat critical to the survival of Koala' under the EPBC Act referral guidelines.

The assessment of whether the project is likely to adversely affect habitat critical to the survival of the Koala, and/or whether the proposed development will interfere substantially with the recovery of the species, is outlined in **Tables 3.2** and **3.3** in accordance with Sections 7 and 8 of the EPBC Act referral guidelines for Koala (Commonwealth of Australia 2014). This takes into account the total amount of habitat being cleared, the density/abundance of Koalas, the level of fragmentation caused, any increase in known threats to the species and any increase in barriers to movement.

It is understood the proposed development design will result in all Koala habitat within the Study Site being cleared (approximately 8 ha). Due to the level of habitat removal proposed and the known presence of Koala, the results of the impact assessment indicate there will be a moderate risk that the proposed development will have a significant impact on Koala. Consequently, a referral to the Commonwealth in regards to Koala is recommended.

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Title	Ecological Features	FIGURE	3.1

Table 3.1. Koala habitat assessment tool results summary.

Attribute	Score	Coastal area criteria	Score	Assessment details
Koala occurrence	+2 (high)	Evidence of one or more Koalas within the last 2 years	**2**	**Desktop:** The EPBC Act Protected Matters Search Tool report identified the Koala as 'species or species' habitat known to occur' within the area. The Wildlife Online point buffer search identified 35 Koala records since 1980 within a 5 km radius of the Study Site. **On-ground:** Although no Koala were observed during the site survey, evidence in the form of scats of their utilisation of the Study Site was recorded at a number of locations (refer **Figure 3.1**).
	+1 (medium)	Evidence of one or more Koalas within 2 km of the edge of the impact area within the last 5 years		
	0 (low)	None of the above		
Vegetation Composition	+2 (high)	Has forest or woodland with 2 or more known Koala food tree species, OR 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	**2**	**Desktop:** The Queensland RE mapping identifies the Study Site as supporting Eucalyptus spp. dominated remnant vegetation. The State Koala SPP Map of Koala Habitat Values maps much of the Study Site as Koala bushland. **On-ground:** Vegetation in the Study Site contains several known Koala food tree species.
	+1 (medium)	Has forest or woodland with only 1 species of known Koala food tree present.		
	0 (low)	None of the above		
Habitat connectivity	+2 (high)	Area is part of a contiguous landscape ≥ 500 ha.	**0**	The Study Site is surrounded by urban development, roads and a railway line, which form barriers that are likely to prevent safe movement of Koala.
	+1 (medium)	Area is part of a contiguous landscape < 500 ha but ≥300 ha.		
	0 (low)	None of the above		
Key existing threats	+2 (high)	Little or no evidence of Koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for Koala occurrence	**1**	**Desktop:** Recent data relating to Koala mortality for the Study Site has not been made available at the time of writing. **On-ground:** The Study Site is located within a rapidly expanding urban environment. Although vehicle and dog threats to Koala within the Study Site would be relatively low at the present time, increasing development within the local area is likely to lead to an increase in threats in the near future.
	+1 (medium)	Evidence of infrequent or irregular Koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for Koala occurrence		
	0 (low)	Evidence of frequent or regular Koala mortality from vehicle strike or dog attack in the study area at present		
Recovery value *	+2 (high)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context	**1**	As the Study Site is known to support Koala and is one of the few remaining patches of Koala habitat left undisturbed within the local area, there is uncertainty as to whether the habitat is important for achieving the interim recovery objects.
	+1 (medium)	Uncertainty exists as to whether the habitat is important for achieving the interim recovery objectives for the relevant context		
	0 (low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context		
Total Score			**6**	As the total score is >5, Koala habitat within the study area is recognised as 'habitat critical to the survival of Koala' under the EPBC Act referral guidelines.

* Interim recovery objective in coastal areas is to protect and conserve large, connected areas of Koala habitat, particularly large, connected areas that support Koalas that are: genetically diverse/distinct; or free of disease or have a very low incidence of disease; or breeding (i.e. presence of back young or juveniles).

Table 3.2. Assessment of the significance of removing habitat critical to the survival of Koala (refer Sections 6, 7, 8 of DotE 2014).

Characteristics that could adversely affect habitat critical to the survival of Koala	Assessment of Proposed Actions
The score calculated for the impact area (higher score = greater risk)	The Study Site achieved a score of 6 (out of 10) for habitat quality. This score reflects the presence of Koala and presence of Koala food trees. **Relatively moderate risk of significant impact.**
Amount of Koala habitat being cleared (more habitat cleared = greater risk)	The entire Study Site (approximately 10 ha) will be cleared for construction and operation of a new school. **Relatively moderate risk of significant impact.**
Method of clearing	All vegetation clearing will be conducted under the supervision of an experienced fauna spotter in accordance with the Queensland government *Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016* (EHP 2006). **Low risk of significant impact expected.**
The density or abundance of Koalas	No Koala individuals were directly observed; however, evidence in the form of scats was found throughout the Study Site, indicating the Study Site is utilised by at least one Koala. A total of 180 Koala have previously been removed from the Coomera Structure Plan area (GCCC 2014). **Relatively moderate risk of significant impact.**
Level of fragmentation caused by the clearing	The Study Site occurs within a landscape that is undergoing rapid urban development. The proposed development will remove Koala habitat, but will not cause an increase in the existing level of habitat fragmentation. **Relatively low risk of significant impact.**

Table 3.3. Assessment of the significance of Project impacts interfering with the recovery of Koala.

Impacts which are likely to substantially interfere with the recovery of the Koala	Assessment of Proposed Actions
Increasing Koala fatalities to dog attacks	The proposed development (school) will not result in an increase in the presence of dogs in the local landscape. **Low risk of significant impact expected.**
Increasing Koala fatalities to vehicle-strikes	The increase in fatalities as a result of the new school will be dependent on the number of night-time events scheduled. However, entrance to the school will be via Foxwell Road; a roadway which will see an increase in traffic as nearby areas become developed as part of the Coomera Town Centre Structure plan. **Moderate risk of significant impact expected.**
Facilitating the introduction or spread of disease of pathogens, that are likely to significantly reduce the reproductive output of Koalas,	The clearing of Koala habitats can induce stress on individual animals, which then makes the animals predisposed to succumbing to diseases/pathogens such as Chlamydia. No Koala will placed in a stressful situation by forcing them to move from a tree targeted for clearing. A qualified fauna spotter/catcher will be present during all vegetation clearing to report the presence of any sick or injured Koala observed within the study area. **Moderate risk of significant impact expected.**
Creating a barrier to movement to, between or within habitat critical to the survival of the Koala that is likely to result in the long-term reduction of genetic fitness.	The Study Site is bordered by an existing TAFE college to the west, a relatively major roadway and residential development to the north, and a railway line to the south, with other Koala habitat located to the east. The proposed clearing will not create a barrier to the eastern habitats. **Relatively low risk of significant impact.**
Changing hydrology which degrades habitat critical to the survival of the Koala to the extent the carrying capacity of the habitat is reduced in the long-term.	The Study Site currently supports one drainage line in the north and a swampy area to the south. Consideration will be given to the engineering of drainage design to mitigate flooding as would be appropriate in an urban area. It is not expected that the proposed development might lead to changes in hydrology to Koala habitat to the east. **Moderate risk of significant impact expected.**

It is also considered likely Grey-headed Flying-fox *Pteropus poliocephalus* (currently listed as Vulnerable under the EPBC Act) would visit the Study Site seasonally to feed on flowering trees.

Under the EPBC Act, an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it 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 important population into two or more populations;
- adversely affect habitat critical to the survival of a 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;
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;
- introduce disease that may cause the species to decline; or
- interfere substantially with the recovery of the species (DotE 2013).

As no flying-fox camp was found within or immediately adjoining the Study Site during the field survey and abundant, alternative food resources are available in the wider landscape, future development of the Study Site is unlikely to have a significant impact on this species based on these criteria.

No other threatened fauna species were recorded during the survey, and no other threatened species are expected to utilise the Study Site, based on the types and conditions of the habitats present and known species distributions.

3.3.3 Migratory Species

Database searches (**Appendix 1**) indicate the potential presence of EPBC Act listed migratory species, a number of which have potential to be seasonal visitors to the Study Site. However, the Study Site has not been identified as supporting an ecologically significant proportion of habitat for migratory species, and all potentially occurring migratory species are common, widely-distributed species that are neither known to be declining nor at the limit of their range within the local area.

Therefore, any future development of the Study Site is unlikely to have a significant impact on migratory species, and it is considered a referral to the Commonwealth is not warranted in relation to potential impacts upon migratory species.

3.3.4 Weeds of National Significance

Weeds of National Significance recorded on the Study Site included Asparagus Fern *Asparagus aethiopicus*; and Lantana *Lantana camara*. Lantana was recorded frequently across the Study Site, while Asparagus Fern only occasionally.

These weeds are currently listed as Weeds of National Significance and appropriate management of these species is legally required by the landholders.

3.4 MATTERS OF STATE ENVIRONMENTAL SIGNIFICANCE (MSES)

3.4.1 Regulated Vegetation

Regional Ecosystems

State regulated vegetation mapping (**Appendix 2**) shows that the study area supports Category B regulated vegetation represented by two Regional Ecosystems:

- RE12.11.24: *Eucalyptus carnea, E. tindaliae, Corymbia intermedia +/- E. siderophloia or E. crebra woodland* on metamorphics +/- interbedded volcanics (currently listed as Least Concern under the *Vegetation Management Act 1999*).
- RE12.3.11: *Eucalyptus tereticornis +/- Eucalyptus siderophloia, Corymbia intermedia* open forest on alluvial plains usually near coast (currently listed as Of Concern).

The extent of each RE mapped by the state differed from that ground-truthed during the field assessment. Specifically, RE12.3.11 was not recorded on site; and the extent of remnant RE12.11.24 differed slightly from that shown in state mapping – in that the north-eastern corner of the Study Site (mapped by the State as non-remnant) met the criteria for remnant vegetation. The ground-truthed location and extent of

remnant vegetation on site is shown on **Figure 3.1**.

On 8 March 2018 the State Government introduced the *Vegetation Management and Other Legislation Amendment Bill 2018* to Parliament. The Amendment Bill proposes to change some unregulated areas of vegetation (category X on the Regulated Vegetation Management Maps) to regulated areas subject to an accepted development vegetation clearing code (proposed categories R or C). If the Bill becomes law, the following regulations will be effective from 8 March 2018:

- Category C regulations proposed for high value regrowth on leasehold, freehold and indigenous land and occupational licences.
- Category R regulations proposed for regrowth vegetation within 50m of a watercourse in the Burnett-Mary, Eastern Cape York and Fitzroy Great Barrier Reef catchments.

Proposed regulated vegetation mapping that would become certified if the Bill is passed (**Appendix 2**) identifies a patch of high value regrowth comprising RE12.11.24, RE12.11.3 and RE12.3.20 in the south-western portion of the Study Site, in addition to the remnant vegetation already present on the currently certified regulated vegetation mapping.

Regulated Vegetation Intersecting a Watercourse

A watercourse is shown on the State regulated vegetation mapping (**Appendix 2**), which is bounded by regulated vegetation that constitutes "regulated vegetation intersecting a watercourse".

Essential Habitat

All State-mapped patches of remnant vegetation are also mapped as essential habitat for Koala (**Appendix 2**).

The field survey confirmed the presence of three essential habitat factors (including RE – listed as a "mandatory" essential habitat factor) for this species within the mapped patch of remnant RE12.11.24, and Koala is known to occur across the site; hence, the essential habitat mapping has been verified as correct.

Legislative Implications

Where regulated vegetation is to be cleared under a development application, the application must (subject to any exemptions that apply) address State Code 16: Native vegetation clearing, with any significant residual impacts to relevant Matters of State Environmental Significance (including regulated vegetation) subject to offsets in accordance with the *Environmental Offsets Act 2014*.

Schedule 21 of the Queensland *Planning Regulation 2017* defines exempt clearing work for the purposes of determining whether a proposed action needs to address State Code 16: Native vegetation clearing. In this case, it is understood the proposed works would be exempt in accordance with Clause 2 (g) of Part 2 of Schedule 21, which covers clearing of regulated regrowth vegetation, and Of Concern and Least Concern REs in a Category B area for urban purposes in an urban area on freehold land.

As such, it is understood State Code 16: Native vegetation clearing will not apply to the proposed works, and Regulated Vegetation will not represent a statutory constraint to the project.

3.4.2 Wetlands and Watercourses

State mapping (**Appendix 2**) indicates that no wetland protection areas, wetlands of high ecological significance or wetland or watercourse in high ecological value waters occur within the Study Site.

3.4.3 Waterways Providing for Fish Passage

No waterways mapped by the State as providing for fish passage occur within the Study Site. Accordingly, there will be no significant impacts upon this MSES.

3.4.4 South East Queensland Koala Planning Framework

The study area is not mapped within a Koala Assessable Development Area (**Appendix 2**), such that the project will not be subject to provisions of Schedule 11 of the *Planning Regulation 2017* in relation to Koala habitat.

However, as the project occurs within the south-east Queensland Koala Protection Area and is mapped under the State Planning Policy as containing Koala bushland habitat (**Appendix 2**), it will need to address the requirements of the

State Government Supported Infrastructure Koala Conservation Policy (July 2017) (the 'Koala Conservation Policy'), subject to any exemptions that may apply.

Specifically, projects resulting in a total area of more than 500m^2 being cleared of native vegetation or requiring a development footprint of more than 500m^2 are to be assessed against the Infrastructure Assessment Criteria within Table 1 of the Koala Conservation Policy. This states that the unavoidable clearing of non-juvenile Koala habitat trees (NJKHTs) from mapped bushland habitat must be offset in accordance with the Queensland *Environmental Offset Policy*.

NJKHTs were counted along a total of nine 10 x 100m transects (**Figure 3.1**). Of these nine transects, two were positioned in non-remnant vegetation, while the remaining seven were positioned in remnant vegetation. Analysis of the results from the NJKHT count indicates that the Study Site supports approximately 2850 NJKHT, based on an average of 39 NJKHT per 0.1 ha of remnant vegetation and 12 NJKHT per 0.1 ha for non-remnant vegetated areas (**Appendix 6**).

For the purposes of project planning, it is considered the upper estimate of 39 NJKHTs should be used to estimate offset requirements for every 0.1 hectares of mapped bushland habitat to be removed.

Under the Queensland *Environmental Offset Policy*, offsets for the removal of Koala habitat within south-east Queensland may be provided as a proponent-driven, land-based offset or a financial settlement offset, or a combination of both.

In terms of proponent-driven offsets, the *Environmental Offset Policy* requires that the rehabilitation, establishment and protection of Koala habitat is the only appropriate action to offset Koala habitat within south-east Queensland, based on the following requirements:

- The offset must establish three new Koala habitat trees for every one 'non-juvenile' tree removed.
- Offset plantings must be within the same local government area as the impact site.
- The offset must be in an area identified as high value or medium value suitable for rehabilitation habitat. Where these are not available Koala offset sites should be located within low value suitable for rehabilitation habitat or where appropriate, within bushland habitat to enhance the quality of bushland within the local government area.
- Koala habitat trees to be established as an offset must be reflective of the species that are endemic to the site and be planted at densities that will produce a mature density reflective of the regional ecosystems present on the site.

Furthermore, where an offset is delivered as a land-based offset, the site must be secured as a legally secured offset area as defined by section 29 of the *Environmental Offsets Act 2014* (other than as Environmental Offset Protection Area).

Alternatively, a financial settlement option can be taken, calculated using the Queensland Government's web-based Financial Settlement Offset Calculator. In this case, the removal of each NJKHT would require a financial settlement of $920.

Column 2 of Table 1 within the Policy also requires that:

- Site design provides safe Koala-movement measures, including Koala-movement infrastructure, as appropriate to the development type, and habitat connectivity values of the site identified in Schedule 2 of the policy.
- Native vegetation clearing is undertaken as sequential clearing and under the guidance of a Koala spotter where the native vegetation is a non-juvenile Koala habitat tree.
- During construction phases:
  - Measures are taken in construction practices to not increase the risk of death or injury to Koalas.
  - Native vegetation that is cleared and in an area intended to be retained for safe Koala movement opportunities is progressively restored and rehabilitated.
- Landscaping activities provide food, shelter and movement opportunities for Koalas consistent with the site design.

In terms of Koala movement, the habitat connectivity values within the site and towards similar habitats to the south-east are currently unrestricted, while movement to the south-west, west and north is restricted by the presence of road and rail corridors. It is recommended site

design maintains opportunities for movement of Koalas through the site and towards the south-east through the retention of vegetated corridors along the southern and eastern boundaries of the site, whilst incorporating Koala habitat tree species in any proposed landscaping works.

An experienced Koala/fauna spotter should also be present to supervise the clearing of native vegetation and ensure the appropriate management of Koalas and other native fauna, should any be present during clearing. This includes establishing a "no-go" zone of at least 25m around any tree containing a Koala (and any adjacent trees with a crown overlapping the Koala tree) until such time that the Koala has moved off the site of its own accord.

3.5 MATTERS ADDRESSED UNDER THE NC ACT

3.5.1 EVNT Flora Species

A search of the DES Wildlife Online database (**Appendix 2**) found five EVNT flora species listed under the NC Act have been previously recorded within 5 km of the study area since 1980. The results of this search, together with the preferred habitat of each species, are presented in **Table 3.1**.

No threatened flora species were detected within the proposed clearing area during the field survey. Furthermore, as the species listed in **Table 3.1** occur in habitats that were not recorded on site, and the field survey achieved a wide coverage of the Study Site, the above species are considered unlikely to occur. Consequently, no direct or indirect impacts on protected plant species are expected to occur and no mitigation measures are considered necessary.

The *Flora Survey Guidelines – Protected Plants* (EHP, 2016) stipulate that, where no EVNT species are identified within the clearing impact area, an exempt clearing notification form is required to be submitted to DES. This report should accompany the notification form as an attachment.

Section 261ZA requires that the exemption form and supporting report are submitted at least one week before clearing commences, but no later than one year after the completion of the flora survey that was undertaken for the report (i.e. by 4 April 2019).

Following submission of the exemption form, the applicant will receive a receipt of the submission providing approval for the clearing to commence. Clearing under this exemption may be conducted within two years after the flora survey report is submitted.

Table 3.1. EVNT flora species recorded within 5km of the Study Site, preferred habitat and likelihood of occurrence.

Species	Common name	NCA status	Preferred habitat characteristics	Likelihood of occurrence
Cupaniopsis newmanii	Long-leaved Tuckeroo	NT	Grows on the margins and in warmer rainforest, north from Mullumbimby into Queensland (NSW Flora online 2015).	**Unlikely to occur**: preferred habitat not recorded on site.
Endiandra floydii		E	Usually along watercourses and edges of rainforests in Gold Coast area (Leiper et al 2008).	**Unlikely to occur**: preferred habitat not recorded on site.
Eucalyptus curtisii	Plunkett Mallee	E	Two growth forms that occur in different habitats. The shorter mallee form is more likely to occur as the only eucalypt species on poorly drained lowland sites in shrubland dominated by banksia, with an understorey of heath plants, and sometimes *E. conglomerata* may also be present. The larger growth form occurs as scattered individuals on better drained soils in the more open areas of mixed eucalypt forests. Commonly associated species include *Corymbia citriodora* subsp. *variegata*, *C. trachyphloia* and *Callitris endlicheri*, less commonly associated with *E. fibrosa, E. planchoniana* and *E. acmenoides*. *E. curtisii* occurs on sandy podsoils with impeded drainage, shallow stony soils, clay loams and stony clays with a surface layer of loose stones (EHP, 2015).	**Unlikely to occur**: Whilst mixed eucalypt forest occurred on site, targeted extensive searches did not locate this species. The Study Site also displays disturbance throughout, and the species is considered unlikely to occur.

Species	Common name	NCA status	Preferred habitat characteristics	Likelihood of occurrence
Macadamia integrifolia	Macadamia Nut	V	Grows in subtropical rainforest, preferring well-drained sites on hill crests, hill slopes, scree slopes, foot slopes and along the edges of hoop pine Araucaria cunninghamii scrubs and creek beds (SCC, 2006)	**Unlikely to occur**: preferred habitat not recorded on site.
Plectranthus habrophyllus		NT	Known only from near Ipswich and near Ormeau in south-east Queensland where it is associated with shaded gullies on rocky sediments substrates, often adjacent to dry rainforest (DotE, 2015).	**Unlikely to occur**: preferred habitat not recorded on site.

3.5.2 Animal Breeding Places

No active animal breeding places were recorded during the field survey and no old-growth hollow-bearing trees were observed. However, common frog species were heard calling within the wetter areas in the south of the Study Site, which could contain frog breeding sites, particularly in the warmer months of the year.

Under the NC Act, any clearing of vegetation that is required to tamper with a confirmed native animal breeding place in order to complete the scope of works must be undertaken in accordance with a Species Management Program (SMP) or Damage Mitigation Permit (DMP) approved by DES.

DES provides two SMP templates, depending on the identified protected animals. The SMP "low risk of impacts" relates to protected animals classed as Least Concern under NC Act where the impacts are unlikely to affect broader population. The SMP "high risk of impacts" relates to protected animals identified as EVNT, Special Least Concern or Least Concern Colonial Breeder species, where the broader population is at a greater risk from impacts.

The findings of the field survey indicate there are unlikely to be breeding places for EVNT species present within the Study Site, although breeding places for Least Concern species such as common frog species, as well as nesting birds and possums, may be present, subject to the timing of works. It is recommended all wet areas and trees to be removed are inspected prior to clearing to determine if any active animal breeding places are present and any necessary SMP or DMP is obtained prior to works, as advised by DES.

3.6 MATTERS ADDRESSED UNDER THE *BIOSECURITY ACT 2014*

3.6.1 State Restricted Weeds

Restricted invasive weed species listed as Category 3 restricted invasive plants under the Queensland *Biosecurity Act 2014* that were recorded on the Study Site include:

- Asparagus Fern *Asparagus aethiopicus* – minor occurrences across the Study Site.
- Lantana *Lantana camara* – occurred frequently across the Study Site.
- Camphor Laurel *Cinnamomum camphora*– minor occurrences across the Study Site.
- Singapore Daisy *Sphagneticola trilobata* – significant infestation along the interface of TAFE campus and Site vegetation (**Photo 6**).

Photo 6. Infestation of Singapore Daisy on TAFE southern boundary.

In accordance with the *Biosecurity Act 2014*, Category 3 restricted invasive plants must not be distributed (i.e. released into the environment) unless the distribution or disposal is authorised in a regulation or under a permit. More generally, landowners are responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants under their control.

3.7 LOCAL GOVERNMENT MATTERS

It is understood the proposed development is likely to be exempt from the local government planning scheme and local laws, although should still have regard to their general requirements.

Under the Coomera Town Centre Structure Plan, much of the Study Site is mapped as Education Precinct, with the southern portions of the Study Site mapped as Conservation Precinct.

Review of the City of Gold Coast PD online (**Appendix 7**) indicates the northern and central portions of the Study Site are currently zoned for "Innovation", while the southern portion of the site is currently zoned for "Conservation". The Environmental Significance Overlay also maps the following features within certain portions of the site:

- Koala habitat areas (and habitat for state significant species) across the majority of the site, consistent with State mapped bushland habitat.
- Medium and general priority vegetation across the majority of the site, generally consistent with State mapped vegetation.
- Minor watercourses and locally significant wetlands within the southern portions of the site.

Given the above, it is recommended site design restricts the area of native vegetation to be cleared to that absolutely necessary for the construction and operation of site infrastructure, and avoids and provide buffers to the locally mapped waterways and wetlands wherever possible to maintain connectivity with downstream aquatic systems and habitats.

4.0 SUMMARY OF ECOLOGICAL CONSTRAINTS AND LEGISLATIVE OBLIGATIONS

4.1 COMMONWEALTH CONSIDERATIONS

The field survey has confirmed that the Study Site contains no Threatened Ecological Communities or threatened flora species listed under the EPBC Act. However, the Study Site supports habitats that are recognised as critical to the survival of Koala. Due to the level of habitat removal proposed and the known presence of Koala, the results of the impact assessment indicate there will be a moderate risk that the proposed development will have a significant impact on Koala.

A referral to the Commonwealth in regards to Koala is therefore recommended. The referral will need to include an assessment of impacts on other threatened and migratory species that have the potential to be present within the Study Site.

It is recommended site design restricts the area of native vegetation to be cleared to that absolutely necessary for the construction and operation of site infrastructure, whilst avoiding the fragmentation of existing habitat and minimising barriers to Koala movement across the landscape.

Weeds of National Significance were also recorded on the Study Site, the appropriate management of which is legally required by the landholders.

4.2 STATE CONSIDERATIONS

4.2.1 MSES

The Study Site supports regulated vegetation in the form of State-mapped remnant regional ecosystems, remnant vegetation intersecting and watercourse, and essential habitat. Proposed regulated vegetation mapping (that will become certified if the recently introduced *Vegetation Management and Other Legislation Amendment Bill 2018* is passed) also identifies a patch of high value regrowth within the Study Site.

The extent of each remnant vegetation mapped by the State differed from that ground-truthed during the field assessment.

In this case, it is understood the proposed works are classified as exempt clearing work in accordance with Schedule 21 of the Queensland *Planning Regulation 2017*, such that State Code 16: Native vegetation clearing will not apply, and

regulated vegetation will not represent a statutory constraint to the project.

It is understood the proposed development would be subject to the State Government Supported Infrastructure Koala Conservation Policy (July 2017) (EHP 2017), which requires the unavoidable clearing of NJKHTs from mapped bushland habitat to be offset in accordance with the Queensland *Environmental Offset Policy*. For the purposes of project planning, data obtained from the field survey indicates an estimate of 390 NJKHTs should be used to calculate potential offset requirements for every hectare of mapped bushland habitat to be removed.

Offsets for the removal of Koala habitat within south-east Queensland may be provided as a proponent-driven, land-based offset or a financial settlement offset, or a combination of both. Land-based offsets must establish three new Koala habitat trees for every one 'non-juvenile' tree removed within the same local government area as the impact site. The offset site must also be legally secured. Alternatively, the removal of each NJKHT would require a financial settlement of $920.

4.2.2 NC Act Obligations

No EVNT flora were recorded during a targeted survey of all vegetation within the Study Site in accordance with the *Flora Survey Guidelines - Protected Plants* (EHP, 2016). Consequently, an exempt clearing notification form is required to be submitted to DES (accompanied by this report) at least one week before clearing commences, but no later than one year after the completion of the flora survey that was undertaken for the report (i.e. by 4 April 2019).

Following submission of the exemption form, the applicant will receive a receipt of the submission providing approval for the clearing to commence. Clearing under this exemption may be conducted within two years after the flora survey report is submitted.

No active animal breeding places were recorded during the field survey, although the Study Site supports potential animal breeding places for least concern species such as common frogs, nesting birds and possums. It is recommended all wet areas and trees to be removed are inspected prior to clearing to determine if any active animal breeding places are present and any necessary SMP or DMP is obtained prior to works, as advised by DES.

4.2.3 State Restricted Weeds

The field survey has confirmed the presence of Category 3 restricted invasive plants on the Study Site, which will need to be appropriately managed during onsite works to ensure they are not spread within or outside of the site.

4.3 LOCAL CONSIDERATIONS

It is understood the proposed development is likely to be exempt from the local government planning scheme and local laws, although should still have regard to their general requirements.

Under the Coomera Town Centre Structure Plan, much of the Study Site is mapped as Education Precinct, with the southern portions of the Study Site mapped as Conservation Precinct.

Based on the current zonings for the site and features mapped on the site under Gold Coast City Council's Environmental Significance Overlay, it is recommended site design restricts the area of native vegetation to be cleared to that absolutely necessary for the construction and operation of site infrastructure, and avoids and provide buffers to the locally mapped waterways and wetlands wherever possible to maintain connectivity with downstream aquatic systems and habitats.

5.0 REFERENCES

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