environmental management

saunders havill group

# Pacific View Estate Development

## EPBC Act Referral

pacificviewestate

PERRON GROUP

Perron Developments Pty Ltd

13 November 2015
7737

surveying town planning urban design environmental management landscape architecture

# Referral of proposed action

## Project title: Pacific View Estate Development

# 1 Summary of proposed action

1.1 **Short description**

**Response 1.1**
The Pacific View Estate is a master planned community with a range of urban land use types including, residential, retail, commercial, industrial and open space. These uses include low and medium density residential, a mixed use Village Centre with retail, commercial and associated uses, active and passive recreation areas and significant conservation areas.

1.2 **Latitude and longitude**

| Id | Longitude (East) | Latitude (North) | Id | Longitude (East) | Latitude (North) |
|---|---|---|---|---|---|
| 1 | 153°19'26.22"E | 28°1'20.02"S | 22 | 153°20'47.771"E | 28°1'44.166"S |
| 2 | 153°19'33.04"E | 28°1'21.004"S | 23 | 153°20'46.195"E | 28°1'54.127"S |
| 3 | 153°19'42.754"E | 28°1'19.459"S | 24 | 153°20'25.506"E | 28°1'51.049"S |
| 4 | 153°19'47.193"E | 28°1'16.869"S | 25 | 153°20'15.882"E | 28°1'50.643"S |
| 5 | 153°19'52.824"E | 28°1'17.182"S | 26 | 153°20'6.94"E | 28°1'54.31"S |
| 6 | 153°19'59.776"E | 28°1'21.826"S | 727 | 153°20'4.25"E | 28°1'58.77"S |
| 7 | 153°20'17.884"E | 28°1'21.326"S | 28 | 153°20'2.074"E | 28°2'6.532"S |
| 8 | 153°20'30.996"E | 28°1'31.362"S | 29 | 153°19'50.048"E | 28°2'12.734"S |
| 9 | 153°20'35.097"E | 28°1'31.954"S | 30 | 153°19'41.952"E | 28°2'20.879"S |
| 10 | 153°20'35.414"E | 28°1'34.36"S | 31 | 153°19'41.146"E | 28°2'20.46"S |
| 11 | 153°20'35.844"E | 28°1'41.616"S | 32 | 153°19'29.443"E | 28°2'21.709"S |
| 12 | 153°20'41.546"E | 28°1'42.926"S | 33 | 153°19'13.692"E | 28°2'20.637"S |
| 13 | 153°20'43.32"E | 28°1'43.506"S | 34 | 153°19'14.232"E | 28°2'19.732"S |
| 14 | 153°20'43.635"E | 28°1'41.597"S | 35 | 153°19'14.303"E | 28°2'10.799"S |
| 15 | 153°20'44.168"E | 28°1'41.647"S | 36 | 153°19'11.99"E | 28°2'1.896"S |
| 16 | 153°20'44.44"E | 28°1'42.36"S | 37 | 153°19'17.47"E | 28°1'54.532"S |
| 17 | 153°20'45.382"E | 28°1'42.452"S | 38 | 153°19'16.787"E | 28°1'49.013"S |
| 18 | 153°20'46.029"E | 28°1'41.746"S | 39 | 153°19'21.103"E | 28°1'47.025"S |
| 19 | 153°20'48.113"E | 28°1'42.10"S | 40 | 153°19'23.218"E | 28°1'31.68"S |
| 20 | 153°20'48.29"E | 28°1'42.875"S | 41 | 153°19'24.89"E | 28°1'27.84"S |
| 21 | 153°20'47.43"E | 28°1'43.6"S | 42 | 153°19'24.72"E | 28°1'25.65"S |

1.3 **Locality and property description**

**Response 1.3**
The subject area falls within the "Urban Footprint" of the *South East Queensland Regional Plan 2009-2031* and shares frontages with Hinkler Drive and the Pacific Highway Service Road off Elysium Drive in Worongary, City of Gold Coast, Queensland.

The referral area covers approximately 299.5 hectares and maintains sparse to moderately dense canopy vegetation. Cleared pasture and farm work areas covering approximately 42.5 hectares occur in the east of the site. All vegetated portions of the site maintain an active native forest practice.

Refer to **Figures 1 & 2** for Site Context and Aerial, respectively, that define the referral area.

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

**Response 1.4**
The allotments that make-up the Pacific View Estate development site cover approximately 342 hectares, including the referral area of approximately 299.5 hectares in size, and the site is one of the largest remaining developable broad hectare parcels within the City of Gold Coast.

1.5 **Street address of the site**

**Response 1.5**
Lot 28 on SP189559 – 167 Hinkler Drive, Worongary;
Lot 10 on SP229681 – 169-331 Hinkler Drive, Worongary; and
Lot 11 on SP229681 – Hinkler Drive, Worongary.

1.6 **Lot description**

**Response 1.6**

| Lot Number | Allotment Area | Referral Area | Tenure |
|---|---|---|---|
| Lot 28 on SP189559 | 312.3 ha | 299.5 ha | Freehold |
| Lot 10 on SP229681 | 22.54 ha | NA | Freehold |
| Lot 11 on SP229681 | 7.093 ha | NA | Freehold |

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

**Response 1.7**
The Pacific View Estate was assessed and approved via the **Queensland State Government's** ministerial 'call in' powers. The **Queensland State Government** remains the assessing authority.

Contact:
**Seija Wellington**
Manager
**Department of Infrastructure, Local Government and Planning**
Level 6, 63 George St Brisbane QLD 4000
p. 07 3452 7178 | e. seija.wellington@dilgp.qld.gov.au

1.8 **Time frame**

**Response 1.8**
The project has secured a development approval for material change of use and is seeking to secure a number of Operational Works and Construction Permits. Once these are in place and EPBC Act considerations complete, the project will commence. This is anticipated to occur in 2016 with a construction, sales and operational currency of 15 years.

| | | | |
|---|---|---|---|
| 1.9 | **Alternatives to proposed action** | **X** | **No**<br>The Pacific View Estate (PVE) development site presents a unique opportunity to provide for necessary urban housing solutions in a strategic location to ease the housing needs of one of southeast Queensland's fastest growing regions.<br><br>Strategic Planning with respect to land use within the area covered by the current City of Gold Coast local government boundaries has been conducted on a "formal" basis since 1973, some 33 years ago when the Albert Shire's first Strategic Plan was gazetted. That first strategic planning document identified the PVE site as part of the first formally designated "Urban" area and as such suitable for development for urban purposes, predominately residential development. Since then, subsequent Strategic Plans in the planning schemes of 1976, 1982, 1988 and 1995 continued to recognise the long term urban potential of the PVE Site with an "Urban Residential" strategic designation. Though remaining undeveloped over this time while adjacent urban area in Highland Park, Gilston and Worongary developed, the site remained an important part of a large urban land bank identified by those visionary Strategic Plans that looked to a future community that would continue to have many complex urban needs well into the 21st Century.<br><br>For over 30 years from 1973 to 2003, this strategic planning continued to demonstrate an understanding of the real need to secure sufficient land supply in the long term to meet the need for urban residential purposes in an area that has experienced sustained high rates of population growth, and claimed the title of fastest growing area in Australia for the last 30+ years. Strategic planning initiatives undertaken by the **State Government** continued to recognise the importance to plan for events on a time scale that required and reflected strategic vision. The *South East Queensland Regional Plan 2005-2026* (the SEQRP 2005) continued the long term view initiated in 1973, placing the site within the "Urban Footprint" and recognising it as a "Major Development Area" (MDA).<br><br>This State Government view of the site's suitability for urban purposes was confirmed |

| | | |
|---|---|---|
| | | by:<br><br>• the Queensland Housing Affordability Study released in July 2007 which specifically identifies the site as a "Greenfield Site" with the potential to be brought forward for development to improve housing affordability prospects in this region;<br>• the SEQRP 2009, which includes the site in the "Urban Footprint' and recognises the site as "Remnant Broad Hectare" and part of the strategy to meet the dwelling targets identified for the Gold Coast sub-region during the planning period of the SEQRP 2009; and<br>• Ministerial gazettal of the site as an 'urban area' in April 2014 for the purposes of the *Sustainable Planning Act 2009*.<br><br>The timely development of this land has now become critical given that:<br><br>• the Gold Coast will not be able to accommodate the additional 137,500 dwellings identified by the SEQRP 2009 as being required by the region's population growth characteristics, housing costs and diminished supply.<br>• independent studies have concluded that the Gold Coast sub-region has the capacity to deliver only 27,000 dwellings through broadhectare development. This is a significant shortfall on the official estimate of 57,500 dwellings in the SEQRP 2009;<br>• independent studies show that the Gold Coast sub-region will actually require 96,000 dwellings to be developed on broadhectare land by 2031.<br>• the Gold Coast is running out of developable broadhectare land; and<br>• the Gold Coast is the least affordable urban area in South East Queensland.<br>• as part of the Queensland Housing Affordability Strategy, Pacific View Estate has been specifically identified as suitable for development that can be "brought forward" and developed in the short – medium term.<br>• the urbanisation of this strategically located remnant broadhectare area is required now to contribute to the already deficient sub-regional land supply, enabling Gold Coast City Council to meet their regional housing targets.<br>• analysis of Council planning assumptions underpinning the current review of the Priority Infrastructure Plan (PIP) indicates that Council assumptions regarding the development yield over the planning period (development until 2031) are unreasonably optimistic and predict yields that greatly exceed long term historic yield rates (refer to UPS 2010).<br><br>The importance of the Pacific View Estate in the context of abating housing demand is reflected in the project being 'called in' by the Minister for direct assessment and approval by the **Queensland Government Office of the Deputy Premier**.<br><br>As per State planning intent, the Pacific View Estate development application was approved by a development approval issued by the Queensland Deputy Premier, Minster for Transport, Minister for Infrastructure, Local Government and Planning and Minister for Trade on 19th March 2015 (refer to Response 2.4). This approval was subsequently amended through a request to amend an approval under the *Sustainable Planning Act 2009* and the permissible change approved on 11th November 2015.<br><br>An alternative location of this size and suitability is not available, would ignore planning intent and is not feasible within the extent of the proponent's land holdings. |
| | | Yes, you must also complete section 2.2 |

| | | | |
|---|---|---|---|
| 1.10 | **Alternative time frames etc** | **X** | **No**<br>As outlined in the Response at 1.9 and stipulated in the SEQRP 2009, there is an increasing need for essential urban development in strategically located areas within the City of Gold Coast region. An alternative timeframe for the proposed action does not suit this need. |
| | | | Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant). |
| 1.11 | **State assessment** | **X** | **No**<br>The project is not subject to a state environmental impact assessment. As stated at **1.9**, the importance of the Pacific View Estate in the context of abating housing demand is reflected in the project being 'called in' by the Minister for direct assessment and approval by the **Queensland Government Office of the Deputy Premier**. The proposal has gained development approval from the **State Government** with conditions, however, these are separate to the EPBC Act process and or any bilateral agreements. |
| | | | Yes, you must also complete Section 2.5 |
| 1.12 | **Component of larger action** | **X** | **No**<br>The action is not part of larger action. |
| | | | Yes, you must also complete Section 2.7 |
| 1.13 | **Related actions/proposals** | **X** | **No**<br>The action is not related to any other actions or proposals. |
| | | | Yes, provide details: |
| 1.14 | **Australian Government funding** | **X** | **No**<br>The proponent has not received funding from the Australian Government to undertake the project. |
| | | | Yes, provide details: |
| 1.15 | **Great Barrier Reef Marine Park** | **X** | **No**<br>The proposed action is not located inside the Great Barrier Reef Marine Park. |
| | | | Yes, you must also complete Section 3.1 (h), 3.2 (e) |

# 2 Detailed description of proposed action

### 2.1 Description of proposed action

**Response 2.1**
The Pacific View Estate is located within the "Urban Footprint" of the *South East Queensland Regional Plan 2009-2031* (the SEQRP 2009) and consists of three (3) parcels of land described as:

Lot 28 on SP189559 – 167 Hinkler Drive, Worongary;
Lot 10 on SP229681 – 169-331 Hinkler Drive, Worongary; and
Lot 11 on SP229681 – Hinkler Drive, Worongary.

The Pacific View Estate (PVE) is approximately 342 hectares in area and is one of the largest remaining developable broad hectare parcels within the City of Gold Coast. PVE represents a unique opportunity in the on-going evolution of the City of Gold Coast as a thriving modern city in the 21st Century.

Pacific View Estate seeks to establish a new relationship between natural and human habitats that will create a gateway to Sustainable Living providing connection to transport and infrastructure corridors, open space and conservation networks and a diversity of built forms recognising the area's sub-tropical climate and significant ecological and landscape values.

The preliminary planning for the Pacific View Estate was undertaken according to the "principles and techniques of neo-classical design" (new urbanism) by international urban designer Demetri Baches of DPZ Pacific. Across the entire project, best practice planning and design was implemented and managed to encourage design excellence, technical innovation, sustainable outcomes, healthy lifestyle choices and strong cultural and social benefits for the existing and future local community. The urban design seeks to establish a new paradigm regarding natural and human habitats, to ensure an appropriate relationship and interface between them and to establish a human habitat that is robust, resilient and adaptable and consistent with stable ecosystems.

The scale of the PVE property presents a unique opportunity to ensure that an environment is crafted that has been designed as attractive, pedestrian-friendly and transit orientated, thereby supporting community life and harnessing the opportunities presented by the site's location and natural features. It also allows incorporation of the full range of transects to ensure a diverse land use pattern and wide range of housing choice (refer to UPS 2010).

Key objectives for the PVE development include:

- Providing for areas of low density residential development that consist predominantly of low rise detached dwellings in a garden landscape that are well serviced by urban facilities and transport, with opportunity for variety in dwelling size, style and density in suitable identified locations;
- In suitable locations, providing for a range of housing choice that is responsive to the changing demographic structure of the City, whilst maintaining an efficient residential land use pattern comprised of mixed dwelling types including detached dwellings, attached dwellings and apartment buildings that relate well to one another and surrounding development;
- Providing for a mixed use local business centre to provide opportunities for local community interaction and a sense of place and identity. The business centre will cater to a local service orientation containing a wide variety of residential, retail, commercial, personal service, entertainment and recreational land uses, at a scale commensurate with the needs of the residential community and surrounding established communities and which does not threaten the viability of other local centres of the activity centre system;
- Providing a central "community green" in the mixed use centre, to provide a focal point to community interaction and a "heart" for the development;
- Providing for a wide variety of home office, home occupation and residential support services, commensurate with existing and future residents' needs;
- Providing for a high level of residential amenity across the range of dwelling types;
- Providing for appropriate areas of both private and public open space, and promoting the landscaping of these areas to achieve a green and attractive residential environment and to contribute to the City wide landscape character themes;
- Contributing to a viable city-wide public open space network through the dedication of land to public ownership to accommodate outdoor active and passive recreation, environmental corridors, natural hazard management and

environmental management functions, including the provision of a limited range of buildings which provide community services and facilities;
- Deliver Theme 1 of the Greenheart Vision, the "Northern Hinterland Corridor", which is an east – west open space link through the PVE site that connects the hinterland in the west of the city with the Green Heart parkland of the Carrara flood plain;
- Providing for the management of bushfire hazard to an acceptable level of risk for wildlife conservation and residential living.

The PVE urban community will be populated with a range of urban land use types such as low density residential, medium density residential, mixed use Village Centre community, active and passive recreation areas and conservation areas. The preliminary site concept visages:

- A residential population in the range of 8,000 to 10,000 persons;
- A theoretical estimate of 3,500 dwellings delivered in a wide range of housing products including apartments, attached housing and detached housing on lots ranging from 180 to 4,000m$^2$;
- A Village Centre with a mixture of residential, commercial, retail and open space uses including a centrally located "community green". The commercial and retail uses will be of a scale of a "local centre" with a maximum GFA of some 15,000m$^2$ to address local demand generated by the development and assist in the goal of a self-contained community that reduces reliance on the private car by both future residents and existing residents to the north and south of the subject site; and
- A broad continuous east/west corridor containing the designated Ecological Corridor Precinct which provides a central green open space spine that links the various transects of the PVE community and protects ecological features of the site.

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

a) Removal of 249 hectares of remnant vegetation (95% of which is Least Concern)
b) Removal of Koala food trees
c) Earthworks linked to creating grades to support roads, new allotments and drainage patterns
d) New and expanding infrastructure to support the creation of residential, commercial, town centre, business, industrial and open space uses
e) Establishment of hard stand areas on former rural land
f) Expansion of surrounding land uses by increasing the population by 8,000 to 10,000, which will increase the number of domestic pets and potential exotic garden plant species

Refer to **Attachment 1** for the proposed PVE layout submitted for Preliminary Approval (refer to Response 2.4).

**2.2 Alternatives to taking the proposed action**

**Response 2.2**
Not applicable. Refer to Response at 1.9.

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

**Response 2.3**
Not applicable. Refer to Responses at 1.9 & 1.10.

**2.4 Context, planning framework and state/local government requirements**

**Response 2.4**

**Context**

The *South East Queensland Regional Plan 2005-2026* places the site within the "Urban Footprint" and recognises it as a "Major Development Area" (MDA).

**Planning Framework**

The subject site is located within the **City of Gold Coast** Local Government Area, situated within South East Queensland. The project is subject to the provision of the *Gold Coast Planning Scheme 2003* as well as Queensland's *Sustainable Planning Act 2009 (Qld)*. An 'impact assessable' development application (which was subject to public notification) for a preliminary approval for material change of use and to vary the effect of the planning scheme in accordance with the *Pacific View Estate Development Code* has been assessed and approved, subject to conditions, under the *Sustainable Planning Act 2009*. As per the development approval issued by the **Minister for Infrastructure, Local Government and Planning**, future planning is to be guided by the approved site specific *Pacific View Estate Development Code*.

**Approvals**

Material Change of Use Preliminary Approval – MBN 15/45 (refer to **Attachment 2**).

**Specific Relevant Approval Conditions**

***Vegetation Management***

Condition 8: Operational works for vegetation

A development application for operational works (vegetation works), other than works that are exempt or self-assessable in the PVE Development Code, must be made to and approved by Council for any works proposing clearing or damage to Endangered Regional Ecosystems in the Ecological Corridor Precinct or the Green Space Precinct. The application must be accompanied by a copy of each of the following plans (and, where a plan has already been approved, that plan must be accompanied by the corresponding approval documentation (i.e. decision notice or letter of approval)):

(a) The approved MCU / ROL layout plan;
(b) The approved bushfire management plan as requested by conditions of this approval;
(c) Plans that clearly identify which vegetation is proposed to be removed and which vegetation is proposed to be retained.
(d) A Vegetation Clearing and Fauna Management Master Plan, as required by conditions of this approval; and
(e) A sediment and erosion control and construction management plan as required by conditions of this approval.

Condition 9: Vegetation clearing and fauna management master plan to be submitted for approval

Prepare and submit to the Planning Minister for approval, a Vegetation Clearing and Fauna Management Master Plan (VCFMMP) generally in accordance with the *Gold Coast Planning Scheme 2003* Vegetation Management Code for any works proposing clearing or damage to vegetation in the Ecological Corridor Precinct or the Green Space Precinct.

The VCFMMP must be prepared by a suitably qualified professional and include all the following information:

(a) The following particulars (including drawings) of the land:
(i) The real property description and street address;
(ii) A site analysis plan;
(iii) Scale and north point; and
(iv) Location of existing and approved buildings, structures, services and roads.
(b) The location (to be accurately mapped) of any vegetation on and adjacent to the site that is:
(i) a 'listed threatened species' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth); or
(ii) 'remnant vegetation' mapped under the *Vegetation Management Act 1999* (Qld).
(c) The following information in relation to proposed vegetation management:
(i) Particulars of how the vegetation is proposed to be damaged;
(ii) A statement of the reasons why the damage is necessary and any relevant factors associated with the purpose of the proposed damage;
(iii) Details of location, size and species of replacement vegetation to compensate for the loss of damaged vegetation;
(iv) Indicative locations and details of all proposed buildings, roads, bridge crossings, site access and services as generally in accordance with Pacific View Estate Development Code Overlay Map 2 – Conceptual Development Infrastructure Plan;

(v) Details of strategies, methods, procedures and standard drawings to be implemented to protect vegetation to be retained, relocated or pruned from damage, and how site works will be managed to ensure the same (e.g. adoption of Australian Standard for Protection of Trees on Development Sites – AS4970-2990);
(vi) Methods for the reuse of felled vegetation from the subject site;
(vii) Disposal methods for remaining debris after the above methods have been employed;
(viii) Treatment of surfaces adjacent to any vegetation to be retained on site (eg. grassing, bitumen paving and the like);
(ix) Details of any proposed rehabilitation to be undertaken; and
(x) For any vegetation to be retained adjacent to hardstand areas or structures, an appraisal prepared by a suitably qualified horticulturalist/arborist of the health and vigour of the subject vegetation including stage of growth, predicted gross morphology, crown framework and extent of root system.
(d) The following information in relation to proposed Fauna Management:
(i) Outline of species and habitat features and niches for listed Threatened Species under the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*;
(ii) Schedules of other fauna species threatened or otherwise as derived from the detailed site ecological reports;
(iii) Specific fauna management objectives for the Pacific View Estate;
(iv) Outline of the role and requirements of Fauna Spotter Relocators (as registered by the Department of Environment and Heritage Protection) for any clearing or civil works within the Ecological Corridor Precinct or Green Space Precinct;
(v) List of potential and likely impacts on fauna species;
(vi) Detailed procedures / specifications for the management of fauna during vegetation clearing and other earthworks;
(vii) The information contained in Schedule 8; and
(viii) Outline of roles, responsibilities, timing, monitoring and reporting outcomes for fauna management.

Condition 10: Ongoing Fauna Management
The applicant shall be responsible for the management and welfare of all wildlife on the subject site for the duration of all vegetation clearing activities undertaken. All handling of wildlife shall be in accordance with the approved Vegetation Clearing and Fauna Management Master Plan and by an approved Department of Environment and Heritage Protection (DEHP) Spotter/Catcher. Where wildlife is required to be removed from the subject site, or relocated into ecological open space onsite, and no Vegetation Clearing and Fauna Management Master Plan has been approved for the area, the applicant shall be responsible for notifying council, and employing the services of a DEHP registered Spotter/Catcher. This responsibility includes all costs associated with relocation of fauna at the developer's expense.

***Fauna Crossing and Fauna Fencing***
Condition 11: Fauna Friendly Road Design
Design all infrastructure that crosses the Ecological Corridor Precinct and the Green Space Precinct to include fauna friendly crossings.
Provisions for fauna movement, including, but not limited to, the design and construction of the fauna crossings must be in accordance with The Queensland Government Fauna Sensitive Road Design Manual Volume 2: Preferred Practices and the Queensland Government Koala Sensitive Design Guidelines, or equivalent and must ensure the following:
(a) Minimum fauna culvert sizes to suit full suite of species onsite;
(b) Must incorporate the use of fauna furniture;
(c) Must provide crossing opportunities for arboreal animals via the use of retained canopy cover, rope bridges, Glider poles, Koala poles;
(d) Demonstrate that the type and dimension of the fauna crossing ensures that during low flow events, one dry culvert exists to facilitate fauna movement;
(e) Where necessary, incorporate the installation of slow traffic areas and/or safe fauna crossing areas, including, but not limited to, appropriate fauna signage, maximum speeds of 50km/per hour, speed humps and fauna fencing; and
(f) Ensure that fauna crossing details are determined in consultation with the consulting hydraulic engineer.

Condition 12: Fauna Friendly Bushfire Trail Design
(a) The amended bushfire management plan must contain provisions for the safe and successful movement of fauna through the Strategic Fire Trail via the installation of fauna friendly crossing devices.
(b) The quantity, location and design of the fauna crossing devices are to be determined in consultation with a suitably qualified professional Environmental Consultant.

Condition 13: Fauna Fencing Strategy

(a) A Fauna Fencing Strategy must be prepared for any development in or directly adjacent to the Ecological Corridor Precinct and the Green Space Precinct including the construction of any road or fauna crossing.

(b) All fencing designs and principles must be in accordance with the Queensland Government Fauna Sensitive Road Design Manual Volume 2: Preferred Practices; and the QLD Government Koala-Sensitive Design Guidelines.

(c) The Fauna Fencing Strategy must include specific fencing details, dimension and locations and include provisions for the management of specific species.

***Rehabilitation***

Condition 14: Preparation of Rehabilitation Management Plan

Prepare a rehabilitation management plan for any disturbed, cleared or modified areas in the Ecological Corridor Precinct and the Green Space Precinct in accordance with:

(a) Appendix 1 (Guideline for the preparation of a Rehabilitation Plan) of Council's Open Space Management Guidelines: Guideline for the preparation of Reports and Plans associated with the dedication of Public Open Space (November 2007: Version 1);

(b) These conditions of this approval;

(c) The rehabilitation management plan must contain the following information (as applicable):

(i) Rehabilitation details of species specific habitat;

(ii) Incorporation of Glossy-Black Cockatoo feed tree species;

(iii) Details of proposed rehabilitation works including proposed species and planting palette;

(iv) Planting modules to demonstrate planting densities;

(v) All weeding works required, including a full list of known weeds on site and how each weed can be adequately managed;

(vi) The required ongoing management/maintenance regimes, including:

a) Plans indicating maintenance areas/zones;

b) Schedules of works including frequency and tasks;

c) Allocation of labour and resources to perform tasks;

d) Nomination of key performance indicators/criteria for monitoring purposes (e.g. All revegetation areas minimum 90% weed free, etc.);

e) Time allocated to perform various tasks (e.g. top up mulch, pruning, topdressing, etc.);

f) Defects liability for materials such as replacement of dead plant species of equivalent species and vigour;

g) Coordination of services such as irrigation repair or civil infrastructure maintenance (such as stormwater) that may impact on the landscape establishment and maintenance periods;

h) Management of bushfire hazard (where approved);

i) Management of domestic farm/feral animals (if appropriate);

j) Management of public access and/or restricted access areas;

k) Tree management procedures;

l) Management and maintenance regimes for sediment and erosion control devices, and irrigation;

m) Proposed future need for infrastructure, including public facilities; and

n) Management and control of declared plants and recognised environmental weeds.

Condition 15: Compliance Assessment of Rehabilitation Management Plan

A request for compliance assessment must be made in accordance with the *Sustainable Planning Act 2009* (or equivalent) for a compliance certificate approving the rehabilitation management plan, in accordance with the following:

(a) Matters or things against which the document must be assessed:

(i) The Gold Coast Planning Scheme 2003 Nature Conservation Constraint Code;

(ii) The Gold Coast Planning Scheme 2003 Natural Wetland Areas and Natural Waterways Constraint Code;

(iii) Appendix 1 (Guideline for the preparation of a Rehabilitation Plan) of Council's Open Space Management Guidelines: Guideline for the preparation of Reports and Plans associated with the dedication of Public Open Space (November 2007: Version 1); and

(iv) South East Queensland Ecological Restoration Framework.

(b) Compliance assessor is Gold Coast City Council.

The rehabilitation management plan is not an approved plan until a compliance certificate has been issued in respect of it.

Condition 16: Compliance certificate with future operational work development applications

A copy of the compliance certificate for the rehabilitation management plan must be provided with any future operational work development applications.

***Vehicle Crossings***

Condition 24: Vehicle Crossings

The location, design and quantity of vehicle and pedestrian crossings traversing the Ecological Corridor Precinct and Green Space Precinct must ensure the following:

(a) Crossing points are to be minimised and co-located with other infrastructure where possible and as required by other conditions of this approval;

(b) Follow recommendations from the report titled *Frog Survey Lots 28 and 57 Pacific View Farm*, prepared by Biosphere Environmental Consultants Pty Ltd and dated 2009;

(c) Road crossings of the defined watercourse are in the form of bridges which maintain natural waterway morphology of bed and banks in accordance with the Department of Transport and Main Roads' Fauna Sensitive Road Design Manual Volume 2: Preferred Practices, dated June 2010;

(d) Follow recommendations from approved Detailed Ecological Assessments and the Vegetation Clearing and Fauna Management Master Plan;

(e) The location of crossings are consistent with the Vegetation Clearing and Fauna Management Master Plan and reflect that the impacts on the following areas have first sought to be avoided wherever reasonably practicable, and where they can't be avoided, the extent of the impacts has been minimised through design :

(i) Threatened species habitat (flora and fauna), including Koala Habitat Trees, Glossy-black Cockatoo Feed Trees, Tusked Frog Habitat, foraging habitat for the Grey-headed Flying Fox, foraging, nesting and denning habitat for the Greater Glider and Powerful Owl foraging habitat;

(ii) Endangered Regional Ecosystems; and

(iii) Important ecological waterway features for amphibians and threatened flora.

(f) Minimise the area of disturbance; and

(g) Facilitate the movement of fauna.

***Hydraulics and Stormwater Management***

Condition 25: No worsening of hydraulic conditions

The development must be designed and constructed so as to result in:

(a) No increase in peak flow rates downstream from the site;

(b) No increase in flood levels external to the site; and

(c) No increase in duration of inundation external to the site that could cause real damage.

Condition 26: Alteration of overland flow paths

Overland flow paths on the site must not be altered in a way that inhibits or alters the characteristics of existing overland flows on other properties or that creates an increase in flood damage on other properties.

Condition 27: Hydraulic and stormwater management plan

The submitted hydraulic and stormwater management plan, being 'Pacific View Estate – Integrated Water Management Plan, Revision 2' prepared by BMT WBM, must be amended to address the following issues:

(a) Hydraulic and hydrologic analyses are to be carried out for all standard storm events up to and including the 100 year ARI storm.

(b) Include a table with catchment/sub-catchment ID, catchment area, fraction imperviousness, average slope, time of concentration, length of the flow path, etc, for both pre and post development cases. Utilise appropriate fraction imperviousness of all catchment/sub-catchments based on development category in accordance with Table 4.05.1 of QUDM (2008).

(c) Include pre and post developed topographic and roughness maps and model boundary conditions.

(d) To be consistent with Council's recent hydrologic studies for the City's catchments, initial loss and continuing loss in the hydrologic model for 10 year ARI and greater storm events are to be 0mm and 0.5mm respectively.

(e) Compare XP-RAFTS hydrologic model against peak flow rates estimated by Rational Method (QUDM (2008). Adopt the most conservative estimates of the peak flow rates to design stormwater mitigation measures.

(f) Demonstrate how the increase of peak stormwater runoff from the site due to its proposed development will be mitigated in case a local rainfall burst occurs in the lower part of the site (particularly downstream of electrical easement where no detention devices are proposed).

(g) Assess the rate of rise and time from commencement of rainfall to unacceptable flood hazard conditions in areas of public open space designed for public access, and demonstrate that adequate flood warning can be provided to effect evacuation and exclusion of public from such areas.

(h) Utilise appropriate roughness values (0.08-0.10) for the existing bushland/forest and proposed unmaintained open spaces and/or watercourses in accordance with Table C.3 of Brisbane City Council's Natural Channel Design Guidelines (BCC, 2003) for pre and post development conditions. Incorporate existing roads, bridges and other cross drainage structures in the TUFLOW model.
(i) Extend the model boundary further downstream (downstream of railway corridor) in order to identify any impacts on the railway corridor as a result of the proposal development. Modelling must demonstrate impacts and safe hydraulic function of all proposed road crossings of the defined watercourse, Hinkler Drive, Pacific Motorway, and the railway line.
(j) Undertake the impact assessment for low downstream water level (minor event flood levels of the Nerang River system). Also undertake sensitivity analyses considering various other tail water levels (10, 20, and 100 year ARI).
(k) Include impact maps for velocity and water level for all events. Also identify the flood levels and flood extents for the site on scaled maps for various flood/storm events.
(l) Include detailed drainage plan and the proposed drainage reserve widths (i.e. width to contain Q100 water level plus the required freeboard as per table 9.03.1 of QUDM) on a scaled plan, in accordance with Section 3.5.6 of Council Land Development Guidelines (2005) and Section 3.05 of QUDM (2008).
(m) Incorporate into the report, all catchments' runoff and pollutant generation parameters, and treatment node parameters utilised in the MUSIC model in tabular and/or graphical format. Also include a scaled MUSIC catchment plan identifying the location of treatment devices, direction of stormwater runoff, discharge points etc.
(n) Remove all rainwater tanks from stormwater treatment train and redesign the bio-retention basins to meet Council's water quality objectives.
(o) Demonstrate that each of the catchment/sub-catchment achieves Council's stormwater pollutants reduction targets. Should each of the catchment/sub-catchment fail to achieve the GCCC reduction targets, the applicant demonstrates that the whole catchment will achieves Council's stormwater pollutants reduction targets and each of the catchment/sub-catchment achieves more than 90% of Council's stormwater pollutant reduction targets.
(p) Include a staging plan for the entire site regarding construction of hydraulic and stormwater infrastructures particularly stormwater detention and treatment systems.
(q) Demonstrates the impact of extreme flood events (probable maximum flood - PMF) on the proposed development, proposed Hinkler Drive intersections and the Pacific Motorway
(r) Include date and version / issue of the report on the document control sheet.

Condition 28: Compliance assessment of amended hydraulic and stormwater management plan
The amended hydraulic and stormwater management plan is a document requiring compliance assessment under the *Sustainable Planning Act 2009*. A request for compliance assessment must be made in accordance with the *Sustainable Planning Act 2009* for a compliance certificate approving the document, in accordance with the following:
(a) Matters or things against which the document must be assessed:
(i) The planning scheme's Changes to Ground Level and Creation of New Waterbodies Specific Development Code;
(ii) The planning scheme's Works for Infrastructure Specific development Code;
(iii) Gold Coast Planning Scheme 2003 Policy 11 – Land Development Guidelines; and
(iv) Queensland Urban Drainage Manual.
(b) The compliance assessor is Gold Coast City Council
(c) The request for compliance assessment must be made prior to the earlier of any development applications for Material Change of Use, Reconfiguration of a Lot and Operational Works (works for infrastructures or change to ground level) for the site.

The amended hydraulic and stormwater management plan is not an approved plan until a compliance certificate has been issued in respect of it.

Condition 30: Stage/site specific stormwater management plan to be submitted with future applications
A detailed stormwater management plan for each stage must be submitted to Council for approval. The detailed stormwater management plan must be prepared in accordance with the approved and amended hydraulic and stormwater management plan (as required by conditions 28 and 29 of this approval) and the Gold Coast Planning Scheme 2003. The plan must include (but not limited to) the following:
a. Provide an individual scaled stormwater management layout plan for each of the contributing sub-catchments. The stormwater management layout plans must provide post development contours at 1m intervals and display all proposed piped stormwater drainage, overland flow paths, stormwater detention, stormwater treatment and inter allotment drainage requirements in accordance with the ultimate plan of development. The applicant shall note that Council requires that the development adopt an ARI 2 year capacity piped drainage system for residential stormwater drainage network with the balance of flow to ARI 100 years being conveyed safely within the road reserves;
b. The report shall include the stage-storage characteristics of each of the basins along with detailed drawings including plan view; long section and cross section views in terms of the Australian Height Datum; inlet and outlet

details; spillway details; scour protection measures; and overflow path details for flood events up to and including the ARI 100 years;

c. All hydraulic structures within the Ecological Corridor Precinct or Green Space Precinct shall be designed to be fauna friendly and shall be in the form of bridges which maintain natural waterway morphology of bed and banks;

d. For any cross drainage structure and for overland flow on the road reserve the report shall demonstrate compliance of QUDM's requirements for public safety (QUDM Section 7.04);

e. Provide engineering details (culvert configuration, invert levels, road level, etc.) and hydraulic information (upstream and downstream water levels, peak flow, and flow velocity for flood events up to and including ARI 100 years) for each culvert or hydraulic structure where roads are proposed to cross the Ecological Corridor Precinct demonstrating compliance with the requirements of QUDM (or relevant equivalent document at time of lodgement);

f. The proposed treatment train must incorporate the use of gross pollutant traps and/or trash racks. The detailed report shall identify the location of GPT's and / or trash racks required for the development;

g. If any devices (stormwater treatment or flood detention) are to be located within the electricity easement, the applicant must submit a written consent from the relevant authority to construct such devices within the easement. The report shall provide a detailed stormwater quality treatment train showing scaled extents of all stormwater devices;

h. Makes an assessment of the hazard category of all proposed retarding basins and undertakes a Failure Impact Assessment for all proposed retarding basins, including an assessment of the combined failure to contain impacts, in accordance with Guidelines for Failure Impact Assessment of Water Dams (DERM 2012) or equivalent later edition;

i. Demonstrate that the bridge over the tributary entering Lot 10 on SP229681from the south causes no real damage upstream of the allotment boundary;

j. Provide scaled diagrams (not generic drawings) of each individual Stormwater Quality Improvement Device (SQID) proposed for the development site. The diagrams shall include cross sections, long sections; plan views and the proposed landscaping within the devices;

k. Ensure that all stormwater treatment devices shall be located above the ARI 20 year flood inundation lines as identified in any endorsed Council hydraulic study or amended hydraulic and stormwater management plan for this site;

l. Submit a MUSIC model demonstrating achievement of the pollutant reduction targets of Table 13.1.B of Council's Land Development Guidelines Section 13;

m. Water Sensitive Urban Design, and in accordance with Council's MUSIC Modelling Guidelines (2006) (or relevant equivalent documents/standards at time of lodgement);

n. If bio-retention basins are used for flood detention purposes, the basins must be designed and constructed to ensure that the storage volume required for flood retardation is provided in addition to the volume required for water quality treatment purposes (i.e. modelling must assume that the extended detention volume is full at the onset of the design storm event). The depth of water from the combined stormwater treatment and flood mitigation purposes is not to exceed 1.2 and 1.5 metres for Q20 and Q100 events respectively; and

o. Submit all hydrologic, hydraulic and MUSIC models to Council on CD/DVD for checking and record purposes.

***Erosion and Sediment Control***

Condition 33: Erosion and Sediment Control

Submit a stage/site specific erosion and sediment control plan for each stage to Council for approval. The plan must be prepared in accordance with the Gold Coast Planning Scheme 2003 Sediment and Erosion Control Constraint Code and the *Best Practice Erosion & Sediment Control* (IECA Australasia, November 2008). The plan must:

(a) ensure that all reasonable and practicable measures are implemented to minimise short and long-term erosion and adverse effects of sediment transport;

(b) be prepared by a suitably qualified professional (Certified Practising Soil Scientist, Certified Practitioner in Erosion and Sediment Control or Registered Professional Engineer Queensland with experience & training in Erosion and Sediment Control);

(c) relate to each phase of works (including clearing, earthworks, civil construction, services installation and landscaping) and detail the type, location, sequence and timing of measures and action to effectively minimise erosion, manage flows and capture sediment;

(d) include the results of all soil investigations undertaken for the site and on which the ESCP is based;

(e) be consistent with current best practice standards to the extent that the standards are not inconsistent with the conditions of approval and taking into account all environmental constraints including erosion hazard, season, climate, soil and proximity to waterways; and

(f) include monitoring requirements, and clearly outline the need to adjust or maintain erosion and sediment control and site management practices to achieve the above requirements.

***Department of Natural Resources and Mines***

Condition 52: Environmental Offsets

An offset for the significant residual impact to endangered regional ecosystem is to be delivered pursuant to the requirements of the Queensland Environmental Offsets Framework, in particular Part 6 of the *Environmental Offsets Act 2014* by either:

(a) A proponent-driven offset; or
(b) A financial settlement offset; or
(c) A combination of a proponent-driven offset and a financial settlement offset.

The offset may be provided as a whole or on a staged basis related to the clearing of endangered regional ecosystem for the relevant stage of the Pacific View Estate development.

Condition 55: Endangered regional ecosystems

The vegetation clearing on the land must not cause land degradation in retained endangered regional ecosystems.

***Pacific View Estate Development Code***

Subject to final amendments including the designation of the Ecological Corridor Precinct to be devoid of development, Self-assessable, code-assessable and impact-assessable works are to be regulated by the approved Pacific View Estates Development Code. Relevant prescribed outcomes of the code include:

The Green Space Precinct will provide a corridor that is a distinctive feature of the development. The corridor includes a central ecological corridor. Adjacent green space shall be located to maximise buffering and mitigation of edge effects on the ecological corridor. The Green Space Precinct is to include land that is dedicated to:

- Ecological functions;
- Preservation of areas of high scenic amenity value;
- Integrated urban stormwater management;
- Provision of a range of unstructured outdoor sporting and recreation facilities for residents and visitors;
- Establishment and maintenance of effective open space areas between land uses;
- Provision of a very limited range of community facilities; and
- The achievement of a high standard of landscape design, and, where appropriate built form to complement the local landscape character and intended image of the PVE development.

The purpose of this precinct is to:

1. establish the extent of the ecologically significant area and provide an ecological corridor at least 100 metres wide and approximately 2945 metres long, that will run through the centre of the land. In addition, the ecological corridor will be buffered by a green space corridor at least 20 metres wide on both sides. The ecological corridor and green space corridor will contain remnant vegetation including endangered, of concern and least concern regional ecosystem, the centrally-located watercourse and habitat for the diversity of flora and fauna species known to occur on the land;
2. provide for the appropriate protection of land best suited for nature conservation, outdoor recreation, landscape preservation, environmental buffers and natural resource management and natural hazard management purposes. Up to 80% of the precinct will contribute to the land's ecological values as a vegetated area that supports wildlife habitat values;
3. provide for the appropriate protection of land with scenic amenity value;
4. provide for a multi-function open space area with a limited range of land uses and topographical forms that are compatible with its primary 'green space' function and ensure that the scale of the limited built form is consistent with the intended landscape character as a vegetated greenspace corridor;
5. provide for areas approximating or reverting to a natural condition due to topography, hydrology, or vegetation;
6. provide areas for unstructured recreation, utilising up to 20% of the precinct area, with a landscape consisting of paths, trail heads, bicycle paths, and a range of spaces suitable for active and passive recreational activities. Built form shall reflect a low impact shelter type building construction, all naturalistically disposed;
7. provide for infrastructure that is sensitive to and responsive to fauna movement;
8. provide for integrated urban stormwater management; and
9. along the western site boundary provide for appropriate bushfire management arrangements, including cleared firebreaks trails & areas.

**2.5 Environmental impact assessments under Commonwealth, state or territory legislation**

**Response 2.5**
Not applicable. Refer to Response at 1.11.

**2.6 Public consultation (including with Indigenous stakeholders)**

**Response 2.6**
As part of the development assessment process for the MCU Preliminary Approval, the proponents were required to engage in public consultation which involved the notification of the project to seek public comment. The proponent was found to satisfy all public notification requirements and was subsequently granted a Preliminary Approval (**Attachment 2**). Similar public consultation is expected to continue during the ongoing approvals process.

A report by **Converge Heritage Community** consultants as part of the Preliminary Approval process outlines the appropriate approach to the production of a *Cultural Heritage Management Plan* that engages with Indigenous Representatives regarding the development process for Pacific View Estate. Of note, a Cultural Heritage Database and Register search conducted by the **Department of Environment & Resource Managemen**t found no Aboriginal Cultural Heritage is currently recorded in the specific search area.

Of note, a *Cultural Heritage Management Agreement,* dated 2nd August 2015, has been signed off between the developer and **Jabree Limited** indigenous representatives.

**2.7 A staged development or component of a larger project**

**Response 2.7**
Not applicable. Refer to Responses at 1.12 & 1.13.

# 3 Description of environment & likely impacts

## 3.1 Matters of national environmental significance

### 3.1 (a) World Heritage Properties

**Description**

**NOT APPLICABLE** (refer to **Attachment 3** EPBCA Search Results).

**Nature and extent of likely impact**

**NOT APPLICABLE**

### 3.1 (b) National Heritage Places

**Description**

**NOT APPLICABLE** (refer to **Attachment 3**).

**Nature and extent of likely impact**

**NOT APPLICABLE**

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

**Description**

The site is within 13 kilometres of Moreton Bay, which is a Ramsar wetland.

**Nature and extent of likely impact**

No impacts on Moreton Bay are expected. The referral area drains off-site via the riparian corridor within the designated Ecological Corridor Precinct into low lying salt marsh areas adjoining a golf course and canal developments on the eastern side of the Pacific Motorway. From there, overland flow drains through residential tidal canals into the relatively developed Nerang River before ultimately draining to the Pacific Ocean through the Gold Coast Seaway located to the south of the Moreton Bay Marine Park. Overland flow originating at Pacific View Estate is therefore unlikely to reach the Moreton Bay Ramsar site. In addition all site works are to be conducted as per approved Hydraulics and Stormwater and Sediment and Erosion Control Plans as outlined in Response 2.4.

As such, it is considered highly unlikely that water flowing from the development site will have a significant impact on Moreton Bay.

### 3.1 (d) Listed threatened species and ecological communities

**Description**

**MNES Desktop Assessment**
The Protected Matters Search Tool (PMST) using a 2 kilometre radius around the site identified the following matters protected under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) as having potential to occur on site:

- 1 Threatened Ecological Community (TEC):
  - Lowland Rainforest of Subtropical Australia (critically endangered) – community may occur
- 19 listed threatened flora species
- 19 listed threatened fauna species

**Table 1** provides a summary of these search results, with the full search results provided in **Attachment 3**.

**Table 1: EPBC Act Protected Matters Search Tool Results**

| **Wetlands of International Importance** | | |
|---|---|---|
| Moreton Bay | | |
| **Threatened Ecological Communities** | | |
| Lowland Rainforest of Subtropical Australia | Critically Endangered | Community may occur in the area |
| **Threatened Species** | | |
| **Scientific Name** | **Common Name** | **Status** |
| **Birds** | | |
| *Anthochaera phrygia* | Regent Honeyeater [82338] | Endangered |
| *Botaurus poiciloptilus* | Australasian Bittern [1001] | Endangered |
| *Dasyornis brachypterus* | Eastern Bristlebird [533] | Endangered |
| *Erythrotriorchis radiatus* | Red Goshawk [942] | Vulnerable |
| *Geophaps scripta scripta* | Squatter Pigeon (southern) [64440] | Vulnerable |
| *Lathamus discolor* | Swift Parrot [744] | Endangered |
| *Poephila cincta cincta* | Black-throated Finch (southern) [64447] | Endangered |
| *Rostratula australis* | Australian Painted Snipe [77037] | Endangered |
| *Turnix melanogaster* | Black-breasted Button-quail [923] | Vulnerable |
| **Mammals** | | |
| *Chalinolobus dwyeri* | Large-eared Pied Bat, Large Pied Bat [183] | Vulnerable |
| *Dasyurus maculatus maculatus (SE mainland population)* | Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered |
| *Petrogale penicillata* | Brush-tailed rock-wallaby [225] | Vulnerable |
| *Phascolarctos cinereus* | Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Vulnerable |
| *Potorous tridactylus tridactylus* | Long-nosed Potoroo (SE mainland) [66645] | Vulnerable |
| *Pseudomys novaehollandiae* | New Holland Mouse, Pookila [96] | Vulnerable |
| *Pteropus poliocephalus* | Grey-headed Flying-fox [186] | Vulnerable |
| **Plants** | | |
| *Acacia attenuata* | [10690] | Vulnerable |
| *Allocasuarina defungens* | Dwarf Heath Casuarina [21924] | Endangered |

| | | |
|---|---|---|
| *Arthraxon hispidus* | Hairy-joint Grass [9338] | Vulnerable |
| *Baloghia marmorata* | Marbled Baloghia, Jointed Baloghia [8463] | Vulnerable |
| *Bosistoa selwynii* | Heart-leaved Bosistoa [13702] | Vulnerable |
| *Bosistoa transversa* | Three-leaved Bosistoa [16091] | Vulnerable |
| *Cryptocarya foetida* | Stinking Cryptocarya, Stinking Laurel [11976] | Vulnerable |
| *Cryptostylis hunteriana* | Leafless Tongue Orchid [19533] | Vulnerable |
| *Diploglottis campbellii* | Small-leaved Tamarind [21484] | Endangered |
| *Endiandra floydii* | Floyd's Walnut [52955] | Endangered |
| *Hicksbeachia pinnatifolia* | Monkey Nut, Bobble Nut, Red Bopple, Red Bopple Nut, Red Nut, Beef Nut, Red Apple Nut, Red Boppel Nut, Ivory Silky Oak [21189] | Vulnerable |
| *Lepidium peregrinum* | Wandering Pepper-cress [14035] | Endangered |
| *Macadamia integrifolia* | Macadamia Nut, Queensland Nut, Smooth-shelled Macadamia, Bush Nut. Nut Oak [7326] | Vulnerable |
| *Owenia cepiodora* | Onionwood, Bog Onion, Onion Cedar [11344] | Vulnerable |
| *Phaius australis* | Lesser Swamp-orchid [5872] | Endangered |
| *Phebalium distans* | Mt Berryman Phebalium [81869] | Critically Endangered |
| *Randia moorei* | Spiny Gardenia [10577] | Endangered |
| *Syzygium hogkinsoniae* | Smooth-bark Rose Apple, Red Lilly Pilly [3539] | Vulnerable |
| *Thesium australe* | Austral Toadflax, Toadflax [15202] | Vulnerable |
| **Reptiles** | | |
| *Coeranoscincus reticulatus* | Three-toed Snake-tooth Skink [59628] | Vulnerable |
| *Delma torquata* | Collared Delma [1656] | Vulnerable |
| *Furina dunmalli* | Dunmall's Snake [59254] | Vulnerable |

A review of specific habitat niches and distribution of these listed flora and fauna species and TECs using the SPRAT database, Queensland's Wildlife Online Search Tool, previous reporting in the local area and Queensland's Regional Ecosystem and Essential Habitat mapping ruled out the potential for most of these listed matters to occur. This was primarily due to the combined impacts from:

- The relatively disturbed and selectively cleared nature of the site;
- Lack of suitable niche habitat across the site, such as large undisturbed waterbodies, rocky outcrops and coastal habitats;
- Influences from surrounding rural-residential developments and expanding urban residential development within the local area;
- Fragmentation of the site adjoining the Pacific Highway;
- Evidence of dogs and exotic weeds throughout the site; and
- Disturbances caused by pastoral and native forest practices.

An assessment of likelihood of occurrence was conducted for threatened and migratory species listed in the PMST search results. This assessment was based on database and historical field report interrogations, presence or absence of suitable habitat, site features, results of the field surveys and professional judgement. Overall, the assessment identified the potential for Grey-headed Flying-fox (Vulnerable) and Koala (Vulnerable) to occur on-site due to the availability of potential habitat or food sources when eucalypts are flowering. No other listed species or TECs are considered likely to occur on-site (refer to the Likelihood of Occurrence Schedule contained in **Attachment 4 – Appendix F**).

**Assessment of Occurrence and Field Survey Results**

The site has been subject to numerous ecological assessments over preceding years (refer to **Attachment 4** – Ecological Assessment Report EPBC Act Referral). In 2009, **Biosphere Environmental Consultants** conducted and reported on frog specific surveys on-site and **Orogen** undertook ecological surveys and produced a preliminary Ecological Assessment Report. In 2010, **James Warren & Associates (JWA)** conducted ecological assessments across the site for the purpose of the Preliminary Approval for a MCU. These surveys were augmented in 2011 and 2012 by **JWA** in order to compile an additional report to respond to the Information Request as part of that Preliminary Approval. In April 2015, Senior Ecologists from **Saunders Havill Group** conducted field assessments across the site to identify any potential MNES fauna or flora and conduct an assessment of suitable habitats on the application allotments, with a focus on Koala and Koala habitat. In addition, a Senior Ecologist from **Saunders Havill Group** accompanied Compliance Officers from the **Department of the Environment** during surveys for evidence of Koala activity on-site in May 2015. This latter survey was related to matters associated with the ongoing lawful native forest activities which have been conducted on-site by a separate entity and are not considered part of this action.

Overall, the site was found to be relatively disturbed as a result of logging and pastoral practices, which have left the proposed development area constituted of mostly regrowth interspersed with mature tree specimens and a weedy understorey with cleared areas. The following fauna specific assessments are based on the results of these studies.

**Koala (*Phascolarctos cinereus*)**

Conservation Status

Under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act), Koala populations in Queensland, New South Wales and the Australian Capital Territory are listed as Vulnerable. Koalas are also listed as Vulnerable under Queensland's Nature Conservation Act 1992 (Qld) (NCA). The site is located within the modelled distribution of the Koala, within the 'coastal context,' as per the EPBC Act Referral Guidelines for the Vulnerable Koala.

Habitat

As described in the Koala SPRAT species profile, Koalas inhabit a wide range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by eucalypt species. Under the Koala Referral Guidelines, Koala habitat is defined as 'any forest or woodland containing species that are known Koala food trees or shrubland with emergent food trees. This can include remnant or non-remnant vegetation in natural, agricultural, urban and peri-urban environments.'

Distribution

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

Threats

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

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

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

Field Assessment

The preliminary ecological assessment undertaken by **Orogen** in 2009 recorded evidence of Koala activity on-site in the form of scats. A single Koala was observed while spotlighting on-site during the **JWA** assessment in 2010, and scats were located in the north and west of the site (refer **Attachment 4 – Appendix D**). On two occasions, two male Koalas were observed on-site during follow-up spotlight surveys by **JWA** in 2011 (**Attachment 4 – Appendix E**), who noted that female Koalas have not been confirmed on-site. Extensive habitat assessments conducted at the same time concluded that Koala Food Trees were present throughout the site, and that higher value Koala habitat was concentrated along waterways within the study area (**Attachment 4**).

In April 2015, Senior Ecologists from **Saunders Havill Group** conducted field surveys in accordance with EPBC Act Guidelines for the Koala across the site with weather conditions fine and sunny. The purpose of the survey was to determine the level of Koala usage across the site and to assess the availability of suitable habitat. The assessment involved the following methods:

- Spot Assessment Technique (SAT) developed by Phillips and Callaghan (2011)
- Habitat Assessments
- Opportunistic searches

SAT Survey Results

Overall, evidence of Koala usage in the form of scats varied from low to high and, despite intensive searches, no Koalas were observed. Ten (10) SAT surveys were conducted across the site, as shown by the Field Survey Effort presented in **Attachment 4 – Plan 1**. As provided below in **Table 3**, Koala usage in the form of scats was evenly distributed between low and high usage with activity focussed toward the upper reaches of the waterway corridor. These estimates are taken from the **Australian Koala Foundation Koala** activity level classification table using the East Coast (low) Activity Category (**Table 5**). The East Coast (low) Activity Category is applicable in habitats dominated by erosional soil landscapes considered of lower nutrient and water holding capacity (Steve Phillips, personal communication). Hydrosols are mapped by ASRIS across the site, however, these soils do not suit this landscape description which are more reflective of Land Zone 11 mapping indicating Rudosols and Tenosols (refer response 3.3(c) and **Attachment 4 – Section 3.6 & Figure 10**).

**Table 3: SAT Survey Results**

| SAT (Spot Assessment Technique) Assessment No. | Evidence of Koala Use (%) | Koala Use (High / Medium / Low) |
|---|---|---|
| 1 | 13.3 | High |
| 2 | 10.0 | Med |
| 3 | 10.0 | Med |
| 4 | 30.0 | High |
| 5 | 10.0 | Med |
| 6 | 16.6 | High |
| 7 | 6.6 | Low |
| 8 | 3.3 | Low |
| 9 | 16.6 | High |
| 10 | 6.6 | Low |

**Table 4: AKF Koala Activity Level Classification Table**

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

Habitat Assessment Results

Queensland's Koala Habitat Values Map (refer **Attachment 4 – Figure 8**), shows that the site contains a mixture of vegetation classified as mostly Medium and Low Value Bushland with patches of Medium and Low Value Rehabilitation Habitat. Regional Ecosystem Mapping rectified by Property Map of Assessable Vegetation (refer **Attachment 4 – Figures 5 & 6**) shows that the majority of the site is mapped as Least Concern RE 12.11.5 that is classified as 'essential habitat' for the Koala, with patches of Least Concern RE 12.11.3 and Endangered RE 12.11.23 adjoining gully lines of Of Concern RE 12.3.11 primarily in the central east of the site (refer to **Attachment 4** and Response 3.3(e) for Regional Ecosystem descriptions).

A total of eight (8) habitat assessments were conducted across the site, shown in the Field Survey Effort (see **Attachment 4 – Plan 1**). This involved recording the trees species within randomised 50 x 20 metre transects across the site. The purpose of the Habitat Assessment was to assess the species composition of site trees to determine the value of site habitat for Koalas, based on the **Australian Koala Foundation's** National Koala Tree Protection List for the Gold Coast City area, extracted below. Species listed in Bold are considered to be primary Koala Food Trees while the other listed species are Secondary Koala Food Trees.

| Local Government Area | Elevation* | Scientific Name and/or subspecies | Common Name | Soil and Location |
|---|---|---|---|---|
| GOLD COAST CITY | 2-100 | ***E. bancroftii*** | **Orange Gum** | infertile, sandy lowland sites |
| GOLD COAST CITY | 2-800 | *E. biturbinata* | Grey Gum | slopes on soils of medium fertility, annual rainfall >1000 mm |
| GOLD COAST CITY | 2-1000 | *E. crebra* | Narrow-leaved red ironbark, Ironbark, Narrow-leaved ironbark | well-drained shallower or sandy/sandy clay soils of medium fertility, >550 mm rainfall |
| GOLD COAST CITY | 2-1000 | *E. grandis* | Flooded Gum, Rose Gum | moist, fertile, well-drained, deep, loamy soils of alluvial or volcanic origin, 725-3500 mm |
| GOLD COAST CITY | 2-850 | *E. major* | Grey Gum | wet coastal forests on soils of low to medium fertility |
| GOLD COAST CITY | 2-1200 | *E. melliodora* | Yellow box, Honey box, Yellow ironbox | gentle slopes, foothills or on flats near watercourses. Soils include alluvials, loams and clays, frost and drought tolerant, 500-1400 mm |
| GOLD COAST CITY | 2-950 | ***E. microcorys*** | **Tallowwood** | on slopes in deeper moderate to fertile soils, well-drained but moist |
| GOLD COAST CITY | 2-1050 | *E. moluccana* | Coastal Grey Box, Grey box, Gum-topped box | loam soils of moderate to high fertility on coastal plains and ranges, tolerates saline soils |
| GOLD COAST CITY | 2-1000 | *E. planchoniana* | Bastard Tallowwood, Needlebark stringybark | dry sclerophyll forest or woodland on sandy soils or coastal sand |
| GOLD COAST CITY | 2-850 | *E. propinqua* | Small-fruited Grey Gum | wet coastal forest on soils of low to medium fertility. Drought and frost tolerant |
| GOLD COAST CITY | 2-1050 | *E. racemosa ssp. racemosa* | Scribbly Gum | shallow infertile sandy soil, coastal areas or over sandstone |
| GOLD COAST CITY | 2-700 | *E. resinifera ssp. hemilampra* | Red mahogany | sandy or well drained fertile soils, Drought and frost tolerant |
| GOLD COAST CITY | 2-200 | ***E. robusta*** | **Swamp Mahogany** | swampy, seasonally waterlogged soils, very moist fertile soils, heavy clay, sandy clay, alluvial sand soils |
| GOLD COAST CITY | 2-200 | *E. seeana* | Narrow-leaved Red Gum | poorly drained shallow soils, swampy sandy soils |
| GOLD COAST CITY | 2-700 | *E. siderophloia* | Ironbark, Broken Back Ironbark | wet forest on soils of moderate fertility |
| GOLD COAST CITY | 2-800 | ***E. tereticornis ssp. tereticornis*** | **Forest red gum, Blue gum, Red irongum** | alluvial soils, 600-2500 mm, tolerates salt-laden coastal winds, tolerates saline soils, medium-heavy clays, does not tolerate waterlogged soils |
| GOLD COAST CITY | 2-1100 | *E. tindaliae* | Tindal's Stringbark | poorer soils in high rainfall areas, often derived from granite |

**Bolded** entries indicate primary tree species

A summary of the habitat assessment results are shown in **Table 5**, however, the full results for each habitat assessment, including species lists, have been included in **Attachment 4**.

**Table 5: Habitat Assessment Results - Summary**

| Habitat Assessment No. | Percentage of Primary Species (%) | Percentage of Secondary Species (%) | Total Primary and Secondary Koala Food Trees (%) |
|---|---|---|---|
| 1 | 3.70 | 7.41 | 11.10 |
| 2 | 6.06 | 13.60 | 19.70 |
| 3 | 19.20 | 38.50 | 57.70 |
| 4 | 10.00 | 35.00 | 4.50 |
| 5 | 0.00 | 11.40 | 11.40 |
| 6 | 0.00 | 64.70 | 64.70 |
| 7 | 0.00 | 25.80 | 25.80 |
| 8 | 2.94 | 14.70 | 17.60 |

As shown by the results in **Table 5**, none of the habitat assessments found Primary Koala food tree species to comprise more than 50% of total species abundance. It is recognised that for Koalas to viably persist in a given landscape, the vegetated area should exceed 100 ha and contain more than 50% primary food tree species for the Koala (McAlpine et al. 2006). This suggests that the evidence of Koala usage on-site may reflect the remains or outliers of a local population.

Disturbance

Due to past agricultural practices and ongoing lawful native forest practices, the site contained a fairly high abundance of invasive weeds, including *Asparagus aethiopicus* (Asparagus Fern), *Asparagus plumosus* (Climbing Asparagus Fern), *Baccharis halimifolia* (Groundsel Bush), *Cinnamomum camphora* (Camphor Laurel), *Lantana camara* (Lantana), *Lantana montevidensis* (Creeping Lantana), *Rubus fruticosus* (Blackberry bush) and *Sphagneticola trilobata* (Singapore Daisy). Other disturbances included significant vegetation clearing for pastoral purposes, creation of vehicle tracks and bushfire management trails and cells, prevalence of dogs and impacts from surrounding land uses.

Outside of the major riparian corridor, the site was found to contain mostly poorer quality habitat unlikely to provide significant or unique habitat values to local Koalas. This is based on the relatively low abundance of primary Koala Food Trees and the prevalence of weeds within site vegetation.

Summary of Findings

The key findings from the field assessment are:

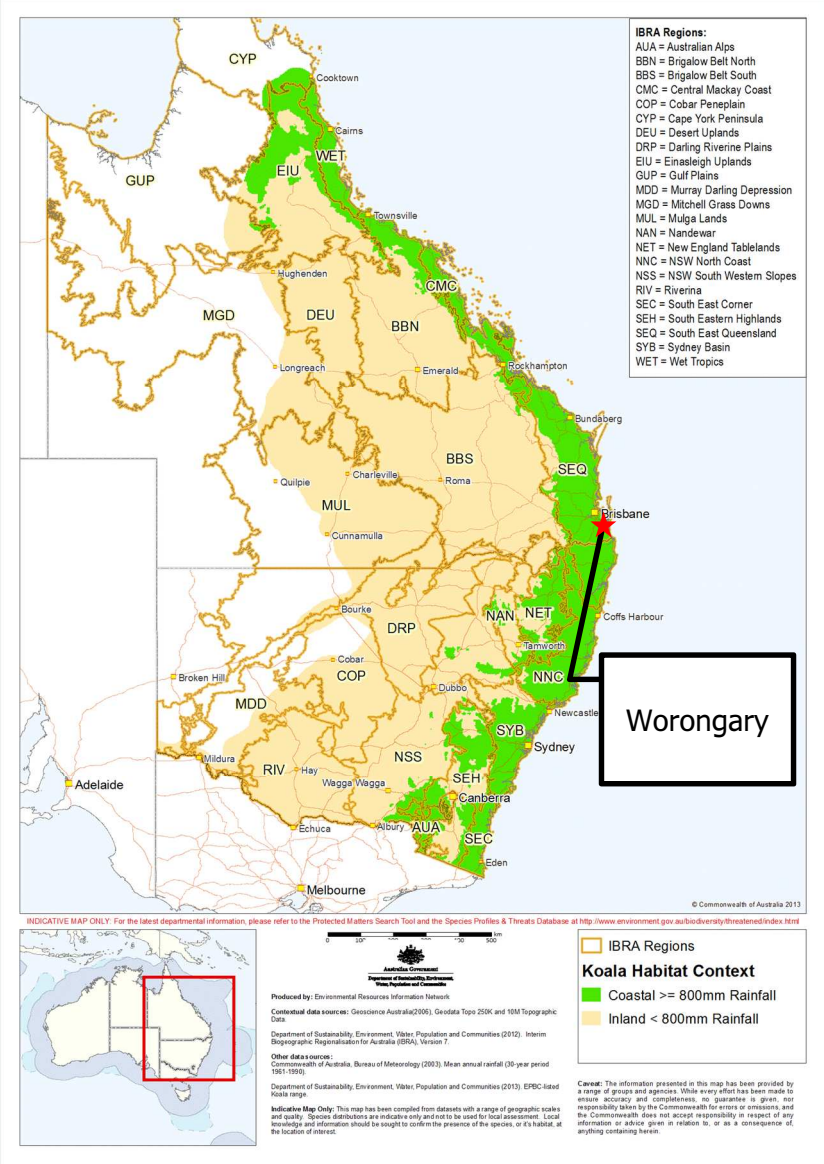
- Only male Koalas have been recorded on-site;
- No Koalas were observed on or surrounding the site in recent studies;
- Evidence of Koala usage remains present throughout the site;
- The site was mostly dominated by canopy species not listed by the AKF as Koala Habitat Trees;
- Overall, the site was significantly disturbed as a result of historical vegetation clearing and thinning, invasion of weeds, disturbance from livestock and impacts from surrounding land uses;
- Outside of the major riparian corridor, the site is not considered to provide high quality habitat to Koalas.

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

*What is the geographic context of the proposal site?*

A search of the EPBC Protected Matters Search Tool within a 2 km buffer lists the Koala as potentially located on-site (**Attachment 3**). As per the EPBC Act Referral Guidelines for the Vulnerable Koala, the site is therefore considered to fall within the modelled distribution of the Koala.

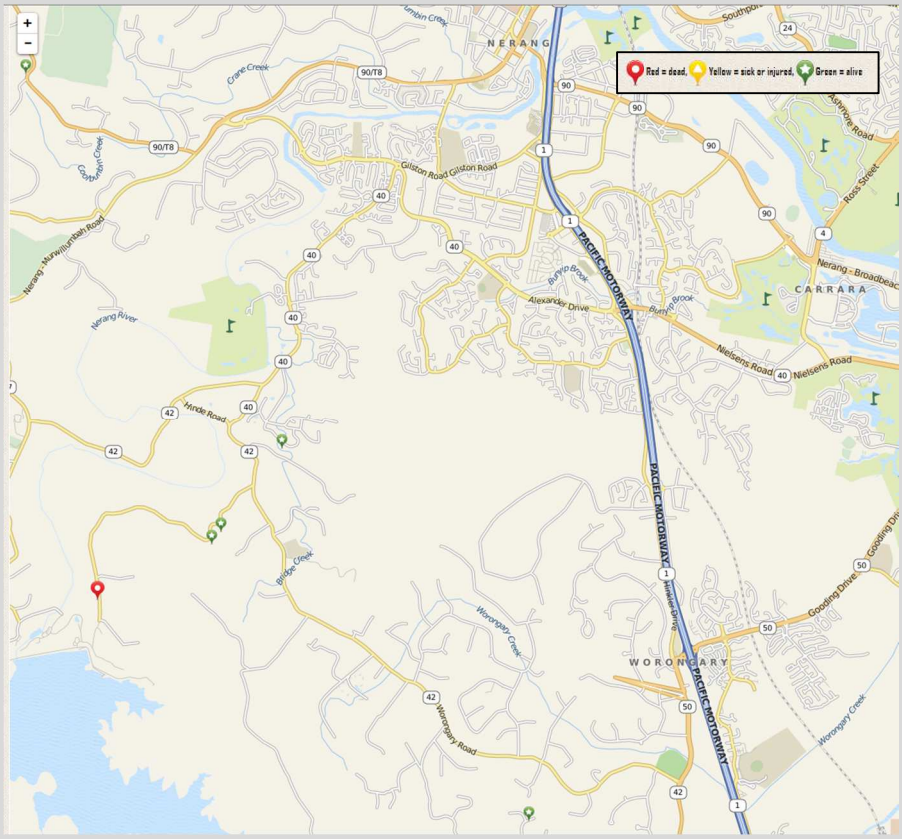
The Koala Referral Guidelines separate the geographical context into two zones, inland and coastal, based on the 800 mm per annum rainfall isohyet. The Pacific View Estate site is mapped within a "coastal" area as per the distribution map (below). Therefore the coastal habitat attributes contained in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



***Does the site contain habitat critical to the survival of the Koala?***
In accordance with the EPBC Act Referral Guidelines for the Vulnerable Koala, any habitat which receives a score of 5 or more using the Koala Habitat Assessment Tool is considered to be critical habitat. As shown by the Koala Habitat Assessments in **Table 6**, the Pacific View Estate site has been given a habitat score of 8.

**Table 6: Koala Habitat Assessment**

| Attribute | Score | Comment |
|---|---|---|
| Koala occurrence | +2 (high) | Desktop<br>A Protected Matters Search with a 2 km radius of the site (**Attachment 3**) suggests there is potential for Koala occurrence in this area. A Wildlife Online search report using a 2 km radius found 27 records of the Koala (**Attachment 4 - Appendix C**). The dates of these sightings are unknown. The Queensland Government Regulated Vegetation Supporting Map (Regional Ecosystem V8.0) identifies a Koala record approximately 500 m west of the site (**Attachment 4 – Figure 5**). Koalas are known to occur in the wider City of Gold Coast area. |
| | | On-ground<br>Koala activity was recorded on the site between 2009 and 2015, with the most recent Koala sighting being 2011.<br><br>**As there is evidence of one or more Koalas on-site within the last two years, the 'Koala Occurrence' attribute has been given a score of +2 (high).** |
| Vegetation composition | 2 (high) | Desktop<br>The Queensland Government Regulated Vegetation Supporting Map (Regional Ecosystem V8.0) identifies the study area as containing Category B Regulated Vegetation (**Attachment 4 – Figure 5**). Regional Ecosystems rectified on-ground via PMAV demonstrate that the majority of the site is mapped as Least Concern RE 12.11.5 that is classified as 'essential habitat' for the Koala, with patches of Least Concern RE 12.11.3 and Endangered RE 12.11.23 adjoining gully lines of Of Concern RE 12.3.11 primarily in the central east of the site (refer to **Attachment 4** and Response 3.3(e) for Regional Ecosystem descriptions). |
| | | On-ground<br>This site contains known Koala Food Trees within the remnant and regrowth woodland areas. Primary and Secondary Koala Food Trees as classified by the **Australian Koala Foundation** for the Gold Coast identified on-site include: Primary - *Eucalyptus tereticornis, E. seeana* and *E. microcorys;* Secondary - *E. propinqua, E. crebra and E siderophloia*.<br><br>**As the zone contains a woodland with 2 or more known koala food tree species, the 'Vegetation Composition' attribute is given a score of +2 (high).** |
| Habitat connectivity | +2 (high) | The application area is currently bounded to the north, east and south by urban residential development and the Pacific Highway (refer **Figures 1 & 2**). However, there are tracts of rural residential land to the west, north west and south west which, when combined with the area of the subject site (approximately 352 ha) constitute a contiguous landscape greater than 500 ha. |

| | | | |
|---|---|---|---|
| | | | Of note, it is anticipated that the Ecological Corridor Precinct that is to be retained as per Preliminary Approval conditions (refer Response 2.4) will maintain these connectivity values post development.<br><br>**The site is part of a contiguous habitat landscape ≥ 500 ha and has been designated with a 'habitat connectivity' score of +2 (high).** |
| | Key existing threats | +1 (medium) | Desktop<br>  <br><br>**AKF Koala Map**<br><br>  <br><br>**Koala Tracker Map** |

| | | | |
|---|---|---|---|
| | | | The **Australian Koala Foundation** Koala map (above) shows no Koala sightings in the immediate vicinity of the site, but three healthy Koalas have been recorded approximately 3 km south of the site in bushland adjoining Advancetown Lake. One other healthy Koala sightings has been recorded 4 km west-north-west of the site in western Nerang.<br><br>Koala Tracker is a crowd sourced National Koala sighting record. In the immediate vicinity, the Koala tracker map (above) shows one healthy Koala 1.3 km west of the site, and another two healthy Koalas 1.8 km to the south west. As for the AKF map, one healthy Koala has been recorded in west Nerang 4 km from the site, and there is also another recording of a healthy Koala 4 km to the south. Of note, a Koala death by vehicle strike has been recorded approximately 3km south west of the site on Gilston Road. |
| | | | **On-ground**<br>The increasing level of vehicle use in the surrounding area and the expansion of residential development bringing with it an increased number of dogs and cars present significant threats of injury and death to Koalas. As surrounding residential development expands and encompasses the site, these threats are likely to increase in scale and intensity.<br><br>There has been one Koala death recorded within 3 km of the site. While data showing the number of deaths or injuries to Koalas immediately adjacent to the site were unavailable, it can be inferred that the impacts of vehicle strike and dog attack are likely to cause death and injury to Koalas.<br><br>**As there is strong evidence of Koala mortality factors in the area and one death recorded within 3 km of the study site, the 'Key Existing Threats' attribute has been given a score of +1 (medium).** |
| | Recovery value | +1 (medium) | It is uncertain whether or not the vegetation on the subject site is likely to be important in achieving the Interim Recovery Objectives for the coastal context given its foundation on the ability to protect and conserve large connected areas of Koala habitat.<br><br>Koala Context Attributes listed under Interim Recovery Objectives in Table 1 of the Guidelines for coastal areas are to:<br><br>1) Protect and conserve large, connected areas of Koala habitat, particularly large connected areas that support koalas that are:<br>• of sufficient size to be genetically robust or operate as a viable sub-population, or;<br>• are free of disease or have a low incidence of disease, or;<br>• are breeding.<br>2) Maintain corridors and connective habitat that allow movement of koalas between large areas of habitat. |

| | | |
|---|---|---|
| | | Overall, the site retains little opportunity to achieve the interim recovery objectives for coastal areas, which is based primarily on maintaining large areas of bushland and connectivity. A contributing factor to the uncertainty is that the site falls within the Urban Footprint of the South East Queensland Regional Plan and, as such, along with its immediate surrounds, is slated for urban development and so not likely to achieve recovery objectives.<br><br>As stated above, the site has been partially cleared, is relatively disturbed, slated for development and increasingly fragmented from vegetation patches within the broader landscape. In addition, the regional Koala population is not considered to be genetically diverse from other SEQ Koala populations, they are not free of disease and no evidence of female Koalas or breeding has been found on the site.<br><br>Overall, the increasing fragmentation of the site to surrounding habitat areas and the lack of safe Koala movement opportunities make it uncertain that the retention of the proposed development area will aid the Interim Recovery Objectives for the coastal context being achieved. It is noted that the project will not cause further fragmentation of surrounding habitat as it is flanked to the east by the Pacific Motorway and the north and south by urban development.<br><br>**The 'Recovery Value' attribute has been given a score of +1 (medium).** |
| **Total** | **8** | **As the habitat score is above 4, this site is considered to provide Critical Habitat for the Koala.** |

***Will the action adversely affect habitat critical to the survival of the Koala?***
The above assessment concludes that the site contains areas of critical habitat. The Koala Referral Guidelines also require the adversity of impacts to be assessed. This process follows a "yes/no" flowchart as shown in the Guidelines (Figure 2), with responses provided below:

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

Yes, the critical habitat on-site received a score of 8.

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

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

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

The total site area is approximately 342 hectares. However, approximately 70 hectares of the development site (including 42.5 ha outside of the referral area) have been cleared of significant vegetation and habitat values and are not considered to constitute Koala habitat. In addition, approximately 53 hectares of critical Koala habitat is to be retained in the Ecological Corridor Precinct as per Preliminary Approval conditions and is responsible for the continued connectivity of the site. As such, the action therefore requires the clearing of approximately 219 hectares of critical Koala habitat (refer to **Plan 1 – Attachment 5**).

4. **Are you proposing to clear ≥20 hectares of habitat containing known koala food trees in an area with a habitat sore of ≥ 8?**

Yes, the action requires the clearing of approximately 219 hectares of vegetation that is critical habitat with a score of 8. As such, referral is recommended as per Figure 2 of the Guidelines and, in addition, assessment against 'Other Impacts' is required.

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

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

These impacts, as well as mitigation measures to address impacts, are discussed in **Table 7**.

**Table 7: Potential Impacts**

| Impact | Likelihood | Comments |
|---|---|---|
| **Dog attack** | Potential | The development of a residential estate is likely to increase the number of dogs entering the area. However, strong evidence of current dog activity was recorded on-site (**Attachment 4**). With appropriate governance and guidance to new home buyers, such as a community engagement program involving interpretive signs, social media, fact sheets and community presentations to raise awareness, minimise threats and encourage reporting of dog threats, it is not expected that dog attacks on Koalas will increase as a result of the development.<br><br>**No residual impacts are identified.** |
| **Vehicle Strike** | Potential | It is likely that vehicle activity through the residential area will increase as a result of the development. However, road design, signage and the imposition of a low vehicle speed will mitigate any potential risks to Koalas as per the following Preliminary Approval conditions:<br><br>Condition 12: Fauna Friendly Road Design<br>Condition 13: Fauna Friendly Bushfire Trail Design<br>Condition 14: Fauna Fencing Strategy<br>Condition 25 : Vehicle Crossings<br><br>Refer back to Response 2.4 for further clarification.<br><br>**No residual impacts are identified.** |
| **Spread of Disease** | Unlikely | Most of South East Queensland's Koala populations already have a high prevalence of *Chlamydia* infection and Koala Retrovirus. The symptoms of these diseases are often observed within Koala populations undergoing environmental stresses, such as overcrowding and poor nutrition. The project is unlikely to cause pressure on 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.<br><br>**No residual impacts are identified.** |

| | | |
|---|---|---|
| **Barriers to Dispersal** | Unlikely | While the proposal will restrict Koala movement through the site, it is arguable that this will not result in impacts to dispersal given the already existing barriers to movement surrounding the site, including the extensive and well maintained security fencing that bounds the entire site. As it currently stands, the site is immediately fragmented from other habitat patches due to the location of the Pacific Highway and associated major arterial roads. Further fragmentation will result from development planned within the surrounding area, including the further expansion of residential housing in the local area pursuant to the *South East Queensland Regional Plan*. As such, the additional impacts from potential barriers to dispersal caused by the development are considered to be minimal.<br><br>**No residual impacts are identified.** |
| **Hydrological change** | Potential | While the increase in hardstand areas across the site has the potential to affect its hydrology, management plans will be implemented to address the requirements of State and Local government guidelines to ensure that impacts are minimised. The following relevant conditions for part of the Preliminary Approval for the site:<br><br>Condition 26: No worsening of hydrological conditions<br>Condition 27: Alteration of Overland Flow Paths<br>Condition 28: Hydraulic and Stormwater Management Plans<br>Condition 29: Compliance assessment of the above<br>Condition 31: Stage Specific Stormwater Management Plans<br><br>Refer back to Response 2.4 for further clarification.<br><br>The rehabilitation of the major creek line will involve the extensive removal and suppression of weeds and weed regrowth and include the stabilisation of erosion prone areas with weed matting and mulch. It is anticipated that revegetation of the creek corridor will contribute additional Koala habitat trees to the prevailing landscape to enhance and restore connectivity and habitat values.<br><br>As such, the project is unlikely to result in hydrological changes that will impact other areas of critical habitat.<br><br>**No residual impacts are identified.** |

***Koala summary***

Targeted field surveys as per EPBC Act guidelines completed across the site resulted in no Koala observations on or surrounding the referral area. However, Koalas have been recorded on-site as recently as 2011 and previous and current Spot Assessment Technique transects found variable activity levels for the Koala. Evidence suggests that the site is frequented by up to two male Koalas. No evidence of a female Koala or a breeding Koala population was recorded on-site.

Habitat Assessments found that the site is dominated by species that are not identified as preferred Koala Food trees, however, generally lower proportions of Primary and Secondary Koala Food Trees were recorded. Approximately 272 hectares of Critical habitat on the site, including the proposed impact area and Ecological Corridor Precinct to be retained, were given a habitat assessment score of 8 under the Koala Referral Guidelines.

Analysis suggests the action is unlikely to interfere substantially with the recovery of Koala (**Table 7**), primarily due to the relatively disturbed nature of the site, its current relatively high level of fragmentation, encroaching development in line with planning intent and only historical evidence of relatively few male Koalas utilising the site.

Regardless, the removal of 219 hectares of critical Koala habitat as assessed under the Guidelines is considered to impose a significant impact on the Koala.

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

*Pteropus poliocephalus* (Grey-headed Flying-fox) requires foraging resources and roosting sites to persist. The species is known to use a wide variety of habitats including subtropical and temperate rainforests, tall sclerophyll forest and woodlands, heaths, swamps and also urban and agricultural areas where food trees have been cultivated. The species is highly adaptive with its diverse native diet, which it can supplement with introduced species. It is known to forage within a variety of habitat areas as each resource does not produce food throughout the entire year.

There are 5 **Department of Environment and Heritage Protection** (EHP) recognised Flying-fox roosting sites within 4 km of the subject site, and all are situated on the Nerang River or associated tributaries:

- Gilston Road, Nerang – approximately 1.5 km west
- Riverbank Drive, Nerang – approximately 2.0 km north west
- Winchester Drive, Nerang – approximately 2.4 km north west
- Bushmead Street, Nerang – approximately 3.9 km north
- Nerang-Broadbeach Road, Carrara – approximately 2.4 km east

According to the *Draft EPBC Act Policy Statement – camp management guidelines for the Grey-headed and Spectacled Flying-fox*, the closest Nationally Important Grey-headed Flying-Fox camp is located approximately 13 km west of the referral site in Canungra. Another Nationally recognised camp is located on Currumbin Creek approximately 17 km south east of the site. All of these roosting sites are within the recognised typical nightly commuting distance of flying-foxes (20km) form the subject site.

It is generally recognised that Grey-headed Flying-fox utilise mature food tree species as foraging resources when bearing fruit. The subject site is known to contain woodland areas that support food tree species suitable for Grey-headed Flying-fox foraging, and the species was recorded foraging on-site during ecological assessments by **JWA** (**Attachment 4**). Of note, there is no evidence of Flying-fox roosts or roosting habitat within the site boundary or immediate surrounds.

The *Draft EPBC Act Policy Statement – camp management guidelines for the Grey-headed and Spectacled Flying-fox* (Draft Guidelines) summarise the decision process in considering the likelihood of a significant impact on the Grey-headed flying-fox or Spectacled Flying-fox schematically (in Figure 1). The Draft Guidelines, mentioned above, are specifically for the assessment of impacts on Flying-fox camps. Given no roosting sites are located on-site or in the near vicinity, it is highly unlikely that the action will involve impacts on the Grey-headed Flying-fox according to the Draft Guidelines. However, the Draft Guidelines also state that:

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

As the site contains known foraging habitat for the Grey-headed Flying-fox, an assessment against *the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* was conducted (refer to **Table 8**) to ascertain whether or not the action could potentially impose a significant impact on the species.

**Table 8: Significant Impact Assessment –Grey-headed Flying-fox**

| Significant Impact Criteria | Description | Impact |
|---|---|---|
| **An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:** | | |
| 1. Lead to a long term decrease in the size of an | While the site does contain potential foraging habitat for the Grey-headed Flying-fox and the species was recorded foraging on-site, no roost camps were seen on or neigbouring the site. South East Queensland and | **No significant impact likely** |

| | | |
|---|---|---|
| important population of a species. | especially the Gold Coast have a permanent and abundant population of Grey-headed Flying-foxes and available habitat is relatively abundant and spread throughout the region given the high prevalence of eucalypts. Although Grey-headed Flying-fox are known to visit the site when foraging, their recognised nightly commuting distance spans up to 20 km and so includes a relatively vast area of suitable habitat within the surrounding landscape. The site is not considered to support an important population of the species and the proposed action is considered unlikely to lead to a long term decrease in the size of any local Grey-headed Flying-fox populations. | |
| 2. Reduce the area of occupancy of an important population. | No roost camps were observed across the site. While the proposed action will remove available foraging habitat, given the abundant availability of eucalypts in the surrounding landscape and the greater region, the development proposal is unlikely to have a significant impact on the area of occupancy of the species. | **No significant impact likely** |
| 3. Fragment an existing important population into two or more populations. | The SPRAT species profile outlines that, while there are spatially structured colonies of Grey-headed Flying-fox, there are no separate or distinct populations due to the constant genetic exchange and movement between camps throughout the species' geographic range. In addition, the species is considered highly mobile and capable of foraging over relatively vast distances. The proposed action is considered unlikely to fragment a population into two or more populations. | **No significant impact likely** |
| 4. Adversely affect habitat critical to the survival of a species. | While the proposed action results in the removal of utilised foraging habitat, this habitat is relatively disturbed by native forest and pastoral practices and subject to edge effects from surrounding development. Further, this habitat is not considered to be unique or of special value. The South East Queensland landscape provides abundant eucalypt and similar genera, which are available for Grey-headed Flying-fox foraging. Of note, the Ecological Corridor Precinct to be preserved within the proposal area will maintain the more optimal foraging resources post development. Given its relatively disturbed nature, potential foraging habitat to be cleared is not considered to be critical habitat for Grey-headed Flying-fox. | **No significant impact likely** |
| 5. Disrupt the breeding cycle of an important population. | The site surveys did not identify any evidence of breeding Grey-headed Flying-fox. Mating normally occurs within autumn, and females generally give birth in October, when they carry their young to feeding sites for four to five weeks after giving birth. As no roosting camps were observed on or near the site, the proposed action is unlikely to disrupt the breeding cycle of an important population. | **No significant impact likely** |
| 6. Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. | The habitat on site did not contain any special or unique values. Its removal is unlikely to have a significant impact on the availability of habitat throughout the broader landscape, given the vast quantity and availability of eucalypts in the surrounding area. | **No significant impact likely** |
| 7. Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat. | The proposed action is unlikely to result in the introduction of invasive species. | **No significant impact likely** |
| 8. Introduce disease that may cause the species to decline. | The project is unlikely to introduce disease into the area. | **No significant impact likely** |

| | | |
|---|---|---|
| 9. Interfere substantially with the recovery of the species. | Recovery of the species has specifically targeted broad scale culling. In addition, conservation efforts have led to the protection of known roosting sites and associated important habitat. The subject site has not been identified as an important habitat or roost site and the action is considered unlikely to interfere with the recovery of the species. | **No significant impact likely** |

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

**Nature and extent of likely impact**

**Koala**
The removal of 219 hectares of critical Koala habitat as assessed under the Guidelines is considered likely to impose a significant impact on the Koala. Of note, however, it is considered unlikely that the action will interfere substantially with the recovery of the Koala (refer **Table 7**), primarily due to the relatively disturbed nature of the site, its current relatively high level of fragmentation, encroaching development in line with planning intent and only historical evidence of two male Koalas and no breeding population utilising the site.

**Other MNES**
No significant impacts on the Grey-headed Flying-fox (refer **Table 8**), or any further listed species or communities, are considered likely as a result of the proposed action.

### 3.1 (e) Listed migratory species

**Description**
Of the fifteen (15) PMST listed migratory species with potential to utilise the site (**Attachment 3**), the following are considered potential visitors based on site habitat characteristics or have been recorded on-site (**Table 9**, refer to **Attachment 4 – Appendix F** for Likelihood of Occurrence analysis).

**Table 9: Listed Migratory Species of Note**

| Scientific Name | Common Name | Site Status |
|---|---|---|
| *Anseranas semipalmata* | Magpie Goose | Possible Visitor |
| *Apus pacificus* | Fork-tailed Swift | Possible Visitor |
| *Ardea ibis* | Cattle Egret | Recorded on-site |
| *Haliaeetus leucogaster* | White-bellied Sea Eagle | Possible Visitor |
| *Hirundapus caudacutus* | White Throated Needletail | Possible Visitor |
| *Merops ornatus* | Rainbow Bee-eater | Recorded on-site |
| *Monarcha melanopsis* | Black-faced Monarch | Possible Visitor |

Although the Cattle Egret and Rainbow Bee-eater were observed foraging on-site, no evidence of their nesting or the presence of significant populations were recorded.

**Nature and extent of likely impact**

The proposed action is not considered to have a significant impact on migratory species given the lack of important habitat or evidence of significant populations on-site.

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

**Description**

**NOT APPLICABLE** (refer to **Attachment 3**).

**Nature and extent of likely impact**

**NOT APPLICABLE**

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

**Description**

**NOT APPLICABLE** (refer to **Attachment 3**).

**Nature and extent of likely impact**

**NOT APPLICABLE**

**3.1 (h) The Great Barrier Reef Marine Park**

**Description**

**NOT APPLICABLE** (refer to **Attachment 3**).

**Nature and extent of likely impact**

**NOT APPLICABLE**

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

**Description**

**NOT APPLICABLE** (refer to **Attachment 3**).

**Nature and extent of likely impact**

**NOT APPLICABLE**

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

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

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

| | | | |
|---|---|---|---|
| **3.2 (b)** | **Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?** | **X** | No |
| | | | Yes (provide details below) |
| | **If yes, nature & extent of likely impact on the whole environment** | | |

| | | | |
|---|---|---|---|
| **3.2 (c)** | **Is the proposed action to be taken in a Commonwealth marine area?** | **X** | No |
| | | | Yes (provide details below) |
| | **If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))** | | |

| | | | |
|---|---|---|---|
| **3.2 (d)** | **Is the proposed action to be taken on Commonwealth land?** | **X** | No |
| | | | Yes (provide details below) |
| | **If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))** | | |

| | | | |
|---|---|---|---|
| **3.2 (e)** | **Is the proposed action to be taken in the Great Barrier Reef Marine Park?** | **X** | No |
| | | | Yes (provide details below) |
| | **If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))** | | |

## 3.3 Other important features of the environment

### 3.3 (a) Flora and fauna

**Response 3.3(a)**
The following provides a brief description of other flora and fauna values found on-site during desktop and field surveys:

**Flora**
The proposed development area is highly modified due to past and present agricultural practices, ongoing native forest practices and property maintenance including bushfire risk management (refer Response 3.3(g)). Exotic flora were prevalent across the site, especially in drainage depressions and along fire breaks. The following 156 flora species were recorded on-site during **JWA** and **SHG** site surveys (**Table 10**, refer to **Attachment 4** for further information):

**Table 10: Site Flora List**

| Scientific Name | Common Name | JWA 2010 | JWA 2012 | SHG |
|---|---|---|---|---|
| *Acacia concurrens* | Black Wattle | | | ✓ |
| *Acacia disparrima* | Hickory Wattle | ✓ | ✓ | ✓ |
| *Acacia falcata* | Sickle wattle | ✓ | ✓ | |
| *Acacia leiocalyx* | Early-flowering Black Wattle | ✓ | ✓ | ✓ |
| *Acacia maidenii* | Maiden's wattle | ✓ | ✓ | |
| *Acacia neriifolia* | Slender Wattle | | | ✓ |
| *Acmena smithii* | Lilly pilly | ✓ | ✓ | |
| *Adiantum atroviride* | Maidenhair fern | ✓ | ✓ | |
| *Adiantum hispidulum* | Rough maidenhair | ✓ | ✓ | |
| *Ageratina adenophora* | Crofton weed | ✓ | ✓ | |
| *Ageratina riparia* | Mistflower | ✓ | ✓ | |
| *Ageratum houstonianum* | Blue Billygoat Weed | | | ✓ |
| *Allocasuarina littoralis* | Black She Oak | ✓ | ✓ | ✓ |
| *Allocasuarina torulosa* | Forest Sheoak | ✓ | ✓ | ✓ |

| | | | | |
|---|---|---|---|---|
| *Alphitonia exxcelsa* | Red Ash | ✓ | ✓ | ✓ |
| *Alyxia ruscifolia* | Chain fruit | ✓ | ✓ | |
| *Andropogon virginicus* | Whiskey Grass | | | ✓ |
| *Araucaria cunninghamii* | Hoop Pine | | ✓ | ✓ |
| *Archontophoenix cunninghamiana* | Piccabeen Palm | | | ✓ |
| *Aristida latifolia* | Feathertop Wiregrass | | | ✓ |
| *Asclepias curassavica* | Redhead Cotton Bush | | | ✓ |
| *Asparagus aethiopicus* | Asparagus Fern | | | ✓ |
| *Asparagus plumosus* | Climbing Asparagus Fern | ✓ | ✓ | ✓ |
| *Astrotricha latifolia* | | ✓ | ✓ | |
| *Babingtonia similis* | Twiggy myrtle | ✓ | ✓ | |
| *Baccharis halimifolia* | Groundsel Bush | ✓ | ✓ | ✓ |
| *Bidens pilosa* | Cobblers Pegs | ✓ | ✓ | ✓ |
| *Breynia oblongifolia* | Coffee Bush | ✓ | ✓ | ✓ |
| *Bursaria spinosa* | Sweet Bursaria | ✓ | ✓ | ✓ |
| *Callistemon salignus* | Willow bottlebrush | ✓ | ✓ | |
| *Callistemon viminalis* | Weeping bottlebrush | ✓ | ✓ | |
| *Castanospermum australe* | Blackbean | | | ✓ |
| *Casuarina glauca* | Swamp she-oak | ✓ | ✓ | |
| *Cheilanthes distans* | Bristle Cloak Fern | | | ✓ |
| *Chloris gayana* | Rhodes Grass | ✓ | ✓ | ✓ |
| *Chrysocephalum apiculatum* | Yellow Buttons | ✓ | ✓ | ✓ |
| *Cinnamomum camphora* | Camphor Laurel | ✓ | ✓ | ✓ |
| *Citrus spp.* | Citrus | | | ✓ |
| *Clerodendrum floribundum* | Lolly Bush | ✓ | ✓ | ✓ |
| *Commersonia bartramia* | Brown Kurrajong | | | ✓ |
| *Conyza bonariensis* | Fleabane | | | ✓ |
| *Cordyline spp.* | Cordyline | | | ✓ |
| *Corymbia citriodora* | Spotted gum | ✓ | ✓ | ✓ |
| *Corymbia intermedia* | Pink Bloodwood | ✓ | ✓ | ✓ |
| *Corymbia torelliana* | cadaghi | ✓ | ✓ | |
| *Corymbia trachyphloia* | Brown Bloodwood | | | ✓ |
| *Cryptocarya glaucescens* | Jackwood | ✓ | ✓ | |
| *Cymbopogon refractus* | Barbwire Grass | ✓ | ✓ | ✓ |
| *Cynodon dactylon* | Couch grass | ✓ | ✓ | ✓ |
| *Cyperus papyrus* | Papyrus | | | |
| *Daviesia mimosoides* | Bitter Pea | ✓ | ✓ | ✓ |
| *Daviesia ulcifolia* | Gorse Bitter Pea | ✓ | ✓ | ✓ |
| *Denhamia pittosporoides* | Veiny denhamia | ✓ | ✓ | |
| *Desmodium intortum* | Green Desmodium | | | ✓ |
| *Dianella caerulea* | Blue Flax Lilly | ✓ | ✓ | ✓ |
| *Digitaria didactyla* | Queensland Couch | | | ✓ |
| *Dodonaea triquetra* | Forest hop bush | ✓ | ✓ | |
| *Dodonea viscosa* | Hop Bush | | | ✓ |
| *Erythrina crista-galli* | coral tree | | ✓ | |
| *Eucalyptus acmenoides* | White Mahogany | | | ✓ |
| *Eucalyptus carnea* | Broad Leaved White Mahogany | ✓ | ✓ | ✓ |

| | | | | |
|---|---|---|---|---|
| *Eucalyptus crebra* | Narrow-leaved Ironbark | ✓ | ✓ | ✓ |
| *Eucalyptus microcorys* | Tallowwood | ✓ | ✓ | ✓ |
| *Eucalyptus pilularis* | Blackbutt | ✓ | ✓ | ✓ |
| *Eucalyptus propinqua* | Small-fruited grey gum | ✓ | ✓ | ✓ |
| *Eucalyptus resinifera* | Red Mahogany | ✓ | ✓ | ✓ |
| *Eucalyptus seeana* | Narrow-leaved Red Gum | ✓ | ✓ | ✓ |
| *Eucalyptus siderophloia* | Northern Grey Ironbark | ✓ | ✓ | ✓ |
| *Eucalyptus tereticornis* | Forest Red Gum | ✓ | ✓ | ✓ |
| *Eucalyptus tindaliae* | Queensland white mahogany | ✓ | ✓ | |
| *Eucalyptus umbra* | Broad-leaved White Mahogany | | | ✓ |
| *Eupomatia laurina* | Bolwarra | ✓ | ✓ | ✓ |
| *Eustrephus latifolius* | Wombat Berry | ✓ | ✓ | ✓ |
| *Ficus coronata* | Sand Paper Fig | ✓ | ✓ | ✓ |
| *Ficus macrophylla* | Moreton Bay Fig | | | ✓ |
| *Flindersia australis* | Crow's Ash | | | ✓ |
| *Gahnia aspera* | Rough saw-sedge | ✓ | ✓ | ✓ |
| *Gahnia clarkei* | Tall Sawsedge | | | ✓ |
| *Glochidion ferdinandi* | Cheese Tree | ✓ | ✓ | ✓ |
| *Gomphocarpus physocarpus* | Balloon Cotton Bush | ✓ | ✓ | ✓ |
| *Goodenia rotundifolia* | Star Goodenia | ✓ | ✓ | ✓ |
| *Hakea florulenta* | Many flowered hakea | ✓ | ✓ | |
| *Hardenbergia violacea* | Native Sarsparilla | | | ✓ |
| *Hibbertia vestita* | | ✓ | ✓ | ✓ |
| *Hibiscus heterophyllus* | Native Rosella | ✓ | ✓ | |
| *Hovea acutifolia* | Hairy Bush Pea | ✓ | ✓ | ✓ |
| *Imperata cylindrica* | Blady Grass | ✓ | ✓ | ✓ |
| *Jacksonia scoparia* | Dogwood | ✓ | ✓ | ✓ |
| *Juncus usitatus* | Common Rush | | | ✓ |
| *Lantana camara* | Lantana | ✓ | ✓ | ✓ |
| *Lantana montividensis* | Creeping Lantana | ✓ | ✓ | ✓ |
| *Lepidosperma laterale* | Variable Sawsedge | ✓ | ✓ | ✓ |
| *Leptospermum polygalifolium* | Tantoon | ✓ | ✓ | ✓ |
| *Ligustrum lucidum* | large leaved privet | | ✓ | |
| *Ligustrum sinense* | small leaved privet | | ✓ | |
| *Lobelia purpurascens* | White Root | ✓ | ✓ | ✓ |
| *Lomandra longifolia* | Spiny head Matrush | | | ✓ |
| *Lomandra multiflora* | Many flowered matrush | ✓ | ✓ | ✓ |
| *Lomatia silaifolia* | Crinkle bush | ✓ | ✓ | ✓ |
| *Lophostemon confertus* | Brush Box | ✓ | ✓ | ✓ |
| *Lophostemon suaveolens* | Swamp Box | ✓ | ✓ | ✓ |
| *Macaranga tanarius* | Macaranga | | | ✓ |
| *Mangifera indica* | Mango | | ✓ | ✓ |
| *Megathyrsus maximus* | Guinea Grass | | | ✓ |
| *Melaleuca linariifolia* | Flax-leaved paperbark | ✓ | ✓ | |

| | | | | |
|---|---|---|---|---|
| *Melaleuca quinquenervia* | Broad-leaved Paperbark | ✓ | ✓ | ✓ |
| *Melaleuca saligna* | Willow Bottlebrush | | | ✓ |
| *Melauleuca viminalis* | Weeping Bottlebrush | ✓ | ✓ | ✓ |
| *Melicope elleryana* | Pink flowered doughwood | ✓ | ✓ | |
| *Melinis minutiflora* | Molasses grass | ✓ | ✓ | |
| *Melinis repens* | Red Natal Grass | | | ✓ |
| *Murraya paniculata* | Mock Orange | | | ✓ |
| *Myrsine variabilis* | Muttonwood | ✓ | ✓ | |
| *Neonotonia wightii* | Glycine | ✓ | ✓ | ✓ |
| *Nephrolepis cordifolia* | Fishbone fern | ✓ | ✓ | |
| *Notelaea longifolia* | Mock olive | ✓ | ✓ | |
| *Ochna serrulata* | Ochna | ✓ | ✓ | ✓ |
| *Onopordum acanthium* | Scotch Thistle | | | ✓ |
| *Pandorea sp. ipswich* | Wonga vine | ✓ | ✓ | |
| *Panicum maximum* | Guinea Grass | | | ✓ |
| *Parsonsia straminea* | Monkey Rope | ✓ | ✓ | ✓ |
| *Paspalum dilatatum* | Paspalum | ✓ | ✓ | ✓ |
| *Passiflora foetida* | Stinking Passionflower | | | ✓ |
| *Passiflora suberosa* | Corky/Small passionfruit | ✓ | ✓ | ✓ |
| *Persoonia stradbrokensis* | Coastal geebung | ✓ | ✓ | |
| *Philydrum lanuginosum* | Frogs Mouth | | | ✓ |
| *Platycerium bifurcatum* | Elkhorn | | | ✓ |
| *Platycerium superbum* | Staghorn | | | ✓ |
| *Pseuderanthemum variabile* | pastel flower | ✓ | ✓ | |
| *Psychotria loniceroides* | Hairy psychotria | ✓ | ✓ | |
| *Pteridium esculentum* | Bracken | ✓ | ✓ | |
| *Pultenaea villosa* | Hairy Pea Bush | | | ✓ |
| *Rubus fruticosus* | Blackberry Bush | | | ✓ |
| *Schefflera actinophylla* | Umbrella tree | | ✓ | ✓ |
| *Senna pendula* | Easter Cassia | ✓ | ✓ | ✓ |
| *Setaria* sp | Pigeon grass | ✓ | ✓ | |
| *Setaria sphacelata* | Setaria | | | ✓ |
| *Smilax australis* | Barbed Wire Vine | ✓ | ✓ | ✓ |
| *Solanum hispidum* | Giant Devils Fig | ✓ | ✓ | ✓ |
| *Solanum mauritianum* | Wild Tobacco | ✓ | ✓ | ✓ |
| *Solanum nigrum* | Blackberry Nightshade | ✓ | ✓ | ✓ |
| *Sorghum halapense* | Johnson Grass | ✓ | ✓ | ✓ |
| *Sphagneticola trilobata* | Singapore Daisy | | | ✓ |
| *Sporobolus pyramidalis* | Giant Rats Tail Grass | | | ✓ |
| *Syzygiumspp.* | Lilly Pilly | | | ✓ |
| *Taeniophyllum muelleri* | Minute orchid | ✓ | ✓ | |
| *Taraxacum officinale* | Dandelion | | | ✓ |
| *Themeda triandra* | Kangaroo Grass | ✓ | ✓ | ✓ |
| *Tradescantia fluminensis* | Wandering Jew | ✓ | ✓ | ✓ |
| *Trema tomentosa* | Poison Peach | ✓ | ✓ | ✓ |

| | | | | |
|---|---|---|---|---|
| *Tristaniopsis laurina* | Water gum | ✓ | ✓ | |
| *Typha spp.* | Bullrush | | | ✓ |
| *Waterhousia floribunda* | Weeping Lillypilly | | | ✓ |
| *Xanthium occidentale* | Noogoora Burr | | | ✓ |
| *Xanthorrhoea macronema* | bottle brush grass tree | ✓ | ✓ | |
| *Zieria smithii* | Sandfly Bush | ✓ | ✓ | ✓ |

The only flora species of note recorded on-site was the Minute Orchid (*Taeniophyllum muelleri*), which was de-listed from the EPBC Act on 14th December 2013. Of the 156 flora species recorded, nine (9) are legislatively declared weed species. A further thirty-four (34) species are weeds of lower significance, meaning forty-three (43) or approximately 28% of site flora species are introduced, which is reflective of a highly disturbed landscape (**Attachment 4**).

**Fauna**

Waterway banks, although stabilised by roughly strewn v-weirs, displayed erosion from utilisation by cattle for watering. Some significant tree hollows were observed in relatively large individual canopy tree specimens, however, these were not observed to be occupied by significant fauna species.

Dogs and foxes were observed utilising the site, and these species are considered generally detrimental to native fauna persistence.

The following 122 fauna species were recorded on-site and reported in the **JWA** and **SHG** assessment reports (**Table 11**, refer to **Attachment 4** for further information):

**Table 11: Site Fauna List**

| Scientific Name | Common Name | JWA 2012 | SHG |
|---|---|---|---|
| *Acanthiza pusilla* | brown thornbill | ✓ | |
| *Acanthorhynchus tenuirostris* | eastern spinebill | ✓ | |
| *Accipiter cirrhocephalus* | collared sparrowhawk | ✓ | |
| *Accipiter fasciatus* | brown goshawk | ✓ | |
| ***Accipiter novaehollandiae*** | **grey goshawk** | ✓ | |
| ***Adelotus brevis*** | **tusked frog** | ✓ | |
| *Aegotheles cristatus* | Australian owlet-nightjar | ✓ | |
| *Alectura lathami* | Australian brush turkey | ✓ | |
| *Alisterus scapularis* | Australian king-parrot | ✓ | |
| *Antechinus flavipes* | yellow-footed antechinus | ✓ | |
| *Aquila audax* | wedge-tailed eagle | ✓ | |
| *Ardea ibis* | Cattle Egret | ✓ | ✓ |
| *Austronomus australis* | white striped freetail bat | ✓ | |
| *Bos taurus* | cow | ✓ | ✓ |
| *Bufo marinus* | Cane Toad | ✓ | ✓ |
| *Cacatua galerita* | Sulphur-crested Cockatoo | ✓ | ✓ |
| *Cacatua galerita* | sulphur-crested cockatoo | ✓ | |
| *Cacatua pastinator* | western corella | ✓ | |
| *Cacatua sanguinea* | little corella | ✓ | |
| *Cacatua tenuirostris* | long-billed corella | ✓ | |
| *Cacomantis flabelliformis* | fan-tailed cuckoo | ✓ | |
| ***Calyptorhynchus lathami*** | **glossy black-cockatoo** | ✓ | |
| *Canis familiaris* | dog | ✓ | ✓ |
| *Chalcites lucidus* | shining bronze-cuckoo | ✓ | |
| *Chalinolobus gouldii* | Gould's wattled bat | ✓ | |

| | | | |
|---|---|---|---|
| *Chalinolobus nigrogriseus* | hoary wattled bat | ✓ | |
| *Chenonetta jubata* | Australian wood duck | ✓ | |
| *Colluricincla harmonica* | grey shrike-thrush | ✓ | |
| *Coracina novaehollandiae* | Black-faced Cuckoo-shrike | ✓ | ✓ |
| *Coracina papuensis* | white-bellied cuckoo-shrike | ✓ | |
| *Cormobates leucophaea* | White-throated Treecreeper | ✓ | ✓ |
| *Corvus orru* | Torresian Crow | ✓ | ✓ |
| *Craticus nigrogularis* | Pied Butcherbird | ✓ | ✓ |
| *Craticus tibicen* | Magpie | ✓ | ✓ |
| *Craticus torquatus* | Grey Butcherbird | ✓ | ✓ |
| *Crinia signifera* | common eastern froglet | ✓ | |
| *Cryptoblepharus virgatus* | Wall Skink | ✓ | ✓ |
| *Dacelo novaeguineae* | Laughing Kookaburra | ✓ | ✓ |
| *Daphoenositta chrysoptera* | varied sittella | ✓ | |
| *Dicaeum hirundinaceum* | Mistletoe Bird | ✓ | ✓ |
| *Dicrurus bracteatus* | spangled drongo | ✓ | |
| *Entomyzon cyanotis* | Blue-faced Honeyeater | ✓ | ✓ |
| *Eolophus roseicapillus* | Galah | ✓ | ✓ |
| *Eopsaltria australis* | eastern yellow robin | ✓ | |
| *Geopelia humeralis* | bar-shouldered dove | ✓ | |
| *Geopelia striata* | Peaceful Dove | ✓ | ✓ |
| *Gerygone albogularis* | white-throated gerygone | ✓ | |
| *Glossopsitta concinna* | musk lorikeet | ✓ | |
| *Glossopsitta pusilla* | little lorikeet | ✓ | |
| *Grallina cyanoleuca* | Magpie-lark | ✓ | ✓ |
| *Haliastur sphenurus* | Whistling Kite | ✓ | ✓ |
| *Hieraaetus morphnoides* | little eagle | ✓ | |
| *Hirundo neoxena* | Welcome Swallow | ✓ | ✓ |
| *Isoodon macrourus* | northern brown bandicoot | ✓ | |
| *Lampropholis delicata* | Common Garden Skin | ✓ | ✓ |
| *Lepus capensis* | brown hare | ✓ | |
| *Lichenostomus chrysops* | yellow-faced honeyeater | ✓ | |
| *Lichmera indistincta* | brown honeyeater | ✓ | |
| *Limnodynastes peronii* | striped marsh frog | ✓ | |
| *Limnodynastes terraereginae* | scarlet-thighed frog | ✓ | |
| *Litoria fallax* | dwarf tree frog | ✓ | |
| *Litoria latopalmata* | broad-palmed frog | ✓ | |
| *Litoria wilcoxi* | stony creek frog | ✓ | |
| *Macropodus giganteus* | Eastern Grey Kangaroo | ✓ | ✓ |
| *Macropygia amboinensis* | brown cuckoo-dove | ✓ | |
| *Malurus lamberti* | Variegated Fairy-wren | ✓ | ✓ |
| *Manorina melanocephala* | Noisy Miner | ✓ | ✓ |
| *Meliphaga lewinii* | Lewin's Honeyeater | ✓ | ✓ |
| *Melithreptus albogularis* | white-throated honeyeater | ✓ | |
| *Merops ornatus* | rainbow bee-eater | ✓ | |
| *Miniopterus australis* | little bentwing bat | ✓ | |
| *Miniopterus oceanensis or Nyctophilus sp.* | unknown bat | ✓ | |

| | | | |
|---|---|---|---|
| *Miniopterus orianae oceanensis* | microbat species | ✓ | |
| *Mixophyes fasciolatus* | great barred frog | ✓ | |
| *Mormopterus ridei* | little north eastern freetail bat | ✓ | |
| *Mus musculus* | house mouse | ✓ | |
| *Myiagra inquieta* | restless flycatcher | ✓ | |
| *Myzomela sanguinolenta* | scarlet honeyeater | ✓ | |
| *Neochmia temporalis* | Red-browed Finch | ✓ | ✓ |
| *Ninox novaeseelandiae* | southern boobook | ✓ | |
| ***Ninox strenua*** | **powerful owl** | ✓ | |
| *Nyctophilus* species; *N. bifax, N. geoffroyi* or *N. goudlii* | unknown bat | ✓ | |
| *Ocyphaps lophotes* | Crested Pigeon | ✓ | ✓ |
| *Oriolus sagittatus* | olive-backed oriole | ✓ | |
| *Pachycephala pectoralis* | golden whistler | ✓ | |
| *Pachycephala rufiventris* | rufous whistler | ✓ | |
| *Pardalotus punctatus* | spotted pardalote | ✓ | ✓ |
| *Pardalotus striatus* | Striated Pardalote | | |
| *Pelecanus conspicillatus* | Australian pelican | ✓ | |
| *Petauroides breviceps* | sugar glider | ✓ | |
| *Petauroides volans* | greater glider | ✓ | |
| *Petrochelidon nigricans* | tree martin | ✓ | |
| *Petroica rosea* | rose robin | ✓ | |
| *Phaps chalcoptera* | Common Bronzewing | ✓ | ✓ |
| *Phascolarctos cinereus* | koala | ✓ | |
| *Philemon corniculatus* | Noisy Friarbird | ✓ | ✓ |
| *Platycercus adscitus* | Pale-headed Rosella | ✓ | ✓ |
| *Platycercus eximius* | Eastern Rosella | ✓ | ✓ |
| *Pseudophryne raveni* | copper- backed brood frog | ✓ | |
| *Psophodes olivaceus* | eastern whipbird | ✓ | |
| *Pteropus alecto* | black flying fox | ✓ | |
| *Pteropus poliocephalus* | grey headed flying fox | ✓ | |
| *Rattus fuscipes* | bush rat | ✓ | |
| *Rattus rattus* | black rat | ✓ | |
| *Rhipidura albiscapa* | Grey Fantail | ✓ | ✓ |
| *Rhipidura leucophrys* | Williw Wagtail | ✓ | ✓ |
| *Saccolaimus flaviventris* | yellow bellied sheathtail bat | ✓ | |
| *Scotorepens greyii* | little broad–nosed bat | ✓ | |
| *Scotorepens, Scoteanax, or Falsistrellus sp.* | unknown bat | ✓ | |
| *Sericornis frontalis* | white-browed scrubwren | ✓ | |
| *Sphecotheres vieilloti* | Australian Figbird | ✓ | ✓ |
| *Strepera graculina* | Pied Currawong | ✓ | ✓ |
| *Streptopelia chinensis* | Spotted Dove | ✓ | ✓ |
| *Trichoglossus chlorolepidotus* | Scaly-breasted Loriket | ✓ | ✓ |
| *Trichoglossus haematodus* | Rainbow Lorikeet | ✓ | ✓ |
| *Trichosurus vulpecula* | common brushtail possum | ✓ | |
| *Turnix varius* | Painted button-quail | ✓ | |

| | | | |
|---|---|---|---|
| *Vanellus miles* | Masked Lapwing | ✓ | ✓ |
| *Varanus varius* | lace monitor | ✓ | |
| *Vespadelus pumilis* | eastern forest bat | ✓ | |
| *Vulpes vulpes* | red fox | ✓ | |
| ***Wallabia bicolor*** | **Swamp Wallaby** | ✓ | ✓ |
| *Zosterops lateralis* | Silvereye | ✓ | ✓ |

Five (5) of these species, excluding those reviewed earlier as relevant to the EPBC Act, are listed as threatened species at the State level (in **bold**). Of note to native fauna persistence, both the dog and fox were recorded as utilising the site.

### 3.3 (b) Hydrology, including water flows

**Response 3.3(b)**
A major waterway with tributaries is located within the assessment area originating from the ridgeline located along the western boundary and flowing to the east. Two (2) specific vegetation types are mapped as occurring over the length of the waterway. In the western portion of the site, the vegetation confirmed was Least Concern RE 12.11.3a and in the eastern portion the vegetation was consistent with Of Concern RE 12.3.11. The vegetation buffering the Of Concern portion of the waterway is mapped as Endangered RE 12.11.23. The vegetation observed was consistent with the RE described and contained within the T1 layer *Eucalyptus pilularis* (Blackbutt), *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus propinqua* (Grey Gum) and *Corymbia intermedia* (Pink Bloodwood).

The vegetation along the waterway is still relatively intact and forestry works have largely not been occurring in the vegetation buffering the waterway. In the Least Concern vegetation associated with the waterway in the western portion of the site, fifty-one (51) flora species were native and twenty-seven (27) were weed/introduced species. In the Endangered and Of Concern vegetation associated with the waterway in the eastern portion of the site, thirty-eight (38) flora species were native and twenty-three (23) were weed/introduced species (**Attachment 4**).

Detailed analysis by specialist Hydraulic Consultants **BMT WBM Pty Ltd** in support of the Development Application concluded:

*"The site is subject to flooding from both local catchment and regional flood (Nerang River) events. Urbanisation of the Site would, without appropriate management strategies, increase the peak flow rates from the Site during local catchment flooding events, but would not significantly influence regional flood events. Council's regional flooding mapping indicates that a small portion of the eastern end of the site would be inundated by backwater during the 100 year ARI (average recurrence interval) flood event. Therefore, it should be demonstrated at the detailed design phase that the development complies with the requirement in Council's Flood Affected Areas Code that there be no loss of floodplain storage in the 100 year ARI regional flood event.*

*Hydrologic and hydraulic modelling has been undertaken in order to characterise the local catchment flooding of the Site under existing and developed (conceptual) conditions and to demonstrate no increase in peak flow rate at the Site outlet. The hydrologic modelling demonstrated that the peak flow rates at the Site outlet would increase if the catchment were to be urbanised, but it was demonstrated using the hydrological model that a system of retarding basins in the upper part of the catchment would attenuate the developed case 100 year ARI flow such that there would be no increase in peak flow rate at the Site outlet.*

*A hydraulic model of the lower portion of the Site was developed to establish existing case flood levels and extents. This model also demonstrated that there would be no increase in peak discharge at the outlet, assuming no change in the waterways. However, changes in the waterway such as filling or road crossings will potentially impact on flood levels and peak flow rates. Therefore a hydraulic analysis of the developed case catchment will be required during the detailed design phase to demonstrate no significant impact on flood levels and peak flow rates external to the site".*

As mentioned earlier at Response 2.4, a series of management plans are required as part of the Preliminary Approval to mitigate the potential for increased water flows from the site post-development, as follows:

- Condition 26: No worsening of hydrological conditions
- Condition 27: Alteration of Overland Flow Paths

- Condition 28: Hydraulic and Stormwater Management Plans
- Condition 29: Compliance assessment of the above
- Condition 31: Stage Specific Stormwater Management Plans

Refer back to Response 2.4 for further clarification.

Given the extensive requirements of these approval conditions and management plans, it is considered unlikely that the action will have a detrimental effect on water flow receiving areas below the site.

### 3.3 (c) Soil and Vegetation characteristics

**Response 3.3(c)**
***Soils***
The site is mapped by the *Australian Soil Resource Information System* as Hydrosols, being relatively close to the coastline (**Attachment 4 – Figure 10**). However, site characteristics are more reflective of Land Zone mapping, with Land Zone 11 predominating and Land Zone 3 located within the major drainage line.

**Land Zone 3**

**Short description:** recent Quaternary alluvial systems

**General term:** alluvial river and creek flats

Recent Quaternary alluvial systems, including closed depressions, paleo-estuarine deposits currently under freshwater influence, inland lakes and associated wave built lunettes. Excludes colluvial deposits such as talus slopes and pediments. Includes a diverse range of soils, predominantly Vertosols and Sodosols; also with Dermosols, Kurosols, Chromosols, Kandosols, Tenosols, Rudosols and Hydrosols; and Organosols in high rainfall areas.

**Land Zone 11**

**Short description:** metamorphic rocks

**General term:** hills and lowlands on metamorphic rocks

Metamorphosed rocks, forming ranges, hills and lowlands. Primarily lower Permian and older sedimentary formations which are generally moderately to strongly deformed. Includes low- to high-grade and contact metamorphics such as phyllites, slates, gneisses of indeterminate origin and serpentinite, and interbedded volcanics. Soils are mainly shallow, gravelly Rudosols and Tenosols, with Sodosols and Chromosols on lower slopes and gently undulating areas. Soils are typically of low to moderate fertility.

(Extract from Department of Environment and Heritage Protection, 20 February 2013)

From site survey, Rudosols and/or Tenosols are considered to dominate the largely erosional landscape. These soils orders generally have a low fertility and low water-holding capacity. Rudosols and Tenosols are poorly developed but widespread and can be shallow and stony. The most extensive areas of these soils are inland from Cairns in Queensland.

Detailed analysis by specialist Geotechnical Consultants **Shaw Urquart Pty Ltd** in support of the Development Application concluded:

*"Subsurface conditions encountered in the seven boreholes drilled in the low-lying, eastern area of the site are broadly similar, and typically consist of 3m to 4.5m of interlayered gravelly, sandy, silty and clayey alluvial soils underlain by weathered metasandstone and metasiltstone. Gravelly layers, where present, were encountered immediately overlying weathered rock. From the drilling and test pits carried out to date, it appears that residual soils have been largely eroded from this area.*

*The subsurface conditions encountered in the six test pits excavated in the area of raised ground and steeper slopes in the central part of the site are broadly similar, and consist of a thin surface layer of sandy topsoil underlain by around 0.8m to 1.0m of residual, red brown to grey mottled, sandy clay/clayey sand grading downwards into extremely weathered metasandstone. The residual soils are underlain by highly to moderately weathered, medium to high strength metasandstone. It is expected that the rock strength will increase with depth and high to very high rock strength rock may be present in some areas.*

*Widespread outcrop of weathered rock (principally metasandstone and greywacke) is present on the base and banks of the creek channel. The rock can generally be described as highly to moderately weathered and medium to high strength. The rock also tends to be strongly jointed and fractured. A persistent discontinuity set was observed dipping to the east/north east at around 50˚ to 60˚.*

*Localised exposures of weathered metamorphic rocks (principally metasandstone, greywacke and metasiltstone) were observed along cuts in access tracks.*

*In general, there were no geotechnical or geological conditions observed on site which would preclude development of the site for residential purposes. No indications of existing landslide or areas of widespread slope instability were observed on the site during the course of the field work".*

***Vegetation***
The Subject site is mostly vegetated, with cleared pasture and farm work areas occurring largely in the east of the site. Recent native forest practices have resulted in disturbance to many of the vegetated areas and removal of mature trees. Four (4) Regional Ecosystems are located on the site as per the certified PMAV. These include RE 12.11.23 – Endangered, RE 12.3.11– Of Concern, RE 12.11.3 – Least Concern and RE 12.11.5 – Least Concern (refer to **Attachment 4 – Figure 6** and Response 3.3(e) for RE descriptions).

Five (5) distinct vegetation communities were identified on the site by **JWA** 2010. These are:

1. Open Forest to 35 m (*Eucalyptus pilularis* +/- *Eucalyptus tindaliae, Eucalyptus carnea, Corymbia intermedia* and *Eucalyptus resinifera*)
2. Open Forest to 30 m (*Eucalyptus tereticornis* +/- *Eucalyptus siderophloia, Corymbia intermedia, Lophostemon confertus* and *Melaleuca quinquenervia*).
3. Open Forest to 30 m (*Corymbia citriodora* +/- *Eucalyptus crebra, Corymbia intermedia, Lophostemon confertus, Eucalyptus seeana, Eucalyptus tereticornis* and *Eucalyptus carnea*)
4. Open Forest to 30 m (*Eucalyptus propinqua* +/- *Eucalyptus microcorys, Eucalyptus siderophloia, Eucalyptus tindaliae* and *Lophostemon confertus*).
5. The site also includes significant landscaped areas, dwellings and cleared areas (incorporating farm infrastructure, sheds, cattle yards, high voltage transmission lines and water pipelines).

Overall, site vegetation was found to be relatively disturbed as a result of logging and pastoral practices, which have left the proposed development area constituted of mostly regrowth interspersed with mature tree specimens and a weedy understorey with cleared areas.

### 3.3 (d) Outstanding natural features

**Response 3.3(d)**
No outstanding natural features have been identified across the subject site. In particular, the sites proximity to the Pacific Highway and surrounding encroaching urban development has rendered it fragmented and isolated from other habitat areas in the broader regional landscape. Moreton Bay lies approximately 13 kilometres to the north east but maintains minimal if any connectivity with the site given the Gold Coast Seaway drains to the Pacific Ocean between the two. Previous disturbances in the greater local area have significantly reduced the ecological value of the site and no outstanding natural features can be identified.

Of note, the major flow path on-site is to be preserved within the Ecological Corridor Precinct as per the Preliminary Approval (refer to Response 2.4 and **Attachment 2**).

### 3.3 (e) Remnant native vegetation

**Response 3.3(e)**
Four (4) Regional Ecosystems have been rectified at the property scale on the site as per the certified PMAV (**Attachment 4 – Figure 6**).

***Endangered RE 12.11.23***
*Eucalyptus pilularis* open forest. Other canopy species include *E. microcorys, Corymbia intermedia, Angophora woodsiana, E. tindaliae* and *E. carnea. E. racemosa* subsp. *racemosa* and *Corymbia trachyphloia* are prominent in the Venman area whilst *C. gummifera* and *E. resinifera* are prominent in the Nerang area. Occurs on low coastal Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics (Neranleigh-Fernvale beds). (BVG1M: 8b).

***Of Concern RE 12.3.11***
*Eucalyptus tereticornis* +/- *E. siderophloia* and *Corymbia intermedia* open forest to woodland. *Corymbia tessellaris, Lophostemon suaveolens* and *Melaleuca quinquenervia* frequently occur and often form a low tree layer. Other species present in scattered patches or low densities include *Angophora leiocarpa, E. exserta, E. grandis, C. trachyphloia, C. citriodora* subsp. *variegata, E. latisinensis, E. tindaliae, E. racemosa* and *Melaleuca sieberi. E. seeana* may be present south of Landsborough and Livistona decora may occur in scattered patches or low densities in the Glenbar SF and Wongi SF areas. Occurs on Quaternary alluvial plains and drainage lines along coastal lowlands. Rainfall usually exceeds 1000mm/y. (BVG1M: 16c). Vegetation communities in this regional ecosystem include: 12.3.11a: Open forest of *Eucalyptus tereticornis* and/or *E. siderophloia* with vine forest understorey. Other canopy species include *Corymbia intermedia, Araucaria cunninghamii* and *Agathis robusta*. Frequently occurring understorey species include *Flindersia spp., Lophostemon suaveolens, L. confertus, Cupaniopsis parvifolia, Acronychia* spp., *Alphitonia excelsa* and *Acacia disparrima* subsp. *disparrima*. Occurs on sub-coastal Quaternary alluvial plains. Rainfall usually exceeds 1000mm/y. (BVG1M: 16c).

***Least Concern RE 12.11.3***
*Eucalyptus siderophloia* and *E. propinqua* open forest +/- *E. microcorys, Lophostemon confertus, Corymbia intermedia, E. biturbinata, E. acmenoides, E. tereticornis, E. moluccana, Angophora leiocarpa, Syncarpia verecunda* with vine forest species and *E. grandis* or *E. saligna* in gullies. *Eucalyptus pilularis* and *E. tindaliae* sometimes present e.g. mid D'Aguilar Range, Conondale Range. Occurs predominantly on hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 9a). Vegetation communities in this regional ecosystem include: 12.11.3a: *Lophostemon confertus* +/- *Eucalyptus microcorys*, *E. carnea, E. propinqua, E. major, E. siderophloia* woodland. Occurs in gullies and exposed ridges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 9a). 12.11.3b: *Eucalyptus pilularis* tall open forest. Other frequently occurring species include *Eucalyptus microcorys, E. saligna, E. siderophloia, E. carnea, Corymbia intermedia* and E. propinqua. Occurs on higher altitude (>300m) subcoastal hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 8b).

***Least Concern RE 12.11.5***
Open forest complex in which spotted gum is a relatively common species. Canopy trees include *Corymbia citriodora* subsp. variegata, *Eucalyptus siderophloia* or *E. crebra* (sub coastal ranges), *E. major* and/or *E. longirostrata* and *E. acmenoides* or *E. portuensis* and/or *E. carnea* and/or *E. eugenioides*. Other species that may be present and abundant locally include *Corymbia henryi, C. intermedia, C. trachyphloia, Eucalyptus tereticornis, E. propinqua, E. biturbinata, E. moluccana, E. melliodora, E. fibrosa* subsp. *fibrosa* and *Angophora leiocarpa. Lophostemon confertus* often present in gullies and as a sub-canopy or understorey tree. Mixed understorey of grasses, shrubs and ferns. Occurs on hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 10b). Vegetation communities in this regional ecosystem include: 12.11.5a: *Eucalyptus tindaliae, E. carnea, Corymbia intermedia* woodland +/- E. *crebra, Corymbia citriodora* subsp. *variegata, Eucalyptus major, E. helidonica, Corymbia henryi, Angophora woodsiana, C. trachyphloia* (away from the coast) or E. *siderophloia, E. microcorys, E. racemosa* subsp. *racemosa, E. propinqua* (closer to the coast). Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 9g). 12.11.5e: *Corymbia citriodora* subsp. *variegata* woodland usually including *Eucalyptus siderophloia* or *E. crebra* (sub coastal ranges), *E. propinqua* and *E. acmenoides* or *E. carnea*. Other species that may be present and abundant locally include *Corymbia intermedia*, *C. trachyphloia* subsp. *trachyphloia, Eucalyptus tereticornis, E. microcorys, E. portuensis, E. helidonica, E. major, E. longirostrata, E. biturbinata, E. moluccana* and *Angophora leiocarpa. Lophostemon confertus* often present in gullies and as a sub-canopy or understorey tree. Mixed understorey of grasses, shrubs and ferns. Occurs on hills and ranges of Palaeozoic and older moderately to

strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 10b). 12.11.5h: Woodland to open forest of *Eucalyptus planchoniana, E. carnea* and *Angophora woodsiana* +/- *E. fibrosa* subsp. *fibrosa, E. racemosa* subsp. *racemosa, Corymbia intermedia, C. trachyphloia, E. tindaliae, E. helidonica* and *E. resinifera*. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 9h) 12.11.5j: *Eucalyptus racemosa* subsp. *racemosa* and/or *E. seeana* and *Corymbia intermedia* woodland. Other characteristic species include *E. siderophloia, Angophora leiocarpa, C. trachyphloia* subsp. *trachyphloia* and rarely *E. pilularis. Melaleuca quinquenervia* may be present and at times becomes locally co-dominant. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 9g) 12.11.5k: *Corymbia henryi* woodland +/- *Eucalyptus crebra, E. carnea, E. tindaliae, E. fibrosa* subsp. *fibrosa, E. siderophloia, C. citriodora* subsp. *variegata, Angophora leiocarpa, E. acmenoides, E. helidonica, E. propinqua, C. intermedia*. Includes patches of E. dura. Occurs on drier ridges and slopes in near coastal areas on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 10b).

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

**Response 3.3(f)**
The subject site gradient ranges from approximately 2 m AHD in the east to 165 m AHD in the northwest and 140 m AHD in the south west. The following summary of site topography was extracted from the Civil Engineering report by **Wood & Grieve Engineers** in support of the Development Application:

***LOT 11***
*Lot 11 currently slopes between a maximum height of approximately 27m AHD in the North, to approximately 2m AHD within the watercourse in the central East. The average grade of the land is approximately 6% with some steeper portions in the northern part which have an existing slope of approximately 18%. It is divided into two portions by an existing drainage line that services a stormwater catchment to the West. The lot is bound by existing industrial development to the East and South, a Queensland Rail Corridor to the North East and the Pacific Highway to the West.*

*Large existing culverts convey stormwater underneath the Pacific Highway from the Western catchment area, with an undefined channel in Lot 11 transferring this stormwater through the site and under the rail corridor. According to planning records, Lot 11 becomes inundated in the Gold Coast City Council Planning Scheme 100 year flood planning event to an approximate RL of 4.7m AHD.*

***LOT 10***
*Lot 10, on the western side of the Pacific Highway, currently slopes at an average of 3.5% from its northwest corner (at an elevation of 25m AHD) to the low point on its central eastern side (at an elevation of 2.5m AHD). There are portions of Lot 10 that have slopes up to 8% grade. It has a large relatively flat, low area through its middle portion which is as a result of the intersection of three existing watercourses, one entering from the west (from Lot 28), one entering from the existing Residential catchment to the north, and one entering from the existing Park Living Allotment catchment in the south. These three watercourses discharge underneath Hinkler Drive via five box culverts (3x 3.3mx2.7m and 2x 3.3mx3m).*

*There is an existing sewer easement that runs diagonally across the north east corner of Lot 10 that services the existing residential area to the north. Lot 10 in the past has been cleared and is currently utilised in most parts for pastoral grazing.*

***LOT 28***
*Lot 28 makes up the bulk of the Pacific View Estate land area and incorporates a north-south easement for a pair of trunk water mains and an over head transmission powerline. The lot slopes from a maximum elevation of 165m AHD on its north western boundary to approximately 8m AHD on its central eastern boundary at an average slope of approximately 10%. There are minor areas of Lot 28 that have existing slopes of up to 50%, though these are predominantly along the existing gully lines.*

*The landform of Lot 28 is characteristically broken up by a number of gully lines which all eventually discharge into one central watercourse that traverses the development site in a general west-east direction. It is these gully lines that form much of the steeper portions of the site. The western boundary of this lot basically defines the extent of the stormwater catchment for the remainder of the development areas.*

### 3.3 (g) Current state of the environment

**Response 3.3(g)**
The subject site is undulating with a combination of gullies and hills. Traversing the property are a 20 m wide cleared water pipeline easement in the east and a 60 m wide cleared powerline easement through the central portion (**Figure 2**). Areas to the east of the water pipeline generally consist of more gentle slopes, with steeper slopes along the dully lines in the west of the property.

A number of drainage lines and creeks occur across the site. The majority of the site is vegetated with eucalypt forest with the exception of several clearings, most notably in the north east of the site. The subject site is currently surrounded by tall, chain wire security fences with locked gates.

The site has most recently been used for pastoral purposes and currently supports a herd of beef cattle. Additionally, a State Government permitted native forest practice has been operating on the site resulting in the harvest of and disturbance to native vegetation. More specifically, selective clearing for native forest practices has resulted in disturbance and alteration of the vegetation structure and species composition on the site. However, some areas remain relatively undisturbed and continue to provide habitat for a range of fauna species, most notably within the primary watercourse and in the steepest areas of the site.

Ongoing pastoral and forestry activities have resulted in a significant level of disturbance on-site. This is evidenced in the high rate of weed incursion recorded, with roughly one third of the 156 flora species recorded regarded as weeds or exotic species, and nine of these requiring control or containment under legislative regulations (refer Response 3.3(a)). In addition, the site is utilised by both dogs and foxes suggesting, in its current condition, the area is not conducive to native fauna persistence.

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

**Response 3.3(h)**

**NOT APPLICABLE** (refer to **Attachment 3**).

### 3.3 (i) Indigenous heritage values

**Response 3.3(i)**
A report by **Converge Heritage Community Consultants** as part of the Preliminary Approval process outlines the appropriate approach to the production of a *Cultural Heritage Management Plan* that engages with Indigenous Representatives regarding the development process for Pacific View Estate. Of note, a Cultural Heritage Database and Register search conducted by the **Department of Environment & Resource Management** found no Aboriginal Cultural Heritage is currently recorded in the specific search area. A *Cultural Heritage Management Agreement* with **Jabree Limited** has since been entered into.

The following Indigenous Heritage summary for the site was extracted from the **Converge Heritage Community Consultants** report in support of the Preliminary Approval:

*"The Cultural Heritage Duty of Care Guidelines provides five categories which describe various circumstances that may be applicable to activities that potentially could harm Aboriginal cultural heritage. If categories one to three are relevant, compliance with the cultural heritage duty of care may already be in place. Category four is relevant to areas which have been previous subject to significant ground disturbance, which includes, by its definition, "the removal of native vegetation by disturbing root systems and exposing underlying soil" (Section 3 of the Guidelines), and may or may not require a cultural heritage agreement or CHMP to provide compliance with the cultural heritage duty of care. Category five applies to activities causing additional surface disturbance, and will require the development of a cultural heritage agreement or a CHMP.*

*A site inspection by Converge indicates that categories 4 and 5 of the Cultural Heritage Duty of Care Guidelines describe the majority of the project area, although category 3 would also be relevant in the eastern section that has previously been heavily*

*modified during construction of the Pacific Motorway. In such circumstances, a cultural heritage agreement or voluntary CHMP will be developed with the Aboriginal Parties for the area. It is the intention of the project to commence the development of this agreement or CHMP in the near future".*

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

**Response 3.3(j)**
The site is not located near other notable environmental features that are likely to be affected by the proposed action.

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

**Response 3.3(k)**
All allotments within the action area are Freehold.

### 3.3 (l) Existing land/marine uses of area

**Response 3.3(l)**
The site is currently utilised for pastoral production and lawful native forestry.

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

**Response 3.3(m)**
The proposed land use is for a master planned residential community as per the Preliminary Approval (**Attachment 2**).

# 4 Environmental outcomes

**Response 4**
It is considered that the proposed action will have, or is likely to have, an impact on a *Matter of National Environmental Significance*, being the removal of 219 hectares of critical habitat for the Koala, and so, is likely to be determined a Controlled Action. Should the **Department of the Environment** concur, it is anticipated that a suitable offset for this impact will be required for approval under the EPBC Act.

The impact area does not include the designated Ecological Corridor Precinct that is intended to preserve as part of the proposal 53 hectares of the highest quality critical habitat for the Koala. An in-depth assessment of the proposed Ecological Corridor Precinct, conducted by **James Warren & Associates** as part of the Information Request Response Report for the Preliminary Approval (**JWA** 2012), against relevant **State Government** Policies, Codes and Guidelines, including those pertaining to;

- Watercourses;
- Connectivity;
- Soil Erosion;
- Conserving Remnant Vegetation, and;
- Essential Habitat,

concluded:

*"The completed development will provide an ecological corridor at least 100m wide and approximately 2945m long that will run through the centre of the site. In addition, the ecological corridor will be buffered by a greenspace corridor at least 20m wide on both sides and in several locations the greenspace corridor will be considerably wider (up to 130 metres). In total, the ecological corridor and greenspace corridor will protect 45.68 hectares of mapped remnant vegetation containing Endangered, Of Concern and Least Concern regional ecosystems, the centrally located watercourse and habitat for the diversity of flora and fauna species known to occur on the site. This report finds that there will be no major loss of aquatic or terrestrial habitat associated with watercourses on the site. Also, the area of mapped remnant vegetation to be retained within the corridor will be of sufficient size and configured in a way that prevents the loss of biodiversity and maintains ecological processes on the site.*

*In summary, this response demonstrates that there will be no adverse impact on mapped wetlands, biodiversity and ecological processes associated with watercourses will be maintained, retained vegetation will be configured in a way that prevents the loss of biodiversity and ecological processes, sedimentation and erosion control measures will be in place to ensure land degradation does not occur, clearing will not lead to an increase in waterlogging or the expression of salinity in the landscape, endangered and of concern regional ecosystems will be conserved or maintained, essential habitat will be conserved or maintained, no threshold regional ecosystem types will be cleared and acid and/or metals associated with iron sulphide soils will not be released into the environment".*

The preservation and rehabilitation of the Ecological Corridor Precinct under the proposal is considered to provide a noteworthy environmental outcome for the *Matter of National Environmental Significance* being critical habitat for the vulnerable Koala.

# 5 Measures to avoid or reduce impacts

**Response 5**
A suite of design construction and management measures will be implemented to reduce the overall environmental impact of the project. Most of these are conditions of the Preliminary Approval and are discussed at length throughout this referral document, especially at Response 2.4 (and within **Attachment 2**). The following summarised relevant management measures designed to reduce environmental impact are to be incorporated under the proposal (refer to Response 2.4 for condition specifics):

**Condition 8: Operational work for vegetation**
A development application for operational works (vegetation works), other than works that are self-assessable in the Pacific View Estate Development Code must be made to and approved by Council for any works proposing clearing or damage to vegetation in the Ecological Corridor Precinct or the Green Space Precinct. The application must be accompanied by a copy of each of relevant plans (and, where a plan has already been approved, that plan must be accompanied by the corresponding approval documentation (i.e. decision notice or letter of approval)).

**Condition 9: Vegetation Clearing and Fauna Management Master Plan**
Prepare and submit to the Planning Minister for approval, a Vegetation Clearing and Fauna Management Master Plan (VCFMMP) generally in accordance with the *Gold Coast Planning Scheme 2003* Vegetation Management Code for any works proposing clearing or damage to vegetation in the Ecological Corridor Precinct or the Green Space Precinct.
The VCFMMP must be prepared by a suitably qualified professional and include all the following information:

- Real property description and site analysis plan
- Location of protected vegetation, vegetation to be retained and vegetation to be removed
- Details on vegetation types
- Location of significant vegetation (remnant vegetation, city wide significant species etc.)
- Particulars on how vegetation is proposed to be cleared damaged
- Methods for protecting or relocating plants
- Disposal methods
- Details of any proposed rehabilitation
- Fauna species surveyed as using the site
- A plan showing existing habitat areas
- Details of threats to existing fauna
- Clearing sequence plan
- Management and mitigation measures - e.g. temporary fauna exclusion fencing
- Fauna spotter role, contacts and certification
- Specific fauna management procedures for potential or known habitat trees

**Condition 10: Ongoing fauna management**
The applicant shall be responsible for the management and welfare of all wildlife on the subject site for the duration of all vegetation clearing activities undertaken. All handling of wildlife shall be in accordance with the approved Vegetation Clearing and Fauna Management Master Plan and by an approved Department of Environment and Heritage Protection (DEHP) Spotter/Catcher. Where wildlife is required to be removed from the subject site, or relocated into ecological open space onsite, and no Vegetation Clearing and Fauna Management Master Plan has been approved for the area, the applicant shall be responsible for notifying council, and employing the services of a DEHP registered Spotter/Catcher. This responsibility includes all costs associated with relocation of fauna at the developer's expense.

**Condition 11: Fauna Friendly Road Design**
Design all infrastructure that crosses the Ecological Corridor Precinct and the Green Space Precinct to include fauna friendly crossings. Provisions for fauna movement, including, but not limited to, the design and construction of the fauna crossings must be in accordance with The Queensland Government Fauna Sensitive Road Design Manual Volume 2: Preferred Practices and the Queensland Government Koala Sensitive Design Guidelines, or equivalent.

**Condition 12: Fauna Friendly Bushfire Trail Design**
The amended bushfire management plan must contain provisions for the safe and successful movement of fauna through the Strategic Fire Trail via the installation of fauna friendly crossing devices. The quantity, location and design of the fauna crossing devices are to be determined in consultation with a suitably qualified professional Environmental Consultant.

**Condition 13: Fauna Fencing Strategy**
A Fauna Fencing Strategy must be prepared for any development in or directly adjacent to the Ecological Corridor Precinct and the Green Space Precinct including the construction of any road or fauna crossing. All fencing designs and principles must be in accordance with the Queensland Government Fauna Sensitive Road Design Manual Volume 2: Preferred Practices; and the QLD Government Koala-Sensitive Design Guidelines. The Fauna Fencing Strategy must include specific fencing details, dimension and locations and include provisions for the management of specific species.

**Condition 14: Rehabilitation Management Plan**
Prepare a rehabilitation management plan for any disturbed, cleared or modified areas in the Ecological Corridor Precinct and the Green Space Precinct as per specific listed approval conditions.

**Condition 15: Compliance Assessment for Rehabilitation Management Plan**
A request for compliance assessment must be made in accordance with the *Sustainable Planning Act 2009* (or equivalent) for a compliance certificate approving the rehabilitation management plan.

**Condition 16: Compliance certificate with future operational work development applications**
A copy of the compliance certificate for the rehabilitation management plan must be provided with any future operational work development applications.

**Condition 24: Vehicle Crossings**
The location, design and quantity of vehicle and pedestrian crossings traversing the Ecological Corridor Precinct and Green Space Precinct must adhere to strict environmental conditions listed in the approval.

**Condition 25: No worsening of hydrological conditions**
The development must be designed and constructed so as to result in:
- No increase in peak flow rates downstream from the site;
- No increase in flood levels external to the site; and
- No increase in duration of inundation external to the site that could cause real damage.

**Condition 26: Alteration of Overland Flow Paths**
Overland flow paths on the site must not be altered in a way that inhibits or alters the characteristics of existing overland flows on other properties or that creates an increase in flood damage on other properties.

**Condition 27: Hydraulic and Stormwater Management Plans**
An hydraulic and stormwater management plan amended as per approval conditions is to be submitted for assessment. In essence, the HSMP outlines the approach to manage water flows so as to comply with Condition 25: No worsening of hydraulic conditions.

**Condition 28: Compliance assessment of the above**
The amended hydraulic and stormwater management plan is a document requiring compliance assessment under the *Sustainable Planning Act 2009*. A request for compliance assessment must be made in accordance with the *Sustainable Planning Act 2009* for a compliance certificate approving the document.

**Condition 30: Stage Specific Stormwater Management Plans**
A detailed stormwater management plan for each stage must be submitted to Council for approval. The detailed stormwater management plan must be prepared in accordance with the approved Development and amended hydraulic and stormwater management plan (as required by conditions 27 and 28) and the *Gold Coast Planning Scheme 2003* as well as specific listed approval conditions.

**Condition 33: Erosion and Sediment Control**
Submit a stage/site specific erosion and sediment control plan for each stage to Council for approval. The plan must be prepared in accordance with the *Gold Coast Planning Scheme 2003 Sediment and Erosion Control Constraint Code* and the *Best Practice Erosion & Sediment Control* (IECA Australasia, November 2008) as well as specific listed approval conditions.

**Condition 52: Environmental Offsets**
An offset for the significant residual impact to endangered regional ecosystem is to be delivered pursuant to the requirements of the Queensland Environmental Offsets Framework, in particular Part 6 of the *Environmental Offsets Act 2014*.

**Condition 53: Endangered Regional Ecosystems**
The vegetation clearing on the land must not cause land degradation in retained endangered regional ecosystems.

**Pacific View Estate Development Code**
Subject to final amendments including the designation of the Ecological Corridor Precinct to be devoid of development, Self-assessable, code-assessable and impact-assessable works are to be regulated by the approved Pacific View Estates Development Code. Relevant prescribed outcomes of the code include:

The Green Space Precinct will provide a corridor that is a distinctive feature of the development. The corridor includes a central ecological corridor. Adjacent green space shall be located to maximise buffering and mitigation of edge effects on the ecological corridor. The Green Space Precinct is to include land that is dedicated to:

- Ecological functions;
- Preservation of areas of high scenic amenity value;
- Integrated urban stormwater management;
- Provision of a range of unstructured outdoor sporting and recreation facilities for residents and visitors;
- Establishment and maintenance of effective open space areas between land uses;
- Provision of a very limited range of community facilities; and
- The achievement of a high standard of landscape design, and, where appropriate built form to complement the local landscape character and intended image of the PVE development.

The purpose of this precinct is to:

1. establish the extent of the ecologically significant area and provide an ecological corridor at least 100 metres wide and approximately 2945 metres long, that will run through the centre of the land. In addition, the ecological corridor will be buffered by a green space corridor at least 20 metres wide on both sides. The ecological corridor and green space corridor will contain remnant vegetation including endangered, of concern and least concern regional ecosystem, the centrally-located watercourse and habitat for the diversity of flora and fauna species known to occur on the land;
2. provide for the appropriate protection of land best suited for nature conservation, outdoor recreation, landscape preservation, environmental buffers and natural resource management and natural hazard management purposes. Up to 80% of the precinct will contribute to the land's ecological values as a vegetated area that supports wildlife habitat values;
3. provide for the appropriate protection of land with scenic amenity value;
4. provide for a multi-function open space area with a limited range of land uses and topographical forms that are compatible with its primary 'green space' function and ensure that the scale of the limited built form is consistent with the intended landscape character as a vegetated greenspace corridor;
5. provide for areas approximating or reverting to a natural condition due to topography, hydrology, or vegetation;
6. provide areas for unstructured recreation, utilising up to 20% of the precinct area, with a landscape consisting of paths, trail heads, bicycle paths, and a range of spaces suitable for active and passive recreational activities. Built form shall reflect a low impact shelter type building construction, all naturalistically disposed;
7. provide for infrastructure that is sensitive to and responsive to fauna movement;
8. provide for integrated urban stormwater management; and
9. along the western site boundary provide for appropriate bushfire management arrangements, including cleared firebreaks trails & areas.

# 6 Conclusion on likelihood of significant impacts

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

| | |
|---|---|
| | No, complete section 6.2 |
| X | Yes, complete section 6.3 |

## 6.2 Proposed action IS NOT a controlled action.

**Response 6.2**
**NOT APPLICABLE**

## 6.3 Proposed action IS a controlled action

| | **Matters likely to be impacted** |
|---|---|
| | World Heritage values (sections 12 and 15A) |
| | National Heritage places (sections 15B and 15C) |
| | Wetlands of international importance (sections 16 and 17B) |
| X | Listed threatened species and communities (sections 18 and 18A) |
| | Listed migratory species (sections 20 and 20A) |
| | Protection of the environment from nuclear actions (sections 21 and 22A) |
| | Commonwealth marine environment (sections 23 and 24A) |
| | Great Barrier Reef Marine Park (sections 24B and 24C) |
| | A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E) |
| | Protection of the environment from actions involving Commonwealth land (sections 26 and 27A) |
| | Protection of the environment from Commonwealth actions (section 28) |
| | Commonwealth Heritage places overseas (sections 27B and 27C) |

**Response 6.3**
The Pacific View Estate project has been subject to detailed consultation with Assessment Officers and Directors from the **Department of the Environment** prior to official lodgement. This has included the submission of plans, pre-lodgement template information and the holding of a pre-referral meeting at the **Department of the Environment** in Canberra. The project has been discussed regularly via communications between the proponent, the consultant team and the Queensland Assessment Team Director. The information provided by the Department in advance of referral has assisted in the final determination recommendation for this project as a "Controlled Action". The project has also been outlined as suitable for consideration of Outcomes Based Conditions with separate discussions held on this topic.

Assessment of site habitat as per the Referral Guidelines for the Vulnerable Koala returned a score of 8 for critical Koala habitat. Analysis of site habitat features revealed that, excluding previously cleared areas and the proposed Ecological Corridor Precinct to be preserved, the action is likely to result in the removal of 219 hectares of critical habitat for the Koala.

Further analysis as per the referral Guidelines suggests that the action is unlikely to interfere substantially with the recovery of the Koala (**Table 7**), primarily due to the relatively disturbed nature of the site, its current relatively high level of fragmentation, encroaching development in line with planning intent and only evidence of relatively few male Koalas

utilising the site. A raft of management measures to ensure that potential impacts on local fauna, including the Koala, are mitigated under the proposal have been imposed as conditions of the Preliminary Approval issued by the **State Government** (refer to Response 2.4 and **Attachment 2**).

Regardless, the removal of 219 hectares of critical Koala habitat (refer **Plan 1** critical habitat impact analysis) is considered to exceed the current thresholds in the Koala referral Guideline to be considered to have, or be likely to have, a significant impact on the Koala.

# 7 Environmental record of the responsible party

| | | Yes | No |
|---|---|---|---|
| **7.1** | **Does the party taking the action have a satisfactory record of responsible environmental management?**<br><br>**Provide details**<br><br>**Perron Developments Pty Ltd** is a highly experienced developer of residential communities, involving subdivision of greenfield sites. As summarised in item 7.4, it has referred numerous development projects under the EPBC Act, carefully designed so as to mitigate potential environmental impacts, each resulting in a not controlled action decision. | X | |
| **7.2** | **Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?**<br><br>**If yes, provide details** | | X |
| **7.3** | **If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?**<br><br>**If yes, provide details of environmental policy and planning framework**<br><br>**Perron Developments Pty Ltd**, while not having a formal environmental policy, is committed to complying with all relevant environmental and planning laws. | X | |
| **7.4** | **Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?**<br><br>**Provide name of proposal and EPBC reference number (if known)**<br><br>1. Urban development and associated infrastructure, Lot 4, Armadale Road, Banjup, WA – 2013/7049;<br>2. Residential and light industrial development, Lots 9520 and 81 Vasse Newton Estate, Vasse, WA – 2013/6932;<br>3. Residential subdivision, Baldivis Road, Sabrina Road and Zig Zag Road, Baldivis, WA – 2012/6613;<br>4. Residential subdivision, Lots 921 and 922 Baldivis Road and Lot 3 Key Close, Baldivis, WA – 2012/6601;<br>5. Residential subdivision, Lots 12, 36 and 38 Caporn Street, Wanneroo, WA – 2012/6409;<br>6. Residential subdivision, Lot 160 Landsdale Road, Landsdale, WA – 2012/6410;<br>7. Residential subdivision, Lots 156 and 157 Landsdale Road, Landsdale, WA – 2012/6407 | X | |

# 8 Information sources and attachments

(For the information provided above)

## 8.1 References


- **Australian Koala Foundation**, *The Spot Assessment Technique: determining the importance of Habitat Utilised by Koalas (Phascolarctos cinereus)*, available online
- https://www.savethekoala.com/sites/default/files/docs/conserve/The%20Spot%20Assessment%20Technique.pdf
- **Australian Koala Foundation** 2012, *National Koala Tree Protection List; Recommended Tree Species for Protection and Planting of Koala Habitat*.
- **Australian Soil Resource Information System**, http://www.asris.csiro.au/
- **BMT WBM** 2015, *Pacific View Estate Integrated Water Management Plan commissioned by* ***Pacific View Farm (Queensland) Pty Ltd.***
- **Converge Heritage Community Consultants** 2010, *The Pacific View Estate Project and Cultural Heritage Report commissioned by* ***Pacific View Farm (Queensland) Pty Ltd.***
- **Department of the Environment** 2015, *Protected Matters Search Report (19/08/2015 –* ***Attachment 3****)*.
- **James Warren & Associates** 2010, *Ecological Assessment commissioned by* ***Pacific View Farm (Queensland) Pty Ltd.***
- **James Warren & Associates** 2012, *Information Request Response commissioned by* ***Pacific View Farm (Queensland) Pty Ltd.***
- **McAlpine, Callaghan, Lunney, Bowen, Rhodes, Mitchell & Possingham** 2006, *Conserving Southeast Queensland Koalas: How much habitat is enough? In: Biodiversity Conference Proceedings (eds G. Siepen and D. jones), pp 11-17, University of Queensland, Gatton.*
- **Phillips & Callaghan** 2011, *The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus*. ***Australian Zoologist 35(3)****: 774-780.*
- **Saunders Havill Group** 2015, *Ecological Assessment Report EPBC Act Referral commissioned by* ***Perron Developments Pty Ltd*** *(****Attachment 4****).*
- **Shaw Urquart** 2010, *Preliminary Geotechnical Report Pacific View Estate commissioned by* ***Pacific View Farm (Queensland) Pty Ltd.***
- **Trad** 2015, *Ministerial Approval for Pacific View Estate (19/03/2015 –* ***Attachment 2****).*
- **Urban Planning Services** 2010, *Material Change of Use Application for Preliminary Approval to vary effect of GCCC Planning Scheme under Section 242 of the Sustainable Planning Act 2009 commissioned by* ***Pacific View Farm (Queensland) Pty Ltd.***
- **Wood & Grieve** 2010, *Pacific View Estate – Material Change of Use Application for a Preliminary Approval commissioned by* ***Pacific View Farm (Queensland) Pty Ltd.***

## 8.2 Reliability and date of information

**Response 8.2**
Refer to Response 8.1

## 8.3 Attachments

| | | ✓ attached | Title of attachment(s) |
|---|---|---|---|
| **You must attach** | figures, maps or aerial photographs showing the project locality (section 1) | ✓ | Figure 1 – Site Context<br>Figure 2 – Site Aerial<br>7737 Pacific View Estate Shapefile |
| | GIS file delineating the boundary of the referral area (section 1) | | |
| | figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3) | ✓ | Figure 1 – Site Context<br>Figure 2 – Site Aerial<br>Attachment 3 – EPBCA Search Results<br>Attachment 4 – Ecological Assessment Report<br>Attachment 5 – Plan 1 |
| **If relevant, attach** | copies of any state or local government approvals and consent conditions (section 2.5) | ✓ | Attachment 1 – Precinct Plan<br>Attachment 2 - Approval |
| | copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6) | ✓ | Attachment 4 – Appendices D & E |
| | copies of any flora and fauna investigations and surveys (section 3) | ✓ | Attachment 4 – Ecological Assessment Report<br>Attachment 4 – Appendices D & E |
| | technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4) | ✓ | Attachment 4 – Appendices D & E |
| | report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3) | - | - |

# 9 Contacts, signatures and declarations

## Project title: Pacific View Estate Development

### 9.1 Person proposing to take action

| | |
|---|---|
| 1. Name and Title: | Lyle William Kenny<br>Property Development Manager |
| 2. Organisation: | Perron Developments Pty Ltd |
| 3. EPBC Referral Number: | NA |
| 4: ACN / ABN: | ACN 000 230 446 |
| 5. Postal address | PO Box 6028, East Perth, WA 6892 |
| 6. Telephone: | (08) 9221 1555 |
| 7. Email: | calston@cragroup.net.au |
| 8. Name of designated proponent (if not the same person at item 1 above: | NA |
| 9. ACN/ABN of designated proponent (if not the same person named at item 1 above): | NA |
| I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am: | NA |
| If you are small business entity you must provide the Date/Income Year that you became a small business entity: | NA |
| I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations. Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made: | NA |

| | |
|---|---|
| Declaration | I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.<br>I understand that giving false or misleading information is a serious offence.<br>I agree to be the proponent for this action.<br>I declare that I am not taking the action on behalf of or for the benefit of any other person or entity. |
| Signature | Date 13/11/15. |

**9.2 Person preparing the referral information (if different from 8.1)**

| | |
|---|---|
| Name | Murray Saunders |
| Title | Director |
| Organisation | Saunders Havill Group Pty Ltd |
| ACN / ABN (if applicable) | 24 144 972 949 |
| Postal address | 9 Thompson Street, Bowen Hills, QLD 4006 |
| Telephone | (07) 3251 9415 |
| Email | murraysaunders@saundershavill.com |
| Declaration | I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.<br>I understand that giving false or misleading information is a serious offence. |
| Signature | Date 13/11/2015 |