Trend Ecology
ecological consultants

INSERT TITLE PAGE

Suitably Qualified Person

This proposal has been prepared by a suitably qualified person. I hold relevant environmental qualifications from recognised Australian institutions. These qualifications include a Bachelor of Science with Honours and a Masters of Environmental Management. I have also completed regional ecosystem training through James Cook University, Queensland. I have over ten years experience in conducting ecological surveys and research projects within Queensland, in which I have led surveys and accompanied other ecologists with over ten years experience. I have also previously had the Queensland Herbarium retain my collected plant specimens to be incorporated into their collection.

Trend Ecology is a registered scientific user with ethics approval, from the Department of Agriculture and Fisheries (DAF) Animal Ethics Committee (AEC), able to conduct flora and fauna surveys in Queensland. This environmental assessment was conducted under Scientific Purposes Permit number .....

[insert signature picture]

Anne Gables BSc (Hons) MEnvMan

EXECUTIVE SUMMARY

The report contains the results of an environmental assessment for The Queens residential development, located on Lot 1 SP789123 in Brisbane, Queensland. The proponent plans to construct 35 additional residential lots on their already planned and approved development site, in which a development application for 'reconfiguring a lot' is required, along with all supporting documentation including an environmental assessment report.

This environmental assessment involved a desktop review of environmental values and a field survey to ground-truth those values using best practice methodologies. This informed an assessment against the performance outcomes in the Natural Assets Overlay Code of the City Plan, and the State Code 16: Native Vegetation Clearing.

The results of the field survey identified that the state regional ecosystem mapping was fairly accurate for the site with only slight changes to the regional ecosystem boundaries. The regional ecosystems present within the development area (location of the proposed lots) were RE11.3.35 (Least Concern), RE11.3.12 (Least concern), and to the east, along a hillslope is RE11.9.12 (Least Concern). There are two strips of non-remnant vegetation to the north and east to south of the development area. These non-remnant areas are consistent with the state mapping.

No threatened flora and fauna were observed during the field survey. Potential habitat for some threatened species does exist due to the location, vegetation and soil types present, however it is expected that the use of this area by threatened species would be minimal to non-existent due to the low ecological function of the remnant vegetation present. Two special least concern flora, listed under the *Nature Conservation Act 1992* were recorded in the development area; *Xanthorrhoea johnsonii* and *Dendrobium canaliculatum.*

While the condition of the remnant vegetation is good, the ecological function associated with the remnant vegetation is low due to edge effects and ongoing disturbance from surrounding urban land uses. Results of the field survey indicated that the vegetation within the development area provides some habitat for common flora and fauna that are tolerant of disturbed environments but is unlikely to be their core habitat.

Based on these results, it has been determined that impacts from the proposed development will be low. Clearing has been kept to non-remnant areas where possible, and will only result in clearing of 4.4 hectares of remnant vegetation (least concern regional ecosystems). While this area of remnant vegetation cannot be avoided, impacts have been minimised by placing the proposed lots adjacent to already planned and approved infrastructure and not fragmenting the remnant vegetation. To ensure impacts are further reduced, a number of recommendations have been provided to guide construction crews prior to and during the clearing phase of the development, to reduce impacts to environmental values during the construction and operation phase of the project.

To compensate for clearing, the developers have set aside 14.33 hectares of native vegetation, of which most is remnant, for conservation to provide a nature refuge for native wildlife. This area acts as an ecological corridor throughout the development area, and adjoins a major ecological corridor approximately 400-500m to the west of the development area.

Assessment against the Natural Asset Overlay Code and State Code 16 has confirmed that the proposed development is compliant with all relevant performance outcomes.

Table of Contents

List of Tables

List of Figures

1. Introduction

1.1. Background

Trend Ecology has been engaged by [insert client name] to undertake an environmental assessment on their residential development site, named The Queens, located in Brisbane, Queensland (Map 1, Appendix 1).

[insert client name] is required to prepare a development application for 'reconfiguring a lot' to allow for an increase in the number of residential lots they have already approved at The Queens (Map 2, Appendix 1). The 35 new lots range from 1000m^2 to 1313 m^2 in size, and will be a part of Stage 9 the development (Map 3, Appendix 1).

The construction of the new lots will require the clearing of native vegetation that is mapped as Category B (remnant vegetation) on the regulated vegetation map (DNRM 2020; Map 4, Appendix 1) and is considered of high environmental importance under the Natural Assets Overlay Code in the City Plan (Map 5, Appendix 1). The certified Regional Ecosystem (RE) Mapping shows 'least concern' remnant vegetation within the proposed development area (DNRM 2020; Map 6, Appendix 1). The clearing of vegetation for the proposed development is not considered exempt clearing work and does not fall under an accepted development vegetation clearing code, hence a development application is required.

This environmental assessment report has been prepared to provide a response to the City Plan's Natural Asset Overlay Code and the State Code 16: Native Vegetation Clearing, and will accompany the Development Application as supporting documentation.

1.2. Development Plans

The Queens development is a large scale residential housing estate, located on Lot 1 SP789123 in Brisbane, Queensland. The Queens covers a total area of 110.8 hectares, most of which is already planned and approved as rural residential lots.

Much of The Queens residential development has been planned and approved, with the first few stages already under construction (Map 3, Appendix 1). The proponent now proposes to add an additional 35 new lots to the already planned development.

The proposed new lots (and associated infrastructure) cover an area of approximately 4.4 hectares. The area in which the proposed new lots are planned will be called the 'development area' within the rest of this report.

1.3. Site Description and Environmental Setting

The Queens is situated in the Plains subregion of the Southeast Queensland Bioregion. The region typically experiences monsoonal summers and dry winters. Average rainfall for the Brisbane region is 1,143mm per year, with most rain falling between November and April (BoM 2020).

One waterway, that is a stream order 2, runs through the development area. This waterway flows from south to north and runs directly into the Gorge River, approximately 400m downstream of the development area. This section of the Gorge River is considered moderately disturbed (DEHP 2013). The closest High Ecological Value (HEV) is the headwaters of Atlas River (a tributary of Gorge River) which is approximately 13.5km to the south of the development area (Gunn and Manning 2010).

The development area is relatively flat with low relief. Elevations over the development area range from 15m AHD to 20m AHD, with a hill to the east of the development area that reaching an

elevation of 105m AHD (Map 10, Appendix 1). The development area is on an alluvial plain characterised by sandy loam soils.

The development area is currently bushland, that has previously been used for four-wheel driving and camping. The area of the property that remains undeveloped, is mostly vegetated with remnant vegetation that comprises open woodland and riparian vegetation. The remnant vegetation contains three regional ecosystems (RE11.3.35, RE11.3.12 and RE11.12.9) that are considered 'least concern' under the *Vegetation Management Act* (Map 6, Appendix 1).

The Queens development is surrounded on all sides by urban development, most of which could be considered rural (low density) residential development. No world heritage areas or other protected areas are in the vicinity of the proposed development, nor within 1km of the proposed development.

1.4. Objectives

The objectives of the environmental assessment were to:

- assess the environmental values of the development area and identify matters of environmental significance (MES) that might be impacted by the proposed vegetation clearing.
- assess potential impacts to MES resulting from the proposed vegetation clearing.
- provide mitigation measures and recommendations to minimise impacts to MES.
- assess whether the development complies with assessment benchmarks provided in the Natural Assets Overlay Code of the City Plan and the State Code 16: Native Vegetation Clearing.

1.5. Project Scope

This environmental assessment involved a desktop review of available information, and a field survey to verify the following information:

- The environmental values of the project site.
- The vegetation communities and associated regional ecosystems (RE) present, their size and condition.
- Presence of matters of environmental significance (MLES, MSES and MNES).
- Presence of and/or presence of suitable habitat for EVNT or otherwise significant flora and fauna.

This environmental assessment report includes the results of the desktop and field survey, details the methodology used for the field survey, discussion of the potential impacts of the proposed development, provides mitigation measures and recommendations for clearing and includes a response to the relevant provisions in the Natural Assets Overlay Code provided in the City Plan and the State Code 16: Native Vegetation Clearing as part of the State Development Assessment Provisions.

1.6. Relevant Legislation

The environmental legislation, policy, guidelines and guidance material provided in Table 1 are relevant to proposed development and have been used to assess the environmental values of development area at The Queens.

Table 1: Relevant environmental legislation

LEGISLATION		DESCRIPTION
COMMONWEALTH	Environment Protection and Biodiversity Conservation Act 1999	The purpose of the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) is to protect and manage nationally and internationally important flora and fauna, ecological communities and heritage places; of which are considered matters of national environmental significance (MNES). The EPBC Act recognises nine MNES: - World heritage properties - National heritage places - Wetlands of international importance (RAMSAR) - Nationally threatened species and ecological communities - Migratory species - Commonwealth marine areas - The Great Barrier Reef Marine Park - Nuclear actions - A water resource (relates to coal seam gas and large coal mining development. The *EPBC Act* applies where a development is likely to have a significant impact on a MNES, in which the development is to be referred to the *Department of Sustainability, Environment, Water, Population and Communities* for assessment as to whether the action is a 'controlled action' requiring Commonwealth approval. An EPBC Protected Matters search for an area can be conducted, and lists all MNES that are considered likely to occur within the area. This assists in determining what MNES are relevant to the proposed development, and which MNES are most likely to be impacted by the proposed development.
STATE	Nature Conservation Act 1992	The purpose of the *Nature Conservation Act* 1992 (NC Act) is to protect Queensland's natural areas and biota, through the creation of national parks, reserves, conservation areas and the protection of Queensland's threatened and special flora and fauna. The *NC Act* regulates development in protected areas and where protected species have been recorded, and upholds a permit and licensing system for the taking and keeping of native wildlife. The new regulations (*Nature Conservation (Animals) Regulation 2020 and Nature Conservation (Plants) Regulation 2020*) that came into effect in August 2020 provide lists of flora and fauna species that are considered to be extinct, extinct in the wild, critically endangered, vulnerable, near threatened, least concern and special least concern. All these species are considered matters of state environmental significance (MSES).

	Vegetation Management Act 1999	The purpose of the *Vegetation Management Act* 1999 (VMA) is to regulate the clearing of native vegetation in Queensland, to conserve remnant vegetation, prevent the loss of biodiversity and to maintain ecological processes. The purpose of the VMA is achieved by providing assessment benchmarks for the *Planning Act 2016* (Qld) for assessable development. For vegetation clearing, these assessment benchmarks are provided in the State Code 16: Native Vegetation Clearing. The VMA categorises native vegetation into categories: - A (Vegetation offsets/compliance notices) - B (Remnant vegetation) - C (High-value regrowth vegetation) - R (Reef regrowth watercourse vegetation) - X (Exempt clearing work on Freehold, Indigenous and Leasehold land) The categories are then broken down into regional ecosystem (RE) protection types: endangered, of concern or least concern. These statuses have differing levels of protection under the VMA. The VMA also regulates the clearing of vegetation that is also considered essential habitat for species of national and state significance (i.e., those listed in the regulations associated with the NC Act)
LOCAL	City Plan (updated 2020)	The City Plan was developed in accordance with superseded *Sustainable Planning Act 2009* (Qld), and has been updated to align with the *Planning Act 2016* (Qld) as a framework for managing development in the Brisbane City Council area over the next 25 years. The City Plan seeks to advance state and regional policies through more detailed local responses. The City Plan provides zoning that facilitates the location of preferred and acceptable land uses. It also identifies overlays that reflect state and local level interests and provides assessment benchmarks for each overlay. The overlay that relates to environmental and ecological interests in the City Plan is the Natural Assets Overlay.

2. Methodology

2.1. Desktop Assessment

The desktop assessment involved a review of all relevant environmental databases, maps and legislation to identify the environmental values that could potentially occur within the proposed development area and the immediate vicinity, and could therefore be impacted by the proposed development. The desktop assessment included a review of the sources provided in Table 2.

Table 2: Sources of information reviewed during the desktop assessment

ASSESSMENT	SOURCE	
DATABASE SEARCHES	EPBC Act Protected Matters Search (5km buffer)	
	Vegetation Management Report	Regulated Vegetation Management Map
		Vegetation Management Supporting Map (Regional Ecosystems/Essential Habitat)
		Protected Plants Flora Survey Trigger Map
	Map of Queensland Wetland Environmental Values	
	Atlas of Living Australia (1km buffer)	
	Wildlife Online (1km buffer)	
	WildNet (1km buffer)	
	Development Assessment Mapping System	
AERIAL IMAGERY	Queensland Globe 2020	
	Google Earth Pro 2020	
PLANNING OVERLAYS	City Plan – Natural Assets Overlay and Code	

2.2. Field Survey

Following on from the desktop assessment, a field survey was conducted to confirm the results of the desktop assessment. The field survey techniques used for this environmental assessment are incorporated in Table 3.

Table 3: Field survey techniques

SURVEY TECHNIQUE	DESCRIPTION
Vegetation survey and mapping	A vegetation community assessment was undertaken using a quaternary level assessment, as defined in *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities* (Neldner *et. al.*, 2020). These quaternary level assessments involved field traverses, and point surveys. All site data sheets have been provided in Appendix 4. Vegetation survey and mapping was required to verify the regional ecosystems within the development area and calculate a total clearing area for the proposed development for state code assessment purposes.

Fauna habitat survey and targeted searches for threatened fauna	A ground traverse of the whole development footprint was undertaken to determine any fauna habitat features present. The habitat assessment focussed on identifying microhabitat features likely to be used by the threatened species that were identified as potentially present during the desktop assessment. Critical habitat features (microhabitat), where present were recorded, such as hollow trees, fallen logs, nests and dens, rocky outcrops, scratch marks, scats and other traces. Targeted searches included searching for nests, denning sites and overturning logs and woody debris in search of the threatened species considered most likely to occur in the area.
Opportunistic Observations	Opportunistic observations of flora and fauna were recorded for the duration of the survey. Opportunistic observations involved recording all direct observations of flora and fauna species, as well as signs of fauna presence; including calls, scats, scratches, diggings, nests, tracks etc. All flora and fauna observed throughout the survey were recorded and incorporated into the species inventory in this report (Appendix 5 and 6).

2.3. Likelihood of Occurrence Assessment

Following the desktop review, the likelihood of occurrence for each identified threatened flora and fauna species was determined based on habitat suitability. This likelihood of occurrence assessment determined which species were considered 'likely', 'possible' or 'unlikely' to occur based on all desktop available information including existing confirmed records of threatened species, suitability of habitat present, location of 'high risk areas' mapped in the Flora Survey Trigger mapping and professional judgement.

Four terms for the likelihood of occurrence were used: Confirmed, Likely, Possible, and Unlikely. Following this likelihood of occurrence assessment and the field survey, an assessment of potential impacts from the proposed clearing was also undertaken to determine which threatened species would most likely be impacted by the proposed development should they be present. The results of this assessment have been provided in Appendix 7.

The threatened species that were considered confirmed or likely to occur, pose the greatest constraints to the proposed development, and hence the field survey targeted the preferred habitat for these species to determine their presence.

3. Results

3.1. Desktop Assessment

3.1.1.Database Overview

A summary of the maps and databases applicable to the development area, that were reviewed as part of the desktop assessment, have been provided in Table 4.

Table 4: Assessment of database information

DATA BASE SOURCE	SEARCH RESULTS	APPLICABLE?	REFERENCE
LOCAL			
City Plan – Natural Assets Overlay Map	The development area is mapped as having 'high' environmental importance, with the waterway mapped as 'very high' on the Natural Assets Overlay mapping.	YES	Map 5, Appendix 1
STATE			
Regulated Vegetation Management Map	Category B (remnant vegetation) was mapped throughout the majority of the development area. Two patches of Category X (exempt) were mapped in the north, and east to south of the development area.	YES	Appendix 3, Vegetation Management Property Report

3.1.2.State Mapped Vegetation Communities

3.1.3.Significant Flora

3.1.4.Significant Fauna

The ALA and Wildlife Online identified no threatened or special least concern (SLC) species under the NC Act within 1km of the development area (Table 7).

3.2. Field Survey

A full day field survey was undertaken …..

3.2.1.Soils and their Geological Derivation

3.2.2.Drainage and Wetland Features

3.2.3.Ground-truthed Vegetation Communities

RE11.3.35 (Least concern)

RE11.3.35 was present in the western portion of the development area and includes the riparian vegetation along the waterway (Map 6, Appendix 1). Four of the proposed lots (374-377) are located within RE11.3.35 (Map 6, Appendix 1).

RE11.3.35 was characteristic of the vegetation community R11.3.35a, and has a very open tree layer dominated by *Eucalyptus platyphylla, Corymbia tessellaris, C. clarksoniana* and scattered *C. erythrophloia,* with an average height of 20m and canopy cover of 5% (datasheets provided in Appendix 4). A nearly non-existent shrub layer exists, with only the occasional *Acacia leptocarpa* and *A. leptostachya* present. Relatively dense ground layer consisting of *Themeda triandra* and *Heteropogon contortus,* with the occasional clumps of *Xanthorrhoea johnsonii* throughout.

Figure 1: Photograph showing RE11.3.35

3.2.4.Flora species

All flora species recorded during the field survey have been listed in the species inventory in Appendix 5.

3.2.5.Presence of weeds

No weeds

3.2.6.Fauna and Fauna Habitat Assessment

Fauna species and habitat

Three fauna species were observed within the ….

Essential habitat for threatened fauna species

No essential habitat was mapped on

4. Potential Impacts and Mitigation Measures

4.1. Potential impacts

The proposed development will result in vegetation clearing, of which 4.4 hectares of remnant vegetation will be cleared. Potential impacts to the environmental values of the site during both construction and operational phases of the development may occur due to vegetation clearing. Potential impacts have been first avoided where possible, then mitigated to ensure no significant residual impact occurs as a result of the development.

The following are potential direct and indirect impacts that could occur as a result of clearing, and have the potential to adversely affect the environmental values of the area:

- Clearing 4.4 hectares of remnant vegetation and suitable wildlife habitat.
- Clearing 0.4 hectares of remnant vegetation that is also mapped as habitat for a MSES, the special least concern fauna species
- Potential loss of suitable foraging habitat for threatened species
- Dust, noise, vibration and dust from the residential development once constructed
-

4.2. Avoidance and mitigation measures

While impacts are possible, it is expected the overall impacts from the proposed clearing and development will be low, as impacts have been avoided where possible by implementing the following precautions:

- The total area of clearing is relatively small in a landscape context, with only 4.4 hectares of remnant vegetation proposed for clearing.
- Positioning as many lots as possible within non-remnant areas.
-

5. Recommendations

5.1. Habitat management

5.1.1.Conservation significant flora and fauna species

As no conservation significant flora and fauna were recorded during the field survey, it is unlikely that impacts to these will occur as a result of clearing. Should any threatened fauna species be present in the area during clearing activities, impacts are considered unlikely due to:

- The remnant vegetation and habitat to be cleared is small compared to the greater remnant area. The remnant clearing area was calculated to be 4.4 hectares.
- Clearing activities will take place in a staged fashion, allowing native fauna that is displaced to relocate to new areas.

5.1.2.Special least concern species

Two flora species listed as special least concern under the NC Act were recorded within the development area

5.1.3.Least concern species

This development

.

5.1.4.Introduced weed species

One introduced flora

6. References

Bureau of Meteorology. (2020). *Climate of Brisbane.* Available: http://www.bom.gov.au/qld/brisbane/climate_Brisbane.shtml#:~:text=The%20average%20annual%20rainfall%20is,variation%20from%20year%20to%20year. Viewed on 3/11/20.

Dennis, A.J. (2012). *Spectacled Flying Fox Pteropus conspicullatus*. *In:* Queensland's threatened animals (eds L.K. Curtis., A. J. Dennis., KR. McDonald., P.M. Kyne and S.J.S. Debus.) pp. 388-389. CSIRO Publishing, Collingwood.

APPENDICES

Appendix 1: Maps

Map 1: Site Location Map

Map 2: Proposed Development Plan Map

Map 3: Development Layout

Map 4: Regulated Vegetation Management Map

Map 5: Council Natural Asset Overlay Map

Map 6: Regional Ecosystem Map

Map 7: MSES Species Map

Map 8: Vegetation Assessment Map

Map 9: Waterways Map

Map 10: Contour Map

Appendix 3: MES Desktop Searches

DOCUMENT INFORMATION

Prepared for	[insert client name]
Project Name	[insert project name]
Document Name	[insert document name]
Date	[insert date]

DOCUMENT CONTROL

VERSION	DATE	AUTHOR	DETAILS
1 2	16/11/2020 04/12/2020		

Citation *Trend Ecology. (2020). [insert citation]*

Document Limitations

www.trendecology.com.au emily@trendecology.com.au

Queensland Office
PO Box 5
Brisbane QLD 4800
P 03589859457

ABN 2483859358934