Northern Link

TECHNICAL REPORT NO. 10

ECOLOGY

■ September 2008

Contents

List of Figures

List of Tables

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
1	20 Dec 2007	H. Brownscombe	H. Brownscombe	20 Dec 2007	Draft for comment
2	7 Feb 2008	H. Brownscombe	H. Brownscombe	7 Feb 2008	Draft
3	23 May 2008	H. Brownscombe	H. Brownscombe	23 May 2008	Draft for comment
4	19 Jun 2008	H. Brownscombe	H. Brownscombe	19 Jun 2008	Final
5					

Distribution of copies

Revision	Copy no	Quantity	Issued to
1	1	1	Peter Jell
3	1	1	Peter Jell (via email)
4	1	1	Peter Jell (via email)

Printed:	22 October 2008
Last saved:	17 October 2008 03:52 PM
File name:	I:\QENV\Projects\QE07311\560 - Ecology\Draft Ecology Report\QE07311.560_DRAFT_Flora_Fauna_V4.doc
Author:	David Fleming
Project manager:	Peter Zahnleiter
Name of organisation:	Brisbane City Council
Name of project:	Northern Link Phase 2 – Detailed Feasibility Study
Name of document:	Ecology
Document version:	4
Project number:	QE07311.560

1. Flora and Fauna

1.1 Introduction

This report describes the existing environment of the Northern Link study corridor in terms of terrestrial and aquatic flora and fauna. It also assesses the impact of the construction of the project on flora and fauna and proposes mitigation measures to address these impacts. The Northern Link project is a predominantly underground road proposed from Brisbane's Western Freeway linking the Inner City Bypass (ICB) at Herston. The study corridor runs from the Western Freeway at Toowong to include the ICB at Bowen Bridge Road.

The study corridor passes through a highly urbanised area of Brisbane where much of the original vegetation cover has been substantially cleared for development and urban land uses. The western connection traverses the edge of a large bushland system on the slopes of Mt. Coot-tha, the Brisbane Botanic Gardens and isolated fragments of vegetation that exist in parks, private properties and along drainage lines.

The study aimed to investigate the terrestrial and aquatic flora and fauna of the study corridor and is based on a desktop analysis of background information and field investigations undertaken by SKM in December 2007. The objectives of this study were to:

- investigate, prepare and compile a description of the vegetation assemblages and fauna habitats of the study corridor, including the compilation of records of threatened species listed under the *Nature Conservation Act 1992* (NC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) from the wider study locality. These species are commonly referred to as EVR (Endangered, Vulnerable or Rare) species;
- confirm the occurrence, or likely occurrence, of terrestrial flora and fauna species and aquatic species of national or state conservation significance;
- assess existing habitat values of the study corridor;
- describe the condition of instream habitat and riparian vegetation along the watercourses;
- determine the impacts on terrestrial and aquatic flora and fauna; and
- propose mitigation measures designed to address the project impacts.

The legislative context for ecological matters is outlined in **Section 1.2**. The methodology used for the flora and fauna components of these investigations is described in **Sections 1.3.1** and **1.4.1**, respectively. The description of the existing environment within the study corridor is provided in **Section 2**. **Section 3** contains the description and assessment of impacts, with mitigation measures in **Section 4**. A summary of issues and conclusions is provided in **Section 5**.

1.2 Legislative Context

1.2.1 Commonwealth Legislation

The Commonwealth EPBC Act prescribes the Commonwealth's role in environmental assessment, biodiversity conservation and the management of protected areas. The EPBC Act identifies three matters of National Environmental Significance (NES) that are pertinent to this study, namely Wetlands of International Significance, Threatened Species and Migratory Species. The EPBC Act requires assessment and approval for any action that has, or is likely to have, a significant impact on a matter of NES. The Commonwealth Minister may declare such action to be a 'Controlled Action'. It is an offence to undertake a 'Controlled Action' without the approval of the Commonwealth Minister for Environment, Water, Heritage and the Arts (DEWHA).

The Commonwealth Minister has declared that the Northern Link project is not a controlled action under the EPBC Act, following the submission of a referral on 5 November 2007.

1.2.2 Queensland Legislation

The *Nature Conservation Act 1992* (NC Act) provides for the conservation and management of protected areas, reserves and native wildlife in Queensland. All native vertebrates and certain invertebrates are protected under Section 71 of the Act.

The *Nature Conservation (Wildlife) Regulation 2006* (NC Regulation) lists the flora and fauna considered extinct in the wild, endangered, vulnerable, rare, near threatened, least concern, international and prohibited. The Regulation lists their significance and states the declared management intent and the principles to be observed in any taking and use for each group.

The *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act) and the *Land Protection (Pest and Stock Route Management) Regulation 2003* provides for pest management in Queensland, and includes both weeds and pest animals. There are three classes of Declared Pest that are enforced under the LP Act and the management intent varies between each class. The Department of Primary Industries and Fisheries (DPIF) administers the LP Act.

The *Vegetation Management Act 1999* (VM Act) provides for the conservation of all remnant native vegetation and Regional Ecosystems (RE) in Queensland. It regulates the clearing of mapped remnant vegetation on freehold and leasehold land in Queensland. For the purposes of assessing significant projects, the VM Act is supported by the Regional Vegetation Management Code for South East Queensland Bioregion and the Policy for Vegetation Offsets. The Code regulates the clearing of vegetation in a way that conserves remnant regional ecosystems, does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes.

1.2.3 Brisbane City Council Local Laws

Brisbane City Council's (BCC) Natural Assets Planning Law 2003 protects and manages Brisbane's vegetation. It aims to:

- protect the biodiversity of the city;
- preserve natural landforms;
- preserve the city's natural landscape character;
- preserve vegetation of cultural and historical value; and
- improve weed management.

The Natural Assets Local Law (NALL) defines seven categories of protected vegetation, including Council Controlled Vegetation (CCV), Vegetation Protection Order (VPO), Significant Native Vegetation (SNV), Valued Urban Vegetation (VUV), Waterway Vegetation (WAV), Wetland Vegetation (WEV) and Significant Landscape Trees (SLT).

1.3 Terrestrial Flora Existing Environment

1.3.1 Methodology

The methods adopted for the flora investigations of the study corridor described in this report involved two stages:

- background data collection and review;
- survey and assessment of vegetation communities; and
- targeted searches for rare or threatened flora.

1.3.1.1 Review of Existing Information and Database Searches

The desktop analysis involved a review of relevant databases, surveys and existing literature. In describing the terrestrial flora and mapped vegetation communities of the study corridor the following data sources were used:

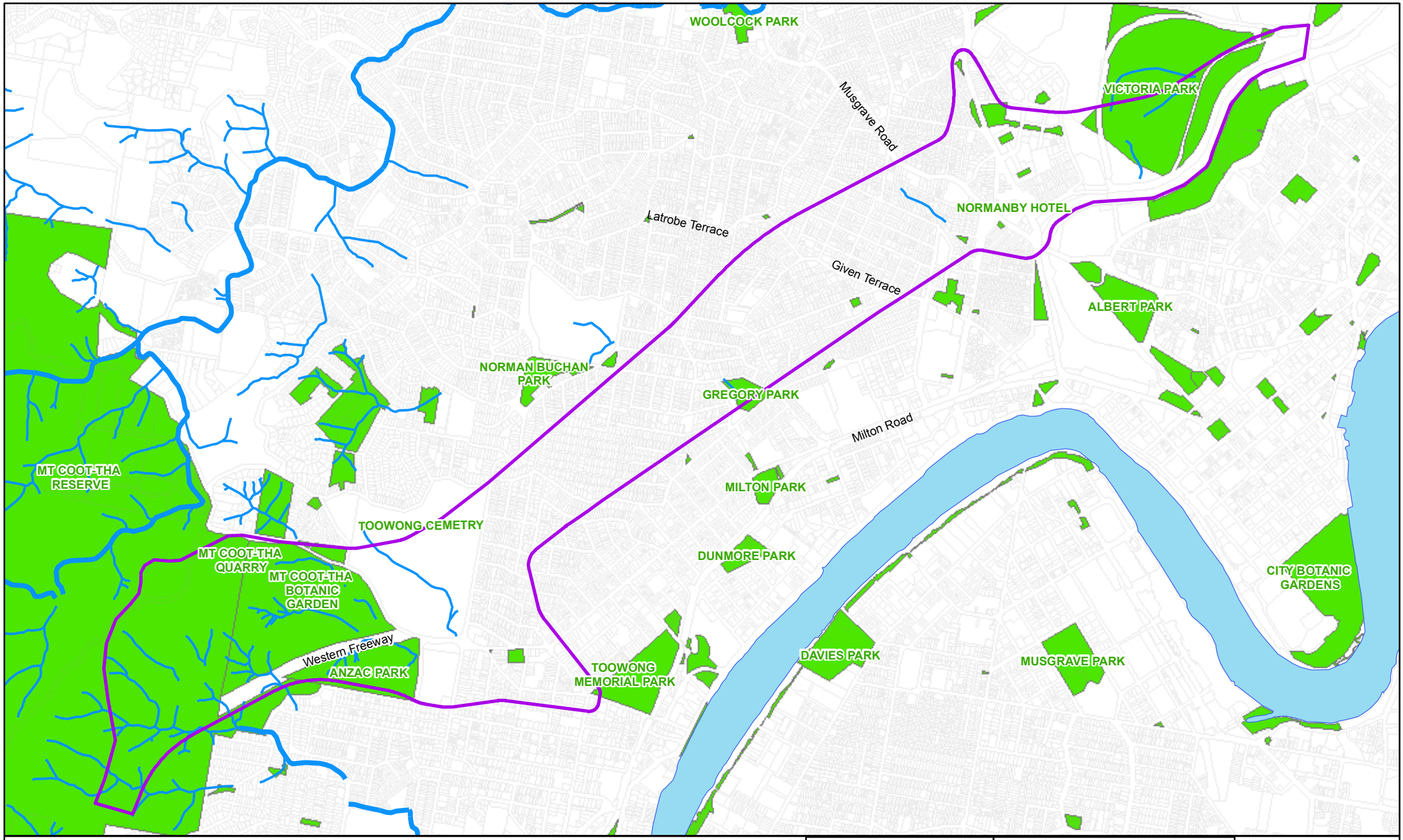
- review of the existing vegetation mapping for the study corridor including the Queensland Herbarium's RE mapping and BCC's vegetation community and RE mapping;
- searches of the Queensland Herbarium HERBRECS, the Environmental Protection Agency's (EPA) Wildlife Online (WildNet) and the EPBC Act Protected Matters databases; and
- information on existing significant trees and groups of trees within the study corridor identified under the BCC NALL.

The conservation status of the flora species occurring or potentially occurring in the study corridor have been assessed at the state, regional and local context with reference to the EPBC Act, NC Act and BCC's Natural Assets Planning Scheme Policy (NAPSP).

1.3.1.2 Field Survey

Several vegetated areas and parks within the study corridor were inspected on 4 December 2007 (**Figure 1**). Terrestrial flora and vegetation were assessed at each of the survey sites, where lists were prepared of the species present during the field investigation. The survey sites were inspected and dominant plant species identified within each area. The following sites were visited:

- Brisbane Botanic Gardens and adjacent road reserve, Toowong;
- Toowong Cemetery, Toowong;
- Anzac Park gully adjacent to Centenary Highway, Toowong;
- Gregory Park, Paddington;
- Blamey Street precinct, Kelvin Grove;
- Normanby Hotel precinct, Red Hill;
- York's Hollow, Herston; and
- Bikeway adjacent to Victoria Park (Busway overpass to York's Hollow), Herston.



Legend

- Major Creek
- Minor Creek
- Brisbane River
- Park
- Study Area Boundary

Figure 1

Northern Link

Overview

0 500 1,000

metres

Scale 1:25,000 (A4)

N

Northern Link

SKM Connell Wagner JOINT VENTURE

I:\QENV\Projects\QE07311\Spatial\Arc_MXD\Ecology\071412_Ecology_Overview.mxd Produced: 17/12/2007

Significant trees and other vegetation listed by BCC under the NAPSP were inspected to verify the species and/or species composition.

1.4 Terrestrial Fauna Existing Environment

1.4.1 Methodology

The methods adopted for the fauna investigations for the study corridor described in this report involved two stages:

- background data collection and review; and
- survey and assessment of fauna habitats.

1.4.1.1 Review of Existing Information and Database Searches

The desktop analysis involved a review of relevant databases, surveys and existing literature. In describing the terrestrial fauna and fauna habitats of the study corridor the following data sources were used:

- searches of the Birds Australia (BirdData), the EPA's WildNet and the DEWHA Protected Matters fauna databases;
- searches of the BCC's fauna database; and
- review of the EPA's Biodiversity Planning Assessment (BPA) for the South East Queensland (SEQ) Bioregion to determine core habitat areas for rare or threatened fauna species and identified corridors at the state, regional and local scales.

The conservation status of fauna species occurring or potentially occurring in the study corridor have been assessed at the national and state level with reference to the EPBC Act and NC Act. In addition, the conservation status of each species is listed according to their status under the BCC NAPSP and within the Action Plans for the relevant taxon; Tyler (1997) for frogs, Cogger, *et al* (1993) for reptiles, Garnett and Crowley (2000) for birds and Maxwell, *et al* (1996) for monotremes and marsupials.

Furthermore, the Commonwealth EPBC Act provides protection for Marine or Migratory species, including those listed under International Agreements such as the Japan-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA) or the Convention on the Conservation of Migratory Species of Wild Animals (i.e. the Bonn Convention).

The SEQ BPA Expert Fauna Panel Report (EPA 2006a) provides a list of fauna species that are considered to be non-EVR (Endangered, Vulnerable or Rare) Priority Taxa by the EPA's fauna expert panel. These species are included in this report as regionally significant species within the southern portion of the SEQ Bioregion.

1.4.1.2 Field Observations

Fauna searches within the study corridor included one night of spotlighting for nocturnal fauna within three largely vegetated areas. Spotlighting was conducted on the night of 11 December 2007 at the road reserve adjacent to the Brisbane Botanic Gardens, the Toowong Cemetery and the Anzac Park gully.

1.4.2 Fauna Habitats

Initial field investigations were undertaken on 11 December 2007 to verify general findings of background data. Six sites were visited across the study corridor for surveying. These sites were identified as bushland, parks and

open spaces, which have potential for relatively significant ecological values in the urban landscape. These included:

1) Brisbane Botanic Gardens and adjacent road reserve, Toowong;
2) Toowong Cemetery, Toowong;
3) Anzac Park gully and adjacent to Centenary Highway, Toowong;
4) Gregory Park, Paddington;
5) Blamey Street precinct, Kelvin Grove; and
6) York's Hollow and Victoria Park Golf Course, Herston.

1.5 Aquatic Flora and Fauna

In collating background information on the aquatic flora and fauna within the study corridor, the following data sources were used:

- search of the EPA Wildnet fauna database;
- review of other literature from the BCC; and
- riparian vegetation assessment.

2. Description of Existing Environment

2.1 Study Components

The study includes three components:

- the investigation of the study corridor which includes the route of the Northern Link tunnel through the inner western suburbs of Brisbane and proposed work sites;
- the spoil placement areas in the Australia TradeCoast area centred on the Port of Brisbane, Swanbank Industrial Land Reclaimation site or the Mt. Coot-tha Quarry. The quarry option includes a conveyor from the western connection tunnel excavation to the quarry; and
- the proposed location of ventilation shafts and outlets and the western and eastern ends of the tunnel.

2.1.1 The Study Corridor

The study corridor is about eight kilometres in length and runs from the Western Freeway at Toowong to the Inner City Bypass at Herston. The study corridor encompasses the inner western suburbs of Brisbane including Toowong, Auchenflower, Milton, Paddington, Red Hill, Kelvin Grove and Herston. A number of small watercourses occur within the study corridor, primarily in the far western portion on the lower slopes of Mt. Coot-tha. A small wetland (York's Hollow) is mapped in the eastern portion of the study corridor within the Victoria Park Golf Course.

The study corridor for the Northern Link project covers a highly urbanised area of Brisbane, and terrestrial and aquatic ecosystems are highly disturbed from development and urban land uses. Terrestrial communities and ecosystems have been substantially cleared, with small, isolated fragments of vegetation remaining in parks and scattered along watercourses in the study corridor. Some remnant vegetation is found on the lower slopes of Mt. Coot-tha adjacent to the Western Freeway. Planted native and exotic vegetation is a dominant feature of the study corridor particularly in parks, gardens, schools and along watercourses and roads.

Aquatic ecosystems have been impacted by clearing of riparian vegetation, infestation by environmental weeds, pollution from surface water runoff, and past management practices of waterways, including channelisation for flood mitigation. Vegetation and habitat of the watercourses is mainly found within the channels, with areas once occupied by riparian vegetation now used for parks, sporting grounds and industrial land uses.

There are several parks, open spaces and other vegetated areas located within the study corridor. These include:

- Brisbane Forest Park (Mt. Coot-tha section), Mt. Coot-tha;
- Brisbane Botanic Gardens, Mt. Coot-tha;
- Toowong Cemetery, Toowong;
- Anzac Park, Toowong;
- Gregory Park, Paddington;
- Kelvin Grove Road Park, Kelvin Grove;
- McCaskie Park on Blamey Street, Normanby;
- Normanby Hotel precinct, Red Hill;
- York's Hollow, Herston; and
- Bikeway adjacent to Victoria Park (Busway overpass to York's Hollow), Herston.

It is recognised that these parks and open spaces and associated watercourses have a landscape and amenity value to the community, in terms of recreational opportunities and green space corridors. The landscape and amenity values of these parks are considered in the Urban Design, Landscape and Visual Existing Environmental Report. There are also several trees and groups of trees which contribute to the landscape amenity of the local area and which have cultural significance within the community.

2.1.2 Spoil Placement Sites

The construction of the project will generate spoils that is proposed to be placed at:

- Fisherman Islands, Port of Brisbane;
- Swanbank Industrial Land Reclaimation site; and
- Mt. Coot-tha Quarry.

The Fisherman Islands site is located within the Port of Brisbane and the Airport Industrial Park is within the Brisbane Airport. These sites were not assessed as part of this report as they have been previously assessed and approved by the Commonwealth Minister for the Environment in 2001 to receive fill material. The assessments provide a discussion on the likely impacts on listed threatened and / or migratory species by the placement of fill materials. It was determined that these works are unlikely to contribute to a significant impact on these species.

The quarry site is located to the west of the Mt. Coot-tha Gardens on the slopes of Mt. Coot-tha. The quarry site has been severely modified as part of the quarrying operations and is cleared of vegetation. A few remaining trees and shrubs have regrown on the periphery of the quarry operations, although these are unlikely to provide any habitat values for fauna. It is proposed to construct a conveyor to transport spoil from the Western Freeway worksite to the quarry. The conveyor is to be constructed from the western portion of the worksite to the quarry to the north. Whilst the conveyor has been intentionally sited within largely disturbed areas as far as practicable, some clearing of remnant vegetation will be required. The clearing width for the conveyor and maintenance track will be up to 8 metres resulting in approximately 0.20 hectares of remnant vegetation being cleared.

2.1.3 Ventilation Outlets

To enable the dispersion of exhaust gases from the tunnels two ventilation outlets are required, at the western and eastern connections. A total of eight preliminary options have been prepared for the location of the ventilation shafts and outlets (four options at either end). These are listed below:

Western Options

- W1 is the preferred option and is located on the northern side of the freeway, approximately 650 metres to the west of the intersection with Mt. Coot-tha Road, within a largely vegetated area;
- W2 is located within buildings within the Brisbane Botanic Gardens; and
- W3 and W4 are located within and immediately adjacent to existing built areas within the BCC Bus Depot at Toowong.

Eastern Options

- N1 is located on the southern side of the intersection of Musgrave Road and Hale Street within a small grove of trees;
- N2 is located to the south of Lower Clifton Road near a small grove of trees;

- N3 is located within largely open parkland to the north of the Normanby Hotel; and
- N4 is the preferred option and is located to the south of the Queensland University of Technology Kelvin Grove campus within a small grove of trees.

2.2 Vegetation Communities and Flora Species

2.2.1 Nationally Significant Communities

The EPBC Act lists ecological communities that are vulnerable, endangered or critically endangered. No threatened ecological communities listed under the Act occur within the study area of the Northern Link project.

2.2.2 State and Locally Significant Communities

The Queensland Herbarium maps remnant vegetation throughout Queensland at the scale of 1:100,000 (and at 1:50,000 in some areas). In most areas of the State, this mapping is able to delineate between different vegetation communities which are assigned unique codes based on the Regional Ecosystems framework. The framework describes a three part code corresponding to bioregions in Queensland (first part), land zones (second part) and vegetation communities (third part).

The Queensland Herbarium has mapped one Regional Ecosystems (RE) as occurring within the western portion of the study corridor (version 5.1, December 2006) on the foothills of Mt. Coot-tha. This RE is listed in **Table** 2-1 together with its vegetation management status under the VM Act.

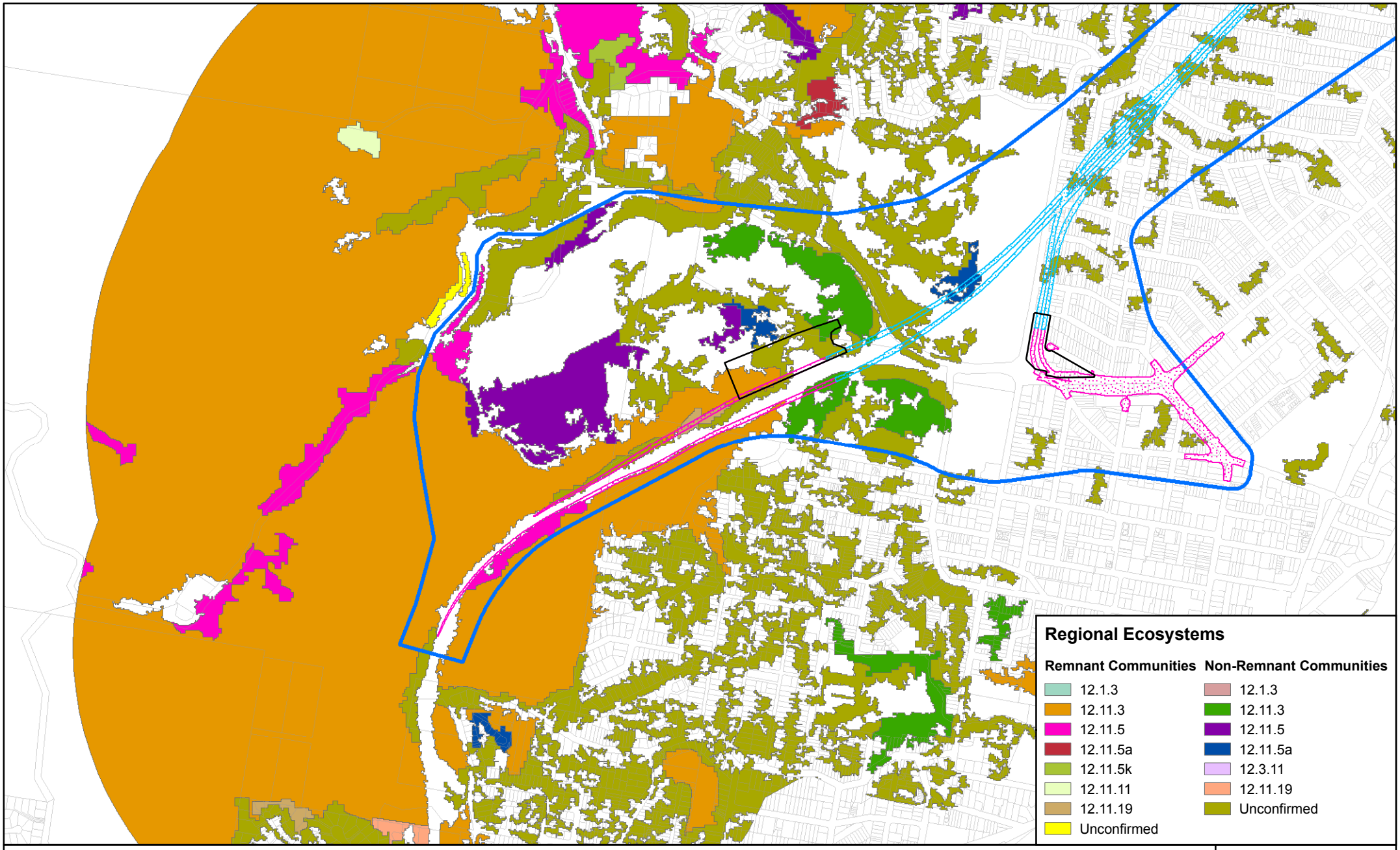
The BCC has also mapped remnant and non-remnant vegetation (Regional Ecosystems Version 1.0) throughout the city at a smaller scale of 1:25,000 than that employed by the Queensland Herbarium. BCC maps remnant and non-remnant vegetation using the same RE codes as the Queensland Herbarium, however BCC mapping is not recognised under the Queensland VM Act. BCC's mapping often overlaps with portions of the State RE mapping.

For the purposes of describing the existing environment in this report, the BCC vegetation mapping was used to describe the extent of REs within the study corridor as it has been prepared to a smaller scale and greater accuracy than the State RE mapping. It should be noted that there is potential for overlap between the State RE mapping and the BCC vegetation mapping due the similar mapping processes in used for each data set, such as delineation of vegetation communities from aerial photography.

The BCC has mapped three REs under the Queensland Herbarium classification system - RE 12.11.3, 12.11.5 and 12.11.19 as described in **Table 2-1**. The BCC has further classified these REs into remnant and non-remnant patches. The majority of the remnant vegetation is defined as RE 12.11.3 as distinct from the 12.11.5 described in the Queensland Herbarium mapping. A linear patch of RE 12.11.5 occurs on the southern edge of the Western Freeway at Toowong and is mapped by BCC as a Significant Regional Ecosystem. A smaller area of 12.11.9 (Of Concern) is identified on the northern side of the Western Freeway, to the west of the proposed Western Freeway worksite.

Many small and/or narrow patches of vegetation have been mapped by BCC as occurring within the study corridor. These are labelled as Unconfirmed (remnant and non-remnant) which are small patches and planting of trees that are not able to be classified under the RE system and are distributed throughout the study corridor

Figure 2A, Figure 2B and Figure 2C show the extent of BCC mapped vegetation within the study corridor and within a 1km radius of the study corridor.



LEGEND

- Study Area Corridor
- Construction Worksites

Proposed Alignment

- Surface Works
- Tunnel Underground

0 250 500

metres

Scale 1:15,000 (A4)

N

NORTHERN LINK
ENVIRONMENTAL IMPACT STATEMENT

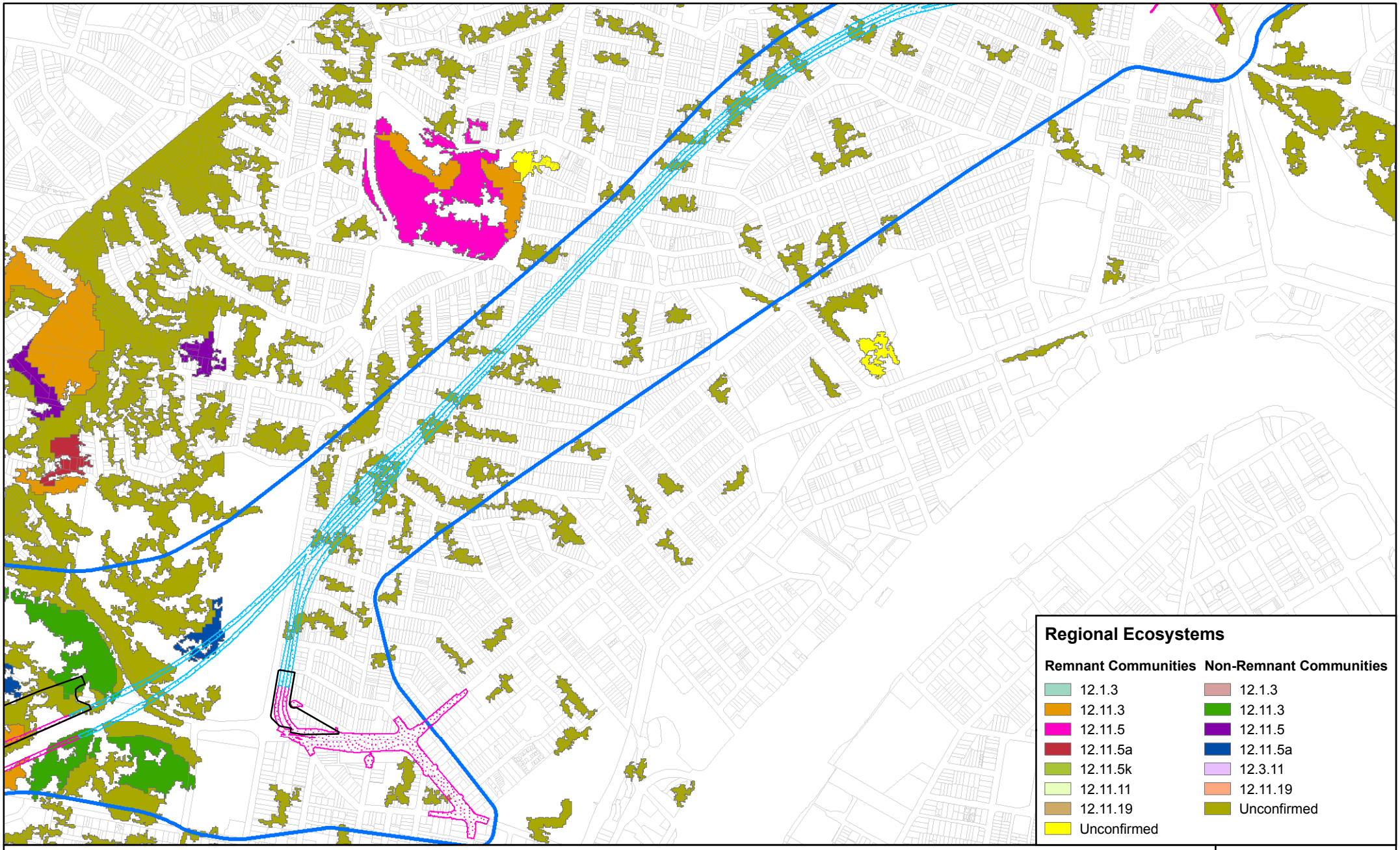
Figure 2A

Regional Ecosystem

Northern Link

SKM Connell Wagner JOINT VENTURE

I:\QENV\Projects\QE07311\Spatial\Arc_MXD\I:\QENV\Projects\QE07311\Spatial\Arc_MXD\Ecology\080817_EcoSystems_TechReport.mxd



LEGEND

- Study Area Corridor
- Construction Worksites

Proposed Alignment

- Surface Works
- Tunnel Underground

0 250 500

metres

Scale 1:15,000 (A4)

N

NORTHERN LINK
ENVIRONMENTAL IMPACT STATEMENT

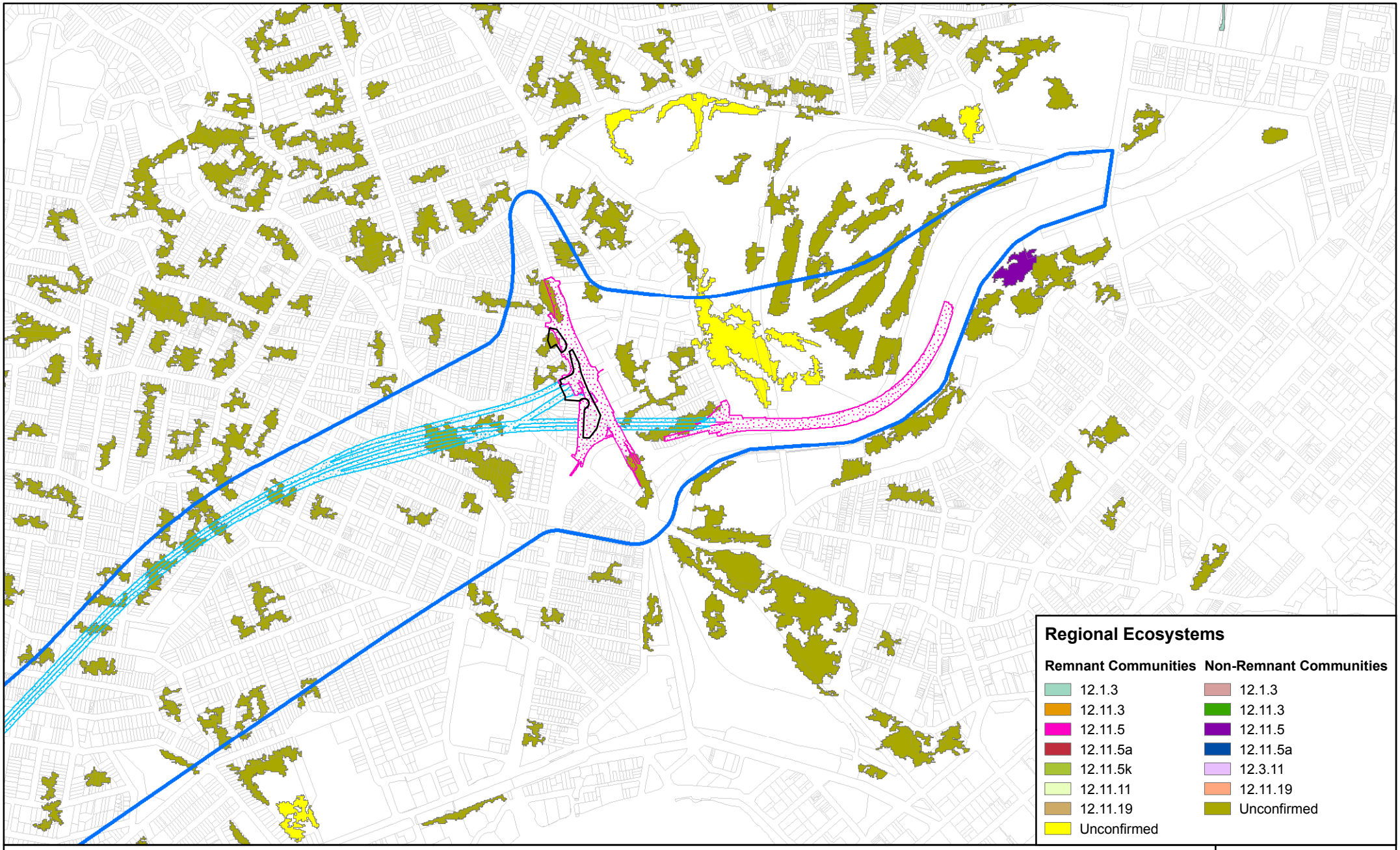
Figure 2B

Regional Ecosystem

Northern Link

SKM Connell Wagner JOINT VENTURE

I:\QENV\Projects\QE07311\Spatial\Arc_MXD\I:\QENV\Projects\QE07311\Spatial\Arc_MXD\Ecology\080817_EcoSystems_TechReport.mxd



LEGEND

- Study Area Corridor
- Construction Worksites

Proposed Alignment

- Surface Works
- Tunnel Underground

0 250 500

metres

Scale 1:15,000 (A4)

N

NORTHERN LINK
ENVIRONMENTAL IMPACT STATEMENT

Figure 2C

Regional Ecosystem

Northern Link

SKM Connell Wagner JOINT VENTURE

I:\QENV\Projects\QE07311\Spatial\Arc_MXD\I:\QENV\Projects\QE07311\Spatial\Arc_MXD\Ecology\080817_EcoSystems_TechReport.mxd

Table 2-1 Mapped Regional Ecosystems and BCC Classified Vegetation

State Regional Ecosystem Mapping	VM Status	Brisbane City Council Regional Ecosystem Mapping	Brisbane City Council Status	Brief Description
12.11.5/12.12.5 (90/10)	Not Of Concern	12.11.3 (Remnant)	none	Open forest generally with *Eucalyptus siderophloia*, *E. propinqua* on metamorphics ± interbedded volcanics
		12.11.5 (Remnant)	Significant	Open forest complex with *Corymbia citriodora, E. siderophloia, E. major* on metamorphics ± interbedded volcanics
		12.11.19 (Remnant)	none	*E. fibrosa* open forest on metamorphics ± interbedded volcanics
Non-remnant Vegetation	None	Unconfirmed Remnant	none	Vegetation, such as small patches of regrowth vegetation or small groups of trees, that are unable to be classified as a Regional Ecosystem
Non-remnant Vegetation	None	12.11.3 (Non-remnant)	none	Open forest generally with *Eucalyptus siderophloia*, *E. propinqua* on metamorphics ± interbedded volcanic; however these patches do not attain the definition of remnant (see Table Notes)
Non-remnant Vegetation	None	12.11.5 (Non-remnant)	none	Open forest complex with *Corymbia citriodora, E. siderophloia, E. major* on metamorphics ± interbedded volcanics; however these patches do not attain the definition of remnant (see Table Notes)
Non-remnant Vegetation	None	12.11.5a (Non-remnant)	none	Open forest complex with *Corymbia citriodora, E. siderophloia, E. major* on metamorphics ± interbedded volcanics; however these patches do not attain the definition of remnant (see Table Notes)
Non-remnant Vegetation	None	Unconfirmed Non remnant	none	Vegetation, such as small patches of regrowth vegetation or small groups of trees, that are unable to be classified as a Regional Ecosystem

A further three REs are located within a 1km radius of the study corridor, namely; remnant and non-remnant RE 12.1.3 (Mangrove shrubland to low closed forest on marine clay plains and estuaries), remnant RE 12.11.5k (Open forest complex with *Corymbia citriodora, E. siderophloia, E. major* on metamorphics ± interbedded volcanic) and remnant RE 12.11.11 (Araucarian microphyll vine forest on metamorphics ± interbedded volcanics; usually southern half of bioregion).

2.2.3 Groundwater Dependent Ecosystems

Groundwater Dependant Ecosystems (GDEs) are ecosystems which have their species composition and their natural ecological processes determined by groundwater. Six broad functional groups of GDEs have been classified as terrestrial vegetation, river base flow systems, estuarine and near shore marine, aquifer and cave systems and wetlands. In general, it is considered that the level of groundwater dependency in the area is likely to be relatively low with species potentially utilising groundwater in the saturated zone only during drought

conditions where surface water flux is uncommon. For the most part the water table is below the root zone of trees in the study corridor.

2.2.4 Database Searches

A search of flora databases revealed a total of 649 flora species have been previously recorded, or are likely occurrences based on the presence of suitable habitat, from within the study corridor. The full species list is provided in **7**.

2.2.5 Flora of Conservation Significance

Fifteen EVR flora species are known or are likely occurrences within the broader study area based on the database searches (**Table 2-2**). Ten of these species are listed under the Commonwealth EPBC Act and seven are listed under the Queensland NC Act. Four flora species are recognised by BCC as significant species within Brisbane City (**Table 2-3**). The BCC NAPSP list species according to the following categories:

1) species whose distribution is poorly known within Brisbane City;
2) species that have restricted distribution within Brisbane City.; and
3) species that are presumed locally extinct within Brisbane City.

Table 2-2 EVR flora species identified from database searches

Scientific Name	Common Name	Status*	Source^	Likely Presence
Alyxia magnifolia		R (Qld) VU (Aust)	3	Not Likely
Arthraxon hispidus	Hairy-joint Grass	VU (Qld)	1	Not Likely
Bosistoa selwynii	Heart-leaved Bosistoa	VU (Aust)	1	Not Likely
Bosistoa transversa	Three-leaved Bosistoa	VU (Aust) VU (Aust)	1	Not Likely
Bulbophyllum globuliforme	Miniature Moss-orchid	R (Qld) EN (Aust)	1	Not Likely
Corchorus cunninghamii	Native Jute	EN (Qld)	2, 3	Not Likely
Cryptostylis hunteriana	Leafless Tongue-orchid	VU (Aust) VU (Aust)	1	Not Likely
Fontainea venosa		VU (Qld) EN (Aust)	1	Not Likely
Gossia gonoclada	Angle-stemmed Myrtle	EN (Qld) VU (Aust)	2, 3	Possible
Hydrocharis dubia	Frogbit	VU (Qld) VU (Aust)	1	Not Likely
Macadamia integrifolia	Smooth-shelled Macadamia	VU (Qld)	1	Not Likely#
Maundia triglochinoides		VU (Qld)	3	Possible
Picris conyzoides		R (Qld) VU (Aust)	3	Possible
Sauropus macranthus		R (Qld)	2	Not Likely
Symplocos harroldii	Hairy Hazelwood	R (Qld)	3	Not Likely

* Status: EN = Endangered, VU = Vulnerable, R = Rare
(Aust) = Status under the Commonwealth EPBC Act

(Qld) = Status under the Queensland *Nature Conservation (Wildlife) Regulation 2006*

^ Source: 1 = DEW Protected Matters database; 2 = EPA Wildlife Online database; 3 = Queensland Herbarium Herbrecs database.

Planted specimens are known to occur within the study corridor; however, natural habitat for this species does not occur in the study corridor.

Table 2-3 Locally significant flora species within Brisbane City

Scientific Name	Common Name	BCC Status*	Source^	Likely Presence
Bulbophyllum schillerianum	Red Rope Orchid	2	3	Likely
Capparis velutina	Native Caper	3	3	Possible
Cryptocarya microneura	Brown Jack	2	2, 3	Possible
Dendrobium tetragonum	Tree Spider Orchid	2	3	Likely
Echinostephia aculeata	Prickly Snake Vine	2	2, 3	
Eucalyptus seeana	Narrow-leaved Red Gum	2	2, 3	Possible
Melodinus acutiflorus		2	3	Not Likely
Mucuna gigantea		2	3	Likely
Oberonia titania	Red Fairy Orchid	2	2	Possible
Rhinerrhiza divitiflora	Rasp Root Orchid	2	3	Likely
Rhodomyrtus psidioides	Native Guava	2	2, 3	Possible
Waterhousea floribunda	Weeping Lilly Pilly	2	3	**Known**
Wilkiea huegeliana	Vieny Wilkea	2	3	Possible

* BCC Status: 2 = Restricted distribution within Brisbane City; 3 = Presumed extinct within Brisbane City.

^ Source: 1 = DEW Protected Matters database; 2 = EPA Wildlife Online database; 3 = Queensland Herbarium Herbrecs database.

2.2.6 Field Observations

From the field surveys 151 flora species were identified as occurring within the eight sites visited. These species are listed in **Appendix B**. Two species of conservation significance were identified during the survey; a Byfield Spider Flower (*Grevillea venusta*) was identified in the Toowong Cemetery and is listed as Vulnerable under the EPBC Act and NC Act, and a Weeping Lilly Pilly (*Waterhousea floribunda*), which is considered to have a restricted distribution within Brisbane City under the NAPSP. The Byfield Spider Flower occurs naturally in sclerophyll forests and woodlands usually in riparian areas along coastal areas of central Queensland from Many Peaks Range to Shoalwater Bay. The specimen in the cemetery is therefore likely to have been planted as a landscape plant.

Several of the sites inspected contained a number of large, mature trees, including eucalypts, figs and rainforest trees. Large, mature trees are diminishing in highly urbanised areas such as within the project area. These trees provide landscape and visual amenity values and habitat, resources (food and shelter) for a variety of fauna species. The fauna habitat values of field survey sites are further discussed in **Table 2-10** Fauna habitat values of field sites.

A description of the eight terrestrial sites visited is provided in **Table 2-4**.

Table 2-4 Description of vegetation and flora species within selected sites

Site	Vegetation Description
Road reserve adjacent to Brisbane Botanic Gardens	This is an open expansive park area located between the Western Freeway and the Brisbane Botanic Gardens. This park is characterised by several large trees with a mown, grassy groundcover. Dominant trees include White Mahogany (*Eucalyptus acmenoides*), Tallowwood (*E.microcorys*), Grey gum (*E. propinqua*), Grey Ironbark (*E. siderophloia*), Queensland Blue Gum (*E. tereticornis*) and Brown Bloodwood (*Corymbia trachyphloia*). Several large Tallowwoods form an open forest community on an embankment adjacent to Mt. Coot-tha Road A number of large Rusty Figs (*Ficus rubiginosa*) are located in a small clump next to a waterway which flows from the gardens, underneath the freeway and into Anzac Park. The waterway has been channelised and does not contain aquatic or riparian vegetation.
Toowong Cemetery	The study corridor encompasses the western half of the cemetery. Vegetation within this area generally includes native and exotic species with ceremonial species planted in several areas. Trees observed within the cemetery include Bunya Pine (*Araucaria bidwillii*), Illawarra Flame Tree (*Brachychiton acerifolius*), Bribie Island Pine (*Callitris rhombifolia*), Spotted Gum (*Corymbia citriodora*), Moreton Bay Ash (*C. tessellaris*), Tallowwood, Grey Gum, Sydney Blue Gum (*E. saligna*), Moreton Bay Fig (*Ficus macrophylla*) and Silky Oak (*Grevillea robusta*). Exotic trees include Chinese Elm (*Celtis sinensis*) and Camphor Laurel (*Cinnamomum camphora*). A waterway through the centre of the cemetery contains patches of vegetation composed primarily of the exotic Camphor Laurel and Chinese Elm. The sedge Papyrus (*Cyperus papyrus*) was observed within the waterway.
Anzac Park, Toowong	Anzac Park is a large open parkland on the southern side of the Western Freeway. The majority of the park is characterised by large trees over mown grassy lawns. Tree species include, Silky Oak, Carrol (*Backhousia myrtifolia*), Black Bean (*Castanospermum australe*), Brown Pine (*Podocarpus elatus*), Chinese Elm, Brushbox (*Lophostemon confertus*), Foambark (*Jagera pseudorhus*), Tallowwood and Cottonwood (*Hibiscus tiliaceus*). Several waterways and associated riparian vegetation occur within the park. The northern waterway contains abundant aquatic macrophytes and fringing sedges and rushes and a small lagoon occurs in the centre of the waterway. The southern waterway is an overflow area, which has been revegetated with a variety of species, including rainforest species. Dominant species include Moreton Bay Ash, Spotted Gum, Grey Ironbark, Bribie Island Pine, White Mahogany and Grey Gum. Riparian and rainforest species include Queensland Kauri Pine (*Agathis robusta*), Cabbage Palm (*Livistona australis*), Bolly Gum (*Litsea reticulata*) and Wheel-of-fire Tree (*Stenocarpus sinuatus*).
Gregory Park, Paddington	This park is located adjacent to a Milton State School. It is used as a sporting field and for community park activities. The park contains a row of large figs (*Ficus* spp.) planted around the perimeter (**Plate 1**).
McCaskie Park on Blamey Street, Normanby	This is typical urban open space park containing a number of large trees over a mown grassy lawn. Tree species include, Hoop Pine (*Araucaria cunninghamiana*), Tallowwood, Weeping Fig (*Ficus benjamina*) and Jacaranda.
Normanby Hotel precinct	Similar to McCaskie Park with a number of large Weeping Figs that have been planted for landscape amenity values.
York's Hollow, Herston	This is a small waterbody, which adjoins to the Victoria Park Golf Course. Riparian and wetland vegetation within this area includes Paperbarks (*Melaleuca quinquenervia* and *M. linariifolia*), Bottlebrush (*Callistemon viminalis* and *C.* "Little John"), Matrush (*Lomandra longifolia* and *L. hystrix*), Weeping Lilly Pilly (*Waterhousia floribunda*) and Jointed Twigrush (*Baumea articulata*). Tree species within the park include Bunya Pine, Jacaranda (*Jacaranda mimosifolia*), Swamp Mahogany (*Eucalyptus robusta*), Narrow-leaved Red Ironbark (*E. crebra*), and Moreton Bay Fig.
Bikeway adjacent to Victoria Park (Busway overpass to York's Hollow)	This is a landscaped open space area containing a variety of trees and other vegetation, including Hoop Pine, White Bottlebrush (*Callistemon salignus*), Blue Quandong (*Eleocarpus grandis*), Grey Ironbark and a number of common urban weeds and grasses

BCC have identified various areas within the study corridor that have been given protection due to their community, landscape amenity or historical values. These areas can include individual trees, groups of trees or other vegetation and are placed under a Vegetation Protection Ordinance (VPO) under the NALL (**Figure 3**). As part of the field survey, all vegetation under a VPO was inspected to confirm species identity and any other notable features. These are listed in **Table 2-5** below.

Table 2-5 Significant vegetation protected under a VPO

Tree No.	Location	Plate Number	Significant Vegetation
1	25 Latrobe Terrace, Paddington	**Plate 2**	1 Mango Tree (*Mangifera indica*)
2	9 Latrobe Terrace, Paddington	**Plate 3**	1 Eucalyptus spp.
3	289, 297A Given Terrace, Paddington		2 Mango Trees
4	267 Given Terrace, Paddington	**Plate 4**	1 Curtain Fig (*Ficus virens*)
5	251 & 257 Given Terrace, Paddington	**Plate 5**	Macadamia (Macadamia sp.), Fig (Ficus sp.), Doughwood
6	6 Martha Street, 31 & 33 Bowler Street, 231, 233 & 235 Given Terrace, Paddington	**Plate 6**	Jacaranda, Silky Oak
7	21 & 23 Guthrie Street, Paddington	**Plate 7**	2 Figs
8	25 Hall Street, Paddington	**Plate 8**	1 Hoop Pine (*Araucaria cunninghamiana*)
9	125 Musgrave Road, Red Hill	-	1 Curtain Fig
10	1 Musgrave Road, Paddington	-	several large Figs
11	575 Milton Road, Toowong	-	1 Crows Ash (*Flindersia australis*).
12	McCaskie Park, Normanby	**Plate 9** & **Plate 10**	Weeping Fig, Hoop Pine, Tallowwood, Jacaranda,
13	140A Kelvin Grove Road, Normanby	**-**	Line of Fig trees
14	Mt. Coot-tha and surrounds	**-**	Remnant and non-remnant vegetation

In addition, the BCC NAPSP has identified several Significant Landscape Trees within the study corridor. These are listed in **Table 2-6**.

Table 2-6 Significant Landscape Trees within the study corridor

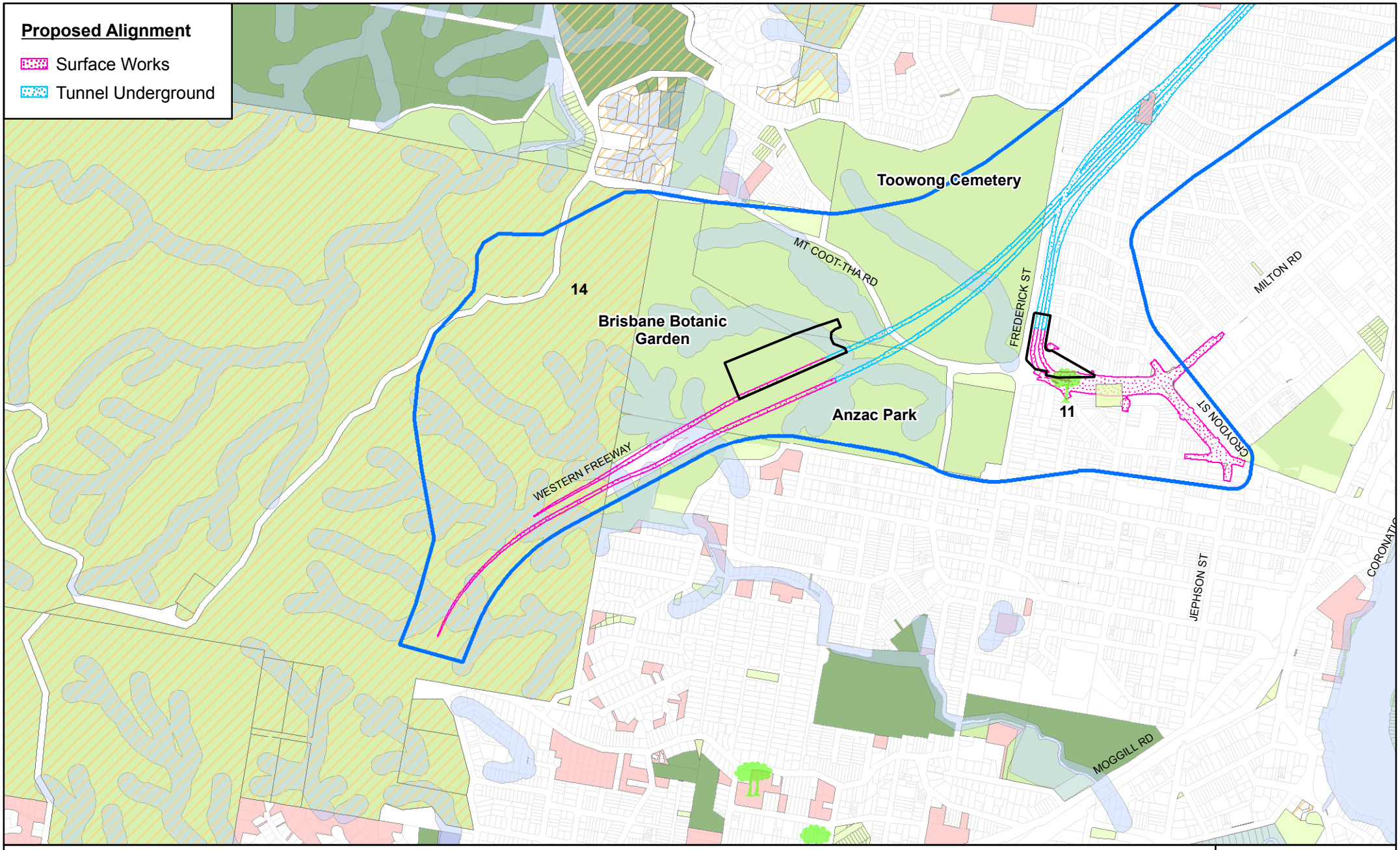
Location	Species and number
89 Agnes St, Auchenflower	2 Poincianas (*Delonix regia*) and 1 Hoop Pine
85 Agnes St, Auchenflower	2 Silky Oaks
79 Payne St, Auchenflower	Gum-topped Box (*Eucalyptus moluccana*)
25 Gona Pde, Kelvin Grove	1 Leopard Tree (*Caesalpinia ferrea*)
Front garden of 2 Haig Rd, Milton	2 Weeping Figs
Front garden of 35 Rockbourne Tce, Paddington	1 Mango
146 Beck St, Paddington	1 Poinciana
2 Agars St, Paddington	1 Weeping Figs and 2 Mangoes

2.2.7 Weeds

Fifty-four species of weeds and other introduced plants were identified from within the study corridor during the field survey. These include 7 species that are listed as Class 2 or Class 3 Declared Plants under the LP Act (**Table 2-7**).

A Class 2 pest is established in Queensland and have, or could have, an adverse economic, environmental or social impact. The management of these pests requires coordination and they are subject to programs led by local government, community or landowners. Landowners must take reasonable steps to keep land free of Class 2 pests. It is a serious offence to introduce, keep or supply a Class 2 pest without a permit issued by the Department of Primary Industries and Fisheries.

A Class 3 pest is established in Queensland and have, or could have, an adverse economic, environmental or social impact. The primary objective of Class 3 listing is to prevent sale, therefore preventing the spread of these pests into new areas. Landholders are not required to control Class 3 plants unless their land is adjacent to an environmentally significant area. It is a serious offence to supply a Class 3 pest without a permit issued by the Department of Primary Industries and Fisheries.



LEGEND

- Study Area Corridor
- Construction Worksites
- Waterway Vegetation
- Council Controlled Vegetation
- Significant Landscape Trees
- Valued Urban Vegetation
- Vegetation Protection Orders
- Wetland Vegetation
- Significant Native Vegetation
- VPO Individual Trees

0 250 500
metres

Scale 1:15,000 (A4)

N

NORTHERN LINK
ENVIRONMENTAL IMPACT STATEMENT

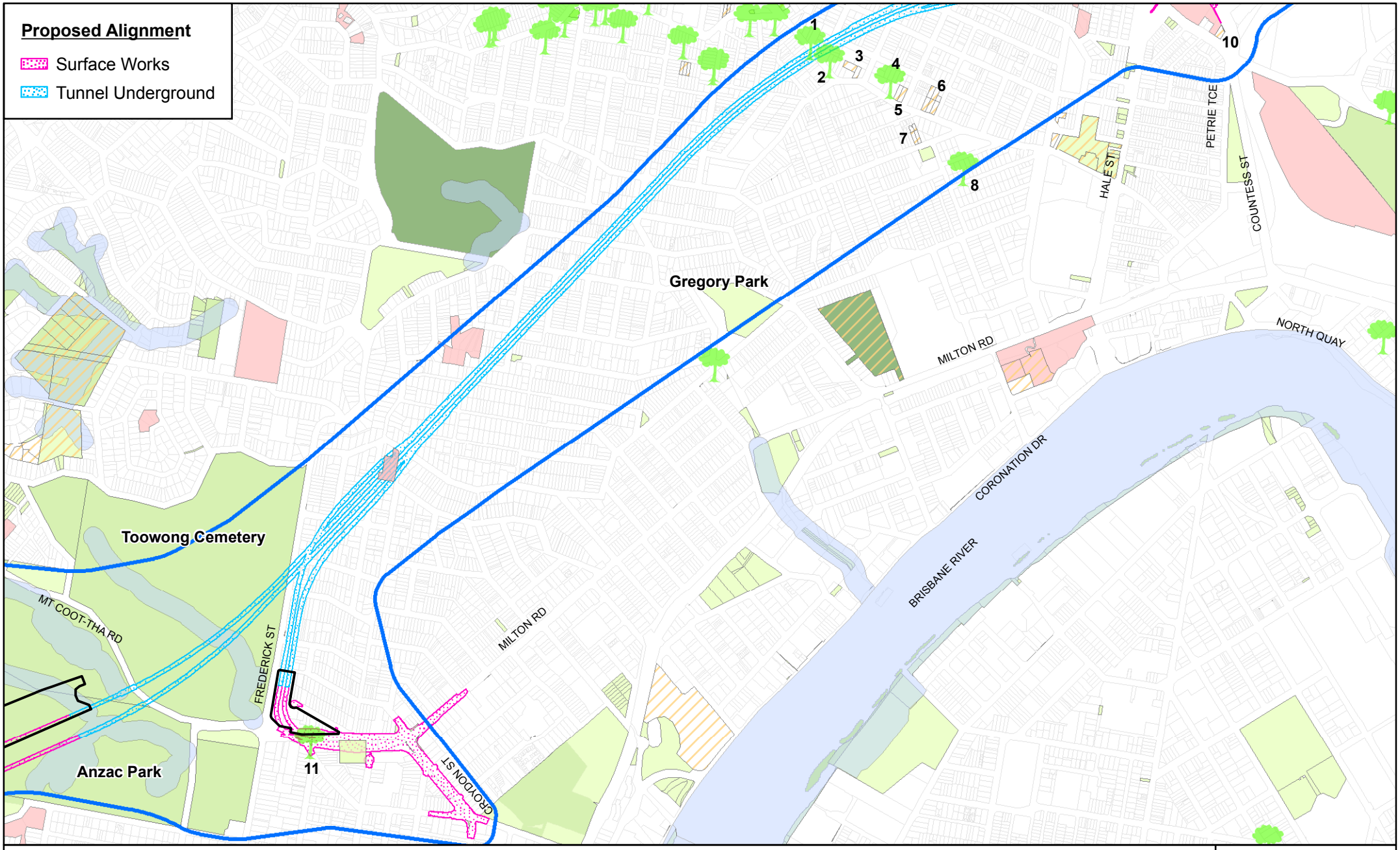
Figure 3A

Natural Assets Local Law Vegetation

Northern Link

SKM Connell Wagner JOINT VENTURE

I:\QENV\Projects\QE07311\Spatial\Arc_MXD\Ecology\080817_NALL_Vegetation.mxd



LEGEND

- Study Area Corridor
- Construction Worksites
- Waterway Vegetation
- Council Controlled Vegetation
- Significant Landscape Trees
- Valued Urban Vegetation
- Vegetation Protection Orders
- Wetland Vegetation
- Significant Native Vegetation
- VPO Individual Trees

0 250 500
metres

Scale 1:15,000 (A4)

N

NORTHERN LINK
ENVIRONMENTAL IMPACT STATEMENT

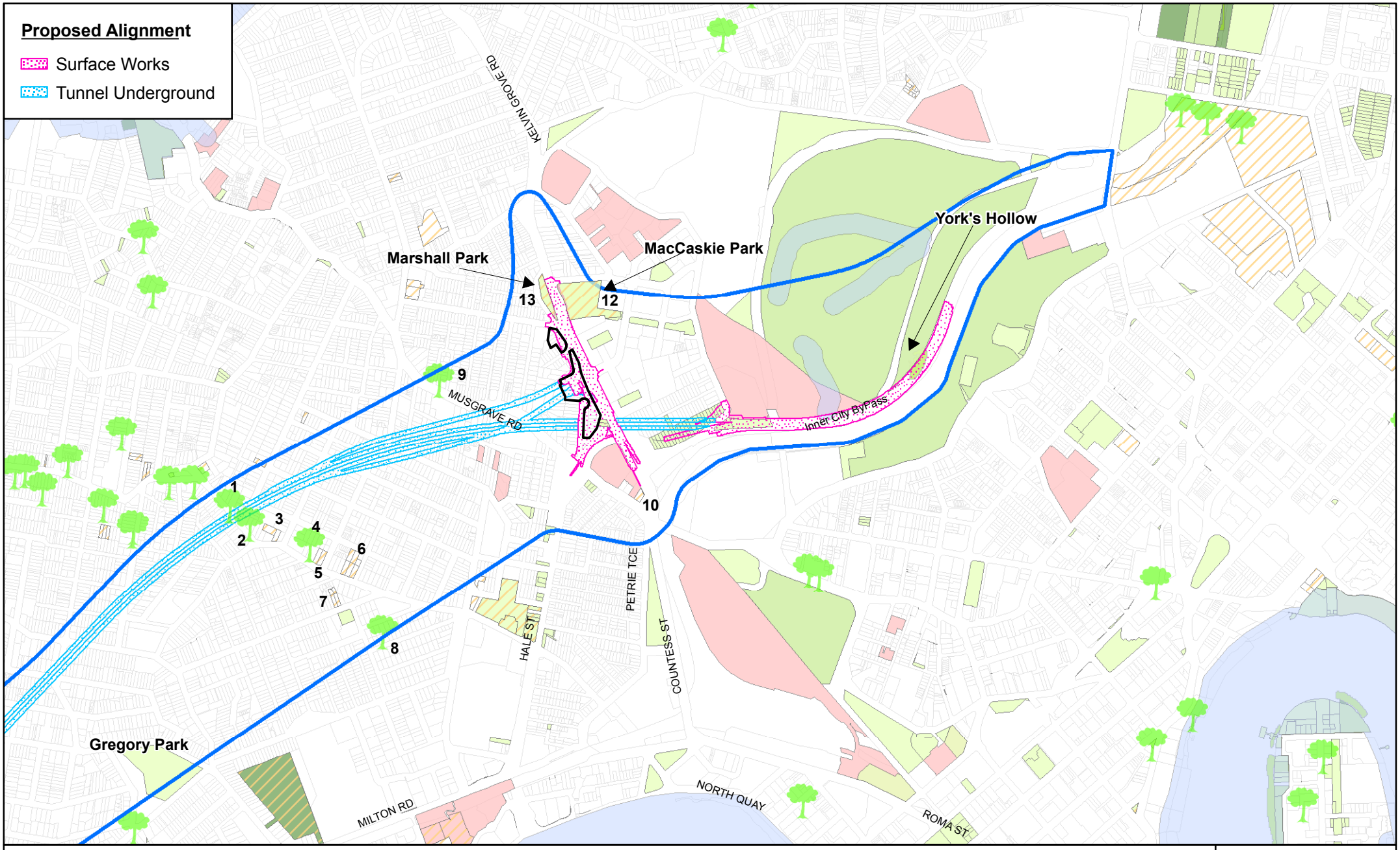
Figure 3B

Natural Assets Local Law Vegetation

Northern Link

SKM Connell Wagner JOINT VENTURE

I:\QENV\Projects\QE07311\Spatial\Arc_MXD\Ecology\080817_NALL_Vegetation.mxd



LEGEND

- Study Area Corridor
- Construction Worksites
- Waterway Vegetation
- Council Controlled Vegetation
- Significant Landscape Trees
- Valued Urban Vegetation
- Vegetation Protection Orders
- Wetland Vegetation
- Significant Native Vegetation
- VPO Individual Trees

0 250 500
metres

Scale 1:15,000 (A4)

N

NORTHERN LINK
ENVIRONMENTAL IMPACT STATEMENT

Figure 3C

Natural Assets Local Law Vegetation

Northern Link

SKM Connell Wagner JOINT VENTURE

I:\QENV\Projects\QE07311\Spatial\Arc_MXD\Ecology\080817_NALL_Vegetation.mxd

Table 2-7 Declared Plants from within the study corridor

Scientific Name	Common Name	Declared Status
Celtis sinensis	Chinese Celtis	3
Cinnamomum camphora	Camphor laurel	3
Lantana montevidensis	Creeping lantana	3
Macfadyena unguis-cati	Cat's-claw Creeper	3
Schinus terebinthifolia	Broad-leaf pepper tree	3
Sphagneticola trilobata	Singapore daisy	3
Bryophyllum delagoensis	Mother of millions	2

2.3 Terrestrial Fauna and Fauna Habitat

2.3.1 Wildlife Corridors

The study corridor occurs at the periphery of a large habitat and wildlife movement system incorporating Mt. Coot-tha and Brisbane Forest Park. In general, well vegetated connections do not occur within the study corridor due to the highly fragmented nature of existing vegetation patches. This limits movement opportunities for fauna and restricts the types of species using fragmented corridors. Some fauna species are likely to utilise waterways within the study corridor that have sufficient vegetation coverage to enable movements through the urban landscape. Such features occur in and around the western connection.

Wildlife corridors have been mapped by the EPA and BCC as occurring within or adjacent to the study corridor. These are discussed below:

- a Terrestrial Bioregional Corridor has been identified by the BPA for the South East Queensland Bioregion as occurring to the north west of the study corridor ecompassing remnant vegetation on the southern slopes of Mt. Coot-tha. This corridor, named the South D'Aguilar Range Terrestrial Corridor, occurs from the Enoggera Forest reserve through to Mt. Coot-tha and is identified as a Regionally Significant corridor (5 kilometre width) (EPA 2006b); and
- a potential wildlife corridor (designated arboreal and avian) has been mapped by BCC from the far western end of the study corridor, traversing in an easterly direction to the south of Stanley Street, Indooroopilly, before linking to a waterway corridor which flows to the Brisbane River. This combined corridor encompasses freehold land, vegetated areas and active and passive open space areas. It is likely to provide limited movement opportunities for some arboreal fauna (i.e. possums and gliders), bats and some birds.

2.3.2 Locally Significant Sites

BCC does not list any significant sites as occurring within the broader study area. One significant site is located at Stuartholme Road in Bardon immediately to the north of the study corridor. This site is located on private property and is considered to contain important wildlife habitat under the NAPSP.

2.3.3 Database Searches

From the database searches, 286 fauna species have been recorded from, or are likely occurrences within the study corridor (**Table 2-8**). These include 11 frogs, 32 reptiles, 216 birds and 24 mammals (of which ten are bats). Fauna listed as rare, threatened, or otherwise significant are described in **Section 2.3.2.1** and Migratory and Marine species listed under the EPBC Act are described in **Section 2.3.2.2**. Due to the location of the study

corridor, all species restricted to marine environments such as whales and sea snakes have been excluded from these results.

2.3.3.1 Fauna of Conservation Significance

Based on the database searches, 22 EVR fauna species are considered potential occurrences within the study corridor including two frogs, one reptile, 14 birds and five mammals (**Table 2-8**). Fourteen of these species are listed under the Commonwealth EPBC Act and 20 are listed under the Queensland NC Act.

Table 2-8 Terrestrial EVR Fauna species identified from database searches as potential occurrences within the study corridor

Scientific Name	Common Name	Status*	Source^	Likely Presence
FROGS				
Mixophyes iteratus	Giant Barred Frog	EN (Aust) EN (Qld)	1	Not Likely
Adelotus brevis	Tusked Frog	VU (Qld)	2	Likely
REPTILES				
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	VU (Aust) R (Qld)	1	Not Likely
BIRDS				
Accipiter novaehollandiae	Grey Goshawk	R (Qld)	2, 3	Not Likely
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	EN (Aust) EN (Qld)	1	Not Likely
Erythrotriorchis radiatus	Red Goshawk	VU (Aust) EN (Qld)	1, 2	Not Likely
Geophaps scripta scripta	Squatter Pigeon (southern)	VU (Aust) VU (Qld)	1	Not Likely
Lathamus discolor	Swift Parrot	EN (Aust) EN (Qld)	1, 2, 3	Possible
Lophoictinia isura	Square-tailed Kite	R (Qld)	2	Not Likely
Melithreptus gularis	Black-chinned Honeyeater	R (Qld)	2	Not Likely
Ninox strenua	Powerful Owl	VU (Qld)	2, 3	Likely on forested slopes of Mt. Coot-tha
Phaethon rubricauda	Red-tailed Tropicbird	VU (Qld)	2	Not Likely
Podargus ocellatus plumiferus	Plumed Frogmouth	VU (Qld)	2	Not Likely
Polytelis alexandrae	Princess Parrot	VU (Aust)	2	Not Likely
Rostratula australis	Australian Painted Snipe	VU (Aust) VU (Qld)	1	Not Likely
Turnix melanogaster	Black-breasted Button-quail	VU (Aust) VU (Qld)	1, 2	Not Likely
Xanthomyza phrygia	Regent Honeyeater	EN (Aust) EN (Qld)	1	Not Likely
MAMMALS				
Chalinolobus dwyeri	Large-eared Pied Bat	VU (Aust) R (Qld)	1	Not Likely

Scientific Name	Common Name	Status*	Source^	Likely Presence
Dasyurus maculatus maculatus	Spotted-tail Quoll (southeastern mainland population)	EN (Aust) VU (Qld)	1	Not Likely
Phascolarctos cinereus	Koala (southeast Queensland bioregion)	VU (Qld)	2	Possible
Potorous tridactylus tridactylus	Long-nosed Potoroo (SE mainland)	VU (Aust) VU (Qld)	1	Not Likely
Pteropus poliocephalus	Grey-headed Flying-fox	VU (Aust)	1, 2	**Known** (this survey)

* Status: EN = Endangered, VU = Vulnerable, R = Rare; Aust = Status under the Commonwealth EPBC Act; Qld = Status under the Queensland *Nature Conservation (Wildlife) Regulation 2006*

^ Source: 1 = Protected Matters database; 2 = EPA Wildlife Online database; 3 = Birds Australia database.

Three threatened species have been previously recorded from Mt. Coot-tha namely the Swift Parrot (*Lathamus discolor*), Powerful Owl (*Ninox strenua*) and the Black-breasted Button-quail (*Turnix melanogaster*). The Swift Parrot is a seasonal migrant to south east Queensland and is a semi-regular occurrence in the outer western suburbs of Brisbane. It has been recorded from the suburbs of Bardon, Kenmore and Chapel Hill and was last recorded from Mt. Coot-tha in 2002. This species occurs in dry sclerophyll forests, although it is often observed feeding on old, large flowering eucalypts within western Brisbane parks. This species is a possible occurrence within parks in the western portion of the study corridor.

The Powerful Owl is a regular occurrence within the Mt. Coot-tha area and has been observed at the J. C. Slaughter Falls picnic area approximately one kilometre to the north-west of the study corridor. This species occurs in tall open forest and woodlands, preferring to roost by day in dense vegetation within gullies. This species is a possible visitor to the study corridor, primarily within bushland adjacent to the Western Freeway.

The Black-breasted Button-quail was recorded in 1993 from the lower eastern slopes of Mt. Coot-tha within microphyll vine scrub along Ithaca Creek (*pers. comm.* G. Smith, October 2007). This species is generally restricted to South East Queensland within semi-evergreen vine thickets, dry sclerophyll forests and occasionally thickets of Lantana (*Lantana camara*). A permanent population is known from the Enoggera Creek catchment where good quality habitat occurs. Potential habitat for this species occurs adjacent to the study corridor in small, isolated thickets within gullies on the southern slopes of Mt. Coot-tha. It is suspected that there are no permanent populations within this area and that the records from 1993 may have been birds dispersing from the Enoggera population (*pers. comm.* G. Smith, October 2007).

Eighteen fauna species are recognised as regionally or otherwise significant, including one frog, three reptiles, six birds and six mammals (**Table 2-9**). Four of these species are listed as Near Threatened or Rare / Insufficiently Known under the relevant Action Plan for their taxon, whilst 17 are listed as Non-EVR Priority Taxa in the BPA for SEQ: Fauna Expert Panel Report (EPA 2006a).

Thirty-five species are recognised by BCC as locally significant within Brisbane City, including 4 reptiles, 27 birds and 7 mammals (**Appendix D**). The BCC NAPSP lists fauna species according to the following categories (from Schedule 4: Significant fauna species (terrestrial/mainland only):

- S: Significant-Significant animals are animals that are rare in Brisbane, or animals that are uncommon in Brisbane and are becoming rare. They are species at risk of becoming extinct in Brisbane if future developments do not accommodate their ecological needs. They are species that do not adapt well to human impacts underway in Brisbane, and which are consequently much less numerous now, and more restricted in distribution, than they were prior to European settlement. Their occurrence indicates

the presence of a habitat that is now rare in Brisbane, or of a habitat remnant that is not degraded, of a habitat type that usually occurs in Brisbane in a degraded state. As such, they are often indicators of rare or quality habitats.

- N: Noteworthy-Noteworthy animals are animals that are uncommon in Brisbane. In the future they may become rare if future developments do not accommodate their needs. They do not adapt well to the human impacts underway in Brisbane, and consequently are less numerous now and more restricted in distribution than they were prior to European settlement. Their presence frequently indicates the occurrence of a habitat that is now uncommon in Brisbane, or of a widespread habitat in a relatively undegraded condition. As such, they are often indicators of habitat quality, especially where several noteworthy species occur together.
- E: Extinct-Extinct animals are those that are known or presumed to have once occurred within Brisbane, but which are now strongly believed to be extinct.

Table 2-9 Regionally significant fauna identified from database searches

Scientific Name	Common Name	AP*	BPA#	Source^	Likely Presence
FROGS					
Pseudophryne major	Large Toadlet		RL(S)	2	Possible
REPTILES					
Emydura macquarii signata	Brisbane Short-necked Turtle	R/IK	EN	2	Likely
Cacophis krefftii	Dwarf Crowned Snake		RL(N)	2	Likely
Lampropholis guichenoti	Pale-flecked Garden Sunskink		RL(N)	2	Likely
BIRDS					
Acrocephalus australis	Australian Reed-Warbler		SEQ	2, 3	Likely
Anthochaera chrysoptera	Little Wattlebird		RL(N)	2	Likely
Glossopsitta concinna	Musk Lorikeet		RL(N)	2, 3	Likely
Ixobrychus minutus	Little Bittern	NT		2	**Known** (BCC record within study corridor)
Ptilinopus regina	Rose-crowned Fruit-Dove		SEQ	2	Likely (BCC record adjacent to study corridor)
Platycercus eximius	Eastern Rosella		RL(N)	2	Likely
Ptilinopus superbus	Superb Fruit-Dove		R	2	Likely (BCC record adjacent to study corridor)
Tyto novaehollandiae novaehollandiae	Masked Owl (southern subspecies)	NT	D, R	2	Not Likely
MAMMALS					
Petauroides volans	Greater Glider		I	2	Possible
Petaurus norfolcensis	Squirrel Glider	NT	SH	2	Likely
Pseudocheirus peregrinus	Common Ringtail Possum		DD	2	**Known** (SKM survey)
Pteropus alecto	Black Flying-Fox		D	2	Likely
Pteropus scapulatus	Little Red Flying-Fox		D	2	Likely
Syconycteris australis	Eastern Blossom Bat		D	2	Possible

* Status under Action Plan for relevant taxon: R/IK = Rare or Insufficiently Known; NT = Near Threatened.

BPA: Identified as Non-EVR Priority Taxa by the Fauna Expert Panel for the SEQ BPA.

RL – Range Limit (with compass bearing in parentheses); EN – Endemic; R – Rare; D – Declining; I – Indicator; SH – Stronghold; DD – Data Deficient Requiring Attention

^ Source: 2 = EPA Wildlife Online database; 3 = Birds Australia Birdata database.

2.3.4 Other EPBC Act Listed Species

In addition, 76 fauna species are listed as Migratory and / or Marine species under the Commonwealth EPBC Act (**Appendix E**). These include 45 species recognised as migratory under the EPBC Act and / or International Agreements (i.e. JAMBA, CAMBA or the Bonn Convention) and 60 species listed as Marine species or are known to fly over marine areas.

2.3.5 Field Survey

Three native fauna species were identified during the field survey, including Brushtail Possum (*Trichosurus vulpecula*), Ringtail Possum (*Pseudocheirus peregrinus*) and Grey-headed Flying Fox (*Pteropus poliocephalus*). The Cane Toad (*Rhinella marina*) was also observed during the field survey and is an introduced species.

The Grey-headed Flying Fox is listed as Vulnerable under the EPBC Act. This species was observed feeding on fruiting fig trees (Ficus spp.) in the Toowong Cemetery and in the road reserve near the Mt. Coot-tha Gardens. This species is relatively common throughout Brisbane City and a number of permanent camps are located within the city, including a camp at Indooroopilly Island which is approximately four kilometres to the south of the study corridor.

The fauna habitat value of selected sites within the study corridor was assessed during the field survey. A brief description of the sites and associated values are provided in **Table 2-10**, below.

Table 2-10 Fauna habitat values of field sites

Site	Fauna Habitat Description
Road reserve adjacent to Brisbane Botanic Gardens	This park contains a number of large eucalyptus and fruiting species that provide roosting and feeding opportunities for a variety of arboreal mammals, birds and bats. Several large fig trees are located within this park, which were fruiting at the time of the survey. A number of Grey-headed Flying Foxes were observed feeding on the fruit. The large eucalypts are also likely to provide a food source for these and other species during peak flowering times. The number of hollows in trees within the park is less than expected due to the trimming of old branches which is conducted as part of the maintenance regime of the park. This limits nesting opportunities for possums and gliders and hollow nesting birds such as lorikeets (*Trichoglossus* spp.). The value of this park for other species (eg. small birds, mammals, reptiles and frogs) is generally limited due to the lack of vegetation below the canopy and lack of riparian vegetation along the waterways.
Toowong Cemetery, Toowong	The cemetery contains a variety of fruiting and flowering trees and shrubs that are likely to provide foraging opportunities for a variety of urban fauna species. Grey-headed Flying Foxes were also observed at this site feeding in the large fig trees. Some large hollow-bearing trees were observed; however most trees were species that generally do not produce hollows (eg. Chinese Elm, Camphor Laurel, Fig trees). The value of this site for other species is generally limited due to the lack of vegetation below the canopy, except for patches of vegetation along the waterway. This vegetation may provide some value for small birds and frogs.

Site	Fauna Habitat Description
Anzac Park, Toowong	This park has higher value for urban wildlife than other vegetated urban areas within the study corridor. This is generally due to the presence of the waterway and lagoon and associated wetland and riparian vegetation. This may provide habitat for freshwater turtles, waterfowl and frogs. The comparably higher structural diversity of the vegetation surrounding the waterway also provides shelter sites and foraging opportunities for small birds and mammals. The park has a good coverage of large trees which may provide nesting opportunities for birds and arboreal mammals and foraging resources for a variety of other wildlife.
Gregory Park, Paddington	Despite the lack of other vegetation within this park, the row of fig trees are likely to provide a food source for fruit loving species, including the Grey-headed Flying Fox and birds. Use of this vegetation by wildlife is likely to be restricted to common arboreal mammals (i.e. possums), birds and bats.
McCaskie Park, Normanby	Despite the lack of other vegetation within this park, the fig trees and eucalypts are likely to provide a food source for some species, including the Grey-headed Flying Fox other bats and birds.
Normanby Hotel precinct, Red Hill	The fig trees are likely to provide a food source for fruit loving species, including the Grey-headed Flying Fox and birds. Use of this vegetation by wildlife is likely to be restricted to arboreal mammals, birds and bats.
York's Hollow, Herston	The wetland is likely to be used by waterfowl and may contain freshwater turtles and fish. The fringing wetland vegetation may provide habitat for frogs and small birds. The surrounding tree species are also likely to provide roosting and nesting opportunities for arboreal mammals and birds and may provide a valuable food source for wildlife within a highly urbanised area.
Bikeway adjacent to Victoria Park (Busway overpass to York's Hollow)	Very little habitat value for wildlife. The planted trees within this area are likely to provide a food source for some birds and bats and may provide some roosting opportunities.

2.3.5.1 Pest Species

One pest species was observed during the fauna survey, namely the Cane Toad. This species is able to breed in almost any kind of semi-permanent water and will feed on a variety of food sources including invertebrates (predominantly insects and other arthropods), skinks, small snakes and frogs. The Cane Toad favours open ground on which to forage and therefore is likely to be abundant within the parks described previously and generally throughout the study corridor.

2.3.6 Aquatic Fauna

2.3.6.1 Database Searches

Based on the database searches, three freshwater turtle species were identified as occurring within the study corridor:-the Broad-shelled River Turtle (*Macrochelodina expansa*), Brisbane Short-necked Turtle (*Emydura macquarii signata*) and the Saw-shelled Turtle (*Wollumbinia latisternum*). All species are listed as Least Concern under the NC Act.

The Broad-shelled River Turtle inhabits permanent lagoons, lakes, rivers and swamps in southern, central and South East Queensland (Wilson, 2005). It is generally found in silty waters, where it lies on the bottom of waterways concealed by a layer of silt (Couper, *et al* 2007). It feeds on invertebrates and a variety of fish. The Saw-shelled Turtle is found in permanent lagoons, creeks and the upper reaches of larger rivers, generally east of the Great Dividing Range north from New South Wales and including the Northern Territory. This species is a predator on invertebrates, frogs and carrion and will graze on algae and aquatic macrophytes (Couper, *et al* 2007).

The Brisbane Short-necked Turtle inhabits permanent slow flowing streams and large lagoons (Wilson 2005) and is the most common turtle in the Brisbane River catchment (Couper, *et al* 2007). It feeds on algae and aquatic macrophytes, but will occasionally take live invertebrates (Couper, *et al* 2007). It has been listed as Rare or Insufficiently Known under the Action Plan for Australian Reptiles (Cogger, *et al* 1993).

2.3.6.2 Field Survey

A number of small waterways and one wetland are mapped by BCC as occurring within the study corridor. Several of the waterways were inspected during the field surveys and most were found to be channelised with little to no vegetation coverage or aquatic plants. Other semi-natural waterways within the study corridor may provide habitat values for aquatic and terrestrial fauna. However, due to the highly urbanised surroundings most waterways are likely to contain a narrow range of species. The waterways are listed in **Table 2-11** and a brief description provided.

Table 2-11 Waterways and wetlands within the study corridor

Location	Brief Description and Habitat Values
Several small creeks and tributaries occurring beneath the Western Freeway	These creeks occur on the southern slopes of Mt. Coot-tha, travelling underneath the Western Freeway before entering the suburban drainage network and eventually the Brisbane River. These waterways are largely vegetated and undisturbed to the north of the freeway, becoming less so within the suburbs. Many of these waterways are likely to be ephemeral and may not provide significant values for aquatic fauna. The level of riparian vegetation fringing the waterways also becomes thinner and more disturbed from the slopes of Mt. Coot-tha to suburban areas. Habitat values for other fauna are likely to be higher in the undisturbed northern portions of the waterways.
Waterways within the Brisbane Botanic Gardens – Mt. Coot-tha	The study corridor partially encompasses the waterway and lagoon within the Brisbane Botanic Gardens. Both features have been landscaped as part of the Garden's maintenance. However, both contain habitat values for aquatic fauna. The lagoon in particular contains abundant macrophytes and algae and is known to contain introduced turtles, eels and fish. The lagoon also contains habitat values for waterfowl and reptiles such as Water Dragons (*Physignathus lesueurii*). The waterways leave the Botanic Gardens and flow through a road reserve and underneath the Western Freeway. This portion of the waterways are channelised and and generally do not contain any riparian vegetation (see **Plate 11**)
Waterways within Anzac Park, Toowong	The lagoon within Anzac Park contains abundant macrophytes and fringing rushes and sedges. It is likely that the lagoon and waterway provides habitat for aquatic fauna such as turtles, eels and fish. The riparian vegetation fringing the lagoon also contains a comparably higher structural and species diversity and is likely to provide habitat for a variety of terrestrial and arboreal fauna.
Waterway within Toowong Cemetery	The waterway within the Toowong Cemetery has been heavily disturbed and most of the native vegetation removed. Some patches of riparian vegetation remain, although most contain exotic weed species such as Chinese Elm and Camphor Laurel. The waterway itself is ephemeral and is likely to contain water only during storms, therefore is of little value to aquatic fauna.
Riparian gully between Cairns Street and Cambridge Terrace, Red Hill	This waterway is not mapped by BCC under the NALL and the gully is primarily a flow path for urban stormwater. Hence, there is unlikely to be any habitat for aquatic fauna. However, the vegetation within the gully is likely to provide habitat and food resources for urban terrestrial wildlife and may provide some nesting resources for birds.

Location	Brief Description and Habitat Values
York's Hollow within Victoria Park Golf Course, Herston	These small wetlands are likely to provide habitat for some aquatic fauna. Some fringing aquatic vegetation is present; however, other surrounding vegetation is generally absent. This limits the habitat value of these wetlands for other fauna and is likely to provide some habitat and food resources for common waterfowl (eg. ducks and ibis) and other urban wildlife.

3. Potential Impacts and Mitigation

3.1 Introduction

This section identifies the impacts that may occur on the identified flora and fauna values of the project and details the suite of measures to mitigate or minimise potential impacts. Despite the largely developed areas within the study corridor, the project has the potential to impact on remnant vegetation, riparian vegetation and waterways, wildlife corridors and fauna.

In general, all vegetation to be disturbed during construction will be replanted or rehabilitated post-construction, depending upon the state of the existing environment at each connection. At the eastern connection, the focus of rehabilitation works will be to restore the landscape amenity of the local area by the planting of landscape trees and shrubs within road reserves and affected parkland areas. At the western connection, the focus of rehabilitation works will be to restore and in some cases improve the ecological values of remnant and non-remnant vegetation which are impacted.

3.2 Vegetation Communities and Flora

3.2.1 Impacts on Vegetation Communities

The project will require the clearing of 4.79 ha of native vegetation. This vegetation is generally located at the western end of the corridor and along several streets and in parks at the western and eastern connection of the tunnel.

Clearing of vegetation will be necessary for the construction of entry and exit ramps to the tunnel, the construction of the W1 ventilation outlet and the conveyor to transport spoil from the western end of the tunnel to the Mt Coot-tha Quarry.

Details of the vegetation to be cleared are provided in **Section 3.2.1.1** and **Section 3.2.1.2**.

There is also some potential for dust fallout from the construction activities to indirectly impact on adjacent vegetation communities. Excessive release of dust has the potential to settle on plants, potentially inhibiting photosynthesis and hence plant metabolism and health. Impacts from dust are likely to be temporary, although this is dependent upon the number of consecutive days without rainfall and/or strong winds to remove dust layers.

3.2.1.1 Impacts on Regional Ecosystems

One RE, as listed under the VM Act, is mapped within the study corridor. Minimal areas of remnant vegetation will require removal at the western connection for the entry and exit points, ventilation outlet (W1 option only) and quarry conveyor. These areas include the lower slopes and gullies of Mt. Coot-tha, the Botanic Gardens and Anzac Park.

The road construction will require the removal of approximately 1.6 hectares of RE 12.11.5/12.12.5 (Open forest complex with *Corymbia citriodora, Eucalyptus siderophloia, E. major* on metamorphic ± interbedded volcanic and *C. citriodora, E. crebra* open forest on Mesozoic to Proterozoic igneous rocks). These REs have a status of Not of Concern under the VM Act.

Additional areas of remnant vegetation are likely to be cleared for the construction of the proposed conveyor to Mt. Coot-tha Quarry and the proposed ventilation tower at the western connection. At the time of writing it is not possible to determine the likely area of remnant vegetation to be cleared.

Within the context of the urban landscape and natural values adjacent to the proposed works, the clearing of remnant vegetation is not considered to be significant provided that the mitigation measures recommended in **Section 3.2.2** are implemented.

3.2.1.2 Impacts on BCC Mapped Communities

Remnant and non-remnant vegetation is mapped by BCC within the study corridor. This mapping is completed at a higher spatial resolution than the State RE mapping and is therefore of greater accuracy. In terms of assessing the impacts on vegetation from the project, it is then preferable to refer to the BCC vegetation mapping data. The BCC mapped remnant vegetation overlaps with portions of the State RE mapping. The BCC vegetation mapping is not recognised under the Queensland VM Act.

Minimal areas of vegetation will be removed at the western end of the corridor for the entry and exit roads, ventilation outlet (W1 option only) and quarry conveyor. In addition, vegetation along several streets and in parks will require removal at the western and eastern connection of the tunnel. These include some large fig trees along Kelvin Grove Road. **Table 3-1** lists the areas of vegetation to be removed by the project.

Table 3-1 Approximate areas of mapped vegetation to be removed

State Regional Ecosystem Mapping	VM Status	Brisbane City Council Regional Ecosystem Mapping	Brisbane City Council Status	Location	Area to be cleared (ha)
12.11.5/12.12.5 (90/10)	Not Of Concern	12.11.3 (Remnant)	none	Both of the Western Freeway surface road connections and within the south-west section of the Western Freeway worksite for the ventilation station	1.24
		12.11.5	LCW*	Southern side of the Western Freeway connection	0.16
		12.11.19	none	Northern side of the Western Freeway connection	0.20
Non-remnant Vegetation	None	Unconfirmed Remnant	none	Victoria Park for the ventilation outlet	0.04
Non-remnant Vegetation	None	12.11.3 (Non-remnant)	none	North-east section of the Western Freeway worksite and southern side of Western Freeway (Anzac Park)	0.40
Non-remnant Vegetation	None	12.11.5 (Non-remnant)	none	Small area south of the quarry for the conveyor	0.20
Non-remnant Vegetation	None	12.11.5a (Non-remnant)	none	Not affected	0
Non-remnant Vegetation	None	Unconfirmed Non remnant	none	Majority of Western Freeway worksite, northern side of the Western Freeway surface connection and small areas within Kelvin Grove Road worksite and surface road connections;	2.55
Total					**4.79**

Table Note: * Significance under Schedule 5 of the NALL: LCW = Local/Citywide Significance

3.2.2 Proposed Mitigation

The following mitigation measures are proposed to mitigate the impacts on vegetation from the project construction. Mitigation includes strategies to manage short and long term impacts on vegetation.

3.2.2.1 Vegetation Management

The short term impacts (pre-construction to up to three years) on vegetation are proposed to be mitigated by the following:

- identify vegetation to be removed and that to be retained on construction drawings and on site to minimise loss of habitat and vegetation;
- high priority should be given to the retention of mature trees during the planning and layout of the Western Freeway worksite to avoid the need for extensive and long term rehabilitation post construction;
- trees and areas of other vegetation to be retained within the worksite should be clearly marked on construction drawings and protected by the use of stakes and suitable fencing. Protection fencing (stakes and suitable fencing wire) would be erected at the dripline[1] of individual trees or groups of trees. No activity, storage of materials (e.g. spoil, fuels, oils, wastes, etc.) or parking of vehicles and machinery would occur within this zone in order to protect surface roots from soil compaction and contamination;
- an assessment of individual trees or groups of trees within the Western Freeway worksite would be conducted to determine those trees or groups of trees that are could be retained within the context of planning a functional and efficient worksite;
- have the contractor to monitor vegetation clearing to ensure only approved areas are cleared;
- avoid damage to the root zones of adjacent trees during construction - locate vehicle access, material storage and the cleaning of plant and equipment away from adjacent trees;
- implement sedimentation and erosion control plans to reduce sediment leaving the project construction sites in surface water run-off and entering receiving environments particularly the Anzac Park gully, drainage lines and stormwater systems;
- prepare of a weed management plan prior to any construction or clearing activities occurring to prevent the spread of declared and other weeds;
- revegetate disturbed areas with local native species (or landscape species depending upon location of revegetation area), as soon as possible after disturbance; and
- monitoring of revegetation plantings for up to two years post-construction to ensure that long-term impacts on native wildlife are minimised through restoration of habitat to at or beyond pre-construction condition.
- a Construction Air Quality Environmental Management Plan (EMP) Sub-Plan would be prepared addressing all worksites and areas of potential dust generation. Generally these requirements are specified as approval conditions to protect surrounding residential and commercial activities from dustfall and would be expected to also meet the needs of surrounding vegetation communities.

3.2.2.2 Rehabilitation and Landscaping

The aim of the rehabilitation program within remnant and non-remnant communities is to restore the ecological values of cleared and impacted areas in the long term (from three to five years plus) by replanting with a suite of

[1] The dripline is defined as the vertical projection of the canopy edge to the ground.

locally endemic species. Non native species will only be used where the use of these species is consistent with existing landscaping.

The Landscape and Visual Masterplan (Verge Urban Landscape Architecture 2008) provides a number of different zones of landscaping depending upon the surrounding or pre-construction environment. The zones relevant to ecology are briefly described as follows:

- Revegetation – the aim of the revegetation zone is to protect, revegetate or rehabilitate areas adjacent to or impacted by the construction works. The protection zone includes vegetation within Anzac Park and vegetation within road reserves. The revegetation and rehabilitation zones include remnant vegetation adjacent to the Western Freeway and particularly along the proposed conveyor route. The site of the proposed water storage dam for the Botanic Gardens will also be rehabilitated in consultation with the Gardens.
- Landscape Open Space – these areas will be planted out along median strips and may assist with improving connectivity for some wildlife across the Western Freeway.
- Boulevard Treatments – these areas provide enhanced streetscape amenity to assist in visual mitigation and integration of infrastructure into the surroundings. These areas are primarily confined to existing urban areas and will include a mixture of native and introduced street trees, some of which are used as a food resource by fauna, including the Grey-headed Flying Fox.

3.2.3 Impacts on Flora

Two flora species of conservation significance were identified from within the study corridor during the field survey. Neither plant is likely to be impacted by the proposed construction works.

One VPO tree may require removal for the proposed construction works. A single Crows Ash (*Flindersia australis*) located at 575 Milton Road, Toowong may be impacted by proposed widening of Milton Road and the construction of the entry and exit of the western tunnel onto Milton Road.

3.2.4 Proposed Mitigation

No flora species listed as EVR under State or Commonwealth legislation will be impacted by the project construction.

One tree listed under a VPO by BCC (i.e the Crows Ash, *Flindersia australis*, at 575 Milton Road, Toowong). Crows Ash is included in the planting palette for streetscape and landscape amenity revegetation zones and it is considered that many individuals of this species will be planted throughout the revegetation zones.

3.2.5 Impacts on Groundwater Dependent Ecosystems

Potential impacts and proposed mitigation measures on GDEs are discussed in Chapter 7 (Hydrology) of the EIS.

3.2.6 Weeds

Weed species are common occurrences throughout the study corridor comprising approximately 36% of the flora diversity. Nevertheless, the project construction has the potential to introduce new species into semi-natural ecosystems and contribute to the spread of existing species by topsoil disturbance and vehicle movements. The potential for significant impacts from weeds are considered low provided that appropriate weed hygiene and management measures are enforced (**Section 3.2.7**).

3.2.7 Proposed Mitigation

Weed hygiene procedures will aim to prevent the introduction and spread of weeds throughout the project area. Weed hygiene procedures will be detailed in the Weed Management Environmental Management Plan (EMP) and will include such strategies as dedicated vehicle washdown facilities, minimisation of topsoil disturbance and minimising the time between disturbance and rehabilitation.

3.3 Habitat and Fauna Species

3.3.1 Impacts on Fauna and Habitats

The project will involve the removal of approximately 4.79 hectares of vegetation, primarily within the western portion of the study corridor. Remnant vegetation is generally considered to provide higher quality habitat and resources (i.e. food, nesting and shelter) for wildlife than non-remnant and regrowth vegetation, although there are exceptions to this rule. Within an urban environment, remnant vegetation is particularly important as refugia for species that are sensitive to disturbance.

Remnant vegetation within the study corridor is characterised by mature eucalypts and a high structural complexity of vegetation beneath the canopy. The loss of this vegetation translates to an effective loss of food, nesting and shelter resources for wildlife.

Non-remnant vegetation within the study corridor comprises small patches of mature and regrowth vegetation and landscaped areas. Fauna that utilise this vegetation are generally adapted to the urban environment and can tolerate a level of disturbance. The loss of 3 hectares is not expected to result in a significant impact on any urban fauna species.

The loss of 4.79 hectares is considered minor compared to the larger patches of vegetation adjacent to the study corridor. Provided that the mitigation and management measures recommended in the following section as complied with, no significant impacts on native species should occur.

There is some potential from construction activities to indirectly impact on local fauna. Fauna species currently occurring within the study area are likely to be exposed to indirect impacts such as noise, lighting, vibration and odours, which are common within urban environments. However, during construction activities, these impacts are concentrated and generally magnified. Potential impacts will be localised around the worksite at each connection and are likely to be more pronounced at the Western Freeway worksite due to it's location adjacent to remnant vegetation.

Most of the fauna likely to occur within the study area are mobile and readily disperse through the urban landscape. Mobile fauna in the immediate vicinity of each worksite, and particularly the Western Freeway worksite, may temporarily move away from the worksites for the duration of the construction activities. This may particularly affect nocturnal fauna such as arboreal mammals, birds and bats, where concentrated lighting sources may deter these fauna from the worksites. Given the proximity of the Western Freeway worksite to the Western Freeway with artificial lighting, the addition of a temporary light sources are expected to be negligible. Light spill onto surrounding areas is also controlled through the approval conditions for these major infrastructure projects.

Impacts from worksites are temporary and mobile fauna are expected to continue to utilise the study area once construction activities have ceased.

There is potential that vehicle strikes with fauna may increase during the operational phase of the project as a result of the additional lanes that fauna must cross.

3.3.2 Proposed Mitigation

The NC Act and NC Regulation require that protected animals whose habitat has been or is about to be destroyed by human activities or natural disasters are cared for and rehabilitated. Compliance with this legislation will be required. These matters will be comprehensively addressed in the Fauna Management EMP.

Several specific fauna management measures are provided below:

- inspection of tree hollows by a 'Spotter-catcher' (a person licensed by the EPA for fauna rescue) in the road reserve adjacent to the Brisbane Botanic Gardens, Anzac Park and adjacent to the Western Freeway prior to site clearance to determine the presence of arboreal mammals and bats, and implement a relocation plan for any fauna found;
- inspection of construction site works, such as trenches and culverts, by a Spotter-catcher each morning and after periods of inactivity to ensure fauna are not trapped or likely to be harmed by construction activities; and
- ensure all native fauna are protected and shall not be intentionally harmed as a result of the construction works or worker actions.

3.3.3 Impacts on Significant Fauna

Five species listed as EVR under Queensland and/or Commonwealth legislation are known or are likely or possible occurrences within the study corridor (**Section 2.3.3.1**). The majority of suitable habitat for these species occurs at the western end of the study corridor and is associated with adjacent remnant vegetation. The minimal amount of remnant vegetation to be cleared compared with adjacent patches is not considered to significantly impact on any of these EVR species. Regardless, there is potential for impacts on these species from vegetation clearance works and changes to hydrology and water quality.

The Tusked Frog (*Adelotus brevis*) is a likely occurrence in the study corridor, primarily within riparian vegetation at the western end of the tunnels. This species is generally common within Brisbane City and is known to breed in temporary ponds, wetlands and riparian vegetation including degraded sites. The project has the potential to impact on suitable breeding sites from vegetation clearance and earthworks which may result in altered hydrology and water quality (e.g. sedimentation of breeding sites from runoff).

The Swift Parrot (*Lathamus discolor*) is possible occurrence within the western portion of the study corridor. This species is known to feed on nectar from large, old flowering eucalypts within parks in outer western Brisbane suburbs. The project may require the removal of preferred feed trees. The removal of these trees is not expected to result in a significant impact on this species.

The Powerful Owl (*Ninox strenua*) is a likely occurrence within the lower slopes of Mt. Coot-tha and may occasionally traverse the study corridor. This species actively hunts nocturnal species such as small gliders (*Petaurus* spp.) and Ringtail Possums (*Pseudocheirus peregrinus*). During the day it shelters within densely vegetated gullies within its' more open forest habitat. The project has the potential to reduce the nesting resources of prey species (i.e. hollow-bearing trees) thereby constituting a potential reduction in food resources. It is considered that the loss of these trees is unlikely to be a significant impact on the Powerful Owl.

The Koala (*Phascolarctos cinereus*) is considered a possible occurrence within the western portion of the study corridor. This species occurs in a variety of habitats provided that preferred food trees are present. The project will result in the removal of habitat for this species, although the minimal amount to be removed is unlikely to result in a significant impact on this species.

The Grey-headed Flying Fox (*Pteropus poliocephalus*) was observed during the field studies feeding on flowering *Eucalyptus* species and fruiting fig trees (Ficus spp.) within the road reserve adjacent to the Botanic Gardens and within the Toowong Cemetery. This species is common within Brisbane City and several permanent camps are located within the city. The nearest camp is at Indooroopilly Island, which lies approximately four kilometres to the south of the study corridor.

The species feeds on a variety of flowering and fruiting native species including Eucalypts, Bloodwoods, Callistemons, Brushbox, Banksias, Grevilleas, Figs, Lilly-pillys and Paperbarks and the fruits and berries from exotic plants (Australasian Bat Society 2001). Flying foxes are also highly mobile and nightly foraging trips can range up to 50 kilometres away camps. The project will result in the removal of some of these plant species which translates to a loss of potential forage resources for the Grey-headed Flying Fox. There are unlikely to be any impacts on known camps as a result from the project. Considering the wide range of preferred food plants for this species and the distance over which it travels, the project is unlikely to significantly impact on this species.

3.3.4 Proposed Mitigation

No specific mitigation measures are proposed for the above EVR species. General fauna and fauna habitat mitigation measures are described in **Section 3.3.2** apply to these species. In addition, the rehabilitation and landscaping measures described in **Section 3.2.2.2** are likely to minimise any long term impacts on these species.

3.3.5 Pest Animals

The Fisherman's Island spoil placement area is within the Red Imported Fire Ant restricted zone, as defined by the Queensland Department of Primary Industries and Fisheries (DPIF), and as such there is the potential for the project to facilitate the colonisation of new areas by the ant. Fire Ants are attracted to areas of freshly disturbed soil, which will be the case at the spoil placement areas. As trucks will be returning to the tunnel construction site, from the restricted area, there is a need to implement procedures to ensure Fire Ants are not spread from the restricted to unrestricted areas.

The Fire Ant (*Solenopsis invicta*) is a small reddish-brown ant with a dark abdomen and ranges in length from two to six millimetres. The nest is a dome shape approximately 40 centimetres high and has no obvious openings. They predominantly inhabit disturbed ecosystems, cleared or partially cleared land where there is less competition from established species. These areas include lawns, pastures, roadsides, unused crop land, industrial sites, residential areas, open forests and areas adjacent to waterways.

The Red Fire Ant is a notifiable pest under the *Plant Protection Act 1989*. The *Plant Protection Regulation 2002* outlines pest control measures for movement of all "high risk items" within and out of restricted areas. The movement of fire ants can occur through natural or human influenced processes. The *Plant Protection Regulation 2002* recognises the movement of Red Fire Ants through "high risk items" such as soil, baled hay and straw, landscaping and construction materials and machinery and equipment that may have come into contact with the ground. Fire Ants are quickly attracted to freshly disturbed soil, particularly during mating flights. During mating flights the winged queen ants fly up to two kilometres to colonise suitable new areas.

The placement of spoil within the Red Fire Ant restricted zone is controlled by the *Plant Protection Regulation 2002*. There are no procedures for the distribution of soil from an unrestricted site to restricted site. However, disturbance including compacting, covering, excavating or exposing soil of more than one cubic metre soil in a

restricted zone requires an inspector's approval. Notification of the disturbance should be made seven days prior to the DPIF.

Other pest animals likely to occur within the project area include Cane Toads and mosquitoes. The project has the potential to create breeding sites for these pests, which includes standing water within artificial and/or natural containers.

3.3.6 Proposed Mitigation

The following management actions will be taken to manage Fire Ants in the project:

- spoil placement areas will be inspected to determine whether Fire Ants are present at the sites;
- spoil placement areas will be inspected on a monthly basis, during the placement of spoil to monitor the presence of the Fire Ants;
- regular contact will be maintained with the Brisbane City Council Fire Ant Control Officer and the DPI&F Fire Ant Control Centre;
- a Risk Management Plan will be prepared to manage the movement of high risk material (soil), and the plan will be approved by DPI&F;
- liaison will occur with both the Brisbane City Council Fire Ant Control Officer and the DPI&F Fire Ant Control Centre during the planning phase of the project, to agree on mitigation measures and management plans for the management of Fire Ants during the construction of the project; and
- an inspection system of vehicles leaving the spoil placement area will be implemented to ensure vehicles are free of loose soil or other material that may be capable of containing Fire Ants.

3.3.7 Impacts on Wildlife Corridors

The project is unlikely to have a significant impact on any identified wildlife corridors within or adjacent to the study corridor. At the western connection, the Western Freeway presents a significant barrier to faunal movement between Mt. Coot-tha and Toowong. The construction of the transition structures and road widening will increase the width of this barrier, although this is unlikely to significantly affect corridor values already impacted by the Western Freeway. The project will result in the redistribution of the corridor edge further into the corridor interior which may impact on species sensitive to edge habitats.

The loss of mapped remnant vegetation at the western connection is unlikely to significantly impact on the values of the bioregional corridor encompassing Mt. Coot-tha nor reduce the movement opportunities for fauna along this corridor. Additionally, minimal vegetation will be lost from the BCC local corridor to the south of the study corridor. This is unlikely to significantly impact on movement opportunities for avian or arboreal species likely to utilise this corridor.

3.3.8 Proposed Mitigation

No specific mitigation measures have been developed to mitigate potential impacts on identified wildlife corridors. **Sections 3.2.2.2** and **3.3.2** contain appropriate measures to minimise impacts on wildlife corridors.

3.4 Aquatic Flora and Fauna

Potential impacts on aquatic flora and fauna may occur at the western end of the study corridor, specifically on the gully within Anzac Park, several creeks which cross the Western Freeway and York's Hollow. Works

associated with the construction of tunnel entrances and widening of roads may have localised impacts on aquatic flora and fauna, although no significant ecological impacts are expected.

3.4.1 Impacts on riparian and aquatic vegetation

The Western Connection design includes the construction of 800 metres of transition structure linking the Western Freeway and the tunnel connection. This will involve the construction of a wide footprint into the Botanic Gardens and adjacent road reserve, the Anzac Park gully and several small drainage lines that currently flow underneath the freeway. This will result in the loss of some riparian habitat for aquatic fauna. The project will also result in disturbance to waterway vegetation as mapped under the BCC NALL.

The drainage line adjacent to the Botanic Gardens is predominantly devoid of native vegetation cover and subsequently construction works within this area is unlikely to result in the loss of habitat for fauna. Conversely, the clearing of vegetation from the gully within Anzac Park and other drainage lines adjacent to Mt. Coot-tha may impact on habitat for aquatic fauna such as turtles, fish and aquatic invertebrates. The loss of fringing vegetation can result in loss of shading, loss of shelter sites and loss of in-stream debris and snags leading to scouring and erosion during large rainfall events. These impacts are short-term only and following rehabilitation are unlikely to result in long term impacts.

3.4.2 Mobilisation of Sediment and Turbidity

The removal of vegetation adjacent to drainage lines can increase turbidity from erosion and topsoil runoff from rainfall events. This can result in reduced growth rates of some aquatic plants further impacting on aquatic fauna. This potential disturbance is short term and is unlikely to result in long term impacts on downstream wildlife. Stormwater issues are further identified in Chapter 7 (Hydrology) of the EIS.

3.4.3 Introduction of Polluntants

Other potential impacts on aquatic flora and fauna are associated with the potential introduction of pollutants in stormwater runoff from construction activities and vehicles. Hydrocarbons and other construction materials/chemicals can have a detrimental impact on aquatic flora and fauna. Mitigation measures to ensure that this does not occur will be detailed in Chapter 7 (Hyrdology) of the EIS and stormwater issues are dealt with in Chapter 7 (Hydrology).

3.5 Proposed Mitigation

Stormwater runoff will be treated prior to release into drainage systems. Stormwater related issues and proposed mitigation are discussed in Chapter 7 (Hydrology).

4. Summary and Conclusions

This report describes the existing environment of the Northern Link study corridor in terms of terrestrial and aquatic flora and fauna. The Northern Link project is a predominantly underground road proposed from Brisbane's Western Freeway linking the Inner City Bypass (ICB) at Herston. The study corridor includes a highly urbanised area of Brisbane City and much of the original vegetation cover has been substantially cleared for development and urban land uses. The western connection traverses the edge of a large bushland system on the slopes of Mt. Coot-tha, the Brisbane Botanic Gardens and isolated fragments of vegetation that exist in urban parks, private properties and along drainage lines.

The study aimed to investigate the terrestrial and aquatic flora and fauna values of the study corridor with particular relevance to legislation and policy at the Commonwealth, State and local levels. The project has been determined to not be a controlled action by the Commonwealth Minister for the Environment and Water Resources. No endangered or vulnerable vegetation communities listed under State and Commonwealth legislation were identified as occurring within the study area. Not of Concern Regional Ecosystems occur within and adjacent to the western connection.

Two species of national conservation significance were identified as occurring within the study corridor. A planted specimen of the Byfield Spider Orchid was identified from within the Toowong Cemetery and Grey-headed Flying Foxes were observed during field surveys. Both species are listed as vulnerable under the Commonwealth EPBC Act and both are unlikely to be significantly impacted by the project construction. Several trees within the study corridor are protected under the Natural Assets Local Law and one of these trees may be removed as part of the project construction.

Limited impacts are expected on terrestrial and aquatic flora and fauna at the eastern connection due to the high level of urban development and lack of intact vegetation and fauna habitat. Potential impacts to native wildlife are generally limited to the proposed works at the western connection. Approximately 4.79 hectares of BCC mapped vegetation (remnant and non-remnant) are proposed to be cleared for construction of the transistion structures, embankments and widening of the Western Freeway. In general, this equates to short-term loss of habitat and resources for wildlife, including potential nesting sites (including hollows), shelter sites (e.g. logs and rocks) and food resources (e.g. flowering and fruiting plants, invertebrates). Potential short-term impacts on aquatic ecosystems include mobilisation of sediments into receiving environments, contamination of polluntants, changes to surface and groundwater hydrology and loss of riparian and aquatic vegetation.

In general, all vegetation (remnant and non-remnant) to be disturbed during construction will be replanted or rehabilitated post-construction, depending upon the state of the existing environment at each connection. At the eastern connection, the focus of rehabilitation works will be to restore the landscape amenity of the local area by the planting of landscape trees and shrubs within road reserves and affected parkland areas. At the western connection, the focus of rehabilitation works will be to restore and in some cases improve the ecological values of remnant and non-remnant vegetation which are impacted.

With the mitigation measures in place, it is expected that impacts on terrestrial and aquatic flora and fauna are unlikely to be significant in the short-term. Long-term impacts are considered to be minimal provided that revegetation and landscaping programs are implemented and monitored post-construction.

5. References

Cogger, H. Cameron, E. Sadlier, R. and Eggler, P. 1993. *The Action Plan for Australian Reptiles*. Australian Nature Conservation Agency, Canberra.

Couper, P., Amey, A. and Limpus, C. 2007. "Freshwater Turtles", in *Wildlife of Greater Brisbane, New Edition*, Queensland Museum, South Brisbane.

Environmental Protection Agency, 2006a. Biodiversity Planning Assessment: Southeast Queensland Fauna Expert Panel Report. Biodiversity Planning Unit, Brisbane.

Environmental Protection Agency, 2006a. Biodiversity Planning Assessment: Southeast Queensland South Landscape Expert Panel Report. Biodiversity Planning Unit, Brisbane.

Garnett, S. T. and Crowley, G. M. 2000. *The Action Plan for Australian Birds*, Environment Australia, Canberra

Groom P. K., Froend R. H. and Mattiske E. M. 2000. "Impact of groundwater abstraction on a Banksia woodland, Swan Coastal Plain, Western Australia". *Ecological Management and Restoration* **1**: 117–124.

Maxwell, S., Burbridge, A. A. and Morris, K. (eds). 1996. *The 1996 Action Plan for Australian Marsupials and Monotremes*. Environment Australia, Canberra.

Tyler, M. J. 1997. *The Action Plan for Australian Frogs*. Environment Australia, Canberra.

Wilson, S. 2005. *A Field Guide to Reptiles of Queensland*. Reed New Holland, Sydney

6. Plates

Plate 1 Line of Figs, Gregory Park, Paddington

Plate 2 Mango tree at 25 Latrobe Tce, Paddington

Plate 3 Eucalyptus sp. at 9 Latrobe Tce, Paddington

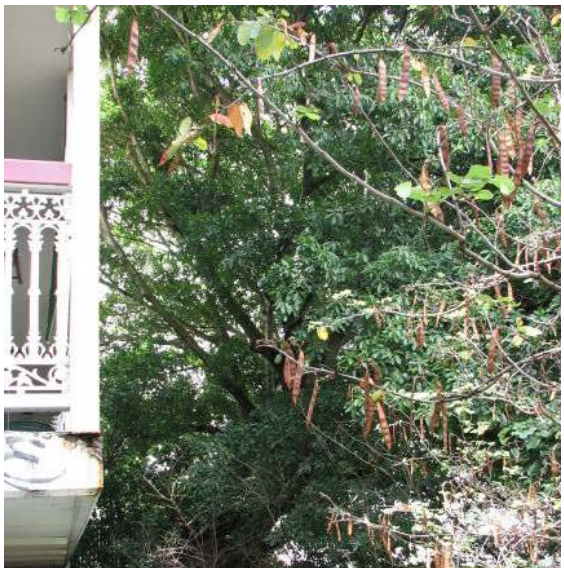


Plate 4 Curtain Fig at 267 Given Tce, Paddington

Plate 5 Macadamia, Fig and Doughwood at 251 & 257 Given Tce, Paddington

Plate 6 Jacaranda, Silky Oak at Martha Street and Bowler Street, Paddington

Plate 7 Fig trees at Guthrie Street, Paddington

Plate 8 Hoop Pine at 25 Hall Street, Paddington

Plate 9 Weeping Fig at Blamey Street precinct

Plate 10 Fig trees at Blamey Street precinct

Plate 11 Waterway exiting Botanic Gardens (looking south towards freeway)

7. Appendices

Appendix A Flora species list from database searches

Scientific Name	Common Name	Status#	Source^
*Abrus precatorius subsp. africanus**			2, 4
*Abutilon grandifolium**			2, 4
Acacia amblygona	fan-leaf wattle		2, 4
Acacia aulacocarpa			2
Acacia conferta			2, 4
Acacia disparrima subsp. disparrima			2, 4
Acacia falcata Willd.			4
Acacia fimbriata	Brisbane golden wattle		2, 4
Acacia implexa	lightwood		2
Acacia leiocalyx			2
Acacia penninervis var. longiracemosa			2, 4
Acacia podalyriifolia			4
Acacia spectabilis			4
*Acalypha australis**			2, 4
*Acetosa sagittata**			2, 4
Acmena smithii			4
Acronychia imperforata			4
Acronychia laevis			4
Adenostemma lavenia			4
Aeschynomene brevifolia			4
*Agave americana var. expansa**			2, 4
*Ageratina adenophora**			4
*Ageratina riparia**	mistflower		2, 4
*Ageratum houstonianum**	blue billygoat weed		2
Alectryon tomentosus			2, 4
Allocasuarina littoralis			2
Allocasuarina torulosa			2
Alloteropsis semialata	cockatoo grass		2
Alocasia brisbanensis			4
Alphitonia excelsa	soap tree		2, 4
*Alpinia zerumbet**			2
*Alternanthera brasiliana**			4
Alternanthera denticulata	lesser joyweed		2
Alternanthera nana	hairy joyweed		2, 4
Alyxia magnifolia		R (Qld)	4
Alyxia ruscifolia			4
*Amaranthus blitum**			4
*Amaranthus viridis**			4
*Ambrosia psilostachya**			4
Amyema conspicua subsp. conspicua			2, 4

Scientific Name	Common Name	Status#	Source^
*Anagallis arvensis**	blue pimpernel		2, 4
*Anagallis minima**			2
Angophora subvelutina			2
*Anredera cordifolia**	Madeira vine		2, 4
Aphananthe philippinensis			4
Aphanopetalum resinosum	gumvine		2, 4
*Arctotheca calendula**	Cape weed		2, 4
Argyrodendron trifoliolatum			4
Aristida benthamii			2, 4
Aristida calycina var. calycina			4
Aristida queenslandica var. queenslandica			2, 4
Aristida ramosa			4
Aristida vagans			2, 4
Aristolochia meridionalis subsp. meridionalis			2, 4
Aristolochia pubera			2
Aristolochia sp. (D'Aguilar Range L.H.Bird+ AQ520943)			2
Artanema fimbriatum			4
Arthraxon hispidus	Hairy-joint Grass	VU (Aust) VU (Qld)	EPBC
Arthropteris tenella			4
*Arundo donax**			2
*Asclepias curassavica**			4
*Asparagus aethiopicus cv. sprengeri**			2, 4
*Asparagus africanus**			2, 4
*Asparagus falcatus**			2, 4
Asplenium attenuatum var. attenuatum			4
Atractocarpus chartaceus			4
Auranticarpa rhombifolia			4
Austromyrtus dulcis	midgen berry		2
Austrosteenisia blackii var. blackii			2
*Avena sativa**			4
*Axonopus compressus**			2
*Axonopus fissifolius**			2
Backhousia myrtifolia			4
Benthamina alyxifolia			4
*Bidens bipinnata**			4
*Bidens pilosa**			2, 4
Blechnum cartilagineum			4
Bosistoa selwynii	Heart-leaved Bosistoa	VU (Aust)	EPBC
Bosistoa transversa	Three-leaved Bosistoa	VU (Aust)	EPBC
Bothriochloa decipiens var. decipiens			4
*Brassica x juncea**			4
Bridelia exaltata			4
*Brillantaisia lamium**			2, 4
*Briza maxima**			4

Scientific Name	Common Name	Status#	Source^
*Bromus catharticus**	prairie grass		2, 4
*Bromus hordeaceus subsp. hordeaceus**			4
*Broussonetia papyrifera**			2
*Bryophyllum pinnatum**	resurrection plant		2, 4
*Bryophyllum proliferum**			2, 4
*Bryophyllum x houghtonii**			2, 4
Buddleja			2, 4
*Buddleja australis**			2, 4
Bulbophyllum globuliforme	Miniature Moss-orchid	VU (Aust) R (Qld)	EPBC
Bulbophyllum schillerianum			4
*Caesalpinia decapetala**			4
*Calceolaria tripartite**			4
*Callisia repens**			2, 4
Callitriche sonderi			4
Calotis dentex			4
*Calyptocarpus vialis**	creeping cinderella weed		2, 4
Calystegia marginata			4
Capillipedium spicigerum			4
Capparis velutina			4
*Capsella bursapastoris**	shepherd's purse		2, 4
*Cardamine hirsute**	common bittercress		2
*Cardiospermum grandiflorum**	heart seed vine		2, 4
*Carduus tenuiflorus**			4
Carex appressa			4
Carex brunnea			4
Carex gaudichaudiana			2
Cassinia straminea			4
Castanospermum australe	black bean		2, 4
Cayratia clematidea	slender grape		2
Celastraceae			2, 4
*Celtis sinensis**	Chinese elm		2, 4
*Centaurea melitensis**			4
Centella asiatica			2
Centipeda minima subsp. minima			4
Centranthera cochinchinensis			4
Centratherum australianum			4
*Centratherum punctatum subsp. punctatum**			2
*Cerastium glomeratum**	mouse ear chickweed		2, 4
*Cestrum parqui**	green cestrum		2, 4
Chamaesyce dallachyana	mat spurge		2, 4
*Chamaesyce hyssopifolia**			2
*Chamaesyce maculate**			2, 4
*Chamaesyce ophthalmica**			2, 4
*Chamaesyce prostrate**	red caustic weed		2, 4
*Cheilanthes distans**			4

Scientific Name	Common Name	Status#	Source^
Cheilanthes sieberi			2, 4
*Chenopodium album**			4
*Chenopodium murale**			4
Chiloscyphus semiteres			2
*Chloris gayana**	rhodes grass		2, 4
Chrysocephalum apiculatum	yellow buttons		2, 4
Chrysopogon filipes			4
*Cinnamomum camphora**	camphor laurel		2, 4
*Cirsium vulgare**			4
Cissus hypoglauca			2
Cissus opaca			2, 4
Cleistanthus cunninghamii			4
*Cleome hassleriana**			4
Clerodendrum tomentosum			2
*Colocasia esculenta**	taro		2, 4
*Commelina benghalensis**			2, 4
Commelina diffusa Burm.f.			4
Commersonia bartramia	brown kurrajong		2, 4
Common plants	167		
*Conyza sumatrensis**			4
Corchorus cunninghamii	Native Jute	EN (Aust) EN (Qld)	2, 4
Corymbia citriodora	spotted gum		2
Corymbia trachyphloia subsp. trachyphloia			2
*Crassocephalum crepidioides**	thickhead		2, 4
Crepidomanes saxifragoides			4
Crepidomanes vitiense			4
Crinum			4
*Crotalaria grahamiana**			2, 4
*Crotalaria lanceolata subsp. lanceolada**			4
*Crotalaria pallida var. obovata**			2, 4
*Crotalaria spectabilis**			4
Croton insularis			4
Cryptocarya laevigata			4
Cryptocarya microneura			2, 4
Cryptocarya triplinervis			4
Cryptostylis hunteriana	Leafless Tongue-orchid	VU	EPBC
Cuscuta australis	Australian dodder		2, 4
*Cuscuta campestris**			4
Cyanthillium cinereum			2, 4
Cyclophyllum coprosmoides var. coprosmoides			4
*Cyclospermum leptophyllum**			2, 4
Cymbopogon refractus	barbed-wire grass		2
*Cyperus brevifolius**			4
Cyperus conicus			2

Scientific Name	Common Name	Status#	Source^
Cyperus cyperoides			4
Cyperus difformis			4
*Cyperus eragrostis**			2, 4
*Cyperus esculentus**			4
Cyperus gracilis			4
*Cyperus involucratus**			2, 4
*Cyperus laevigatus**			4
*Cyperus rotundus**			4
Cyperus sphaeroideus			4
Cyperus tetraphyllus			2, 4
Cyperus trinervis			4
*Dactyloctenium australe**	sweet smother grass		2, 4
Daphnandra apatela			4
Daviesia ulicifolia			4
Daviesia villifera	prickly daviesia		2, 4
Dawsonia			2
Dawsonia longiseta			2
Decaspermum humile			4
Deeringia arborescens			4
Dendrobium gracilicaule			4
Dendrobium kingianum subsp. kingianum			4
Dendrobium monophyllum			4
Dendrobium speciosum subsp. hillii			4
Dendrobium tetragonum			4
Dendrocnide photinophylla			4
Dendrophthoe vitellina			4
Denhamia celastroides			4
Dentella repens	dentella		2, 4
*Desmanthus pernambucanus**			4
Desmodium brachypodum	large ticktrefoil		2
Desmodium gangeticum			2
*Desmodium incanum**			2, 4
Desmodium rhytidophyllum			2, 4
*Desmodium triflorum**			4
*Desmodium uncinatum**			2, 4
Desmodium varians	slender tick trefoil		2
Dianella caerulea var. assera			4
Dianella longifolia			2
Dianella revoluta			2
Dichanthium tenue			4
Dichelachne crinita			4
Dichondra repens			4
*Dichrostachys cinerea subsp. malesiana**			2, 4
Dicranella dietrichiae			2
*Digitaria abyssinica**			4
*Digitaria ciliaris**			4

Scientific Name	Common Name	Status#	Source^
Digitaria diffusa			4
Digitaria minima			4
Digitaria parviflora			2
*Digitaria violascens**	bastard summergrass		2, 4
Dioscorea transversa	native yam		2, 4
Diospyros pentamera			4
Diplocyclos palmatus subsp. palmatus			2, 4
Dissiliaria baloghioides			4
Diuris			4
Dockrillia mortii			4
Doodia aspera			4
Doodia australis			4
Doodia caudata			4
*Drymaria cordata**			2, 4
*Drymaria cordata subsp. cordata**			2
Drynaria rigidula			2, 4
*Duranta erecta**	duranta		2, 4
*Dyschoriste depressa**			2, 4
Dysphania glomulifera subsp. glomulifera			4
*Echinochloa crus-galli**	barnyard grass		2, 4
Echinopogon nutans			4
Echinostephia aculeata	prickly snake vine		2, 4
Eclipta prostrata	white eclipta		2, 4
*Egeria densa**	dense waterweed		2
Elaeocarpus obovatus	blueberry ash		2, 4
Eleocharis equisetina			4
*Eleusine indica**	crowsfoot grass		2
Elymus multiflorus			4
*Emilia sonchifolia**			2
*Emilia sonchifolia var. javanica**			2
Endiandra discolor			4
Entolasia marginata			4
Entolasia sp. (Miles S.T.Blake 7709)			2
Entolasia stricta	wiry panic		2
Epaltes australis			4
*Epilobium ciliatum**			4
*Eragrostis cilianensis**			4
Eragrostis elongata			4
Eragrostis parviflora			4
Eragrostis spartinoides			4
*Eriobotrya japonica**	loquat		2, 4
Eriochloa procera			4
Erythrorchis cassythoides			4
Eucalyptus acmenoides			2
Eucalyptus carnea			4
Eucalyptus crebra	narrow-leaved red ironbark		2, 4

Scientific Name	Common Name	Status#	Source^
Eucalyptus fibrosa subsp. fibrosa			4
Eucalyptus helidonica			2, 4
Eucalyptus major	mountain grey gum		2, 4
Eucalyptus microcorys			2, 4
Eucalyptus moluccana			4
Eucalyptus propinqua			4
Eucalyptus seeana	narrow-leaved red gum		2, 4
Eucalyptus siderophloia			2, 4
Eucalyptus tereticornis			2, 4
Eucalyptus tindaliae	Queensland white stringybark		2, 4
Euchiton japonicus			4
*Eugenia uniflora**	Brazilian cherry tree		2, 4
*Euphorbia cyathophora**	dwarf poinsettia		2, 4
*Euphorbia heterophylla**			2, 4
*Euphorbia peplus**	petty spurge		2
Eustrephus latifolius	wombat berry		2, 4
Everistia vacciniifolia var. nervosa			4
Evolvulus alsinoides var. decumbens			4
Exocarpos latifolius			4
Ficus coronata			4
Ficus fraseri			4
Ficus obliqua			4
Fimbristylis dichotoma			4
Fimbristylis ferruginea			4
Fissidens			2
Fissidens megalotis			2
Flindersia australis	crow's ash		2
Flindersia schottiana			4
Fontainea venosa		VU (Aust) VU (Qld)	EPBC
Fossombronia papillata			2
*Freesia laxa**			2, 4
Frullania ericoides			2
Frullania monocera			2
Frullania pentapleura			2
*Fumaria bastardii**	bastard fumitory		2, 4
*Fumaria officinalis subsp. officinalis**			2, 4
Funaria hygrometrica			2
*Furcraea selloa**			2, 4
Galactia tenuiflora var. lucida			2, 4
*Galinsoga parviflora**	yellow weed		2, 4
Galium migrans			4
*Gamochaeta pensylvanica**			2
*Gladiolus x gandavensis**			4
*Gleditsia triacanthos**			4
Glossocardia bidens	native cobbler's pegs		2, 4

Scientific Name	Common Name	Status#	Source^
Glycine clandestina var. clandestina			2
Glycine tabacina	glycine pea		2
Gonocarpus chinensis subsp. verrucosus			4
Goodenia rotundifolia			4
Gossia bidwillii			4
Gossia gonoclada	Angle-stemmed Myrtle	EN (Aust) EN (Qld)	2, 4
Gossia hillii			4
Grewia			2
Grewia latifolia	dysentery plant		2, 4
*Guizotia abyssinica**			4
*Gymnocoronis spilanthoides**			2, 4
Gymnostachys anceps			4
Hardenbergia violacea			2, 4
*Heliotropium amplexicaule**			2, 4
Heteropogon contortus	black speargrass		2
Heteroscyphus argutus			2
Hibbertia linearis var. obtusifolia			4
*Hibiscus mutabilis**			2, 4
*Hiptage benghalensis**			2, 4
Homalanthus stillingiifolius			4
Hovea acutifolia			2, 4
Hybanthus stellarioides			2, 4
Hydrocharis dubia	Frogbit	VU (Aust) VU (Qld)	EPBC
Hydrocotyle acutiloba			2, 4
Hydrocotyle peduncularis			2
Hymenosporum flavum			4
Hypericum gramineum			2, 4
*Hypochaeris microcephala var. albiflora**			2, 4
*Hypochaeris radicata**	catsear		2
Hypoestes floribunda var. pubescens			4
*Hypoestes phyllostachya**			2, 4
*Impatiens walleriana**	balsam		2, 4
Imperata cylindrica	blady grass		2
Indeterminate	Unknown or Code Pending		2
*Indigofera circinella**			2, 4
*Indigofera spicata**	creeping indigo		2, 4
*Ipomoea cairica**			4
*Ipomoea hederacea**			4
*Ipomoea indica**	blue morning-glory		2, 4
Ipomoea plebeia	bellvine		2, 4
Isolepis inundata			4
Isopterygium			2
*Jacaranda mimosifolia**	jacaranda		2, 4
Jacksonia scoparia			2

Scientific Name	Common Name	Status#	Source^
*Jasminum laurifolium forma nitidum**			2
Jasminum suavissimum			4
Jungermannia wattsiana			2
*Justicia betonica**			2, 4
*Koelreuteria elegans subsp. formosana**			2, 4
Lachnagrostis filiformis			2
Lagenophora gracilis			4
*Lamium amplexicaule**	deadnettle		2, 4
*Lantana camara**			2, 4
*Lantana camara cv. Gol Gol**			2
Laportea interrupta			4
Lastreopsis marginans			4
Lejeunea flava subsp. orientalis			2
*Lepidium bonariense**	Argentine peppercress		2
*Lepidium didymium**			2, 4
Lepidosperma laterale			2, 4
Leptobryum pyriforme			2
Leptochloa decipiens subsp. decipiens			4
Leptochloa decipiens subsp. asthenes			4
*Leucaena leucocephala subsp. leucocephala**			2, 4
Lindsaea microphylla			4
*Linum usitatissimum**			4
Lobelia gibbosa	native lobelia		2
Lobelia gibbosa var. browniana			2, 4
Lomandra confertifolia subsp. pallida			2
Lomandra longifolia			2
Lomandra multiflora subsp. multiflora			2
Lophostemon confertus	brush box		2, 4
Lophostemon suaveolens			4
*Ludwigia longifolia**			2, 4
Ludwigia octovalvis	willow primrose		2, 4
Ludwigia peploides subsp. montevidensis			2
Macadamia integrifolia	Smooth-shelled Macadamia	VU (Aust) VU (Qld)	EPBC
*Macfadyena unguis-cati**			4
*Macroptilium atropurpureum**	siratro		2, 4
*Macroptilium lathyroides**			2, 4
Mallotus discolor			4
*Malva sylvestris**			2
Malvastrum americanum var. stellatum			4
*Manihot grahamii**			2, 4
Marsilea hirsuta			4
Maundia triglochinoides		VU (Qld)	4
Maytenus silvestris			4
*Medicago polymorpha**	burr medic		2, 4

Scientific Name	Common Name	Status#	Source^
*Medicago sativa subsp. sativa**			4
Medicosma cunninghamii			4
*Megathyrsus maximus var. maximus**			2, 4
Melaleuca bracteata			2, 4
Melaleuca styphelioides			4
Melaleuca viminalis			2
Melicope micrococca			4
*Melinis minutiflora**	molasses grass		2
*Melinis repens**	red natal grass		2
Melodinus acutiflorus			4
Melodorum leichhardtii			4
Mesochaete undulata			2
*Mimosa pudica var. hispida**			2, 4
*Momordica charantia**			4
Monotoca scoparia	prickly broom heath		2
Morinda canthoides			4
*Morus alba**	white mulberry		2, 4
Mucuna gigantea			4
Muehlenbeckia gracillima			2, 4
*Murraya paniculata cv. exotica**			2, 4
Napoleonaea			2
*Neonotonia wightii var. wightii**			2, 4
Notothixos cornifolius			4
Notothixos subaureus			4
Nyssanthes diffusa			4
Oberonia titania			2
*Ochna serrulata**	ochna		2, 4
*Odontonema tubaeforme**			4
*Oenothera indecora subsp. bonariensis**			4
Olea paniculata			2, 4
Olearia nernstii	Ipswich daisy		2, 4
Operculina aequisepala			4
Ophioglossum reticulatum			4
*Opuntia monacantha**			2, 4
Ottelia ovalifolia			4
Oxalis			4
Oxalis chnoodes			2, 4
*Oxalis corniculata**			2
*Oxalis debilis var. corymbosa**	pink shamrock		2, 4
Oxalis rubens			2
Oxalis thompsoniae			2, 4
Ozothamnus diosmifolius			4
*Panicum miliaceum**	millet panic		2, 4
Panicum paludosum			4
Parietaria debilis	native pellitory		2
*Parietaria judaica**			2, 4

Scientific Name	Common Name	Status#	Source^
Parsonsia lanceolata			4
Parsonsia straminea			4
Parsonsia velutina			4
Parsonsia ventricosa			4
*Parthenium hysterophorus**	parthenium weed		2, 4
Paspalidium disjunctum			4
Paspalidium distans	shotgrass		2, 4
*Paspalum conjugatum**	sourgrass		2, 4
Paspalum distichum			4
*Paspalum notatum**	bahia grass		2, 4
*Passiflora edulis**			2, 4
*Passiflora foetida**			2, 4
*Passiflora suberosa**	corky passion flower		2
Patersonia glabrata			4
Patersonia sericea			4
*Pavonia hastate**			4
Pellaea paradoxa			4
*Pennisetum purpureum**	elephant grass		2, 4
*Pennisetum setaceum**			4
*Pennisetum villosum**			4
*Pereskia aculeate**	blade apple		2, 4
Persicaria attenuata			4
Persicaria decipiens	slender knotweed		2
Persicaria hydropiper			4
Persicaria lapathifolia	pale knotweed		2
Persicaria orientalis			4
Persoonia sericea	silky geebung		2
Persoonia stradbrokensis			4
*Petunia axillaris**	petunia		2, 4
*Phalaris angusta**			2
*Phalaris canariensis**			4
*Phyla canescens**			2, 4
*Phyllanthus tenellus**			2
Phyllanthus virgatus			2, 4
*Phyllostachys aurea**	fishpole bamboo		2, 4
*Physalis peruviana**			4
*Phytolacca dioica**			4
*Phytolacca octandra**	inkweed		2, 4
Picris conyzoides		R (Qld)	4
Pimelea linifolia			4
Piper hederaceum var. hederaceum			4
*Pithecoctenium crucigerum**			2, 4
Pittosporum multiflorum			2, 4
Plantago debilis			4
*Plantago lanceolata**			2, 4
*Plantago major**			4

Scientific Name	Common Name	Status#	Source^
Platycerium superbum			4
Plectranthus parviflorus Willd.			4
*Plectranthus verticillatus**			2, 4
*Poa annua**			4
*Polygala paniculata**			2, 4
*Polygonum aviculare**			4
Pomax umbellata			2
Poranthera microphylla	small poranthera		2, 4
*Portulaca oleracea**	pigweed		2
*Portulaca pilosa subsp. Pilosa**			4
Pottia			2
Pouteria pohlmaniana			4
*Prunus persica var. persica**			2, 4
Pseuderanthemum variabile			4
Pseudovanilla foliata			4
Pseudoweinmannia lachnocarpa			4
Psilotum nudum	skeleton fork fern		2, 4
Pteris vittata			4
Pterostylis curta	blunt greenhood		2
Pterostylis ophioglossa			2
Pultenaea retusa			2, 4
Pyrrosia confluens var. confluens			2, 4
Pyrrosia rupestris			4
Ranunculus sessiliflorus var. sessiliflorus			2
*Raphanus raphanistrum**			4
*Rauvolfia tetraphylla**			2, 4
Reboulia hemisphaerica			2
*Rhaphiolepis indica**	Indian hawthorn		2, 4
Rhinerrhiza divitiflora			4
Rhodamnia argentea			4
Rhodamnia rubescens Miq.			4
Rhodomyrtus psidioides	native guava		2, 4
Rhynchospora corymbosa			4
*Richardia brasiliensis**	white eye		2, 4
*Richardia stellaris**			4
*Ricinus communis**	castor oil bush		2, 4
*Rivina humilis**			4
*Rorippa nasturtiumaquaticum**	watercress		2
*Rorippa palustris**	marsh cress		2
*Rosa laevigata**			4
Rostellularia adscendens var. adscendens			4
Rostellularia obtusa			2, 4
Rosulabryum subfasciculatum			2
Rubus parvifolius	pink-flowered native raspberry		2, 4
Rubus rosifolius var. commersonii			4
Rubus x novus			4

Scientific Name	Common Name	Status#	Source^
*Ruellia squarrosa**			2, 4
*Ruellia tweediana**			2, 4
Rumex brownii	swamp dock		2, 4
*Rumex crispus**			4
*Sagittaria platyphylla**			4
*Salvinia molesta**			4
Sambucus australasica			4
*Sambucus nigra**			2
*Sansevieria trifasciata**	mother-in-law's tongue		2, 4
Sarcomelicope simplicifolia subsp. simplicifolia			4
Sarcopetalum harveyanum			4
Sauropus macranthus		V (Aust) R (Qld)	2
Schefflera actinophylla	umbrella tree		2, 4
*Schinus terebinthifolius**			2, 4
Schizaea bifida			4
Schoenoplectus mucronatus			4
Schoenoplectus validus			4
Scleria mackaviensis			4
Scleria tricuspidata			2, 4
Sclerodontium pallidum subsp. pallidum			2
Senecio bipinnatisectus			4
Senecio pinnatifolius var. pinnatifolius			4
Senna barclayana			4
*Senna occidentalis**			4
*Senna pendula var. glabrata**	Easter cassia		2
Seringia arborescens			4
*Setaria italica**			4
*Setaria palmifolia**	palm grass		2, 4
*Setaria pumila subsp. pumila**			4
*Sida cordifolia**			4
Sigesbeckia orientalis	Indian weed		2, 4
Siphonodon australis			4
Smilax australis	barbed-wire vine		2, 4
*Solanum abutiloides**			2, 4
*Solanum americanum**			2, 4
*Solanum americanum subsp. nodiflorum**			4
*Solanum americanum subsp. nutans**			4
Solanum aviculare			4
*Solanum capsicoides**			4
*Solanum erianthum**			4
*Solanum mauritianum**	wild tobacco		2, 4
*Solanum nigrum subsp. nigrum**			2
Solanum stelligerum			4
Solenogyne bellioides			2, 4

Scientific Name	Common Name	Status#	Source^
*Soliva anthemifolia**	dwarf jo jo weed		2
*Soliva sessilis**			4
*Sonchus oleraceus**	common sowthistle		2
*Sorghum arundinaceum**			4
*Sorghum halepense**			4
*Spergula arvensis**			4
Spergularia marina			2, 4
*Sphagneticola trilobata**			2, 4
Sporobolus laxus			4
*Stachys arvensis**			4
*Stachytarpheta australis**			4
*Stellaria media**	chickweed		2, 4
Stenocarpus sinuatus			4
Stephania japonica			2
*Stephanophysum longifolium**			2, 4
Symplocos harroldii		R (Qld)	4
Syngonium			2, 4
*Syngonium podophyllum**			2, 4
Syzygium francisii			4
Tabernaemontana pandacaqui			4
*Tagetes minuta**			4
*Talinum paniculatum**			4
*Tecoma stans var. stans**			2, 4
Tephrosia filipes subsp. filipes			4
*Tephrosia glomeruliflora**	pink tephrosia		2, 4
*Tetrapanax papyrifer**			2, 4
Teucrium argutum			4
*Thalia geniculata**			2, 4
Themeda triandra	kangaroo grass		2
*Thunbergia alata**	black-eyed Susan		2, 4
*Tithonia diversifolia**	Japanese sunflower		2, 4
Toechima tenax			4
*Toxicodendron succedaneum**			2
Trachymene procumbens			4
*Tradescantia fluminensis**			2, 4
*Tradescantia zebrine**			2, 4
Trema tomentosa var. aspera			4
*Trifolium dubium**	yellow sucking clover		2
*Trifolium glomeratum**	clustered clover		2
*Trifolium repens var. repens**	white clover		2
*Triticum aestivum**			4
*Triumfetta rhomboidea**			4
Trochocarpa laurina			4
Tropaeolum			2
*Tropaeolum majus**	garden nasturtium		2, 4
*Urochloa decumbens**			2, 4

Scientific Name	Common Name	Status#	Source^
Urtica incisa			4
Utricularia gibba	floating bladderwort		2, 4
*Verbena litoralis var. litorales**			4
*Verbena rigida**			4
*Vernonia amygdalina**			2
*Veronica arvensis**	wandering speedwell		2, 4
Veronica plebeian	trailing speedwell		2, 4
*Vicia hirsute**			4
*Vicia sativa subsp. nigra**			4
*Vigna caracalla**			2, 4
Vigna vexillata var. angustifolia			2
Vitex lignum-vitae			4
Vittadinia pustulata			2, 4
*Vulpia muralis**			4
Wahlenbergia gracilis			4
Waterhousea floribunda			4
Wedelia spilanthoides			4
Wikstroemia indica			4
Wilkiea huegeliana			4
*Xanthium spinosum**			4
*Xanthosoma violaceum**	blue taro		2
Youngia japonica			2
Zornia dyctiocarpa var. dyctiocarpa			4

Appendix B Flora species list from field survey sites

Flora Survey Sites

1) Mt Coot-tha Botanic Gardens and adjacent road reserve
2) Toowong Cemetery
3) Anzac Park gully and adjacent to Centenary Highway
4) Gregory Park, Paddington
5) Blamey Street precinct
6) Normanby Hotel precinct
7) York's Hollow, Herston
8) Bikeway adjacent to Victoria Park (Busway overpass to York's Hollow)

Botanical Name	Common Name	Form	Status	Status	Sites							
			EPBC Act	NC Act	1	2	3	4	5	6	7	8
Acacia concurrens	Black wattle	T		LC	4							
Acacia disparrima subsp. *disparrima*	Hickory Wattle	T		LC	4	4	4					
Acacia falcata	Sickle Wattle	S		LC								4
Acacia fimbriata	Brisbane wattle, fringed wattle	S		LC			4					
Acacia leiocalyx	Black wattle	T		LC	4		4					
Acacia podalyriifolia	Queensland silver wattle	S		LC			4				4	
Agave sp.	Agave	H		Intro			4				4	
Ageratum houstonianum	Blue Billygoat Weed	H		Intro	4						4	
Albizia sp.		T		?		4						

Botanical Name	Common Name	Form	Status EPBC Act	Status NC Act	Sites 1	2	3	4	5	6	7	8
Aleurites moluccana	Candle nut	T		LC			4					
Allocasuarina littoralis	Black she-oak	T		LC							4	
Allocasuarina littoralis	Black she-oak	T		LC			4					
Alphitonia excelsa	Red Ash	T		LC								
Alphitonia excelsa	Soap tree, Red ash	T		LC	4		4					
Alpinia zerumbet	Shell ginger	H		Intro			4					
Araucaria bidwillii	Bunya pine	T		LC		4	4				4	
Araucaria cunninghamii	Hoop Pine	T		LC			4		4			4
Backhousia citriodora	Lemon scented myrtle	T		LC			4					
Backhousia myrtifolia	Carrol	T		LC			4					
Bambusa sp.	Bamboo	G		Intro			4					
Bauhinia sp.		T		Intro			4					4
Baumea articulata	Jointed twigrush	Se		LC							4	
Bidens pilosa	Cobbler's pegs	H		Intro			4					
Bothriochloa decipiens	Pitted blue grass	G		LC		4	4					
Bougainvillea sp.	Bougainvillea	S		Intro							4	
Brachiaria decumbens	Signal grass	G		Intro			4					
Brachychiton acerifolium	Flame Tree	T		LC		4	4					
Breynia oblongifolia	Coffee bush	S		LC	4							
Bryophyllum delagoensis	Mother of millions	H		Intro			4					
Buckinghamia celcissima	Ivory curl	T		LC		4						
Bursaria spinosa	Sweet bursaria (Blackthorn), Prickly pine	S		LC			4					
Caesalpinia ferrea	Leopard tree	T		Intro				4				
Calliandra surinamensis	Pink tassel-flower	S		Intro								4

Botanical Name	Common Name	Form	Status EPBC Act	Status NC Act	Sites 1	2	3	4	5	6	7	8
Callisia fragrans	Purple succulent	H		Intro			4					
Callistemon 'Little John'		S		CV							4	
Callistemon citrinus	Crimson bottlebrush	S		NA		4						
Callistemon salignus	White bottlebrush	T		LC								4
Callistemon viminalis	Bottlebrush	T		LC		4					4	
Callitris rhombifolia	Bribie Island Pine	T		LC		4	4					
Castanospermum australe	Black Bean	T		LC			4					
Celtis sinensis	Chinese Celtis	T		Intro; C3	4	4	4				4	
Centella asiatica	Pennywort	H		LC	4							
Chloris gayana	Rhodes grass	G		Intro								4
Cinnamomum camphora	Camphor laurel	T		Intro; C3		4	4					
Conyza sp.	Fleabane	H		Intro			4				4	4
Coreopsis lanceolata	Tickseed	H		Intro	4							
Corymbia citriodora subsp *variegata*	Spotted gum	T		LC		4	4					
Corymbia tesselaris	Moreton Bay ash	T		LC		4	4					
Corymbia torelliana	Cadaghi	T		LC		4	4					
Corymbia trachyphloia	Brown bloodwood	T		LC			4					
Crinum pedunculatum	River lily	H		LC							4	
Cupaniopsis anacardioides	Tuckeroo	T		LC	4		4				4	
Cymbopogon refractus	Barb-wire grass	G		LC			4					
Cyperus gracilis	Whisker sedge	Se		LC			4					
Cyperus papyrus	Papyrus	Se		Intro		4						
Cyperus polystachyos	Bunchy sedge	Se		LC	4						4	4

Botanical Name	Common Name	Form	Status EPBC Act	Status NC Act	Sites 1	2	3	4	5	6	7	8
Desmodium rhytidophyllum	Native desmodium	H		Intro	4							
Dietes bicolor		H									4	
Elaeocarpus grandis	Blue quandong	T										4
Eragrostis brownii	Brown's lovegrass	G		LC			4					
Erythrina indica	Coral Tree	T		LC			4	4				
Eucalyptus acmenoides	White Mahogany	T		LC	4		4					
Eucalyptus microcorys	Tallowwood	T		LC	4	4	4		4		4	
Eucalyptus propinqua	Grey gum	T		LC	4	4	4					
Eucalyptus robusta	Swamp mahogany	T		LC							4	
Eucalyptus saligna	Sydney Blue Gum	T		LC		4						
Eucalyptus siderophloia	Grey Ironbark	T		LC	4		4					4
Eucalyptus tereticornis	Forest red gum	T		LC	4	4	4					
Eucalyptus trachyphloia	Brown bloodwood	T		LC	4		4					
Eustrephus latifolius	Wombat berry	V		LC	4							
Ficus benjamina	Weeping fig	T		Intro				4	4	4		
Ficus macrophylla	Moreton Bay Fig	T		LC		4	4	4			4	
Ficus rubiginosa	Rusty fig	T		LC	4			4				
Ficus sp.	Large leaves, cormiflorous	T		Intro					4			
Ficus sp.		T		?							4	
Fimbristylis dichotoma	Common fringerush	Se		LC			4					
Flindersia australis	Crow's Ash	T		LC							4	
Glochidion ferdinandi	Cheese Tree	T		LC								
Glossocardia bidens	Native cobbler's pegs	H		LC			4					
Glycine clandestina	Twining glycine	H		LC	4							
Glycine tabacina	Glycine Pea	H		LC	4							

Botanical Name	Common Name	Form	Status EPBC Act	Status NC Act	Sites 1	2	3	4	5	6	7	8
Gomphrena celosioides	Gomphrena Weed	H		Intro			4					
Grevillea 'Forest Rambler'		S		CV								4
Grevillea 'Superb'		S		CV		4						
Grevillea baileyana	Scrub beefwood, white oak, brown silky oak	T		LC		4	4					
Grevillea robusta	Silky oak	T		LC		4	4	4			4	
Grevillea venusta	Byfield spider flower (GE)	S	V	V		4						
Harpullia pendula	Tulipwood	T		LC		4					4	
Heliotropium amplexicaule	Blue heliotrope	H		Intro		4						
Hibiscus tiliaceus	Cottonwood	T		LC		4	4					
Hypochoeris radicata	Catsear	H		Intro	4							
Ipomoea cairica	Coast Morning Glory	V		Intro	4		4					
Jacaranda mimosaefolia	Jacaranda	T		Intro		4	4		4			
Jacksonia scoparia	Dogwood	S		LC			4					
Jagera pseudorhus	Foambark	T		LC	4		4					
Lagerstroemia indica	Crepe myrtle	T		Intro		4						
Lantana montevidensis	Creeping lantana	H		Intro; C2	4	4						
Leptospermum polygalifolium	Wild May	S		LC		4						
Leucena leucocoephala	Leucena	S		Intro		4						
Livistonia australis	Cabbage-tree Palm	T		LC			4					
Lomandra hystrix	Creek matrush	H		LC							4	
Lomandra longifolia	Long leaved matrush	H		LC							4	
Lophostemon confertus	Brush box	T		LC	4	4						
Ludwigia octovalvis	Willow primrose	H		LC								

Botanical Name	Common Name	Form	Status EPBC Act	Status NC Act	Sites 1	2	3	4	5	6	7	8
Macfadyena unguis-cati	Cat's-claw Creeper	V		Intro; C3			4					
Macroptilium atropurpureum	Siratro	V		Intro								4
Macroptilium lathyroides	Phasey Bean	H		Intro								4
Malvastrum coromandelianum	Prickly malvastrum	H		Intro	4							
Megathyrsus maximus	Guinea grass	G		Intro	4	4	4					4
Melaleuca leucadendra	Weeping teatree	T		LC							4	
Melaleuca quinquenervia	Paper barked tea tree	T		LC							4	
Melia azedarach	White Cedar	T		LC			4					
Melinis repens	Red Natal grass	G		Intro			4					
Morus sp.	Mulberry tree	T		Intro		4						
Murraya paniculata	Mock orange	S		Intro		4						
Nandina domestica	Sacred bamboo	S		Intro		4						
Neolitsea dealbata	Bolly gum	T		LC			4					
Ochna serrulata	Ochna	S		Intro	4		4					
Oleander sp.	Oleander	S		Intro		4						
Ottochloa gracillima		G		LC	4		4					
Oxalis corniculata	Creeping oxalis	H		LC	4		4					
Paspalum dilatatum	Paspalum	G		Intro								4
Paspalum scrobiculatum	Ditch millet	G		LC			4					
Passiflora edulis	Passionfruit	V		Intro	4							
Pennisetum alopecuroides	Swamp Foxtail	G		LC							4	
Persicaria subsessile	Smartweed	H		LC								4
Phoenix sp.		P		Intro		4						
Pinus elliottii	Slash pine	T		Intro								

Botanical Name	Common Name	Form	Status EPBC Act	Status NC Act	Sites 1	2	3	4	5	6	7	8
Pinus sp.		T		Intro		4						
Plantago lanceolata	Common Plantain	H		Intro	4							
Podocarpus elatus	Brown Pine	T		LC		4	4					
Pseuderanthemum variable	Love flower	H		LC			4					
Psidium guajava	Guava	T		LC		4						
Psidium sp.	Guava	T		Intro		4						
Sansevieria trifasciata	Mother-in-law's Tongue	H		Intro			4					
Sarcomelicope simplicifolia	Bauerella	T		LC		4						
Schefflera actinophylla	Queensland umbrella tree	T		LC		4	4					
Schinus terebinthifolia	Broad-leaf pepper tree	T		Intro; C3	4	4						
Sida rhombifolia	Sida	H		Intro	4						4	
Solanum torvum	Devil's fig	S		Intro		4	4				4	
Sonchus oleraceus	Sow thistle	H		Intro							4	
Sphagneticola trilobata	Singapore daisy	H		Intro; C3	4							
Stenocarpus sinuatis	Wheel of Fire	T		LC			4					
Syagrus romanzoffianum	Queen Palm	T		Intro		4	4					
Tephrosia glomulifera	Pink Tephrosia	S		Intro	4							
Tipuana tipu	Pride of Bolivia	T		Intro		4						
Toona ciliata	Red Cedar	T		LC		4	4					
Typha sp.	Cumbungi	Se		LC							4	
Vernonia cinerea	Vernonia	H		LC			4					
Waterhousia floribunda	Weeping Lilly Pilly	T		LC;BC C2							4	
Westringia fruitcosa	Coastal rosemary	S		LC								4

Table Notes: * This species is a weed in south-east Queensland

Scientific name: (NF) = uncertain identification due to non-fertile material

Form:

T	= tree	H	= herb
S	= shrub	AQ H	= aquatic herb
P	= palm	V	= vine
F	= fern	O	=orchid
G	= grass	M	= mistletoe
Se	= sedge	EW	= a non- local native plant which has become an environmental weed in South East Queensland

Status:

E = Endangered	= Nature Conservation (Wildlife) Regulation 1994 (Queensland Government)
V = Vulnerable	= Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia)
R = Rare	intro = introduced species
C = Common	F = subject to the Fisheries Act 1994
CV = Cultivated Variety	BCC 2 = Species that have restricted distribution within Brisbane City (Natural Assets Planning Scheme Policy in Brisbane City Plan 2000, Brisbane City Council)

Categories of Declared plants under the *Land Protection (Pest and Stock Route Management) Act 2002* and listed in the *Land Protection (Pest and Stock Route Management) Regulation 2003*.

- C1 = Class 1 Pest Plants
- C2 = Class 2 Pest Plants
- C3 = Class 3 Pest Plants

A landowner must take reasonable steps to keep the following land free of class 1 and class 2 pests, unless the owner holds a declared pest permit allowing the pests to be kept on the land.

- the owner's land;
- unfenced land comprising part of a road or stock route that adjoins or is within the owner's land;

- other land that is fenced within the owner's land;
- the bed, banks and water of a watercourse on the owner's land;
- the bed, banks and water to the centre-line of a watercourse forming a boundary, or part of a boundary, of the owners land.
- A person must not, without reasonable excuse, introduce a declared pest other than under a declared pest permit.

Appendix C Fauna species list from database searches

Species Name	Common Name	Status*	Significant in SEQ	AP Status#	Source^
Adelotus brevis	Tusked Frog	VU (Qld)			2
Limnodynastes ornatus	Ornate Burrowing Frog				2
Limnodynastes peronii	Striped Marshfrog				2
Litoria caerulea	Common Green Tree Frog				2
Litoria fallax	Eastern Sedge Frog				2
Litoria latopalmata	Broad palmed Rocket Frog				2
Litoria rubella	Ruddy Tree Frog				2
Litoria wilcoxii					2
Mixophyes fasciolatus	Great Barred Frog				2
Mixophyes iteratus *	Giant Barred Frog	EN (Aust) EN (Qld)		EN	1
Pseudophryne major	Great Brown Broodfrog		YES		2
Acanthiza lineata	Striated Thornbill				2, 3
Acanthiza nana	Yellow Thornbill				2
Acanthiza pusilla	Brown Thornbill				2, 3
Acanthiza reguloides	Buff-rumped Thornbill				2, 3
Acanthorhynchus tenuirostris	Eastern Spinebill				2
Accipiter cirrhocephalus	Collared Sparrowhawk				2
Accipiter fasciatus	Brown Goshawk				2, 3
Accipiter novaehollandiae	Grey Goshawk	R (Qld)			2, 3
Acridotheres tristis	Common Myna				3
Acrocephalus australis	Australian Reed-Warbler		YES		2, 3
Aegotheles cristatus	Australian Owlet-nightjar				2
Ailuroedus crassirostris	Green Catbird		YES		2
Alectura lathami	Australian Brush-turkey				2, 3
Alisterus scapularis	Australian King-Parrot				2, 3
Amaurornis olivaceus	Bush-hen				2
Anas gracilis	Grey Teal				2
Anas platyrhynchos	Mallard				3
Anas superciliosa	Pacific Black Duck				2, 3
Anas superciliosa/platyrhynchos	Pacific Black Duck/Mallard hybrid				3
Anhinga melanogaster	Darter				2, 3
Anser anser	Greylag Goose				3
Anseranas semipalmata	Magpie Goose				2
Anthochaera chrysoptera	Little Wattlebird		YES		2
Anthus novaeseelandiae	Richard's Pipit				2

Species Name	Common Name	Status*	Significant in SEQ	AP Status#	Source^
Aprosmictus erythropterus	Red-winged Parrot				2
Apus pacificus	Fork-tailed Swift				2
Aquila audax	Wedge-tailed Eagle				2
Ardea alba	Great Egret				2
Ardea alba	Great Egret				2, 3
Ardea ibis	Cattle Egret				3
Ardea intermedia	Intermediate Egret				2, 3
Ardea pacifica	White-necked Heron				2
Artamus cyanopterus	Dusky woodswallow				2
Artamus leucorynchus	White-breasted Woodswallow				2, 3
Aviceda subcristata	Pacific Baza				2, 3
Aythya australis	Hardhead				2, 3
Barnardius zonarius barnardi	Mallee Ringneck				2
Burhinus magnirostris	Bush Stone-curlew				2, 3
Butorides striatus	Striated Heron				2, 3
Cacatua galerita	Sulphur-crested Cockatoo				2, 3
Cacatua roseicapilla	Galah				2, 3
Cacatua sanguinea	Little Corella				2, 3
Cacomantis flabelliformis	Fan-tailed Cuckoo				2, 3
Cacomantis variolosus	Brush Cuckoo				2
Calyptorhynchus funereus	Yellow-tailed Black-Cockatoo				2
Centropus phasianinus	Pheasant Coucal				2, 3
Chalcophaps indica	Emerald Dove				2, 3
Chenonetta jubata	Australian Wood Duck				2, 3
Chrysococcyx lucidus	Shining Bronze-Cuckoo				2, 3
Chrysococcyx minutillus	Little Bronze-Cuckoo				2
Cinclosoma punctatum	Spotted Quail-thrush				2, 3
Cisticola exilis	Golden-headed Cisticola				2
Colluricincla harmonica	Grey Shrike-thrush				2, 3
Colluricincla megarhyncha	Little Shrike-thrush				2, 3
Columba leucomela	White-headed Pigeon				2
Columba livia	Rock Dove				3
Coracina lineata	Barred Cuckoo-shrike				2
Coracina novaehollandiae	Black-faced Cuckoo-Shrike				2, 3
Coracina papuensis	White-bellied Cuckoo-Shrike				2, 3
Coracina tenuirostris	Cicadabird				2, 3
Cormobates leucophaeus metastasis	White-throated Treecreeper (southern)				2
Corombates leucophaeus	White-throated Treecreeper				3

Species Name	Common Name	Status*	Significant in SEQ	AP Status#	Source^
Corvus coronoides	Australian Raven				2, 3
Corvus orru	Torresian Crow				2, 3
Coturnix ypsilophora	Brown Quail				2
Cracticus nigrogularis	Pied Butcherbird				2, 3
Cracticus torquatus	Grey Butcherbird				2, 3
Cuculus pallidus	Pallid Cuckoo				2
Cuculus saturatus	Oriental Cuckoo				2
*Cyclopsitta diophthalma coxeni**	Coxen's Fig-Parrot	EN (Aust) EN (Qld)		CE	1
Cygnus atratus	Black Swan				2
Dacelo novaeguineae	Laughing Kookaburra				2, 3
Daphoenositta chrysoptera	Varied Sittella				2, 3
Dendrocygna arcuata	Wandering Whistling-Duck				2
Dicaeum hirundinaceum	Mistletoebird				2, 3
Dicrurus hottentottus	Spangled Drongo				2, 3
Egretta garzetta	Little Egret				2
Egretta novaehollandiae	White-faced Heron				2, 3
Elanus axillaris	Black-shouldered Kite				2
Entomyzon cyanotis	Blue-faced Honeyeater				2, 3
Eopsaltria australis	Eastern Yellow Robin				2, 3
Erythrotriorchis radiatus *	Red Goshawk	VU (Aust) EN (Qld)		VU	1, 2
Eudynamis scolopacea	Common Koel				2, 3
Eurostopodus mystacalis	White-throated Nightjar				2, 3
Eurystomus orientalis	Dollarbird				2, 3
Falco berigora	Brown Falcon				2
Falco cenchroides	Nankeen Kestrel				2
Falco longipennis	Australian Hobby				2
Falco peregrinus	Peregrine Falcon				2, 3
Falco subniger	Black Falcon				2
Fulica atra	Eurasian Coot				2, 3
Gallinago hardwickii	Latham's snipe				2
Gallinula tenebrosa	Dusky Moorhen				2, 3
Gallirallus philippensis	Buff-banded Rail				2, 3
Geopelia humeralis	Bar-shouldered Dove				2, 3
Geopelia striata	Peaceful Dove				2, 3
*Geophaps scripta scripta**	Squatter Pigeon (southern)	VU (Aust) VU (Qld)		NT	1
Gerygone laevigaster	Mangrove Gerygone				2, 3
Gerygone mouki	Brown Gerygone				2
Gerygone olivacea	White-throated Gerygone				2, 3

Species Name	Common Name	Status*	Significant in SEQ	AP Status#	Source^
Glossopsitta concinna	Musk Lorikeet		YES		2, 3
Glossopsitta pusilla	Little Lorikeet				2, 3
Grallina cyanoleuca	Magpie-Lark				2, 3
Gymnorhina tibicen	Australian Magpie				2, 3
Haliaeetus leucogaster	White-bellied Sea-Eagle				2, 3
Haliastur indus	Brahminy Kite				2, 3
Hieraaetus morphnoides	Little Eagle				2
Hirundapus caudacutus	White-throated Needletail				2, 3
Hirundo ariel	Fairy Martin				2, 3
Hirundo neoxena	Welcome Swallow				2, 3
Hirundo nigricans	Tree Martin				2, 3
Ixobrychus flavicollis	Black Bittern				2
Ixobrychus minutus	Little Bittern			NT	2
Lalage leucomela	Varied Triller				2
Lalage sueurii	White-winged Triller				3
Larus novaehollandiae	Silver Gull				2, 3
Lathamus discolor *	Swift Parrot	EN (Aust) EN (Qld)		EN	1, 2, 3
Leucosarcia melanoleuca	Wonga Pigeon				2
Lichenostomus chrysops	Yellow-faced Honeyeater				2, 3
Lichenostomus fasciogularis	Mangrove Honeyeater				2
Lichmera indistincta	Brown Honeyeater				2, 3
Lonchura castaneothorax	Chestnut-breasted Mannikin				3
Lophoictinia isura	Square-tailed Kite	R (Qld)			2
Lopholaimus antarcticus	Topknot Pigeon				2
Macropygia amboinensis	Brown Cuckoo-Dove				2, 3
Malurus cyaneus	Superb Fairy-wren				2, 3
Malurus lamberti	Variegated Fairy-wren				2, 3
Malurus melanocephalus	Red-backed Fairy-wren				2, 3
Manorina flavigula	Yellow-throated Miner				2
Manorina melanocephala	Noisy Miner				2, 3
Megalurus timoriensis	Tawny Grassbird				2, 3
Meliphaga lewinii	Lewin's Honeyeater				2, 3
Melithreptus albogularis	White-throated Honeyeater				2, 3
Melithreptus gularis	Black-chinned Honeyeater	R (Qld)		NT	2
Melopsittacus undulatus	Budgerigar				2
Merops ornatus	Rainbow Bee-eater				2, 3
Microeca fascinans	Jacky Winter				2
Monarcha melanopsis	Black-faced Monarch				2, 3

Species Name	Common Name	Status*	Significant in SEQ	AP Status#	Source^
Monarcha trivirgatus	Spectacled Monarch				2
Myiagra cyanoleuca	Satin Flycatcher				2
Myiagra rubecula	Leaden Flycatcher				2
Myzomela sanguinolenta	Scarlet Honeyeater				2, 3
Neochmia temporalis	Red-browed Finch				2, 3
Ninox novaeseelandiae	Southern Boobook				2, 3
Ninox strenua	Powerful Owl	VU (Qld)			2, 3
Numida meleagris	Helmeted Guineafowl				3
Nycticorax caledonicus	Nankeen Night Heron				2, 3
Ocyphaps lophotes	Crested Pigeon				2, 3
Oriolus sagittatus	Olive-backed Oriole				2, 3
Pachycephala pectoralis	Golden Whistler				2, 3
Pachycephala rufiventris	Rufous Whistler				2, 3
Pandion haliaetus	Osprey				3
Pardalotus punctatus	Spotted Pardalote				2, 3
Pardalotus striatus	Striated Pardalote				2, 3
Passer domesticus	House Sparrow				3
Pelecanus conspicillatus	Australian Pelican				2, 3
Petroica goodenovii	Red-capped Robin				2
Petroica rosea	Rose Robin				2, 3
Phaethon rubricauda	Red-tailed Tropicbird	VU (Qld)			2
Phalacrocorax carbo	Great Cormorant				2
Phalacrocorax melanoleucos	Little Pied Cormorant				2, 3
Phalacrocorax sulcirostris	Little Black Cormorant				2, 3
Phalacrocorax varius	Pied Cormorant				2, 3
Philemon citreogularis	Little Friarbird				2, 3
Philemon corniculatus	Noisy Friarbird				2, 3
Pitta versicolor	Noisy Pitta				2
Platalea flavipes	Yellow-billed Spoonbill				2
Platelea regia	Royal Spoonbill				2, 3
Platycercus adscitus	Pale-headed Rosella				2, 3
Platycercus elegans	Crimson Rosella				2
Platycercus eximius	Eastern Rosella		YES		2
Podargus ocellatus plumiferus	Plumed Frogmouth	VU (Qld)		NT	2
Podargus strigoides	Tawny Frogmouth				2, 3
Polytelis alexandrae	Princess Parrot	VU (Aust)		NT	2
Porphyrio porphyrio	Purple Swamphen				2, 3
Porzana pusilla	Baillon's crake				2
Psophodes olivaceus	Eastern Whipbird				2, 3
Ptilinopus regina	Rose-crowned Fruit-Dove		YES		2
Ptilinopus superbus	Superb Fruit-Dove		YES		2

Species Name	Common Name	Status*	Significant in SEQ	AP Status#	Source^
Ptilonorhynchus violaceus	Satin Bowerbird				2, 3
Rhipidura fuliginosa	Grey Fantail				2, 3
Rhipidura leucophrys	Willie Wagtail				2, 3
Rhipidura rufifrons	Rufous Fantail				2, 3
Rostratula australis *	Australian Painted Snipe	VU (Aust) VU (Qld)		VU	1
Scythrops novaehollandiae	Channel-billed Cuckoo				2, 3
Sericornis frontalis	White-browed Scrubwren				2, 3
Sericornis magnirostris	Large-billed Scrubwren				2, 3
Sericulus chrysocephalus	Regent Bowerbird				2
Smicrornis brevirostris	Weebill				2
Sphecotheres viridis	Figbird				2, 3
Sterna anaethetus	Bridled Tern				2
Sterna bergii	Crested Tern				2
Sterna caspia	Caspian Tern				2, 3
Sterna nilotica	Gull-billed Tern				2
Strepera graculina	Pied Currawong				2, 3
Streptopelia chinensis	Spotted Turtle-Dove				3
Sturnus vulgaris	Common Starling				3
Tachybaptus novaehollandiae	Australasian Grebe				2, 3
Tadorna tadornoides	Australian shelduck				2
Taeniopygia bichenovii	Double-barred Finch				3
Threskiornis molucca	Australian White Ibis				2, 3
Threskiornis spinicollis	Straw-necked Ibis				2, 3
Todiramphus chloris	Collared Kingfisher				2
Todiramphus macleayii	Forest Kingfisher				2, 3
Todiramphus pyrrhopygia	Red-backed Kingfisher				2
Todiramphus sanctus	Sacred Kingfisher				2, 3
Trichoglossus chlorolepidotus	Scaly-breasted Lorikeet				2, 3
Trichoglossus haematodus	Rainbow Lorikeet				2, 3
Turnix melanogaster *	Black-breasted Button-quail	VU (Aust) VU (Qld)		VU	1, 2
Turnix varia	Painted Button-quail				2, 3
Tyto alba	Barn Owl				2, 3
Tyto novaehollandiae novaehollandiae	Masked Owl (southern subspecies)		YES		2
Vanellus miles	Masked Lapwing				3
Vanellus miles novaehollandiae	Masked Lapwing (southern subspecies)				2
Xanthomyza phrygia *	Regent Honeyeater	EN (Aust) EN (Qld)		EN	1

Species Name	Common Name	Status*	Significant in SEQ	AP Status#	Source^
Zoothera heinei	Russet-tailed Thrush				2
Zosterops lateralis	Silvereye				2, 3
*Carcharias taurus (east coast population)**	Grey Nurse Shark (east coast population)	CE (Aust) EN (Qld)			1
Acrobates pygmaeus	Feathertail Glider			lc	2
*Chalinolobus dwyeri **	Large-eared Pied Bat, Large Pied Bat	VU (Aust) R (Qld)		VU	1
Chalinolobus nigrogriseus	Hoary Wattled Bat			lc	2
*Dasyurus maculatus maculatus (SE mainland population)**	Spotted-tail Quoll (southeastern mainland population)	EN (Aust) VU (Qld)		VU	1
*Eubalaena australis **	Southern Right Whale	EN (Aust)			1
Hydromys chrysogaster	Water Rat				2
Isoodon macrourus	Northern Brown Bandicoot			lc	2
Macropus rufogriseus	Red-necked Wallaby			lc	2
Miniopterus australis	Little Bent-wing Bat			lc	2
Perameles nasuta	Long-nosed Bandicoot			lc	2
Petauroides volans	Greater Glider		YES	lc	2
Petaurus breviceps	Sugar Glider			lc	2
Petaurus norfolcensis	Squirrel Glider		YES	nt	2
Phascolarctos cinereus (southeast Queensland bioregion)	Koala (southeast Queensland bioregion)	VU (Qld)		VU	2
*Potorous tridactylus tridactylus**	Long-nosed Potoroo (SE mainland)	VU (Aust) VU (Qld)		VU	1
Pseudocheirus peregrinus	Common Ringtail Possum		YES	lc	2
Pteropus alecto	Black Flying Fox		YES	lc	2
*Pteropus poliocephalus **	Grey-headed Flying Fox	VU (Aust)		VU	1, 2
Pteropus scapulatus	Little Red Flying Fox		YES	lc	2
Saccolaimus flaviventris	Yellow-bellied Sheathtail Bat			lc	2
Scotorepens greyii	Little Broad-nosed Bat			lc	2
Sousa chinensis	Indo-Pacific Hump-backed Dolphin	R (Qld)			2
Syconycteris australis	Eastern Blossom Bat		YES	lc	2
Tadarida australis	White-striped Freetail Bat			lc	2
Trichosurus vulpecula	Common Brushtail Possum			lc	2
Anomalopus verreauxii					2
Boiga irregularis	Brown Tree Snake				2
Cacophis harriettae	White-crowned Snake				2
Cacophis krefftii	Dwarf Crowned Snake		YES		2
Cacophis squamulosus	Golden Crowned Snake				2
Calyptotis scutirostrum	Scute-snouted Skink				2

Species Name	Common Name	Status*	Significant in SEQ	AP Status#	Source^
Coeranoscincus reticulatus *	Three-toed Snake-tooth Skink	VU (Aust) R (Qld)		VU	1
Cryptoblepharus virgatus	Cream-striped Skinning Sking				2
Ctenotus robustus					2
Ctenotus taeniolatus	Copper-tailed Skink				2
Cyclodomorphus gerrardii	Pink-tongued Lizard				2
Demansia psammophis	Yellow-faced Whip Snake				2
Dendrelaphis punctulata	Common Tree Snake				2
Egernia frerei	Major Skink				2
Emydura macquarii signata	Brisbane Short-necked Turtle		YES	R/IK	2
Eulamprus martini					2
Eulamprus quoyii	Eastern Water Skink				2
Eulamprus tenuis					2
Hemiaspis signata	Black-bellied Swamp Snake				2
Lampropholis delicata					2
Lampropholis guichenoti			YES		2
Lialis burtonis	Burton's Legless Lizard				2
Macrochelodina expansa	Broad-shelled River Turtle				2
Morelia spilota	Carpet Python				2
Oedura robusta	Robust Velvet Gecko				2
Physignathus lesueurii	Eastern Water Dragon				2
Pogona barbata	Bearded Dragon				2
Rhinoplocephalus nigrescens	Eastern Small-eyed Snake				2
Tiliqua scincoides	Eastern Blue-tongued Lizard				2
Tropidechis carinatus	Rough-scaled Snake				2
Varanus varius	Lace Monitor				2
Wollumbinia latisternum	Saw-shelled Turtle				2

* Status: EN = Endangered, VU = Vulnerable, R = Rare

(Aust) = Status under the Commonwealth EPBC Act

(Qld) = Status under the Queensland *Nature Conservation (Wildlife) Regulation 2006*

Status under Action Plan for relevant taxon: R/IK = Rare or Insufficiently Known; NT = Near Threatened.

^ Source: 1 = DEW Protected Matters database; 2 = EPA Wildlife Online database; 3 = Birds Australia BirData database.

Appendix D Fauna species of local significance within Brisbane City

Scientific Name	Common Name	BCC Status#	Source^
REPTILES			
Egernia frerei	Major Skink	S	2
Emydura macquarii signata	Brisbane Short-necked Turtle		2
Tropidechis carinatus	Rough-scaled Snake	S	2
Varanus varius	Lace Monitor	N	2
BIRDS			
Acanthiza lineata	Striated Thornbill	S	2
Acanthiza reguloides	Buff-rumped Thornbill	N	2
Accipiter fasciatus	Brown Goshawk	S	2, 3
Ailuroedus crassirostris	Green Catbird	S	2, 3
Aquila audax	Wedge-tailed Eagle	S	2
Calyptorhynchus funereus	Yellow-tailed Black-Cockatoo	S	2
Cinclosoma punctatum	Spotted Quail-thrush	S	2
Coracina lineata	Barred Cuckoo-shrike	S	2, 3
Cuculus saturatus	Oriental Cuckoo	S	2, 4
Eurostopodus mystacalis	White-throated Nightjar	N	2, 3
Falco peregrinus	Peregrine Falcon	S	2
Gallinago hardwickii	Latham's Snipe	S	2, 3
Gerygone mouki	Brown Gerygone	S	2
Haliaeetus leucogaster	White-bellied Sea-Eagle	S	2
Ixobrychus minutus	Little Bittern	S	2, 4
Lichenostomus fasciogularis	Mangrove Honeyeater	N	2, 3
Lopholaimus antarcticus	Topknot Pigeon	S	2, 3
Monarcha trivirgatus	Spectacled Monarch	S	2
Myiagra cyanoleuca	Satin Flycatcher	S	2
Pandion haliaetus	Osprey	S	2
Porzana pusilla	Baillon's Crake	S	3, 4
Ptilinopus regina	Rose-crowned Fruit-Dove	S	2, 4
Ptilonorhynchus violaceus	Satin Bowerbird	S	2
Rhipidura rufifrons	Rufous Fantail	S	2, 3
Sericulus chrysocephalus	Regent Bowerbird	S	2, 3
Todiramphus chloris	Collared Kingfisher	N	2
Tyto novaehollandiae novaehollandiae	Masked Owl (southern subspecies)	S	2
MAMMALS			
Macropus rufogriseus	Red-necked Wallaby	N	2
Perameles nasuta	Long-nosed Bandicoot	S	2
Petauroides volans	Greater Glider	S	2

Scientific Name	Common Name	BCC Status#	Source^
Petaurus breviceps	Sugar Glider	N	2
Petaurus norfolcensis	Squirrel Glider	S	2
Saccolaimus flaviventris	Yellow-bellied Sheathtail Bat	S	2
Syconycteris australis	Eastern Blossom Bat	S	2

Status under BCC *Natural Assets Planning Scheme Policy*: S = Significant fauna; N = Noteworthy fauna.

^ Source: 2 = EPA Wildlife Online database; 3 = Birds Australia Birdata database; 4 = BCC Fauna database.

Appendix E Terrestrial Migratory and/or Marine listed birds identified from database searches

Scientific Name	Common Name	Migratory*	Marine#	Source^
Accipiter cirrhocephalus	Collared Sparrowhawk	B, E		2
Accipiter fasciatus	Brown Goshawk	B, E	Ma	2, 3
Accipiter novaehollandiae	Grey Goshawk	B, E		2, 3
Acrocephalus australis	Clamorous Reed-warbler	E	Ma	2, 3
Anas gracilis	Grey Teal	B, E		2
Anas superciliosa	Pacific Black Duck	B, E		2, 3
Anseranas semipalmata	Magpie Goose		Ma	1, 2
Anthus novaeseelandiae	Richard's Pipit		Ma	2
Apus pacificus	Fork-tailed Swift	J, C, E	Ma	1, 2
Aquila audax	Wedge-tailed Eagle	B, E		2
Ardea alba	Great Egret	E	Ma	1, 2, 3
Ardea ibis	Cattle Egret	E	Ma	1, 2, 3
Ardea intermedia	Intermediate Egret		Ma	2, 3
Aviceda subcristata	Pacific Baza	B, E		2, 3
Aythya australis	Hardhead	E		2, 3
Cacomantis flabelliformis	Fan-tailed Cuckoo		Ma	2, 3
Chenonetta jubata	Australian Wood Duck	E		2, 3
Chrysococcyx lucidus	Shining Bronze-cuckoo		Ma	2, 3
Chrysococcyx minutillus	Little Bronze-cuckoo		Ma	2
Coracina novaehollandiae	Black-faced Cuckoo-shrike		Ma	2, 3
Coracina papuensis	White-bellied Cuckoo-shrike		Ma	2, 3
Coracina tenuirostris	Cicadabird		Ma	2, 3
Cuculus pallidus	Pallid Cuckoo		Ma	2
Cuculus saturatus	Oriental Cuckoo	J, C, E	Ma	2
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	E		1
Cygnus atratus	Black Swan	E		2
Dendrocygna arcuata	Wandering Whistling-Duck	E	Ma	2
Egretta garzetta	Little Egret		Ma	2
Elanus axillaris	Black-shouldered Kite	B, E		2
Erythrotriorchis radiatus	Red Goshawk	B, E		1, 2
Eudynamys scolopacea	Common Koel		Ma	2, 3
Eurostopodus mystacalis	White-throated Nightjar		Ma	2, 3
Eurystomus orientalis	Dollarbird		Ma	2, 3
Falco berigora	Brown Falcon	B, E	Ma	2
Falco cenchroides	Nankeen Kestrel	B, E	Ma	2
Falco longipennis	Australian Hobby	B, E		2
Falco peregrinus	Peregrine Falcon	B, E		2, 3
Falco subniger	Black Falcon	B, E		2
Gallinago hardwickii	Latham's Snipe	J, C, E	Ma	1, 2

Scientific Name	Common Name	Migratory*	Marine#	Source^
Haliaeetus leucogaster	White-bellied Sea-eagle	C, B, E	Ma	1, 2, 3
Haliastur indus	Brahminy Kite	B, E	Ma	2, 3
Hieraaetus morphnoides	Little Eagle	B, E		2
Hirundapus caudacutus	White-throated Needletail	C, E	Ma	1, 2, 3
Hirundo neoxena	Welcome Swallow		Ma	2, 3
Hirundo nigricans	Tree Martin		Ma	2, 3
Larus novaehollandiae	Silver Gull		Ma	2, 3
Lathamus discolor	Swift Parrot		Ma	1, 2, 3
Lophoictinia isura	Square-tailed Kkite	B, E		2
Megalurus timoriensis	Tawny Grassbird	E		2, 3
Merops ornatus	Rainbow Bee-eater	E	Ma	1, 2, 3
Monarcha melanopsis	Black-faced Monarch	E	Ma	1, 2, 3
Monarcha trivirgatus	Spectacled Monarch	E	Ma	1, 2
Myiagra cyanoleuca	Satin Flycatcher	B, E	Ma	1, 2
Nettapus coromandelianus	Cotton Pygmy-goose	E	Ma	1
Ninox novaeseelandiae	Southern Boobook		Ma	2, 3
Nycticorax caledonicus	Nankeen Night Heron		Ma	2, 3
Pelecanus conspicillatus	Australian Pelican		Ma	2
Phaethon rubricauda	Red-tailed Tropicbird		Ma	2
Pitta versicolor	Noisy Pitta		Ma	2
Porphyrio porphyrio	Purple Swamphen		Ma	2, 3
Porzana pusilla	Baillon's Crake		Ma	2
Ptilinopus superbus	Superb Fruit-Dove		Ma	2
Rhipidura rufifrons	Rufous Fantail	B, E	Ma	1, 2, 3
Rostratula australis	Australian Painted Snipe	C, E	Ma	1, 2
Sterna anaethetus	Bridled Tern	J, C, E	Ma	2
Sterna bergii	Crested Tern	J, C, E	Ma	2
Sterna (Hydropogne) caspia	Caspian Tern	C, E	Ma	2, 3
Sterna nilotica	Gull-billed Tern		Ma	2
Tadorna tadornoides	Australian Shelduck	E		2
Threskiornis molucca	Australian White Ibis		Ma	2, 3
Threskiornis spinicollis	Straw-necked Ibis		Ma	2, 3
Todiramphus macleayii	Forest Kingfisher		Ma	2, 3
Todiramphus sanctus	Sacred Kingfisher		Ma	2, 3
Vanellus miles novaehollandiae	Masked Lapwing (southern subspecies)	E		2, 3
Xanthomyza phrygia	Regent Honeyeater	E		1
Zoothera heinei	Russet-tailed Thrush	E		2
Zosterops lateralis	Silvereye		Ma	2, 3

* Migratory: Listed Migratory species under the EPBC Act; E = EPBC Act; J = JAMBA; C = CAMBA; B = Bonn Convention.

Marine = Listed Marine species or listed Overfly Marine Area species under the EPBC Act.

^ Source: 1 = DEW Protected Matters database; 2 = EPA Wildlife Online database; 3 = Birds Australia Birdata database.