2014
Biodiversity Strategy

ROCKDALE
CITY COUNCIL
On Historic Botany Bay

A Strategy for the Natural Assets of the City of Rockdale

Volume 1: The Strategy

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Local Environmental Groups

Rockdale Wetland Preservation Society

Botany Bay and Catchment Alliance

Wolli Creek Preservation Society

Wildlife Preservation Society (NSW)

Regional Council Alliances

Sydney Weeds Committee

Georges River Combined Councils' Committee

Cooks River Alliance

Sydney Coastal Councils Group

State Agencies

NSW Department of Primary Industries (Fisheries)

NSW Office of Water

NSW Office of Environment and Heritage

NSW Roads and Maritime Service

Sydney Airport Corporation Ltd

Sydney Trains

Sydney Water

This document has been prepared by Eco Logical Australia Pty Ltd

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Abbreviations

Abbreviation	Description
EEC	Endangered ecological community
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
LGA	Local Government Area
RCC	Rockdale City Council
RMS	Roads and Maritime Services
TSC Act	NSW Threatened Species Conservation Act 1995

Vision

Rockdale is a city that values, protects and conserves its native plants and animals, and the environment in which they live. The City's biodiversity is enhanced and sustained through a connected network of bushland, wetland and coastal habitats. These natural areas contribute to our community's environmental awareness, wellbeing and sense of place.

Executive Summary

Prior to European settlement Rockdale was comprised of a distinctive combination of coastline, wetland, waterway, and bushland environments. Today, less than 100 ha (or 3% of the original area) of native vegetation remains: bushland has been cleared for the construction of housing and industry; much of the extensive corridor of wetlands has been filled and replaced with parks and sports fields; and many riverbanks and natural drainage lines are channelised with concrete.

Despite the vast reduction in the original extent of Rockdale's native vegetation, its diverse landscape character has resulted in habitat for a surprising variety of native plants and animals in remaining natural and open space areas. Traditionally, urban areas such as Rockdale have been regarded as locations of low biodiversity. However, there is increasing evidence that urban waterways, native vegetation remnants, and native and exotic trees in parks, streets and gardens provide habitat for a range of fauna species which are resident (eg frogs and possums) migrant (some shorebirds and microbats), and transitory (Grey-headed Flying Fox). Many of Rockdale's open space areas have high conservation values because they provide habitat for internationally significant migratory shorebirds, threatened plants and animals, and fish spawning grounds for Botany Bay. Rockdale's biodiversity contributes significantly to the quality of life for its urban dwellers and the sustainability of the City in many ways.

The field work undertaken for this Strategy provides a current snapshot of the vulnerable state of Rockdale's biodiversity. Large areas of remnant vegetation are in serious decline primarily from high levels of weed invasion. Small insect eating birds such as wrens, thornbills, and fantails are being replaced by pests like the Indian Mynah and generalist species such as Noisy Miners and Pied Currawongs. Rockdale's channelised waterways have little or no in-stream habitat for aquatic fauna.

Reversing the decline in Rockdale's biodiversity is still achievable. However, it requires more effective management, a reduction in the impact of invasive species, better ecological linkages, better knowledge about biodiversity condition, and awareness of the impact of climate change on biodiversity. To achieve this reversal the full engagement of Council, Rockdale's community and other stakeholders is required.

This Strategy has developed goals and targets to meet these challenges. Actions are provided which span on-ground restoration works, community engagement, collaborative partnerships with other land management organisations, and the integration of biodiversity protection and enhancement as a core objective in Council's decision making, long term financial planning and all its processes.

This Strategy is the key document to guide Council in its management of Rockdale's important and diverse natural assets of bushland, waterways, coastal environment, and the native flora and fauna found within the City.

Rockdale City Council recognises the important contribution that has been made by local community environmental groups and residents in helping to protect the City's biodiversity. The success of achieving many of the actions outlined in this Strategy will depend on Council's continuing partnership with the wider community.

1 Background

1.1 Introduction

The City of Rockdale covers an area of 29.8 km² and is located in Sydney's southern suburbs, approximately 12 km from the Sydney city centre. The City is bounded by Botany Bay to the east, the Cooks River to the north, the Georges River to the south and principally the Cities of Canterbury and Hurstville to the west and Kogarah to the south west. (Rockdale Community Strategic Plan 2013-2025)

The traditional owners of the area are the Aboriginal people of the Eora nation from the Gamaygal, Gwegal, Bidgigal and Gadigal clans (Rockdale Community Strategic Plan 2013-2025).These tribes were known as "water people" and the traditional owners have had an intimate spiritual and cultural connection to the land for many thousands of years.

Prior to European settlement Rockdale was comprised of a distinctive combination of coastline, wetland, waterway and bushland environments which over thousands of years supplied the Eora with abundant resources to survive and develop a rich and spiritual culture. Extensive beds of seagrasses growing in the Botany Bay shallows were habitat for an abundance of fish including sting-rays, weedy sea-dragons and blue gropers and dense stands of mangroves, Swamp Oaks, broad mudflats and saltmarsh lined the Cooks River and its lower tributaries. A series of north-south beach sand-ridges interspersed with swamp forests and wetlands extended one kilometre inland from Lady Robinsons Beach in a broad corridor from Cooks River in the north to the Georges River in the south. Further inland a 'profusion of the native flowers of Australia' were found on the steeper sandstone country after which 'Rockdale' was named and at the south western edges of the municipality Turpentine Ironbark Forests grew on the richer soils derived from Wianamatta shale (Benson and Howell 1990).

Rockdale today is a highly urbanised area with significant industrial and commercial precincts, bordered by Sydney International Airport and served by major road, rail and bus transport connections. It has a population of greater than 100,000 which is projected to increase due in part to its proximity to the Sydney CBD, lifestyle benefits, access to transport and employment opportunities. Its community is culturally diverse with significantly higher numbers of residents who were born overseas or from a non-English speaking background compared to the rest of Sydney (Rockdale Community Strategic Plan 2013-2025).

Less than 100 ha (or 3% of the original area) of native vegetation now remains, much of the wetlands corridor has been filled and replaced with parks and sports fields, bushland areas replaced with housing and roads, and many riverbanks and natural drainage lines are channelised with concrete and other hard material. Fortunately however, some of Rockdale's natural areas remain, many of which have high conservation values because they provide habitat for internationally significant migratory shorebirds birds, threatened plants and animals, and fish spawning grounds for Botany Bay.

For many people living in an urban environment like Rockdale, the remaining diversity of ecosystems and species is a source of emotional, artistic and spiritual inspiration, and cultural identity. Many people believe that human society must be built on a respect for all life around us. For others, the open space and natural areas around their homes and parklands are simply aspects of the place they live in and enjoy - part of the experience of living in Rockdale.

However appreciated, the remaining natural areas in Rockdale provide the platform for protecting and expanding biodiversity conservation values for current and future generations to enjoy.

1.2 What is biodiversity and why is it important?

Biodiversity or biological diversity is defined as:

> *The variety of all living things, including plants, animals and micro-organisms, the genes they contain, and the ecosystems of which they form a part. It is not static, but is constantly changing. It is increased by genetic change and evolutionary processes and reduced by processes such as habitat degradation, population decline, and extinction. (National Strategy for the Conservation of Australia's Biological Diversity (DEST 1996))*

The concept of biodiversity emphasises the interconnectedness and interdependence of all life on earth and can be considered at three levels:

- Genetic diversity - the variety of genetic information that is contained in all living things and that varies within and between the populations of organisms making up single species or wider groups
- Species diversity - the variety of species on earth
- Ecosystem diversity - the variety of habitats, ecosystems and ecological processes.

1.2.1 Urban biodiversity natural assets

Traditionally, highly urbanised areas such as Rockdale have been regarded as locations of low biodiversity. However, there is increasing evidence that urban waterways, native vegetation remnants, native and exotic trees in parks, streets and gardens provide habitat for a range of fauna species which are resident (eg frogs and possums), migrant (some shorebirds and microbats), and transitory (Grey-headed Flying Fox). Urban biodiversity is not only important to conserving native plants and animals but contributes significantly to the quality of life for urban dwellers and the sustainability of our city in many ways that we can be oblivious to. Accordingly, native vegetation and waterways may be regarded as natural assets because they provide a range of ecosystem services. Natural assets are discussed further in section 5.4.4. The types of ecosystem services provided by Rockdale's natural assets include:

- **Air pollution removal:** in particular ozone, nitrogen dioxide and sulphur dioxide by large street trees and other vegetation
- **Microclimate regulation:** trees provide shade and vegetation and waterway areas reduce the heat island effect; trees also keep cities warmer in winter by blocking wind and reducing wind speed
- **Flood regulation:** wetlands and other vegetated areas can store large quantities of water and slow water movement thus reducing flood damage
- **Noise abatement:** vegetation belts act as barriers for traffic noise along roads
- **Water filtration:** wetlands remove sediments, nutrients and other contaminants from water
- **Recreational values:** natural areas are highly valued for opportunities to play, exercise and de-stress
- **Aesthetic values:** natural areas provide attractive surroundings, increase property values, promote tourism, and may even shape the cultural identity of urban localities
- **Educational values:** easily accessible natural areas provide numerous opportunities for nature study, research and environmental education through field trips and excursions.
- **Carbon sequestration:** urban trees remove carbon dioxide from the air and act as a sink by storing carbon in their biomass; Rockdale's wetlands are also carbon sinks because they remove carbon dioxide from the atmosphere and store it in the soil carbon pool

(Pearson et al 2007)

Urban biodiversity is important for the mental health and wellbeing of city dwellers. For much of Rockdale's population, green-spaces are the primary opportunity for direct contact with the natural environment. Increasingly, international research (Fuller et al 2007) has shown that interaction with the natural environment contributes to a range of measurable positive benefits at individual and societal levels including:

- general health
- degree of social interaction
- respite from mental fatigue
- opportunities for reflection.

Furthermore, it appears that the psychological benefits of green-spaces increase with biodiversity (Fuller et al 2007), as green-space users are able to perceive and appreciate species richness, and in particular plants and birds. This suggests that conserving and enhancing urban biodiversity is not only important for the provision of ecosystem processes but also creates opportunities for increasingly urbanised communities to have contact with nature, thus enhancing societal and community wellbeing.

1.3 Need for a local biodiversity strategy

This biodiversity strategy for the Rockdale City Council Local Government Area aims to address Council's responsibilities under the *Local Government Act 1993* charter to,

> *'... properly manage, develop, protect, restore, enhance and conserve the environment of the area for which it is responsible, in a manner that is consistent with and promotes the principles of ecologically sustainable development'.*

The Rockdale Biodiversity Strategy also assists Council in meeting its obligations under several pieces of environmental legislation at a state and federal level including the Noxious Weeds Act, Threatened Species Conservation (TSC) Act, Fisheries Management Act, Environmental Planning and Assessment (EP&A) Act and Environmental Protection and Biodiversity Conservation (EPBC) Act.

The field work undertaken for the preparation of this strategy provides a current snapshot of the vulnerable state of Rockdale's biodiversity. Large areas of remnant vegetation are in serious decline primarily from high levels of weed invasion. Small insect eating birds such as wrens, thornbills and fantails are being replaced by dominant, generalist species such as Noisy Miners and Pied Currawongs. A large proportion of Rockdale's waterways have been channelised with little or no in-stream habitat for aquatic fauna. Reversing the precipitous decline in Rockdale's biodiversity is still achievable. However, it requires more effective management, a reduction in the impact of invasive species, better ecological linkages, the full engagement of Council, Rockdale's community and other stakeholders, better knowledge about biodiversity condition and awareness of the impact of climate change on biodiversity.

This strategy brings together the available information about biodiversity within the LGA, and provides a clear and practical approach to guide the future management of biodiversity that is consistent with legislation, plans and policies.

2 Vision and Goals

Rockdale is a city that values, protects and conserves its native plants and animals, and the environment in which they live. The City's biodiversity is enhanced and sustained through a connected network of bushland, wetland and coastal habitats. These natural areas contribute to our community's environmental awareness, wellbeing and sense of place.

2.1 Guiding principles

This Strategy is underpinned by a set of principles that guide the goals, targets, strategies and actions to achieve its Vision. They have been developed in collaboration with the Rockdale community.

1. *Biodiversity contributes to the quality of life of urban residents by improving visual, spiritual and recreational amenity and providing a connection to the natural world. (adapted City of Sydney 2014)*
2. *The Rockdale community in partnership with Council are key stewards of Rockdale's biodiversity.*
3. *Rockdale's natural areas are irreplaceable natural assets that are as important to our lifestyle as built assets and should be valued, managed and enhanced in an equivalent way*
4. *Prevention of loss and degradation of biodiversity habitat is the first priority and is significantly more cost-effective and less risky than recovery and restoration actions*
5. *Minimise natural area fragmentation and promote corridor and habitat linkages whilst recognising the different habitat requirements of individual species.*
6. *Buffer zones around habitat areas are important in reducing the impacts of adjacent land-uses and enhancing habitat connectivity*

Based on previous work undertaken by: City of Sydney 2014; Department of Environment and Primary Industries (NSW) Department of Environment and Primary Industries 2009; Department of Environment and Primary Industries (NSW) Department of Environment and Primary Industries 2009 (Victoria) 2013.

2.2 Goals and targets

Eight goals underpin the Biodiversity Strategy management actions. Each goal has a target which quantifies the biodiversity improvement and when it will be achieved. The goals have been derived from:

- Extensive consultation with the Rockdale community, land management agencies, and Council staff
- Legislative obligations relating to the conservation of biodiversity
- Best practice management of biodiversity
- Rockdale's unique character and natural environment and specific threats to its biodiversity.

Table 1: Goals and targets for the Biodiversity Strategy

Goal		Target	Monitoring
1	The decline of biodiversity values in Rockdale's terrestrial natural areas is reversed.	All Council priority natural areas are managed under an LGA wide ongoing bushland restoration and weed management program resulting in a consistent improvement in vegetation condition by 2024	5 yearly baseline monitoring
2	The ecological values of Rockdale's wetlands, waterways and riparian land are protected, enhanced and maintained.	The water quality of Rockdale's key waterways is improved to support ecological processes, by 2024.	5 yearly baseline monitoring
		Where possible, establish and maintain fully vegetated native riparian vegetation buffers from the relevant local vegetation community along waterways and wetlands in priority natural areas, by 2024.	Biennial reporting: percentage of buffers established, percentage of buffers maintained
3	The habitat of threatened, migratory and other priority species is enhanced and effectively protected.	Threats to Priority Species actively managed and actions to enhance habitat being implemented by 2024.	Baseline habitat surveys and biennial reporting
4	Ecological connectivity at local and regional scales is established and improved	Locations for habitat creation, expansion and linkages are identified and works commenced by 2024	Bushland Restoration and Weed Management program monitoring and reporting
5	Biodiversity protection and enhancement is integrated as a core objective in Council's decision making and all its processes	Integration of priority biodiversity actions, and costings into City projects planning in preparation for the 2015/16 budget Establishment of an approved long term financial strategy to address implementation of the Biodiversity Strategy, by 2017. Biodiversity and Environmental Sensitive Land information is integrated into key development assessment and asset information documentation.	Budget allocation to biodiversity projects
6	Council places a high value on Rockdale's biodiversity and demonstrates leadership in all its operations to address biodiversity conservation priorities.	Key staff are trained in biodiversity awareness Councillors are more aware of biodiversity issues in the City Strategic asset management plans, frameworks and decisions incorporate natural assets by 2018.	Biodiversity training integrated into Councillor Induction programs Biodiversity training integrated into Council's learning and development program
7	A community that is engaged, informed and appreciates Rockdale's unique natural heritage	Community participation in natural resource management and awareness programs increases annually.	Annual Reporting Council Community Surveys
		Sensitive recreational access and interpretive opportunities identified and implemented in appropriate sites commencing 2018.	
8	Collaborative partnerships between Council, the community, large land owners, businesses, research institutes, regional Councils and the government to protect and enhance biodiversity	Council's participation in public and private partnerships relating to biodiversity management increases every year	Annual Reporting

3 Biodiversity in Rockdale

3.1 Landscape character

The City of Rockdale is 12km from Sydney's central business district on the shoreline of Botany Bay. For a relatively small land area of 28km², Rockdale's landscape is remarkably diverse comprising of:

- Intertidal estuarine areas with seagrass meadows, beaches, and dune vegetation along the coastline
- A flat sand plain extending 1km inland supporting a wide open green-space corridor with a sequence of modified wetlands, ponds, fringing reeds and swamp forest remnants
- Sandstone slopes and escarpments in the western half of the LGA
- Two major creek-lines, Bardwell Creek and Wolli Creek and two major rivers, the Cooks River and Georges River estuary on the City's northern and southern boundary.

Despite the vast reduction in the original extent of Rockdale's native vegetation, its diverse landscape character has resulted in habitat for a surprising diversity of native plants and animals in remaining natural and green-space areas.

3.2 Vegetation communities, vegetation condition and plant species

A comprehensive on ground vegetation validation has not been undertaken for this strategy. However, using a combination of past vegetation mapping (Conachers Travers, 2006;NSW Office of Environment and Heritage, 2013), aerial photograph examination and limited field work it is estimated that Rockdale has a total of 81ha of remnant vegetation communities comprising of 16 different vegetation types (see Table 3 and Figure 1). This figure includes Seagrass Meadows growing just offshore in the shallow intertidal waters of Botany Bay. About 26.5 ha or 32% of Rockdale's vegetation conforms to seven endangered ecological communities (EECs) protected under the NSW *Threatened Species Conservation Act 1995*(TSC Act) (see Table 2).

Table 2: Endangered ecological communities

TSC Act EEC Name	Area ha
Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions	1.75
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	1.98
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	0.38
Kurnell Dune Forest in the Sutherland Shire and City of Rockdale	1.67
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	6.88
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	1.86
Sydney Freshwater Wetlands in the Sydney Basin Bioregion	11.93
Total:	**26.45**

Large areas of Rockdale's native vegetation, in particular the wetland vegetation communities suffer from high levels of weed invasion and correspondingly low plant species diversity. This makes it difficult to correlate the vegetation with one single EEC.

A rapid field survey carried out for this strategy identified that almost half (43%) of all Rockdale's remnant vegetation is in a disturbed condition. The reference criteria used to define disturbed was 'highly weed infested and a substantially modified structure but with some indication of remnant native vegetation composition'. Of particular concern is that over 60% of Rockdale's EECs were assessed as disturbed. The rapid field survey mapped 37 ha of exotic vegetation occurring within and on the boundaries of natural areas. These areas of exotic vegetation represent sites of former remnant vegetation communities which have become entirely dominated by prolific weed growth and so highly disturbed that their rehabilitation could only occur at the expense of other priority natural areas which have a higher potential for restoration. To help determine the future management of these sites Council should review all its natural areas identified as highly disturbed to assess their biodiversity and public recreation value. Urgent intervention is required to actively manage Rockdale's remaining disturbed remnant vegetation to halt its loss of viability and subsequent conversion to exotic vegetation.

The rapid field survey also mapped areas of revegetation with indigenous plants (22 ha), remnant trees and non-indigenous native trees where they occurred in parkland corridors linking areas of natural vegetation. These are regarded as important to urban biodiversity and have capacity for enhancement and extension.

Table 3: Vegetation communities and correlation with endangered ecological communities

Vegetation Type	NSW TSC Act EEC Name	Total Area (Ha)	Area Disturbed (Ha)	% Area Disturbed (Ha)
Alluvial Bangalay Forest	Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	1.86	0.93	50
Bangalay Sand Forest	Bangalay sand forest, Sydney Basin and South East Corner bioregions	1.57	0.73	46.5
Beach Spinifex Grassland	N/A	3.73	3.13	83.91
Estuarine Reedland	Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions	1.51	1.49	98.68
Estuarine Saltmarsh	Coastal saltmarsh in the NSW North Coast, Sydney Basin and South East Corner bioregions	1.98	0.48	24.24
Floodplain Paperbark Scrub	Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	0.38	0.38	100
Foredune Wattle Scrub	N/A	4.25	0.91	21.41
Freshwater Wetlands	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	11.21	10.93	97.5
Kurnell Dune Forest	Kurnell dune forest in the Sutherland Shire and the City of Rockdale	1.67	0	0
Mangrove Forest	N/A	8.79	3.03	34.47
Sandstone Gully Forest	N/A	2.81	0.18	6.41
Sandstone Heath	N/A	3.19	0.77	24.14

Vegetation Type	NSW TSC Act EEC Name	Total Area (Ha)	Area Disturbed (Ha)	% Area Disturbed (Ha)
Sandstone Open Forest	N/A	10.15	3.73	36.75
Seagrass Meadows	N/A[1]	13.92	0	0
Swamp Oak Forest	Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions	4.66	0.53	11.37
Swamp Paperbark Scrub	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	0.02	0	0
Swamp Sclerophyll Forest on Coastal Floodplains	Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	1.48	0.55	37.16
Remnant Trees	Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions	0.07	0	0
Remnant Trees	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	0.03	0	0
Unclassified	N/A	8.58	7.4	86.25
Total area Remnant Vegetation Communities		**81.76**	**35.17**	**Av 43%**
Total area Endangered Ecological Communities		**26.45**	**16.02**	**Av: 61%**
Revegetation	N/A	22.73	0	0
Remnant Trees	N/A	0.39	0	0
Non-Indigenous Native Trees	N/A	27.01	0	0
Total Area native vegetation not part of a formal vegetation community		**50.13**		
Total Exotic Vegetation	**N/A**	**37.52**		

At least 246 native plant species and159 bushland weed species have been recorded in the Rockdale LGA (see Volume 2 - Appendix A). Three species, recently validated in the field, Downy Wattle, Sunshine Wattle and Magenta Lilly Pilly, are listed as threatened species under both the NSW TSC Act and Commonwealth EPBC Act (see Table 4). There are past recorded locations of threatened plant species that cannot be currently located but potential habitat for these plants may still exist in the form of a soil seedbank. For example, it is possible that active management, in the form of weed control and carrying out an ecological burn, may encourage germination of *Dillwynia tenuifolia* and Downy Wattle in Bardwell Valley Parklands. There is a 1988 National Trust record of these species in an area of sandstone vegetation that is currently degraded but has good recovery potential. A further eleven species identified from the EPBC Act search were identified to occur or have habitat that may occur within the City of Rockdale.

[1] *Within Botany Bay close to Towra Point there is the endangered seagrass population of Posidoniaaustralis.*

Table 4: Threatened plants in the City of Rockdale

Scientific Name	Common Name	TSC Act Status	EPBC Act Status
Known Threatened Plants in City of Rockdale			
Acacia pubescens	Downy Wattle	V	V
Acacia terminalis subsp. terminalis	Sunshine Wattle	E	E
Syzgiumpaniculatum	Magenta Lilly Pilly	V	V
Potential Threatened Plants in the City of Rockdale			
*Allocasuarinaglareicola**		E	E
Caladenia tessellata	Thick-lipped Spider-orchid	E	V
Cryptostylishunterina	Leafless Tongue-orchid	-	V
Genoplesiumbaueri	Yellow Gnat-orchid	E	E
Melaleuca biconvexa	Biconvex Paperbark	V	V
Pelargonium sp. Striatellum*	Omeo Stork's bill	E	E
Pimeleaspicata	Spiked Rice-flower	E	E
Pterostylissaxicola	Sydney Plains Greenhood	E	E
Strebluspendulinus	Siah's Backbone	-	V
*Thelymitra*sp. Kangaloon*	Kangaloon Sun-orchid	CE	CE
Thesiumaustrale	Austral Toadflax	V	V

E:Endangered V: Vulnerable *: Low likelihood of being present

3.3 Fauna species

Rockdale currently supports a varied assemblage of native wildlife with all major terrestrial groups represented. This diversity is probably due in part to the diversity of remaining habitats which include coastline, wetlands and bushland. Artificial or modified habitats such as constructed ponds on golf-courses, sandstone retaining walls, and even piped watercourse channels are also used by much of Rockdale's fauna for foraging and shelter.

A filtered search on the NSW Office of Environment and Heritage BioNet database (June 2013) identified 151 animal species recorded over the past 20 years in the following groups (see Volume 2 - Appendix B):

- eight frog species
- 12 reptile species including one turtle, nine lizards and two snakes
- 121 bird species including 10 introduced species
- 18 mammal species including seven introduced species, two possums, one native rat, and eight bat species.

Earlier BioNet search conducted on 27 May 2013 also identified *Ardea ibis* (Cattle Egret), *Calidrisruficollis* (Red-necked Stint),*Hydroprognecaspia* (Caspian Tern) and *Thalasseusbergii* (Crested Tern). These species have been included in Table 5.

In addition recent sightings of *Ninoxstrenua* (Powerful Owl) has been anecdotally reported in within Bardwell Valley and Wolli Creek. As they are known to occur in the surrounding LGAs it is highly likely the City of Rockdale provides habitat for this threatened species (Environmental Strategist Alexandra Vandine pers. comm 2014).

Birds are the most diverse and significant assemblage in terms of conservation status. Two groups of bird species, which are considered critical to Rockdale's biodiversity values, are small birds and shorebirds (most of which are migratory species listed in Table 5).

Like the original vegetation, the viability of Rockdale's wetlands and waterways has also been significantly reduced through landfill, removal of waterway meanders, channelisation and pollution from stormwater runoff. However, a study carried out in 2004 showed that the Rockdale wetlands corridor is functioning as a sustainable nursery ground for juvenile bream and mullet with its importance to the local marine ecosystem accentuated by the loss of equivalent habitat in Botany Bay from port reclamation works (Gibbs 2004). The study recorded 22 fish and nine mobile invertebrate species from the Botany Bay sea floor (see Volume 2 - Appendix B), which regularly enter the wetlands via three permanently open 700 m long pipes from Botany Bay.

Table 5 lists fauna in the City of Rockdale which are protected under the NSW TSC Act and the Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Act. This list was developed from an analysis of the results from searches of the NSW BioNet which includes fauna species which have at least one known record within the past 20 years (Table 5 and Volume 2 - Appendix B), and the EPBC Act Matters of National Environmental Significance database. A large number of the birds recorded include migratory shorebird species protected under one or more bilateral international agreements which Australia has entered into with Japan (Japan-Australia Migratory Bird Agreement (JAMBA)), China (China-Australia Migratory Bird Agreement (CAMBA)), and the Republic of Korea (Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)).

Table 5: Threatened and significant fauna

Scientific Name	Common Name	TSC Act Status	EPBC Act Status
Amphibians[2]			
Litoriaaurea	Green and Golden Bell Frog	E	V
Birds			
Anthochaeraphrygia	Regent Honeyeater	CE	E
Ardea alba	Great Egret	-	M C J
Ardea ibis	Cattle Egret	-	M C J
Arenariainterpres	Ruddy Turnstone	-	M C J K
Botauruspoiciloptilus	Australasian Bittern	E	E
Calidrisacuminate	Sharp-tailed Sandpiper	-	M C J K
Calidrisruficollis	Red-necked Stint	-	M C J K
Calidris alba	Sanderling	V	M K
Calidriscanutus	Red Knot	-	M C J K
Calidrisferruginea	Curlew Sandpiper	E	M C J K

[2]*While the Wallum Froglet is included in the Office of Environment and Heritage BioNet records as occurring in the City of Rockdale Council has been informed this is most likely a misidentification as the City of Rockdale does not contain suitable habitat for this species (Dr Arthur White pers. comm 2012).*

Scientific Name	Common Name	TSC Act Status	EPBC Act Status
Calidristenuirostris	Great Knot	V	M C J K
Charadriusleschenaultii	Greater Sand-plover	V	M C J K
Charadriusmongolus	Lesser Sand-plover	V	M C J K
Haematopusfuliginosus	Sooty Oystercatcher	V	-
Haematopuslongirostris	Pied Oystercatcher	E	-
Hydroprognecaspia	Caspian Tern	-	M C J
Limicolafalcinellus	Broad-billed Sandpiper	V,P	M C J K
Limosalapponica	Bar-tailed Godwit		M C J K
Limosalimosa	Black-tailed Godwit	V,P	M C J K
Ninoxstrenua	Powerful Owl	V	-
Numeniusmadagascariensis	Eastern Curlew	-	M C J K
Sterna albifrons	Little Tern	E	M C J K
Thalasseusbergii	Crested Tern	-	M
Xenuscinereus	Terek Sandpiper	V	M C J K
Mammals (Bats)			
Miniopterusschreibersiioceanensis	Eastern Bent-wing Bat	V	-
Myotismacropus (formerly *M. adversus)*	Southern Myotis, Large-footed Myotis	V	-
Pteropuspoliocephalus	Grey-headed Flying-Fox	V	V

CE: Critically Endangered
E: Endangered
V: Vulnerable
M: Migratory Species
C: China-Australia Migratory Bird Agreement (CAMBA)
J: Japan-Australia Migratory Bird Agreement (JAMBA)
K: Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)

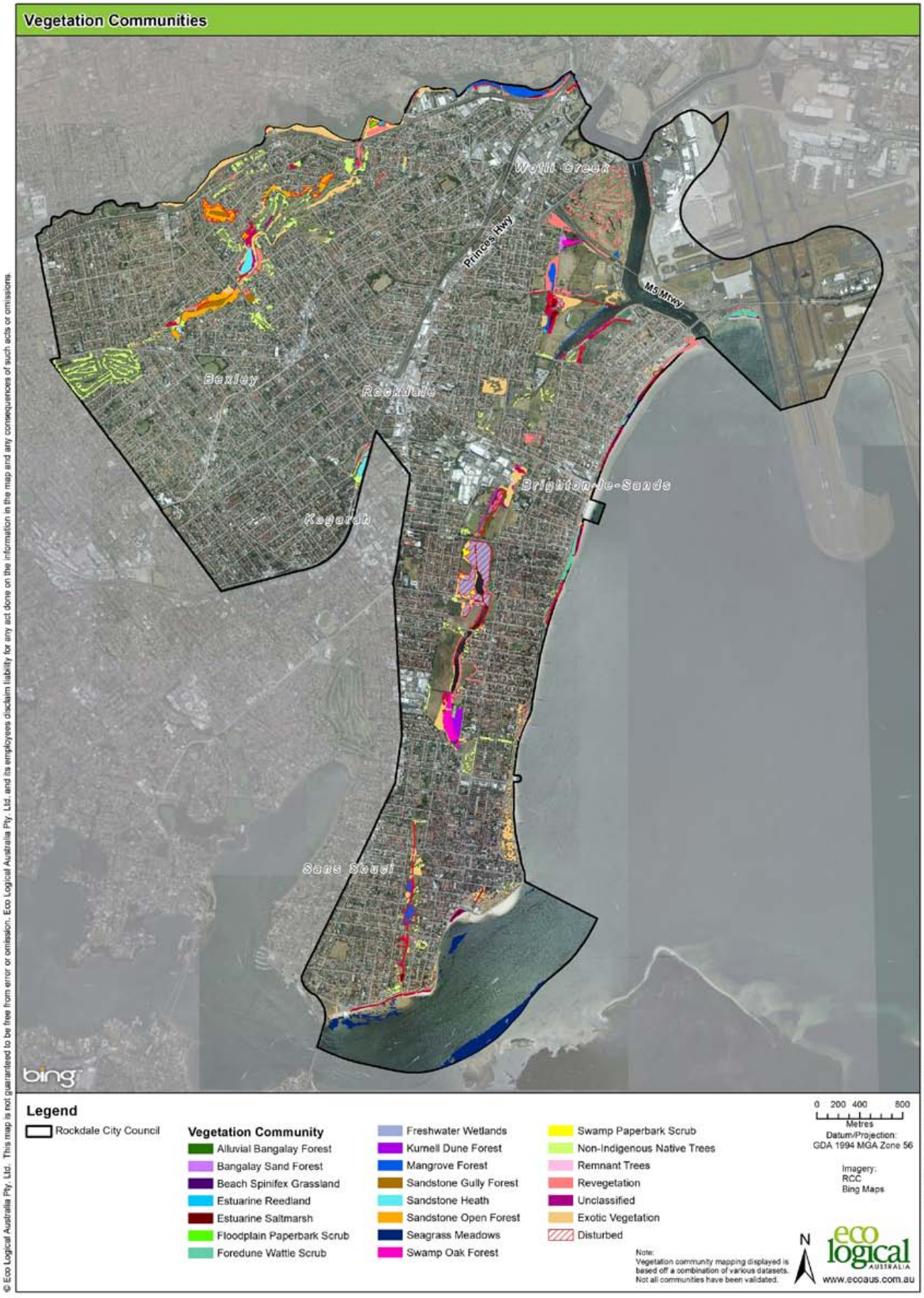

Figure 1: Vegetation communities

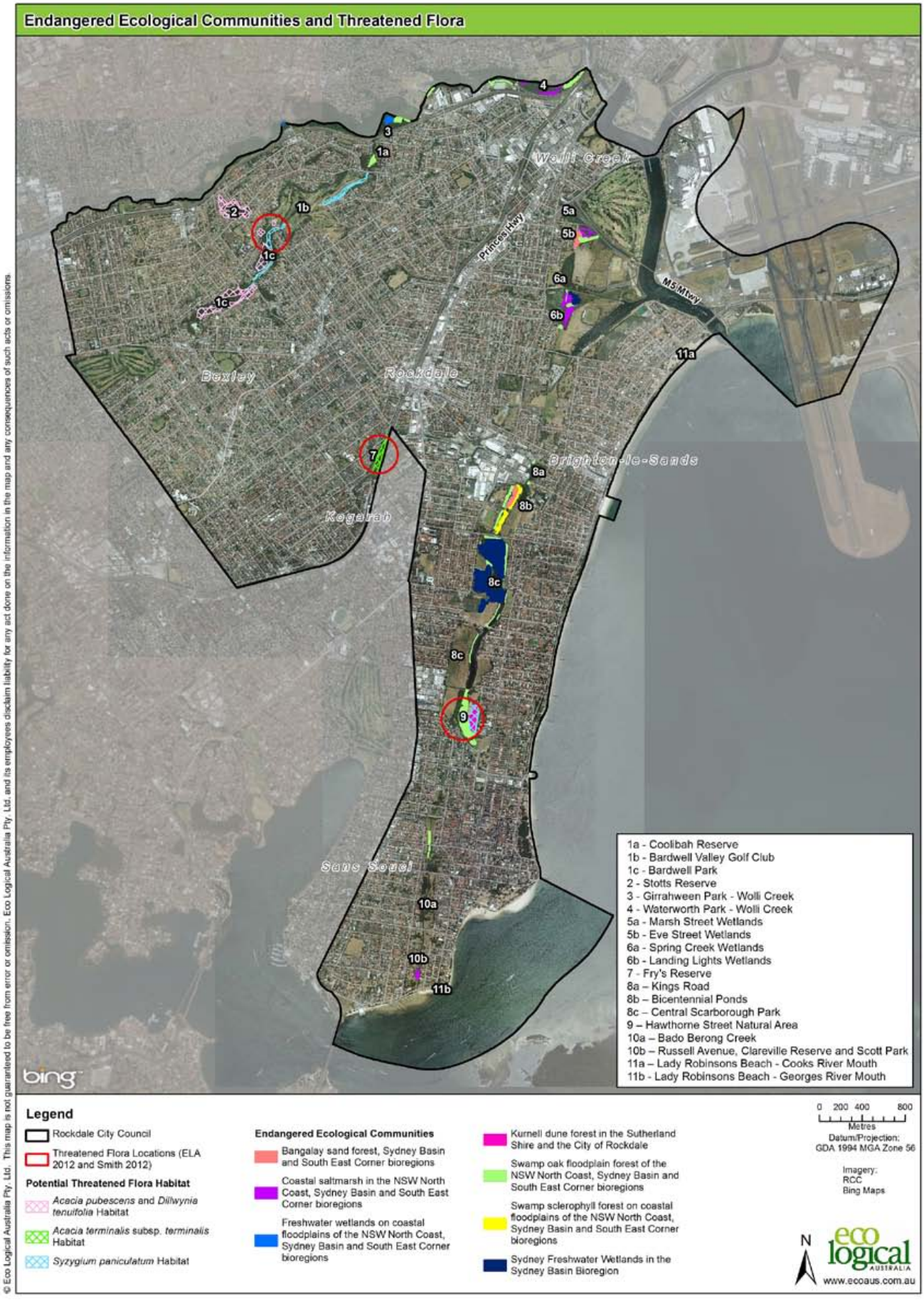

Figure 2: Endangered ecological communities and known and potential habitat for threatened flora

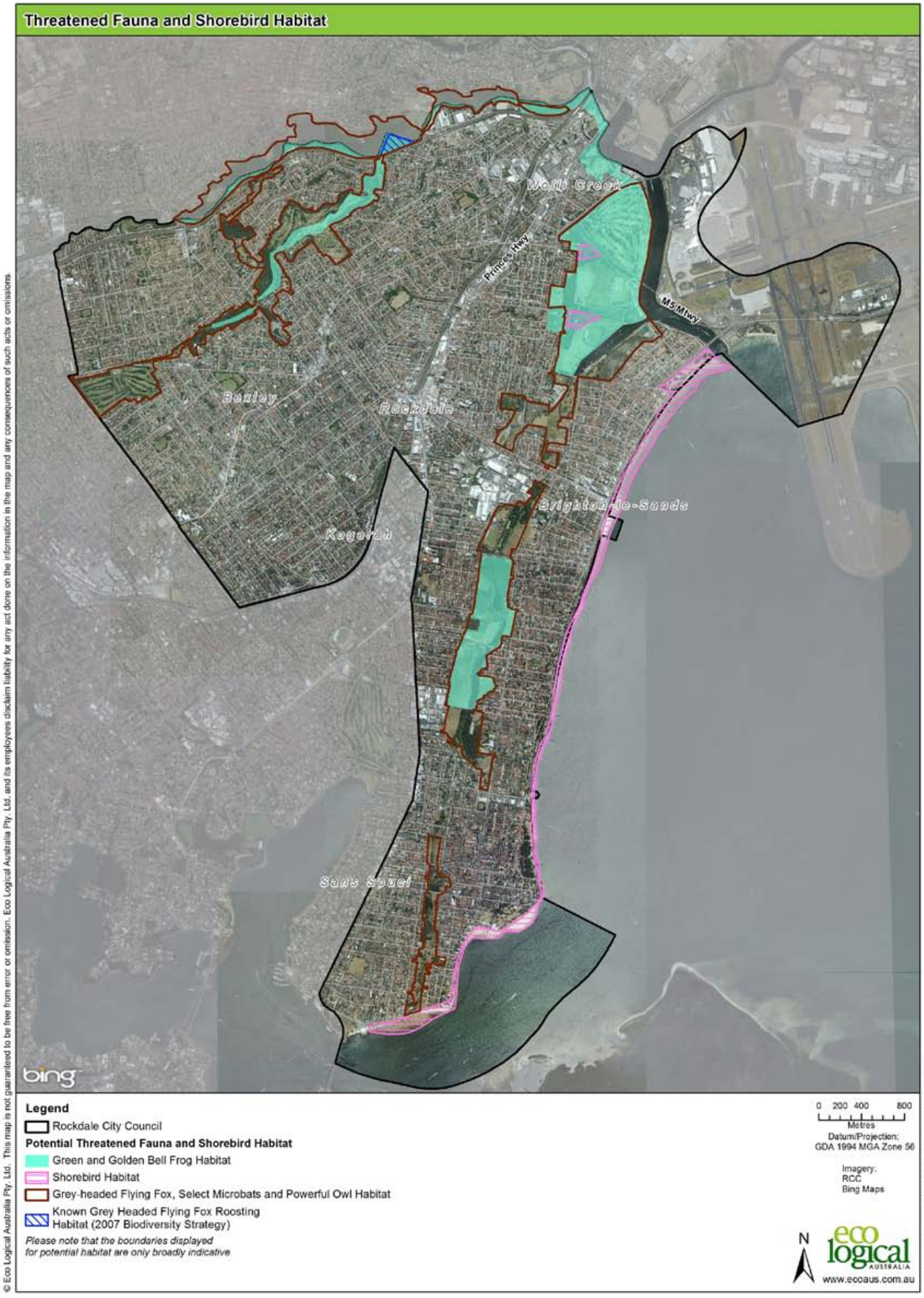

Figure 3: Known and potential habitat for threatened fauna and shorebirds

3.4 Priority natural areas

Priority natural areas are those that have important regional biodiversity values with a high priority for conservation and restoration. Some priority natural areas comprise a number of sites that are in close proximity. Other natural areas have local biodiversity significance and have an important role in fauna habitat extension or supporting the biodiversity corridors. Priority natural areas are listed below in Table 6 and their locations identified in Figure 5.

Table 6: Priority natural areas summary

ID	Site Name	Location(s)	Area (Ha)	Owner	Management Control	Features
1a	Coolibah Reserve	Bardwell Park, Bardwell Valley	4	RCC/State Government	RCC	Supports patches of remnant vegetation and well maintained indigenous revegetated areas. Key location at the junction of two biodiversity corridors, Bardwell Creek and Wolli Creek.
1b	Bardwell Valley Golf Club	Bardwell Park, Bardwell Valley	29	RCC	Bardwell Valley Golf Club / RCC	Known habitat for a threatened plant species, *Acacia pubescens* and potential habitat for another threatened plant species, *Dillwynia tenuifolia.* Important link in the Bardwell Creek Corridor. There is significant potential to improve riparian habitat along natural sections of Bardwell Creek.
1c	Bardwell Park	Bardwell Park, Bardwell Valley, Bexley, and Bexley North	16	RCC/State Government	RCC	Comprises of degraded alluvial floodplain, sandstone vegetation communities and large patches of indigenous revegetated areas. A program of weed control and ecological burns would restore a viable and species rich community in the sandstone vegetation. Excellent small bird and reptile habitat, with high biodiversity corridor values.
2	Stotts Reserve	Bardwell Park and Bexley North	4	RCC	RCC	Sandstone gully and woodland vegetation communities in excellent condition. Good fauna habitat in the form of leaf litter, fallen timber and dense vegetation structure. Major component of a secondary corridor that links the Wolli Creek and Bardwell Creek biodiversity corridors
3	Girrahween Park	Turrella	3	Sydney Trains	Sydney Trains	Comprises of highly degraded remnants of two endangered vegetation communities, Freshwater Wetlands on Coastal Floodplains and Swamp Sclerophyll Forest on Coastal Floodplains Dense largely inaccessible vegetation provides good habitat for small birds and shy fauna species. Used as a roosting camp for the threatened fauna species, Grey-headed Flying Fox; Dense reed and rush vegetation provides potential habitat for the threatened bird species, Australasian Bittern.
4	Waterworth Park - Wolli Creek	Wolli Creek	3	Sydney Trains	Sydney Trains	Comprises of relatively intact large patches of saltmarsh and large stand of mangroves on the lower reaches of Wolli Creek.
5a	Marsh Street Wetlands	Arncliffe	1	RCC	RCC	Provide foraging and roosting habitat for a range of migratory and non-migratory shorebirds and small bush birds. Marsh/Eve Street Wetlands is known habitat for the threatened Green and Golden Bell Frog. Potentially constrained by proximity to
5b	Eve Street Wetlands	Arncliffe and Banksia	3	Sydney Water	Sydney Water	

ID	Site Name	Location(s)	Area (Ha)	Owner	Management Control	Features
6a	Spring St Wetlands	Arncliffe	3	RCC	RCC	Sydney Airport (given attraction to birds). Comprise of a sequence of threatened estuarine and freshwater vegetation assemblages and coastal saltmarsh. Function as important wetland links in the Wetlands Biodiversity Corridor. Potentially constrained by proximity to Sydney Airport (given attraction to birds), M5 and neighbouring market gardens. Within Landing Lights wetland coastal saltmarsh are currently heavily impacted by the weed species *Juncusacutus* and are being out-competed by more dominant mangroves.
6b	Landing Lights Wetlands	Arncliffe	6	RCC	RCC	
7	Frys Reserve	Kogarah	3	RCC/ Sydney Trains	RCC/ Sydney Trains	Comprises of degraded sandstone heath vegetation Known habitat for the threatened plant, *Acacia terminalis* spp. *terminalis*
8a	Kings Road Reserve	Brighton Le Sands	2	RMS	RMS	Comprises a combination of degraded threatened estuarine vegetation communities, open water bodies and recreational open space. Habitat for waterbirds such as ducks and moorhens and identified as an important nursery/breeding areas for fish entering the wetlands corridor from Botany Bay via large underground pipes at Florence Street. Part of the central section of the Wetlands Biodiversity Corridor.
8b	Bicentennial Ponds (to President Avenue)	Brighton Le Sands, Rockdale	6	RCC	RCC	
8c	Central Scarborough Park	Kogarah, Monterey	46	RCC/Crown	RCC	Important link in the central section of the Wetlands Corridor with significant potential to improve riparian habitat through revegetation with indigenous species. Consists primarily of filled land comprising of mown open space/parkland and large areas of weeds surrounding open water areas fringed with highly degraded wetland vegetation. Habitat for waterbirds such as ducks and moorhens and identified as an important nursery/breeding area for fish entering the Wetlands Corridor from Botany Bay via large underground pipes at Florence Street.
9	Hawthorne Street Natural Area	Kogarah, Ramsgate	4.7	Crown	Crown	Supports two endangered vegetation communities: Kurnell Dune Forest and Swamp Oak Floodplain Forest in good to very good condition. Known habitat for the threatened plant species *Syzygiumpaniculatum.* Mangroves, interspersed with coastal saltmarsh species line sections of the creek line. Supports a diverse range of fauna habitat, including estuarine habitat for aquatic species such as fish and hollows for mammal and bird species. Part of the Wetlands Corridor and is the location where fish from Botany Bay travelling via underground pipes at Florence Street enter the Wetlands Corridor
10a	BadoBerong Creek	Sandringham, Sans Souci	6	Various	Various	Comprise a combination of remnant mature *Eucalyptus botryoides* and *Casuarina glauca* within

ID	Site Name	Location(s)	Area (Ha)	Owner	Management Control	Features
10b	Russell Avenue, Clareville Park and Scott Park	Sandringham, Sans Souci	7	Various	Various	mown open space/parkland, patches of weedy/exotic vegetation and scattered mangrove individuals and coastal saltmarsh remnants lining channelised drainage lines. Good potential to reinstate natural waterways and extend riparian habitat through the removal of concrete channels. Provides fauna habitat in the form of tree hollows. Southern section of the Wetlands Corridor links with the Coastal Corridor at Scott Park.
11a	Lady Robinsons Beach - Cooks River Mouth	Kyeemagh	500m	Crown	RCC	Northern stretch of beach at the mouth of the Cooks River supports small patches of dune vegetation. Molluscs and crustacea provide foraging habitat for shorebird species on intertidal sand flats. Part of the Coastal Corridor
11b	Lady Robinsons Beach - Georges River Mouth	Botany Bay, Sandringham, Sans Souci	2600m	Crown	RCC	Southern stretch of beach on the mouth of the Georges River Estuary extending northwards from Taren Point Bridge to Sandringham Street. Supports small patches of dune vegetation. Molluscs and crustacea provide foraging habitat for shorebird species on intertidal sand flats. Part of the Coastal Corridor

3.5 Priority species / groups

The flora and fauna species identified in Table 7 are identified as priorities for conservation and management in the Rockdale LGA. They include threatened flora and fauna species, shorebirds and key fauna groups such as small birds and microchiropteran[3] bats which have experienced substantial decline due to loss of habitat and other impacts.

Figure 4: The Green and Golden Bell Frog, *Litoreaaurea,* is a priority species for Rockdale.

[3]*Microchiropteran bats are also known as "echolocating bats" because they have the ability to use echolocation in obstacle avoidance and hunting*

These species should receive particular attention in Council's planning processes and operational works and this strategy includes management actions focussing on the conservation and enhancement of habitat for these species. Specific habitat locations for the priority species/groups are shown in Figure 5.

Shorebirds are birds that commonly feed by wading in shallow water, or on intertidal sand and mudflats on the shoreline of wetlands and the ocean. Many shorebird species are migratory, flying vast distances to breed during the short summer of the Northern hemisphere and are protected under international treaties between Australia and Japan, China, and South Korea. These treaties commit each country to take special measures to protect bird species migrating between countries. Specifically, under the EPBC Act, a person undertaking an action having or likely to have a significant impact on a listed migratory species must undertake an assessment process and seek the approval of the Commonwealth Environment Minister.

Table 7: Priority species/ groups summary

Species	Habitat Area
Downy Wattle *Acacia pubescens*	Bardwell Valley Golf Course
Sunshine Wattle *Acacia terminalis* spp. *terminalis*	Frys Reserve
Magenta Lilly Pilly *Syzygiumpaniculatum*	Hawthorne Street Natural Area, Bardwell Valley Golf Course
Shorebirds	Eve Street Wetlands Landing Lights Wetland Northern end of Lady Robinsons Beach Southern end of Lady Robinsons Beach at Sandringham Bay and Riverside Drive, Sans Souci
Green and Golden Bell Frog *Litoriaaurea*	Restricted to two ponds on Kogarah Golf Course and Eve Street Wetlands
Grey-headed Flying Fox *Pteropuspoliocephalus*	Grey headed flying fox camp
Microbats	Many locations - providing there are roost sites such as bridges, tunnels, and tree hollows and an abundance of flying insects to feed on or in the case of the threatened Southern Myotis (habitat Hawthorne St Natural Area) small fish and water insects.
Small Birds (eg Golden Whistlers, Silvereyes, Pipits Superb Fairy Wrens and Thornbills.)	Thickets of shrubby vegetation often close to waterways - includes weedy areas.

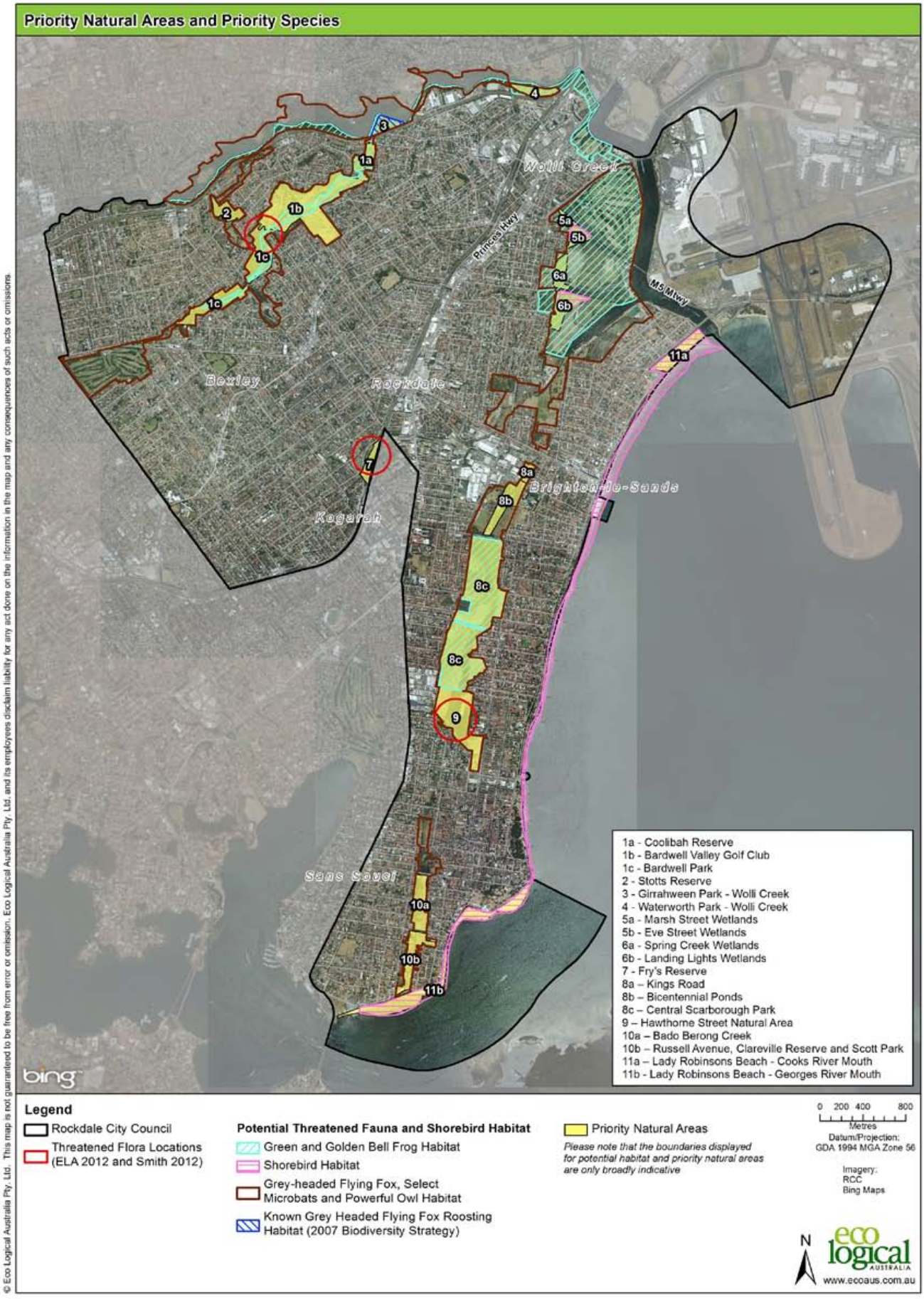

Figure 5: Priority natural areas and priority species

3.6 Biodiversity corridors

For the purposes of this strategy, the term 'Biodiversity Corridor' refers to physical connections between habitat areas across a landscape allowing the movement of some animals and the transfer of plants through seeds and pollen. It is important to note that biodiversity corridors are vital to the long-term viability of both fauna species and remnant vegetation. Biodiversity corridors are also recognised as one of the most effective tools available for conserving biodiversity and preparing landscapes for the impacts of climate change (SEWPaC 2012). The important ecological functions of biodiversity corridors include:

- Ensuring out breeding and genetic exchange between flora and fauna populations that may otherwise become extinct in the long-term
- Allowing re colonisation of habitat areas by fauna and flora that have become locally extinct from events such as fire, disease or just simply poor breeding success
- Providing a route for the dispersal of young animals and a guiding pathway across an alien habitat for birds and bats including migratory and nomadic species. (Smith and Smith 2009)

Much of Rockdale is comprised of fragmented patches of habitat isolated by a highly urbanised environment. However, some connectivity between habitats remains and there is potential to improve and progressively restore connectivity between them by selective revegetation of public open space, changing landuse/work practices and including clauses in planning instruments focussing on protecting and enhancing connectivity. Landscape elements that contribute to biodiversity corridors include sensitively designed urban open space, golf courses and gardens that provide habitat.

Figure 6 identifies biodiversity corridors which link important areas of habitat in Rockdale including the priority natural areas discussed earlier.

Rockdale Wetlands Corridor

The Rockdale Wetlands Corridor is a key biodiversity corridor linking a series of estuarine, wetland and bushland habitats between the Cooks and Lower Georges Rivers. The corridor also incorporates a large proportion of Rockdale's recreational open space including parkland, playing fields and Kogarah Golf Course in the north. The presence of recreational open space provides the opportunity for corridor improvement and restoration works such as revegetation and weed control to be readily implemented.

However, the future construction of a proposed motorway (the F6 and WestConnex South link) may seriously impact large sections of this corridor. Three 700m long underground pipes at Florence Street link Botany Bay to the Rockdale Wetlands Corridor via the Hawthorne Street Natural Area and function as an important corridor for estuarine fish, especially yellowfin, bream and sand mullet, using the ponds at Scarborough Park and Bicentennial Park as nursery breeding areas (Gibbs 2004).

It is important to note that areas of open space (including sporting fields) without significant vegetation still provide some form of foraging habitat value to a number of birds (such as white faced heron) particularly after heavy rain.

Coastline Corridor

A coastline corridor extends along the entire length of Lady Robinsons Beach linking patches of dune vegetation and two important shorebird foraging habitat areas located at the mouth of the Cooks River in the north and the mouth of the Georges River in the south.

While marine and intertidal ecosystems represent an important part of City of Rockdale's biodiversity they are relatively poorly understood from a scientific point of view. It is known that beaches and soft substrates form a distinctive group of marine habitats with hundreds of species but most of them are small (less than a few mm) and buried. These tiny species of flora

and fauna, however, are an important food supply for the larger animals seen on the beachfront.

Bardwell Creek and Wolli Creek Corridors

On the western boundary of the Rockdale LGA, Bardwell Creek and Wolli Creek form two biodiversity corridors linking bushland habitat such as Bardwell Park, Stotts Reserve and Wolli Creek Regional Park and a substantial area of saltmarsh within a railway land close to the junction of Wolli Creek and the Cooks River. The presence of Bexley Golf Club and Bardwell Valley Golf Course within the Bardwell Creek Corridor also provides the opportunity to enhance the corridor through management of remnant vegetation using bush regeneration techniques, irrigation ponds and revegetation with indigenous plant species particularly along Bardwell Creek.

3.7 Groundwater

Groundwater is water that is located below the earth's surface. A significant area of the eastern side of the City of Rockdale sits above the Botany Sand Bed Aquifer, a large volume of ground water present in the sandy ground surrounding Botany Bay. The aquifer is highly vulnerable to contamination due to the permeability of the sands and the generally shallow water table.

While there is high probability that the Alluvial Bangalay Forest and Swamp Oak Forest vegetation communities found within the City of Rockdale are groundwater dependent ecosystems, further research would be required to confirm this and to identify other groundwater dependent ecosystems within the City of Rockdale.

Impacts on groundwater and the following impacts on groundwater dependent ecosystem does not fall within the scope of this Biodiversity Strategy. However, further research into groundwater is identified as an action for the future

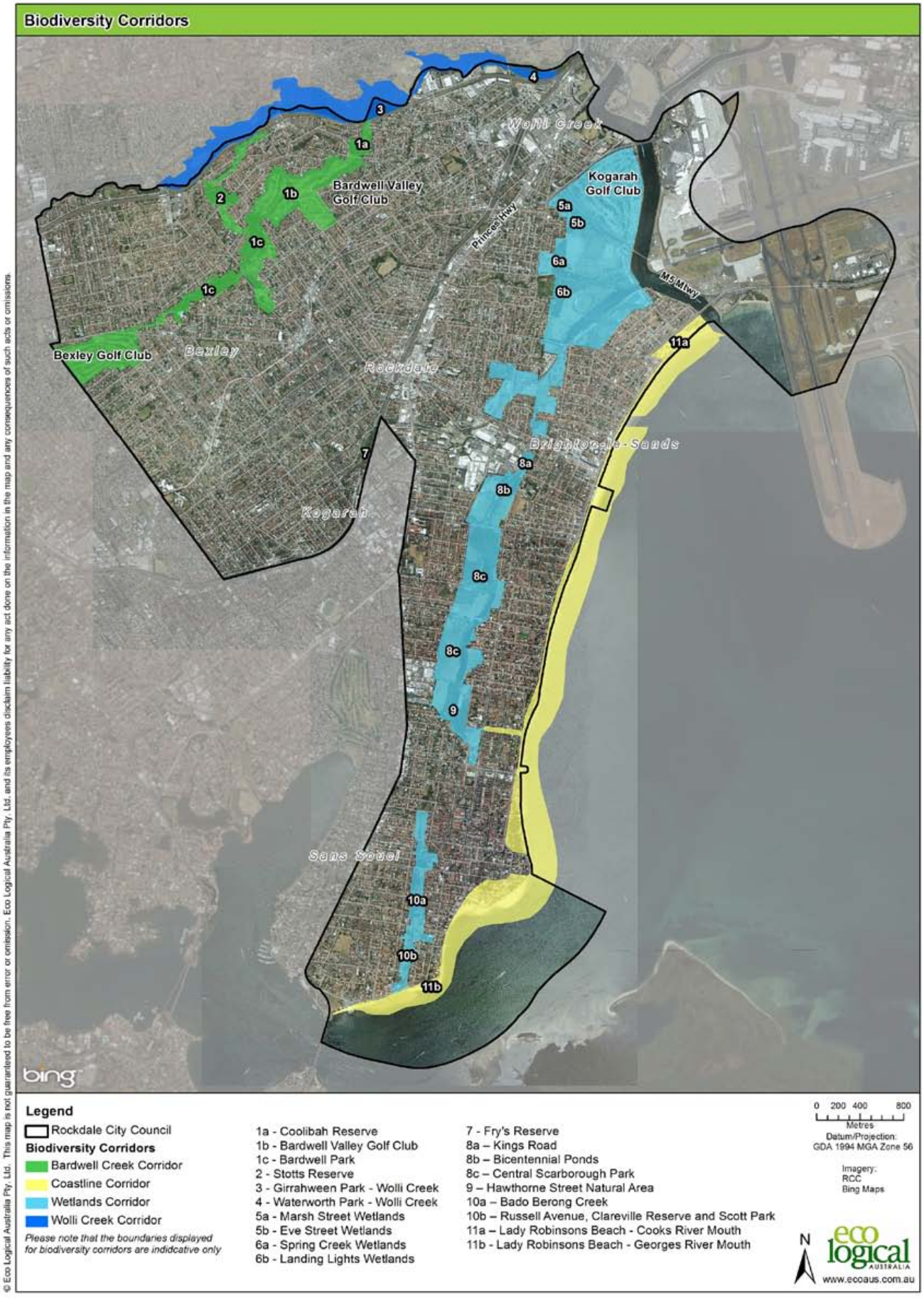

Figure 6: Biodiversity corridors

4 Threats to Rockdale's Biodiversity

In order to protect and improve Rockdale's native vegetation, waterways and fauna habitats from its many threats, an integrated and adaptive management approach is needed that focuses on long term implementation of best contemporary practices backed by sound policy. Effective management should also be supported by monitoring that allows a review of the effectiveness of implementation resulting in adaptation of management practices. Below is a summary of the major threats facing Rockdale's biodiversity with reference to key threatening processes listed under the NSW *Threatened Species Conservation Act 1995*and *Fisheries Management Act*1994 where relevant.

4.1 Weed invasion

Weed invasion is a pervasive and significant threat to Rockdale's biodiversity. Almost half (43%) of all Rockdale's remnant vegetation, including over 60% of Rockdale's endangered ecological communities, is in serious decline from high levels of weed invasion. Weed invasion is covered by a number of key threatening processes listed under the *Threatened Species Conservation Act 1995*which are relevant in the Rockdale LGA:

- Invasion and establishment of exotic vines and scramblers
- Invasion, establishment and spread of *Lantana camara*
- Invasion of native plant communities by *Chrysanthemoidesmonilifera* (bitou bush and boneseed)
- Invasion of native plant communities by exotic perennial grasses
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants
- Invasion of native plant communities by African Olive *Oleaeuropaea subsp.* cuspidata

Unless active management of Rockdale's remnant vegetation commences within the next 3-5 years, a significant proportion of Rockdale's endangered ecological communities will suffer an ecological collapse, permanently losing their viability and potential for restoration (ability to recover).

The likely impacts on the City of Rockdale of such a collapse include the loss of important green-space areas for Rockdale's community and visitors, loss of endemic birdlife and the proliferation and dominance of pest bird and plant species across the City, closure of sports fields and parklands due to weed spread, as well as the inability of waterways and wetlands to function as natural filters leading to growing water quality problems.

Active management would entail a long-term restoration program using bush-regeneration techniques. Reversing the decline is still achievable, however as the condition of many natural areas is poor to very poor, recovery under a restoration program will require ten or more years to attain a level of viability that can be managed with less resourcing under a minimum maintenance program.

The highly invasive alga, *Caulerpataxifolia*, is a marine weed species that threatens Rockdale's Seagrass meadows. Caulerpa is endemic to tropical regions including northern Australia and was listed as a Class 1 noxious species in 2001, under the NSW Fisheries Management Act 1994. It was first detected in Botany Bay in April 2001 sparking fears that it would out-compete native seagrass beds and poison grazing invertebrates such as sea-slugs, sea urchins and fish species from the toxins it produces.

Five years of monitoring the interaction of Caulerpa and seagrasses in Quibray Bay (an aquatic reserve within Botany Bay) have shown Caulerpa to be quite dynamic, with large fluctuations in density and abundance at the monitoring sites (NSW Department of Industry and Investment 2009).Recent mapping indicates that most of the Seagrass Meadows established just offshore of Lady Robinsons Beach are affected by Caulerpa (NSW Department of Primary Industries 2011).

Figure 7: Example of extensive weed invasion at Bardwell golf course (left) and Kings Road (right).

4.2 Destruction and fragmentation of habitat

Increasing housing and population densities as well as increasing or changing commercial and industrial activities are placing pressure on Rockdale's remaining natural areas. A few examples of these pressures include:

- The proposed F6/WestConnex motorway reservation runs north to south through the Rockdale Wetlands Corridor; its construction has the potential to destroy large tracts of habitat and fragment remaining patches.
- The development future of the Cooks Cove site which is likely to have an adverse impact on the northern section of the Rockdale Wetlands Corridor.
- The existing rail corridor for the East Hills railway line which creates a significant fragmentation of the Wolli Creek corridor.
- Large scale developments along waterways and near wetlands that alter riparian vegetation communities. Degradation of native riparian vegetation along NSW watercourses is listed as a key threatening process under the NSW Fisheries Management Act 1994.

Public reserve encroachment is a specific type of habitat destruction threat. Encroachments occur on the urban interface boundary of bushland and generally involve incremental vegetation clearance and degradation for various reasons such as extension of residential backyards, weed and rubbish dumping, parking cars, trailers and boats, view enhancement, inappropriate management of weeds and perceived bushfire risk. Bushland encroachment is a widespread threat to biodiversity in Rockdale particularly on the boundaries of public reserves.

Landscape maintenance works can also result in habitat destruction and fragmentation. For instance, inappropriate use of herbicide, lawnmowers and brush cutters in habitat areas, misidentification of native plants as weeds and removal of important habitat features such as fallen timber, rocks and hollow bearing trees can all lead to destruction and fragmentation. Construction works associated with new development or redevelopment can remove habitat elements which are important for urban wildlife such as long grass, dense shrubby areas (including weeds) and rock piles.

Rockdale's increasing population and demand for recreational access is placing pressure on its natural areas. Biodiversity impacts associated with recreational access include direct loss of habitat, in particular habitat for threatened plants through trampling, erosion and sedimentation of natural waterways, dispersal of weeds, introduction of the plant pathogen *Phytophthora cinnamomi* (identified as a key threatening process under NSW Threatened Species Conservation Act), disturbance to fauna behaviour such as avoidance of habitat, the use of trails by foxes, cats and dogs and edge effects extending into bushland from the trail boundaries.

4.3 Introduced animal species

A number of introduced animal species, including domestic pets, prey upon native fauna in the Rockdale LGA. Biodiversity impacts associated with introduced animals relevant to the Rockdale LGA are covered by five key threatening processes listed under the Threatened Species Conservation Act (TSC) 1995 and two key threatening processes under the Fisheries Management Act (FMA) 1994:

- Competition from feral honey bees (*Apismellifera*) (TSC)
- Predation by the European red fox (*Vulpesvulpes*)(TSC)
- Predation by the feral cat (*Feliscatus*)(TSC)
- Predation by *Gambusiaholbrooki* (plague minnow or mosquito fish)(TSC)
- Dominance by pest bird species such as the Indian Mynah bird.(TSC)
- Introduction of non-indigenous fish and marine vegetation to the coastal waters of New South Wales (FMA)
- Introduction of fish to fresh waters within a river catchment outside their natural range.(FMA)

The decline of fauna populations directly impacts biodiversity values through a reduction in species and genetic diversity. Indirect impacts relate to a change in interactions between species which may exacerbate local extinctions; for instance the loss of small bird species from a bushland area may detrimentally impact plants by removing pollinator vectors and an important form of insect control.

Breeding colonies of feral honeybees occupy large hollows in trees used by bird, possum and microbat species dependent on them for shelter and breeding. Feral honeybees have also been shown to remove up to 80% of pollen and nectar from flowers resulting in the displacement of honeyeaters and native bees and impact seed set in some native plants due to inefficient transfer of pollen (NSW Scientific Committee 2003).

The Green and Golden Bell Frog is an example of a Rockdale priority fauna species that is potentially impacted by fox and cat predation and predation of mosquito fish on its tadpoles and eggs. Small bush birds and microbats once abundant in Rockdale's bushland and wetland habitats have doubtless been impacted by cat and fox predation.

Many important bird species and a diversity of birds are impacted by the proliferation of introduced pest birds such as the highly visible and noted Indian Mynah bird that out-compete native birds for habitat and food.

4.4 Over-abundant aggressive native birds

Small insect eating birds such as wrens, thornbills, and fantails have been especially affected by urbanisation and are now largely absent in most of the built-up areas of our cities. A major cause for their decline is the abundance of larger native bird such as ravens, currawongs and butcherbirds which have adapted well to urbanisation. Several of these species are voracious nest predators (Birds in Backyards n.d.) preying upon small bird nestlings and eggs during the breeding season.

Figure 8: Small birds such as the Superb Fairy Wren are becoming less common in urban areas.

Noisy Miners are also strongly implicated in the loss of small birds from cities because they aggressively compete with smaller species for food resources. Fortunately, a number of small bird species still occur in Rockdale's dense shrubby areas, including weedy thickets, often close to waterways where there is shelter for them to escape attacks from Noisy Miners which prefer the treed lawn landscapes found in Rockdale's parks and yards.

Figure 9: Noisy Miner despite being a native bird is particularly aggressive to other birds.

4.5 Altered fire regimes

Fire regimes have a crucial role in the life cycle in much of Rockdale's native flora by stimulating the release or germination of seeds, facilitating the establishment of seedlings by liberating resources and reducing the competition of standing vegetation (Auld and Keith 2009). Remnant vegetation within a developed area such as the Rockdale LGA is impacted by long-term changes in the natural fire regime once characteristic of the landscape. It is likely (and typical) that Rockdale's sandstone vegetation in particular is potentially impacted by a fire regime that is 'reduced' in a complex pattern of fire frequency, intensity, and seasonality resulting in a long-term decrease in biodiversity values.

It is possible that active management in the form of weed control and carrying out an ecological burn may encourage germination of some of Rockdale's threatened species. An example is Bardwell Valley Parklands where there is a 1988 National Trust record of *Dillwynia tenuifolia* and Downy Wattle *(Acacia pubescens)* in an area of vegetation that is currently degraded but has good recovery potential.

4.6 Water pollution and changes to natural water regimes

Stormwater polluted with litter, chemicals such as pesticides and oils, nutrients and sediment discharges into Rockdale's urban wetland, creek line and estuarine ecosystems resulting in the loss of aquatic biodiversity. Examples in the Rockdale LGA include:

- Decaying green waste taking vital oxygen away from plants, fish and other aquatic animals;
- Heavy metals and pesticides building up in aquatic plants and animals, impacting the food chain;
- Historic legacy of previous land uses such as heavy industry, chemical discharges, landfills and poor practices that continue to remain in soils, groundwater and waterway sediments and release contaminants;
- Plastic debris clogging waterways and deposited in Botany Bay entangling or poisoning wildlife as it breaks down; and
- Sediment smothering sea-grass beds affecting light penetration.

Almost 40% of Rockdale's waterways have been modified through removal of meanders, changes to the shape of the channel, and concrete channelisation, all of which are associated with the removal of riparian buffers (fringing vegetation). Channelised waterways have little or no in-stream habitat in the form of rocks, logs and aquatic plants. Often the flow rate has increased to such a speed that fish and other aquatic fauna are unable to move upstream, or even maintain a position within the waterway. The removal of natural water level fluctuations resulting from the construction of weirs as has occurred in Wolli Creek can also impact wetland ecosystems.

The extent of these changes on waterways throughout NSW has been recognised by the following listings of key threatening processes under the NSW Fisheries Management Act 1994:

- Installation and operation of in stream structures and other mechanisms that alter natural flow regimes of rivers and stream
- Removal of large woody debris from New South Wales rivers and streams.

Figure 10: Example of mulch stockpiling (wetland at Barton Park) & polluted creek (Kings Road, Kogarah)

4.7 Disturbance to fauna species

Artificial light, noise and traffic in a highly urbanised environment can alter the behaviour of fauna species, in particular during their breeding season which can result in the loss of young.

Disturbance from recreational activities such as walking (particularly with dogs), power-boating, fishing and kite surfing is a recognised major threat to shorebirds foraging on Lady Robinsons Beach and in Rockdale's estuarine wetlands.

During the Australian summer the daily routine of a shorebird is determined by the tide. At high tide they roost in flocks above high water mark and as the tide recedes they move onto intertidal flats to forage on worms, crabs, molluscs and other benthic invertebrates (Geering et.al. 2008).Disturbances will interrupt the shorebirds' limited foraging periods during low tide preventing them from foraging effectively. Disturbance resulting in roosting birds taking flight causes them to waste energy stored for migration (DEWHA 2009). It is likely that high and sustained levels of recreational use on Lady Robinsons Beach have significantly limited the shorebird use of large areas of potential foraging habitat.

The primary shorebird habitat areas in Rockdale are Eve Street Wetlands, Landing Lights Wetland, the northern end of Lady Robinsons Beach and the southern end of Lady Robinsons Beach at Sandringham Bay and Riverside Drive, Sans Souci.

4.8 Climate change

Human induced climate change is listed as a key threatening process under the *Threatened Species Conservation Act 1995*and *Fisheries Management Act 1994* and will impose major impacts on species and ecosystems, although many of the potential impacts on ecological processes remain poorly understood (Auld and Keith 2009). The means by which global climate change could affect biodiversity include increased frequency of extreme weather events, disrupting the life cycles of flora and fauna, exposure to new pathogens and predators and loss of habitat from sea level rise (Auld and Keith 2009).

Examples of the potential impact of climate change in the Rockdale LGA are sea level rise and extreme wet weather events inundating habitat for the endangered coastal saltmarsh communities and intertidal foraging habitat for shorebirds, and the exacerbation of weed invasion from changed temperature and moisture regimes.

Figure 11: Example of shoreline erosion at Cahill Park - an area potentially impacted by sea level rise.

5 Means of Achievement

This section provides a discussion of the key strategic focus areas of the strategy and provides a background to some of the major proposed actions summarised in Chapter 6.

5.1 Natural area restoration and priority species management plans

The preparation and implementation of natural area restoration and priority species management plans address two goals:

Goal 1: The decline of biodiversity values in Rockdale's natural areas is reversed.

Goal 3: The habitat of threatened, migratory and other priority species is enhanced and effectively protected.

5.1.1 Natural area restoration plans

Natural area restoration plans based on a five year time frame will be prepared for Rockdale's most significant natural areas. The Plans will incorporate information from the Rockdale City Council Aquatic Weed Management Strategy (Wetland Care Australia 2011) and zone each natural area into management units for which required works and targets will be specified. Works will entail weed control and, where appropriate, revegetation and the use of ecological burns to promote species diversity. The plans will cover primary, secondary and maintenance bush-regeneration works and be used to formulate contract specifications for the employment of profession bush-regeneration contractors including monthly and annual reporting guidelines. The plans must be updated to include the maintenance of any newly revegetated areas established under a proposed Riparian Buffer Revegetation Plan (outlined further in Section 5.2.2 and listed in Chapter 6: Actions).

To monitor improvement in the condition of Rockdale's natural areas a baseline restoration monitoring plan will be prepared for all natural areas managed under a restoration program. The plan will identify the baseline condition for each natural area and monitoring criteria which are practical to implement. Monitoring should be undertaken by Council staff or an independent bush-regeneration expert, not undertaking works in the areas being monitored.

Some of Rockdale's priority natural areas are not under Council's management control (eg Waterworth and Girrahween Parks along Wolli Creek), they are on land owned by Sydney Trains. Expenditure of Council funds on the preparation and implementation of a restoration plan for these sites is not appropriate. Both sites support endangered ecological communities and have important riparian and fauna habitat values which are threatened by weed invasion (severely threatened in the case of Girrahween Park). Council will liaise with agencies with management control of priority natural areas to facilitate and encourage active management and conservation of these sites.

5.1.2 Priority species management plan

Section 3 identifies three threatened plant species and six fauna species/groups that are considered at serious risk from threats such as loss of habitat or disturbance from people or animals within Rockdale.

A priority species management plan will be prepared to improve the protection and viability of these species on both public and private lands. The plan will include the recommendations of the Draft Shorebird Roost Management Report (Straw 2012)and the Rockdale City Council Wildlife Friendly Landscape Design Guidelines (Australian Wetlands 2008).

The plan will cover the following elements:

- A profile of each species/group including its ecology, threats and its particular management issues within the Rockdale local government area
- If the species is protected under relevant state or commonwealth legislation and Council's specific legislative obligations in this regard
- Community engagement and education opportunities
- Management actions and guidelines to protect and enhance the habitat of the priority species at key sites such as:
    - fencing
    - use of nest boxes and artificial roosts
    - conservation of hollows
    - control/exclusion of companion animals and pest species
    - specifications on the staged removal of dense weedy areas to minimise impacts upon small bird habitat
    - food tree plantings.

A baseline habitat survey plan incorporating rapid assessment criteria and specified monitoring timeframes will be prepared to monitor the viability and threats to the priority species.

5.2 Wetlands and waterways

Goal 2: The ecological values of Rockdale's wetlands and waterways are protected and enhanced

5.2.1 Water quality of key waterways

In 2012/13, Council undertook a comprehensive water quality monitoring study over a 12 month period across key waterway sites throughout the City.

The key findings of the Study show the high degree of susceptibility that Rockdale's creeks, rivers and wetlands have to the adverse impacts from urban runoff, stormwater, sewage overflows, fertiliser usage and the legacy of former landfill sites. This is reflective of the pressures on waterways in a highly urbanised environment.

Water quality results show that many of Rockdale's creeks and rivers suffer from low dissolved oxygen levels and they consistently exceed national standards for acceptable levels of nutrients and some metals. In a comparison to proposed benchmarks for urban streams in Sydney, Rockdale's waterways are classified as performing quite poorly.

Key recommendations from the Rockdale Water Quality Study include the proper maintenance of existing treatment systems and the construction of new treatment systems at some problem sites on Bardwell Creek, Spring Street Wetland, Scarborough Ponds, Bicentennial Ponds and Goomun Creek.

5.2.2 Riparian buffer revegetation plan

The protection, restoration or rehabilitation of vegetated riparian buffers is important for maintaining or improving the shape, stability and ecological functions of a watercourse. Within the highly urbanised Rockdale context the main benefits of a vegetated riparian buffer are:

- Protecting water quality by trapping sediment, nutrients and other contaminants
- Providing a diversity of habitat for terrestrial, riparian and aquatic plants and animals
- Providing connectivity between wildlife habitats
- Providing passive recreational uses.

Approximately 40% of Rockdale's waterways and wetlands have no native vegetation buffers or buffers of inadequate width. A Riparian Buffer Revegetation Plan will be prepared for priority natural areas to establish and maintain native vegetation buffers where appropriate along waterways and wetlands. It is recognised that the establishment of riparian buffers will be constrained in many locations if the waterway has been channelised with brick or concrete or due to the presence of infrastructure such as roads and buildings close to the bank.

The width of the riparian buffer will be measured from the top of the highest bank on both sides of the waterway and will be based on watercourse order as classified under the Strahler System of ordering streams. For example, the buffer width on both sides of a waterway will be 40m for a 4th order waterway such as the Cooks River and 30m for a 3rd order waterway such as Wolli Creek. All of Rockdale's waterways have been classified according to Strahler Stream order as a part of mapping 'sensitive land' for this Biodiversity Strategy (see Section 5).

The Riparian Buffer Revegetation Plan will incorporate information from the Rockdale Bio-links Study (Australian Wetlands 2007) and the Rockdale City Council Aquatic Weed Management Strategy (Wetland care Australia 2011). The plan will:

- Prioritise and map riparian buffers to be revegetated
- Assess the feasibility of naturalising (i.e. restore natural banks) channelised waterways
- Specify planting species and configuration
- Provide indicative costings.

Revegetation works can be implemented using Bushcare and RiverHealth volunteers and professional bush-regeneration contractors. As waterway edges can rapidly become weed infested, it is important that regular maintenance of all revegetated buffer areas is incorporated into the Natural Area Restoration Plans.

5.2.3 Coastal saltmarsh management

Landing Lights Wetlands is an important estuarine wetland supporting a significant stand of coastal saltmarsh and an endangered ecological community which provides foraging habitat for migratory wading birds. In some saltmarsh areas, including Landing Lights Wetland, mangroves are invading which limits the use of the area by birds and reduces the saltmarsh extent. Several theories have been proposed as to why this is occurring, including climate change causing sea levels to rise resulting in increased tidal inundation. The baseline restoration plan will include monitoring criteria for the invasion of Grey Mangrove (*Avicennia marina*), and specifications for sensitive removal of encroaching mangroves in accordance with permit conditions under the *Fisheries Management Act 1994*. However, in the case of sea level rise this is only a short term measure - long-term management of this problem requires strategic planning including consideration of saltmarsh re-establishment at higher elevations. Accordingly, a preliminary feasibility assessment will be undertaken on the re-creation of saltmarsh habitat through estuarine foreshore or creek-bank re-profiling and habitat friendly seawalls where suitable.

5.3 Ecological connectivity

The implementation of the Riparian Buffer Revegetation Plan, will greatly enhance the connectivity value of the wildlife corridor linking a series of estuarine, wetland and bushland habitats between the Cooks and Lower Georges River. Two additional actions: the preparation of a biodiversity corridors review; and input into master-planning guidelines for street trees and developed open space, also address Goal 4: Ecological connectivity at local and regional scales is established and improved

Preliminary mapping of biodiversity corridors has been undertaken as a part of this Biodiversity Strategy.

These maps identify:

- Regionally or locally significant biodiversity corridors where enhancement works should be focussed based on the highest priority habitats
- Fauna movement barriers such as major roads
- Biodiversity corridor gaps where linkages could be established through street tree and private garden plantings.

Guidelines will be prepared for a street tree master plan and for developed open space to provide information on plant species selection and planting configurations to:

- Improve connectivity between habitats
- Extend fauna habitat outside natural areas
- Potentially re-establish rare indigenous plants in the urban environment.

5.4 Council's strategic planning framework

The following actions address:

Goal 5:Biodiversity protection and enhancement is integrated as a core objective in Council's decision making and all its processes

5.4.1 Corporate governance framework and recurrent and capital works funding

To ensure that biodiversity conservation becomes a core business for Rockdale City Council it must be effectively integrated into Council's planning, resource allocation, performance monitoring and reporting process.

Much of Rockdale's key biodiversity habitats are in severe decline and at risk of ecological collapse with no potential for recovery unless Council can commit to a long-term restoration program in the near future. This can only be achieved through the establishment of a recurrent funding and a capital works program to resource the implementation of the Natural Area Restoration, Priority Species Management and Riparian Buffer Revegetation plans.

Council already has a corporate governance and budgetary framework in place to create a Delivery Program and Operational Plan that allocates budgets for the delivery of works and services to benefit the City of Rockdale. However, the existence and recognition of the need for a long term financial plan to deliver key biodiversity outcomes for Rockdale remains a gap.

A sustainable funding strategy to achieve improvements to the City's biodiversity assets must occur through a multi-faceted approach - a model that allocates funding from a variety of sources including Council's recurrent budget, developer contributions and external grants.

5.4.2 Sensitive land mapping

Clause 6.8 of the *Rockdale Local Environment Plan 2011* (LEP) refers to 'sensitive land' on the Natural Resources Sensitivity Biodiversity Map. Before approving a development application on sensitive land Council must consider any adverse impact of the proposed development on:

- Native ecological communities
- The habitat of any threatened species, populations or ecological community
- Regionally significant species of fauna and flora or habitat
- Habitat elements providing connectivity; and
- any proposed measures to minimise or mitigate those impacts.

New draft mapping of sensitive lands has been prepared to include land parcels which intersect with one or more of the criteria in Table 8. The mapping has identified 1,984 land parcels as 'sensitive land'.

Table 8: Sensitive land mapping criteria

Criteria	Detail
Threatened and migratory species habitat	▪ validated mapped locations of threatened plants ▪ habitat for the Green and Golden Bell Frog and other threatened species ▪ important foraging habitat for threatened and migratory bird species
Native Vegetation	▪ 10m wide buffer to non-endangered native vegetation ▪ 20m wide buffer to native vegetation listed as a vulnerable or endangered or critically ecological community under the TSC Act
Watercourses	▪ 10m wide buffer to a first order watercourse ▪ 20m wide buffer to a second order watercourse ▪ 30m wide buffer to a third order watercourse ▪ 40m wide buffer to a fourth order watercourse or a wetland

Note: Watercourse order as classified under the Strahler System of ordering streams and buffer widths are based on the Department of Primary Industries: Office of Water Guidelines for riparian corridors on waterfront land (2012)

There are approximately 9km of concrete lined channels representing 40% of all watercourses in the Rockdale LGA. As many of these concrete lined channels occur between unlined or 'natural' sections of watercourses they have been classified according to the natural stream order so that the ranking system is not disrupted. However, compared to natural watercourses, concrete lined channels are unlikely to have equivalent biodiversity values such as provision of habitat for fish species or aquatic vegetation.

Accordingly, only those concrete channels and associated buffer widths which occur within public open space, such as parkland or playing fields and which are contiguous with unlined or 'natural' watercourses, have been mapped as sensitive land. This is because these concrete channels have existing connectivity and the potential to reinstate a natural waterway through the removal of concrete and establishment of vegetated riparian buffers.

The land above the three underground pipes at Florence Street, Ramsgate Beach, which link Botany Bay to the Rockdale Wetlands Corridor, has also been mapped as sensitive land because of the important function of the pipes as a corridor for estuarine fish, especially yellowfin bream and sand mullet using the Rockdale Wetlands nursery breeding areas.

5.4.3 Conservation significance assessment

A conservation significance assessment is a consistent repeatable method to compare the conservation value of remnant habitat (management units), which can be used to identify 'priority' sites for management and restoration, and guide the allocation of expenditure and staff resources. Results can also feed into a natural assets register and environmental planning and development assessment processes.

A conservation significance assessment was undertaken for all of Rockdale's natural areas. The natural areas were delineated into 26 management units which were the basis for calculating the conservation significance score. The management units were initially identified via a GIS assessment and subsequently confirmed by Council as a discrete area generally comprising contiguous or non-contiguous vegetation bounded by physical or management boundaries (such as a waterway, road or property boundary). Each unit was independent of tenure and was given a unique identifier. The criteria weightings and category scores were determined by consensus in a workshop attended by participants who had a good knowledge of Rockdale's biodiversity and threats to long-term viability.

The conservation assessment applied seven weighted conservation criteria which comprised of two or more scored categories resulting in a final score for each management unit. The final

scores for the 26 management units were then converted into a conservation significance rank of 'local', 'moderate' or 'high' using the Jenks Natural Breaks classification method. Figure12 shows the conservation significance rankings of Rockdale's natural areas.

Table 9: Conservation significance criteria and category scores

Major Values	Criteria	Supporting Information Measure	Category Value	Score	Weighting
Conservation	Endangered Ecological Communities (TSC Act)	Vegetation mapping	3 or more EECs	3	x7
			2 EECs	2	
			1 EEC	1	
			No EEC	0	
	Known habitat for migratory or threatened species	Atlas of NSW Wildlife, Council database, Field assessment	Known habitat for 5 or more species	3	x7
			Known habitat for 2 - 5 species	2	
			Known habitat for 1 species	1	
			Is not known habitat	0	
Landscape	Vegetation Patch Size	GIS analysis	>10ha	3	x4
			4 - 10ha	2	
			2 - 4ha	1	
			0 - 2ha	0	
	Connectivity / Corridors	GIS analysis	Part of biodiversity corridor	1	x2
			Not part of biodiversity corridor	0	
	Perimeter to Area Ratio	GIS analysis	<0.08	3	x4
			0.08 - <0.14	2	
			0.14 - <0.25	1	
			>=0.25	0	
	Waterways	1:25k drainage, GIS analysis	Intersects with natural waterway	3	x3
			Intersects with de-channelised waterway	2	
			Intersects with concrete lined or piped waterway	1	
			Does not intersect waterway	0	
Condition	Vegetation Condition	Field assessment	Native vegetation	5	x4
			Disturbed vegetation	4	
			Exotic vegetation	3	
			Remnant trees	2	
			Revegetation	2	
			Native trees	2	

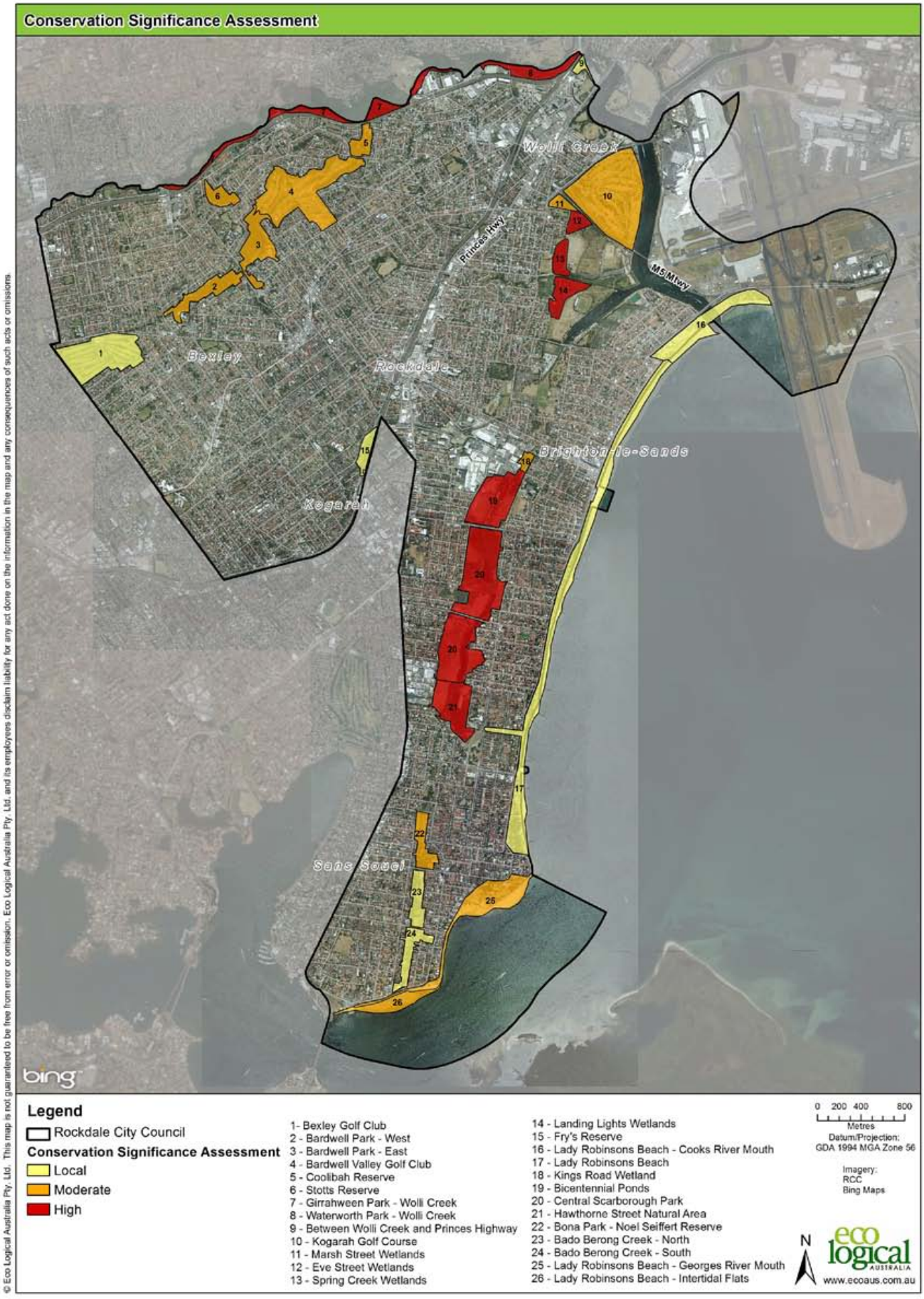

Figure 12: Conservation significance map

5.4.4 Natural asset register guidelines

The NSW *Local Government Act1993* (s8) requires Councils to 'effectively plan for, account for and manage the assets for which it is responsible'. Within a local government strategic planning framework, areas of biodiversity can be considered as 'natural assets'. Natural assets can be defined as soil, water systems, plants and animals from which ecosystem services flow to provide financial, cultural and ecological benefits. Natural assets will appreciate with management over time - built assets depreciate more slowly with management but will eventually require replacement. Arguably, natural assets cannot be replaced.

- It is not acceptable to think that natural assets within a highly urbanised environment can look after themselves. Lack of active management in the past has resulted in local extinctions of native plant and animal species and serious degradation of much of Rockdale's bushland and waterways - in some cases, to a point beyond which it is impossible to reverse the decline. Like built assets, we natural assets need to be actively managed to ensure they are functioning and continue to provide the important ecosystem services discussed in section 1.3.
- It is acknowledged that there are competing interests for Council resources. Accordingly, natural asset management must be integrated with other Council programs/actions (eg sporting, recreation, infrastructure, facilities, etc). If it is treated in isolation, there is a tendency for it to receive low priority.

In this context, Rockdale City Council needs to ensure its natural assets are restored and maintained so that they are healthy, viable and provide a level of ecosystem services that benefits residents and the broader community. Asset management is linked with the Council's integrated planning and reporting framework which requires Council to plan for asset management through a ten year community strategic plan, delivered via a four year program and an annual operational plan, reported annually. This Biodiversity Strategy has prepared guidelines for establishing a simple natural assets register to be used to develop a Natural Asset Management Plan and Framework which aligns the value of the natural asset with the financial expenditure required to maintain and if desired improve its condition through management options supported by feedback monitoring. The guidelines for the Natural Assets Register can be found in Volume 2 - Appendix C.

5.5 Council leadership in biodiversity management

The following actions address:

Goal 6: Council places a high value on Rockdale's biodiversity and demonstrate leadership in biodiversity conservation priorities

5.5.1 Increased awareness of Rockdale's biodiversity values

Increased awareness and engagement of Rockdale's Councillors and staff regarding Council's legislative obligations and actions in this Biodiversity Strategy is fundamental to achieving positive outcomes in biodiversity management operations. Biodiversity information and training sessions will be undertaken for Councillors and key staff involved in decision making and impact assessment. This can be integrated into the Councillor Induction program and through Council's Learning and Development program. Staff and contractors undertaking maintenance works that have the potential to impact natural areas will undertake and ecological induction prior to work commencing.

5.5.2 Continuation of Environment Committee

As stated above increased awareness and engagement of Rockdale's Councillors regarding Council's legislative obligations and actions in this Biodiversity Strategy is fundamental to achieving positive outcomes in biodiversity management operations.

Rockdale City Council currently facilitates a Climate Change and Environment Advisory Committee. This Committee, which meets quarterly, consists of Council staff, Councillors and representative community members. The function of the Committee is to raise awareness of key environmental issues within the City of Rockdale and activities underway to address them, The Committee also plays a crucial role in seeking feedback into improving management of Council's natural environment.

This Committee is an integral way of increasing awareness and engagement of Rockdale Councillors into biodiversity protection. Continuation of this committee (or similar Environment Committee) is recommended.

5.5.3 Management by staff and contractors

Specifications will be developed for all open space maintenance practices that have the potential to impact on natural areas and priority species to ensure that detrimental impacts are avoided or if this is not possible mitigated. The specifications will:

- Address the staged removal of dense weedy areas to minimise impact on fauna habitat
- Give consideration to installation of paths or edges to define mowing boundaries
- Address and minimise the use of herbicides near waterways
- Retain habitat features such as logs and rocks where feasible and hollows/dead branches cut down for safety reasons
- Be aware of and identify opportunities to create artificial habitat for fauna such as sandstone walls, tunnels, stormwater drains, etc.

5.5.4 Council nursery

Rockdale's Community Nursery sells predominantly exotic garden plants. There will be an assessment into the feasibility of expanding the nursery operations to specialise in the propagation of, and education about, locally indigenous plants. In addition to selling indigenous plants to the public, plants could be grown to supply Volunteer Bushcare sites and the Natural Area Restoration and Riparian Buffer Revegetation programs.

5.5.5 Council's natural resource databases

A protocol will be developed to manage and maintain Council's GIS and flora and fauna databases. Resources permitting data will be collected and additional surveys will be undertaken for bird and microbat species to increase knowledge about Rockdale's biodiversity.

5.6 Engagement and collaboration

Rockdale City Council recognises the important contribution that has been made by local community environmental groups and residents in helping to protect the City's biodiversity. In addition Rockdale City Council is part of a number of regional Council alliances (Southern Sydney Regional Organisation of Councils (SSROC), Cooks River Alliance (CRA), Georges River Combined Councils' Committee (GRCCC) and Sydney Coastal Councils Group (SCCG)) which have been instrumental in developing projects and policies and accessing funding to undertake activities to protecting the City's biodiversity. The success of achieving many of the actions outlined in this Strategy will depend on a continuing and enhancing the partnership between Council and the wider community.

The following actions address

Goal 7: A community that is engaged, informed and appreciates Rockdale's natural heritage

Goal 8: Collaborative partnerships between Council, the community, large land owners, businesses, research institutes, regional Councils and the government to protect and enhance biodiversity

5.6.1 Bushcare and RiverHealth Volunteers

Rockdale City Council highly values the contributions made by volunteers in managing natural areas. Council's Bushcare and RiverHealth Programs are successful examples of community volunteers working with Council to monitor, conserve and rehabilitate publicly owned natural bushland, wetlands and waterways. Council will continue its commitment to supporting the Bushcare and RiverHealth Volunteers through a variety of means including on-ground support, insurance and administrative support.

5.6.2 Work in partnerships

Many of the environmental issues impacting on Rockdale City Council natural areas such as weeds, feral animals, cannot be tackled in isolation. We need to work in partnership with NRM agencies, major landowners and regional Council on biodiversity management issues. Some of the complex issues (such as climate change adaptation) are also beyond the scope of expertise of Council staff. To help address these issues Council will continue to actively participate in regional Council alliances, engage with the major landowners in the City (such as Sydney Trains, Roads and Maritime Service and Sydney Water) and seek opportunities to undertake projects in collaboration with research institutions.

5.7 Constraints

There are a number of external constraints to Rockdale City Council- current and future that may impact on the delivery of the actions within the Biodiversity Strategy. These includes:

National Airports Safeguarding Framework: One of the key aims of this Framework is to improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions. This includes reducing the risk of wildlife strike for flights entering and exiting Sydney Airport. Therefore, when Rockdale City Council is undertaking projects that may impact on numbers and distribution of particular fauna species in the City, as well as developing Natural Area Restoration and Priority Species Management Plans, Council will need to take into consideration the National Airports Safeguarding Framework.

Significant Road Development - The F6 corridor runs through the Rockdale LGA primarily within the Rockdale wetlands corridor. In addition, any expansion of the M5 may impact on the wetlands in the northern section of the City and on Wolli Creek Valley. In response Council will continue to advocate to work with the State Government to ensure the F6/WestConnex construction will be designed in a manner to minimise the impact on Rockdale's natural environment

Major Landholders - while most of the open space in the City of Rockdale is owned by Rockdale City Council there are still some significant natural areas which fall under State Agency management eg Sydney Water, RMS and Sydney Trains. While Council is limited in implementing actions within these areas Rockdale City Council will continue to work in cooperation with the relevant agencies to encourage the management of these land areas in an environmentally sensitive manner.

Managing regional issues at a local scale - many of the issues identified in this strategy cannot be solved in isolation to surrounding Councils (eg control of weeds, pest species and responding to climate change). Rockdale City Council is an active member in a number of regional Council alliances as outlined in 5.6 to maximise opportunities to address these issues.

5.8 Updates to the Rockdale Biodiversity Strategy

In order to ensure that the Rockdale Biodiversity Strategy remains relevant to the needs and priorities of Rockdale's natural assets, it is recommended that a review of the Biodiversity Strategy is conducted every five to seven years. This will enable the incorporation of all necessary updates in state and federal legislation, and an update of key goals and actions.

6 Actions

The Action Plan has been developed to meet the vision and goals set by this strategy.

The following Action Plan collates and summarises recommendations made in this plan, and also identifies actions to maintain and improve biodiversity values in the Rockdale LGA. The Action Plan has been developed to meet the targets and proposals included in this Strategy. Actions have been divided as they pertain to the Goals that support the vision and targets for the strategy. It is anticipated that Council would have the primary responsibility for implementing these actions, with the support of relevant government agencies and the broader community.

The following format is used for the presentation of actions in this Strategy.

Action	Responsibility and Partnerships	Delivery Priority
A description of the action	*Responsibility for implementation and an identification of external partners (or state "internal")*	*High: within two years* *Medium: within five years* *Low: within eight years*

The indicative implementation timeframe for this strategy is five to seven years, with an interim review at about three years, after which it should be subject to a comprehensive review.

Funding priority actions

A number of the actions listed in the Action Plan do not require funding and are focused on process improvements, updates to plans, changes to planning controls and better recognition of natural areas management in Council's management systems.

However, to facilitate effective biodiversity improvements across the City of Rockdale, significant long term investment is required to fund priority works outlined throughout the Biodiversity Strategy. This is more challenging for Councils in general as many of the natural resource management responsibilities have transferred from state to local government over the past 15 years.

Over the past five years, Council has invested significantly in natural resource management and especially in tackling the challenging issue of weed proliferation. This has been possible by utilising Council funds to maximise access to external funding to achieve benefits at priority locations. However, as competition increases and external funding pools reach their limit, the challenge for long term investment into the City's natural assets will become more important.

Council will continue to fund biodiversity actions through a multi-tiered approach using a combination of external funds (as they become available), special rates (eg Stormwater Management Charge, development contributions and Council funding. This will vary over time depending on City and Council priorities as well as opportunities for collaboration and partnership.

All priority actions that require funding will be costed and submitted to be considered as part of Council's overall budgetary processes on an annual and medium to long term basis.

Table 10: Action table

1. The decline of biodiversity values in Rockdale's natural areas is reversed.

Action	Partnerships	Delivery Priority
1.1 Prepare a Natural Area Restoration Plan and a Baseline Restoration Monitoring Plan for all Council managed priority natural areas. Where relevant, the Plan should consider ecological fire regimes and incorporate priorities and management strategies from the Rockdale Bio-links Study and the Aquatic Weed Management Strategy	Local environmental groups	High
1.2 Implement the Natural Area Restoration Plan and Baseline Restoration Monitoring Plan using professional bush-regeneration contractors.	Internal	High
1.3 Regularly update the Natural Area Restoration Plans to incorporate maintenance of newly revegetated riparian buffers	Internal	High
1.4 Evaluate the results from the Baseline Restoration Monitoring Program annually to focus works for following year. The results should be summarised in an annual Biodiversity Management Works Report to Council and publicised on Council's website.	Internal	High
1.5 Continue Council's current bush-regeneration program until it can be re-aligned to the new Natural Area Restoration Program	External Grant Bodies	High

2 The ecological values of Rockdale's wetlands and waterways are protected and enhanced

Action	Partnerships	Delivery Priority
2.1 Prioritised and submit key actions from the City of Rockdale Water Quality Monitoring Study 2014 into Council's 2015/16 City Plan and budget process.	Internal	High
2.2 Prepare a Riparian Buffer Revegetation Plan to establish and maintain native vegetation buffers where possible along waterways and wetlands	Local environmental groups/Major landowners	Medium
2.3 Implement the Riparian Buffer Revegetation Plan using Bushcare and RiverHealth volunteers and professional bush-regeneration contractors. Ensure that maintenance of the established buffer plantings is included in the Natural Area Restoration Plan.	Bushcare and RiverHealth Volunteers	Medium
2. 4 Undertake a preliminary feasibility assessment on the re-establishment saltmarsh habitat at higher elevations as an adaptive response to sea-level rise.	NSW Department of Primary Industries (Fisheries), OEH	Low
2.5 Identify groundwater dependent ecosystems within the City of Rockdale and key actions to help protect these ecosystems	NSW Office of Water	Medium

3 The habitat of threatened, migratory and other priority species is enhanced and effectively protected.

Action	Partnerships	Delivery Priority
3.1 Prepare a Priority Species Management Plan and a Baseline Habitat Survey Plan to protect and enhance the habitat of threatened, migratory and other priority species. The Plan should be prepared in consultation with OEH and other relevant organisations and give consideration to the provision of artificial shorebird and micro-bat roosts, provision of food trees for the Grey-headed Flying Fox in developed open space and pest animal control.	OEH, Sydney Trains, Sydney Water, Roads and Maritime Service	Medium

3.2 Implement the Priority Species Management Plan and Baseline Habitat Survey Plan	OEH, Transport NSW, Sydney Water, Roads and Maritime Service	Medium
3.3 Evaluate the results from the Habitat Survey Program annually to focus works for following year. The results should be summarised in an annual Biodiversity Management Works Report to Council and publicised on Council's website.	Internal	Medium
3.4Establish a public access control campaign in priority habitats with a focus on unleashed dog access. Controls should consider signage, education and awareness, media information and regular ranger patrols.	Internal	High
3.5Monitor and implement sensitive control of mangroves and casuarina invasion of saltmarsh areas as a part of the Natural Area Restoration Program. Monitoring guidelines should be included in the Natural Area Restoration Plan and a Baseline Restoration Monitoring Plan (see Action 1.1) Ongoing mangrove control works should be covered in a Review of Environmental Factors(REF).	NSW Department of Primary Industries (Fisheries)	Medium

4. Ecological connectivity at local and regional scales is established and improved.

Action	Partnerships	Delivery Priority
4.1Undertake a Wildlife Corridor Review to prioritise wildlife corridors based on the ecological significance of the habitat areas that they link and identify barriers to fauna movement.	OEH, Sydney Trains, Sydney Water, Roads and Maritime Service	Medium
4.2 Prepare Master Plan guidelines for street tree and developed open space (including golf-courses) landscaping to enhance fauna habitat and encourage fauna movement in mapped corridors	Internal Land Managers	Medium
4.3 Develop an online overlay resource showing street tree lines and clumps of vegetation to enhance connectivity projects by Council and community	Internal Land Managers	Medium

5 Biodiversity protection and enhancement is integrated as a core objective in Council's decision making and all its processes

Action	Partnerships	Delivery Priority
5.1Review the Corporate Governance Framework to effectively integrate biodiversity conservation into Council's planning, resource allocation, performance monitoring and reporting processes.	Internal	High
5.2Establish a long term financial plan to implement the Natural Area Restoration, Priority Species Management and Riparian Buffer Revegetation Programs. Identify additional funding opportunities such as grants, development contributions and partnerships.	Internal	High
5.3 Employ an experienced Natural Resource Management Officer to oversee the Natural Area Restoration, Priority Species Management and Riparian Buffer Revegetation Programs.	Internal	High
Strategic Land Use Planning and Development Assessment		
5.4 Review the Rockdale LEP 2011 to incorporate relevant findings and mapping developed as part of the Rockdale Biodiversity Strategy including the Natural Resources Sensitivity Biodiversity Map to include the draft sensitive land mapping (comprising of threatened and migratory species habitat, native vegetation, native vegetation buffers and watercourse buffers).	Internal NSW Planning & Environment	High
5.5 Revise development assessment guidelines for proposals within mapped sensitive lands (see above)	Internal	Medium

5.6 Develop and implement a biodiversity offset strategy to identify suitable offset requirements for the removal or disturbance of remnant vegetation and habitat. The offset strategy should cover the impacts of the proposed F6 and other future developments on threatened habitats and ecological connectivity. For guidance on Biodiversity Offsets http://www.environment.nsw.gov.au/biodivoffsets/	OEH	High
5.7Use the results of the Conservation Significance Assessment to guide the allocation of resources, to feed into a natural assets management register, and to inform strategic environmental planning and development assessment processes.	Internal	Medium
5.8 Develop a Natural Assets Register which places an economic value upon, classifies, maps and assesses the condition of Council's bushland, wetlands and waterways. Incorporate the results of the Conservation Significance Assessment and relevant priorities, targets and actions from this strategy into Council's asset management plan and framework.	Internal	High
5.9 Prepare a waterways strategy which includes a comprehensive conservation significance assessment to identify priority sites, restoration actions and management guidelines. Incorporate these results in the Natural Assets Register	NSW Department of Primary Industries (Fisheries)	High
5.10 Council continues to advocate to work with the State Government to ensure the F6/WestConnex construction will be designed in a manner to minimise the impact on Rockdale's natural environment		

6 Council places a high value on Rockdale's biodiversity and demonstrates leadership in all its operations to address biodiversity conservation priorities

Action	Partnerships	Delivery Priority
6.1 Undertake periodic Councillor and Staff training sessions to increase awareness of Rockdale's biodiversity values and legislative obligations, impact assessment triggers and interpretation and use of biodiversity data bases (Council's GIS).	LGNSW OEH	High
6.2 Continuation of Council Environment Committee with Councillor and community participation	N/A	High
6.2 Review all open space maintenance practices that have potential to impact on natural areas and priority habitat and develop clear specifications (including maps) designed to avoid or mitigate detrimental impacts.	N/A	Medium
6.3Establish an ecological induction process for all staff and contractors undertaking maintenance practices that have potential to impact on natural areas and priority habitats in accordance with the above specifications	LGNSW OEH	Medium
6.4 Prepare a business case to expand the operation of the Rockdale Community Nursery to specialise in locally indigenous plant species and provide advice to local residents on sustainable gardens. Consideration should be given to growing plants to supply Bushcare sites and the Natural Area Restoration and Habitat Expansion programs.	Rockdale Community Nursery	Low
Underpinning Biodiversity Data Management and Survey		
6.5 Develop a protocol to maintain GIS and flora and fauna databases including the results of the Baseline Restoration Monitoring and Habitat Survey Programs	N/A	Medium
6.6 Undertake additional on-ground survey to carry out detailed vegetation community and condition mapping to refine the Preliminary Conservation Significance Assessment feed into a Natural Assets Management Register and prepare the updated vegetation community profile for the Rockdale LGA	OEH	High
6.7 Undertake an on-ground survey to map and assess Rockdale's waterways to provide information for the Natural Asset Register (see Action 6.9) and feed into Council's Asset Management Plan and Framework	NSW Department of Primary Industries (Fisheries)	Medium

6.8 Collect and collate bird records from bird watching/conservation organisations and consider undertaking small bird surveys in priority natural areas.	Wolli Creek Preservation Society, Local Environmental Groups	Low
6.9 Undertake microbat surveys in appropriate locations such as near bridge structures within the Wetlands and Recreation Corridor to detect Large-footed Myotis	Local Environmental Groups	Low
6.10 Estimate and map the former distribution of broad vegetation units prior to 1750 (pre-European settlement) by extrapolation from remnant vegetation, soils and topographic mapping using existing information.	N/A	Low
6.11 Provide an updated vegetation community profile for the Rockdale LGA with photo, description (structure, dominant and associated tree species and common understorey species), habitat, Rockdale distribution and conservation significance locally and state/national and as habitat for threatened species.	N/A	Medium

7 A community that is engaged, informed and appreciates Rockdale's unique natural heritage

Action	Partnerships	Delivery Priority
Recreation Opportunities		
7.1 Prepare and cost a Natural Area Recreation Strategy for selected sites. Consideration should be given to providing access into natural areas from adjacent developed open space such as parks and playing fields to promote community awareness and appreciation of Rockdale's urban biodiversity. Include consideration of bird-watching facilities established to view wading birds in wetland areas.	Local and Regional Environmental Groups Neighbouring Councils	Medium
Community Bushcare/RiverHealth Groups		
7.2 Continue ongoing support for Bushcare and RiverHealth Volunteers	Bushcare and RiverHealth Volunteers	Ongoing
7.3 Investigate and market opportunities to establish new volunteer groups.	Local Environmental Groups	Medium
7.4 Implement an interpretive signage plan for priority bushland and wetland sites to improve awareness about key natural areas.	N/A	High
7.5 Develop and implement an environmental grants program for habitat enhancement works such as ponds, roost/nest boxes and native bee hives at volunteer sites.	Local Environmental Groups	Medium
Community Education		
7.6 Select a Rockdale biodiversity icon species to engage the community. The icon species should be easily recognisable, marketable and impacted by habitat decline (eg small birds). An icon species could be chosen from each of main ecosystem communities of bushland, wetland, waterway and coastal.	Local Environmental Groups	High
7.7 Place a "point and click" interactive web map showing the broad distribution of pre 1750 vegetation units and associated plant species lists on Council's website. Promote its use to residents, schools and businesses to encourage the use of indigenous species in gardens and landscaping. The plant lists should include information about size, type, flower-colour and habitat value of each species.	N/A	Low
7.8 Establish a demonstration small-bird friendly garden, native bee hives and pond habitat at a public reserve or the Rockdale Community Nursery. Encourage the use of insect rather than bird pollinated plants to avoid attracting Noisy Miners. Discourage the use of succulent fruit bearing trees where Pied Currawongs are a problem.	Rockdale Community Nursery	Low

7.9 Hold environmental workshops for Bushcare and RiverHealth Volunteers and the broader community to promote awareness of urban biodiversity.	NSW Environmental Educators Network	Medium
7.10 Where appropriate, incorporate biodiversity themed public art and interpretation signage in public infrastructure works and at high profile sites.	N/A	Ongoing
7.11 Prepare a Schools Environmental Resource Kit with education project ideas that are specific to Rockdale's biodiversity including opportunities to visit Rockdale's natural areas.	Environmental Education Centres	Low
7.12Distribute information on how to upload flora and fauna records onto BioNet to environmental groups and interested individuals	N/A	Medium
7.13 Provide regular biodiversity related stories to local media outlets.	N/A	High
7.14 Develop educational materials to inform the community about the impacts of littering and dumped rubbish on the natural environment including natural waterways	N/A	Medium

8 Collaborative partnerships between Council, the community, large land owners, businesses, research institutes, regional Councils and the government to protect and enhance biodiversity

Action	Partnerships	Delivery Priority
8.1 Work in partnership with NRM agencies, major landowners, and regional Councils on biodiversity management issues	NSW Fisheries, Local Land Services, OEH, major landowners	Ongoing
8.2 Establish partnerships with other land-managers such as NSW Transport, Sydney Airport, Golf Courses and adjacent Local Councils to share biodiversity information and implement relevant actions in this Strategy such as the preparation and implementation of restoration programs.	Cooks River Alliance Georges River Combined Councils' Committee, Sydney Coastal Councils Group, Neighbouring Councils	Ongoing
8.3 Collaborate with research institutes, regional Councils and non-government organisations (eg Backyard Birds) to undertake joint research and community education projects.	Various	Ongoing
8.4 Work with local businesses to promote sustainable biodiversity management practices.	Various	Ongoing
8.5 In partnership with regional Council alliances identify locally endangered flora and fauna species and prioritise actions for their protection	Cooks River Alliance Georges River Combined Councils' Committee, Sydney Coastal Councils Group	Medium
8.6 Council will consider the National Airports Safeguarding Framework (NASF) and, in particular, NASF Guideline C (Managing the Risk of Wildlife Strike in the Vicinity of Airports) and NASF Guideline F (Managing the Risk of Intrusions into Protected Airspace of Airports) when developing relevant projects	Sydney Airport & Commonwealth Department of Infrastructure and Regional Development	High

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Important

This document contains important information about Rockdale City Council. If you do not understand, please visit Council's Customer Service Centre at 2 Bryant Street Rockdale, Monday – Friday from 8.30am – 4.30pm, Saturday from 9am – 1pm. Council Staff will be happy to arrange interpreter services for you.

You may also contact Telephone Interpreter Services on 131 450 and ask them to ring Rockdale City Council on 9562 1666 on your behalf.

Arabic

هام:

تحتوي هذه الوثيقة على معلومات هامة عن بلدية روكدايل. إذا لم تكن قادراً على فهمها، يرجى زيارة مركز خدمة زبائن البلدية على العنوان التالي: 2 Bryant Street في روكدايل من الإثنين إلى الجمعة بين الساعة ٨.٣٠ صباحاً و ٤.٣٠ مساءً، والسبت بين الساعة ٩.٠٠ صباحاً و ١.٠٠ بعد الظهر حيث سيقوم موظفو البلدية بتأمين مترجم لك بكل سرور.

كما يمكنك الاتصال بخدمة الترجمة الهاتفية على الرقم 131 450 والطلب منهم الاتصال ببلدية روكدايل على الرقم 9562 1666 نيابةً عنك.

Chinese

重要消息

本文件載有關於 Rockdale 市政府的重要資訊，如果您有不明白之處，請於星期一至星期五，上午8時30分至下午4時30分，及星期六上午9時至下午1時，前來位於2 Bryant Street，Rockdale，市政府的顧客服務中心。市政府的職員會很樂意為您安排傳譯員的服務。

您也可以聯絡電話傳譯服務處，電話 131 450，並請他們代您致電 9562 1666 給Rockdale市政府。

Greek

Σημαντικό:

Αυτό το έγγραφο περιέχει σημαντικές πληροφορίες για τη Δημαρχία Rockdale City Council. Αν δεν τις καταλαβαίνετε, παρακαλείσθε να επισκεφτείτε το Κέντρο Εξυπηρέτησης Πελατών [Customer Service Centre] του Δήμου στο 2 Bryant Street, Rockdale, Δευτέρα - Παρασκευή από 8.30πμ - 4.30μμ και Σάββατο από 9.00πμ - 1.00μμ. Το Προσωπικό του Δήμου θα χαρεί να κανονίσει υπηρεσίες διερμηνέων για σας.

Μπορείτε επίσης να επικοινωνήσετε με τις Τηλεφωνικές Υπηρεσίες Διερμηνέων [Telephone Interpreter Services] στο 131 450 και να τους ζητήσετε να τηλεφωνήσουν στο Rockdale City Council στο 9562 1666 για λογαριασμό σας.

Italian

Importante:

Questo documento contiene importanti informazioni sul Comune di Rockdale City. Se avete difficoltà a comprenderne il contenuto, recatevi presso il Customer Service Centre del Comune a 2 Bryant Street, Rockdale dal lunedì al venerdì dalle ore 8.30 alle 16.30 e al sabato dalle 9.00 alle 13.00. Il personale del Comune sarà ben lieto di procurarvi un servizio interpreti.

Potete anche chiamare il Servizio telefonico interpreti (TIS) al numero 131 450 chiedendo che telefoni per vostro conto al Comune di Rockdale City al numero 9562 1666.

Macedonian

Важно:

Овој документ содржи важни информации за Rockdale City Council (Градската општина на Rockdale). Ако не го разбирате, ве молиме, посетете го општинскиот Customer Service Centre (Центар за услуги на клиенти), кој се наоѓа на 2 Bryant Street, Rockdale, од понеделник до петок, од 8.30 наутро до 4.30 попладне и во сабота од 9.00 наутро до 1.00 попладне. Вработените во општината со задоволство ќе ви организираат да користите преведувач.

Исто така, можете да телефонирате во Telephone Interpreter Services (Служба за преведување по телефон) на 131 450, и да ги замолите во ваше име да се јават во Градската општина на Rockdale на 9562 1666.

Spanish

Importante:

Este documento contiene información importante sobre el Rockdale City Council (Municipio de Rockdale). Si no la entiende, le rogamos concurrir al Centro de Servicio al Cliente del Municipio, ubicado en 2 Bryant Street, Rockdale, atención de lunes a viernes, de 8:30 am a 4:30 pm y el sábado de 9.00 am a 1.00 pm. El personal del municipio se complacerá en obtener los servicios de un intérprete para usted.

Puede asimismo llamar al Servicio Telefónico de Intérpretes al 131 450 y pedirles que llamen de su parte al Rockdale City Council, teléfono 9562 1666.

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