

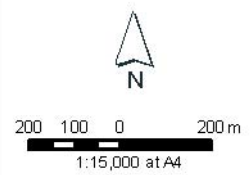


FIGURE 8a
Mapped Vegetation and Freshwater Ponds in the Northwest of the City of Sydney LGA

- Coastal Sandstone Outcrop Complex
- Coastal Saltmarsh
- Mangrove Forest
- Bush Restoration Sites
- Indigenous/Mostly Indigenous Plantings
- Major Weed Infestation
- Ponds

Possible Remnant Trees

- Rough barked Apple (*Angophora floribunda*)
 - Sydney Turpentine Ironbark Forest
- Bangalay (*Eucalyptus botryoides*)
 - Coastal Swamp/Alluvial Forest
- Grey Ironbark (*Eucalyptus paniculata*)
 - Sydney Turpentine Ironbark Forest



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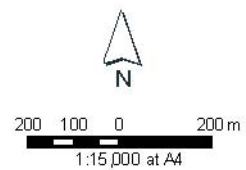


FIGURE 8b
Mapped Vegetation and Freshwater Ponds in the Northeast of the City of Sydney LGA

- Coastal Sandstone Outcrop Complex
- Indigenous Plantings/Naturally occurring Vegetation
- Bush Restoration Sites
- Indigenous/Mostly Indigenous Plantings
- Ponds

Possible Remnant Trees

- Swamp Oak (*Casuarina glauca*)
 - Coastal Swamp/Alluvial Forest
- Forest Red Gum (*Eucalyptus tereticornis*)
 - Coastal Swamp/Alluvial Forest



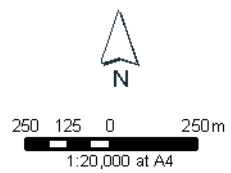
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FIGURE 8c
Mapped Vegetation and Freshwater Ponds in the Southeast of the City of Sydney LGA

- Bush Restoration Sites
- Indigenous/Mostly Indigenous Plantings
- Major Weed Infestation
- Freshwater Wetlands
- Ponds



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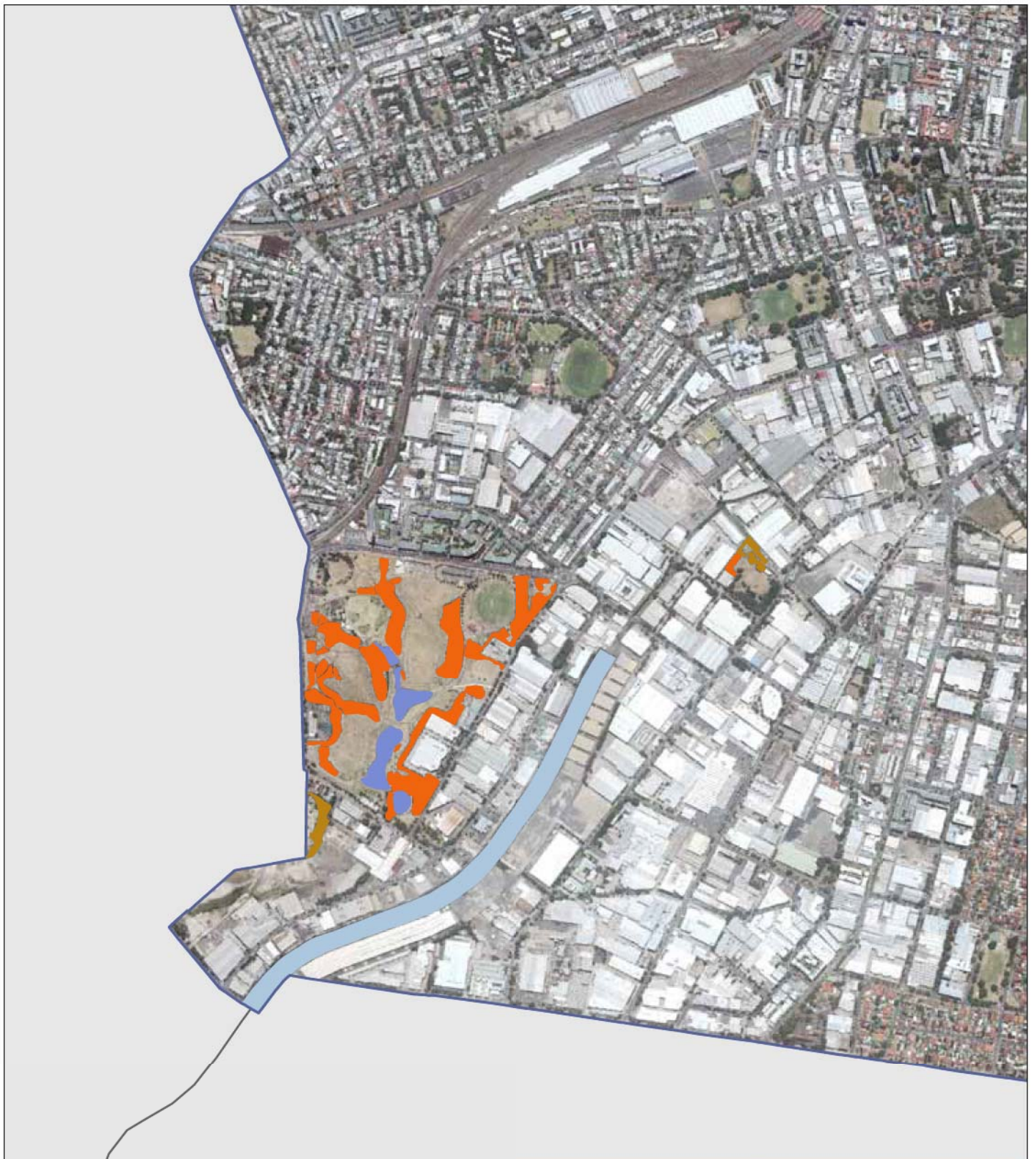

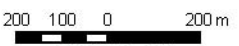


FIGURE 8d
Mapped Vegetation and Freshwater Ponds in the Southwest of the City of Sydney LGA

- Indigenous/Mostly Indigenous Plantings
- Freshwater Wetlands
- Major Weed Infestation





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The mapped bush restoration sites are distinguished from other indigenous/mostly indigenous plantings because they are maintained by volunteer groups or specialist bush regeneration contractors. Most have been established and are maintained by two volunteer groups – the Glebe Bushcare Group, who have also propagated many of the species planted at these sites at the Rozelle Bay Community Native Nursery, and Pyrmont Ultimo Landcare. Bush restoration works have also been undertaken by the City at several sites, and the Department of Defence has likewise begun bush restoration at Garden Island and at

Victoria Barracks (subsequent to the flora surveys). The largest bush restoration site is Orphan School Creek in Forest Lodge, which was established by the developers of an adjacent apartment complex in response to community demand, with species selection based on specialist advice (Ondinea 1999 & 2006). A new volunteer bush restoration group, Friends of Orphan School Creek, will commence work at this site in 2013.

Community members including volunteers from the PEACE group and National Tree Day volunteers have made a significant contribution to the mapped other indigenous/mostly indigenous plantings, particularly at Sydney Park.



Bush restoration site planted by Glebe Bushcare Group volunteers at Federal Park, Glebe, in January 2011 (left) and the same site one year later (right). (photos K. Oxenham)



Bush restoration works undertaken by the City at Blackwattle Bay Park (left) in October 2011 and (right) the same site one year later. (photos K. Oxenham)



a



b



c



d

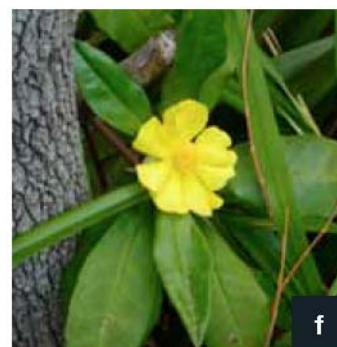
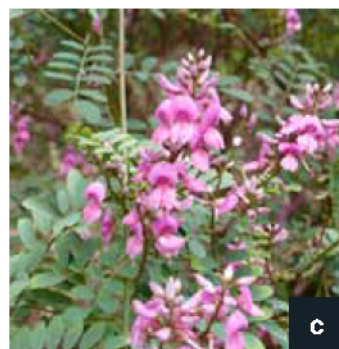
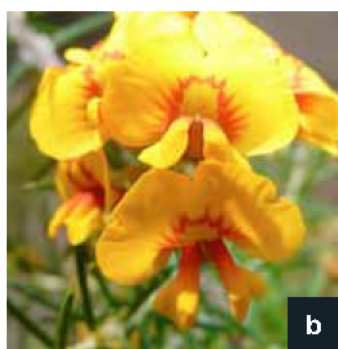
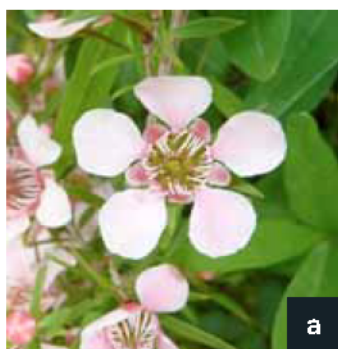
Some of the possible remnant trees identified in the LGA.

- a Grey Ironbark *Eucalyptus paniculata* representative of the endangered Sydney Turpentine Ironbark Forest at St John's Anglican Church, Glebe.
- b Bangalay *Eucalyptus botryoides* at Low Hoade Reserve, Glebe.
- c Forest Red Gum *Eucalyptus tereticornis* in the Royal Botanic Gardens.
- d Swamp Oak *Casuarina glauca* in the Royal Botanic Gardens.

Around 365 indigenous species were recorded in the LGA, and individuals of around 20 per cent were considered likely to be naturally occurring. No threatened species were recorded, although some planted specimens may occur in the Royal Botanic Gardens or the Yurong Precinct of the Domain. 81 (82 depending on *Koelreuteria* id) weed species were recorded, including four weeds of national significance (Lantana, Salvinia, Bitou Bush and Asparagus Fern), 13 weeds declared noxious in the LGA, and 20 environmental weeds, several of which are declared

noxious in other LGAs and one of which, *Koelreuteria elegans ssp. formosana* is a National Environmental Alert weed. An environmental weed of particular concern is the Chinese Hackberry, a tree that was widely planted in the past in City parks, some streets and many private properties.

A list of all flora species recorded during the surveys is provided in Appendix 2. Many more species, both exotic and indigenous, are likely to be present across the LGA.



Some of the locally indigenous species planted in the LGA. (photos K. Oxenham)

- | | |
|--------------------------------------|------------------------|
| a <i>Leptospermum polygalifolium</i> | f Golden Guinea Flower |
| b <i>Dilwynnia</i> species | g Kangaroo Grass |
| c <i>Indigofera australis</i> | h Blue Flax Lily |
| d Flannel Flower | i Pink Spider Flower |
| e Whiteroot | j Native Violet |

Major weed infestations in the LGA are largely limited to cliffs and outcrops, rail corridors and water easements, although some private properties, particularly disused sites, are also weed-infested. Weeds are spreading from these locations in many instances.



Examples of major weed infestations in the LGA: the light rail corridor at Pyrmont (above) and a Sydney Water easement in Alexandria (below). (photos K. Oxenham)

3.2 Fauna

Like the original vegetation, the diversity of terrestrial vertebrate fauna species within the LGA has also been greatly reduced from its original state. The original fauna would have included a wide range of frogs, reptiles, birds and ground-dwelling and arboreal mammals including microchiropteran bats. Many of these species have disappeared from the area.

Nevertheless, data from the fauna surveys combined with opportunistic observations made by City staff and reliable reports from the community from October 2010 to June 2012 indicate that a reasonably diverse fauna assemblage is present within the LGA. As well as natural habitat features, modified and constructed habitats such as ponds, cliff lines, retaining walls and fences, weed infestations, roof cavities, and even tall buildings in the city centre are used by some of the species recorded.



Examples of species using constructed features in the LGA.

- a A Peregrine Falcon on a CBD window ledge. (photo P. Munro).
- b Elegant Snake-eyed Skinks (also known as Wall Skinks) inhabiting a sandstone retaining wall at Glebe. (photo K. Oxenham)
- c Welcome Swallows, which often nest on built structures, roosting on a gabion wall at Sydney Park.
- d A White-faced Heron and Little Black Cormorants roosting on posts in Sydney Park.

Constructed ponds and weed infestations identified within the LGA are indicated in Figures 8a-d.

A total of 99 fauna species was confirmed in the LGA, comprising 87 indigenous species (with an additional two unconfirmed), as well as 12 introduced fauna species. This total comprises:

- 70 bird species, including seven introduced species;
- 13 mammal species (with an additional two unconfirmed microchiropteran bats), including five introduced species;
- 11 reptile species; and
- Five frog species.

A complete list of the species recorded is provided in Appendix 3.

Many of the species recorded have adapted well to urbanisation and are abundant and widespread in the LGA and other urban areas (Russell *et al.* 2011; Major 2004; Major & Parsons 2010; Parsons 2009). These include the Common Brushtail Possum and large-bodied birds such as the Rainbow Lorikeet, Noisy Miner, Pied Currawong, Grey Butcherbird, Laughing Kookaburra, Australian Raven, Sulphur-crested Cockatoo, Australian White Ibis, Silver Gull, and the introduced Rock Dove (commonly known as the feral pigeon) and Common Myna (also known as the Indian Myna). Most of these larger indigenous birds were not originally resident in central Sydney, or at least not in large numbers (Major 2004; Major & Parsons 2010).



Common indigenous species in the LGA that have adapted well to urbanisation.

- | | |
|-------------------------------------|-------------------------|
| a Noisy Miner | f Pied Currawong |
| b Australian Magpie at Sydney Park | g Silver Gull |
| c Rainbow Lorikeet (photo A. Davis) | h Australian Raven |
| d Common Brushtail Possum | i Australian White Ibis |
| e Sulphur-crested Cockatoo | j Laughing Kookaburra |

In contrast, many of the other species were recorded in small numbers at only a small number of sites, and appear to be scarce in the LGA. These included:

- Frogs such as the Green and Golden Bell Frog, Dwarf Eastern Tree Frog, and Perons Tree Frog;
- Reptiles such as the Eastern Blue-tongue, Eastern Water Dragon, Eastern Water Skink, Bar-sided Skink and Gully Skink;
- Small birds such as the Superb Fairy-wren and Silvereye;
- Wetland birds such as the Australian Reed-warbler, Black-fronted Dotterel, Black-winged Stilt, Buff-banded Rail and Royal Spoonbill;
- The Long-nosed Bandicoot, which was the only ground-dwelling indigenous mammal recorded; and
- Microchiropteran bats (microbats) such as Gould's Wattled Bat, Eastern Freetail Bat and Little Forest Bat.

These types of species were once common and widespread in the Sydney area (Major & Parsons 2010; Shea 2010; Recher 2010), but have declined and in many cases disappeared altogether in this LGA and many other highly urbanised areas, as discussed further in Section 3.5.

Three of the fauna species recorded, and one of the unconfirmed species, are currently listed as threatened (Table 4). The Long-nosed Bandicoot has also been included in Table 4 as an endangered population listing currently applies to the Marrickville, Leichhardt, Ashfield, Canada Bay, and Canterbury LGAs; the listing may be extended to the City of Sydney LGA given that the individuals present in the area are likely to be part of the wider inner west population.



Introduced birds that are common and widespread across the LGA: Common Myna (left), Rock Dove or feral pigeon (centre) and Common Starling (right).



a



b



c



d



e



f



g



h



i



j



k



l



m



n



o

Uncommon fauna species recorded in the LGA.

- a Eastern Dwarf Tree Frog (photo K. Oxenham)
- b Eastern Water Skink at Chinese Gardens, Darling Harbour (photo K. Oxenham)
- c Eastern Water Dragon at Chinese Gardens, Darling Harbour (photo K. Oxenham)
- d Eastern Blue-tongue at Sydney Park
- e Gully Skink (photo K. Oxenham)
- f Juvenile Eastern Long-necked Turtle at Wetland 1, Sydney Park (photo K. Oxenham)

- g Superb Fairy-wren (photo N. Lazarus)
- h Silvereye (photo N. Lazarus)
- i New Holland Honeyeater (photo N. Lazarus)
- j Buff-banded Rail in Royal Botanic Gardens
- k Australasian Grebe at Sydney Park
- l Royal Spoonbill at Sydney Park
- m Black-winged Stilt (photo J. Irvine)
- n Australian Reed-warbler at Sydney Park
- o Gould's Wattled Bat (photo M. Turton)

Table 4 Threatened species recorded within the LGA

Species	Conservation Status	Location	Details
Green and Golden Bell Frog	V (EPBC Act); E (TSC Act)	Rosebery	Small, declining population, with breeding habitat limited to small ponds in one residential backyard.
Grey-headed Flying-fox	V (EPBC Act); V (TSC Act)	Forages over wide area at night (former camp in Royal Botanic Gardens)	Variable numbers throughout the year.
Powerful Owl	V (TSC Act)	Royal Botanic Gardens	Two individuals regularly present.
Eastern Bent-wing Bat	V (TSC Act)	University of Sydney	Unconfirmed record (call could not be positively identified).
Long-nosed Bandicoot	EP (TSC Act)	Alexandria, University of Sydney	Records of three individuals to date, including one reported juvenile, in a community garden, park and university campus respectively.

V – vulnerable

E – endangered

EP – endangered population (currently not applicable to the City)



Threatened fauna species recorded in the LGA (although not a threatened species, the Long-nosed Bandicoot is included since individuals within the city may be part of an endangered population).

- a Green and Golden Bell Frog (photo K. Oxenham)
- b Grey-headed Flying-fox
- c Powerful Owl in the Royal Botanic Gardens

- d Eastern Bent-wing Bat (photo M. Turton)
- e Long-nosed Bandicoot at Alexandria (photo NPWS)

3.3 Community consultation

This section provides an overview of results from the community consultation process. The full community consultation report is provided as Appendix 4, and issues raised and other findings have been incorporated into the Plan where appropriate.

3.3.1 Community group consultation

Responses from the targeted community group consultation sessions were grouped into four categories; responses in each category are summarised below.

- Policy – the need for an over-arching City policy relating to biodiversity was identified to coordinate a consistent approach towards biodiversity management across the organisation;
- Procedures – it was considered that the City should put into place numerous procedures and processes, particularly to ensure City parks maintenance staff and contractors have appropriate qualifications and experience in biodiversity-friendly maintenance practices, but also to maximise the area of indigenous plantings and ensure appropriate management of companion and feral animals;
- Education and training – the establishment of biodiversity-related training programs for City staff and contractors was recommended, as was establishing educational programs for school and university students; and
- Community resources – it was recommended that the City review actions implemented by other councils, educational programs being implemented by others in the LGA, and consult with experts on local biodiversity issues in relation to development of this Plan.

3.3.2 Online survey findings

A total of 231 responses were received to the online survey. Respondents were predominantly local; 50 per cent identified themselves as residents and 27 per cent as workers in the LGA.

Ninety-eight respondents reported interesting/unusual fauna species they had observed in the city, and these were incorporated into the fauna species list for the LGA. They included the Red-bellied Black Snake, Superb Fairy-wren, Peregrine Falcon, Powerful Owl, White-headed Pigeon, Silveryeye, Eastern Long-necked Turtle, Eastern Blue-tongue, Tawny Frogmouth, and Common Ringtail Possum. Most of these were confirmed in the fauna surveys and/or by City staff.

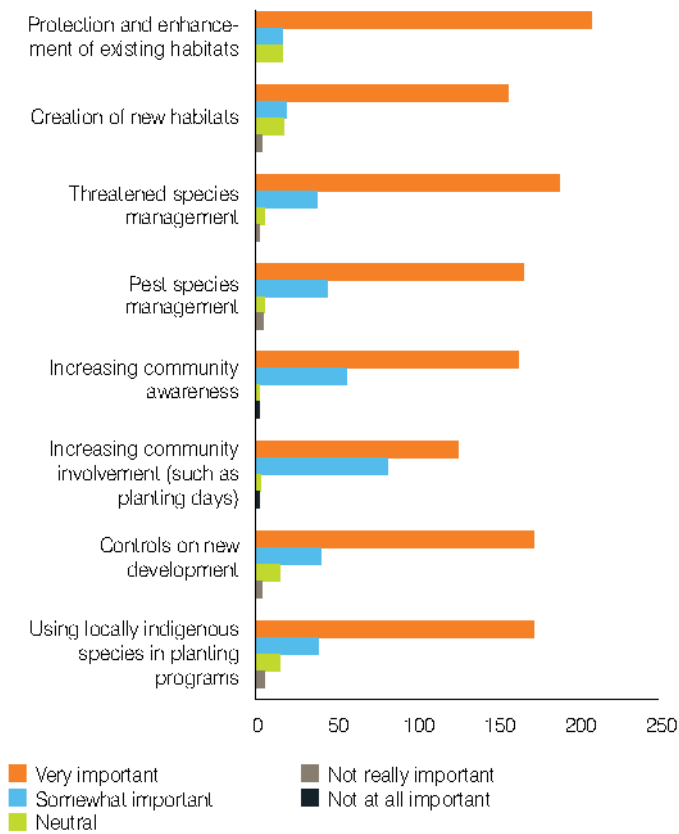


Tawny Frogmouths (photographed above in a Glebe backyard) were reported by a number of residents, as were Common Ringtail Possums (below).



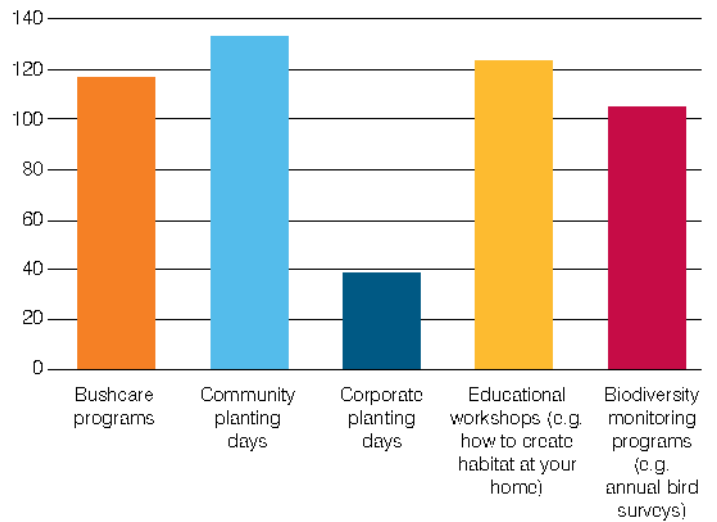
With regard to the importance of various activities that have potential to improve biodiversity in the LGA, the majority of respondents rated all activities listed in the survey as important, with protection and enhancement of existing habitats rated particularly important (Figure 9).

Figure 9 Rating of importance of activities in terms of improving biodiversity in the City



The survey also revealed substantial community interest in participating in bush restoration activities, community planting days, educational workshops and biodiversity monitoring programs (Figure 10). Among other things this indicates considerable potential for the formation of additional bush restoration groups in the LGA. Suitable sites at which such groups could work include Sydney Park, Moore Park, and small parks in Paddington, Green Square and Potts Point.

Figure 10 Interest in participating in biodiversity-related activities



3.4 Priority sites

Six high-priority sites were identified in the LGA based on the assessment of biodiversity values. These are listed below (note two comprise multiple sites in close proximity to each other):

- Sydney Park, St Peters;
- Glebe Foreshore Walk East – Orphan School Creek, Glebe-Forest Lodge;
- Pyrmont (sandstone cliffs and outcrops and bush restoration sites);
- the Royal Botanic Gardens and Domain (Yurong Precinct);
- Garden Island (northern end), Woolloomooloo; and
- Moore Park (Mt Steel, Moore Park Golf and Lake Kippax).

It should be noted the latter three sites are not managed by the City of Sydney, but are under the management of other agencies who have been consulted in the development of this Plan.

The biodiversity values of each site are briefly discussed in the following sections, as are the constraints that are likely to be affecting these values. Numerous smaller sites that provide an important role in supporting the priority sites are also briefly discussed.

3.4.1 Sydney Park

Biodiversity values

The high biodiversity values of this site (Figure 11) are attributable to the following:

- Large size (44 hectares);
- The presence of large, constructed freshwater wetlands and associated rocky drainage lines as well as planted woodland and forest patches;
- High flora species diversity (over 100 indigenous species recorded during the surveys, although many are not local);
- Relatively diverse fauna habitat features, including the wetlands, drainage lines and woodland and forest patches;
- The highest indigenous bird species diversity in the LGA (49 indigenous species recorded, 22 of which are wetland species and several of which were not recorded elsewhere in the LGA);
- The presence of one of few known populations of both the Superb Fairy-wren and Eastern Blue-tongue in the LGA;
- The presence of a breeding population of the Eastern Long-necked Turtle;
- High potential to re-establish elements of the likely original vegetation communities, including the endangered Eastern Suburbs Banksia Scrub, and expand on existing plantings that comprise elements of Coastal Sand Swamp Forest (representative of the endangered Swamp Sclerophyll Forest on Coastal Floodplains community) and Coastal Freshwater Reedland (representative of the endangered Freshwater Wetlands on Coastal Floodplains community); to increase the diversity of locally indigenous flora species; and to undertake fauna habitat enhancements without compromising the existing range of uses; and
- Potential to establish habitat connectivity with the Glebe Foreshore Walk East-Orphan School Creek corridor via the rail corridor and the University of Sydney; with sites in the Randwick LGA via landscaping associated with the future redevelopment of Green Square and other precincts in the southern part of the LGA and Moore Park; and with sites in the Marrickville and Botany Bay LGAs via landscaping associated with future redevelopments along Alexandra Canal.

Site constraints

Site constraints affecting the above biodiversity values include:

- Ongoing methane and leachate management issues resulting from the site's past use as a landfill have potential to effect vegetation growth;
- The structurally simple nature of most existing terrestrial plantings (comprising densely planted trees with no understorey), provide habitat for only the most common indigenous species, particularly aggressive and predatory birds;
- The very high density of trees in most terrestrial plantings limits both their potential to grow to full size and the space, light and nutrients required to enable an understorey to establish;
- The potential for dense stands of *Casuarina glauca*, which are already limiting plant diversity in some parts of the park due to the ability of this species to suppress the germination and growth of other species, to rapidly spread by vigorous suckers and outcompete other vegetation, particularly around wetlands and drainage lines, and to affect wetland health through shading;
- Limited staff knowledge or experience in bush regeneration and biodiversity management techniques further limits the potential for understorey establishment and other habitat enhancements;
- Reduced wetland health as a result of nutrient-rich mulch washing downslope from terrestrial garden beds due to the lack of stabilising understorey vegetation;
- The potential for increased volumes of water from stormwater harvesting to limit the implementation of best practice hydrological regimes, incorporating periods of at least partial drying, to ensure wetland health;
- Infestation of all wetlands with Mosquito Fishes likely to be limiting frog populations;
- Infestations of environmental weeds, particularly *Ludwigia* (Wetland 2), *Juncus acutus* (Wetland 4) and Golden Wreath Wattle (*Acacia saligna*);
- Heavy use for recreational activities including dog walking, cycling, organised sports and picnicking, which result in noise and physical disturbance to wetlands and other habitat areas.



Where present, dense understorey provides habitat for small birds at Sydney Park (left), and a densely vegetated bioretention swale and bird roosting posts installed as part of a stormwater harvesting project provide good habitat at Wetland 4, Sydney Park (right).



Fauna at Sydney Park includes a range of wetland birds, including the Black Swan (left, at Wetland 2), which is one of several species that breed at the park, and the Black-fronted Dotterel (right, at Wetland 4).



FIGURE 11
Sydney Park

- Indigenous/Mostly Indigenous Plantings
- Freshwater Wetlands
- Major Weed Infestation
- Drainage line
- Open drainage channels



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3.4.2 Glebe Foreshore Walk East to Orphan School Creek

Biodiversity values

The high biodiversity values of this 'site' (Figure 12a-c), which comprises several large parks – the Glebe Foreshore Walk, Blackwattle Bay Park, Bicentennial Park, Federal Park, Jubilee Park and Orphan School Creek – and a number of pocket parks adjoining Johnstons Creek Canal – including AV Henry Reserve, Minogue Crescent Reserve, Lewis Hoad Reserve, Canal Reserve, JV McMahon Reserve, Wigram Road Reserve and Spindler Reserve in the Leichhardt LGA – are attributable to the following:

- Relatively large size, incorporating several bush restoration sites;
- Relatively continuous area of open space from the Glebe Foreshore to Forest Lodge, a distance of 2.5 kilometres;
- Presence of a possible remnant tree representative of the critically endangered Sydney Turpentine Ironbark Forest community, near Orphan School Creek;
- Presence of the endangered Coastal Saltmarsh community, in Federal, Bicentennial and Jubilee Parks;
- Presence of a possible remnant tree representative of the endangered River-flat Forest on Coastal Floodplains community (Swamp Forest/Alluvial Forest map unit) in Lewis Hoad Reserve;
- Presence of the only patches of Mangrove Forest that occur within the LGA, on the Rozelle Bay foreshore;
- Presence of naturally occurring flora species that occur in association with sandstone outcrops;
- Very high flora species diversity (over 100 locally indigenous species recorded) as a result of bushland restoration works at numerous sites, mostly by volunteers from the Glebe Bushcare Group;
- Diverse fauna habitat features, including sandstone outcrops and retaining walls, a rocky modified creekline and other ground-level habitat features such as fallen timber, a small freshwater pond and freshwater seepages, structurally complex patches of locally indigenous vegetation, and intertidal habitats;
- The presence of one of only two known populations of both the Bar-sided Skink and Eastern Water Skink in the LGA;
- High potential to expand bush restoration works and increase the diversity of locally indigenous flora species, and to undertake fauna habitat enhancements;
- High potential to expand on planted elements of the endangered Swamp Oak Floodplain Forest community that are already present in the park, using shrubs and groundcovers of this community;
- The greatest potential to provide an almost continuous (albeit narrow) habitat corridor in the LGA, with connectivity to habitat areas in the Leichhardt LGA, and potential for connectivity to be established with sites at Pyrmont along the future Glebe Foreshore Walk extension, and new parks that will be created in this area in the future at Harold Park, the Hill and Crescent Land sites; and
- Potential for naturalisation of Johnstons Creek Canal, to not only improve habitat for Coastal Saltmarsh but also to benefit a range of estuarine fauna species, including wetland birds, fish and aquatic invertebrates.

Site constraints

Site constraints affecting the above biodiversity values include:

- The limited extent and poor condition of Coastal Saltmarsh along Johnstons Creek Canal due to the presence of self-sown Phoenix Palms (which have reduced the area of tidal inundation by raising the soil surface elevation, and cause shading), and trampling and soil compaction by park users and dogs;
- Limited overall contract staff knowledge and experience in bush regeneration and biodiversity management techniques (although the fenced Coastal Saltmarsh in Federal Park and most of Orphan School Creek are well-maintained by specialist bush regeneration contractors);
- The narrow, linear nature of the potential corridor, since corridors of this type are of limited value to some priority fauna species (refer Section 3.3.2);
- The occurrence of environmental weeds, particularly annuals and Chinese Hackberry *Celtis sinensis*; and
- Heavy use of the Glebe Foreshore Walk, Blackwattle Bay Park, Bicentennial Park, Jubilee Park, and Federal Park for recreational activities including dog walking, cycling, organised sports and picnicking, which result in noise and physical disturbance to habitat areas.



Bush restoration sites at Blackwattle Bay Park (left) and Orphan School Creek (right) (photos K. Oxenham)



Bar-sided Skinks inhabit sandstone outcrops and retaining walls along the Glebe Foreshore Walk (left, photo K. Oxenham) and the intertidal zone provides habitat for estuarine species like the Striated Heron (right, photo J. Irvine).

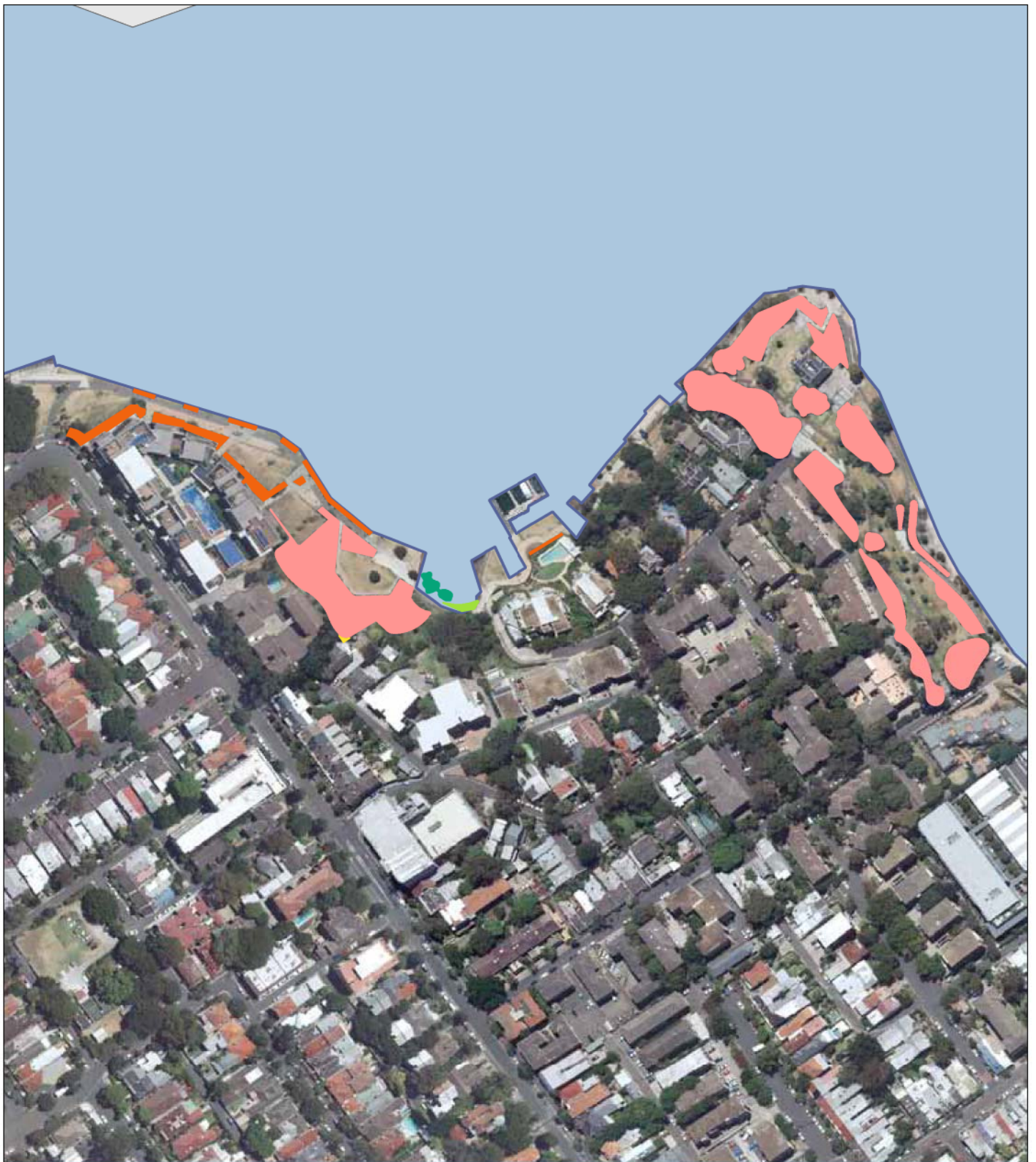
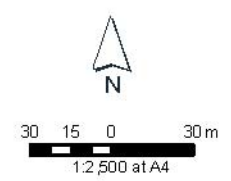


FIGURE 12a
Blackwattle Bay Park to Bicentennial Park

- Coastal Sandstone Outcrop Complex
- Coastal Saltmarsh
- Mangrove Forest
- Bush Restoration Sites
- Indigenous/Mostly Indigenous Plantings




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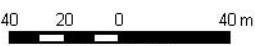


FIGURE 12b
Bicentennial Park to Harold Park

- Coastal Sandstone Outcrop Complex
- Coastal Saltmarsh
- Mangrove Forest
- Bush Restoration Sites
- Indigenous/Mostly Indigenous Plantings
- Major Weed Infestation





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CITY OF SYDNEY

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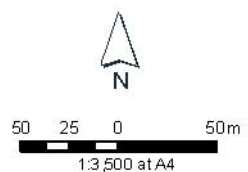


FIGURE 12c
Harold Park to Orphan School Creek

- Coastal Sandstone Outcrop Complex
- Bush Restoration Sites
- Indigenous/Mostly Indigenous Plantings
- Major Weed Infestation

Possible Remnant Trees

- Rough barked Apple (*Angophora floribunda*)
- Sydney Turpentine Ironbark Forest
- Bangalay (*Eucalyptus botryoides*)
- Coastal Swamp/Alluvial Forest



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3.4.3 Pyrmont

Biodiversity values

The high biodiversity values of this 'site' (Figure 13), which comprises several sandstone cliffs and outcrops and bush restoration sites, is attributable to the following:

- Sandstone cliffs and outcrops that, although modified, provide similar habitat to natural sandstone features that are likely to have once been more widespread in the LGA and that provide a refuge for ferns and other naturally occurring flora species;
- Very high flora species diversity as a result of bushland restoration works undertaken by Pyrmont Ultimo Landcare volunteers, with approximately 120 indigenous species recorded during the surveys;
- High potential to expand bush restoration sites and increase the diversity of locally indigenous flora species, and potential to undertake fauna habitat enhancements;
- Clear demonstration of the potential for bushland restoration in even the most highly urbanised areas;
- Reasonable connectivity between most cliffs and outcrops and bush restoration sites along the light rail corridor, which although currently weed-infested provides suitable habitat for small birds and reptiles; and
- Potential for future connectivity with the Glebe Foreshore Walk to Orphan School Creek corridor as a result of the future Glebe Foreshore Walk extension.



Bush restoration site adjoining sandstone cliff (left) and naturally occurring ferns and figs on modified sandstone cliff (right).

Site constraints

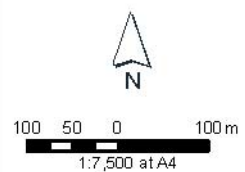
Site constraints affecting the above biodiversity values include:

- The relatively small size of this 'site';
- The high concentration of tall buildings and other features such as road overpasses affect vegetation growth by limiting sunlight and/or rainfall at parts of the 'site';
- Infestations of environmental and noxious weeds including Fountain Grass, Asthma Weed, Lantana, Chinese Hackberry, and Crofton Weed, especially on cliff faces and along the light rail corridor, but also on some parts of the foreshore (although as mentioned above these weeds provide suitable habitat for some fauna); and
- Steep terrain poses access, safety and cost issues for bush restoration works.



FIGURE 13
Pymont

- Coastal Sandstone Outcrop Complex
- Bush Restoration Sites
- Indigenous/Mostly Indigenous Plantings
- Major Weed Infestation



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3.4.4 Royal Botanic Gardens and Domain (Yurong Precinct)

Biodiversity values

This site (Figure 14) has the highest biodiversity values in the LGA, attributable to the following:

- Large size (53 hectares);
- The most intact and extensive sandstone outcrops within the LGA, within the Yurong Precinct of the Domain (Mrs Macquaries Point);
- Possible remnant trees representative of the endangered River-flat Eucalypt Forest community;
- Possible remnants of the Coastal Sandstone Foreshores Forest, Coastal Littoral Rainforest and Coastal Cliff Soak communities;
- Very high diversity of flora species, both exotic and indigenous;
- The largest assemblage of locally indigenous species considered likely to be naturally occurring in the LGA – a total of 27 tree, shrub and groundcover species that mainly occur in association with sandstone outcrops;
- The presence of the Growing Friends nursery, at which indigenous and exotic species are propagated and sold to the public, with the assistance of volunteers from the Foundation and Friends of the Botanic Gardens;
- Diverse fauna habitat features, including sandstone cliffs, outcrops and retaining walls, freshwater ponds and associated drainage lines, a sculpture designed to provide microbat roosting habitat, structurally complex plantings from a range of exotic and indigenous vegetation types within the Royal Botanic Gardens (including themed areas such as the Tropical Centre and Rainforest Walk), and structurally complex patches of locally indigenous vegetation created through past bush restoration works in the Yurong Precinct;
- High fauna species diversity – 34 indigenous species recorded, including 25 birds, and two threatened species (the Powerful Owl, a pair of which appears to be resident in the Royal Botanic Gardens, and the Grey-headed Flying-fox, which is likely to continue to forage at the site despite the recent camp relocation);

- The only site at which the Eastern Dwarf Tree Frog and Buff-banded Rail were recorded in the LGA, and one of only two sites at which the Eastern Water Dragon was recorded;
- The only site at which Little Pied Cormorants and Little Black Cormorants nest in the LGA;
- Vegetation and habitats are relatively well-protected from disturbance as pets are prohibited and the site is closed to public access at night;
- High potential to expand bush restoration works and increase the diversity of locally indigenous flora species; such works were identified by the Royal Botanic Gardens and Domain Trust as one of several 'Future Domain' proposals that may be implemented in the lead-up to the bicentenary of the Royal Botanic Gardens in 2016 (Royal Botanic Gardens and Domain Trust website); and
- Existing volunteer base through the Foundation and Friends of the Botanic Gardens.

Site constraints

Site constraints affecting the above biodiversity values include:

- The primary function of the site as a Royal Botanic Garden, i.e. to maintain a living plant collection, including rare specimens, for education and botanical research, which is not always compatible with the provision of fauna habitat;
- Disturbance from high levels of public use; and
- High levels of bird feeding by the public, and the likelihood for this to encourage species that are common and widespread, including nuisance species, potentially to the detriment of uncommon/declining species, as well as to private property and/or resident amenity.



Little Black and Little Pied Cormorant nesting colony (left) and juvenile Eastern Water Dragon in the Royal Botanic Gardens (right) (photos K. Oxenham).



Plantings of mostly indigenous on the eastern side of the Yuroung Precinct (left), and indigenous plantings in the Royal Botanic Gardens (right).

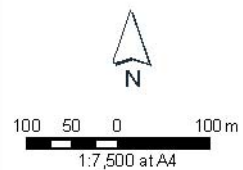


FIGURE 14
Royal Botanic Gardens and Domain

- Coastal Sandstone Outcrop Complex
- Indigenous Plantings/Naturally occurring Vegetation
- Indigenous/Mostly Indigenous Plantings
- Ponds
- Drainage line

Possible Remnant Trees

- Swamp Oak (*Casuarina glauca*)
- Coastal Swamp/Alluvial Forest
- Forest Red Gum (*Eucalyptus tereticornis*)
- Coastal Swamp/Alluvial Forest



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