City of
Bayswater

Berringa Park Wetlands
Conservation Plan 2020 - 2030

Natural Area
CONSULTING MANAGEMENT SERVICES

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Contents

1.0 Introduction

The City of Bayswater engaged Natural Area Consulting Management Services (Natural Area) in March 2020 to prepare a conservation plan to restore the Berringa Park Wetlands and to identify roles and responsibilities of stakeholders involved in the maintenance of the reserve. The site is located in the south ward of the City, bordered by the Maylands Peninsula Golf Course, Maylands Yacht Club, Woodhouse Road/Tony Di Scerni pathway and the Swan River. Berringa Park Wetlands occupies an area of approximately 14 hectares (Figure 1).

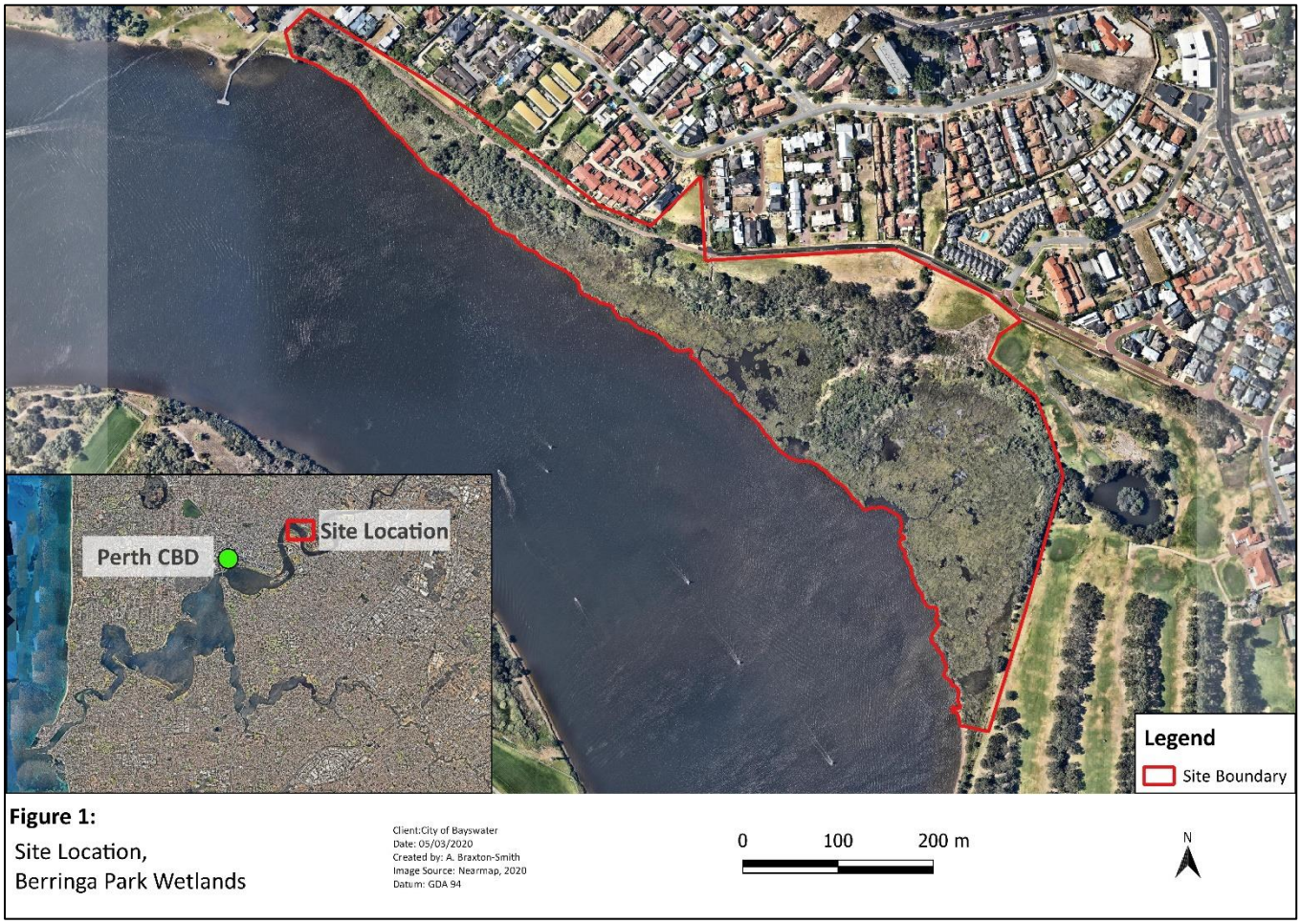


Figure 1:
Site Location,
Berringa Park Wetlands

Vegetation on site consists of excellent condition saltmarsh adjacent the Swan River, bordered by areas of poor quality vegetation. The site has high densities of weeds including but not limited to:

- Invasive running grasses such as Couch and Kikuyu
- Arum Lily (*Zantedeschia aethiopica*), Declared Pest
- Blackberry (*Rubus laudatus*), Declared Pest
- Brazilian Pepper (*Schinus terebinthifolia*)
- Common Lantana (*Lantana camara*), Declared Pest
- Pampas Grass (*Cortaderia selloana*)
- Paspalum (*Paspalum dilatatum*).

A flora survey undertaken in March 2020 determined four vegetation types (Appendix 1), with the *Juncus kraussii* Sedgeland being assessed as a threatened ecological community; this is consistent

with the Subtropical and Temperate Coastal Saltmarsh listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (Department of Biodiversity, Conservation and Attraction, 2020b). Vegetation condition cover for Berringa Park Wetlands is provided in Appendix 2, flora species lists in Appendix 3 and flora quadrat data in Appendix 4. Fauna species were recorded on observation during the March 2020 survey with two mammals, 29 birds, 2 reptiles, one amphibian, three invertebrates and one Cnidarian recorded (Appendix 6).

1.1 Conservation plan aim

The conservation plan will aim to:

- guide revegetation over 10 years
- describe revegetation methodologies
- cost proposed works
- provide an indicative implementation schedule
- identify stakeholder roles and responsibilities.

2.0 Roles and responsibilities

Berringa Park Wetlands has a number of built and natural elements that are required to be maintained to ensure service delivery. Table 1 identifies the relevant management items and their requirements.

Table 1: Management Roles and responsibilities

Management item	Responsibility	Action required
Dual use path	Engineering Services	▪ Undertake and document quarterly inspections ▪ Budget depreciation ▪ Undertake repairs as required
Domestic animals	Rangers and security	▪ Undertake periodic patrols ▪ Enforce local laws for dogs and cats
Mosquito and midge management	Environmental Health	▪ Undertake monitoring and implement control measures as required
Mowing	Parks and Gardens	▪ Maintain grass areas prevent infestation into natural areas
Natural area maintenance	Sustainability and environment	▪ Maintain natural areas for biodiversity
Rehabilitation of natural areas	Sustainability and Environment	▪ Implement a 10 year revegetation program
Trees within Natural areas	Sustainability and Environment	▪ Undertake inspections and maintain as required
Trees within Parkland	Parks and Gardens	▪ Undertake inspections and maintain as required
Water quality monitoring	Sustainability and environment	▪ Periodic monitoring of water quality monitoring

3.0 Revegetation Plan

Revegetation works specified within this plan are planned to occur over a ten-year period from 2020 – 2030 within degraded areas. The degraded area has been split into 10 revegetation zones (Table 2). Activities associated with revegetation include:

- clearing and removal of non-endemic vegetation
- site preparation including removal of rubbish and other deleterious materials
- pre-planting weed control
- manual weed removal
- installation of tubestock
- post planting weed control
- monitoring
- infill planting.

Figure 2:
Revegetation Zones
Berringa Park Wetlands

Table 2: Revegetation zones

Berringa Park Wetlands	Area (m2)
Zone 1 – includes proposed living stream	4,700
Zone 2	4,700
Zone 3	4,700
Zone 4	4,700
Zone 5	4,700
Zone 6	4,700

Berringa Park Wetlands	Area (m2)
Zone 7	4,700
Zone 8	4,700
Zone 9	4,700
Zone 10a	2,849
Zone 10b	1,829
Zone 10 additional slope area	1,000

3.1 Weed Management

Weed management considerations include:

- weed type
- treatment priority
- area of infestation and population density
- control methods
- access considerations
- presence of native flora and fauna species
- management of community members near active weed control works.

Management Strategies

Weed management strategies involves the removal of weeds from a designated area by manual, chemical, or biological treatment methods, with manual and chemical treatments being the most common. Control techniques for target weed species depend on the plant characteristics including its rate of growth, regenerative capacity and the presence of non-target species or other sensitive areas, such as threatened and/or priority flora and/or fauna.

Manual Weed Control

Manual control typically involves the removal of the nominated weed either mechanically (machine) or by hand. Removal of woody weeds (trees and shrubs with woody stems), will often involve the following:

- manual (‘hand’) removal of plant – physically removing the plant by hand or using hand-operated tools to assist with removal
- cut and paint – removal of woody weeds by trimming and then cutting trunk at the base followed by painting of the stump with herbicide; the stump will break down over time
- stem injection – injecting the stem of woody weeds at a nominated location with herbicide to kill the plant
- brush cutting/slashing – using a line trimmer or similar for weed control rather than removal; effective on long, grassy weeds
- stump removal – if required, a stump grinder can be used to removal the large woody mass left behind, encouraging faster break down of plant remains.

Advantages of manual weed control:

- particular species can be targeted rather than ‘blanket’ control
- can significantly reduce the weed seed bank when plants and all seeds are removed
- mechanical removal is the most successful method of eradicating rhizomatous weeds as all the root mass can be removed
- plants will not develop a ‘resistance’ to the control method

- can be used effectively in conjunction with other methods
- avoids the use of chemicals that could pose a risk to non-target areas and operators.

Disadvantages of manual weed control:

- the process can be laborious and time-consuming, meaning that it is not economical for many weed types
- seed bank within the topsoil will provide the basis for new infestations
- key areas of plants can be left behind, such as bulbs or corms that can regrow under favourable conditions
- large numbers of people hand weeding can result in greater damage to sensitive bushland areas.

Chemical Weed Control

The use of herbicides is the most common and cost-effective method of controlling many environmental weeds. Chemical control can be targeted at a particular species or weed class, with large areas being treated in a cost effect manner. There are a range of herbicides in common usage with differing active ingredients that target different weed types.

Advantages of chemical weed control include:

- results apparent in a short time frame
- more likely to be effective on the entire plant
- can treat large areas in a cost-effective manner.

Disadvantages of chemical controls include:

- some plants, particularly those that have tuberous or rhizomatous root systems, may require follow up treatments to ensure effective control
- some plants can develop a resistance to a particular herbicide
- herbicides have the potential to impact non-target flora and fauna species
- potential health effects on operators need to be considered and managed
- the use of herbicides by contractors are subject to complying with:
  - off-label permits for use in bushland areas (Australian Pesticides and Veterinary Medicines Authority)
  - operator licence requirements by the Department of Health WA.

Weed Treatment

Various treatments are commonly used in natural areas that allow the targeting of weeds with minimal off-target damage to native plants. Best practice application methods should be applied, including the following:

- do not spray over standing water
- use lowest possible spray pressure to reduce spray drift
- do not spray in windy conditions to avoid spray drift
- do not spray if rainfall is forecast within the rainfast period as per label recommendations.

Treatment methodologies for the species present at Berringa Park Wetlands are summarised below in Table 3. Weed maps for Berringa Park Wetlands are provided in Appendix 5.

Weed Control Post Revegetation

General weed control activities should be carried out each year in revegetation zones following the completion of revegetation works to ensure weeds do not reinstate in these areas. Weed control should be undertaken in conjunction with quarterly maintenance activities occurring in January, April, July and October each year. Quarterly weed control should focus on areas that are not undergoing initial weed treatments to reduce the potential for weeds to germinate post planting. This will enhance the survival of the plantings by keeping weed coverage low and reducing competition for resources. Refer to Table 3 for weed treatments and timings to control particular weeds.

Table 3: Weed control methodologies

Species	Common Name	Treatment Type	Timing
Agapanthus praecox		▪ Small infestations can be dug out all year round, making sure all rhizomes are removed and destroyed off site ▪ Spray with 1% Grazon® prior to flowering ▪ Moderately resistant to herbicides so the use of a surfactant can help with penetration of the waxy leaves as long as the plant is away from waterways	Jan-Dec, Aug-Nov/Dec
Anredera cordifolia	Madeira Vine	▪ Hand weed seedlings less than 3 cm tall and make sure the tubers are entirely removed ▪ Basal bark or drill and fill thick vines with 100% glyphosate ▪ Cut stems, paint stumps with a solution of 50% glyphosate ▪ Intensive follow up of reshoots two to three times a year for up to ten years	Sep-May
Carex divisa	Divided Sedge	▪ Manual removal all year round ▪ Foliar spray with 1% glyphosate	Jan-Dec, Aug-Oct
Casuarina glauca		▪ Hand weed seedlings ▪ Mature plants apply 50% glyphosate to basal bark 50 cm of trunk or drill and fill	Sep-Mar
Cenchrus clandestinus	Kikuyu	▪ Spray with 1% glyphosate or Fusilade® Forte at 16 mL/L	Nov-Jan
Chamaecytisus palmensis	Tagasaste	▪ Hand weed seedlings ▪ Mature plants apply 50% glyphosate to basal bark 50 cm of trunk or drill and fill	Mar-Sep
Colocasia esculenta	Taro	▪ Cut plants to base, paint Metsulfuron methyl 0.05 g/L + 50% glyphosate ▪ Six weeks later spray regrowth with Metsulfuron methyl 0.05 g/L + 1% glyphosate	Nov-Mar
Cortaderia selloana	Pampas Grass	▪ Cut out small plants remove to avoid resprouting ▪ Treat young plants with 13 mL/L Fusilade Forte® ▪ Alternatively, foliar spray with 4% glyphosate ▪ Remove flower heads, slash and spray 1% glyphosate in spring	Jul-Nov
Cynodon dactylon	Couch	▪ Small infestations can be dug out, making sure all rhizomes and stolons are removed, but herbicides are best treatment ▪ Spray Fusilade Forte® at 13 mL/L when plants are small and beginning new growth, or 1% glyphosate in late spring/summer and autumn when rhizomes are actively growing ▪ Follow up always required	Nov-Feb/Apr

Species	Common Name	Treatment Type	Timing
Dipogon lignosus	Dolichos Pea	▪ Hand weed seedling and small plant ensuring removal of all root material ▪ Cut vines of larger plants and leave to dry in canopy and dig out woody roots, scrape and paint using 100% glyphosate ▪ Or Foliar spray in highly degraded areas with 1.5% glyphosate before fruit develops ▪ In sensitive areas, like wetlands, cut stems off at chest height, lay lower to the ground and spray 1.5% glyphosate	Sep-Oct
Eragrostis curvula	African Lovegrass	▪ Manually dig out plant making sure all root material is removed ▪ Alternatively apply 2% glyphosate (Roundup Biactive®) when the plant is green and actively growing before the seed is set	Jul-Dec
Ficus carica	Common Fig	▪ Hand weed seedlings ▪ Stem inject with 50% glyphosate and foliar spray regrowth with 10% glyphosate ▪ Stems less than 30 cm apply 2% glyphosate to basal bark 50 cm of trunk	Nov/Dec-Feb/Mar
Gomphocarpus fruticosus	Narrowleaf Cottonbush	▪ Hand weed small plants ensuring the removal of as much root material as possible, if the plant has fruit and/or seeding remove fruits and seed pods and put into bags and dispose away from site ▪ Foliar spray with 1.5% glyphosate or cut and paint using 50% glyphosate before fruit set spring to early summer	Jan-Dec, Sep-Dec
Ipomoea cairica	Coast Morning Glory	▪ Hand weed seedlings ensuring removal of all root material and all stem material in contact with soil ▪ Severe vines at base and leave to dry in canopy or cut thin vines at chest height, then lie them on ground and apply herbicide spray ▪ For thicker vines, scrape and paint stem 20-100% glyphosate ▪ Monitor for the next two years	Jan-Dec
Lactuca serriola	Prickly Lettuce	▪ Manually remove small or isolated infestations, ensuring the entire plant and taproot are removed ▪ Apply glyphosate or Metsulfuron methyl 5 g/ha at early growth or rosette stages in spring, summer and autumn ▪ Once flowering stems have begun to elongate, plants are hard to control with herbicide	Jun-Jan, Sep-Nov
Lantana camara	Lantana	▪ Apply 2% glyphosate to base 50 cm of stems (basal bark) or	Mar-May

Species	Common Name	Treatment Type	Timing
		▪ Foliar spray with 1.5% glyphosate	
Olea europaea	Olive	▪ Hand pull or dig out seedlings and small plants ensuring removal of all roots ▪ For mature plants cut to base and paint or basal bark the base 50 cm of trunk with 50% glyphosate ▪ Monitor sites for seedling recruitment	Mar-May, Oct-Dec
Paspalum dilatatum		▪ Cut out small populations and isolated plants, ensuring rhizome removal and remove seed heads for safe disposal ▪ At early head stage spray with 1% glyphosate, and for established actively growing adult plants spray Fusilade Forte® 16 mL/L ▪ Older stands can be controlled with 1% glyphosate, preferably pre or early flowering ▪ Alternatively cut near ground and wipe with 10% glyphosate, with repeat application may be required for well-established plants ▪ Follow up control for seedlings with 2 mL/L Fusilade Forte®	Nov-Mar
Ricinus communis	Castor Oil Plant	▪ Hand weed small plants ensuring roots are removed ▪ Cut and paint or basal bark base 50 cm of trunk using 50% glyphosate ▪ Foliar spray seedlings and small plants using 1% glyphosate	Sep-Dec
Rubus laudatus	Blackberry	▪ Spray with Metsulfuron 1 g/10 L in summer and autumn (will require follow up for a number of years) ▪ For small infestations or in sensitive areas hand weed small plants and seedlings ▪ For larger plants cut and paint with 20-50% glyphosate or slash canes ▪ Spray regrowth at 50 cm with Metsulfuron methyl 1 g/ 10L in summer and autumn	Aug-Jan
Schinus terebinthifolia	Brazilian pepper	▪ Hand pull seedlings ensuring removal of all root material ▪ Stem inject older plants or basal bark base 50 cm of trunk using 50% glyphosate during summer ▪ Avoid root disturbance until trees are confirmed dead	Dec-Mar
Stenotaphrum secundatum	Buffalo Grass	▪ Spray with 1% glyphosate two to three times over a single growing season, alternatively spray Fusilade Forte® 13 mL/L ▪ Solarisation over warmer months can be useful for small isolated infestations	Nov-May

Species	Common Name	Treatment Type	Timing
Solanum nigrum	Black Berry Nightshade	▪ Prevent seed set for several years ▪ Hand weed small infestations ▪ Manually remove plants before flowering ▪ Spray 1% glyphosate before fruiting stage	Jun-Nov, Jul-Dec
Symphyotrichum squamatum	Bushy Starwort	▪ Hand weed isolated plants before seed set ▪ Alternatively use 1% glyphosate before seeding stage all year round	Dec-Jan
Zantedeschia aethiopica	Arum Lily	▪ Spot spray Metsulfuron methyl 0.4 g/15 L of water (or 5 g/ha) +225 mL glyphosate (non-selective so apply caution amongst natives) ▪ Otherwise Metsulfuron methyl or Chlorsulfuron 0.4 g/15 L of water (or 5 g/ha) for a more selective approach ▪ Herbicide application can send some tubers into dormancy therefore any control program needs to continue for at least 5 years	Jul-Sep

Source: FloraBase (Department of Biodiversity, Conservation and Attractions, 2020)

3.2 Biomass removal

Certain species will require intensive physical removal once properly treated, to allow for successful revegetation works. The following species will require clearing once treated:

- *Casuarina glauca*
- Castor Oil Plant
- Pampas Grass
- Blackberry
- Common Fig
- *Paspalum*
- *Schinus terebinthifolia*
- *Typha orientalis* (where necessary for the management of other weeds or to maintain drainage flow).

Clearing methodologies are summarised below in Table 4.

Table 4: Clearing methodologies

Species	Common Name	Removal methodology
Casuarina glauca		Cut and mulch back onto the site. Disturbance will promote suckering. Ensure the plant is dead before cutting and mulching.
Cortaderia selloana	Pampas Grass	Slash and mulch leaf material and stumps as low as possible. Retreat any regrowth.
Ficus carica	Common Fig	Cut and mulch back onto the site. Stumps need to be painted with herbicide immediately after cutting.
Paspalum dilatatum		Once treated with herbicide, slash and mulch finely. Material will quickly breakdown.
Ricinus communis	Castor Oil Plant	Cut and mulch large specimens, removing any seed present. Small plants are easily hand removed and can be laid down with roots exposed. Plants will quickly decompose.
Rubus laudatus	Blackberry	Slash thickets to allow access for further treatment and treatment of regrowth.
Schinus terebinthifolia	Brazilian pepper	Cut and mulch back onto the site. Disturbance will promote suckering. Ensure the plant is dead before cutting and mulching.
Typha orientalis	Bulrush	Slash and mulch finely. *Typha* mulch will suppress other weeds and will break down quickly into the site. *Typha* will recolonise the area quickly.

3.3 Planting

Plantings will consist of mostly understorey species as the existing tree canopy across the site is adequate and native understorey is largely lacking or consists of weed species. Revegetation species were selected based on the native flora recorded across the site and additional species that are likely to occur in the vegetation types present. The revegetation works have been split into 10 revegetation zones for the 10 year plan (refer to Table 2). Planting density for overstorey (trees) is recommended to be 1 plant per 10 square meters and understorey species at one plants per square meter. Planting species and their densities (%) within each of the vegetation types are provided in Table 5.

Plant species prescribed for the revegetation zones have been split into five groups or mixes based on the vegetation type present (Figure 3, Table 5), these and their indicative number of plantings are:

- emergent freshwater (2,230 plants, 1 plant/m^2)
- wetland brackish (10,130 plants, 1 plant/m^2)
- wetland understorey and canopy restoration (4,870 understorey plants; 487 trees 1/10 m^2, understorey 1 plant/m^2, Figure 4)
- wetland understorey (24,760 plants, 1 plant/m^2)
- woodland understorey (dryland) (1,000 plants, 1 plant/m^2).

Figure 3:
Planting Mix Areas
Berringa Park Wetlands

As site conditions may be subject to change once weed management has taken place, each zone should be inspected prior to ordering plants and adjustments made based on the presenting conditions. Specific numbers of species should also be prescribed as per the vegetation cover and condition at the time of plant ordering.

Table 5: Indicative planting species and percentage for each category

Species Name	Common Name	Species Composition (%)
Emergent Fresh Water		
Baumea articulata	Jointed Rush	10
Baumea juncea	Bare Twigrush	10
Baumea preissii		10
Baumea rubiginosa		10

Species Name	Common Name	Species Composition (%)
Carex fascicularis	Tassel Sedge	10
Carex tereticaulis		10
Centella asiatica	Centella	10
Gahnia decomposita		5
Isolepis cernua	Nodding Club-rush	10
Melaleuca lateritia	Robin Redbreast	5
Schoenoplectus tabernaemontani		10
Wetland Brackish		
Frankenia pauciflora	Seaheath	10
Gahnia trifida	Coast Saw-sedge	5
Juncus kraussii	Sea Rush	20
Myoporum caprarioides	Slender Myoporum	5
Samolus repens	Creeping Brookweed	10
Tecticornia lepidosperma		10
Tecticornia halocnemoides	Shrubby Samphire	10
Tecticornia indica subsp. bidens		15
Salicornia quinqueflora	Beaded Samphire	15
Wetland Understorey & Canopy Restoration		
Astartea scoparia	Common Astartea	4
Banksia littoralis	Swamp Banksia	3
Baumea articulata	Jointed Rush	7
Baumea juncea	Bare Twigrush	8
Baumea preissii		8
Baumea rubiginosa		8
Carex fascicularis	Tassel Sedge	7
Carex tereticaulis		7
Centella asiatica	Centella	8
Eucalyptus rudis	Flooded Gum	3
Gahnia decomposita		7
Gastrolobium ebracteolatum		3
Melaleuca rhaphiophylla	Swamp Paperbark	4
Hakea varia	Variable leaved hakea	3
Hypocalymma angustifolium	White Myrtle	4
Melaleuca lateritia	Robin Redbreast	3
Melaleuca teretifolia	Banbar	3
Pericalymma ellipticum	Swamp Teatree	4
Pteridium esculentum	Bracken	3
Taxandria linearifolia	Swamp Peppermint	3
Wetland Understorey		

Species Name	Common Name	Species Composition (%)
Astartea scoparia	Common Astartea	5
Baumea juncea	Bare Twigrush	15
Carex fascicularis	Tassel Sedge	15
Carex tereticaulis		15
Centella asiatica	Centella	15
Hakea varia	Variable leaved hakea	5
Hypocalymma angustifolium	White Myrtle	5
Melaleuca lateritia	Robin Redbreast	5
Melaleuca teretifolia	Banbar	5
Pericalymma ellipticum	Swamp Teatree	5
Pteridium esculentum	Bracken	5
Taxandria linearifolia	Swamp Peppermint	5
Woodland Understorey (Dryland)		
Acacia pulchella	Prickly Moses	4
Astartea scoparia	Common Astartea	4
Baumea juncea	Bare Twigrush	8
Bossiaea eriocarpa	Common Brown Pea	4
Calytrix fraseri	Pink Summer Calytrix	4
Centella asiatica	Centella	8
Gastrolobium ebracteolatum		4
Gompholobium tomentosum	Hairy Yellow Pea	4
Hardenbergia comptoniana	Native Wisteria	7
Hovea trisperma	Common Hovea	7
Hypocalymma angustifolium	White Myrtle	4
Kennedia prostrata	Scarlet Runner	7
Lechenaultia floribunda	Free-flowering Leschenaultia	7
Patersonia occidentalis	Purple Flag	8
Pericalymma ellipticum	Swamp Teatree	4
Phlebocarya ciliata		8
Pteridium esculentum	Bracken	4
Taxandria linearifolia	Swamp Peppermint	4

Figure 4:
Canopy Revegetation
Berringa Park Wetlands

3.4 Slope stabilisation

A small section at the eastern end of Zone 10a (adjacent to Zone 6) will be stabilised and revegetated. Works in this area will consist of:

- Installation of coir matting to an ~1,000m^2 area
- Installation of tubestock to the matted area at a rate of 1 plant per square metre.

The recommended species mix for this area at shown in Table 6.

Table 6: Indicative dryland slope planting species mix

Species Name	Common Name
Dryland Slope Stabilisation	
Eremophila glabra (prostrate)	Tar Bush
Grevillea crithmifolia	
Hemiandra pungens	Snakebush
Jacksonia calcicola	
Rhagodia baccata	Berry Saltbush
Scaevola crassifolia	Thick-leaved Fan-flower

3.5 Capital works

Indicative costings for various capital works projects which may be applicable to this site are provided in Table 20. Costs are provided for:

- Installation of a crushed limestone pathway
- Installation of bench seating
- Interpretive signage
- Supply and installation of a bridge across the living stream (options provided for supply of a composite structure as well as a timber structure).

Any works of this nature may require capital works funding and as such have not been considered as part of this conservation plan.

3.6 Post Revegetation Works

Following the completion of revegetation works quarterly site inspections should continue occurring in January, April, July and October each year. If required, weed control should be undertaken to prevent weed re-establishing within the site and keep competition for revegetation plantings to a minimum so they can establish.

4.0 Works plan

Indicative works schedules for each year are outlined in Tables 7 – 16 below.

Table 7: Works schedule - Berringa Park Wetlands revegetation program 2020 - 2021

Year 1 - 2020/2021	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 1												
Follow up weed control - Zone 1												
Plant supply												
Plant install - volunteer												
Plant install - contractor												
General maintenance												

Table 8: Works schedule - Berringa Park Wetlands revegetation program 2021 - 2022

Year 2 - 2021/2022	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 2												
Follow up weed control - Zone 1												
Follow up weed control - Zone 2												
Plant supply												
Plant install - volunteer												
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 1 - contractor												
General maintenance												

Table 9: Works schedule - Berringa Park Wetlands revegetation program 2022 - 2023

Year 3 - 2022/2023	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 3												
Follow up weed control - Zone 1												
Follow up weed control - Zone 2												
Follow up weed control - Zone 3												
Plant supply												
Plant install - volunteer												

Year 3 - 2022/2023	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 2 - contractor												
General maintenance												

Table 10: Works schedule - Berringa Park Wetlands revegetation program 2023 - 2024

Year 4 - 2023/2024	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 4												
Follow up weed control - Zone 2												
Follow up weed control - Zone 3												
Follow up weed control - Zone 4												
Plant supply												
Plant install - volunteer												
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 3 - contractor												
General maintenance												

Table 11: Works schedule - Berringa Park Wetlands revegetation program 2024 - 2025

Year 5 - 2024/2025	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 5												
Follow up weed control - Zone 3												
Follow up weed control - Zone 4												
Follow up weed control - Zone 5												
Plant supply												
Plant install - volunteer												
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 4 - contractor												
General maintenance												

Table 12: Works schedule - Berringa Park Wetlands revegetation program 2025 - 2026

Year 6 - 2025/2026	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 6												
Follow up weed control - Zone 4												
Follow up weed control - Zone 5												
Follow up weed control - Zone 6												
Plant supply												
Plant install - volunteer												
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 5 - contractor												
General maintenance												

Table 13: Works schedule - Berringa Park Wetlands revegetation program 2026 - 2027

Year 7 - 2026/2027	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 7												
Follow up weed control - Zone 5												
Follow up weed control - Zone 6												
Follow up weed control - Zone 7												
Plant supply												
Plant install - volunteer												
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 6 - contractor												
General maintenance												

Table 14: Works schedule - Berringa Park Wetlands revegetation program 2027 - 2028

Year 8 - 2027/2028	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 8												
Follow up weed control - Zone 6												
Follow up weed control - Zone 7												
Follow up weed control - Zone 8												
Plant supply												

Year 8 - 2027/2028	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Plant install - volunteer												
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 7 - contractor												
General maintenance												

Table 15: Works schedule - Berringa Park Wetlands revegetation program 2028 - 2029

Year 9 - 2028/2029	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 9												
Follow up weed control - Zone 7												
Follow up weed control - Zone 8												
Follow up weed control - Zone 9												
Plant supply												
Plant install - volunteer												
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 8 - contractor												
General maintenance												

Table 16: Works schedule - Berringa Park Wetlands revegetation program 2029 - 2030

Year 10 - 2029/2030	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Clearing/initial weed control - Zone 10												
Follow up weed control - Zone 8												
Follow up weed control - Zone 9												
Follow up weed control - Zone 10												
Plant supply												
Plant install - volunteer												
Plant install - contractor												
Infill plant supply												
Infill plant install Zone 9 - contractor												
Coir matting install to slope												
General maintenance												

5.0 Cost schedules

Costing schedules for revegetation, weed control and maintenance works are provided in Table 17 – 19. Built environment (capital works) indicative costings are provided in Table 20.

Table 17: Costings Years 1 - 4

	Year 1 (Jul 2020 - Jun 2021)				Year 2 (Jul 2021 - Jun 2022)				Year 3 (Jul 2022 - Jun 2023)				Year 4 (Jul 2023 - Jun 2024)			
Activity	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**
Initial weed control - Zone 1	event	1	5,000.00	5,000.00				-				-				-
Initial weed control - Zone 2				-	event	1	5,000.00	5,000.00				-				-
Initial weed control - Zone 3				-				-	event	1	5,125.00	5,125.00				-
Initial weed control - Zone 4				-				-				-	event	1	5,125.00	5,125.00
Maintenance weed control - Zone 1	event	3	1,150.00	3,450.00	event	4	600.00	2,400.00	event	4	615.00	2,460.00				-
Maintenance weed control - Zone 2				-	event	3	1,150.00	3,450.00	event	4	615.00	2,460.00	event	4	615.00	2,460.00
Maintenance weed control - Zone 3				-				-	event	3	1,178.75	3,536.25	event	4	615.00	2,460.00
Maintenance weed control - Zone 4				-				-				-	event	3	1,178.75	3,536.25
Plant supply initial - Zone 1	each	4,700	1.75	8,225.00				-				-				-
Plant supply initial - Zone 2				-	each	4,700	1.75	8,225.00				-				-
Plant supply initial - Zone 3				-				-	each	4,700	1.79	8,430.63				-
Plant supply initial - Zone 4				-				-				-	each	4,700	1.79	8,430.63
Initial plant install - contractor	each	2,700	1.10	2,970.00	each	2,700	1.10	2,970.00	each	2,700	1.13	3,044.25	each	2,700	1.13	3,044.25
Initial plant install - volunteer	each	2,000	-	-	each	2,000	-	-	each	2,000	-	-	each	2,000	-	-
Infill plant supply - Zone 1				-	each	1,000	1.75	1,750.00				-				-
Infill plant supply - Zone 2				-				-	each	1,000	1.79	1,793.75				-

	Year 1 (Jul 2020 - Jun 2021)				Year 2 (Jul 2021 - Jun 2022)				Year 3 (Jul 2022 - Jun 2023)				Year 4 (Jul 2023 - Jun 2024)			
Activity	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**
Infill plant supply - Zone 3				-				-				-	each	1,000	1.79	1,793.75
Infill plant install - contractor				-	each	1,000	1.10	1,100.00	each	1,000	1.13	1,127.50	each	1,000	1.13	1,127.50
General maintenance works (rubbish, fencing etc)	item	1	2,000.00	2,000.00	item	1	2,000.00	2,000.00	item	1	2,050.00	2,050.00	item	1	2,050.00	2,050.00
Whole site maintenance (additional works outside restoration areas)	item	1	10,000.00	10,000.00	item	1	10,000.00	10,000.00	item	1	10,000.00	10,000.00	item	1	10,000.00	10,000.00
Yearly Total (ex GST)				**31,645.00**				**36,895.00**				**40,027.38**				**40,027.38**
GST				**3,164.50**				**3,689.50**				**4,002.74**				**4,002.74**
Yearly Total (inc GST)				**34,809.50**				**40,584.50**				**44,030.11**				**44,030.11**

Table 18: Costings Years 5 - 7

	Year 5 (Jul 2024 - Jun 2025)				Year 6 (Jul 2025 - Jun 2026)				Year 7 (Jul 2026 - Jun 2027)			
Activity	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**
Initial weed control - Zone 5	event	1	5,253.13	5,253.13				-				-
Initial weed control - Zone 6				-	event	1	5,253.13	5,253.13				-
Initial weed control - Zone 7				-				-	event	1	5,384.45	5,384.45
Maintenance weed control - Zone 3	event	4	630.38	2,521.50				-				-
Maintenance weed control - Zone 4	event	4	630.38	2,521.50	event	4	630.38	2,521.50				-
Maintenance weed control - Zone 5	event	3	1,208.22	3,624.66	event	4	630.38	2,521.50	event	4	646.13	2,584.54
Maintenance weed control - Zone 6				-	event	3	1,208.22	3,624.66	event	4	646.13	2,584.54
Maintenance weed control - Zone 7				-				-	event	3	1,238.42	3,715.27
Plant supply initial - Zone 5	each	4,700	1.84	8,641.39				-				-
Plant supply initial - Zone 6				-	each	4,700	1.84	8,641.39				-

	Year 5 (Jul 2024 - Jun 2025)				Year 6 (Jul 2025 - Jun 2026)				Year 7 (Jul 2026 - Jun 2027)			
Activity	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**
Plant supply initial - Zone 7				-				-	each	4,700	1.88	8,857.43
Initial plant install - contractor	each	2,700	1.16	3,120.36	each	2,700	1.16	3,120.36	each	2,700	1.18	3,198.37
Initial plant install - volunteer	each	2,000	-	-	each	2,000	-	-	each	2,000	-	-
Infill plant supply - Zone 4	each	1,000	1.84	1,838.59				-				-
Infill plant supply - Zone 5				-	each	1,000	1.84	1,838.59				-
Infill plant supply - Zone 6				-				-	each	1,000	1.88	1,884.56
Infill plant install - contractor	each	1,000	1.16	1,155.69	each	1,000	1.16	1,155.69	each	1,000	1.18	1,184.58
General maintenance works (rubbish, fencing etc)	item	1	2,101.25	2,101.25	item	1	2,101.25	2,101.25	item	1	2,153.78	2,153.78
Whole site maintenance (additional works outside restoration areas)	item	1	10,000.00	10,000.00	item	1	10,000.00	10,000.00	item	1	10,000.00	10,000.00
Yearly Total (ex GST)				**40,778.06**				**40,778.06**				**41,547.51**
GST				**4,077.81**				**4,077.81**				**4,154.75**
Yearly Total (inc GST)				**44,855.87**				**44,855.87**				**45,702.26**

Table 19: Costings Years 8 - 10

	Year 8 (Jul 2027 - Jun 2028)				Year 9 (Jul 2028 - Jun 2029)				Year 10 (Jul 2029 - Jun 2030)			
Activity	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**
Initial weed control - Zone 8	event	1	5,384.45	5,384.45				-				-
Initial weed control - Zone 9				-	event	1	5,519.06	5,519.06				-
Initial weed control - Zone 10				-				-	event	1	5,519.06	5,519.06
Maintenance weed control - Zone 6	event	4	646.13	2,584.54				-				-
Maintenance weed control - Zone 7	event	4	646.13	2,584.54	event	4	662.29	2,649.15				-
Maintenance weed control - Zone 8	event	3	1,238.42	3,715.27	event	4	662.29	2,649.15	event	4	662.29	2,649.15
Maintenance weed control - Zone 9				-	event	3	1,269.38	3,808.15	event	4	662.29	2,649.15

	Year 8 (Jul 2027 - Jun 2028)				Year 9 (Jul 2028 - Jun 2029)				Year 10 (Jul 2029 - Jun 2030)			
Activity	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**	**Unit**	**Qty**	**Unit rate**	**Cost ($ ex GST)**
Maintenance weed control - Zone 10				-				-	event	3	1,269.38	3,808.15
Plant supply initial - Zone 8	each	4,700	1.88	8,857.43				-				-
Plant supply initial - Zone 9				-	each	4,700	1.93	9,078.86				-
Plant supply initial - Zone 10				-				-	each	4,700	1.93	9,078.86
Initial plant install - contractor	each	2,700	1.18	3,198.37	each	2,700	1.21	3,278.32	each	2,700	1.21	3,278.32
Initial plant install - volunteer	each	2,000	-	-	each	2,000	-	-	each	2,000	-	-
Infill plant supply - Zone 7	each	1,000	1.88	1,884.56				-				-
Infill plant supply - Zone 8				-	each	1,000	1.93	1,931.67				-
Infill plant supply - Zone 9				-				-	each	1,000	1.93	1,931.67
Infill plant install - contractor	each	1,000	1.18	1,184.58	each	1,000	1.21	1,214.19	each	1,000	1.21	1,214.19
General maintenance works (rubbish, fencing etc)	item	1	2,153.78	2,153.78	item	1	2,207.63	2,207.63	item	1	2,262.82	2,262.82
Whole site maintenance (additional works outside restoration areas)	item	1	10,000.00	10,000.00	item	1	10,000.00	10,000.00	item	1	10,000.00	10,000.00
Supply coir matting Zone 10a additional slope area				-				-	roll	27	155.00	4,185.00
Supply steel U pins Zone 10a additional slope area				-				-	each	2,160	0.70	1,512.00
Install coir matting – Zone 10 additional slope area				-				-	hr	60	70.00	4,200.00
Supply and install tubestock - Zone 10 additional slope area				-				-	each	1,000	3.15	3,145.87
Yearly Total (ex GST)				**41,547.51**				**42,336.20**				**55,434.26**
GST				**4,154.75**				**4,233.62**				**5,543.43**
Yearly Total (inc GST)				**45,702.26**				**46,569.82**				**60,977.68**

Table 20: Built environment indicative costings – capital works

Item	Unit	Qty	Unit rate	Cost ($ ex GST)	Notes
Supply and installation of 100 linear metres crushed limestone track (2m width)	Lm	260	39.95	10,387.00	Allows for supply of 75mm crushed limestone in semi-trailers, plus labour and equipment (posi track, rolling and compaction equipment). Cost allows for construction of 100 linear metres at 2m width.
Supply and installation of bench including concrete pad	item	1	2,350.00	2,350.00	Supply and installation of Exteria 'Vasse' bench w/back rest (or similar), installed onto concrete pad.
Supply and installation of shelter including concrete pad and table setting	item	1	10,500.00	10,500.00	Supply and installation of Exteria 'Longreach' shelter (or similar), installed onto 4m x 4m concrete pad. Cost also allows for supply and installation of Exteria 'Vasse' table setting (table with 2 x benches) under shelter.
Interpretive signage	each	1	2,000.00	2,000.00	Allows for artwork, supply and installation of aluminium signage installed to concrete footing.
Supply and install composite pedestrian bridge over living stream (Zone 1)	item	1	80,000.00	80,000.00	Allows for supply and installation of Treadwell Group composite pedestrian bridge structure (approximate total length 15m), including all engineering, design drawings and footings. Design life 55 years.
Supply and install timber pedestrian bridge over living stream (Zone 1)	item	1	45,000.00	45,000.00	Allows for supply and installation of treated timber bridge structure (approximate total length 15m), including design drawings and footings. Approximate design life 20 years.

Note: *Capital works costings are indicative at time of plan preparation in 2020; these costs will need to be revised according to final design/timing of potential works.*

6.0 References

Biosecurity and Agriculture Management Act 2007 (WA)

Department of Biodiversity, Conservation and Attractions. (2020a). *FloraBase*. Retrieved March 2020 from https://florabase.dpaw.wa.gov.au/.

Department of Biodiversity, Conservation and Attractions. (2020b). *Threatened and Priority Flora, Fauna and Ecological Community Database Searches*. Personal Communication, Natural Area.

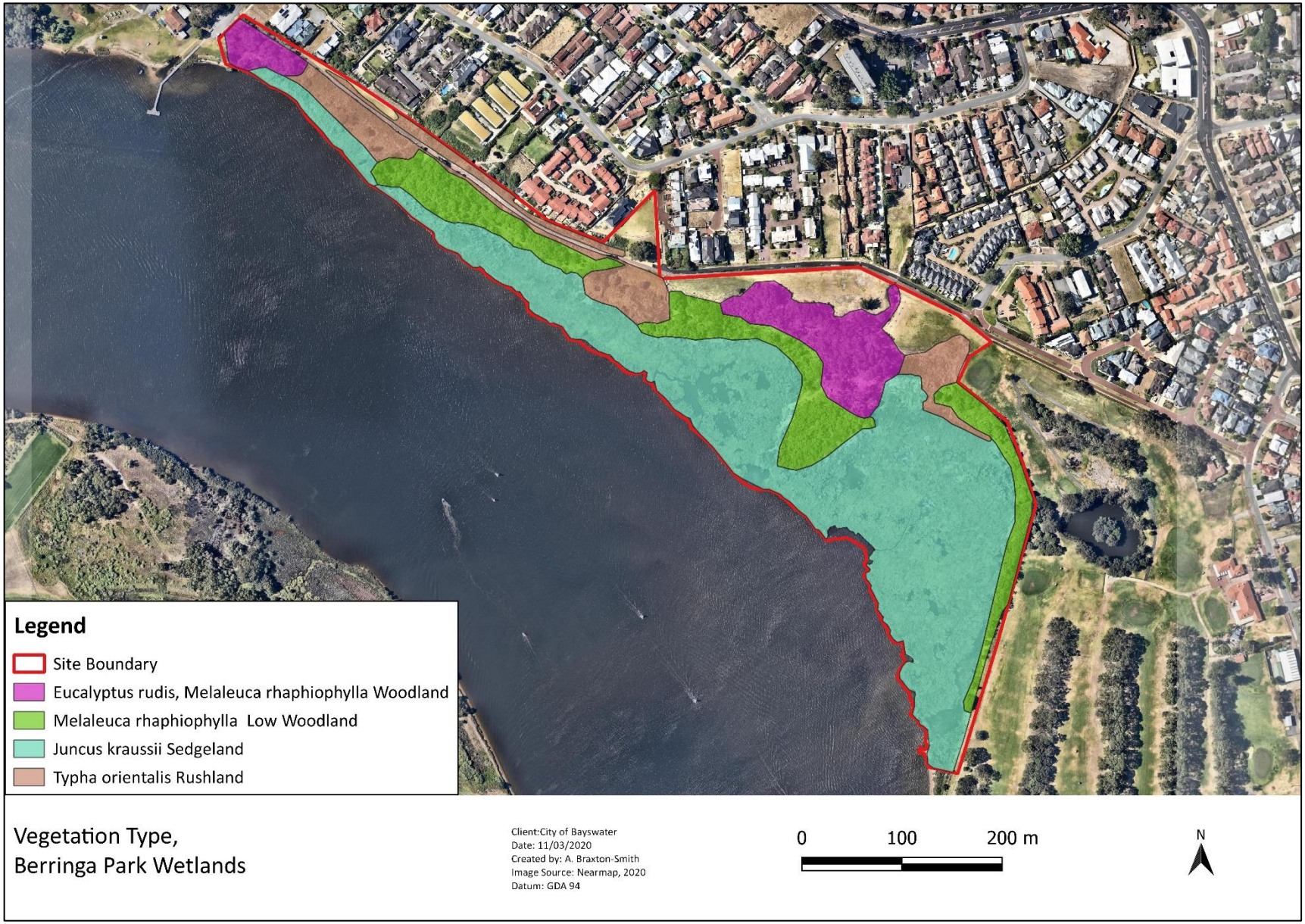
Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)

Government of Western Australia, (2000), *Bush Forever, Volume 2 – Directory of Bush Forever Sites*, Department of Environmental Protection, Perth Western Australia.

Appendix 1 – Vegetation Types

Name	Description	Area (ha) Cover (%)	Photograph
Eucalyptus rudis and *Melaleuca rhaphiophylla* Woodland	Woodland dominated by *Eucalyptus rudis* and *Melaleuca rhaphiophylla* with a sparse understory of sedges and weedy herbs.	1.27 ha 10.9%	
Juncus kraussii Sedgeland (TEC)	Sedgeland dominated by *Juncus kraussii* and associated with samphire flora species *Salicornia quinqueflora* and *Samolus repens* along the slightly elevated drier edges.	6.88 ha 58.8%	
Melaleuca rhaphiophylla Low Woodland	Low Woodland dominated by *Melaleuca rhaphiophylla* with an understory of *Juncus kraussii* and weedy herbs.	2.19 ha 18.7%	

Name	Description	Area (ha) Cover (%)	Photograph
Typha orientalis Rushland	Rushland dominated by *Typha orientalis* and *Pteridium esculentum* amongst a large weed diversity of Blackberry, Coastal Morning Glory, Elephant Ears and *Hibiscus diversifolius*.	1.37 ha 11.7%	

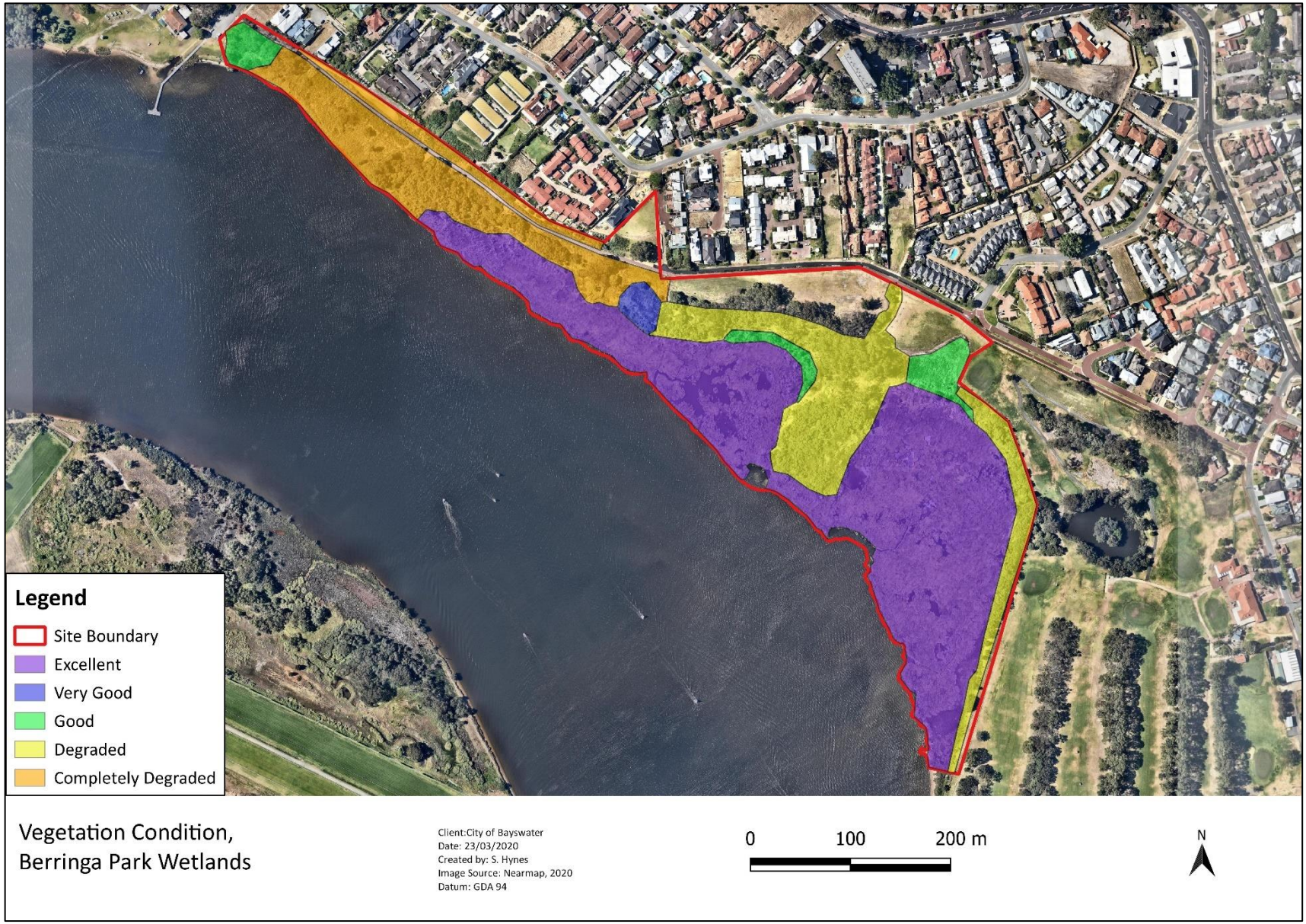

Legend
Site Boundary
Eucalyptus rudis, Melaleuca rhaphiophylla Woodland
Melaleuca rhaphiophylla Low Woodland
Juncus kraussii Sedgeland
Typha orientalis Rushland
Vegetation Type,
Berringa Park Wetlands
Client:City of Bayswater
Date: 11/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N

Appendix 2 – Vegetation Condition

Vegetation condition was assessed at Berringa Park Wetlands in accordance with the scale attributed to Keighery (1994) described in Bush Forever Vol. 2 (Government of Western Australia, 2000).

Vegetation condition cover within Berringa Park Wetlands:

	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
Area (ha)	6.55	0.15	0.59	2.80	2.41	12.49
Percent (%)	52.4	1.2	4.7	22.4	19.3	100


Legend
Site Boundary
Excellent
Very Good
Good
Degraded
Completely Degraded
Vegetation Condition,
Berringa Park Wetlands
Client:City of Bayswater
Date: 23/03/2020
Created by: S. Hynes
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N

Appendix 3 – Flora Species List

This list is a record of the flora survey carried out during preparation of this plan.
* denotes introduced species
WoNS – Weed of National Significance

Species Name	Common Name	Comment
Native Species		
Acacia saligna	Orange Wattle	
Apium prostratum	Sea Celery	
Atriplex cinerea	Grey Saltbush	
Baumea juncea	Bare Twigrush	
Baumea articulata	Jointed Rush	
Bolboschoenus caldwellii	Marsh Club-rush	
Cassytha racemosa	Dodder Laurel	
Centella asiatica	Centella	
Eucalyptus rudis	Flooded Gum	
Juncus kraussii	Sea Rush	
Melaleuca rhaphiophylla	Swamp Paperbark	
Pteridium esculentum	Bracken	
Salicornia quinqueflora	Beaded Samphire	
Samolus repens	Creeping Brookweed	
Suaeda australis	Seablite	
Tecticornia halocnemoides	Shrubby Samphire	
Typha domingensis	Bulrush	
Typha orientalis	Bulrush	
Weed Species		
**Agapanthus praecox*		
**Anredera cordifolia*	Madeira Vine	WoNS
**Atriplex prostrata*	Hastate Orache	
**Bougainvillea glabra*		
**Carex divisa*	Divided Sedge	
**Casuarina glauca*		
**Cenchrus clandestinus*	Kikuyu	
**Chamaecytisus palmensis*	Tagasaste	
**Colocasia esculenta*	Taro	
**Conyza bonariensis*	Flaxleaf Fleabane	
**Cortaderia selloana*	Pampas Grass	
**Cynodon dactylon*	Couch	
**Cyperus eragrostis*	Umbrella Sedge	

Species Name	Common Name	Comment
**Cyperus rotundus*	Nut Grass	
**Dipogon lignosus*	Dolichos Pea	
**Epilobium ciliatum*		
**Eragrostis curvula*	African Lovegrass	
**Erythrina x sykesii*		
**Ficus carica*	Common Fig	
**Gomphocarpus fruticosus*	Narrowleaf Cottonbush	Declared Pest
**Hibiscus diversifolius*		
**Ipomoea cairica*	Coast Morning Glory	
**Lactuca serriola*	Prickly Lettuce	
**Lantana camara*	Common Lantana	WoNS/Declared Pest
**Mentha spicata*	Spearmint	
**Olea europaea*	Olive	
**Osteospermum ecklonis*		
**Paspalum dilatatum*		
**Persea americana*		
**Phoenix dactylifera*	Date Palm	
**Ricinus communis*	Castor Oil Plant	
**Rubus laudatus*	Blackberry	Declared Pest
**Rumex crispus*	Curled Dock	
**Schinus terebinthifolia*	Brazilian Pepper	
**Solanum nigrum*	Black Berry Nightshade	
**Sorghum halepense*	Johnson Grass	
**Stenotaphrum secundatum*	Buffalo Grass	
**Symphyotrichum squamatum*	Bushy Starwort	
**Tribulus terrestris*	Caltrop	
**Washingtonia filifera*		
**Zantedeschia aethiopica*	Arum Lily	Declared Pest

Appendix 4 – Quadrat Data

Quadrat No: BPQ01
Survey Date: 04 March 2020
Personnel: Sharon Hynes, Kylie Sadgrove
GPS Coordinates: -31.93945 115.89676
Location: Berringa Park
Aspect: South
Soil: Dark Brown Clay Loam
Leaf Litter: 0%
Condition: Excellent
Notes: Potential TEC

Native Species	Cover (%)	Height (m)	Introduced Species	Cover (%)	Height (m)
Baumea juncea	10	0.5			
Bolboschoenus caldwellii	0.5	0.1			
Juncus kraussii	50	1.5			
Melaleuca rhaphiophylla	2	2			
Salicornia quinqueflora	20	0.2			
Samolus repens	30	0.3			
Suaeda australis	5	0.3			

Quadrat No: BPQ02
Survey Date: 04 March 2020
Personnel: Sharon Hynes, Kylie Sadgrove
GPS Coordinates: -31.92918 115.89628
Location: Berringa Park
Aspect: Flat
Soil: Black Sandy Loam
Leaf Litter: 0%
Condition: Very Good
Notes:

Native Species	Cover (%)	Height (m)	Introduced Species	Cover (%)	Height (m)
Bolboschoenus caldwellii	0.1	0.5	*Phoenix dactylifera*	0.5	0.5
Melaleuca rhaphiophylla	0.5	4	*Schinus terebinthifolia*	1	1
Typha orientalis	99	3			

Quadrat No: BPQ03
Survey Date: 05 March 2020
Personnel: Sharon Hynes, Aster Braxton-Smith
GPS Coordinates: -31.94010 115.89871
Location: Berringa Park
Aspect: Flat
Soil: Brown Clay Loam
Leaf Litter: 0%
Condition: Excellent
Notes: Potential TEC

Native Species	Cover (%)	Height (m)	Introduced Species	Cover (%)	Height (m)
Juncus kraussii	70	1	*Atriplex prostrata*	0.1	0.5
Salicornia quinqueflora	25	0.5	*Symphyotrichum squamatum*	0.5	1.5
Samolus repens	2	0.5			
Suaeda australis	0.5	0.5			

Quadrat No: BPQ04
Survey Date: 05 March 2020
Personnel: Sharon Hynes, Aster Braxton-Smith
GPS Coordinates: -31.93961 115.89907
Location: Berringa Park
Aspect: Flat
Soil: Brown Clay Loam
Leaf Litter: 0%
Condition: Good
Notes:

Native Species	Cover (%)	Height (m)	Introduced Species	Cover (%)	Height (m)
Bolboschoenus caldwellii	5	0.5	*Cynodon dactylon*	0.5	0.1
Typha orientalis	80	2	*Cyperus rotundus*	2	0.5
			Mentha spicata	3	1
			Rubus laudatus	5	1.5

Quadrat No: BPQ05
Survey Date: 05 March 2020
Personnel: Sharon Hynes, Aster Braxton-Smith
GPS Coordinates: -31.93961 115.89841
Location: Berringa Park
Aspect: Flat
Soil: Brown Loam
Leaf Litter: 95%, 2 cm
Condition: Degraded
Notes:

Native Species	Cover (%)	Height (m)	Introduced Species	Cover (%)	Height (m)
Eucalyptus rudis	70	15	*Dipogon lignosus*	0.1	0.1
Melaleuca rhaphiophylla	5	6	*Schinus terebinthifolia*	0.1	0.1
			Zantedeschia aethiopica	0.1	0.1

Quadrat No: BPQ06
Survey Date: 13 March 2020
Personnel: Sharon Hynes, Kylie Sadgrove
GPS Coordinates: -31.93932 115.89758
Location: Berringa Park
Aspect: South East
Soil: Brown Sand
Leaf Litter: 90%, 2 cm
Condition: Degraded
Notes:

Native Species	Cover (%)	Height (m)	Introduced Species	Cover (%)	Height (m)
Bolboschoenus caldwellii	1	0.5	*Cynodon dactylon*	0.1	0.1
Centella asiatica	1	0.1			
Eucalyptus rudis	25	15			
Melaleuca rhaphiophylla	45	6			

Quadrat No: BPQ07
Survey Date: 13 March 2020
Personnel: Sharon Hynes, Kylie Sadgrove
GPS Coordinates: -31.93934 115.89710
Location: Berringa Park
Aspect: South East
Soil: Brown Clay Loam
Leaf Litter: 0%
Condition: Very Good

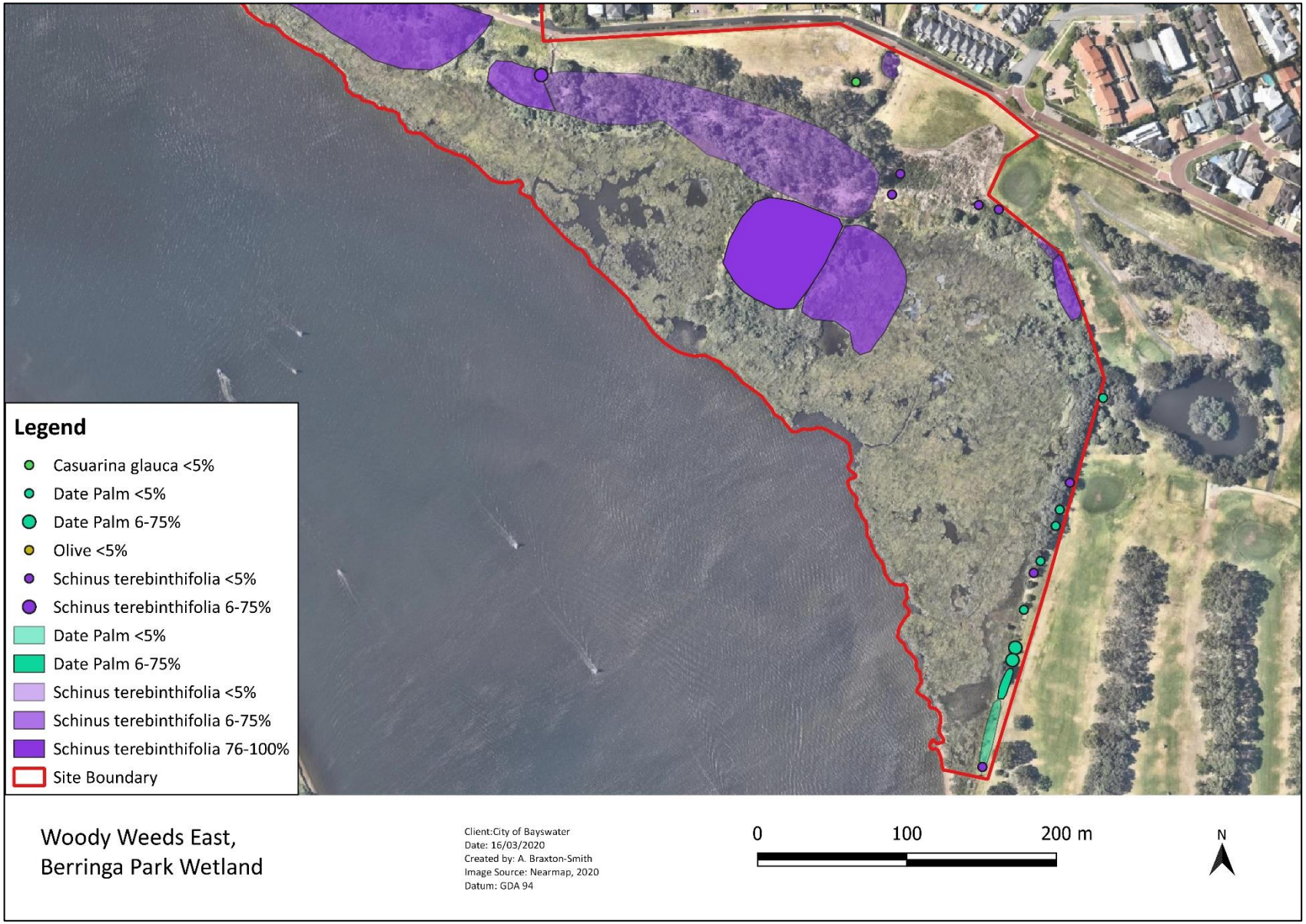
Notes:

Native Species	Cover (%)	Height (m)	Introduced Species	Cover (%)	Height (m)
Apium prostratum	0.5	0.5	*Carex divisa*	3	0.3
Bolboschoenus caldwellii	95	0.5	*Cynodon dactylon*	0.1	0.1
Melaleuca rhaphiophylla	70	6			

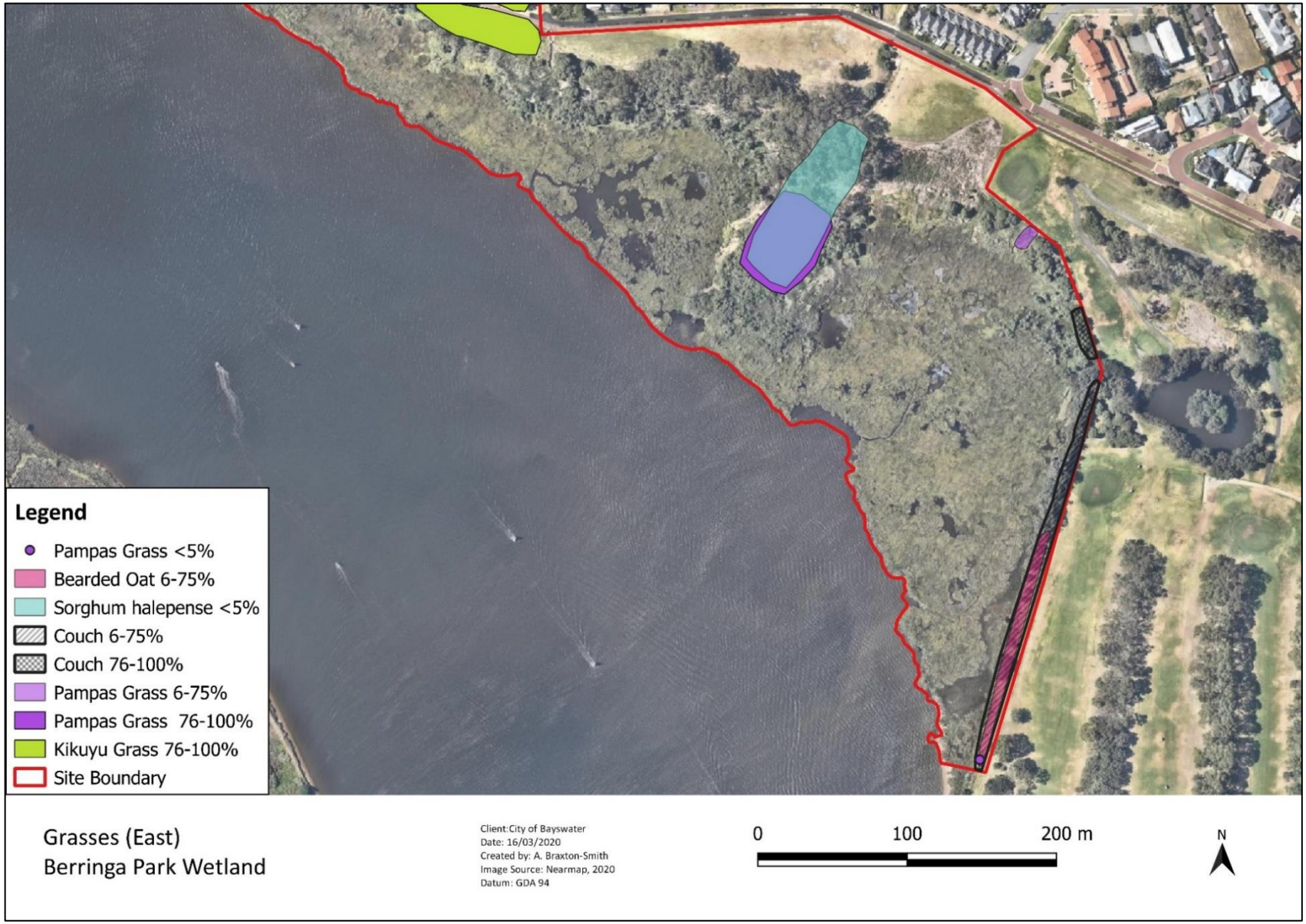
Quadrat No: BPQ08
Survey Date: 13 March 2020
Personnel: Sharon Hynes, Kylie Sadgrove
GPS Coordinates: -31.93821 115.89416
Location: Berringa Park
Aspect: South
Soil: Brown Clay Loam
Leaf Litter: 3%, 1 cm
Condition: Completely Degraded
Notes:

Native Species	Cover (%)	Height (m)	Introduced Species	Cover (%)	Height (m)
Bolboschoenus caldwellii	0.5	0.5	*Atriplex prostrata*	2	2
Cassytha racemosa	5	4	*Stenotaphrum secundatum*	95	0.5
Casuarina obesa	30	6			
Melaleuca rhaphiophylla	60	6			
Typha orientalis	2	2			

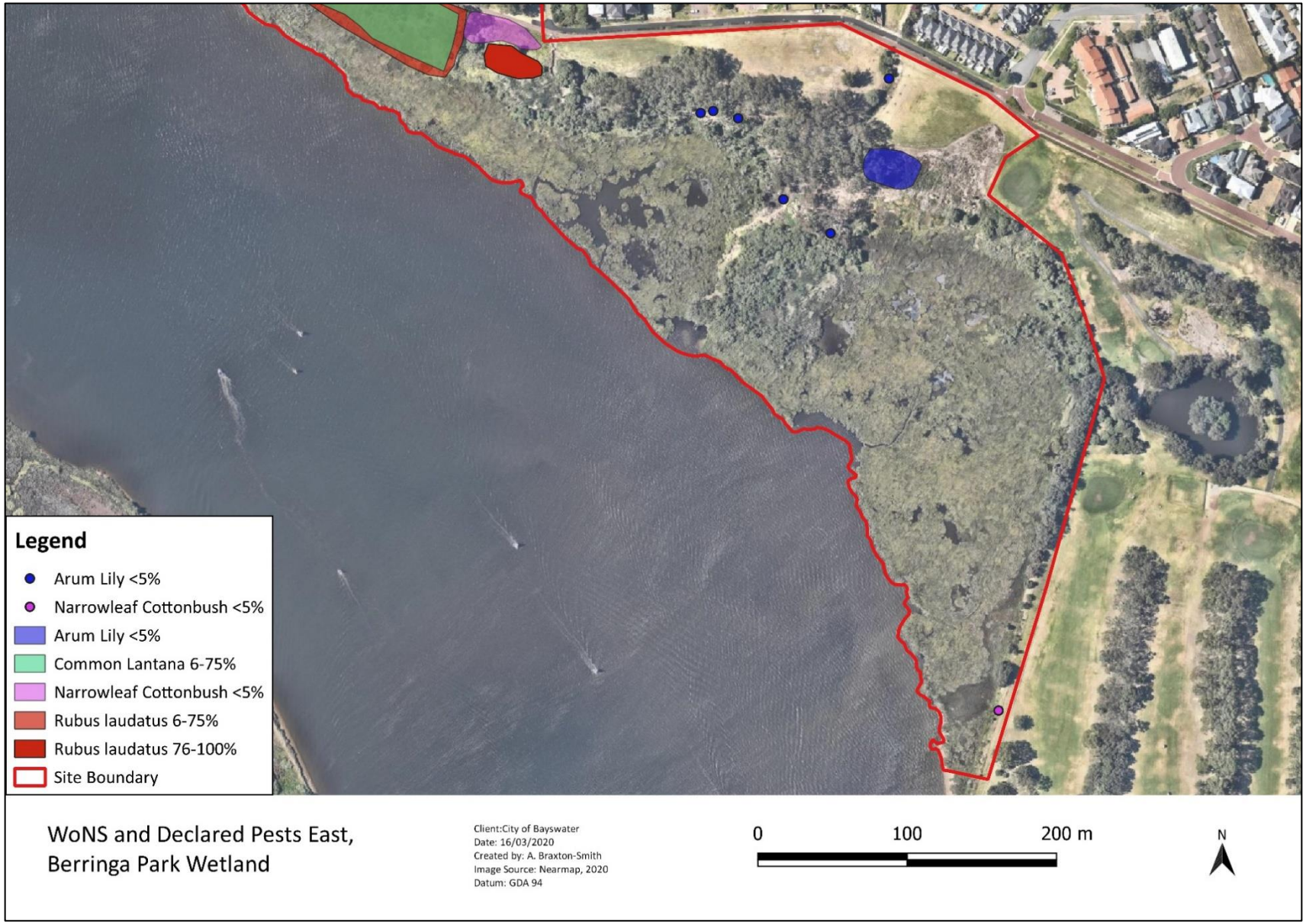
Appendix 5 – Weed Maps


Legend
Casuarina glauca <5%
Date Palm <5%
Date Palm 6-75%
Olive <5%
Schinus terebinthifolia <5%
Schinus terebinthifolia 6-75%
Date Palm <5%
Date Palm 6-75%
Schinus terebinthifolia <5%
Schinus terebinthifolia 6-75%
Schinus terebinthifolia 76-100%
Site Boundary
Woody Weeds East,
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N

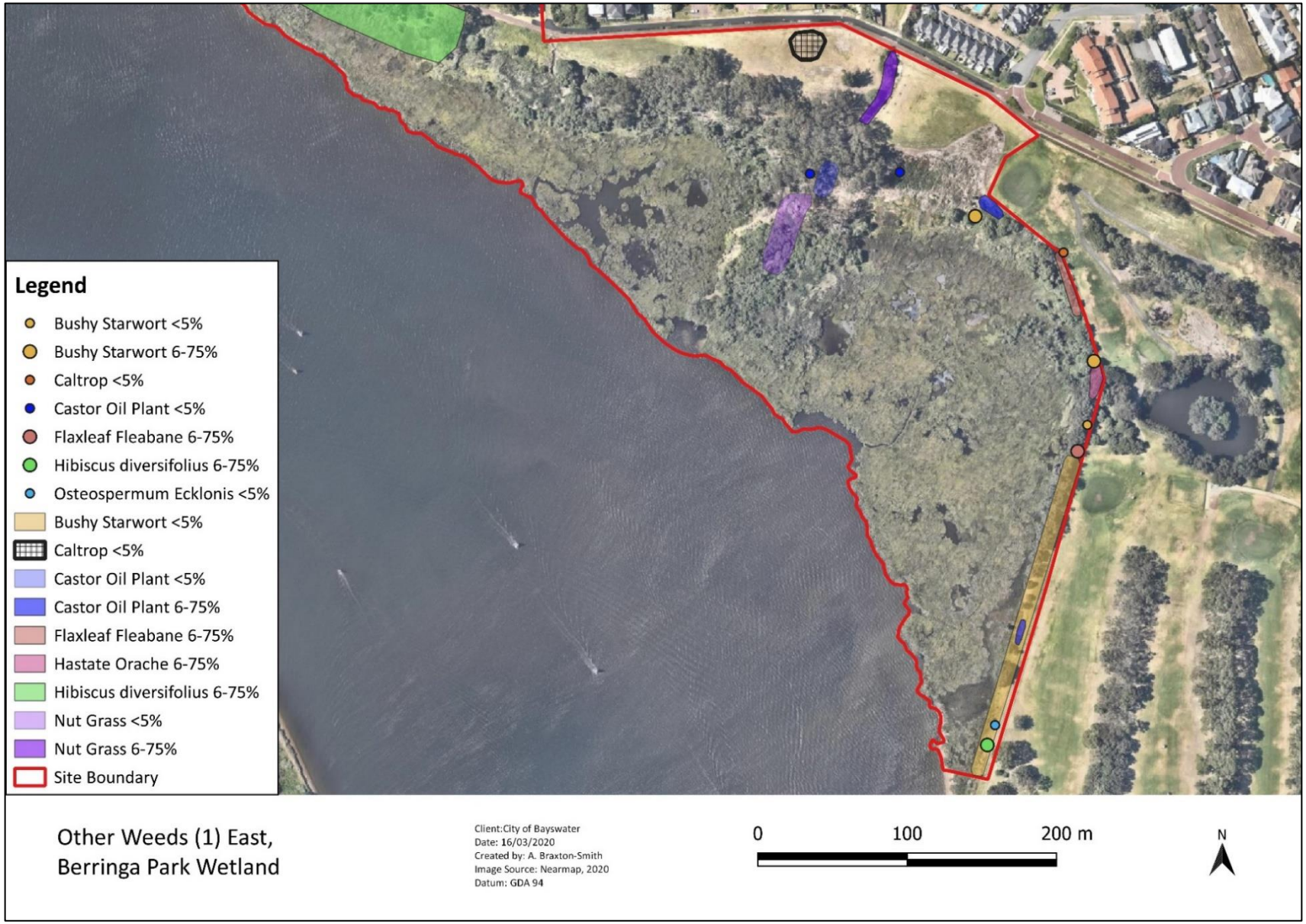

Legend
African Lovegrass <5%
Pampas Grass <5%
Pampas Grass 6-75%
Paspalum dilatatum <5%
Paspalum dilatatum 6-75%
Couch 6-75%
Paspalum dilatatum <5%
Paspalum dilatatum 6-75%
Paspalum dilatatum 76-100%
Kikuyu Grass 6-75%
Kikuyu Grass 76-100%
Site Boundary
Grasses (West)
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N


Legend
Pampas Grass <5%
Bearded Oat 6-75%
Sorghum halepense <5%
Couch 6-75%
Couch 76-100%
Pampas Grass 6-75%
Pampas Grass 76-100%
Kikuyu Grass 76-100%
Site Boundary
Grasses (East)
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N


Legend
Narrowleaf Cottonbush <5%
Anredera cordifolia 6-75%
Common Lantana 6-75%
Common Lantana 76-100%
Narrowleaf Cottonbush <5%
Rubus laudatus 6-75%
Rubus laudatus 76-100%
Site Boundary
WoNS and Declared Pests West,
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N


Legend
Arum Lily <5%
Narrowleaf Cottonbush <5%
Arum Lily <5%
Common Lantana 6-75%
Narrowleaf Cottonbush <5%
Rubus laudatus 6-75%
Rubus laudatus 76-100%
Site Boundary
WoNS and Declared Pests East,
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N


Legend
Castor Oil Plant <5%
Castor Oil Plant 6-75%
Flaxleaf Fleabane <5%
Nut Grass 6-75%
Osteospermum Ecklonis 6-75%
Castor Oil Plant <5%
Dolichos Pea 6-75%
Hastate Orache 6-75%
Hibiscus diversifolius <5%
Hibiscus diversifolius 6-75%
Osteospermum Ecklonis 6-75%
Site Boundary
Other Weeds (1) West,
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N


Legend
Bushy Starwort <5%
Bushy Starwort 6-75%
Caltrop <5%
Castor Oil Plant <5%
Flaxleaf Fleabane 6-75%
Hibiscus diversifolius 6-75%
Osteospermum Ecklonis <5%
Bushy Starwort <5%
Caltrop <5%
Castor Oil Plant <5%
Castor Oil Plant 6-75%
Flaxleaf Fleabane 6-75%
Hastate Orache 6-75%
Hibiscus diversifolius 6-75%
Nut Grass <5%
Nut Grass 6-75%
Site Boundary
Other Weeds (1) East,
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N


Legend
Agapanthus praecox <5%
Black Berry Nightshade <5%
Black Berry Nightshade 6-75%
Taro <5%
Taro 6-75%
Coast Morning Glory <5%
Coast Morning Glory 6-75%
Giant Reed 6-75%
Prickly Lettuce 6-75%
Taro <5%
Taro 6-75%
Site Boundary
Other Weeds (2) West,
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N


Legend
Black Berry Nightshade <5%
Black Berry Nightshade 6-75%
Coast Morning Glory <5%
Curled Dock 6-75%
Black Berry Nightshade 6-75%
Melilotus indicus 6-75%
Mentha spicata 6-75%
Prickly Lettuce 6-75%
Taro <5%
Taro 6-75%
Site Boundary
Other Weeds (2) East,
Berringa Park Wetland
Client:City of Bayswater
Date: 16/03/2020
Created by: A. Braxton-Smith
Image Source: Nearmap, 2020
Datum: GDA 94
0
100
200 m
N

Appendix 6 – Fauna Species List

Fauna observed while undertaking survey activities include:
* denotes introduced species

Species Name	Common Name
Mammals	
*Canis lupus familiaris**	Domestic Dog
*Rattus rattus**	Black Rat
Birds	
Accipiter cirrocephalus	Collared Sparrowhawk
Anthochaera carunculata	Red Wattlebird
Ardea ibis	Cattle Egret
Ardea novaehollandiae	White-faced Heron
Corvus coronoides	Australian Raven
Cracticus tibicen	Australian Magpie
Cygnus atratus	Black Swan
*Dacelo novaeguineae**	Laughing Kookaburra
Gavicalis virescens	Singing Honeyeater
Grallina cyanoleuca	Magpie Lark
Hirundo neoxena	Welcome Swallow
Larus novaehollandiae	Silver Gull
Lichmera indistincta	Brown Honeyeater
Phalacrocorax melanoleucos	Little Pied Cormorant
Phalacrocorax sulcirostris	Little Black Cormorant
Phylidonyris novaehollandiae	New Holland Honeyeater
Platalea flavipes	Yellow-billed Spoonbill
Poliocephalus poliocephalus	Hoary-headed Grebe
Porphyrio porphyrio	Purple Swamphen
Rhipidura albiscapa	Grey Fantail
Rhipidura leucophrys	Willie Wagtail
*Spilopelia chinensis**	Spotted Turtle-Dove
*Spilopelia senegalensis**	Laughing Turtle-Dove
Sterna bergii	Crested Tern
Threskiornis moluccus	Australian White Ibis

Species Name	Common Name
*Trichoglossus moluccanus**	Rainbow Lorikeet
Zosterops lateralis	Grey-breasted White-eye (Silvereye)
Reptiles	
Cryptoblepharus buchananii	Snake-eyed Skink
Notechis scutatus	Tiger Snake
Amphibians	
Litoria moorei	Motorbike Frog
Invertebrates	
*Apis mellifera**	European Honeybee
Argiope trifasciata	Banded Orb Weaving Spider
Tettigoniidae sp.	Bush Cricket
Cnidarian	
Phyllorhiza punctata	Brown Jellyfish