Natural Area
CONSULTING MANAGEMENT SERVICES

City of Gosnells

Holmes Street Bushland North: Revegetation and Weed Management Plan

D3 - July 2016

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Draft/Version No.	Date	Changes	Prepared by	Approved by	Status
D1	31 March 2016	New document	SH	LS	Draft for client review and comment
D2	May 2016		SH	LS	Draft for client review and comment
D3	2016	Additional recommendations and clarification on methodology	SH	LS	Draft for client review and comment

Executive Summary

Natural Area Consulting Management and Services (Natural Area) was contracted by the City of Gosnells to prepare this Revegetation and Weed Management Plan for Holmes Street Bushland North. The site is located approximately 17 km south-east of the Perth Central Business District and cover approximately 53.6 ha. Weed management and revegetation within the site aims to enhance the biodiversity and increase visual amenity of the area.

The level 2 flora survey within Holmes Street Bushland North determined:

- a total of 170 flora species from 44 families, of which 64 were monocotyledons and 106 were dicotyledons
- forty-six introduced (weed) and 124 native species
- the presence of twelve vegetation types
- twelve vegetation types
- vegetation condition ranged from Completely Degraded to Excellent
- the presence of the priority species Jacksonia gracillima, which is listed under the *Wildlife Conservation Act 1950* (WA)
- the presence of the introduced species Bridal Creeper (Asparagus asparagoides), which is listed as a category C3 declared pest under the *Biosecurity and Agriculture Management Act 2007* (WA), and as a Weed of National Significance, requiring management at a national level.

Revegetation will occur within two main revegetation areas and along decommissioned Fire Access Tracks and walking tracks (Figure 8) within the site to enhance biodiversity and visual amenity of the area, these areas include:

- Area D (9,000 m^2)
- Area E (5,300 m^2)
- Track revegetation (2,871 m^2)

Total area for revegetation activities is 17,171 m^2 (1.71 ha).

The revegetation in these areas will take into consideration existing native vegetation within the areas and involve:

- removal of rubbish within planting areas
- weed management (initial and ongoing)
- feral animal management
- greenstock procurement and plant propagation
- planting in sites D and E and selected tracks
- watering over summer
- infill planting where required
- ongoing site maintenance and monitoring, which will continue 3 years post initial planting.

Weed management will involve manual and chemical weed control, with weed control visits occurring four times per year and monitoring occurring biannually. Weed control and will occur within:

- revegetation areas (17,171 m^2)
- the rest of the site except the revegetation areas, as required.

The implementation of this Revegetation Plan will occur over three calendar years; during this time 25,590 plants will be installed over the three areas and selected tracks.

Contents

1.0 Introduction

The City of Gosnells commissioned Natural Area Consulting Management Services (Natural Area) to undertake baseline environmental studies within Homes Street Bushland North (HSBN), to inform its proposed environmental management program for the area. Survey outcomes were utilised to prepare management plans for the area including this Revegetation and Weed Management Plan. The site is part of Bush Forever Site 125 located approximately 17 km south-east of the Perth Central Business District and covers approximately 53.6 ha (Figure 1). The site is made up of 17 separate lots, and is split into two main portions of the Holmes Street Bushland north-west of Harpenden Road and Gay Street Bushland south-east of Harpenden Road.

1.1 Revegetation Aims

The aims of the Revegetation Plan are to:

- revegetate areas of low vegetation condition or disturbed areas of natural vegetation throughout the Bushland
- to enhance the biodiversity of the area and improve visual amenity of the site
- prevent unauthorised access in the form of goat tracks and old vehicle tracks through
- undertake revegetation in nominated areas to reduce the potential for weed and pathogen introduction into bushland areas.

1.2 Weed Management Aims

The weed management aims are to:

- remove populations of weeds of national significance (WONS)
- control populations of significant weeds
- enhance vegetation condition within the Bushland
- aid revegetation success
- reduce spread of weeds into and within the site
- assist in the management of fire fuel loads
- reduce bushfire risk.

Note: Recommendations in this plan have been amalgamated with relevant recommendations made within the Access and Bushfire Management Plan, and the Fauna Management Plan to minimise duplication, with codes assigned to each recommendation to identify the management plan it originated from. These codes are:

- **RW** – Holmes Street Bushland North Revegetation and Weed Management Plan (this Plan)
- **AB** – Holmes Street Bushland North Access and Bushfire Management Plan
- **FM** – Holmes Street Bushland North Fauna Management Plan.

Figure 1:
Site location
Holmes Street Bushland North

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Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 200
Metres

1.3 Reference Documents

In preparing this Plan, Natural Area had access to a number of survey reports provided by the City of Gosnells. These were:

- 360 Environmental – 2014 Targeted Flora Survey, Garden Street
- Cardno BSD – 2006 Southern River Precinct 1 Environmental Review
- Eco Logical – 2014 Bushfire Hazard Assessment Lot 1585 Harpenden Street
- ENV Australia – 2010 Ecological Assessment of Selected Natural Areas in the City of Gosnells
- Glevan – 2014 Harpenden Street Bushland Phytophthora Dieback Assessment
- HAAES – 2014 Environmental Management Plan Lot 3 Holmes Street
- RPS – 2012 Environmental Management Plan Lot 2 Holmes Street
- Terrestrial Ecosystems – 2014 Black Cockatoo Assessment Garden Street Extension
- Woodman – 2004 Vegetation and Declared Rare and Priority Flora Assessment Garden Street Extension
- Woodman – 2004 Vegetation and Declared Rare and Priority Flora Assessment Lot 1585 Harpenden Street.

These report identified significant environmental aspects to be considered during planning of management for HSBN including:

- The presence of the Priority 3 *Jacksonia gracillima* within the Garden Street Road Reserve, and the presence of potential habitat for *Drakaea elastica* and *Caladenia huegelii* (360 Environmental, 2014)
- The potential presence of the Threatened *Caladenia huegelii* (Grand Spider Orchid) within the Garden Street Road Reserve and potential habitat within Harpenden Street Bushland, and potential habitat for the Threatened *Drakaea elastica* (Woodman, 2004)
- The use of HSBN for foraging by Threatened Black Cockatoos (Terrestrial Ecosystems, 2014)
- The DPaW Geomorphic Wetlands Database of the Swan Coastal Plain did not accurately reflect the wetland boundaries present on site (Cardno BSD, 2006).
- The presence of *Phytophthora* dieback within the Harpenden Street section of HSBN (Glevan, 2014).
- A bushfire hazard of moderate to extreme within Lot 1585 Harpenden Street (Eco Logical).

2.0 Site Characteristics

The distribution of flora and fauna assemblages is directly influenced by several key factors including:

- climate
- soils
- topography
- disturbance processes, such as land clearing.

2.1 Regional Context

According to Interim Biogeographical Regionalisation of Australia (IBRA) descriptions, Perth is located within the Swan Coastal Plain region. The Swan Coastal Plain comprises two major divisions, the Swan Coastal Plain 1 - Dandaragan Plateau and Swan Coastal Plain 2 - Perth Coastal Plain (Mitchell, Williams and Desmond, 2002), with the City of Gosnells situated in the latter. The Swan Coastal Plain is dominated by Banksia or Tuart woodlands on sandy soils and paperbark in swampy areas (Mitchell, Williams and Desmond, 2002).

2.2 Zoning and Land Tenure

HSBN is comprised of several different implementation classes:

- Local Town Planning Scheme reserves
- Other government lands
- Major road/rail reserves
- Strategic – negotiated planning solutions
- Urban, Urban Deferred, Industrial Negotiated Planning Solutions Agreed.

A map of the zoning for HSBN is provided in the Holmes Street Bushland Access and Bushfire Management Plan (AB: Figure 4).

2.2 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters. According to the Bureau of Meteorology (Perth Airport, Station ID 009021, 2016):

- average rainfall is 767.4 mm pa, with the majority falling between May and August;
- average maximum temperature ranges from 17.9 ^{o}C in winter to 32.0 ^{o}C in summer, with the highest recorded maximum being 46.7 ^{o}C;
- average minimum temperatures range from 8.0 ^{o}C in winter to 17.5 ^{o}C in summer, with the lowest recorded minimum being -1.3 ^{o}C; and
- predominant wind directions include morning easterlies and westerly sea breezes during summer months, with an average wind speed of 23.8 km/h and gusts of more than 100 km/h, particularly during storm events.

2.3 Soil Type

Nine soil types are situated within Homes Street Bushland North and nearby, which included Bassendean Dune and Pinjarra Plain formations (Department of Agriculture and Food, 2015a). Soil types are described in Table 1 and shown in Figure 2.

Table 1: Soil type descriptions

Map Unit	Name	Description	Areas (Lots)
212Bs S8	Bassendean S8 Phase	Sand - very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin.	CR46361, 1592, 1595, 1596, 1, 1645, 1646 and Garden Street Road Reserve
212Bs B1	Bassendean B1 Phase	Extremely low to very low relief dunes, undulating sandplain and discrete sand rises on deep bleached grey sands sometimes, with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m.	1578, 1502, 9000, 9002, 8000, 3 and CR45771
212Bs B2	Bassendean B2 Phase	Flat to very gently undulating well drained sandplain of the surface on deep bleached grey sands, with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.	8000 and CR47575
212Bs B3	Bassendean B3 Phase	Closed depressions and poorly defined stream channels. Poorly to very poorly drained on moderately deep bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.	CR45771, 9000, 1502 and 1578
212Bs B4	Bassendean B4 Phase	Broad poorly drained sandplain on deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan.	Not within site boundary, south west of the site
213Pj S10	Pinjarra S10 Phase	Sand - relatively thin veneer over sandy clay to clayey sand of eolian origin.	1592, 1595, 1596, 1, 1645, 1646, 1647 and Garden Street Road Reserve
213Pj Sp1	Pinjarra Sp1 Phase	Peaty sand - grey to black, fine to medium-grained, moderately sorted quartz sand, slightly peaty, lacustrine (lake) origin.	1592, 1, 1645, 1646 and Garden Street Road Reserve
213Pj P1b	Pinjarra P1b Phase	Flat to very gently undulating plain. Imperfectly drained and moderately susceptible to salinity in limited areas on deep acidic mottled yellow duplex (or "effective duplex") soils. Moderately deep pale sand to loamy sand over clay.	9002
213Pj P8	Pinjarra P8 Phase	Broad poorly drained flats and poorly defined stream channels on moderately deep to deep sands over mottled clays. These may be acidic or less commonly alkaline grey and yellow duplex soils to uniform bleached or pale brown sands over clay.	CR47575, 8000, 3 and 9000

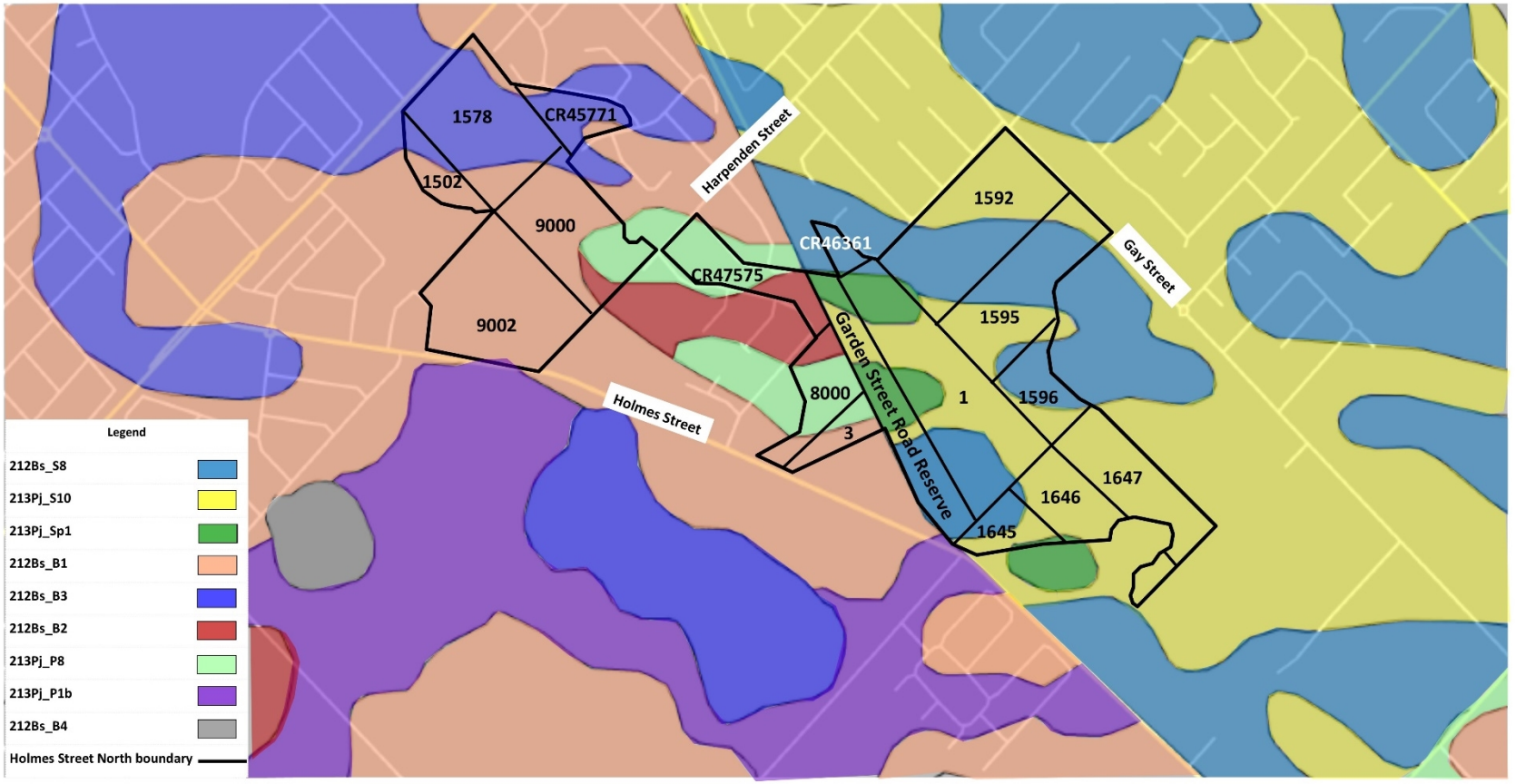

Figure 2:
Soil Types
Holmes Street Bushland North

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

2.4 Topography

Holmes Street Bushland North has undulating topography with site contours ranging from 20 m – 25 m AHD (Figure 3), with the highest spot height being 29 m at the south east end of Garden Street Road Reserve. The majority of the site is relatively low lying and flat (Landgate, 2016).

2.5 Hydrology and Wetlands

While no water courses occur within Holmes Street Bushland North, it does contain conservation category and multiple use damplands (Landgate, 2016) that are wet during winter months. Natural Area recorded wetland boundaries based on wetland vegetation, topography and vegetation condition during 2015 flora surveys. The boundaries were consistent with the geomorphic wetland dataset for the majority of the site with only a few inconsistencies identified. The differences between the wetland vegetation boundaries determined by Natural Area and those mapped by the Department of Parks and Wildlife in the Geomorphic Wetlands (Swan Coastal Plain) dataset are shown in Figures 3 and 4.

2.5.1 Storage Lake

A man-made water body is used to store water for irrigation of the nearby sports fields. It is located in the south-east corner of the site, outside of the study area and Bush Forever Site 125. It is also outside of the area mapped by DPaW as conservation category wetland.

The City is considering options for improving watering capacity. One option is understood to involve an enlargement of the waterbody. This could impact on vegetation immediately adjacent to the south-east of the waterbody, which is part of Bush Forever Site 125 and mapped as a conservation category wetland.

The degraded nature of the vegetation present in this area with *Corymbia calophylla* (Marri) trees present with no understory except weedy grasses and herbs, and the City's advice that that the expansion would not involve the removal of large specimens of Marri, suggests that the proposal might not be in conflict with the City's management intent for HSBN. Key aspects include:

- the Natural Area wetland assessment advises that the subject vegetation, currently mapped by DPaW as conservation category wetland, is a significant distance from the actual wetland vegetation boundary (Figures 3 and 4)
- the extension site is highly degraded
- the size and shape of the subject area are not conducive to resilience or the sites restoration.

The City will need to follow due process in developing and progressing this concept, but it is the assessment of this study that the area is not significant to the HSBN, and that the proposed expansion could provide greater habitat diversity through planting the margins of the expanded waterbody with appropriate species for aquatic fauna and water bird habitat resources.

2.6 Vegetation Complex

According to WALGA (2015), the vegetation at the site is characterised as the Southern River complex, which is characterised by *Corymbia calophylla, Eucalyptus marginata*, and *Banksia* species to fringing woodland of *E. Rudis – Melaleuca rhaphiophylla* along riverbanks (Heddle, Loneragan and Havel, 1980). All of these flora species were found apart from *Eucalyptus rudis*, with *Melaleuca preissiana* found in dampland areas,

Corymbia calophylla adjacent dampland areas and *Banksia* species and *Eucalyptus marginata* in higher elevated dryland areas.

There is approximately 18% (11254.99 ha) of the pre-European extent of this vegetation complex left on the Swan Coastal Plain (WALGA, 2013), with approximately 12% (4871 ha) of the pre-European extent occurring within the City of Gosnells (WALGA, 2010).

2.7 Bush Forever

Holmes Street Bushland North is a part of Bush Forever Site 125, with a larger portion of the site located south-west of Holmes Street. Three floristic community types are listed in Bush Forever Volume 2 (Government of Western Australia, 2000) as occurring within Bush Forever Site 125:
4 – *Melaleuca preissiana* damplands
S3 – Wet sedgeland on sandy clays (most southerly occurrence)
23a – Central *Banksia attenuata* – *B. menziesii* woodlands

2.8 Significant Flora

The NatureMap search indicated the potential presence of seven threatened and priority flora species listed under the *Wildlife Conservation Act 1950* (WA). The Protected Matters Search (PMST) report indicated the potential for 13 flora species listed under the *Environment Protection and Biodiversity Conservation Act* 1999 (Cwlth) (Department of the Environment, 2015b) as potentially being present or having habitat within 2 km of the site. Of the species listed, suitable habitat may occur for the following (Table 2). Conservation codes are provided in Appendix 1.

Table 2: Threatened and Priority species listed by NatureMap and PMST

Species Name	Common Name	Cons Code WA	Cons Code Cwlth	Likelihood to occur on site
Andersonia gracilis		Threatened	Endangered	Soil types are suitable
Aponogeton hexatepalus	Stalked Water Ribbons	Priority 4		Habitat and soil types are suitable
Caladenia huegelii	Grand Spider Orchid	Threatened	Endangered	Soil types are suitable
Centrolepis caespitosa		Threatened	Endangered	Habitat and soil types are suitable
Diuris purdiei	Purdie's Donkey Orchid	Threatened	Endangered	Soil types are suitable
Drakaea elastica	Glossy-leaved Hammer Orchid	Threatened	Endangered	Soil types are suitable
Lepidosperma rostratum		Threatened	Endangered	Soil types are suitable
Stenanthemum sublineare		Priority 2		Soil types are suitable
Schoenus benthamii		Priority 3		Soil types are suitable

Species Name	Common Name	Cons Code WA	Cons Code Cwlth	Likelihood to occur on site
Verticordia lindleyi subsp. *lindleyi*		Priority 4		Habitat and soil types are suitable

(Source: Department of Parks and Wildlife, 2014c; Department of the Environment, 2015b)

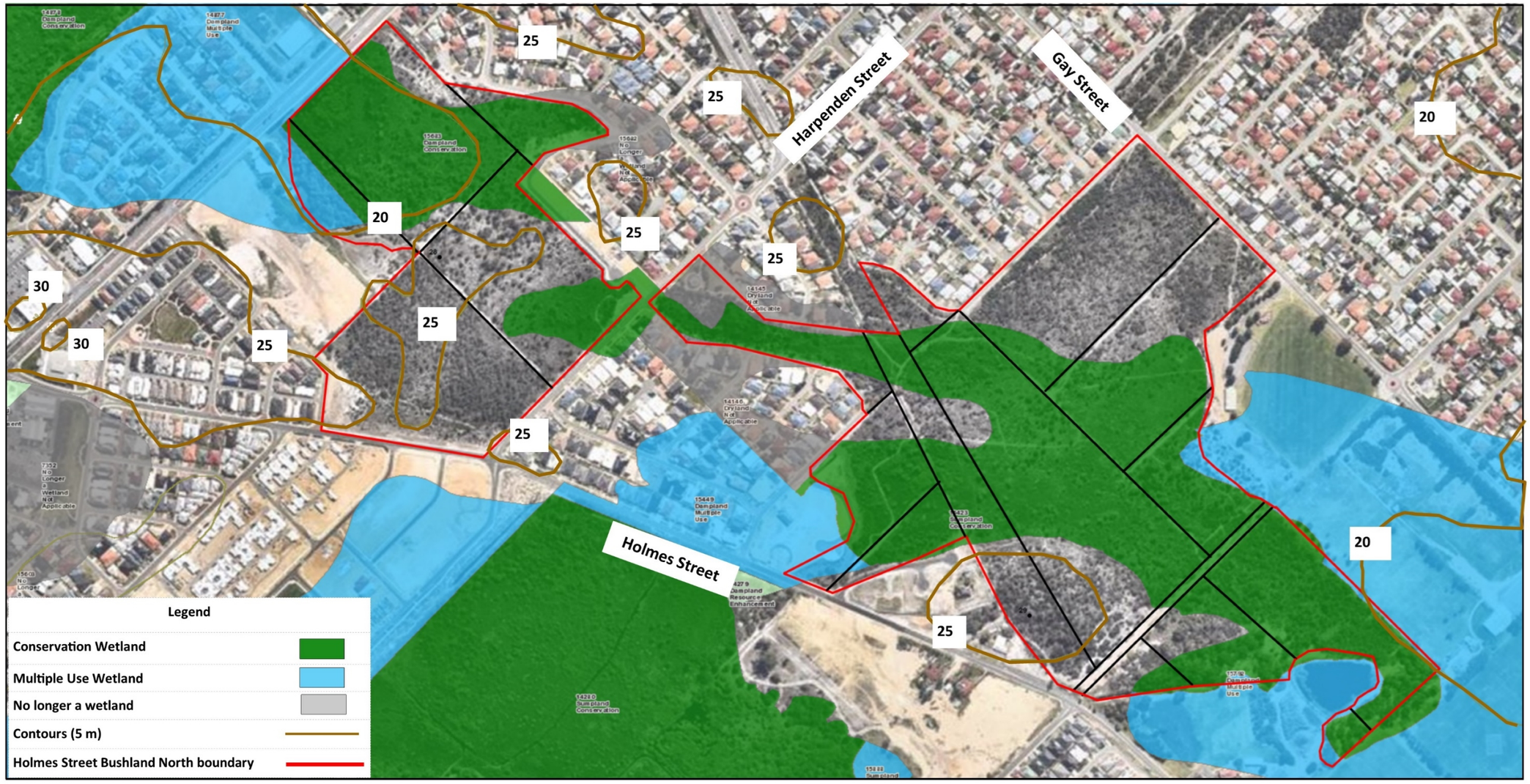

Figure 3:
Geomorphic wetlands and contours
Holmes Street Bushland North

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Client: City of Gosnells

Project: Holmes Street Bushland North Revegetation and Weed Management Plan

Image Source: WA Atlas (DPaW dataset) and NearMap, 2015

Prepared by: Sharon Hynes

Datum: GDA 94, Zone 50

0 200
Metres

Figure 4:
Wetland boundaries determined by Natural Area Holmes Street Bushland North

N

Client: City of Gosnells

Project: Holmes Street Bushland North Revegetation and Weed Management Plan

Image Source: WA Atlas (DPaW dataset) and NearMap, 2015

Prepared by: Sharon Hynes

Datum: GDA 94, Zone 50

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2.8 Fauna

Survey activities carried out by Natural Area during spring 2015 confirmed the presence of:

- six mammal species, of which five are introduced
- 24 bird species, of which one was introduced
- two native frog species
- 10 native reptile species
- 56 invertebrate species, of which two were introduced.

2.8.1 Significant Fauna

Survey activities confirmed the presence of:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*), listed as threatened under the *Wildlife Conservation Act 1950* (WA) and Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
- Rainbow Bee-eater (*Merops ornatus*), listed as migratory under the *Wildlife Conservation Act 1950* (WA) and the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
- Southern Brown Bandicoot or Quenda (*Isoodon obesulus fusciventer*), Priority 5 listed species under the *Wildlife Conservation Act 1950* (WA).

2.8.2 Introduced Fauna

The European Rabbit (*Oryctolagus cuniculus*) was recorded on site during 2015 survey activities, including scats, tracks, diggings and observations of rabbits. Rabbits damage revegetation plantings, cause erosion and promote weed growth. The control of the introduced European Red Fox (*Vulpes vulpes*) a natural predator of rabbits could cause an increase in rabbit numbers if both species are not controlled concurrently.

Recommendation

RW 1 – Rabbit control should occur on a needs basis prior to revegetation activities to prevent predation on plantings, and in conjunction with any fox control which may cause an increase in rabbit populations.

2.8.3 Fauna Management Aims

Statutory responsibility for the protection and management of native fauna resides with the Department of Parks and Wildlife under the *Wildlife Conservation Act 1950* (WA). The City does not explicitly undertake the management of native fauna. Its fauna management in HSBN is largely by default through the management of vegetation and, thereby, habitat. Revegetation works will, ultimately improve habitat and be to the benefit of native fauna. In planning for revegetation activity, assess area(s) for rabbit presence and take appropriate measures with regard to preventing predation.

Recommendation

RW 2 – Revegetation activities will consider fauna habitat requirements particularly resources for significant fauna, such as the Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo, the Rainbow Bee-eater and the Quenda.

2.9 Flora

A total of 170 flora species from 44 families were recorded within Holmes Street Bushland North during 2015 surveys, of which 124 are natives and 46 are introduced (weed) species; with 64 monocotyledons and 106 dicotyledons. The complete flora list is provided in Appendix 2, and flora quadrat data is provided in Appendix 3.

2.9.1 Floristic Community Types

All three floristic community types described in Bush Forever (Government of Western Australia, 2000) were recorded on site during 2015 site assessments. Community type 4 – Melaleuca damplands occurred in low lying areas within the site. Community type S3 – Wet sedgeland on sandy clays occurred within the eastern portion of the site where the Pinjarra S10 Phase soils occur (Figure 2). Community type 23a – Central *Banksia attenuata – B. menziesii* woodlands occurs on higher ground surrounding the wetlands.

2.9.2 Significant Flora

The Priority 3 *Jacksonia gracillima* was recorded on site in lots 1592, 1647, CR46361 and Garden Street Road Reserve (Figures 5and 6). The Endangered *Caladenia huegelii* (Grand Spider Orchid) was not found on site during 2015 surveys, although it is known to occur within the Garden Street Road Reserve, and suitable habitat for the species is also located within the Harpenden Street portion HSBN. Habitat for the Endangered Drakaea elastica was also found within the wetland areas on site although no plants were found.

Figure 5: *Jacksonia gracillima* within Garden Street Road Reserve

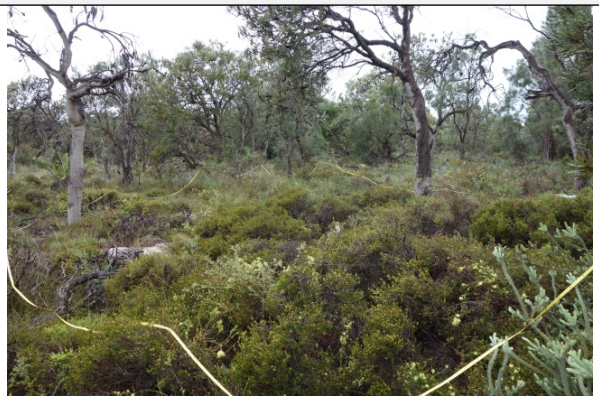
2.9.3 Threatened and Priority Ecological Communities

No threatened or priority ecological communities were recorded within Holmes Street Bushland North during 2015 survey activities. There has been discussion about adding Banksia Woodlands on the Swan Coastal Plain to the list of threatened ecological communities. If this listing is confirmed, then it will apply to this site.

2.9.4 Vegetation Types

Twelve vegetation types were identified within the Holmes Street Bushland North (Table 3; Figure 6), with the most abundant being *Banksia* Woodland located on higher elevations, surrounding wetland areas.

Table 3: Vegetation types

Vegetation Type	Description	Photo	Area
BaAfEpCaSl *Banksia, Allocasuarina fraseriana* Woodland	*Banksia attenuata* and low open woodland over *Eramaea pauciflora*, *Calytrix angulata* and *Stirlingia latifolia*		Lots 1, 9000 and Garden Street Road Reserve
BaKgMp Mixed Open Woodland	*Banksia attenuata*, *Kunzea glabrescens, Melaleuca preissiana* Low open woodland		Lots 1, CR45771, CR47575 and Garden Street Road Reserve
BaPcW Banksia attenuata Woodland	*Banksia attenuata* Woodland over a sparse middle story and a sedgeland of *Phlebocarya ciliata*; *Eucalyptus marginata* is also associated with this vegetation type		Lot 1592

Vegetation Type	Description	Photo	Area
MpAsLl *Melaleuca preissiana* Woodland over mixed wetland	*Melaleuca preissiana* low open woodland over *Astartea scoparia, Pericalymma* or *Regelia ciliata* middle storey and *Lepidosperma longitudinale, Dasypogon bromeliifolius* and *Dampiera linearis* understorey		Lots 1578, 1502, 9002, 1, 8000, 3, 1646, 1647, CR47575 and Garden Street Road Reserve
MpRc *Melaleuca preissiana* Low Open Woodland	*Melaleuca preissiana* Low Open Woodland over *Xanthorrhoea preissii* shrubland and a dense understory of *Lepidosperma longitudinale*		Lot CR45771
RcCS *Regelia ciliata* Closed Shrubland	A closed shrubland of *Regelia ciliata* over an understorey of *Phlebocarya ciliata* sedges		Lots 9000, 8000, 3, 1, 1592, 1595, 1596, CR47575 and Garden Street Road Reserve
Ms *Melaleuca systena* Closed Tall Shrubland	*Melaleuca systena* closed tall scrub with sparse middle and understorey		Lots 8000, 3, CR47575 and Garden Street Road Reserve

Vegetation Type	Description	Photo	Area
PcDb *Phlebocarya ciliata* and *Dasypogon bromeliifolius* closed sedgeland	*Phlebocarya ciliata* and *Dasypogon bromeliifolius* Closed Sedgeland with scattered *Banksia ilicifolia*, *B. Attenuata*, *Eucalyptus todtiana, Allocasuarina fraseriana* and *Xanthorrhoea preissii*		Lots 900, 1592, 1, 1595, 1596, CR45771, CR47575 and Garden Street Road Reserve
KgS *Kunzea glabrescens* Shrubland	*Kunzea glabrescens* Shrubland over sparse middle layer of mixed shrubs and an understorey of *Phlebocarya ciliata*		Lots 1596, 1647 and 1646
VdLiTp *Banksia attenuata* and *Eucalyptus todtiana* Low Open Woodland	Low open woodland of *Banksia attenuata*, *Eucalyptus todtiana* over *Xanthorrhoea preissii and Xanthorrhoea brunonis* shrubland and *Dasypogon Bromeliifolius* and *Phlebocarya ciliata* sedgeland		Lots 1578, 1502, 9000, 9002, 8000, 3, 1592, 1, 1595, 1596 and CR46361
JfEpOS *Jacksonia furcellata* and *Eremaea pauciflora* Open Shrubland	*Jacksonia furcellata* and *Eremaea pauciflora* Open Shrubland with mixed shrubs over sparse understorey dominated by *Dasypogon bromeliifolius* weedy grasses		Lot 9002

Vegetation Type	Description	Photo	Area
CcW *Corymbia calophylla* Woodland	*Corymbia calophylla* Woodland over *Xanthorrhoea preissii* and mixed shrubs and an understorey of *Dasypogon bromeliifolius* and mixed sedges		Lots 1645, 1646 and 1647

2.9.5 Vegetation Condition

Vegetation condition was assessed using the rating scale attributed to Keighery in Bush Forever Volume 2 (Government of Western Australia, 2000). Vegetation condition ranged from Completely Degraded to Excellent with no areas recorded as Pristine (Table 4; Figure 7). The majority of the site was classified as being in very good condition. Disturbed areas were identified along tracks and in open areas; these had a higher densities of weeds such as Perennial Veldt (*Ehrharta calycina*) and Bearded Oat (*Avena barbata*).

The large area classed as degraded in Lot CR47575 at the time of the condition assessment had been the subject of a fire hazard reduction burn in October 2015. This classification is only temporary, as the area is being actively managed by the City for post-fire issues and is expected to improve in condition to Good or Very Good once it has regenerated.

Table 4: Vegetation condition

	Completely Degraded	Degraded	Good	Very Good	Excellent	Pristine
Area (ha)	0.2	3.6	7.5	21.8	14.6	0
Area (%)	0.4	7.6	15.7	45.7	30.6	0

Figure 6:
***Jacksonia gracillima* locations**
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

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Metres

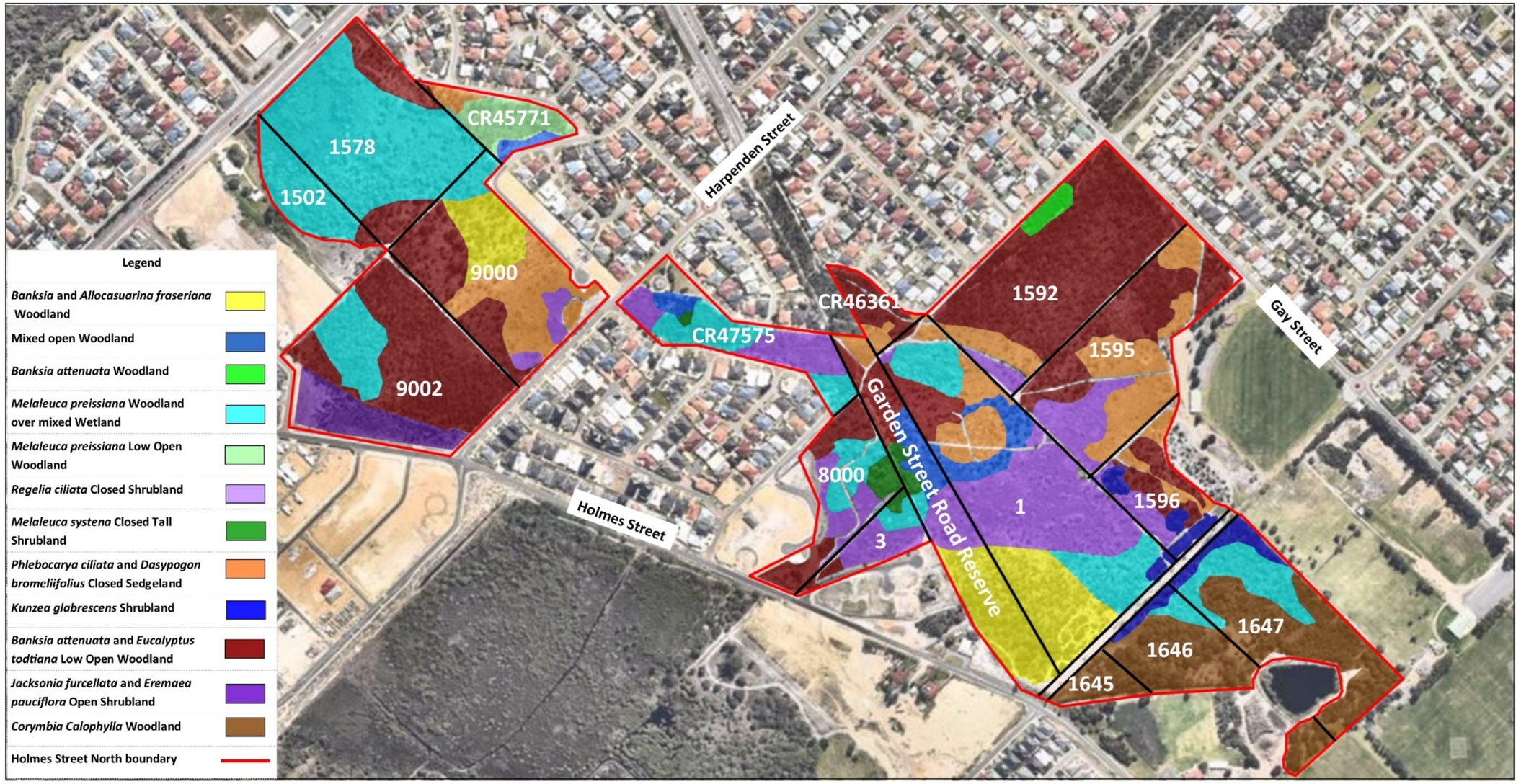

Figure 7:
Vegetation Types
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

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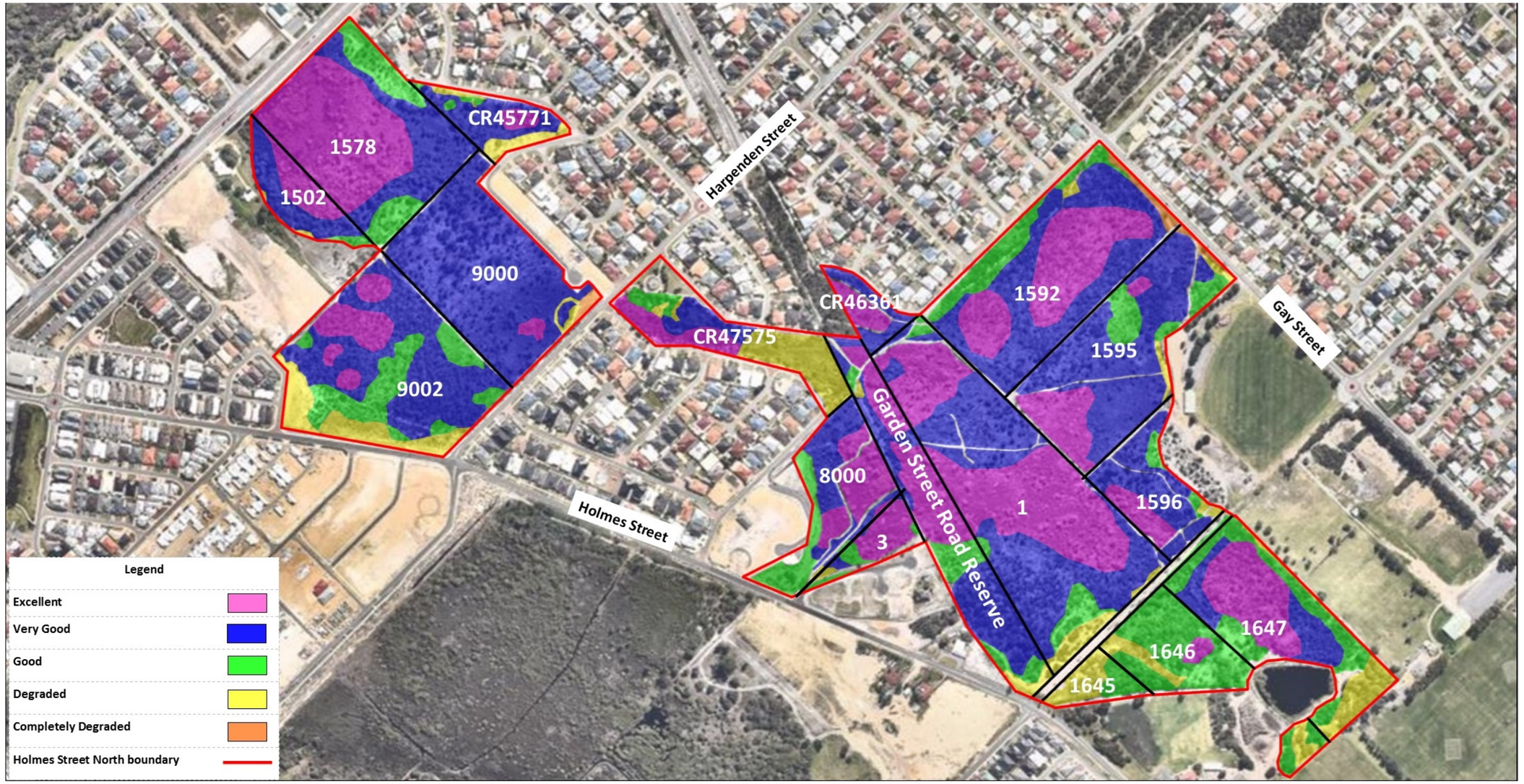

Figure 8:
Vegetation condition
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

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3.0 Weeds

A total of 46 introduced flora (weed) species were recorded on site during flora survey activities in 2015. Maps showing the location of weeds are provided in Appendix 4.

3.1 Weeds of National Significance and Declared Pests

Bridal Creeper (*Asparagus asparagoides*) was found by Natural Area during 2015 flora survey activities, and is listed as a weed of national significance (WoNS) requiring control and at a national level (Weeds Australia, 2016). It is also listed on the Western Australian Organism List (WAOL) as a category C3 declared pest under the Biosecurity and Agriculture Management Act 2007 requiring management by landowners to reduced negative environmental impacts, and to reduce numbers and spread of the species.

3.2 Department of Parks and Wildlife Prioritisation Strategy

Twelve species are listed as having a medium or high control priority on the Department of Parks and Wildlife's Weed Prioritisation Process for the Swan Coastal Plain (2015) due to their invasiveness and potential for spread:

- *Acacia iteaphylla* (Flinders Range Wattle) – H
- *Acacia longifolia* (Sydney Golden Wattle) – H
- *Asparagus asparagoides* (Bridal Creeper) – H
- *Carpobrotus edulis* (Hottentot Fig) – M
- *Euphorbia terracina* (Geraldton Carnation Weed) – M
- *Gladiolus caryophyllaceus* (Pink Gladiolus) – M
- *Lactuca serriola* (Prickly Lettuce) – M
- *Leptospermum laevigatum* (Coast Teatree) – H
- *Lupinus cosentinii* (Blue Lupin) – H
- *Melilotus indicus* (Common Melilot) – M
- *Oenothera drummondii* (Coastal Evening Primrose) – M
- *Ricinus communis* (Castor Oil Plant) – M.

These twelve species are present within Holmes Street Bushland North and have the potential to spread and increase in density, and are recommended as control priorities (Table 6), with high priority weeds highlighted red and medium priority weeds highlighted orange.

3.3 Weed Management

It is understood that it is the City's intention to engage suitably qualified and experienced bushland weed managers to prepare and implement adaptive weed control plans for the bulk of HSBN weed management. Post-fire weed management may be included in this program, but it is most likely that the City's specialist Ecological Recovery Team will assume this role.

Weed control will generally be undertaken in two separate areas of activity:

- Revegetation areas (2.56 ha), with initial works undertaken prior to initial planting and weed control maintenance carried out four times per year for 3 years post initial planting (refer to implementation schedule)

- Balance of the site as required with four visits recommended per year for 3 years and monitoring of weed control occurring biannually (refer to maps in Appendix 4).

Weed control is specifically recommended:

- prior to revegetation projects and for a minimum of three years post-planting to aid planting success
- where bushfire, planned or unplanned, provides an opportunity post-fire to achieve more effective weed management.

3.4 Post-fire Weed Control

Post-fire weed management takes advantage of a rare opportunity to achieve a significant weed management return for targeted investment. Fire, whether planned or unplanned, stimulates the germination of weed seed which, in the main, grows at a faster rate than native vegetation regrowth. An immediate opportunity exists for the use of non-selective herbicide to achieve significant weed kill without a noticeable impact on native vegetation.

Quality weed mapping can greatly inform post-fire weed management, providing for a more informed post-fire response. The location of woody weeds (or previous location if they have been removed), such as *Acacia iteaphylla*, for example, will enable targeted surveillance and control of germinants from a large seed bank. It will also allow for comparison over time between pre- and post-fire weed species and densities.

Recommendation

RW 3 – It is recommended that detailed weed mapping precedes any planned fuel reduction burn to inform post-fire weed management and monitoring.

RW 4 – Post fire weed control should be undertaken as fires can promote weed growth.

RW 5 – Residual herbicides such as Metsulfuron that can build up in the soil are recommended to be avoided during post fire weed control when more of the soil surface is exposed, with considerations given to using alternative herbicides or manual control.

3.5 Weed Control Methodologies

Weed control methodologies for the 46 weed species identified by Natural Area during 2015 site assessments are provided in Tables 5 and 6, noting that weed treatments can target more than one species.

Herbicide usage should always be as per the manufacturer's usage and safety specifications as detailed on labels and Safety Data Sheets (SDS), which can be provided by the manufacturer or downloaded from relevant internet sites. Consideration will also need to be given to the use of herbicides in bushland areas through permitted off-label use by the Australian Pesticides and Veterinary Medicines Authority (APVMA). It is recommended that herbicides such as metsulfuron and Triasulfuron be used once a year at the recommended dose in the reserve to reduce residual effect in soils, which can lead to some species becoming resistant to their effects and associated death of non-target species. The recommended treatment and treatment times are shown in the weed control methodology table (DPaW, FloraBase 2015; Brown and Brooks, 2002). Chemical weed control activities will be in accordance with the City of Gosnells' operational procedures and guidelines.

This section provides general information regarding recommended treatment types and timing for differing weed classes. However, information can change as new products come on the market and ongoing research identifies improved treatment methodologies. FloraBase (http://florabase.dpaw.wa.gov.au/) or suitable references should be regularly checked to determine preferred treatment methods.

Table 5: Weed treatment types

Treatment Number	Treatment Type	Targeted Species	Application Method and Comments
1	Glyphosate Spray	Annual and perennial grass and broadleaf weeds	Spot spray – non-selective
2	Selective grass herbicide (such as Quizalofop or Fusilade Forte)	Annual and perennial grasses	Spot spray, or overall spray in broad leaf host situations – selective grass spray
3	Metsulfuron	Annual broadleaf weeds and bulbs	Spot spray – semi selective
4	Glyphosate glove/ sponge wipe	One-leaf Cape Tulip, Gladiolus	Wipe Leaves with sponge prior to or just on flowering
5	Triclopyr or Picloram	Woody weeds and trees	Cut and paint or basal bark (summer)
6	Manual removal /hand weeding	Carnation Weeds, Fleabane, Pigface, and similar	Gloves required due to caustic sap of Carnation Weed
7	Triasulfuron	Carnation Weeds, Brassicaceae weeds post emergence and other annual	Spot spray - selective

(Source: DPaW, FloraBase 2015; Brown and Brooks, 2002)

Table 6: Weed Control Methodology

Species Name	Common Name	Treatment Number	Timing
Acacia iteaphylla	Flinders Range Wattle	5 or 6	March – July
Acacia longifolia	Sydney Golden Wattle	5 or 6	March – August
Agave sisalana		5 or 6	Year round
Arctotheca calendula	Cape Weed	1 or 6	June – November
Asparagus asparagoides	Bridal Creeper	3	July – August
Avena barbata	Wild Oats	2	July – November
Brassica tournefortii	Mediterranean Turnip	1, 6 or 7	June – August
Briza maxima	Blowfly Grass	1	July – August
Bromus diandrus	Brome Grass	2	June – September
Carpobrotus edulis	Hottentot Fig	1 or 6	Manual: Year round Herbicide: June – October
Cenchrus clandestinus	Kikuyu	2	November – January

Species Name	Common Name	Treatment Number	Timing
Chamaecytisus palmensis	Tagasaste	5 or 6	March – September
Chamelaucium uncinatum	Geraldton Wax	5	Year round
Conyza bonariensis	Flaxleaf Fleabane	1 or 6	Manual: June – September Herbicide: June – September, occasionally year round
Cynodon dactylon	Couch	2	November – February
Cyperus polystachyos	Bunchy Sedge	1	November – December
Ehrharta calycina	Perennial Veldt Grass	2	June – September (before flowering)
Eragrostis curvula	African Lovegrass	1	November - May
Erodium botrys	Long Storksbill	1	May – July
Euphorbia terracina	Geraldton Carnation Weed	1, 6 or 7	Manual: June – November Herbicide: August – September
Fumaria capreolata	Whiteflower Fumitory	3	July – September
Gladiolus caryophyllaceus	Pink Gladiolus	1 or 4	July – September
Hypochaeris glabra	Smooth Catsear	1	May – September
Lactuca serriola	Prickly Lettuce	1 or 6	September – November
Leptospermum laevigatum	Victorian Teatree	5 or 6	July to October
Lolium multiflorum	Italian Ryegrass	1, 2 or 6	July – October
Lotus subbiflorus		1 or 3	July – September
Lupinus cosentinii	Blue Lupin	3	June - September
Lysimachia arvensis	Pimpernel	1	June – November
Malva parviflora	Marshmallow	1 or 6	Manual: April – September Herbicide: April – June
Medicago polymorpha	Burr Medic	3	June – August
Melilotus indicus	Common Melilot	1 or 6	July – December
Monoculus monstrosus	Stinking Roger	1 or 6	July - September
Oenothera drummondii	Beach Primrose	1	July – September
Osteospermum ecklonis	African Veldt Daisy	1	July – September
Oxalis pes-caprae	Soursob	1 or 6	June – July
Paspalum dilatatum		2	November – March

Species Name	Common Name	Treatment Number	Timing
Pelargonium capitatum	Rose Pelargonium	1	June – October
Ricinus communis	Castor Oil Plant	5 or 6	December – May
Rubus laudatus	Blackberry	3 or 5	August – January
Solanum nigrum	Black Berry Nightshade	1 or 6	July – December
Sonchus oleraceus	Common Sowthistle	1 or 6	Manual: June – November Herbicide: June – September
Stenotaphrum secundatum	Buffalo Grass	1 or 2	November – May
Trachyandra divaricata	Dune Onion Weed	1	June – August
Ursinia anthemoides	Ursinia	1 or 6	August - November
Vicia sativa	Common Vetch	3 or 6	July - September

4.0 Revegetation Plan

Revegetation activities will occur along decommissioned FATs and walking tracks and in three specific areas (17,171 m^2) within the Holmes Street Bushland North (Figure 8). The revegetation of tracks will commence with decommissioning, which will include the placement of logs (as required to deter access and protect revegetation). Tubestock should be sourced from a Nursery and Garden Industry Western Australia (NGIWA) accredited nursery and grown from local provenance seed, hardened off and in good condition prior to planting.

Revegetation planning and activity will comprise:

- Site evaluation (fine-tuning of species selection based on adjacent vegetation)
- Detailed weed and vegetation mapping
- Evaluation of potential for fauna predation
- Collection of propagation material
- Propagation and acquisition of greenstock
- site preparation (ripping, rubbish removal, log placement, mulching, temporary fencing)
- pre-planting weed control
- plant (tubestock) installation and/or direct seeding (including tree guards if required)
- ongoing weed management (three years)
- watering (as required)
- monitoring.
- In-fill planting as required (may require further collection of propagation material)

4.1 Site Evaluation

Site evaluation to assess the habitat present within revegetation areas and vegetation present within or adjacent to fine-tuning a suitable species list for each area (Appendix 4). Note avoidance of *Phytophthora* dieback susceptible species is not recommended in this plan, as they include preferred habitat and food source species for conservation significant fauna, and in some cases are the dominants species of the area (e.g. *Banksia* species).

4.2 Detail Weed and Vegetation Mapping

Undertaking detailed weed mapping or review previous weed mapping within the revegetation areas to determine pre-planting weed control or potential controlled burn requirements.

4.3 Fauna Herbivory

Review species list and assess the potential for herbivory of plantings by fauna, with areas requiring susceptible plant species potentially requiring rabbit control. If required management of feral fauna such as rabbits can be undertaken in accordance with the City's guidelines, policies and procedures.

4.4 Collection of Propagation Material

Revegetation stock should be sourced 1-2 years prior to planting, for sufficient time to collect seed and cuttings material, and allow enough time for propagation and for plants grow to a suitable size for installation.

4.5 Site Preparation

Rubbish removal is recommended to occur in revegetation areas prior to planting, particularly the car body in Revegetation Area D. No soil preparation activities are required as the soil present consists of sandy soils, which will not be difficult to use augers or other planting equipment in. For tracks that are to be closed, the placing of large logs to prevent vehicle or pedestrian access is recommended. No mulching is recommended for the planting areas. It is the City's intent that the periphery of HSBN will be fenced prior to revegetation works being undertaken to prevent inappropriate access. Therefore, no temporary fencing will be required for the revegetation sites.

4.6 Pre-planting Weed Control

Weed control can follow controlled burns to enable removal of abundance weedy grasses, herbs and dead material making observation of weedy germinants easier, or it can occur on its own where weed abundance is lower.

4.7 Planting Installation and/or Direct Seeding

Revegetation activities within Holmes Street Bushland North will serve to complement the remaining natural areas surrounding the revegetation sites. Works will be undertaken within the two revegetation areas and along decommissioned tracks, to improve the vegetation condition within these areas. The boundary of these revegetation areas are detailed in Figure 8.

Planting should be undertaken in accordance with the City of Gosnells Revegetation Guidelines. Appropriate methodology and hygiene practices should be undertaken particularly with regards to pathogens such as Phytophthora Dieback, which is known to occur on site (refer to the Phytophthora Dieback Occurrence Assessment report). Planting should include:

- installing bamboo stakes (x3/plant) and plastic guards around each plant, to reduce potential herbivory by fauna and negative effects of the weather on plantings until they are more established
- only ground covers and small shrubs to be planted within a 2 m buffer along Strategic Fire Access Ways to avoid compromising vertical clearance and pedestrian vision.

Recommendations

RW 6 – It is recommended that plants used for revegetation are:

- grown by a Nursery and Garden Industry Western Australia (NAGIWA) accredited nursey to ensure quality stock free from pathogens, such as *Phytophthora* dieback
- sourced from seed or cuttings from within a 20 km radius of the site to maintain genetic provenance
- hardened off before planting to condition them to environmental stress
- in good condition prior to planting with vigorous root stock.

RW 7 – The decommissioning of FATs will include the placing of logs at the ends of tracks to deter vehicle and pedestrian access, prior to rehabilitation.

RW 8 – Plantings should be installed with stakes and guards to reduced herbivory by fauna and the negative impacts from weather elements until they are more established.

RW 9 – Only ground covers and shrubs below 0.5 m height should be used within 2 m of SFATs.

4.7.1 Seed Collection

The City proposes an emphasis on local provenance stock for revegetation. The HSBN provides an excellent source of seed and cutting material. Seed collection should be undertaken during the warmer months of the year, when mature seed is presenting by collectors licensed by DPaW. Cuttings can also be collected from plants that are unable to be grown from seed, these are best collected when plants are actively growing.

Seed collection within HSBN can also contribute to the generation of a seed bank to be utilised within all bushland reserves within the local government area. The use of suitable seed from nearby reserves will also increase the genetic diversity of flora species within HSBN. Seed Collection in areas prior to a controlled burn would be beneficial as it can take years for some species to set seed again post fire, this seed can also be used to revegetate the area burnt if natural regeneration is unsuccessful.

Recommendations

RW 10 – It is recommended seed be collected a minimum of one to two years in advance of revegetation works to allow to plants to grow to a suitable size for installation.

RW 11 – Only local provenance seed from within 20 km of HSBN (within the City of Gosnells) be used for revegetation activities within the site.

RW 12 – The City develop a seed banks with seed to be collected from all suitable reserves within the City of Gosnells to be used for revegetation in local reserves.

RW 13 – Seed collection occur in areas prior to controlled burns, to reduce fire impact on HSBN's seed bank.

4.7.3 Revegetation Areas

A number of revegetation projects are already ongoing within the Holmes Street Bushland north (Figure 8), including:

- areas A, B and C within the Harpenden Street Bushland (the city's direct offset program associated with the 10-Lot subdivision in the former Lot 1585 Harpenden Street)
- areas and tracks within lots 8000 Dalyup Road and 3 Holmes (by developers as a condition of subdivision approval)
- an area north-west of the water storage lake on Lots 1646 and 1647 Balfour Street (by Armadale and Gosnells Landcare Group).

Additional revegetation activities recommended in this plan are all within two revegetation areas and along decommissioned FATs and walking tracks, which require planting densities of 2 plants/m^2; existing native vegetation was also taken into account. Planting numbers within each planting area include:

- Area D (9000 m^2) – 12000 plants
- Area E (5300 m^2) – 7060 plants
- Track regeneration (2,871 m^2) – 5742 plants, although tracks of 468 m (940 plants), occurs on private land in Lot 1592, which is not yet owned by the City and may require planting at a later date (Figure 8).

In Area D only low shrubs and ground covers up to 0.5 m in height should be planted within 2 m of the SFATs, to keep the required track clearance and allow better vision along track for pedestrians. More detailed methodology and maps of revegetation areas are show in Appendix 5.

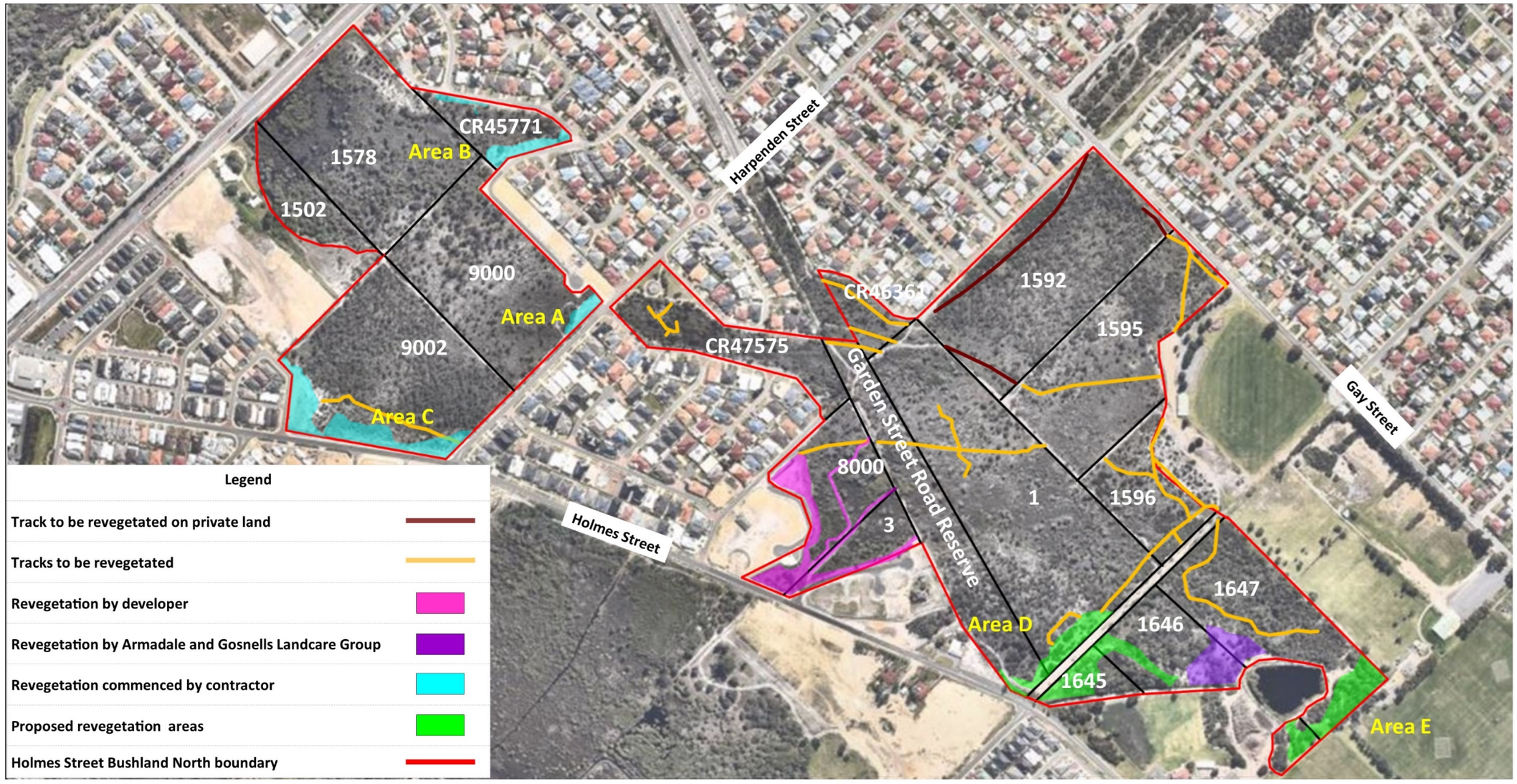

Figure 9:
Current and proposed revegetation areas
Holmes Street Bushland North

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Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 200
Metres

4.8 Rehabilitation Species

The aim of restoration and revegetation is to enhance the vegetation condition and fauna habitat at a particular location. Consideration should be given to the preferred habitat of flora species particularly in relation to the depth of water in wetland and dryland areas, with species planted in vegetation types where they naturally occur on site. Adjacent vegetated areas should be used as reference sites to fine tune vegetation species lists for revegetation areas.

In dieback affected areas consideration should be given to direct seeding, which results in less soils disturbance and reduces potential dieback spread. Planting dieback resistant species already present within existing vegetation types, would also increase planting success. A recommended planting list is provided in Table 7 with dieback susceptible species highlighted in green. Planting densities of 2 plants/m^2 are recommended in revegetation areas, with consideration given to already existing vegetation present.

Table 7: Recommended planting numbers and locations

Species Name	Form	Track Revegetation	Area E	Area F	Total Plant Numbers
Acacia huegelii	Small shrub	100	400	400	960
Acacia pulchella	Small shrub	300	600	400	1360
Acacia sessilis	Small shrub	80	400		500
Acacia stenoptera	Small shrub	210	400	400	1060
Adenanthos cygnorum	Shrub/tree	60	100		160
Adenanthos obovatus	Shrub	50			120
Allocasuarina fraseriana	Tree	60	100		160
Allocasuarina humilis	Shrub	40	200		240
Anigozanthos manglesii	Herb	200	400	200	840
Astartea scoparia	Shrub	100		200	300
Austrostipa flavescens	Grass	160	400	200	760
Banksia attenuata	Tree	40	100		140

Species Name	Form	Track Revegetation	Area E	Area F	Total Plant Numbers
Banksia ilicifolia	Tree/shrub	30			30
Banksia menziesii	Tree	32	100		140
Bossiaea eriocarpa	Small shrub	190	300	200	740
Calothamnus lateralis	Shrub	80			80
Calytrix angulata	Small shrub	100	400		500
Calytrix flavescens	Small shrub	100	400		500
Conostylis juncea	Herb	80	100	240	420
Corymbia calophylla	Tree	60		80	140
Dampiera linearis	Herb	80	200	200	560
Dasypogon bromeliifolius	Herb	100	400	300	800
Dianella revoluta	Herb	100	400	300	800
Eremaea asterocarpa	Small shrub	80	200		300
Eremaea pauciflora	Small shrub	100	400		500
Eucalyptus marginata	Tree	40	100		140
Eucalyptus todtiana	Tree	100			100
Euchilopsis linearis	Small shrub	150			200
Gastrolobium capitatum	Small Shrub	200	600	400	1200
Gompholobium tomentosum	Small Shrub	200	400	400	1020
Hakea varia	Shrub	80			80
Hemiandra pungens	Ground cover	40	400		440

Species Name	Form	Track Revegetation	Area E	Area F	Total Plant Numbers
Hibbertia huegelii	Small shrub	40	200	200	440
Hibbertia hypericoides	Small shrub	40	200		240
Hibbertia racemosa	Small shrub	100	100	200	400
Hibbertia subvaginata	Small shrub	100	200		300
Hovea trisperma	Small shrub	150	200	300	680
Hypocalymma angustifolium	Small Shrub	30		200	230
Jacksonia furcellata	Shrub	100	300	200	640
Jacksonia gracillima	Shrub	50		200	300
Juncus pallidus	Sedge	50			100
Kennedia prostrata	Ground cover	40	400	200	640
Kunzea glabrescens	Shrub	100	200	100	400
Lechenaultia floribunda	Small shrub	100		300	400
Lepidosperma longitudinale	Sedge	200			200
Lyginia barbata	Sedge	40	200		250
Lyginia imberbis	Sedge	40	200		250
Melaleuca preissiana	Tree	20			20
Melaleuca thymoides	Shrub	40			40
Melaleuca trichophylla	Small shrub	40	200		240
Nuytsia floribunda	Tree	60	40		100
Patersonia occidentalis	Herb	80	400	200	680

Species Name	Form	Track Revegetation	Area E	Area F	Total Plant Numbers
Pericalymma ellipticum	Shrub	100		100	200
Petrophile linearis	Small shrub	100	300		400
Philotheca spicata	Small shrub	100	300	200	630
Phlebocarya ciliata	Sedge	100	260	300	680
Regelia ciliata	Shrub	100		160	260
Scholtzia involucrata	Small shrub	100	300		400
Stirlingia latifolia	Small shrub	100	300		400
Xanthorrhoea brunonis	Grass tree	100	100	40	240
Xanthorrhoea preissii	Grass tree	100	100	40	240
Xanthosia huegelii	Herb	80		200	300
Total Plants/Area		**5742**	**12000**	**7060**	**25590**

4.8.1 Infill Planting

Infill planting should occur one year after planting where plant mortality is observed during monitoring activities or where the density of plantings (plants/m^2) is below 2/m^2. This should take place in the proposed planting areas identified in Figure 8, and shown in more detail in Appendix 5. Infill planting should will include installing bamboo stakes (x3/plant) and plastic guards around each plant. The indicative project costs in Section 6.0 have allowed for 30% mortality rate, with actual requirements to be determined through formal monitoring.

4.8.2 Watering

Irrigation can increase the survival of new seedlings by reducing water stress over the summer months. This can be achieved through periodic watering visits using a mobile watering unit. This has the advantage of being a cost-effective method of delivering water, when needed, to required locations. To reduce mortality, watering should occur directly on planting (if planting occurs on a dry day) and once every month during the first two summers (November – February) at a rate of 2 L per plant. However, if plants are suffering drought stress, additional watering may be required.

4.8.3 Fire in Revegetation Areas

No controlled burns are recommended within revegetation areas as plants will be too small to withstand fire. Fire fuel load reductions could focus on bushland areas surrounding planting areas to minimise potential impacts of fires on revegetation. Controlled burns can be used as a preparation tool in conjunction with weed control prior to revegetation activities, to improve the potential success of plantings.

Recommendation

RW 14 – Consideration by the city should be given to using controlled burns within future revegetation areas as a site preparation tool.

RW 15 – Fire fuel load reductions could focus on bushland surrounding revegetation areas to reduce the potential for fires to impact plantings.

4.9 Maintenance

The contractor will undertake activities detailed in this plan and summarised in Tables 8, 9 and 10, and will maintain the revegetation sites for a period of three years. If completion criteria are not met at the conclusion of this period, a further period of maintenance will be required until they are met, at which time the management of the sites will be assumed by the City of Gosnells. Maintenance of the site will be undertaken in accordance with City of Gosnells schedules and current practices and will include:

- access and fencing maintenance
- control of significant weed infestations, including manual removal where use of herbicide may cause off-target damage
- general site assessment and informal monitoring
- maintenance visits should be scheduled after the initial planting has been completed in each area and maintenance activities will include:

- maintenance and removal of tree guards once plants are established (prior to summer months)
- removal of dead plants
- removal of rubbish.

4.10 Monitoring

Monitoring of vegetation activities within the three revegetation areas and areas of track revegetation will occur twice annually during autumn and spring for three years after the initial planting. Monitoring will involve:

- setting up 8 – 10 photo monitoring points after initial planting has occurred, with photos taken of each vegetation area to enable comparison of tubestock growth over time
- establishing two 5 x 5 m quadrats within each revegetation area with plant/species survival, vegetation health and community structure recorded
- assessing the site with any maintenance issues recorded, such as rubbish, erosion or damage to fencing or pathways
- the outcomes of each monitoring event will be reported to the City of Gosnells including any recommendations for infill planting and maintenance actions.

4.10.1 Completion Criteria

Monitoring activities will also assess the success of the revegetation works by comparing outcomes of the monitoring activities to the completion criteria. For the revegetation works to be considered successful the criteria for completion is as follows:

- at least 70% survival rate of all plantings
- at least 90% of species are represented in total species composition by year 3
- a maximum of 5% weed coverage within the revegetation areas.

5.0 Management Recommendations Summary

Table 8: Revegetation and Weed Management recommendations

Recommendations	
RW 1	Rabbit control should occur on a needs basis prior to revegetation activities to prevent predation on plantings, and in conjunction with any fox control which may cause an increase in rabbit populations.
RW 2	Revegetation activities will consider fauna habitat requirements particularly resources for significant fauna, such as the Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo, the Rainbow Bee-eater and the Quenda.
RW 3	It is recommended that detailed weed mapping precedes any planned fuel reduction burn to inform post-fire weed management and monitoring.
RW 4	Post fire weed control should be undertaken as fires can promote weed growth.
RW 5	Residual herbicides such as Metsulfuron that can build up in the soil are recommended to be avoided during post fire weed control when more of the soil surface is exposed, with considerations given to using alternative herbicides or manual control.
RW 6	It is recommended that plants used for revegetation are: ▪ grown by a Nursery and Garden Industry Western Australia (NAGIWA) accredited nursey to ensure quality stock free from pathogens, such as *Phytophthora* dieback ▪ sourced from seed or cuttings from within a 20 km radius of the site to maintain genetic provenance ▪ hardened off before planting to condition them to environmental stress ▪ in good condition prior to planting with vigorous root stock.
RW 7	The decommissioning of FATs will include the placing of logs at the ends of tracks to deter vehicle and pedestrian access, prior to rehabilitation (Appendix 5).
RW 8	Plantings should be installed with stakes and guards to reduced herbivory by fauna and the negative impacts from weather elements until they are more established.
RW 9	Only ground covers and shrubs below 0.5 m height should be used within 2 m of SFATs.
RW 10	It is recommended seed be collected a minimum of one to two years in advance of revegetation works to allow to plants to grow to a suitable size for installation.
RW 11	Only local provenance seed from within 20 km of HSBN (within the City of Gosnells) be used for revegetation activities within the site.
RW 12	The City develop a seed banks with seed to be collected from all suitable reserves within the City of Gosnells to be used for revegetation in local reserves.
RW 13	Seed collection occur in areas prior to controlled burns, to reduce fire impact on HSBN's seed bank.
RW 14	Consideration by the city should be given to using controlled burns within future revegetation areas as a site preparation tool.
RW 15	Fire fuel load reductions could focus on bushland surrounding revegetation areas to reduce the potential for fires to impact plantings.

Recommendations	
AB 16	SFATs are upgraded and maintained to a minimum 4 m width with vertical clearance to 6m height, with the minimal necessary vegetation clearing undertaken to protect vegetation condition and fauna habitat.
AB 21	Manual fire fuel load reduction need to takes into consideration protection of vegetation condition and fauna habitat requirements within HSBN.
AB 24	It is recommended that seed collection and appropriate plant salvage is carried out in advance of any controlled burns.
AB 26	Post fire monitoring of conservation significant flora should be undertaken, with location, population size, health and potential threatening processes recorded.

6.0 Implementation Schedule

The implementation schedule is provided in Tables 9, 10, 11 and 12, showing years 1 to 4 for all management actions identified in section 3.0. Indicative costings for works described in Section 3.0 are provide in Table 12. The implementation of this Revegetation Management Plan will occur over four calendar years, during this time 25590 plants will be installed over the selected tracks and revegetation areas at a projected cost of approximately **$197,532.00** (ex. GST).

Table 9: Implementation schedule Year 1

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Greenstock procurement												
Cuttings collection												
Seed collection												
Plant propagation												
Tubestock procurement												
Weed control												
Glyphosate												
Selective grass												
Manual												
Access												
Revegetation												
All revegetation areas												
Watering												
Planting all revegetation areas												
Monitoring												
All revegetation areas												
Maintenance												
All revegetation areas												

Table 10: Implementation schedule Year 2

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Greenstock procurement												
Cuttings collection												
Seed collection												
Plant propagation												
Tubestock procurement												
Weed control												
Glyphosate												
Selective grass												

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Manual												
Revegetation												
Infill planting all areas												
Watering												
All revegetation areas												
Monitoring												
All revegetation areas												
Maintenance												
All revegetation areas												

Table 11: Implementation schedule Year 3

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Greenstock procurement												
Tubestock procurement												
Weed control												
Glyphosate												
Selective grass												
Manual												
Revegetation												
Infill planting all areas												
Watering												
All revegetation areas												
Monitoring												
All revegetation areas												
Maintenance												
All revegetation areas												

Table 12: Implementation schedule Year 4

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weed control												
Glyphosate												
Selective grass												
Manual												
Monitoring												
All revegetation areas												

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maintenance												
All revegetation areas												

7.0 Cost Schedule

Indicative costs and timing of revegetation works are provided in Table 12. Final cost of tubestock will be dependent on stock availability and final species mix.

Table 12: Indicative costings for revegetation works, years 1 to 4

	Year 1				Year 2				Year 3				Year 4			
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)**
Weed control and maintenance (revegetation areas)																
Preparatory weed management	Day	2	1,072.00	1,072.00	-	-	-	-	-	-	-	-	-	-	-	-
Quarterly weed management and any other maintenance aspects	Visit	3	1,072.00	3,216.00	Visit	4	1,072.00	4,288.00	Visit	4	1,072.00	4,288.00	Visit	4	1,072.00	4,288.00
Subtotal (ex GST)				**5,360.00**				**4,288.00**				**4,288.00**				**4,288.00**
Weed control and maintenance (bushland except for revegetation areas)																
Quarterly weed management and any other maintenance aspects	Visit	4	1,072.00	4,288.00	Visit	4	1,072.00	4,288.00	Visit	4	1,072.00	4,288.00	Visit	4	1,072.00	4,288.00
Subtotal (ex GST)				**4,288.00**				**4,288.00**				**4,288.00**				**4,288.00**
Revegetation works																
Cuttings/seed collection	Day	4	975.00	3,900.00	Day	4	975.00	3,900.00	Day	4	975.00	3,900.00	Day	4	975.00	3,900.00
Supply tubestock (average per plant cost)	Ea.	17913	1.75	31,347.75	Ea.	3839	1.75	6,718.25	Ea.	3838	1.75	6,716.50				
Tubestock installation (including tree guards)	Ea.	17913	3.00	53,739.00	-	-	-	-	-	-	-	-				
Infill tubestock installation (including tree guards)	-	-	-	-	Ea.	3839	3.00	11,517.00	Ea.	3838	3.00	11,505.00				
Watering over summer	Day	1	487.50	487.50	Day	4	487.50	1,950.00	Day	4	487.50	1,950.00				
Subtotal (ex GST)				**89,474.25**				**24,085.25**				**24,071.50**				**3,900.00**
Monitoring and reporting																
Monitoring	Day	1	975.00	975.00	Day	2	975.00	1,950.00	Day	2	975.00	1,950.00	Day	2	975.00	1,950.00
Reporting	Day	2	975.00	1,950.00	Day	4	975.00	3,950.00	Day	4	975.00	3,950.00	Day	4	975.00	3,950.00
Subtotal (ex GST)				**2,925.00**				**5,900.00**				**5,900.00**				**5,900.00**
Yearly Total (ex GST)				**102,047.25**				**38,561.25**				**38,547.50**				**18,376.00**
GST				**10,204.72**				**3856.12**				**3,854.75**				**1,837.60**
Yearly Total (inc GST)				**112,251.97**				**42,417.37**				**42,402.25**				**20,213.60**
Project Total (ex GST)		**197,532.00**														
GST		**19,753.19**														
Project Total (inc GST)		**217,285.19**														

7.0 References

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Wildlife Conservation Act 1950 (WA)

Appendix 1: Conservation Codes

Western Australia

Conservation Code	Name	Description
T	Threatened	Flora or fauna that is rare or likely to become extinct (Schedule 1 of the *Wildlife Conservation Act* 1950)
X	Presumed Extinct	Flora or fauna that is presumed to be extinct in the wild (Schedule 2 of the *Wildlife Conservation Act* 1950)
IA	International Agreement	Birds protected under international agreement (Schedule 3 of the *Wildlife Conservation Act* 1950)
S	Specially Protected	Other specially protected fauna (Schedule 4 of the *Wildlife Conservation Act* 1950)
Schedule 1 species are ranked by DPaW according to their level of threat using IUCN Red List criteria		
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild
EN	Endangered	Species considered to be facing a very high risk of extinction within the wild
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild
Species that have not been adequately surveyed for listing under Schedule 1 or 2 of the Wildlife Protection Act		
1	Priority One	Poorly known species – known from one or a few collections or sight records (generally <5), on all lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
2	Priority Two	Poorly known species – known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
3	Priority Three	Poorly known species – known collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.
4	Priority Four	Rare or near threatened and other species in need of monitoring.
5	Priority Five	Conservation dependent species that are not threatened but are subject to a specific conservation program, the cessation

Conservation Code	Name	Description
		of which would result in them becoming threatened within five years.

(Source: Department of Parks and Wildlife, 2015a)

Commonwealth

Category	Description
Critically Endangered	Species facing an extremely high risk of extinction in the wild in the immediate future
Endangered	Species facing a very high risk of extinction in the wild in the near future
Vulnerable	Species facing a high risk of extinction in the wild in the medium term

(Source: Department of the Environment, 2015a)

Appendix 2: Flora List Holmes Street Bushland North

* Introduced species
1 Sourced from Burrows, Wardell-Johnson and Ward, 2007

Family	Species Name	Common Name	Months to Flowering[1]
Monocotyledon (Liliopsida)			
ANARTHRIACEAE	*Lyginia barbata*		21
	Lyginia imberbis		
ASPARAGACEAE	**Agave sisalana*		
	**Asparagus asparagoides*	Bridal Creeper	
	Chamaescilla corymbosa	Blue Squill	7
	Lomandra caespitosa	Tufted Mat Rush	33
	Lomandra nigricans		
	Lomandra preissii		
	Lomandra sp.		
	Thysanotus multiflorus	Many-flowered Fringe Lily	12
	Thysanotus patersonii	Patterson's Fringed Lily	22
	Thysanotus thyrsoideus		
ASPHODELACEAE	**Trachyandra divaricata*	Trachyandra	
COLCHICACEAE	*Burchardia congesta*	Milkmaids	
CYPERACEAE	*Cyperaceae* sp.		
	**Cyperus polystachyos*	Bunchy Sedge	
	Lepidosperma longitudinale	Pithy Sword-sedge	24
	Lepidosperma squamatum		22
	Schoenus curvifolius		24
	Schoenus pedicellatus		
	Schoenus sp. 1		
	Schoenus sp. 2		
	Tetraria octandra		12
DASYPOGONACEAE	*Dasypogon bromeliifolius*	Pineapple Bush	6
HAEMODORACEAE	*Anigozanthos manglesii*	Mangles Kangaroo Paw	12
	Blancoa canescens	Red Bugle	24
	Conostylis juncea	Cone Flowers	

Family	Species Name	Common Name	Months to Flowering[1]
	Haemodorum laxum	Haemodorum	6
	Phlebocarya ciliata		18
	Phlebocarya filifolia		
HEMEROCALLIDACEAE	*Arnocrinum preissii*	Preiss's Arnocrinum	
	Caesia micrantha	Pale Grass Lily	
	Caesia occidentalis		
	Dianella revoluta	Flax Lilies	36
	Hensmania turbinata		
	Tricoryne elatior	Yellow Autumn Lily	24
IRIDACEAE	**Gladiolus caryophyllaceus*	Pink Gladiolus	
	Patersonia occidentalis	Purple Flag	36
JUNCACEAE	*Juncus pallidus*	Pale Rush	
LAXMANNIACEAE	*Laxmannia squarrosa*		
ORCHIDACEAE	*Caladenia arenicola*	Carousel Spider Orchid	
	Caladenia flava	Cowslip Orchid	24
	Microtis media	Tall Mignonette Orchid	
	Pterostylis brevisepala		
	Thelymitra graminea		
POACEAE	*Amphipogon turbinatus*	Amphipogon	12
	Austrostipa flavescens		6
	**Avena barbata*	Bearded Oat	
	**Briza maxima*	Blowfly Grass	
	**Bromus diandrus*	Great Brome	
	**Cenchrus clandestinus*	Kikuyu	
	**Cynodon dactylon*	Couch Grass	
	**Ehrharta calycina*	Perennial Veldt Grass	
	**Eragrostis curvula*	African Love Grass	
	**Lolium multiflorum*	Italian Ryegrass	
	**Paspalum dilatatum*		
	**Stenotaphrum secundatum*	Buffalo Grass	
RESTIONACEAE	*Desmocladus flexuosus*		
	Hypolaena exsulca	Hypolaena	

Family	Species Name	Common Name	Months to Flowering[1]
	Lepyrodia glauca		
	Loxocarya cinerea		
	Meeboldina coangustata		
	Xanthorrhoea brunonis	Grass Tree	
	Xanthorrhoea preissii	Grass Tree	9
Dicotyledon (Magnoliopsida)			
AIZOACEAE	**Carpobrotus edulis*	Hottentot Fig	
APIACEAE	*Centella asiatica*	Pennywort, Centella	
	Platysace filiformis		
	Xanthosia huegelii	Xanthosia	32
ASTERACEAE	**Arctotheca calendula*	Cape Weed	
	**Conyza bonariensis*	Flaxleaf Fleabane	
	**Hypochaeris glabra*	Smooth Catsear	
	**Lactuca serriola*	Prickly Lettuce	
	**Monoculus monstrosus*	Stinking Roger	
	**Osteospermum ecklonis*	African Veldt Daisy	
	Podotheca angustifolia	Sticky Long-heads	
	Siloxerus humifusus	Procumbent Siloxerus	
	**Sonchus oleraceus*	Common Sowthistle	
	Trachymene pilosa	Native Parsnip	12
	**Ursinia anthemoides*	Ursinia	
BRASSICACEAE	**Brassica tournefortii*	Mediterranean Turnip	
CAMPANULACEAE	*Wahlenbergia preissii*		
CASUARINACEAE	*Allocasuarina fraseriana*	Sheoak	36
	Allocasuarina humilis	Dwarf Sheoak	36
DILLENIACEAE	*Hibbertia huegelii*	Huegel's Hibbertia	
	Hibbertia hypericoides	Yellow Buttercups	22
	Hibbertia racemosa	Stalked Hibbertia	29
	Hibbertia subvaginata		
DROSERACEAE	*Drosera erythrorhiza*		11
	Drosera macrantha	Sundews	
	Drosera menziesii	Menzies' Rainbow	8

Family	Species Name	Common Name	Months to Flowering[1]
ERICACEAE	*Conostephium pendulum*	Pearl Flower	60
	Leucopogon conostephioides		
	Leucopogon polymorphus		
	Leucopogon propinquus		27
EUPHORBIACEAE	**Euphorbia terracina*	Geraldton Carnation Weed	
	**Ricinus communis*	Castor Oil Plant	
FABACEAE	*Acacia huegelii*	Huegel's Wattle	
	**Acacia iteaphylla*	Flinders Range Wattle	
	**Acacia longifolia*	Sydney Golden Wattle	
	Acacia pulchella	Prickly Moses	24
	Acacia sessilis		
	Acacia stenoptera	Narrow Winged Wattle	36
	Bossiaea eriocarpa	Common Brown Pea	12
	**Chamaecytisus palmensis*	Tagasaste	
	Euchilopsis linearis	Swamp Pea	
	Gastrolobium capitatum		
	Gompholobium tomentosum	Hairy Yellow Pea	31
	Hovea trisperma	Common Hovea	42
	Jacksonia gracillima		
	Kennedia prostrata	Scarlet Runner	19
	**Lotus subbiflorus*		
	**Lupinus cosentinii*	Blue Lupin	
	**Medicago polymorpha*	Burr Medic	
	**Melilotus indicus*	Common Melilot	
	**Vicia sativa*	Common Vetch	
	Viminaria juncea	Swishbush	
GERANIACEAE	**Erodium botrys*	Long Storksbill	
	**Pelargonium capitatum*	Rose Pelargonium	
GOODENIACEAE	*Dampiera linearis*	Common Dampiera	24
	Lechenaultia floribunda	Free-flowering Leschenaultia	12
HALORAGACEAE	*Gonocarpus pithyoides*		
LAMIACEAE	*Hemiandra pungens*	Snakebush	24 – 33

Family	Species Name	Common Name	Months to Flowering[1]
LAURACEAE	*Cassytha glabella*	Tangled Dodder Laurel	
LORANTHACEAE	*Nuytsia floribunda*	Christmas Tree	24
MALVACEAE	**Malva parviflora*	Marshmallow	
MYRTACEAE	*Astartea scoparia*		
	Calothamnus lateralis	One-sided Bottlebrushes	24
	Calytrix angulata	Yellow Starflower	
	Calytrix flavescens	Summer Starflower	30
	**Chamelaucium uncinatum*	Geraldton Wax	
	Corymbia calophylla	Marri	48
	Eremaea asterocarpa		
	Eremaea pauciflora	Sandplain Eremaea	48
	Eucalyptus marginata	Jarrah	48
	Eucalyptus rudis		48
	Eucalyptus todtiana		48
	Hypocalymma angustifolium	White Myrtle	48
	Kunzea glabrescens	Spearwood	
	**Leptospermum laevigatum*	Coast Teatree	
	Melaleuca lateritia	Robin Redbreast Bush	60
	Melaleuca preissiana	Moonah	24
	Melaleuca rhaphiophylla	Swamp Paperbark	
	Melaleuca thymoides		44
	Melaleuca trichophylla		36
	Pericalymma ellipticum	Swamp Teatree	22
	Regelia ciliata		60
	Scholtzia involucrata	Spiked Scholtzia	
ONAGRACEAE	**Oenothera drummondii*	Beach Evening Primrose	
OXALIDACEAE	**Oxalis pes-caprae*	Soursob	
PAPAVERACEAE	**Fumaria capreolata*	White-flower Fumitory	
PHYLLANTHACEAE	*Poranthera microphylla*	Small Poranthera	12
PRIMULACEAE	**Lysimachia arvensis*	Pimpernel	
PROTEACEAE	*Adenanthos cygnorum*	Common Woollybush	24
	Adenanthos obovatus	Basket Flower	30

Family	Species Name	Common Name	Months to Flowering[1]
	Banksia attenuata	Slender Banksia	48
	Banksia menziesii	Firewood Banksia	24
	Hakea varia	Variable-leaved Hakea	24
	Persoonia saccata	Snottygobble	13
	Petrophile linearis	Pixie Mops	25
	Stirlingia latifolia	Blueboy	24
ROSACEAE	**Rubus laudatus*	Blackberry	
RUTACEAE	*Boronia dichotoma*	Boronia	
	Philotheca spicata	Pepper and Salt	
SOLANACEAE	**Solanum nigrum*	Black Berry Nightshade	
STYLIDIACEAE	*Levenhookia stipitata*	Common Stylewort	
	Stylidium brunonianum	Pink Fountain Triggerplant	12
	Stylidium diuroides subsp. *diuroides*		
	Stylidium piliferum	Common Butterfly Triggerplant	12
	Stylidium repens	Matted Triggerplant	7
VIOLACEAE	*Hybanthus calycinus*	Wild Violet	

Appendix 3: Flora Quadrat Data

Quadrat No.: 1
Survey Date: 12/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401216.42 N: 6449219.46
Location: Holmes Street Bushland North
Aspect: SE
Soil: Sand
Leaf Litter: 20% (0.1cm)
Condition: Excellent
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	2.0	1.5	*Solanum nigrum	0.5	1.0
Astartea scoparia	20.0	2.0	**Eragrostis curvula*	0.5	1
Calothamnus lateralis	4.0	1.0			
Cassytha glabella	1.0	2			
Dampiera linearis	1.0	0.5			
Euchilopsis linearis		1.50			
Hybanthus calycinus	0.5	<0.5			
Hypolaena exsulca	2	1			
Juncus pallidus	2.0	1			
Lepidosperma Longitudinale	70.0	1			
Lepyrodia glauca	2.0	1.5			
Melaleuca preissiana	10.0	>10			
Pericalymma ellipticum	2.0	1.5			
Regelia ciliata	2.0	2.0			

Quadrat No.: 2
Survey Date: 12/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401286.2 N: 6449195.2
Location: Holmes Street Bushland North
Aspect: S
Soil: Sandy Loam
Leaf Litter: 4% (0.5 cm)
Condition: Excellent
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Astartea scoparia	1	1.0			
Calothamnus lateralis	5	2			
Cassytha glabella	2	2			
Eucalyptus rudis	4	<10			
Euchilopsis linearis	1	1			
Lepidosperma longitudinale	70	1.5			
Lepyrodia glauca	20	1.5			
Melaleuca lateralis	2	2			
Melaleuca rhaphiophylla	2	<10			

Quadrat No.: 3
Survey Date: 12/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401389.7 N: 6559195.28
Location: Holmes Street Bushland North
Aspect: SE
Soil: Sand
Leaf Litter: 5% (0.5 cm)
Condition: Very Good
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	6	2	*Ehrharta calycina	0.1	1
Acacia stenoptera	1	1.0	**Gladiolus caryophyllaceus*	0.1	0.5
Adenanthos cygnorum	0.5	3	**Monoculus monstrosus*	0.1	0.5
Astartea scoparia	1	1.5	**Ursinia anthemoides*	0.1	0.5
Boronia spathulata	0.1	1			
Cyperaceae sp.	1	1			
Dampiera linearis/cuneata					
Euchilopsis linearis	1	1			
Gompholobium tomentosum	1	1			
Hemiandra pungens		<0.5			
Hibbertia racemosa	0.5	<0.5			
Hypolaena exsulca	0.1	0.5			
Kennedia prostrata	2	<0.5			
Kunzea glabrescens	4	2			
Lyginia barbata	0.5	<0.5			
Melaleuca preissiana	3	<10			
Pericalymma ellipticum	4	1.5			
Phlebocarya ciliata	2	0.5			
Regelia ciliata	50	1.5			
Stylidium brunonianum	0.1	<0.5			
Thysanotus multiflorus	2	0.5			
Trachymene pilosa	0.1	<0.5			
Tricoryne elatior	0.5	<0.5			
Xanthosia huegelii	0.1	<0.5			

Quadrat No.:	4
Survey Date:	12/10/2015
Personnel:	Alex Devine, Taryn Brebner
GPS Coordinates:	E: 401507.29 N: 6449217.4
Location:	Holmes Street Bushland North
Aspect:	None
Soil:	Sand
Leaf Litter	1% (0.1cm)
Condition:	Excellent
Notes:	

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Adenanthos obovatus	3	1	**Briza maxima*	0.1	<0.5
Allocasuarina fraseriana	2	<10	**Ehrharta calycina*	0.1	1.5
Bossiaea eriocarpa	1	0.5	**Gladiolus caryophyllaceus*	0.5	1
Burchardia congesta	1	0.5			
Conostylis juncea	0.1	<0.5			
Dampiera linearis	0.1	<0.5			
Dasypogon bromeliifolius	20	0.5			
Eucalyptus todtiana	2	<10			
Hovea trisperma	1	1			
Hypocalymma angustifolium	1	1			
Hypolaena exsulca	1	<0.5			
Jacksonia gracillima	1	1			
Laxmannia squarrosa	0.1	<0.5			
Melaleuca thapsina	0.5	2.0			
Patersonia occidentalis	5	0.5			
Phlebocarya ciliata	40	0.5			
Regelia ciliata	3	1.5			
Restionaceae sp.	0.2	1			
Stylidium piliferum	0.1	<0.5			
Tricoryne elatior	0.1	<0.5			
Ursinia anthemoides	0.1	<0.5			
Xanthorrhoea brunonis	3	1			
Xanthorrhoea preissii	6	1			

Quadrat No.: 5
Survey Date: 12/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401640.6 N: 6449143.75
Location: Holmes Street Bushland North
Aspect: SE
Soil: Sand
Leaf Litter: 1% (0.1 cm)
Condition: Excellent
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	4	1.5	**Gladiolus caryophyllaceous*	0.1	1
Astartea scoparia	1	1			
Boronia spathulata	1	1			
Euchilopsis linearis	0.1	<0.5			
Schoenus sp.	0.1	0.5			
Kunzea glabrescens	2	<10			
Lepidosperma longitudinale	60	1			
Melaleuca preissiana	4	2			
Melaleuca trichophylla	1	1.0			
Pericalymma ellipticum	2	1			
Stylidium brunonianum	0.1	<0.5			

Quadrat No.: 6
Survey Date: 13/01/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401468.37 N: 6449207.31
Location: Holmes Street Bushland North
Aspect: SW
Soil: Sand
Leaf Litter: 1% (0.05 cm)
Condition: Excellent
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	2	0.4	**Gladiolus caryophyllaceus*	0.1	0.4
Adenanthos obovatus	2	1.5	**Ursinia anthemoides*	0.1	0.2
Burchardia congesta	0.5	0.5			
Calytrix angulata					
Dampiera linearis	0.1	0.3			
Dasypogon bromeliifolius	40	0.3			
Eucalyptus todtiana	1	6			
Euchilopsis linearis	0.5	0.3			
Gompholobium tomentosum	1	0.5			
Hovea trisperma	0.5	0.4			
Hypocalymma angustifolium	2	1			
Hypolaena exsulca	2	0.3			
Lomandra preissii	0.1	0.3			
Patersonia occidentalis	5	0.4			
Pericalymma ellipticum	0.5	0.5			
Phlebocarya ciliata	30	0.3			
Regelia ciliata	2	1.5			
Stylidium diuroides subsp. *diuroides*	0.1	0.3			
Stylidium piliferum	0.1	0.3			
Stylidium brunonianum	0.1	0.3			
Tricoryne elatior	0.1	0.2			
Xanthorrhoea brunonis	1	1			
Xanthorrhoea preissii	2	1.5			
Xanthosia huegelii	0.1	0.2			

Quadrat No.: 7
Survey Date: 13/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401523.81 N: 6449117.69
Location: Holmes Street Bushland North
Aspect: None
Soil: Sand
Leaf Litter: 2% (0.05 cm)
Condition: Excellent
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	1	1	**Briza maxima*	0.1	0.1
Banksia attenuata	3	7	**Gladiolus caryophyllaceus*	0.1	1
Banksia menziesii	1	2			
Boronia dichotoma	2	1			
Bossiaea eriocarpa	1	0.5			
Burchardia congesta	1	0.5			
Calytrix flavescens	0.1	0.2			
Chamaescilla corymbosa	0.1	0.2			
Conostylis juncea	0.1	0.7			
Dampiera linearis	0.1	0.2			
Dasypogon bromeliifolius	30	0.3			
Drosera menziesii	0.1	0.4			
Eremaea pauciflora	0.5	1			
Eucalyptus todtiana	5	10			
Gompholobium tomentosum	0.1	0.2			
Hypolaena exsulca	0.1	0.2			
Jacksonia gracillima	1	0.8			
Lepidosperma squamatum	0.1	0.3			
Lomandra caespitosa	0.1	0.1			
Lyginia imberbis	1	0.3			
Melaleuca thymoides	2	1.5			
Patersonia occidentalis	3	0.3			
Phlebocarya ciliata	20	0.3			
Schoenus curvifolius	0.1	0.2			
Schoenus pedicellatus	2	0.3			
Stylidium piliferum	0.1	0.3			
Stylidium brunonianum	0.1	0.4			
Thysanotus thyrsoideus	0.1	0.4			
Tricoryne elatior	0.1	0.2			
Xanthorrhoea brunonis	4	1.5			
Xanthorrhoea preissii	5	1.5			

Quadrat No.: 8
Survey Date: 13/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401546.71 N: 6449044.36
Location: Holmes Street Bushland North
Aspect: None
Soil: Sandy Loam
Leaf Litter: 80% (0.01 cm)
Condition: Very good
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	0.1	0.4			
Dasypogon bromeliifolius	0.5	0.3			
Kunzea glabrescens	70	6			
Lepyrodia glauca	5	1.5			
Euchilopsis linearis	0.1	0.2			
Melaleuca preissiana	5	8			
Regelia ciliata	10	1.5			
Schoenus pedicellatus	2	0.3			

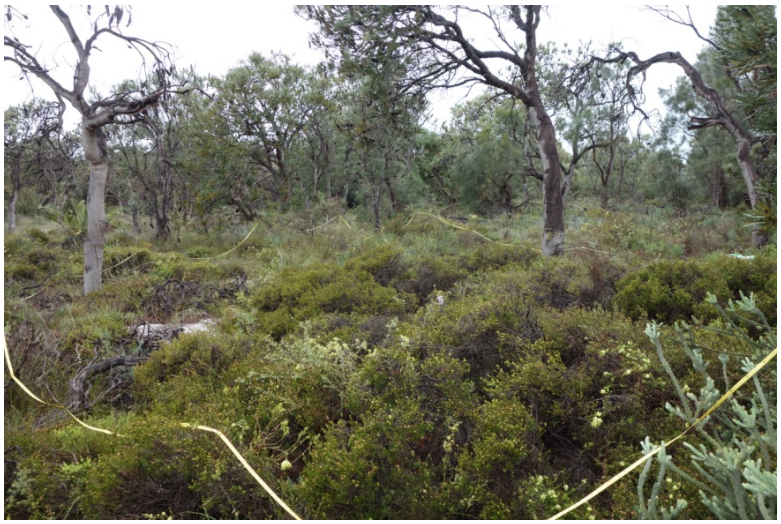
Quadrat No.: 9
Survey Date: 13/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401575.99 N: 6448977.57
Location: Holmes Street Bushland North
Aspect: NE
Soil: Sandy loam
Leaf Litter: 10% (0.01 cm)
Condition: None
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	3	1.5			
Astartea scoparia	45	2			
Cassytha glabella	2	1.5			
Dampiera linearis	2	0.3			
Hypolaena exsulca	4	0.5			
Kunzea glabrescens	3	2.5			
Lepidosperma longitudinale	8	1.5			
Lepyrodia glauca	30	1.5			
Meeboldina coangustata	1	0.5			
Melaleuca preissiana	5	8			
Melaleuca rhaphiophylla	3	2			
Microtis media	0.1	0.2			
Pericalymma ellipticum	1	1.5			
Regelia ciliata	2	1			
Schoenus pedicellatus	2	0.3			
Thysanotus multiflorus	0.5	0.3			
Xanthosia huegelii					

Quadrat No.: 10
Survey Date: 13/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401623.34 N: 6448944.03
Location: Holmes Street Bushland North
Aspect: S
Soil: Sand
Leaf Litter: 10% (0.01 cm)
Condition: Very good
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia stenoptera	0.5	0.5	**Briza maxima*	0.1	0.2
Adenanthos obovatus	1	1.5	**Ehrharta calycina*	0.1	1
Caladenia flava	0.1	0.1	**Gladiolus caryophyllaceous*	0.1	1
Dasypogon bromeliifolius	10	0.4	**Hypochaeris glabra*	0.1	0.1
Boronia dichotoma	0.1	0.2			
Drosera macrantha	0.1	0.1			
Euchilopsis linearis	0.1	0.5			
Gastrolobium capitatum	2	1			
Hypocalymma angustifolia	0.5	1			
Hypolaena exsulca	1	0.4			
Lomandra caespitosa	0.1	0.2			
Melaleuca preissiana	10	8			
Patersonia occidentalis	2	1			
Phlebocarya ciliata	5	0.3			
Regelia ciliata	30	3.0			
Schoenus pedicellatus	3	0.3			
Trachymene pilosa	0.1	0.2			
Wahlenbergia preissii	0.1	0.1			

Quadrat No.: 11
Survey Date: 14/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401747.23 N: 6448829.62
Location Holmes Street Bushland North
Aspect: NE
Soil: Sand
Leaf Litter: 5% (0.5 cm)
Condition: Very Good
Notes:



Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	0.5	0.5	**Briza maxima*	0.5	>0.5
Acacia sessilis	1	0.5	**Ehrharta calycina*	0.5	0.5
Adenanthos cygnorum	1	1.5	**Gladiolus caryophyllaceous*	0.1	0.5
Amphipogon turbinatus	3	0.5	**Hypochaeris glabra*	0.1	0.1
Anigozanthos manglesii	0.1	0.5	**Ursinia anthemoides*	0.1	0.1
Banksia attenuata	5	>10			
Banksia menziesii	1	>10			
Blancoa canescens	3	>0.5			
Bossiaea eriocarpa	1	0.5			
Burchardia congesta	0.1	0.5			
Calytrix angulata	7	1			
Conostephium pendulum	0.1	0.5			
Desmocladus flexuosa	4	0.2			
Eremaea pauciflora	8	1			
Gompholobium tomentosum	0.1	0.1			
Hibbertia hypericoides	0.1	0.5			
Hibbertia subvaginata	1	0.5			
Leucopogon polymorphus	0.5	0.5			
Loxocarya cinerea	2	0.1			
Melaleuca thymoides	0.1	0.1			
Patersonia occidentalis	1	1			
Petrophile linearis	0.1	0.5			
Phlebocarya ciliata	0.6	0.3			
Podotheca angustifolium	0.1	0.1			
Siloxerus humifusus	0.1	0.1			
Stirlingia latifolia	5	1			
Stylidium repens	0.1	0.1			
Thysanotus thyrsoideus	0.1	0.1			
Trachymene pilosa	0.1	0.1			

Quadrat No.: 12
Survey Date: 14/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401796.27 N: 6448921.32
Location: Holmes Street Bushland North
Aspect: NE
Soil: Sand
Leaf Litter: 1% (1 cm)
Condition: Excellent
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	0.5	2	**Asparagus asparagoides*	0.1	<0.5
Adenanthos obovatus	0.5	1	**Avena barbata*	0.1	<0.5
Boronia dichotoma	0.1	1	**Hypochaeris glabra*	0.5	<0.5
Burchardia congesta	0.1	0.5			
Conostephium pendulum	1	0.5			
Dasypogon bromeliifolius	5	0.5			
Eucalyptus marginata	1.5	<10			
Euchilopsis linearis	0.1	0.5			
Hibbertia huegelii	0.1	0.5			
Hypocalymma angustifolium	1	1			
Lepidosperma squamatum	0.1	0.5			
Lomandra preissii	0.1	<0.5			
Melaleuca preissiana	10	<10			
Phlebocarya ciliata	3	0.5			
Regelia ciliata	40	2			
Schoenus pedicellatus	3	1			
Trachymene pilosa	0.1	<0.5			
Tricoryne elatior	0.1	0.5			
Xanthorrhoea brunonis	3	1.5			
Xanthosia huegelii	0.1	0.5			

Quadrat No.: 13
Survey Date: 14/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401767.37 N: 6449226.42
Location: Holmes Street Bushland North
Aspect: None
Soil: Sand
Leaf Litter: 20% (0.1 cm)
Condition: Excellent
Notes:

Native Species	Cover %	Height (m)
Acacia huegelii	0.5	0.5
Acacia pulchella	0.1	0.5
Acacia sessilis	0.5	0.5
Allocasuarina humilis	5	1.5
Anigozanthos manglesii	1	0.5
Austrostipa flavescens	0.1	<0.5
Banksia attenuata	10	<10
Banksia menziesii	6	<10
Blancoa canescens	1	<0.5
Bossiaea eriocarpa	0.5	0.5
Burchardia congesta	0.5	1
Calytrix angulata	2	0.5
Calytrix flavescens	0.1	0.5
Conostephium pendula	0.5	0.5
Conostylis juncea	1	<0.5
Dasypogon bromeliifolius	2	0.5
Desmocladus flexuosa	2	0.5
Drosera erthrorhiza	2	<0.5
Eremaea pauciflora	3	1
Gompholobium tomentosum	1	0.5
Hensmania turbinata	2	0.5
Levenhookia stipitata	0.1	<0.8
Hibbertia huegelli	0.1	<0.5
Hibbertia subvaginata	0.1	0.5
Hypochaeris glabra	0.5	<0.5
Laxmannia squarrosa	0.1	<0.5
Leucopogon polymorphus	1	0.5
Loxocarya cinerea	5	0.5
Lyginia imberbis	3	1
Melaleuca thymoides	0.5	1.5

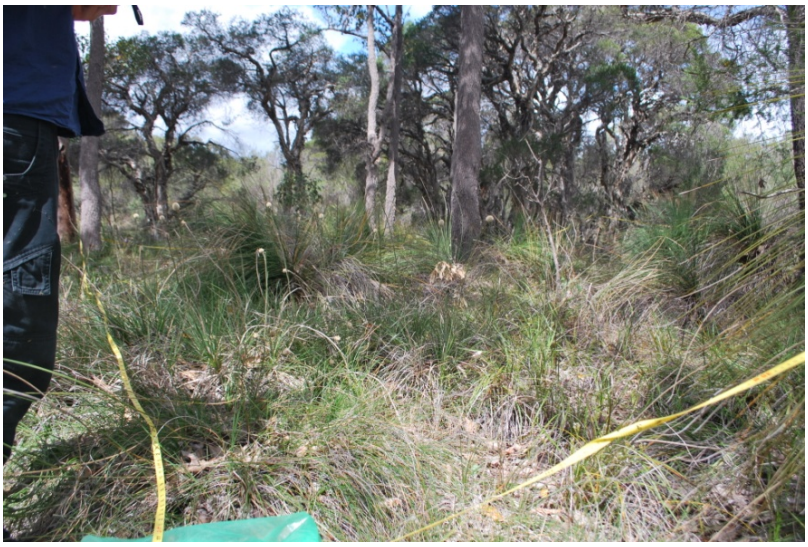
Native Species	Cover %	Height (m)
Patersonia occidentalis	3	0.5
Petrophile linearis	0.1	0.5
Philotheca spicata	0.1	1
Phlebocarya ciliata	2	0.5
Scholtzia involucrata	1	0.5
Stirlingia latifolia	3	0.5
Stylidium brunonianum	0.1	0.5
Stylidium diuroides subsp. *diuroides*	0.1	0.1
Thysanotus thyrsoideus	0.1	0.5
Trachymene pilosa	0.1	<0.5

Invasive Species	Cover %	Height (m)
**Briza maxima*	0.1	<0.5
**Ehrharta calycina*	0.1	1
**Gladiolus caryophyllaceus*	0.5	1
**Hypochaeris glabra*	0.1	0.1
**Ursinia anthemoides*	0.1	<0.5

Quadrat No.: 14
Survey Date: 14/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401527.21 N: 6448994.83
Location: Holmes Street Bushland North
Aspect: S
Soil: Loam
Leaf Litter: 60% (5 cm)
Condition: Excellent
Notes:

Native Species	Cover %	Height (m)	Invasive Species	Cover %	Height (m)
Centella asiatica	0.1	<0.5			
Hakea varia	1	1			
Juncus pallidus	0.1	1			
Lepidosperma longitudinale	1	1			
Lepyrodia glauca	1	1			
Melaleuca rhaphiophylla	90	<10			
Pterostylis brevisepala	0.1	0.1			

Quadrat No.: 15
Survey Date: 14/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401985.69 N: 6448853.29
Location: Holmes Street Bushland North
Aspect: SE
Soil: Sand
Leaf Litter: 0.1% (2 cm)
Condition: Excellent
Notes:



Native Species	%	Height (m)	Invasive Species	%	Height (m)
Acacia pulchella	0.5	1.5	**Gladiolus caryophyllaceus*	0.1	1
Boronia dichotoma	0.1	0.5	**Rubus laudatus*	0.1	<0.5
Burchardia congesta	0.1	0.5			
Caladenia paludosa	0.1	<0.5			
Chamaescilla corymbosa	0.1	<0.5			
Conostylis juncea	0.5	0.5			
Corymbia calophylla	50	>10			
Dampiera linearis	0.1	0.5			
Dasypogon bromeliifolius	30	0.5			
Gompholobium tomentosum	0.3	1			
Gonocarpus pithyoides	0.1	0.5			
Lomandra preissii	0.1	0.5			
Lyginia imberbis	0.1	0.5			
Melaleuca preissiana	10	<10			
Phlebocarya ciliata	10	0.5			
Poranthera sp.	0.1	<0.5			
Patersonia occidentalis	0.2	0.5			
Schoenus lanatus	0.1	<0.5			
Trachymene pilosa	0.1	0.1			
Tricoryne elatior	0.1	0.5			
Xanthorrhoea preissii	25	1.5			

Quadrat No.: 16
Survey Date: 14/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 402066.92 N: 6448812.32
Location: Holmes Street Bushland North
Aspect: None
Soil: Sandy Loam
Leaf Litter: 30% (3cm)
Condition: Excellent
Notes:

Native Species	%	Height (m)
Acacia pulchella	0.5	1.0
Amphipogon turbinatus	1	1
Caesia micrantha	0.2	1
Corymbia calophylla	10	>10
Drosera menziesii	0.5	0.5
Euchilopsis linearis	0.5	1
Lomandra sp.	0.1	0.1
Haemodorum laxum	0.1	1.5
Hypochaeris glabra	0.1	0.1
Kennedia prostrata	0.1	<0.5
Kunzea glabrescens	1	3
Lepidosperma longitudinale	10	1
Lomandra sp.	40	<0.5
Melaleuca preissiana	5	>10
Patersonia occidentalis	2	0.5
Phlebocarya ciliata	1	1.5
Platysace filiformis	0.1	0.5
Thysanotus multiflorus	1	0.5
Viminaria juncea	1	2
Xanthorrhoea preissii	30	1.5
Xanthosia huegelii	0.1	<0.5

Invasive Species	%	Height (m)
**Briza maxima*	0.1	<0.5
**Briza minor*	0.1	<0.5
**Ursinia anthemoides*	0.1	0.1

Quadrat No.: 17
Survey Date: 14/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 401079.74 N: 6449264.34
Location: Holmes Street Bushland North
Aspect: SW
Soil: Sand
Leaf Litter: 2% (0.5cm)
Condition: Excellent
Notes:

Native Species	%	Height (m)
Acacia pulchella	15	1.5
Acacia stenoptera	0.1	0.2
Adenanthos obovatus	1	0.5
Allocasuarina fraseriana	3	10
Amphipogon turbinatus	1	0.3
Bossiaea eriocarpa	5	0.5
Calytrix flavescens	1	0.7
Chamaescilla corymbosa	0.1	0.1
Conostylis juncea	0.5	0.2
Dasypogon bromeliifolius	15	0.3
Desmocladus flexuosa	0.1	0.1
Drosera macrantha	0.1	0.3
Gastrolobium capitatum	2	0.5
Gompholobium tomentosum	5	1
Gonocarpus pithyoides	0.1	0.2
Hovea trisperma	0.5	0.5
Hypolaena exsulca	0.5	0.2
Laxmannia squarrosa	0.1	0.2
Lepidosperma squamatum	0.1	0.5
Leucopogon propinquus	0.1	0.3
Lomandra preissii	0.1	0.2
Lyginia imberbis	0.5	0.2
Melaleuca trichophylla	0.1	0.5
Nuytsia floribunda	1	1.5
Patersonia occidentalis	10	0.5
Pericalymma ellipticum	0.1	0.5
Regelia ciliata	1	0.5
Schoenus curvifolius	0.1	0.2
Stylidium repens	0.1	0.2
Tricoryne elatior	0.1	0.3
Xanthorrhoea preissii	6	1.5

Invasive Species	%	Height (m)
**Briza maxima*	0.1	0.2
**Gladiolus caryophyllaceous*	0.1	0.5
**Ursinia anthemoides*	0.1	0.1

Quadrat No.: 18
Survey Date: 15/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 400857.5 N: 6449224.83
Location: Holmes Street Bushland North
Aspect: NE
Soil: Sand
Leaf Litter: 10% (1cm)
Condition: Excellent
Notes:

Native Species	Cover (%)	Height (m)
Acacia huegelii	2	0.5
Acacia pulchella	2	1.5
Allocasuarina fraseriana	6	>10
Amphipogon turbinatus	2	0.5
Arnocrinum preissii	3	0.5
Banksia attenuata	5	<10
Banksia menziesii	6	<10
Blancoa canescens	0.1	<0.5
Bossiaea eriocarpa	2	0.5
Burchardia congesta	0.1	0.5
Calytrix flavescens	0.5	0.5
Conostephium pendulum	0.1	0.5
Conostylis juncea	0.1	<0.5
Dampiera linearis	0.1	<0.5
Dasypogon bromeliifolius	0.1	0.5
Drosera macrantha	0.1	0.5
Eremaea pauciflora	55	0.5
Gastrolobium capitatum	0.1	1
Gompholobium tomentosum	1	1.5
Hibbertia hypericoides	5	1
Hibbertia racemosa	0.1	0.5
Hibbertia subvaginata	0.5	0.5
Hypolaena exsulca	0.5	0.5
Laxmannia squarrosa	0.1	<0.5
Leucopogon conostephioides	0.5	1
Lomandra nigricans	0.1	0.5
Loxocaria cinerea	2	<0.5
Lyginia imberbis	1	
Melaleuca thymoides	0.5	1
Patersonia occidentalis	2	0.5
Petrophile linearis	0.1	0.5

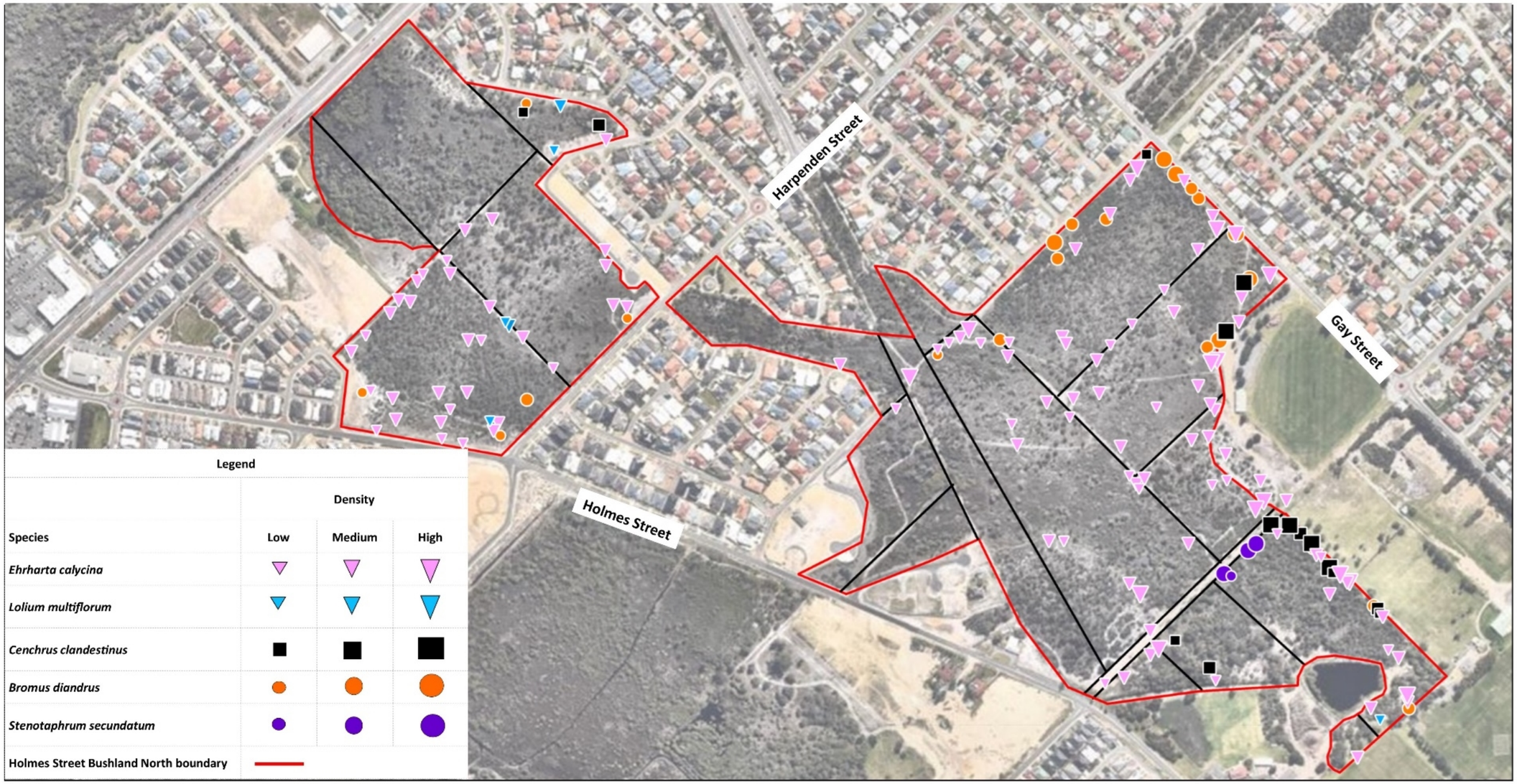
Native Species	(%)	Height (m)
Philotheca spicata	1	1
Phlebocarya ciliata	0.1	0.5
Schoenus curvifolius	0.5	<0.5
Scholtzia involucrata	1	0.5
Stirlingia latifolia	2	1
Stylidium brunonianum	0.1	0.5
Stylidium repens	0.1	<0.5
Thysanotus patersonii	0.1	0.5

Invasive Species	%	Height (m)
**Gladiolus caryophyllaceous*	0.5	1.0

Quadrat No.: 19
Survey Date: 15/10/2015
Personnel: Alex Devine, Taryn Brebner
GPS Coordinates: E: 400955.91 N: 6449506.67
Location: Holmes Street Bushland North
Aspect: None
Soil: Sandy Loam
Leaf Litter: 0
Condition: Very Good
Notes:

Native Species	%	Height (m)	Invasive Species	%	Height (m)
Adenanthos obovatus	30	1.5	*Cenchrus clandestinus	1	0.5
Astartea scoparia	1	0.5			
Boronia dichotoma	1	1.5			
Calothamnus lateralis	0.5	0.5			
Dianella revoluta	0.3	1			
Euchilopsis linearis	1	1.5			
Juncus pallidus	0.1	1.5			
Lepidosperma longitudinale	60	1.5			
Melaleuca preissiana	20	<10			
Cyperaceae sp.	30	1			
Cyperaceae sp.2	0.1	1.0			
Xanthorrhoea preissii	4	1.5			

Appendix 4: Weed Maps

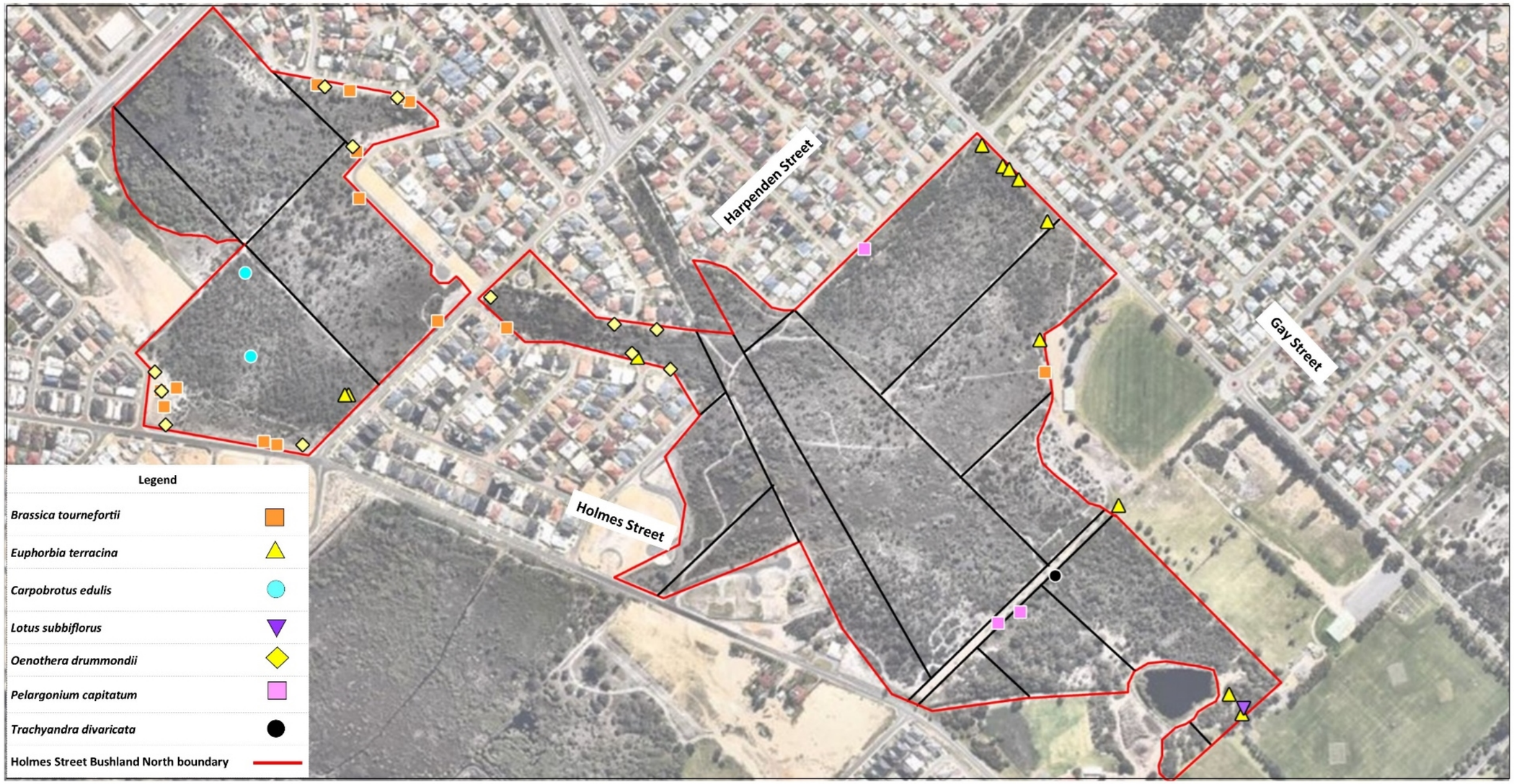


Introduced grasses (map 1)
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 200
Metres

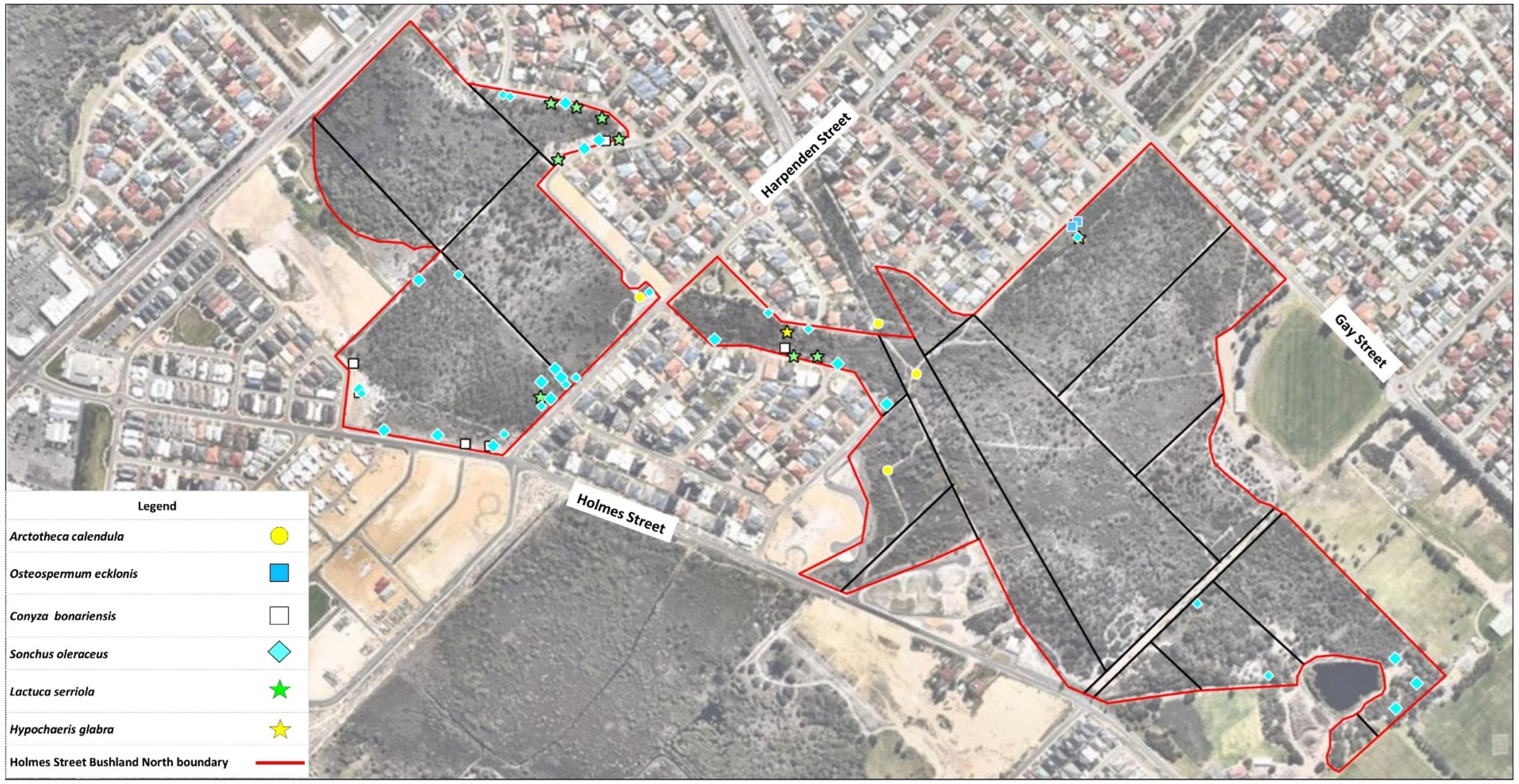


Introduced flora at low densities (map 2)
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 200
Metres



Introduced Asteraceae (Daisies) at low densities
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

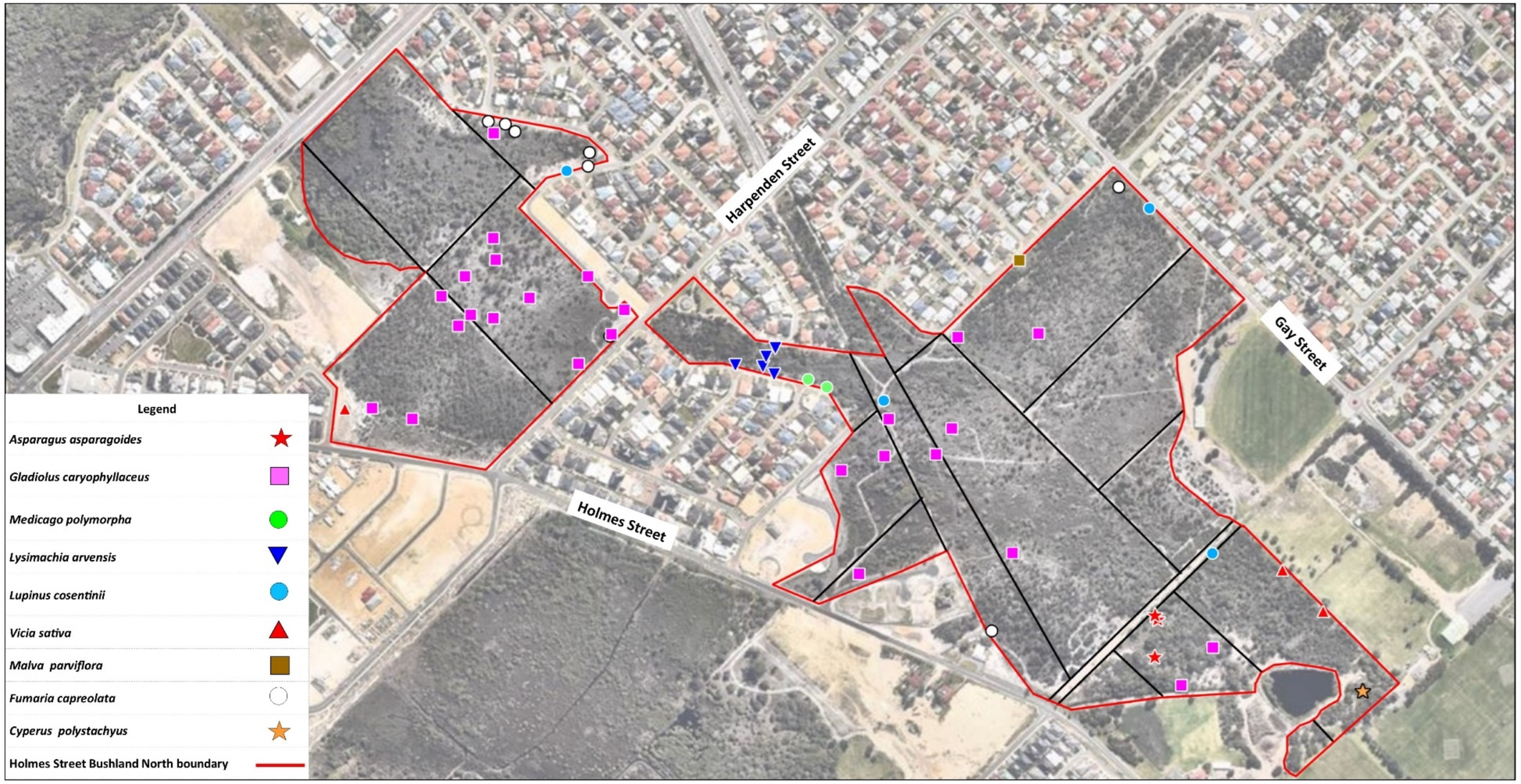
0 200
Metres

Woody weeds at low densities
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 200
Metres

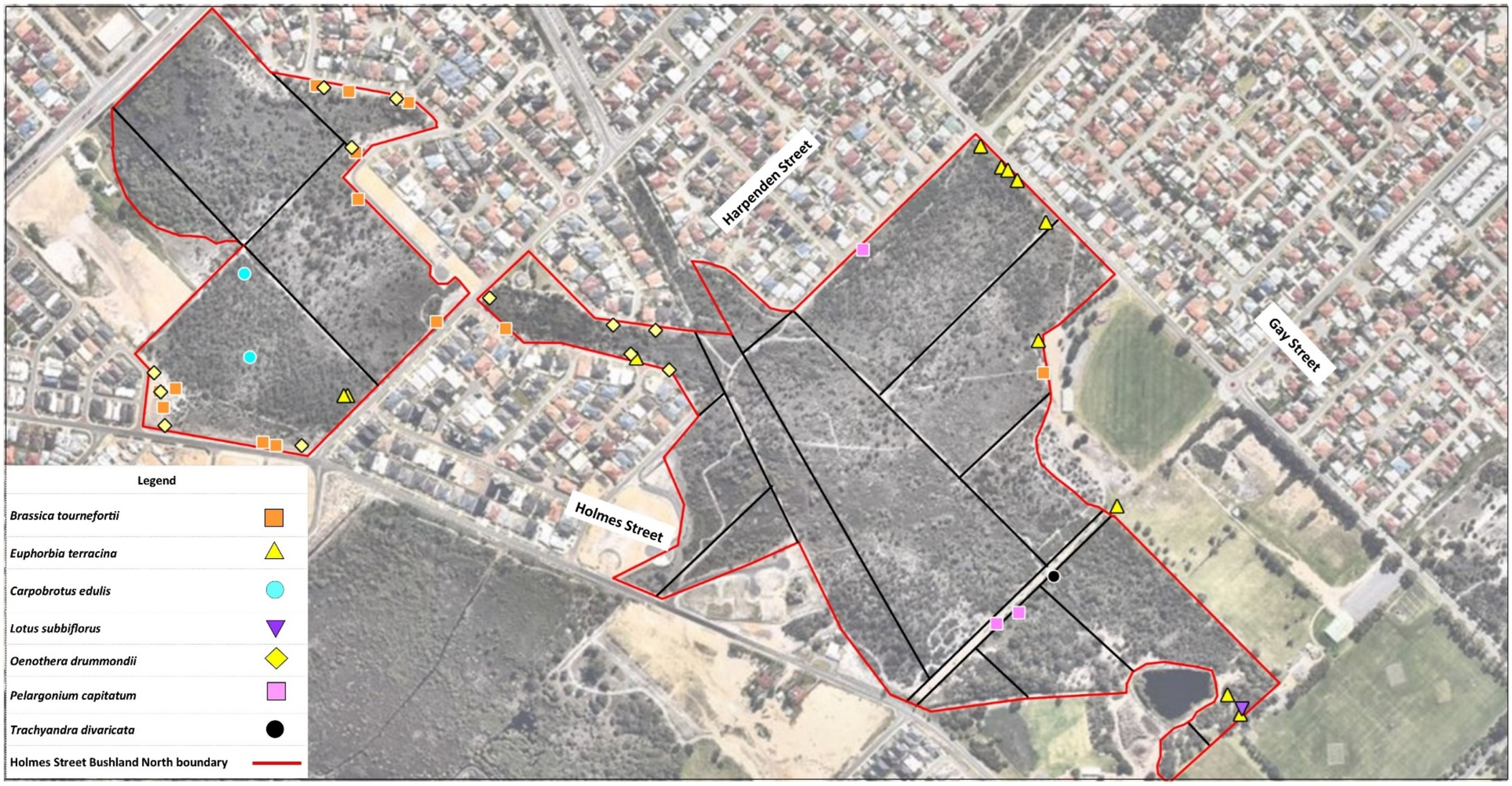


Introduced flora at low densities (map 1)
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 200
Metres



Introduced flora at low densities (map 2)
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 200
Metres

Appendix 5: Revegetation Areas Specifications and Maps

All revegetation areas require seed and cuttings collection to occur 1-2 years prior to initial planting. Weed control is required in all revegetation areas with initial treatment to occur prior to initial planting, and retreatment to occur quarterly after that. Monitoring and maintenance of revegetation areas should occur prior to planting and monitoring is recommended to occur biannually and maintenance quarterly for 3 years post initial planting. Planting is expected to occur after the exterior of HSBN is fenced, and inappropriate access is controlled.

Revegetation Area D

Revegetation Area D is 9,000 m^2 and requires 2 plants/m^2 as it is in a transitional zone Taking into account existing native vegetation 12,000 plants are recommended to be installed in this area. Only low shrubs and ground covers to a height of 0.5 m are to be planted within 2 m of the SFATs. The area is split into three sections, with the number of plants to be installed including:

- Area D1 – 650 plants (MC7)
- Area D2 – 750 plants (MC7)
- Area D3 – 10,600 plants (MC6)

Site preparation

Site preparation for this area will involve rubbish removal including the car body that is located in the north east of this planting area. Burning off of the understorey may be required prior to planting if there are abundant weedy grasses and herbs present, with weed control to follow this. If rabbits are seen to be a problem rabbit control may need to be undertaken prior to planting.

Revegetation Area E

Revegetation Area E is 5,300 m^2 and requires 2 plants/m^2, taking into account existing native vegetation 7,060 plants are recommended to be installed in this area. The area is split into two sections, with the number of plants to be installed including:

- Area E1 – 650 plants (MC6)
- Area E2 – 750 plants (MC6)

Site Preparation

Site preparation for this site will involve rubbish removal, potentially burning off the understorey followed by weed control prior to planting. If rabbits are seen to be a problem rabbit control should be undertaken prior to planting.

Track Revegetation

Track regeneration areas are 3,265 m2 and require 2 plants/ m2 as most go through transitional zones. A total of 6,530 plants are recommended to be planted along informal tracks in Holmes Street Bushland North. Track ends should also be blocked off using logs or other suitable materials, to stop vehicle access into these areas. As Lot 1592 is currently situated on private land, planting within tracks in this area may have to be undertaken at a later date, once this area comes into the City's management. Recommended planting number are provided in the table below.

Track regeneration and plant numbers for management cells

Management Cell	Length (m)	Plant Numbers
MC3	201	402
MC4	468	936
MC5	884	1768
MC6	325	650
MC7	519	1038
MC8	381	762
MC9	96	192
	Total Plant Numbers	**5748**

Proposed Revegetation Area D
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

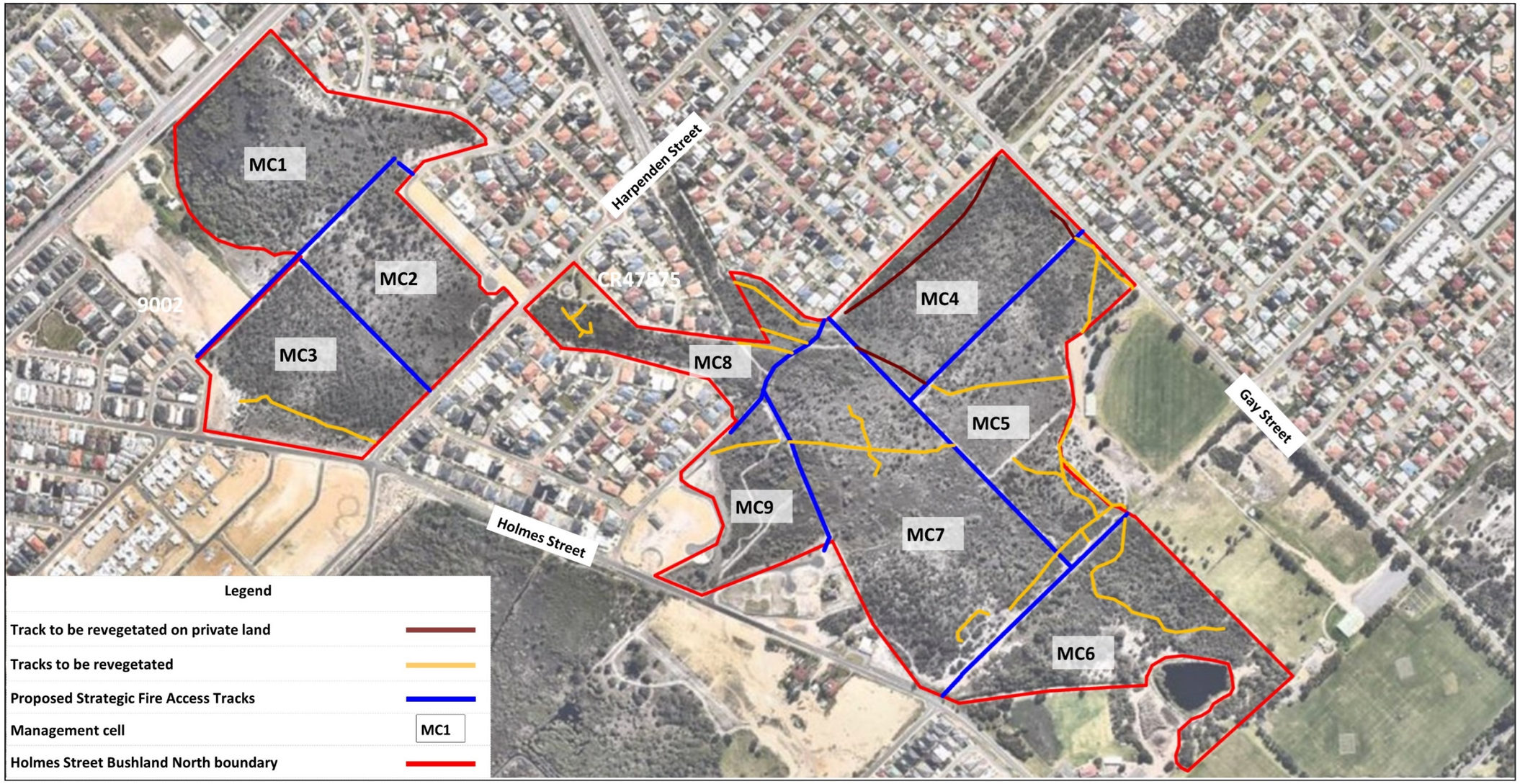
0 100
Metres

Proposed Revegetation Area E
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 50
Metres



Proposed track revegetation
Holmes Street Bushland North

N

Client: City of Gosnells
Project: Holmes Street Bushland North Management Plan
Image Source: NearMap, 2015
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50

0 200
Metres