CITY OF COCKBURN

Poore Grove Widening Flora and Fauna Report

March 2015

Contents

Prepared by Linda Metz Environmental Officer- Natural Resource Management

City of Cockburn

Abbreviations

DER- Department of Environmental Regulation

DIA-Department of Indigenous Affairs

MRS-Metropolitan Regional Scheme

TPS- Town Planning Scheme

TEC- Threatened Ecological Community

BOM- Bureau of Meteorology

EPA- Environmental Protection Authority

DPaW- Department of Parks and Wildlife (formerly Depart of Environment and Conservation)

PTA- Public Transport Authority

Executive Summary

The City of Cockburn has identified through traffic studies that Poore Grove in Coogee requires widening to a standard design (AS/NZS 2890.1:2004).

The current road only allows for single car access. As the site is within the Coogee Beach Reserve and Woodman Point Regional Park the traffic movements to the new Surf Life Saving Club and park visitation has seen a marked increase in pedestrian, cycle and road traffic entering and exiting this site.

The widening requires an area of 0.07ha to be cleared. A flora and fauna assessment has been undertaken within the subject site.

The surveys indicated mixed condition within the site varying from very good to completely degraded and includes areas of revegetation. No significant flora or fauna were recorded during surveys. The most significant feature is the presence of a Threatened Ecological Community on site SCP30a *Callitris preissii*(or *Melaleuca lanceolata*) forests and woodlands. The proposed clearing will have some impact on individuals of *Callitris* sp. however as the area to be cleared is small the impact would not be considered significant.

The City has also undertaken extensive planting of *Callitris preissii* within the reserve to improve representation across the whole reserve.

1.0 INTRODUCTION

1.1 Project background

The City of Cockburn intends to clear approximately 740m2(0.07ha) to allow for the widening of Poore Grove, Coogee. The current intersection and road at Poore Grove have been earmarked for upgrades to ensure road user safety. The City of Cockburn has municipal funds to construct the new intersection and road widening.

This project will cater for the increasing traffic flows for the Coogee Beach Surf Life Saving Club and will contribute to improving road safety at this site. The study area is bounded by the Indian Ocean to the west, to the east by Cockburn Rd and is contained within the Woodman Point Regional Park.

Some of the site analysis data included in this report draws on information that was gathered in relation to a larger scope of works- the construction of a carpark along with the widening of Poore Grove. At this stage the carpark proposal is not being

progressed. As such while information contained within this report is still relevant to the site its impacts are greatly reduced due to the much smaller area required to be cleared for the widening activity only.

1.2 Purpose of study

- Describe the vascular flora, terrestrial vertebrate fauna and habitat values of the study area.
- Carry out a vegetation condition assessment.
- Map any ecologically significant flora and terrestrial fauna habitats.
- Assess any potential impacts of the proposed development on the terrestrial environment.
- Identify any potential mitigation measures including areas of native vegetation or habitat that could potentially be avoided to minimise losses.

1.3 Project site and tenure

The project site is located within the City of Cockburn which lies south of Fremantle in Western Australia. The site is located specifically in the suburb of Coogee (refer Fig.1).

The site of the proposed Poore Grove road widening is located within the current public road boundary (refer Fig.2).

The total area of land to be required for the road construction is 0.07 hectares.

A submission was made by the City of Cockburn in 2009 to have a portion of Reserve 49220 transferred and amalgamated into the City's current landholdings within Woodman Point Regional Park (Reserve 24306). This includes the realignment of the northern boundary of Reserve 49220 including Poore Grove. This was approved by the Conservation Commission and Depart of Environment and Conservation (now DPaW) in 2009 (see Appendix 1).

The eastern portion of the project site is located within land previously vested with the Public Transport Authority (PTA) as part of a reserve (Property no.6000212). In 2009 the City received approval from the PTA to have the land related to the road excised and vested as a public road (see Appendix 2 and Fig 3).

The site is located within the Woodman Point Regional Park, an A class reserve (R24306) within land managed by the City of Cockburn. The site is also part of a Bush Forever Site 341 Woodman Point.

The Department of Indigenous Affairs (DIA) on line site search was consulted and revealed that there no Aboriginal sites identified within the project area (refer Appendix 3). The nearest sites are located over 200m from the project site and as such will not be impacted on by any part of the road widening.

2.0 Existing Environment

2.1 Climate

The study area is characterized by a mild Mediterranean type climate with hot dry summers and mild wet winters. Clear patterns of seasonality occur with within an annual cycle. Rainfall is concentrated in the winter months from April to October.

Average mean temperatures for the area are based on temperatures taken from the Fremantle weather station (1955-2007) indicates the lowest temperatures are in July with a mean minimum of 10.6°C and highest mean of 17.6°C. Summer temperatures are traditionally warmer with a mean maximum temperature of 32.3 °C at Perth Metro, although 0.7 °C above average, was the lowest in February for three years, since February 2012 when a mean maximum of 31.1 °C was recorded (BOM 2015).

2.2 Landform Geology and Soils

Poore Grove is located on the western side of the Swan Coastal plain on the Quindalup Dune System. The site is characterized by low undulating foredunes with variably thick sand overlaying limestone (Coffey 2008).

Quindalup dunes. The dunes are composed of unconsolidated sand (quartz grains) and shell fragments. Sometimes organic matter darkens the surface layers. The shell fragments are mostly calcium carbonate, so the sands are alkaline. As the shell fragments dissolve, calcium moves down the profile and is deposited as lime, initially around plant roots, to form pipes, which are exposed by wind erosion of sand from the surface of dunes at or near the coast (i.e. the Quindalup dunes), or on the western margin of the Spearwood dunes (Bolland 1998).

2.3 Surface and Groundwater

2.3.1 Surface Hydrology

The sandy soils at this site allow for free flowing drainage. As such there is little surface runoff generated from the site. Water from the upgraded road will be allowed to infiltrate at source.

2.3.2 Groundwater Hydrology

The Perth Groundwater Atlas (DOW 2015) indicates a shallow watertable.

The below figures were calculated from the following values which were extracted from the three surfaces at location 115.76515 degrees East and 32.11851 degrees South **

Levels relative to ground level

Watertable: 3.0 metres
Base of Aquifer: 34.0 metres

Levels relative to AHD (Australian Height Datum)

Natural Surface Level: 4.0 metres
Watertable Level: 1.0 metres
Base of Aquifer Level: -30.0 metres

2.3.3 Groundwater Quality

The Peth Groundwater Atlas indicates that the site has groundwater which is considered brackish, having a total dissolved solids (TDS) of 1500-3000mg/L.

Groundwater Salinity - TDS in mg/L	1500 - 3000
Surface Geology type	Safety Bay Sand: Aeolian and beach lime sand
Iron Staining Risk	Low risk
Garden Bore Suitability	Unsuitable
Acid Sulfate class	No known risk

2.4 Flora and Vegetation

2.4.1 Methodology

The site was assessed by D.Bright from Regen4 in October 2014 using quadrats and transects. The survey at that time included the current site for assessment as well as another area within the vicinity as part of investigations for a proposed additional carpark. Only information relevant to the proposed widening has been included in this report.

The site assessment collected information on the vegetation type, condition and any impacts on Threatened Ecological Community at the site. The assessment was conducted in line with EPA Guidance Statement No.51 Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (EPA, 2004a).

Vegetation condition mapping have been determined using the Keighery (1994) scale.

Prior to undertaking the survey a search of the Department of Parks and Wildlife Threatened flora rankings, Naturebase and Flora base databases were undertaken to determine what species may be present and associated conservation status.

Bushforever Vol.2 (Government of Western Australia 2000) indicated that two Threatened Ecological Communities (TEC's) have been recorded as occurring in the vicinity of the study area.

Table 1. Threatened Ecological Communities recorded within the vicinity of Poore Grove, Coogee

Name	Description	Category
SCP30a	Callitris preissii(or Melaleuca lanceolata) forests and woodlands, Swan Coastal Plain	Vulnerable
SCP29a	Coastal Shrublands on shallow sands	Priority

Table 2. Significant Flora recorded within the vicinity of Poore Grove

Species	**Conservation Code**	**Distribution**	**Flowering Period**
Acacia aphylla	R	Perth - Northam	Aug-Sep
Acacia lasiocarpa var. *bracteolata* long peduncle variant(GJ Keighery 5026)	1	North Dandalup, Mundijong, Gosnells, Jandakot	May-Aug
Angianthus micropodioides	3	Perth, Meckering, Mongers Lake, Bunjil, Warriedar, Mollerin	
Anthotium junciforme	4	Jandakot	Nov-Mar
Aotus cordifolia	3	Murdoch	Aug-Jan
Aponogeton hexatepalus	4	Perth, Pinjarra, Capel, Bunbury, Boyanup, Nannup	Aug-Sep
Byblis gigantea	2	Yule Brook, Cannington, Jandakot, Brookton Highway	Sep-Jan
Caladenia huegelii	R	Perth - Capel	Aug-Oct
Chorizema varium	R	Breton Bay, (Fremantle)	Sep
Crassula colorata var. *miriamiae*	2	Perth, Stirling Range	
Cyanicula ixioides subsp. *ixioides*	4	Beechina, Wooroloo, Datatine, Perth, Toodyay, Calingiri, Walpole, Gingin	Sep
Dillwynia dillwynioides	3	Harvey, Pinjarra,	Aug-Oct

		Yunderup, Gingin, Perth	
Diuris drummondii	R	Rocky Gully, Bridgetown, Pinjarra, Lake Muir, Frankland River, Nornalup Inlet, Perth, Lake Jasper, Torndirrup NP	Nov-Dec
Diuris purdiei	R	Perth-Waroona, Busselton	Sep-Oct
Dodonaea hackettiana	4	Wattleup, Thompson Lake, Kings Park, Jandakot, Bibra Lake-The Spectacles, Gingin	Jul-Oct
Drakaea micrantha ms	R	Perth-Augusta-Albany, Denmark, Margaret River	Sep-Oct
Grevillea olivacea	4	Rockingham	Jun-Sep
Hydrocotyle lemnoides	4	Perth-Bolgart, Lane Poole, Eneabba	Sep-Oct
Jacksonia sericea	4	Wanneroo, Trigg, Perth, Karrinyup, Mandurah-Pinjarra, Neerabup NPk, Ardross, Stakehill	Dec-Feb
Lepidium pseudohyssopifolium	1	Perth, Herdsman's Lake, Eucla, Eastern States	
Microtis media subsp. *quadrata*	4	Albany-Augusta, Pinjarra, Jandakot, Varley	Dec-Jan
Picris compacta	1	Claremont, Perth	Oct
Pityrodia obliqua	3	King Leopold Range, Cockburn Range	May-Jul
Platychorda rivalis	1	Spearwood Swamp, Blackwood	
Ptilotus sericostachyus subsp. *roseus*	1	Perth, Kelmscott, Pinjarra, Armadale, Cannington	Sep-Oct
Stylidium longitubum	3	Upper Swan, Bullsbrook, Bunbury, Midland, Busselton, Arthur River, Jandakot	Nov
Thelymitra stellata	R	Perth-Three Springs, Pinjarra, Dumbleyung, Corrigin, Boonanaring, Bungendore Park, Unnamed Shire Reserve 34155, Hartfield Rd, Mt Peron, Jurien Bay, Mt Lesueur NP	Oct-Dec
Verticordia plumosa var. *ananeotes*	R	Cockburn, Serpentine	Nov-Dec

2.4.2 Limitations

The flora and fauna surveys were conducted by experienced botanist and zoologist who have had taxonomic experience on the Swan Coastal Plain. Timing of the surveys is deemed appropriate as surveys were conducted in spring 2014 to capture flowering period of native plants. Limitations of this report are some plant species are dormant and/or lack flowering or fruiting material, making detection and/or identification difficult. Some fauna species, particularly quendas, are less active during the day time and therefore not observed during this assessment.

2.4.3 Vegetation Complexes

Two vegetation complexes have been mapped within the vicinity of the study area (Government WA 2000).

Quindalup Complex – Coastal dune complex consisting mainly of two alliances – the strand and fore dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata – Callitris preissii* and the closed scrub of *Acacia rostellifera*.

Cottesloe Complex – Central and South – Mosaic of woodland of Tuart (*Eucalyptus gomphocephala*) and open forest of Tuart (*Eucalyptus gomphocephala*)–Jarrah(*Eucalyptus marginate*)– Marri (*Corymbia calophylla*); closed heath on the limestone outcrops.

Within the City of Cockburn 0.52% of the Quindalup Complex and 11.4% of Cottesloe Complex Central and South are represented of the pre-European extent.

2.5 Fauna

The survey conducted was a targeted Level 1 fauna survey according to the EPA Position Statement No.3 (Environmental Protection Authority 2002) and Guidance Statement 56 (Environmental Protection Authority 2004). This was the level of assessment commissioned by the City.

The Level 1 fauna survey includes a search of available literature and databases (a 'desk-top' study), and a site visit. The site visit serves to put the desk-top study into context, as well as allowing for the identification of fauna habitats and likely fauna assemblages of the site. The survey does not include a complete list of all vertebrate fauna likely to occur in the study area, instead focusing on conservation significant species.

A report has been prepared by Western Wildlife (see Appendix 4).

3.0 RESULTS

3.1Vegetation and Flora

The vegetation proposed to be cleared is located along an existing road (refer Fig 4). The vegetation cover consists mainly of overstory species with a patchy understory and in some areas has been subject to previous revegetation.

The vegetation type within the study site is described as *Agonis flexuosa* and *Callitris preissii* Open Woodland over *Acacia rostellifera* shrubland over *Acanthocarpus preissii.*

The study area contains two large *Agonis flexuosa* and two mature *Callitris preissii*. *Acacia rostellifera* and some remnant shrubland comprise the remaining areas. In a flora assessment undertaken by Keighery in 2001 it is interesting to note that *Agonis flexuosa* (WA Peppermint) is not listed. *Agonis* sp.was known to be used as a planted landscape species within the Poore Grove carpark prior to the redevelopment of that site to facilitate the Surf Life Saving Club in 2012. It is possible that the specimens of *Agonis flexuosa* currently on site are not endemic and are escapes from planted species.

The survey recorded 16 species within the subject site including weed species such as *Lagurus ovatus* and *Cynodon dactylon.* No threatened or declared flora was recorded within the subject site (refer Appendix 5).

Fig 1. *Callitris preisii* extent, Poore Grove Coogee

The key species within the subject site is the *Callitris preissii* and associated TEC FCT 30a- *Callitris preissii* (or *Melaleuca lanceolata*) forest and woodlands.

The impact of the widening within the area is small and will impact up to 7 individuals of *Callitris preissii*, both saplings and mature trees and as such no significant impact on the Threatened Ecological Community is likely. In addition the City of Cockburn has been undertaking revegetation within the Coogee Beach reserve and has

planted large areas of *Callitris preissii* so to improve its representation across the whole reserve.

Plate 1. Vegetation within Poore Grove project site

3.2 Condition of Native Vegetation

Condition mapping is based on Keighery (1994). Overall this site is has mixed condition with areas varying from very good to revegetated to completely degraded.

Table 2. Vegetation condition ratings (Keighery 2000)

Rating Description	Condition description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non aggressive species
Very Good	Vegetation structure altered obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the areas are completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora composing weed or crop species with isolated native trees or shrubs.

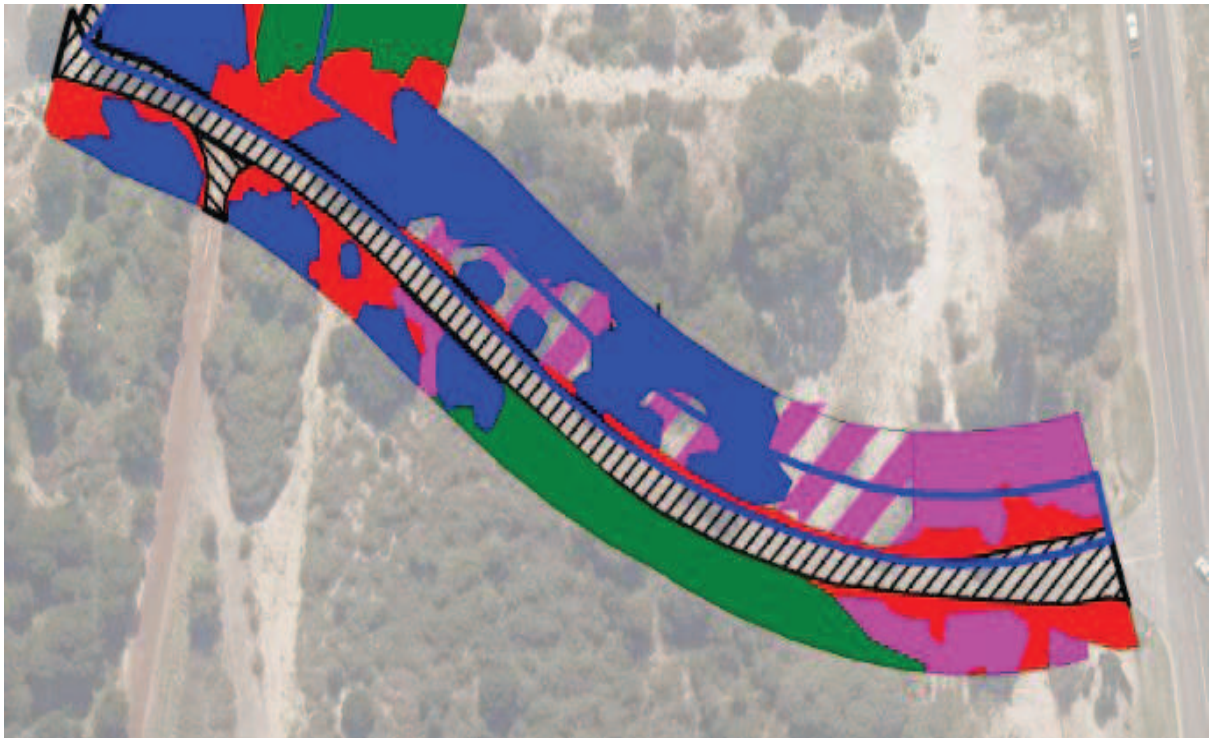

Fig. 2 Vegetation condition map-(subject area blue line)

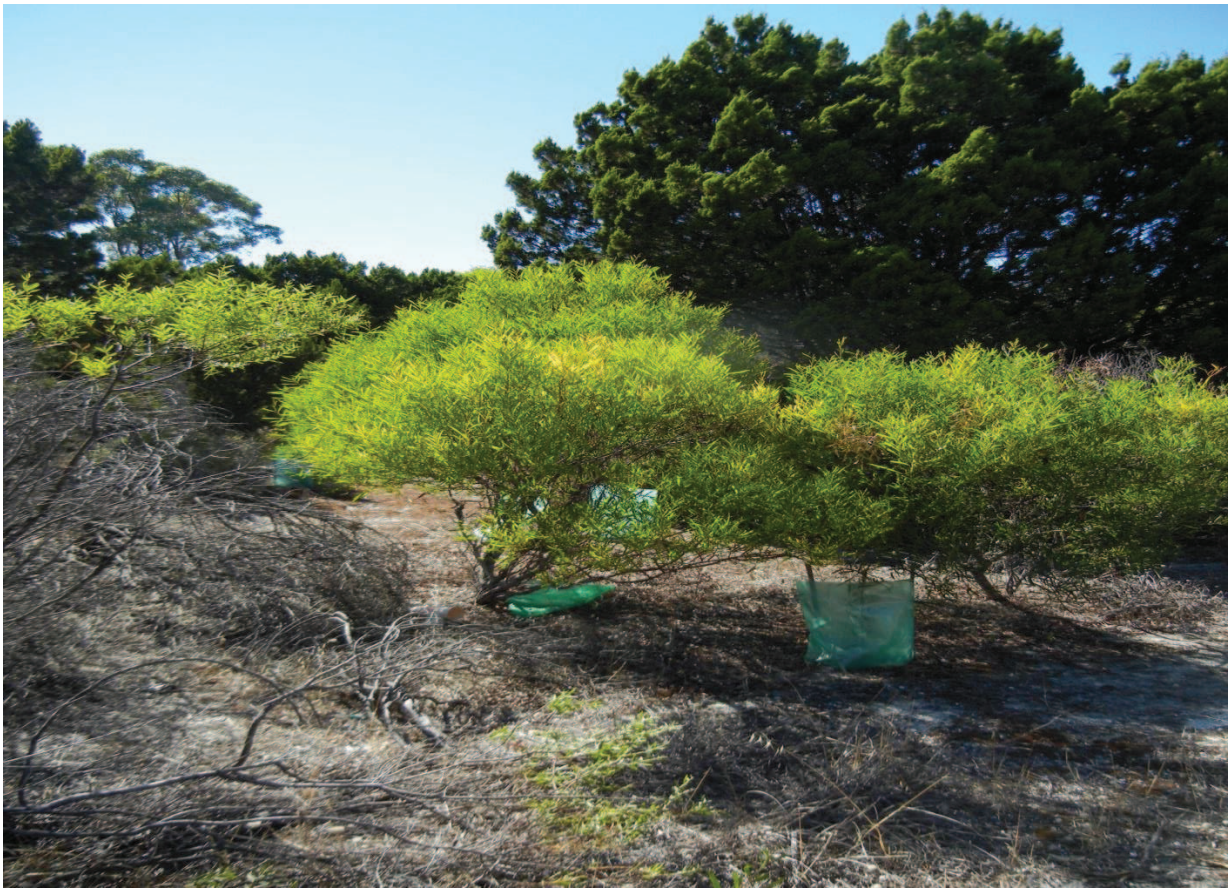

Plate 2. Vegetation within Poore Grove subject site

Plate 3. Vegetation within Poore Grove subject site.

3.3 Priority flora

The October 2014 survey did not record any species listed by the Department of Parks and Wildlife as Threatened or Priority Listed flora. A Threatened Ecological Community is present FCT30a *Callitris preissii* (or *Melaleuca lanceolata*) forest and woodlands.

4.0 FAUNA

Western Wildlife conducted a Level 1 survey and found that the study area is relatively small and consists of a mixture of remnant coastal vegetation and revegetation plantings. The coastal vegetation includes patches of *Acacia rostellifera* shrubland, *Callitris preissii* woodland, and a low heathland of coastal shrubs.

For full report please refer to Appendix 4.

The study area has the potential to support 36 fauna species of conservation significance as well as other native species, but the small size of the study area means only a smaller subset of these are actually likely to be present.

The six species of Conservation Significance 1 that may occur are the:

- White-bellied Sea-Eagle (*Haliaeetus leucogaster*) – EPBC Act (Migratory)
- Peregrine Falcon (*Falco peregrinus*) – WC Act (Schedule 4)
- Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris)* - EPBC Act (Endangered), WC Act (Schedule 1)

• Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) - EPBC Act (Vulnerable), WC Act (Schedule 1)
• Fork-tailed Swift (*Apus pacificus*) – EPBC Act (Migratory), WC Act (Schedule 3)
• Rainbow Bee-eater *(Merops ornatus*) – EPBC Act (Migratory)

Of these, the Forest Red-tailed Black-Cockatoo and Carnaby's Black-Cockatoo are likely to occur as seasonal foraging visitors, foraging on the seeds of *Callitris preissii*. The Rainbow Bee-eater is likely to be a common summer visitor to the site, and may breed along tracks and firebreaks. The study area is unlikely to be significant to the White-bellied Sea-Eagle, Peregrine Falcon or Fork-tailed Swift, though these species may overfly the area.
Other indigenous fauna that may use this area include Black striped snake (*Neelaps calanotos*, *Priority 3*), Lined skink (*Lerista lineate, Priority 3*) and Quenda (*Isoodon obesulus fusciventer Priority 5*)(DEC 2009).

Of these, the Perth Lined Lerista is likely to occur throughout the study area, and the Blackstriped Snake is less common, but may also occur. The Quenda is known from Woodman Point Regional Park, and may also occur, though it is likely to favour denser vegetation.
The 27 species of Conservation Significance 3 that may occur are locally significant bird species that are wide-ranging species with a reduced population on the Swan Coastal Plain, or habitat specialists with a reduced distribution on the Swan Coastal Plain.

Rabbit scats and diggings were observed within the subject site.

Plate 4. Rabbit scats and diggings observed in subject site.

Habitat loss occurs when native vegetation is cleared. In this case the amount proposed to be cleared is small, and for many larger species it may only be part of a larger home-range or foraging area. The Rottnest Island Pines in the study area are likely to be foraging habitat for Carnaby's Black-Cockatoo, but the loss of a small area of these (less than 1ha) is unlikely to be a significant impact on this EPBC-listed species. Habitat loss may be partially offset by planting local native plant species on

verges and median strips, or by revegetation of degraded areas elsewhere in Woodman Point Regional Park.

5.0 POTENTIAL IMPACTS AND MITIGATION

5.1 Potential impacts

The flora and terrestrial fauna values of the study area are low and therefore the proposed clearing of native vegetation in the project site unlikely to have any significant ecological impacts.

5.1.1 Direct Impacts

There is likely to be the loss of 0.07 hectares of native vegetation.

5.1.2 Indirect Impacts

Indirect impacts of development typically involve the modification and degradation of adjacent vegetation and habitat not removed by the development footprint. Given this area has already been impacted on by the existing road, path network and associated development, indirect impacts are likely to be further degradation of remaining vegetation through continued weed invasion.

5.2 Potential Mitigation Measures

The City of Cockburn has attempted to avoid clearing additional vegetation where possible and through road design has minimised the extent of vegetation clearing.

Management of the proposed construction works has followed principles of i) avoid any native vegetation loss, ii) minimise any unavoidable loss of native, iii) offsets.

Step 1: Avoid

This project has been identified as part of ensuring road user safety at this site to meet design standards. As such there is no likelihood of avoiding the proposed project.

Step 2: Minimise

The area to be cleared has been minimised through the road design process. Utilising kerbing and soakwells with the natural ground level to reduce cut and fill and thereby the overall footprint.

Step 3: Offset

No offsets have been determined at this time. The City has already undertaken an extensive revegetation program within Coogee Beach Reserve to increase the representation of the Threatened Ecological Community within Woodman Point Regional Park. In addition the City has on-going commitments to weed control, feral animal control and site maintenance.

5.2.1 Other Mitigation Measures

There are a number of options to mitigate potential ecological impacts of the proposed road widening.

Potential measures to minimise the ecological impact on the land are as follows:

Pre-construction

• All areas of retained native vegetation should be protected with high visibility tape prior to construction commencing.

Construction

• Ensure construction vehicles, equipment storage and stockpiles of materials avoid areas of remnant vegetation.

• Follow appropriate hygiene measures for all machinery to ensure removal of weed seeds and soil before entering the site, particularly to minimise spread of Dieback (*Phytophora cinnamomii*).

• Control all noxious and woody environmental weeds arising from the proposed works.

Potential impacts of the proposed development are some habitat loss and some direct mortality of fauna during clearing. The following are recommendations on reducing the impact of the development on fauna.

Recommendations

• Avoid disturbance to native vegetation adjacent to the clearing area, by clearly demarcating the vegetation to be protected.
• Avoid clearing during late winter and spring, to avoid mortality of eggs and nestlings.
• Avoid clearing during summer, when Rainbow Bee-eaters are breeding, or ensure there are no Rainbow Bee-eater burrows in the clearing area.
• When clearing, clear progressively from the east (adjacent to Cockburn Rd) to west, to encourage fauna (e.g. Quenda, goannas or snakes) to move away from roads.
• Consider employing a fauna handler during the clearing process, to relocate venomous snakes and other fauna from the clearing area into adjacent native vegetation
• Use local native plant species in any verge and median strip plantings.
•Consider revegetation of degraded patches in adjacent native vegetation, to improve the fauna habitat values of the area.

6.0 SUMMARY

The assessment of the existing remnant vegetation within the subject area indicates a small parcel that is along an existing road. The vegetation condition varies from very good to completely degraded with areas of revegetation contained within it.

Individuals of *Callitris preissii* which form part of the Threatened Ecological Community on site will be impacted on however given the small number the overall impact on the TEC within the site would not be considered significant. Similarly fauna habitat values are low given the small scale of the site and the patchiness of the vegetation.

Extensive revegetation activities have already been undertaken by the City within the Coogee Beach Reserve.

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