



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8220/2
Permit Holder:	City of Joondalup
Duration of Permit:	30 April 2019 to 30 April 2026

ADVICE NOTE

The funds referred to in condition 9 of this permit are intended for contributing towards the purchase of 1.636 hectares of native vegetation with similar environmental values to the area to be cleared.

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of constructing a dual use path.

2. Land on which clearing is to be done

Lot 9505 on Plan 52070, Tamala Park
Lot 3050 on Plan 47951, Mindarie
Lot 9026 on Plan 415564, Mindarie
Lot 3000 on Plan 44066, Burns Beach
Marmion Avenue road reserve (PIN 1135104), Tamala Park

3. Area of Clearing

The Permit Holder must not clear more than 3.06 hectares of native vegetation within the area cross hatched yellow on attached Plan 8220/2(a).

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

5. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for the activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for those activities under the *Local Government Act 1995* or any other written law.

6. Type of clearing not authorised

This Permit does not authorise the Permit Holder to clear native vegetation after 30 April 2024.

PART II –MANAGEMENT CONDITIONS

7. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- (a) avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

8. Weed and dieback control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *dieback* and *weeds*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* and *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

9. Monetary contributions to a fund maintained for the purpose of establishing or maintaining vegetation (offset)

Prior to undertaking any clearing authorised under this Permit and no later than 30 April 2020, the Permit Holder shall provide documentary evidence to the CEO that funding of \$23,506.05 has been transferred to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining native vegetation.

10. Revegetation

The Permit Holder shall implement and adhere to the following actions;

- (a) retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared within the area cross-hatched red on the attached Plans CPS 8220/2(b), 8220/2(c), 8220/2(d), 8220/2(e), 8220/2(f) and 8220/2(g);
- (b) prior to 31 August 2021 commence *revegetating* and *rehabilitating* the areas hatched red on Plans 8220/2(b), 8220/2(c), 8220/2(d), 8220/2(e), 8220/2(f) and 8220/2(g) by:
 - (i) laying the vegetative material and topsoil retained under condition 10(a);
 - (ii) deliberately *planting* of tube stock and salvaged native vegetation that will result in similar species composition, structure and density of native vegetation to the reference sites; and
 - (iii) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area.
- (c) water planted vegetation between October and March for the first two years post planting as required;
- (d) install signage to educate reserve users of the revegetation activities being undertaken;
- (e) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the site;
- (f) undertake weed control activities on an ‘as needs’ basis to maintain a minimum 90 per cent weed free state by the end of the project maintenance period;
- (g) achieve the following completion criteria after the three year monitoring period for areas *revegetated* and *rehabilitated* under this Permit;

Criterion	Baseline floristic data	Completion targets	Completion criteria	Monitoring
1	Species richness is the average number of species between the reference sites of each vegetation community .	Minimum of 50% of native vegetation species returned based on propagation capacity of species. Therefore revegetation areas shall have a minimum of 50% native species per quadrat, as obtained by the average recorded at the reference sites.	Species richness and number of plants / m2 in the revegetation areas shall have a minimum of 50% native species per quadrat, as obtained by the average recorded at the reference sites.	The species and number of plants / m2 in the revegetation areas will be counted in years 2 and 3.
2	% cover of weeds in reference sites of each vegetation community is less 2% to <30%	Weeds are mostly absent from the reference sites. Considering external pressures (adjacent to dual use path) a target of ≤10% has been established for the revegetation areas.	The revegetation areas must have % cover of ≤10% weeds.	Monitor revegetation areas in years 2 and 3.
3	One declared weed (* <i>Asparagus asparagoides</i>) is present	Declared Weeds are managed in accordance with the <i>Biosecurity and Agriculture Management Regulations 2013</i> .	Declared weeds are absent from the rehabilitation areas.	Monitor the revegetation site for declared weeds by traversing the area in years 2 and 3.
4	Survival rate to be achieved	If after year 2 and year 3 of planting, a survival rate of 2plants/m ² is not achieved, all planted tube stock that have not survived must be replanted within 12 months and monitored for a further 1 year.	The revegetation site needs to ensure a survival rate of at least 2 plants/m ² is achieved after three years, and replant any plants within 12 months of dying.	The number of surviving plants in the revegetation areas will be counted in years 2 and 3.
5	Rubbish is present in bushland.	Rubbish is absent from the revegetation site.	The revegetation site contains minimal rubbish.	Monthly asset inspections

- (h) undertake remedial actions for area *revegetated* and *rehabilitated* where monitoring indicated that revegetation has not met the completion criteria, outlined in 10(g); including
- (iv) revegetate the area by deliberately *planting* native vegetation that will result in the minimum target in 10(g) and ensuring only *local provenance* seeds and propagating material are used;
 - (v) undertake further weed control activities;
 - (vi) undertake further watering activities; and
 - (vii) annual monitoring of each *revegetated* and *rehabilitated* site, until the completion criteria, outline in 10(g) are met.

PART III - RECORD KEEPING AND REPORTING

11. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit, in relation to the clearing of native vegetation authorised under this Permit:

- (a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (b) the date that the area was cleared;
- (c) the size of the area cleared (in hectares);
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 7 of this Permit;
- (e) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 8 of this Permit;

- (f) In relation to the revegetation of areas pursuant to condition 10 of this Permit;
 - (i) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (ii) the size of the area *revegetated* and *rehabilitated* (in hectares); and
 - (iii) the date that the area was *revegetated* and *rehabilitated*.

12. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:
 - (i) of records required under condition 11 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 28 February 2026, the Permit Holder must provide to the *CEO* a written report of records required under condition 11 of this Permit where these records have not already been provided under condition 12(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

CEO means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

dieback means the effect of *Phytophthora* species on native vegetation;

direct seeding means a method of re-establishing vegetation through establishment of a seed bed and the introduction of seeds of the desired plant species;

fill means material used to increase the ground level, or fill a hollow;

local provenance means native vegetation seeds and propagating material from natural sources within 100 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

planting means the re-establishment of vegetation by creating soil conditions and planting seedlings of the desired species;

regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting so that the species composition, structure and density is similar to pre-clearing vegetation types in that area; and

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*;
or
- (b) published in a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



Samara Rogers
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

16 April 2020

Plan 8220/2 (a)



Legend

-  CPS areas approved to clear
-  Road Centrelines
-  Local Government Authorities
-  Cadastre - LGATE 218



MGA 94
Geocentric Datum of Australia 1994

Samara Rogers

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Samara Rogers

Officer delegated under section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8220/2 (c)

115°42.570'E

115°42.600'E

115°42.630'E





115°42.660'E

115°42.690'E

115°42.720'E



Legend

-  CPS subject to conditions
-  Road Centrelines
-  Local Government Authorities
-  Cadastre - LGATE 218



MGA 94
Geocentric Datum of Australia 1994

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Officer delegated under section 20 of the
Environmental Protection Act 1986







GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8220/2 (d)



Legend

-  CPS subject to conditions
-  Road Centrelines
-  Local Government Authorities
-  Cadastre - LGATE 218



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Geocentric Datum of Australia 1994

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Officer delegated under section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8220/2 (e)




115°42.802'E 115°42.850'E 115°42.899'E 115°42.947'E 115°42.996'E 115°43.045'E 115°43.093'E

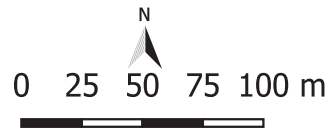
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Legend

-  CPS subject to conditions
-  Local Government Authorities
-  Cadastre - LGATE 218



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Officer delegated under section 20 of the
Environmental Protection Act 1986






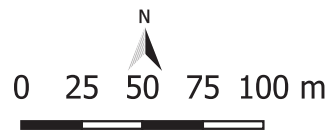
GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8220/2 (f)



Legend

-  CPS subject to conditions
-  Local Government Authorities
-  Cadastre - LGATE 218



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Geocentric Datum of Australia 1994

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Officer delegated under section 20 of the
Environmental Protection Act 1986






GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8220/2 (g)



Legend

-  CPS subject to conditions
-  Local Government Authorities
-  Cadastre - LGATE 218



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Geocentric Datum of Australia 1994

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Officer delegated under section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: CPS 8220/2
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: City of Joondalup
Application received date: 16 September 2019

1.3. Property details

Property: Lot 9505 on Deposited Plan 52070, Tamala Park
Lot 9026 on Deposited Plan 415564, Mindarie
Local Government Authority: City of Wanneroo
Localities: Mindarie, Tamala Park

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
0.5283	0	Mechanical Removal	Extension and construction of a dual use pathway

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 16 April 2020

Reasons for Decision: The clearing permit application relates to a request to amend Clearing Permit CPS 8220/1 by extending the application area by an additional 0.5283 hectares. The amendment application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986*.

The Delegated Officer has concluded that the additional proposed clearing has similar impacts to the original area assessed under CPS 8220/1. It was concluded that the proposed additional clearing of 0.5283 hectares is at variance with principle (h), and is not likely to be at variance with the remaining principles.

Through the assessment it has been determined that the application area comprises Bush Forever site 322. The Delegated Officer determined that the proposed clearing is likely to impact on the environmental values of this conservation area.

The applicant avoided, minimised and mitigated the additional impacts to the Bush Forever site by implementing a revegetation plan which aims to revegetate and rehabilitate 1.8654 hectares of native vegetation, effectively reducing the impact to the Bush Forever site from 2.6834 hectares to 0.818 hectares. **Which is the same residual impact as the original area.** To address the remaining residual impacts, the applicant is required to provide a monetary contribution of \$23,506.05 to the Department of Water and Environmental Regulation (DWER) for the purchase of 1.636 hectares of native vegetation with similar values to the area to be cleared.

After consideration of the above, the Delegated Officer determined that the offset will ensure that the integrity of Bush Forever site 322 is upheld and is consistent with State Planning Policy 2.8 Bushland Policy for the Perth Metropolitan Region (SPP 2.8).

The Delegated Officer determined that the proposed clearing may increase the risk of weeds and dieback spreading into surrounding Bush Forever site and vegetated areas. A weed and dieback management condition has been placed on the permit to mitigate the impact of spreading weeds and dieback into adjacent vegetation.

The Delegated Officer considers that the proposed clearing is not likely to result in a significant environmental impact. The Delegated Officer decided to grant a clearing permit subject to weed and dieback management, avoidance and mitigation, revegetation and offset conditions.

2. Site Information

Clearing Description:

The amendment application is for the proposed clearing of an additional area of 0.5283 hectares within Lot 9505 on Deposited Plan 52070, Tamala Park, and Lot 9026 on Deposited Plan 415564, Mindarie. The amendment is for the purpose of connecting the existing dual use path, located directly south of the application area for which the clearing of native vegetation was approved under CPS 8220/1, to the existing path network located directly north of the application area in Mindarie (Figure 1).

Vegetation Description

The vegetation within the application area is mapped as the Swan Coastal Plain Quindalup vegetation complex, described as 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* (Rottneest Teatree) - *Callitris preissii* (Rottneest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay (Hedde et al, 1980).

Vegetation within the southern extent of the application area primarily comprises *Spyridium globulosum*, *Melaleuca systena* and *Acacia cyclops* mid-shrubland over *Acanthocarpus preissii*, *Lomandra maritima* and *Desmocladius asper* mixed herbs and rushes (City of Wanneroo, 2019a; AECOM, 2018). *Hakea prostrata*, *Melaleuca cardiophylla*, *Schoenus grandiflora* and *Xanthorrhoea preissii* are also present (Hawthorne, 2019). The upper stratum of trees are absent, with the shrub density varying according to position on the dune system (City of Wanneroo, 2019a; AECOM, 2018).

The vegetation within the centre of the application area primarily comprises an open heath of *Melaleuca cardiophylla* over very open grassland dominated by *Ehrharta longiflora*, over herb land dominated by *Raphanus raphanistrum*, *Crassula glomerata* and *Petrorhagia dubia* over sedgeland dominated by *Lomandra maritima* and *Desmocladius flexuosus* (City of Wanneroo, 2019a; Bennett, 2016; Hawthorne, 2019). The vegetation within the northern extent of the application area primarily comprises non-native grasses and weeds, with sparse native understorey and midstorey, situated adjacent to a patch of *Eucalyptus gomphocephala* (tuart) woodland (DWER, 2020; City of Wanneroo, 2019a; Hawthorne, 2019).

Vegetation Condition

Vegetation condition within this assessment has been assessed using the vegetation condition scale developed by Keighery (1994). All references to vegetation condition throughout this assessment therefore, reference this scale. The vegetation condition of the application area was determined through a site inspection undertaken by DWER officers, and other vegetation assessments and surveys undertaken within the application area (DWER, 2020, City of Wanneroo, 2019a; Bennett, 2016; Hawthorne, 2019; AECOM, 2018).

The condition of the vegetation within the application area ranges from very good (Keighery, 1994) to completely degraded (Keighery, 1994), described as:

- Very good: Vegetation structure altered, obvious signs of disturbance (Keighery, 1994).
- Good: Vegetation structure significantly altered with obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate (Keighery, 1994).
- Degraded: Basic vegetation structure severely impacted by disturbance, scope for regeneration but not to a state approaching good condition without intensive management (Keighery, 2014).
- Completely degraded: The structure of the vegetation is no longer intact and the area is completely or almost completely without native species (Keighery, 2014).

Soil Type

The soil type within the application area is mapped as:

- Karrakatta shallow soils Phase, described as Low hills and ridges. Bare limestone or shallow siliceous or calcareous sand over limestone. Dense low shrub dominated by *Dryandra sessilis*, *Melaleuca huegelii* and species of *Grevillea* (DPIRD, 2019).
- Quindalup South oldest dune Phase, described as the oldest phase. Dunes or remnants with low relief. Calcareous sands have organic staining to about 30 centimetres, overlying pale brown sand with definite cementation below one metre (DPIRD, 2019).

A site inspection conducted by DWER environmental officers determined that the soils within the application area are primarily characterised by white to grey soil, comprising scattered small to large limestone fragments in areas (DWER, 2020).

Comments

The local area referred to in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of the application area. A site inspection of the application area was conducted by DWER environmental officers on 28 January 2020 (DWER, 2020).



Figure 1: Aerial image showing the location of the application area (hatched in blue)



Figure 2. A photograph taken from the northern extent of the application area, looking south to the application area (DWER, 2020).



Figure 3. A photograph of the tuarts adjacent to the northern extent of the application area and to be avoided by the applicant (DWER, 2020).



Figure 4. A photograph of the application area looking north (DWER, 2020).



Figure 5. A photograph of the application area looking north (DWER, 2020).



Figure 6. A photograph of the southern extent of the application area (City of Wanneroo, 2019a)



Figure 7. A photograph of the existing dual use path, for which clearing was approved under CPS 8220/1. The applicant proposes to connect this path to the existing path network in Mindarie (DWER, 2020).

3. Minimisation and Mitigation Measures

The applicant considered the terrain and topography when selecting the alignment to connect the existing dual use path within the clearing footprint approved under CPS 8220/1 to the existing path network to the north in Mindarie. The applicant determined that the proposed alignment and clearing footprint minimises impacts as it is situated within the existing cleared access track that bestrides the two property parcels in which the application area is located (City of Wanneroo, 2019b). The applicant further avoided and minimised impacts by reducing the application area by 0.124371 hectares on 1 November 2019, during the validation stage of the application process, resulting in a reduction of the amendment area from 0.6527 hectares to 0.5283 hectares (City of Wanneroo, 2019c, d).

The northern section of the application area is situated adjacent to a patch of ten tuart trees. The applicant advised that the dual use path was specifically designed to retain and minimise impacts to the tuart trees (City of Wanneroo, 2019a). The applicant engaged an arborist to inspect and assess the health and structural condition of the tuarts, to ensure the design of the dual use path does not impact these trees (Paperbark Technologies Pty Ltd, 2019a, b; City of Wanneroo, 2019a). The arborist established a tree protection zone radius and structural root zone radius to be incorporated into the dual use path design (Paperbark Technologies 2019b; City of Wanneroo, 2019b). The City of Wanneroo, City of Joondalup, project engineers and arborists met on site in July 2019 to discuss the tree protection and structural root zones, provide management actions in relation to tree health and condition, and advise strategies to minimise disturbance to the tuarts and their roots (City of Wanneroo, 2019a). Outcomes from these assessments and discussions were incorporated into the design of the dual use path (Paperbark Technologies 2019b; City of Wanneroo, 2019a). Furthermore, the dual use path was designed and will be constructed to a less standard specification in comparison to remainder of the application area to assist in mitigating impacts to the tuart individuals (City of Wanneroo, 2019a).

An initial offset and rehabilitation proposal was submitted by the applicant on 16 September 2019 (City of Wanneroo, 2019b). Subsequent to this, the offset and rehabilitation proposal was revised throughout the assessment, including on 19 December 2019, 6 January 2020, 7 February 2020, 25 February 2020, 28 February 2020 and 9 March 2020. On 17 March 2020, the applicant confirmed that the final offset proposal for CPS 8220/2 comprises a monetary contribution of \$23,506.05 to DWER for the purchase of 1.636 hectares of native vegetation with similar values to the area to be cleared, and revegetation and rehabilitation of 1.8654 hectares of area disturbed during the clearing (City of Wanneroo, 2020). The proposed revegetation works is considered a form of mitigation, given it will be occurring onsite (Government of Western Australia, 2011). Therefore, the environmental impact to the Bush Forever site 322 is reduced to 0.818 hectares, and the corresponding offset to satisfy the Bush Forever requirements is 1.636 hectares.

4. Assessment of application against clearing principles

This amendment is to include an additional area of 0.5283 hectares to the permit. The amendment is to facilitate the connection of the existing dual use path located directly south of the application area for which the clearing of native vegetation was approved under CPS 8220/1, to the existing path network, located directly north of the application area in Mindarie. The 2.53 hectares already approved under CPS 8220/1 has not been reassessed and an assessment of this area can be found in Clearing Permit Decision Report CPS 8220/1 (DWER, 2019). The application area in the following assessment therefore refers only to the additional 0.5283 hectares of native vegetation proposed for clearing, as indicated in the area hatched in blue in Figure 1.

According to available databases, 23 conservation significant flora species have been recorded within the local area, comprising three threatened flora, three Priority 1, six Priority 2, ten Priority 3 and one Priority 4 flora species. None of these records occur within the application area. Noting the habitat preferences of these species, including soil type and vegetation association, the vegetation within the application area may comprise habitat for nine conservation significant flora, including *Grevillea* sp. *Ocean Reef* (*D. Pike Joon* 4; Priority 1), *Sarcozona bicarinata* (Priority 3), *Styliidium maritimum* (Priority 3), *Conostylis bracteata* (Priority 3), *Jacksonia sericea* (Priority 4), *Leucopogon maritimus* (Priority 1), *Baeckea* sp. *Limestone* (*N. Gibson & M.N. Lyons* 1425; Priority 1), *Leucopogon* sp. *Yanchep* (*M. Hislop* 1986; Priority 3) and *Eucalyptus argutifolia* (Threatened). These records occur within different mapped vegetation associations, with the exception of *Conostylis bracteata*, *Eucalyptus argutifolia* and *Grevillea* sp. *Ocean Reef* (*D. Pike Joon* 4)

A site inspection of the application area conducted by DWER environmental officers determined that the condition of vegetation within the application area ranges from very good (Keighery, 1994) to completely degraded (Keighery, 1994). The vegetation in completely degraded (Keighery, 1994) condition is primarily situated along existing access tracks and the areas of vegetation that intersect the subdivision area to the east of the application area (DWER, 2020). A number of flora and vegetation surveys and assessments conducted within the application area did not identify any conservation significant flora (AECOM, 2018; Bennett, 2016; Hawthorne, 2019; City of Wanneroo, 2019a). A site inspection of the application area undertaken by DWER environmental officers / botanist did not observe conservation significant flora (DWER, 2020). Noting the above, the vegetation within the application area is not likely to comprise significant conservation flora or habitat. Given the above, the proposed clearing of 0.5283 hectares is not likely to significantly impact conservation significant flora or their populations in the local area.

According to available databases, 35 conservation significant fauna species have been recorded within the local area (DBCA, 2007-). No watercourses, wetlands or marine environments have been recorded within the application area (DWER, 2020). As such, marine and freshwater dependant species are not likely to be impacted by the proposed clearing and are not considered further in this assessment. Four terrestrial fauna species listed threatened under the Western Australia *Biodiversity Conservation Act 2016* (BC Act), and two Priority 3 and three Priority 4 fauna listed by the Department of Biodiversity Conservation and Attractions (DBCA) have been recorded within the local area (DBCA, 2007-). These species include forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*; vulnerable), Baudin's cockatoo (*Calyptorhynchus baudinii*; endangered), and Carnaby's cockatoo (*Calyptorhynchus latirostris*; endangered), collectively known as black cockatoos, woollybush bee (*Hylaeus globuliferus*; Priority 3), quenda (*Isoodon fusciventer*; Priority 4), black-striped snake (*Neelaps calonotos*; Priority 3), western brush wallaby (*Notamacropus irma*; Priority 4) and graceful sun-moth (*Synemon gratiosa*; Priority 4).

None of these records occur within the application area. No conservation significant fauna were recorded during a survey of the Tamala Conservation Park (GHD, 2013; City of Wanneroo, 2019a). Three conservation significant fauna species have been recorded within the application area, including Carnaby's cockatoo, quenda and western brush wallaby (AECOM, 2018).

Black cockatoos breed in large hollow-bearing trees, generally within woodlands, forests or isolated trees (Commonwealth of Australia, 2012). These species nest in hollows in live or dead trees of karri, marri, wandoo, tuart, salmon gum, jarrah, flooded gum, York gum, powder bark, bullich and blackbutt (Commonwealth of Australia, 2012). Breeding habitat is described as trees of species known to support breeding within the range of black cockatoos, which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. Suitable DBH for nest hollows is 500 millimetres for most tree species (Commonwealth of Australia, 2012). A site inspection of the application area conducted by DWER environmental officers did not observe trees with a suitable DBH or potential hollows for black cockatoo breeding (DWER, 2020). A patch of tuart is situated adjacent to the application area and have been excluded from the application area footprint (Figure 3). No evidence of potential hollows have been observed within these tuart trees (DWER, 2020; Paperbark Technologies Pty Ltd, 2019a). As discussed in Section 3, the applicant has designed the dual use path to retain the tuart trees and minimise impacts through the establishment of tree protection and structural root zones (City of Wanneroo, 2019a).

Black cockatoos forage on a range of plant species, predominantly the seeds and flowers of marri (*Corymbia calophylla*), jarrah (*Eucalyptus marginata*), *Callistemon* species, and proteaceous species such as *Banksia*, *Hakea*, and *Grevillea* species (Commonwealth of Australia, 2012; DBCA, 2013; Valentine and Stock, 2008). Black cockatoos also forage on the seeds of introduced species (e.g. *Pinus* and *Erodium* species, canola and almonds), insects and insect larvae (Commonwealth of Australia, 2012). A DWER site inspection of the application area observed a small patch of vegetation within the centre of the application area and the base of a dune swale, comprising scattered *Banksia sessilis* (parrot bush), *Melaleuca cardiophylla* and groundcover *Banksia* (DWER, 2020; refer to Figure 9 to Figure 11). Noting the flora species present within the application area, the completely degraded (Keighery, 1994) to very good (Keighery, 1994) vegetation condition, and the small extent of clearing proposed, the vegetation within the application area is not likely to comprise significant black cockatoo foraging habitat. Given the above, the proposed clearing is not likely to significantly impact black cockatoo foraging habitat.

Quenda prefer dense scrubby vegetation such as coastal heath for nesting (AECOM, 2018). Western brush wallaby prefers open forest or woodland, seasonally wet flats with low grasses, open scrubby thickets and mallee, including *Banksia* dominated woodland (AECOM, 2018). The black-striped snake, primarily occurs in coastal dunes and sand plains with heath and banksia (AECOM, 2018). Graceful sun-moth prefers open herbland, heathland and shrubland on sand and limestone close to the coast where it breeds on *Lomandra maritima*, and in banksia woodland where *Lomandra hermaphrodita* is present (AECOM, 2018), and has been recorded within 80 metres from the application area (DBCA, 2007-). The woolybush bee has been recorded within 7.6 kilometres from the application area (DBCA, 2007-). Noting the habitat requirements of the species above, the very good (Keighery, 1994) to completely degraded (Keighery, 1994) vegetation condition within the application area, the presence of vegetation in very good (Keighery, 1994) condition adjacent to the application area, and the relatively small clearing extent of 0.5283 hectares proposed, and that these species are considered to be mobile and have access to adjacent vegetation, the vegetation within the application area may provide habitat for fauna of conservation significance, but is not anticipated to provide significant habitat for fauna species of conservation significance.

According to available databases, no threatened ecological communities (TECs) or priority ecological communities (PECs) have been mapped within the application area. TECs and PECs have been mapped within the local area. The 'Banksia Dominated Woodlands of the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) Region', listed as Priority 3 and recognised as an endangered TEC under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), has been mapped approximately 5.4 kilometres east from the application area. The '*Melaleuca huegelii* - *Melaleuca acerosa* (currently *M. systema*) shrublands on limestone ridges', listed as an endangered TEC by DBCA, is located approximately 4.8 kilometres north from the application area. Three state-listed PECs have been mapped within the Tamala Conservation Park, including 'Acacia shrublands on taller dunes' (Priority 3), 'Coastal Shrublands on Shallow Sands' (Priority 3) and 'Northern Spearwood Shrublands and Woodlands' (Priority 3) (AECOM, 2018). No PECs or TECs were recorded within the application area surveyed (AECOM, 2018; City of Wanneroo, 2019a). A site inspection of the application area conducted by DWER environmental officers / botanist identified that the vegetation within the application area is not likely to represent the PECs or TECs listed above (DWER, 2020). Given the above, the vegetation within the application area is not likely to comprise PECs or TECs.

The Priority 3 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' PEC, recognised as a critically endangered TEC under the EPBC Act, is mapped approximately 1.5 kilometres east from the application area. The application area is situated adjacent to a patch of tuart trees that may represent this ecological community. Conservation advice for the tuart woodland TEC outlines key diagnostic characteristics and defining features including, occurrence within the Swan Coastal Plain Bioregion, and Spearwood and Bassendean dune systems, and the presence of at least two at least two living established tuart trees in canopy layer, potentially co-occurring with other tree species (TSSC, 2019). The distance between the tuart trees must be no more than 60 metres between the outer edges of the canopies of the adjacent tuart trees (TSSC, 2019).

The TEC often occurs as a woodland, with other tree species such as *Agonis flexuosa* (peppermint), *Banksia grandis* (bull banksia), *Banksia attenuata* (candlestick banksia) and *Eucalyptus marginata* (jarrah) in the canopy or sub-canopy (TSSC, 2019). An understorey comprising native plants such as grasses, herbs and shrubs is commonly present, however, this has often been disturbed and modified (TSSC, 2019). If the patch is smaller than 0.5 ha it is not considered part of the nationally protected ecological community (TSSC, 2019). Patch sizes between 0.5 hectares and five hectares, in degraded vegetation condition, do not form part of the protected ecological community. All patches more than five hectares in size are considered a protected ecological community, regardless of the vegetation condition (TSSC, 2019).

Ten tuart trees are situated adjacent to the northern extent of the application area (City of Wanneroo, 2019a), and as discussed in Section 3, are avoided by the application area footprint. The City of Wanneroo (2019a) estimates that this discrete patch is 0.32 hectares in area, in degraded condition, and comprises weeds and other non-native flora species that have been planted, and as such, is not likely to meet the patch threshold of 0.5 hectares (City of Wanneroo, 2019a). A site inspection conducted by DWER environmental officers / botanist observed the adjacent tuart trees occur within 60 metres of one another and comprise a combination native and non-native mid-storey and understorey species (DWER, 2020). Noting that the boundaries for patch determination can extend beyond a property boundary, site or potential area of impact for a proposed action (TSSC, 2019), the tuart woodland situated adjacent to the application area has the potential to form part of a larger patch within immediate area (DWER, 2020). Noting the above, and that the proposed clearing will not result in the clearing of the tuart trees (Section 3), the dual use path has been designed incorporating tree protection and structural root zone recommendations from an arborist, and the degraded (Keighery, 1994) vegetation condition within this section of the application area (DWER, 2020), the proposed clearing is not likely to significantly impact the tuart woodland PEC/TEC, if present within the local area.

Given the above, the vegetation within the application area is not likely to comprise the whole or part of, or be necessary for the maintenance of conservation significant ecological communities. Noting the above, and the small clearing area of 0.5283 hectares, the proposed clearing is not likely to significantly impact any conservation significant communities within the local area.

The National Objectives and Targets for Biodiversity Conservation include a target to prevent the clearance of ecological communities with an extent below 30 per cent of that present pre-European settlement (Commonwealth of Australia, 2001). The local area retains approximately 29.6 per cent pre-European clearing extent. The application area is situated within the Swan Coastal Plain IBRA bioregion and mapped as the Swan Coastal Plain Quindalup complex, retaining 38.6 per cent and 60.5 per cent pre-European vegetation extents, respectively (Government of Western Australia, 2018a; Government of Western Australia, 2018b). Given these extents are approximately 30 per cent or more, the vegetation within the application area is not considered comprise a significant remnant in an area that has been extensively cleared.

The vegetation within the application area is located within Bush Forever site 322 "Burns Beach Bushland". Bush Forever site 322 contains 407.9 hectares of bushland (Government of Western Australia, 2000). Vegetation assessments and surveys of the application area determined that the vegetation within the application area is in very good (Keighery, 1994) to completely degraded (Keighery, 1994) condition (DWER, 2020; AECOM, 2018; Bennett, 2016; Hawthorne, 2019; City of Wanneroo, 2019a). The proposed clearing will impact on the environmental values of this Bush Forever site through the direct removal of vegetation and through the potential introduction / spread of weeds and dieback.

To ensure the integrity of Bush Forever site 322 is upheld, and proposed clearing is consistent with SPP 2.8, the Department of Planning, Lands and Heritage (DPLH) recommends that an offset package is prepared by the applicant, prior to clearing of native vegetation in accordance with the Western Australian Environmental Offset Policy (Government of Western Australia, 2011) and with guidance from Appendix 4 of SPP 2.8 (DPLH, 2019).

According to available databases, there are no wetlands or watercourses mapped within or in close proximity to the application area. The closest mapped wetland is Neerabup Lake, located approximately 3.8 kilometres from the application area. The site inspection of the application area conducted by DWER environmental officers did not observe any watercourses within the application area (DWER, 2020). Subsequently, it is considered that the proposed clearing is unlikely to impact on vegetation growing in association with a wetland or watercourse, deteriorate the quality of groundwater or surface water or cause, or exacerbate, the incidence or intensity of flooding. Soils within the application area are considered to have a high to extreme risk of wind erosion (Karrakatta shallow soils Phase and Quindalup South oldest dune Phase 30-50% of map unit has a high to extreme wind erosion risk) (Schoknecht et al., 2004), suggesting that clearing may contribute to further wind erosion. However, given there is substantial vegetation located east of the area under application, the risk of wind erosion will be minimal. Therefore, it is not considered likely for the proposed clearing to cause appreciable land degradation.

Given the above, the proposed clearing of an additional 0.5283 hectares is at variance with the clearing principle (h) and is not likely to be at variance with the remaining clearing principles.

Planning instruments and other relevant matters

The DPLH has advised that the proposed application to extend the dual use path to the existing path network in Mindarie is an outcome of an existing planning commitment with the Western Australia Planning Commission (WAPC), City of Joondalup and City of Wanneroo that benefits the wider recreational needs of the community and is therefore considered consistent with SPP 2.8 (DPLH, 2019). The DPLH advised that an offset package should be prepared and approved by DWER prior to the clearing of any native vegetation, in accordance with WA Environmental Offset Policy (2011) and Appendix 4 of SPP 2.8. It is recommended that there is an environmental gain for any clearing undertaken, i.e. at least 2x the calculated loss in habitat hectares (2:1 ratio) which can include revegetation, and it would be preferable that the offset measures are provided onsite within Bush Forever 322 (DPLH, 2019).

The DPLH recommended that other than the area of native vegetation proposed to be cleared, the development including construction, access, drainage, battering and ongoing maintenance shall not result in further disturbance or clearing of any native vegetation within Bush Forever site 322 (DPLH, 2019). The DPLH also recommended fencing where appropriate be installed to mitigate adverse impacts from pedestrian traffic (DPLH, 2019).

The offset and rehabilitation offset proposed under CPS 8220/2 is consistent with those approved under CPS 8220/1. Under CPS 8220/1, the applicant avoided, minimised and mitigated impacts to the Bush Forever site by implementing a revegetation plan aiming to revegetate and rehabilitate 1.7 hectares, effectively reducing the impact to the Bush Forever site from 2.518 hectares to 0.818 hectares under CPS 8220/1 (DWER, 2019). To address the remaining residual impacts, the applicant provided a monetary contribution of \$23,506.05 to the DWER for the purchase of 1.636 hectares of native vegetation with similar values to the area to be cleared (DWER, 2019). The applicant has mitigated the additional proposed impacts to the Bush Forever site under CPS 8220/2 through additional rehabilitation and revegetation within the application area. The permit conditions have been updated to reflect the amendment changes to revegetation requirements.

The clearing permit application was advertised on DWER's website on 19 November 2018, inviting submissions from the public within a 21 day period. One public submission was received.

The submission was concerned that the application information provided on the DWER ftp website, Clearing Permit System (CPS) and DWER ftp website varied in depicting the area to be cleared (Submission, 2019). The submission raised concerns that two parcels of land were noted in the applicant's application form excerpt available on the DWER ftp website, however, one of the parcels, known as 'Lot 9025 on Plan 413127' was not shown on the maps presented on ftp (Submission, 2019). The submission raised that it difficult to determine where the additional land was being sought to clear and how much additional land is being sought to clear under the amendment, noting that the CPS references 3.18 hectares (Submission, 2019). The submission raised concerns that the clearing envelopes presented for CPS 8220/1 and 8220/2 appear similar, and therefore is difficult to determine the additional area of clearing proposed under the amendment (Submission, 2019). Furthermore, the submission was concerned that the application states that an offset will be offered, however no details regarding the proposed offset were provided on the ftp site. Responses to the submission have been provided below.

- It is noted that the applicant incorrectly referenced a parcel number (Lot 9025 on Plan 413127) within their amendment application form available on the ftp (City of Wanneroo, 2019b). Lot 9025 on Plan 413127 does not form part of the application area, as verified during the validation stage of the application process. As such, the maps presented in the DWER ftp website and advertised on 18 November 2019 for 21 days depicts the correct land parcels and clearing footprint assessed under the application to amend CPS 8220/1, which excluded Lot 9025 on Plan 413127.
- It is noted that the original application to amend CPS 8220/1 submitted by the applicant included two separate clearing areas, comprising 0.528357 hectares and 0.124371 hectares (City of Wanneroo, 2019b). Noting the above and that the approved permit CPS 8220/1 allows for clearing of 2.53 hectares, this equated to a total clearing area of 3.18 hectares under the proposed amendment. On 1 November 2019, the applicant reduced the clearing footprint by 0.124371 hectares during the validation stage of the application process (City of Wanneroo, 2019c). This reduced the total clearing footprint from under CPS 8220/2 from 3.18 hectares to 3.06 hectares. While the maps were correctly presented and advertised on the DWER ftp site, CPS stated a clearing area of 3.18 hectares and should have stated 3.06 hectares. This discrepancy was addressed during the assessment stage of the clearing permit application process. CPS now correctly states a total clearing area of 3.06 hectares, rather than 3.18 hectares.

- The correct mapping for the area applied to clear under CPS 8220/2 and the area approved to clear under CPS 8220/1 were available on CPS were available at the time when the application was advertised on 18 November 2019. There are no changes to the CPS 8220/2 maps advertised on 18 November 2019 and available on the ftp.
- An initial offset and rehabilitation proposal was submitted with the application to amend on 16 September 2019 (City of Wanneroo, 2019b). The application was accepted and advertised on 18 November 2019. Offset proposals are not typically made available on the DWER ftp website at the acceptance and advertisement stage of the application. The offset proposal was reviewed during the assessment stage of the application process. In accordance with SPP 2.8, a 2:1 ratio offset is required to counterbalance the removal of 2.6834 hectares of native vegetation within Bush Forever site 322. Taking this ratio into account and the mitigation measures proposed through the revegetation and rehabilitation of 1.865 hectares within the application area, the size of the offset required is 1.636 hectares. The offset will be made publicly available online within the Government of Western Australia Environmental Offsets Register.

According to available databases, the Aboriginal Site of Significance identified as Mindarie Waugal is mapped within the application area. It is the applicant's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no unauthorised impacts to Sites of Aboriginal Significance occur through the clearing process.

The eastern portion of the application area intersects previously approved Purpose Permit CPS 6488/1, held by Tamala Park Regional Council for the purpose of clearing native vegetation for the purpose of conducting an unexploded ordnance search. The duration of the permit is for 15 June 2015 to 13 June 2020. The application area is intersected by purpose permit application CPS 8794/1 received by DWER on 29 January 2020.

5. Suitability of Proposed Offset

In line with SPP 2.8 section 5.1, a 2:1 ratio offset is required to counterbalance the removal of 2.6834 hectares of native vegetation within Bush Forever site 322. Taking this ratio into account and the mitigation measures proposed via 1.865 hectares revegetation and rehabilitation, the size of the offset required is 1.636 hectares.

6. References

- AECOM Australia Pty Ltd (AECOM) (2018) Tamala Park Reserve – Biological Report, Perth. In: City of Wanneroo (2019a). Amendment to Mindarie to Burns Beach Dual Use Path – Catalina Section & Additional Laydown Area. Amendment to CPS 8220/1 Native Vegetation Clearing Permit Application Supporting Documentation (DWER Reference: A1823624).
- Bennett Environmental Consulting Pty Ltd (Bennett) (2016) Botanical Assessment of Proposed Access Roads from Catalina to the Beach, November 2016. In: City of Wanneroo (2019a). Amendment to Mindarie to Burns Beach Dual Use Path – Catalina Section & Additional Laydown Area. Amendment to CPS 8220/1 Native Vegetation Clearing Permit Application Supporting Documentation. (DWER Reference: A1823624).
- City of Wanneroo (2019a) Amendment to Mindarie to Burns Beach Dual Use Path – Catalina Section & Additional Laydown Area. Amendment to CPS 8220/1 Native Vegetation Clearing Permit Application Supporting Documentation (DWER Reference: A1823624).
- City of Wanneroo (2019b) Email correspondence CPS 8220/2, received 16 September 2019 - application for an amendment to clearing permit CPS 8220/1 form (DWER Reference: A1823624).
- City of Wanneroo (2019c) Email correspondence CPS 8220/2 received 1 November 2019 - reduction in the clearing footprint by 0.12374 hectares (DWER Reference: A1837620).
- City of Wanneroo (2019d) Email correspondence CPS 8220/2, received 19 December 2019 - clearing permit amendment - reduction in the clearing footprint by 0.12374 hectares (DWER Reference: A1854186).
- City of Wanneroo (2020) Email correspondence from applicant, received 17 March 2020 - CPS 8220/2 offset and rehabilitation proposal confirmation (DWER ref: A1877197).
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Commonwealth of Australia (2012) EPBC Act referral guidelines for three threatened black cockatoo species. Department of Sustainability, Environment, Water, Populations and Communities, Canberra.
- Department of Biodiversity Conservation and Attractions (DBCA) (2013) Carnaby's cockatoo (*Calyptorhynchus latirostris*) Recovery Plan. Department of Parks and Wildlife, Perth, Western Australia.
- Department of Primary Industries and Regional Development (DPIRD) (2019). NRInfo Digital Mapping. Accessed at <https://maps.agric.wa.gov.au/nrm-info/>. Accessed December 2019. Department of Primary Industries and Regional Development. Government of Western Australia.
- Department of Planning, Lands and Heritage (DPLH) (2019) Bush Forever advice (DWER Reference: A1853252).
- Department of Water and Environmental Regulation (DWER; 2019) Clearing Permit Decision Report – CPS 8220/1 (DWER Reference: A1779307).
- Department of Water and Environmental Regulation (DWER; 2020) Site Inspection Report – CPS 8220/2 conducted 28 January 2020 (DWER Reference: A1884179).
- GHD (2013) Department of Planning Proposed Dual Use Coastal Path between Mindarie and Burns Beach Environmental Study and Topographical Survey, May 2013. In: City of Wanneroo (2019a). Amendment to Mindarie to Burns Beach Dual Use Path – Catalina Section & Additional Laydown Area. Amendment to CPS 8220/1 Native Vegetation Clearing Permit Application Supporting Documentation (DWER Reference: A1823624).
- Government of Western Australia (2000) Bush Forever Volume 2. Department of Planning, Lands and Heritage, Perth.
- Government of Western Australia (2011) The Western Australian Government's Environmental Offset Policy, Government of Western Australia, Perth.
- Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In: Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Hawthorne, A (2019). Burns DUP Catalina: Notes on vegetation assessment. In: City of Wanneroo (2019a). Amendment to Mindarie to Burns Beach Dual Use Path – Catalina Section & Additional Laydown Area. Amendment to CPS 8220/1 Native Vegetation Clearing Permit Application Supporting Documentation (DWER Reference: A1823624).

- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- Paperbark Technologies Pty Ltd (Paperbark Technologies) (2019a). Arboricultural Advice for the City of Wanneroo, July 2019. In: City of Wanneroo (2019a). Amendment to Mindarie to Burns Beach Dual Use Path – Catalina Section & Additional Laydown Area. Amendment to CPS 8220/1 Native Vegetation Clearing Permit Application Supporting Documentation (DWER Reference: A1823624).
- Paperbark Technologies Pty Ltd (2019b). Further information on Tree Protection Zone radius and Structural Root Zone radius for trees at Long Beach Promenade. Prepared for the City of Wanneroo. In: City of Wanneroo (2019a). Amendment to Mindarie to Burns Beach Dual Use Path – Catalina Section & Additional Laydown Area. Amendment to CPS 8220/1 Native Vegetation Clearing Permit Application Supporting Documentation (DWER Reference: A1823624).
- Paperbark Technologies Pty Ltd (2019c). Tree Survey – Long Beach Promenade, Mindarie Prepared for the City of Wanneroo. In: City of Wanneroo (2019a). Amendment to Mindarie to Burns Beach Dual Use Path – Catalina Section & Additional Laydown Area. Amendment to CPS 8220/1 Native Vegetation Clearing Permit Application Supporting Documentation (DWER Reference: A1823624).
- Schoknecht et al. (2004) Soil-landscape mapping in south-Western Australia: an overview of methodology and outputs, Department of Agriculture and Food, Perth.
- Submission (2019). Submission received on 5 December 2019. Department of Water and Environmental Regulation, Western Australia, DWER A1848786.
- Threatened Species Scientific Committee (TSSC; 2019) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (s266B) Approved Conservation Advice (incorporating listing advice) for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/153-conservation-advice.pdf> (accessed December 2019).
- Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gngalara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.

GIS Databases:

- Aboriginal Sites of Significance
- DBCA Managed Estate
- Directory of Important Wetlands
- Geomorphic Wetlands Swan Coastal Plain
- Hydrography, hierarchy
- Hydrography, linear
- Land Degradation datasets
- NatureMap
- Perth Groundwater Mapping (DWER)
- Remnant Vegetation
- SAC Bio Datasets
- Soils, Statewide
- TPFL Data
- Vegetation Complexes, IBRA Bioregion
- WA Herbarium Data
- WA TEC / PEC Boundaries and Buffers