GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8840/1
Permit Holder:	City of Cockburn
Duration of Permit:	17 July 2020 to 17 July 2030

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 is for the purpose of road upgrades and widening of Hammond Road, Success.

2. **Land on which clearing is to be done**
   Lot 812 on Deposited Plan 221241, Success
   Lot 8004 on Deposited Plan 409666, Success
   Lot 7 on Diagram 29141, Success
   Lot 6 on Diagram 29141, Success
   Lot 50 on Diagram 62370, Success
   Lot 500 on Deposited Plan 66535, Success
   Lot 500 on Deposited Plan 48831, Success
   Lot 41 on Diagram 31725, Success
   Lot 23 on Diagram 31084, Success
   Lot 14 on Plan 7633, Success
   Un-named Road Reserve – (PINS 11858580, 11122649, 1381640 and 12277624), Success
   Hammond Road Reserve – (PINS 11871415, 11919439 and 11871414), Success

3. **Area of Clearing**
   The Permit Holder must not clear more than 0.414 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8840/1a and Plan 8840/1b.

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. **Period during which clearing is authorised**
   The Permit Holder must not clear any native vegetation after 17 July 2025.

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

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. Dieback and weed 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 *weeds* and *dieback*:

(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* or *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. Vegetation management

(a) Where practicable the Permit Holder shall avoid clearing riparian vegetation.
(b) Where a watercourse or wetland is to be impacted by clearing, the Permit Holder shall maintain the existing surface flow by use of culverts.

10. Revegetation and rehabilitation

The Permit Holder must within 12 months of undertaking clearing authorised under this Permit:

(a) undertake deliberate *planting* of at least 42 trees or shrubs known to provide a foraging resource for black cockatoos including *Banksia attenuata* and/or *Banksia mensiesii* in the area cross-hatched red on attached Plan 8840/1c;
(b) ensure only *local provenance* propagating or seeding material is used;
(c) ensure *planting* is undertaken at the *optimal time*;
(d) undertake *weed* control and watering of *plantings* for at least three years post *planting;*
(e) the Permit Holder must within 24 months of *planting* in accordance with condition 10(a) of this Permit:
    (i) Engage an *environmental specialist* to make a determination that the planted vegetation will survive.
    (ii) If the determination made by the *environmental specialist* under condition 10(e)(i) that replanted vegetation will not survive, the Permit Holder must plant additional *local provenance* propagating material of species known to provide a foraging resource for black cockatoos within area cross hatched red on attached Plan 8840/1c.
(f) where additional *planting* is undertaken in accordance with condition 10(e), the Permit Holder must repeat the activities required by condition 10(c), 10(d) and 10(e) of this Permit.

PART III – RECORD KEEPING AND REPORTING

11. Record keeping

The Permit Holder must maintain the following records 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(s) 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) vegetation management actions in accordance with Condition 9 of this Permit; and
(g) rehabilitation activities undertaken in accordance with condition 10 of this Permit.

12. Reporting

(a) The Permit Holder must provide to the *CEO*, on or before 31 December of each calendar year, a report containing:
   (i) The records required to be kept under condition 11; and
   (ii) Records of activities done by the Permit Holder under this Permit between 1 July of the preceding calendar year and 30 June of the current calendar year.

(b) If no clearing authorised under this permit has been undertaken, a written report confirming that no clearing under this Permit has been undertaken, must be provided to the *CEO* on or before 31 December of each calendar year.

(c) The Permit Holder must provide to the *CEO*, no later than 90 calendar days prior to expiry date of the Permit, a written report of records required under condition 11, where these records have not already been provided under condition 12(a).

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;

environmental specialist means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the *CEO* as a suitable environmental specialist.

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

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;

local provenance means native vegetation seeds and propagating material from natural sources within 10 and 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

optimal time means the period from May to June for undertaking *planting;*

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

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 species-led ecological impact and invasiveness ranking summary, regardless of ranking; or

(c) not indigenous to the area concerned.

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

24 June 2020

Plan 8840/1 (a)

Legend

CPS layers
CPS areas approved to clear

base layers
Road Centrelines
Cadastre - LGATE 218

0 50 100 150 m

N

Mathew Gannaway
2020.06.24
10:58:10 +08'00'

Officer delegated under section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Plan 8840/1 (b)

Legend

CPS layers
CPS areas approved to clear

base layers
Road Centrelines
Cadastre - LGATE 218

0 50 100 150 m

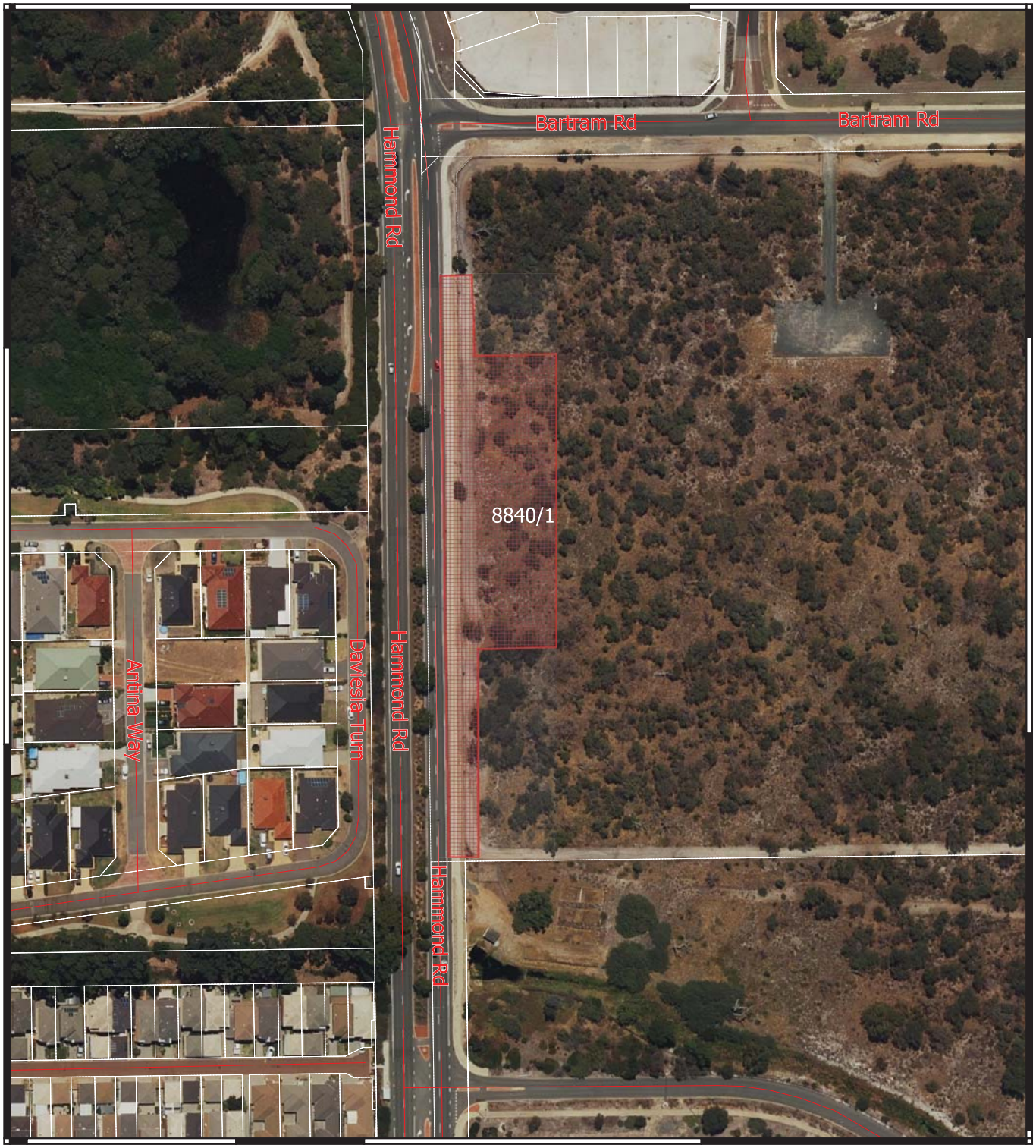
N

Mathew Gannaway
2020.06.24
10:57:33 +08'00'

Officer delegated under section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Plan 8840/1 (c)



Legend

CPS layers

CPS subject to conditions

base layers

Road Centrelines

Cadastre - LGATE 218

0 25 50 75 100 m

N

Mathew Gannaway
2020.06.24 10:56:37 +08'00'

Officer delegated under section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1. Application details

Permit application details

Permit application No.: 8840/1
Permit type: Purpose Permit

Applicant details

Applicant's name: City of Cockburn
Application received date: 11 March 2020

Property details

Property:
Lot 812 on Deposited Plan 221241, Success
Lot 8004 on Deposited Plan 409666, Success
Lot 7 on Diagram 29141, Success
Lot 6 on Diagram 29141, Success
Lot 50 on Diagram 62370, Success
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Lot 41 on Diagram 31725, Success
Lot 23 on Diagram 31084, Success
Lot 14 on Plan 7633, Success
Un-named Road Reserve – (PINS 11858580, 11122649, 1381640 and 12277624), Success
Hammond Road Reserve – (PINS 11871415, 11919439 and 11871414), Success

Local Government Authority: City of Cockburn
Localities: Success

Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
0.415		Mechanical Removal	Road construction and upgrades

Decision on application

Decision on Permit Application: Grant
Decision Date: 24 June 2020

Reasons for Decision:

The clearing permit application has been assessed against the clearing principles, planning instruments, and other matters in accordance with section 51O of the *Environmental Protection Act 1986.* It has been concluded that the proposed clearing is at variance with clearing principle (f), may be at variance with clearing principles (b) and (h), and is not at variance with, or not likely to be at variance with, the remaining clearing principles.

The Delegated Officer had regard to the supporting documentation submitted by the applicant (City of Cockburn 2020a; City of Cockburn 2020b). Through the assessment it was identified that the proposed widening of Hammond Road will remove trees that provide a foraging resource for black cockatoos, will remove approximately 0.09 hectares of riparian vegetation, and has the potential to further isolate two reserves managed for conservation purposes. The Delegated Officer also determined that the proposed clearing may increase the spread of weeds and dieback into adjacent conservation reserves.

The Delegated Officer noted that to reduce impacts the applicant has committed; to revegetating the Hammond Road verge and/or adjacent areas with species known to provide a foraging resource for black cockatoos (including *Banksia* spp.); revegetating 0.5 hectares of degraded areas within the nearby Yangebup Lake Reserve with species known to provide a foraging resource for black cockatoos (including *Banksia* spp.); and installing signage over Hammond Road to mitigate fauna vehicle collisions.

The Delegated Officer determined that given the condition and isolated occurrence of the vegetation present within the application area, and the management and mitigation measures specified by the applicant, proposed clearing is not likely to lead to an unacceptable risk to the environment. The Delegated Officer decided to grant a clearing permit subject to dieback and weed management conditions, maintaining

surface water flows, and the revegetation of a section of the Hammond Road verge and/or adjacent areas with appropriate local native vegetation that provides foraging habitat for black cockatoos.

2. Site Information

Clearing Description

0.415 hectares of clearing is required to facilitate the duplication of approximately 1.3 kilometres of Hammond Road in the vicinity of Hird Road to Bartram Road, Success, for the Hammond Road Duplication Project.

Vegetation Description

The vegetation within the application area is mapped as the following:

The application area has been mapped as the Bassendean Complex-Central and South Swan Coastal Plain vegetation complex. This complex ranges from woodland of *Eucalyptus marginata* (Jarrah) - *Allocasuarina fraseriana* (Sheoak) - Banksia species to low woodland of Melaleuca species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* (Jarrah) to *Eucalyptus todtiana* (Pricklybark) in the vicinity of Perth (Heddle et al. 1980).

A site inspection of the application area by Department of Water and Environmental Regulation (DWER) officers identified the vegetation within the application area to be predominantly parkland cleared, and consists of native tree species intermixed with exotic trees and shrubs. Native tree species present include *Eucalyptus rudis* (Flooded Gum), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (sheoak) and *Eucalyptus gomphocephala* (Tuart). Smaller areas of Banksia Woodland occur, and a sumpland (an area of inundation) bisects the application in the northern section (DWER 2020).

Vegetation Condition

Vegetation across the majority of the application area is predominantly parkland cleared, and therefore Completely Degraded or Degraded (66 per cent of the application area), based on the condition scale of Keighery (1994). At the northern section the proposed road upgrade crosses an area of inundation with vegetation in Good condition. In the southern section isolated stands of Banksia Woodland occur with vegetation in Degraded to Good Condition (Keighery 1994).

Soil and Landform Type:

The application area consists of Bassendean Sands. Three soil units have been mapped over the application area, including Bassendean Phase 1, Phase 2, and Phase 3, described as:

- Phase 1. 212Bs_B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than two metres.
- Phase 2. 212Bs_B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan one to two metres.
- Phase 3. 212Bs_B3: Closed depressions and poorly defined stream channels with moderately deep, poorly to very poorly drained bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.

Comments:

The applicant is the City of Cockburn. 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. The application area is located within the Swan Coastal Plain (SWA02) bioregion as described by Thackway and Cresswell (1995).

Figure 1: Representative photographs of the application area (City of Cockburn 2020a; DWER 2020)

3. Avoidance and minimisation measures

The Hammond Road Duplication Project consists of a dual carriageway with associated median, verge and footpath. The alignment required has been designed to minimise impacts to native vegetation. Retaining walls, safety barriers, and mesh fencing will be installed to restrict clearing to design footprints and to protect vegetation.

Due to the requirement to duplicate Hammond Road, and the location of major water and gas infrastructure within the vicinity, the native vegetation included within application CPS 8840/1 could not be avoided. Several revisions of the design were considered by the City of Cockburn to avoid native vegetation prior to the submission of the most appropriate design to support a clearing permit application (City of Cockburn 2020b).

To mitigate the loss of approximately 0.10 hectares of Banksia Woodland and associated black cockatoo foraging habitat the City of Cockburn propose to undertake revegetation programs (City of Cockburn 2020b).

Street-scaping along the Hammond Road verge will incorporate revegetation using *Banksia attenuata* and *Banksia menziesii,* particularly along a 200 metre stretch on the eastern side, immediately south of Bartram Road and adjacent to, and possibly including, a large patch (approximately 5 hectares) of Banksia Woodland (Lot 500 on Plan 66535). Street-scaping will also include the use of Grass Trees *(Xanthorrhoea preissii)* located within the application area that will be salvaged and translocated for landscaping use. Additional Grass Trees from further afield will also be utilised in street scaping works (City of Cockburn 2020b).

The City of Cockburn also propose to undertake a revegetation program within the southern portion of the nearby Yangebup Lake Reserve (Yangebup Fora and Fauna Reserve). That is, Lot 810 on Plan 31233 and Lot 403 on Plan 32448 incorporating Bush Forever site 256 (Yangebup and Little Rush Lakes) and Beeliar Regional Park. The revegetation site is within 1.6 kilometres of the application area. Revegetation will entail approximately 0.5 hectares and include the scalping of weed-laden soil and replacing it with topsoil including a seed bank of *Banksia attenuata* and *Banksia menziesii*. These works will be a component of a larger (approximately 0.85 hectare) revegetation site which will have a rabbit-proof fence installed and be maintained through watering, weed control, and infill planting until it is self-supporting and resilient (City of Cockburn 2020b).

To mitigate potential restrictions to fauna movements at a riparian sumpland crossing in the northern section of the application area the City of Cockburn considered various options. Due to topography and tenure constraints a fauna underpass could not be designed. The City of Cockburn also considered colour-coding the road so that fauna crossings could be highlighted. This strategy was not consistent with Main Roads WA standards and could not be implemented.

The City of Cockburn will, however, install illuminated signage at validated hotspots on the Hammond Road verge to avoid turtle and other fauna vehicle collisions. Common Brushtail Possums *(Trichosurus vulpecula)* have been recorded in the Yangebup area and the City of Cockburn is also considering the installation a 'possum bridge' over Hammond Road, similar to that installed on Beeliar Drive, to help this species disperse through the landscape (City of Cockburn 2020b).

4. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

Proposed clearing is not likely to be at variance with Principle (a).

Large areas of naturally vegetated lands and wetlands occur immediately to the west of the application area associated with Beeliar Regional Park and Thompsons Lake, as well as to the north (Jubilee Park) and east (Twin Bartram Swamp). However, the application area consists predominantly of road verge, much of which is parkland cleared with no native understorey species present (City of Cockburn 2020a). Just two components of the application area recorded a vegetation condition better than Degraded (Keighery 1994) and therefore incorporate a native understorey. The areas identified in in Good condition (Keighery 1994) include a 0.07 hectare area in the northern portion where Hammond Road crosses a sumpland and three small areas of Banksia Woodland in the south totalling 0.07 hectares (DWER 2020). The smallest of these areas incorporates three individual *Banksia attenuata* trees that are on the extreme edge of a larger patch of the Priority Ecological Community (P3) Banksia dominated woodlands of the Swan Coastal Plain IBRA region, also listed as an endangered Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Criteria to qualify as this TEC have been developed by the Commonwealth of Australia (No Date) and the TSSC (2016). The remaining smaller and isolated patches of Banksia Woodland ranging from Degraded to Good (Keighery 1994) do not qualify as this TEC in respect to patch size and vegetation condition.

No Priority flora taxa have been recorded within the application area. According to available databases 35 priority flora taxa have been recorded within the local area. The majority of these records occur within lands managed for conservation within the local area such as Beeliar Regional Park, Thomsons Lake Nature Reserve, and Jandakot Regional Park.

The closest Priority flora taxa was recorded over one kilometre to the west of the application area; *Dodonaea hackettiana* (P4), with the second closest *Cyathochaeta teretifolia* (P3) recorded over two kilometres distant. Several of the Flora taxa identified such as *Levenhookia preissii* (P1), *Dodonaea hackettiana* (P4) and *Dampiera triloba* (P3) have the potential to occur in sumpland habitat (WAH 1998-). However, due to the majority of the application area being in a Degraded to Completely Degraded state, and the small area incorporating a native understorey, it is unlikely that priority flora species occur over the application area. A site survey of DWER (2020) recorded twenty native understorey species in the Banksia Woodland areas, and six within a sumpland area, none of which were conservation significant.

Due to the proximity of Thompsons Lake, a large number of conservation significant fauna, and in particular water birds, have been recorded in the local area (DBCA 2007-). The application area consists of disjunct patches of native vegetation in a predominantly Degraded to Completely Degraded state (Keighery 1994), and the vegetation present is not conducive to supporting priority or threatened fauna habitat or species. However the Priority 4 Quenda (*Isoodon fusciventer)* may intermittently frequent the application area from adjacent vegetation and the Endangered Carnaby's Black Cockatoo *(Calyptorhynchus latirostris)* would feed upon some components of the vegetation present; in particular the *Banksia* trees, as evidenced during the site inspection (DWER 2020).

Due to the majority of the application area being disjunct and in a Degraded to Completely Degraded state, and the relatively small area incorporating a native understorey, it is unlikely that conservation significant flora occur, and habitats present are not significant for locally-occurring fauna species. A small area incorporating three individual *Banksia* trees, representing a State PEC and Commonwealth TEC, on the extreme edge of a larger patch of approximately five hectares of native vegetation, will be impacted. Located on the extreme edge of this larger bushland area, and adjacent to a road, this small area is currently subject to edge effects (DWER 2020), and the loss of these three trees will not impact the overall significance or viability of the larger patch.

At least 199 flora taxa have been recorded in bushland reserves immediately to the west (Government of Western Australia 2000b), and the application area does not contain vegetation of a better condition, or likely to be of higher biodiversity, than surrounding vegetation. Nor does the application area support high levels of species diversity, ecosystem diversity or genetic diversity. The proposed clearing is not likely to be at variance with this Principle.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.

Proposed clearing may be at variance with Principle (b).

According to available databases 53 vertebrate fauna species of conservation significance have been recorded within the local area, including nine mammals, two reptiles, and 42 birds. None have been recorded within the application area itself.

The majority of mammals, and all of the reptiles identified, are unlikely to occur due to the predominantly Degraded to Completely Degraded condition (Keighery 1994), and in particular the lack of understorey and isolated nature of the remnant patches.

The Priority 4 Quenda (*Isoodon fusciventer)* is known locally with recent records from within 20 metres of the application area, and a deceased specimen found on Hammond Road in the vicinity of the application area during the site inspection (DWER 2020). Quenda require a dense understorey for cover (van Dyck and Strahan 2008) including exotic species and the sumpland to the north of the application area and Acacia thickets in the south offer habitat. Quenda may intermittently frequent the application area, particularly from Thompsons Lake Nature Reserve and surrounding Beeliar Regional Park bushland to the west, however the application area does not contain significant habitat for Quenda.

Widening of Hammond Road in the northern portion, where Hammond Road crosses a sumpland, has the potential to further restrict fauna movements. Species potentially impacted include the Quenda (P4), Common Brushtail Possum *(Trichosurus vulpecula)*, and South-western Snake-necked Turtle (*Chelodina colliei*). Due to the flat topography at this point, an appropriate fauna underpass cannot be constructed (City of Cockburn 2020b). Culverts sufficient for maintaining current flow rates, including the modelled 1 in 100 flood, will be installed. These culverts will facilitate the dispersal of aquatic species including frogs and turtles, and terrestrial species only during the summer period when water levels sufficiently subside. The City of Cockburn will install illuminated signage at validated hotspots on the Hammond Road verge to avoid fauna vehicle collisions.

Of the 42 significant bird species recorded, 30 are marine shorebirds or migratory waders protected under International Agreements including Priority and Threatened species (particularly the Families: Scolopacidae, Charadriidae, and Glareolidae) (DBCA 2007-). These species are unlikely to occur over the application area due to a lack of shoreline or wetland margins habitat. Two bittern species, the Blue-billed Duck *(Oxyura australis)* (P4) and Glossy Ibis *(Plegadis falcinellus)* (protected under International Agreements) occur in and around the mesic areas surrounding Thomsons Lake. The Blue-billed Duck is a diving species (Marchant and Higgins 1990) that requires water at depth that is not present. The migratory Fork-tailed Swift *(Apus pacificus)*, as well as the Peregrine Falcon *(Falco peregrinus)* (other specially protected fauna) may overfly the application area without utilising any of the habitats present. Of the remaining species, the loss of the small 0.058 hectare area of Completely Degraded to Good sumpland habitat (Keighery 1994) in the north of the application area adjacent to Hammond Road is unlikely to impact any local populations.

Of the birds of conservation significance identified, the species most likely to frequent the vegetation of the application area are the two vagile species of black cockatoo that could utilise the tree canopy present. The Endangered Carnaby's Cockatoo *(Calyptorhynchus latirostris)* and the Vulnerable Forest Red-tailed Black Cockatoo *(Calyptohynchus banksii naso)* are both known from the vicinity of the application area.

Black cockatoo habitat can be considered in terms of breeding habitat, night roosting habitat, and foraging habitat. Black cockatoos will generally forage up to 12 kilometres from an active breeding site (DSEWPaC 2012; DoEE 2017; DPaW 2013). Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DSEWPaC 2012; DoEE 2017; DPaW 2013). Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore viewed in the context of known breeding and night roosting sites within foraging distance.

Numerous records of Carnaby's Cockatoo and the Forest Red-tailed Black Cockatoo have been made within ten kilometres of the application area. The application area is outside of any confirmed, or unconfirmed, black cockatoo breeding areas. A known Carnaby's Cockatoo night roost site was previously recorded in a small pine plantation approximately 150 metres north of the application area, but no longer exists. However, several other confirmed and unconfirmed night roosts are located within a six kilometre foraging distance for both Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo.

An inspection of two Tuarts *(Eucalyptus gomphocephala),* the only large trees in the application area, did not record any hollows (DWER 2020), and black cockatoo breeding habitat (large trees providing hollows), and roosting habitat (generally the tallest trees within an area) are not present over the application area. However, due to the presence of night roosts within the local area available foraging resources become important to both species, and Carnaby's Cockatoo was observed feeding on Banksias within the application area during the site inspection (DWER 2020).

Native vegetation within the application area consists predominantly of isolated trees along the Hammond Road verge, consisting of ten species (City of Cockburn 2020a). Of these *Corymbia calophylla,* and *Eucalyptus marginata* provide a potential foraging resource for both black cockatoo species; *Eucalyptus todtiana, Eucalyptus gomphocephala, Banksia attenuata, Banksia menziesii* (and *Acacia* thickets) provide a potential foraging resource for Carnaby's Cockatoo; and *Allocasuarina fraseriana* provides a potential foraging resource for the Forest Red-tailed Black Cockatoo. In total 42 trees of various maturity provide a potential foraging resource for the two black cockatoo species. This foraging habitat is considered 'Low quality' for the Forest Red-tailed Black Cockatoo and 'Low quality' to 'Quality' for Carnaby's Cockatoo based on guidance within Commonwealth of Australia (2017). That is, individual foraging plants, or a small stand of foraging plants. The foraging quality assessment is elevated for Carnaby's Cockatoo due to its location on the Swan Coastal Plain (Commonwealth of Australia 2017).

Within the local context the application area abuts large tracts of native vegetation providing foraging habitat (including large areas of Banksia Woodland) to the west associated with Beeliar Regional Park and the Thomsons Lake Nature Reserve. Jandakot Regional Park to the east also provides suitable foraging habitat for black cockatoos, and 24.5 percent of the local area retains native vegetation. The loss of a small area of Low quality to Quality foraging resource is unlikely to impact the viability of black cockatoos in the local area, however, due to the presence of black cockatoo foraging habitat and evidence that the application area is being used by Carnaby's Cockatoo, the proposed clearing may be at variance with this Principle.

To mitigate the loss of black cockatoo foraging habitat, the applicant the applicant has committed; to revegetating the Hammond Road verge and/or adjacent areas with species known to provide a foraging resource for black cockatoos (including *Banksia* spp.) and revegetating 0.5 hectares of degraded areas within the nearby Yangebup Lake Reserve with species known to provide a foraging resource for black cockatoos (including *Banksia* spp.)

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, Threatened flora.

Proposed clearing is not likely to be at variance with Principle (c).

The application area is predominantly parkland cleared with no native understorey species present. No Threatened flora taxa have been recorded within the application area. According to available databases, nine Threatened flora taxa have been recorded within the local area, six of which are orchids. Of these species the closest, and most commonly recorded, is *Caladenia huegelii* (Critically Endangered), with the closest 1.4 kilometres to the north-east. Apart from *Caladenia huegelii, Diuris drummondii* (Vulnerable) is the only other taxa recorded within five kilometres of the application area.

Seven Threatened taxa are recorded between five and ten kilometres of the application area, including the Critically Endangered *Austrostipa jacobsiana, Drakaea elastica* and *Synaphea* sp. Fairbridge Farm (D. Papenfus 696), and the Endangered *Diuris micrantha, Diuris purdiei, Drakaea micrantha* and *Lepidosperma rostratum.*

The inundated sumpland habitat potentially provides habitat for three species *(Austrostipa jacobsiana,* Synaphea sp. Fairbridge Farm (D. Papenfus 696), and *Diuris purdiei).* However due to the small area impacted and predominantly degraded condition of the habitat none are likely to occur. The Banksia Woodland habitat potentially provides habitat for two species *(Caladenia huegelii* and *Drakaea micrantha).* However due to the small and disjunct areas impacted and condition of the habitat none are likely to occur. A site inspection by DWER (2020) recorded 24 native understorey vascular plant taxa, none of which were of conservation significance.

The application area is not likely to include Threatened flora, or be necessary for the continued existence of Threatened flora, and proposed clearing is not at variance with this Principle.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Proposed clearing is not at variance with Principle (d).

Five TECs endorsed by the Western Australian Minister for Environment have been mapped within ten kilometres of the application area:

- Mound Springs SCP: Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain). (Endangered)
- SCP10a: Shrublands on dry clay flats. (Endangered)
- Limestone Ridges (SCP26a): *Melaleuca huegelii - Melaleuca systena* shrublands on limestone ridges (Gibson *et al.* 1994 type 26a). (Endangered)
- SCP08: Herb rich shrublands in clay pans. (Vulnerable)
- SCP30a: *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain. (Vulnerable)

None of these TECs have been mapped within six kilometres of the application area, with the closest (Mound Springs SCP) occurring approximately 6.3 kilometres to the south. Vegetation descriptions over the application area are not analogous with these communities, and given the condition of the vegetation, and the distance to the nearest TEC, it is unlikely that the vegetation under application will be necessary for the maintenance of any of these communities. The proposed clearing is not at variance with Principle (d).

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Proposed clearing is not likely to be at variance with Principle (e).

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present prior to the year 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The application area is located within the Swan Coastal Plain bioregion as described by Thackway and Cresswell (1995). The Swan Coastal Plain (IBRA) bioregion retains approximately 38.6 per cent of its pre-European vegetation extent (Government of Western Australia (2019a).

The Swan Coastal Plain Vegetation Complex of 'Bassendean Complex-Central and South' (System 6 ID 44) has been mapped over the application area (Heddle et al. 1980 as updated by Webb et al. 2016). The vegetation over the application area consists of remnant trees representative of this complex including *Eucalyptus marginata Eucalyptus todtiana*, *Allocasuarina fraseriana,* and *Banksia* species (City of Cockburn 2020a).

The Bassendean Complex-Central and South vegetation complex has approximately 23,500 hectares remaining, representing 26.9 per cent of its original occurrence. This is below the 30 per cent threshold of the Government of Western Australia (2019b). However, the Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region as a constrained area, which provides for the reduction of vegetation complexes to a minimum of 10 per cent of their pre-European extent (EPA, 2008).

At the local scale of a ten kilometre radius approximately 7,738 hectares of native vegetation remains, representing 24.5 per cent of native vegetation cover. This figure is augmented by significant reserves to the west (Beeliar Regional Park) and to the east (Jandakot Regional Park).

The application area is not considered significant as a remnant of native vegetation and is not likely to be at variance with Principle (e).

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance with Principle (f).

The application area is located within the Bartram Road Catchment of the Murray River Basin. A Ramsar listed wetland is located approximately 390 metres to the west of the application area; Forrestdale and Thomsons Lakes (ID 35). Thomsons Lake is also listed in the Directory of Important Wetlands (WA092), as is the Gibbs Road Swamp System (WA078) located approximately 2.5 kilometres to the east.

An ephemeral 'Conservation Category' sumpland (ID 12432) mapped as a Geomorphic Wetland of Swan Coastal Plain occurs across the northern section of the application area comprising a small area of 0.058 hectares. A sumpland is defined as an area that is seasonally inundated (Semeniuk and Semeniuk 2004; Water and Rivers Commission 2001). When adjacent riparian vegetation outside of the mapped boundary is included, this area increases to 0.094 hectares (or approximately 22.5 per cent of the application area).

Conservation Category wetlands are the highest priority wetlands with a management objective of preservation of the wetland attributes and functions (EPA 2004; EPA 2008; Water and Rivers Commission 2001). The Conservation Category sumpland (ID 12432) totals 0.058 hectares of which the west side (0.01 hectares) is Completely Degraded and the east side (0.05) hectares is in Good condition (Keighery 1994). When adjacent riparian vegetation is included, 0.02 hectares of the west side is in Completely Degraded and 0.07 hectares on the east side is in Good condition; totalling 0.09 hectares of riparian vegetation.

The west side consists of *Eucalyptus rudis* over *Melaleuca preissiana* and a weedy shrub/small tree over Kikuyu grass *(*Pennisetum clandestinum)* (DWER 2020). The east side is in a predominantly Good condition consists of *Eucalyptus rudis* over *Melaleuca preissiana* over *Lepidosperma longitudinale* and *Juncus pallidus* (DWER 2020).

The proposed clearing will remove approximately 0.09 hectares of vegetation associated with a wetland, therefore the proposed clearing is at variance with this Principle. Culverts will be installed to facilitate the flow of water through the sumpland and enable current hydrological flows to be maintained, and construction will conform with a Construction Management Plan Guidelines (City of Cockburn 2019) to mitigate construction impacts to adjoining wetlands.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

The proposed clearing is not at variance with Principle (g)

The application area consists of gently undulating sandplain of unconsolidated sediments, with non-calcareous sands, podsolised soils and low-lying wet areas. Three phases of the Bassendean Sands occur: Phase 1 (212Bs_B1); Phase 2 (212Bs_B2); and Phase 3 (212Bs_B3) (DPIRD 2017; Schoknecht *et al.,* 2004). Bassendean Sands generally consist of well to moderately well drained deep bleached grey sands, with a pale yellow B horizon.

Due to the association with nearby wetlands, acid sulfate soil risk as well as sub-surface acidification has been assessed and mapped at a High risk (H2), with the risk of phosphorous export also rated High (H2) (DPIRD 2017). Groundwater salinity over the application area is mapped at under 500 total dissolved salts (TDS) milligrams per litre (mg/L) (that is, 'fresh'), with the risk of salinity rated at Low (L1). Due to the unconsolidated nature of the soils, wind erosion risk over the application area is rated at Moderate (M2) to High (H1). Conversely water erosion and water-logging risk are rated Low (DPIRD 2017).

Standard, and staged, road construction methodologies including strategies for the management of acid sulfate soils, drainage controls, and wind and water erosion will be implemented including adherence to Construction Management Plan Guidelines (City of Cockburn 2019). Soils will not generally be excavated at depth, and any impacts to surrounding soils and drainage can be managed through appropriate design and construction management.

The proposed clearing is minor with much of the vegetation in a Degraded to Completely Degraded condition (Keighery 1994). The cleared area will be replaced with a hard road surface, drainage controls, and landscaping. Given the location, small scale of clearing, surrounding landscape, and methodologies implemented for road construction, it is unlikely that the proposed clearing would contribute to, or cause, appreciable land degradation. The proposed clearing is not at variance with Principle (g).

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Proposed clearing may be at variance with Principle (h).

The northern section of the application area is located within a Conservation Category sumpland (ID 12432).

At this northern section, a reserve associated with the Beeliar Regional Park,, and managed by the Department of Biodiversity, Conservation and Attractions (DBCA), is located immediately adjacent to the west (P048831-500). This reserve is contiguous with reserves comprising both Beeliar Regional Park, and Thomsons Lake Nature Reserve managed by DBCA. These lands are also associated with Bush Forever Site 391 – 'Thomsons Lake Nature Reserve and adjacent bushland, Beeliar'. Bush Forever Site 391 is also immediately adjacent to the application area to the west.

Immediately to the east of this northern section associated with Conservation Category sumpland (ID 12432), is Reserve 53183. This reserve supports a wetland, and is known as Jubilee Park. Jubilee Park (R53183) is vested with the City of Cockburn for the purpose of conservation. The northern section of the application area, therefore, is bounded directly to the west and to the east by lands managed for conservation purposes and supporting wetland habitats associated with Conservation Category sumpland (ID 12432).

The application area is not located within close proximity to any formal ecological linkages, however, in the northern section of the application area construction of the Hammond Road Duplication Project (with a dual carriageway) has the potential to further isolate two reserves managed for conservation purposes, currently separated by a single carriageway. Construction also has the potential to introduce or spread weeds and/or dieback *(Phytophthora* spp.) into surrounding vegetation. The City of Cockburn has undertaken consultation with both the Water Corporation and DBCA with regards to water flows and potential negative environmental impacts (City of Cockburn 2020b), however, indirect impacts associated with the construction process has the potential to negatively impact these adjacent areas. Therefore, the proposed clearing may be at variance with Principle (h).

Weed and dieback management practices will assist in mitigating impacts to adjacent remnant native vegetation. Culverts will be installed to facilitate the flow of water through the sumpland and enable current hydrological flows to be maintained, and construction will conform with a Construction Management Plan Guidelines (City of Cockburn 2019) to mitigate construction impacts to adjoining wetlands and conservation areas.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Proposed clearing is not likely to be at variance with Principle (i).

The application area is located within the Jandakot Groundwater Area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). No RIWI Act proclaimed rivers occur in the local area, and the application area is located well outside of any RIWI Act surface water and irrigation districts. The application area is also located well outside of any *Country Areas Water Supply Act 1947* (CAWS Act) control catchments or reserves, or any Public Drinking Water Source Areas, with the closest approximately 800 metres to the east (the Jandakot Underground Water Pollution Control Area).

Groundwater salinity over the application area is mapped at under 500 TDS mg/L (that is, 'fresh'), with the risk of salinity rated at Low (L1). Works associated with the clearing application will not intersect groundwater, and there is no requirement to take groundwater for the project.

The northern section of the application area bisects an ephemeral Conservation Category sumpland (ID 12432) and approximately 0.09 hectares of riparian vegetation will be removed. Indirect impacts to the surface water of the Conservation Category sumpland via construction of the Hammond Road Duplication Project are possible.

Detailed design of the Hammond Road Duplication Project has considered water run-off management, particularly in respect to the Conservation Category sumpland and the City of Cockburn has undertaken consultation with both the Water Corporation and DBCA with regards to water flows and potential negative environmental impacts (City of Cockburn 2020b). Surface water flow regimes will be maintained, and the proposed final design levels will not restrict or alter the flow regime of the sumpland.

Impacts to groundwater from the proposed clearing are unlikely, as are direct impacts to surface water. Indirect impacts to the Conservation Category sumpland (ID 12432) via construction works are possible. However, the City of Cockburn has undertaken consultation with both the Water Corporation and DBCA with regards to water flows and potential negative environmental impacts

(City of Cockburn 2020b) and detailed design and standard construction methodologies, such as adherence to Construction Management Plan Guidelines (City of Cockburn 2019), are likely to mitigate potential impacts.

Given the small scale of the proposed clearing, the detailed design, and the standard construction methodologies employed, the proposed clearing is unlikely to cause deterioration in the quality of surface or underground water and is not likely to be at variance with Principle (i).

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not at variance with Principle (j).

The application area experiences an annual average rainfall of approximately 866 millimetres, the majority received during the winter months, with the wettest being June and July (BOM 2020). Between 30 and 50 per cent of the mapped M2 unit in the extreme southern section of the application area (Bassendean Sands - B3 Phase) has a moderate to high flood risk. The remainder of the application area has a Low flood risk, with water-logging risk also rated as Low (L2) over the entire area.

Cleared areas will be replaced with hard road base and landscaping. Detailed design of the Hammond Road Duplication Project has considered water run-off management, particularly in respect to the Conservation Category sumpland. Surface water flow regimes will be maintained, and the proposed final design levels will not restrict or alter the flow regime of the sumpland.

Any potential for flooding will be managed through appropriate drainage design and construction to Australian Standards. The proposed clearing, is not likely to cause, or exacerbate, the incidence or intensity of flooding, and is not at variance with Principle (j).

Planning instruments and other relevant matters.

Purpose Permit application CPS 8840/1 was advertised on the DWER website for a 14 day public comment period on 16 April 2020. No public submissions were received in relation to this application.

An EPA Ministerial Boundary intersects the application area. Ministerial Statement 819 concerns a s46C - Minor change to implementation conditions: That is, a proposal regarding the management and abstraction of groundwater from the Jandakot Mound, with provision for environmental water requirements. The Ministerial Statement will not impact DWERs ability to determine this application.

The application area is located within the Jandakot Groundwater Area proclaimed under the RIWI Act. The application area intersects a Conservation Category sumpland (ID 12432). A section 11, 17 or 21A permit under the RIWI Act to interfere with bed and banks of a watercourse will not be required (City of Cockburn 2020b).

The application area is located within a Native Title Registered Claim for the Whadjuk People (WAD242/2011) and within the boundaries of the Whadjuk People Indigenous Land Use Agreement (WI2017/015). No Aboriginal sites of significance have been recorded within the application area itself, however, six are located within 500 metres of the application area: ID 18937, ID 3428, ID 25019, ID 18938, ID 3429, and ID 15936. It is the applicant's responsibility to ensure compliance with any obligations under the *Aboriginal Heritage Act 1972*.

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5. GIS Datasets

- Aboriginal Sites of Significance
- Clearing Regulations - Environmentally Sensitive Areas
- Carnaby's cockatoo: breeding, roosting, feeding

- Department of Biodiversity Conservation and Attractions, Tenure
- Geomorphic Wetlands, Swan Coastal Plain
- Groundwater salinity, statewide
- South west forest vegetation complexes
- Hydrology, linear
- IBRA Australia
- Land for Wildlife
- PDWSA, CAWSA, RIWI Act Areas
- Remnant vegetation
- SAC Biodatasets (accessed January 2020)
- Soils, statewide
- South coast significant wetlands
- Town Planning Scheme Zones