



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

### PERMIT DETAILS

Area Permit Number: 8983/1

File Number: DWERVT6177

Duration of Permit: From 26 November 2020 to 26 November 2022

### PERMIT HOLDER

City of Cockburn

### LAND ON WHICH CLEARING IS TO BE DONE

Lot 508 on Deposited Plan 414835, Bibra Lake

### AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.89 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8983/1(a).

### CONDITIONS

#### 1. 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.

#### 2. 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.

#### 3. Fauna management (black cockatoo habitat trees)

The permit holder shall not clear the six *black cockatoo habitat trees* identified red on attached Plan 8983/1(b).

#### 4. Fauna management (directional clearing)

Clearing shall be conducted in a slow, progressive manner from east to west to allow fauna to move out of the clearing area and into adjacent remnant vegetation.

#### 5. Land degradation (wind erosion)

The Permit Holder must begin construction works within 2 months of the cessation of clearing to mitigate against *land degradation* through wind erosion.

## 6. Offset – Land acquisition

Prior to 1 August 2021, the Permit Holder shall provide to the *CEO* a copy of the executed change in purpose of Lot 500 on Plan 413034 (being Crown Reserve 1820) from ‘Recreation’ to ‘Conservation’ on Plan 8983/1(c).

## 7. Offset - Vegetation management - fencing

- (a) Within six months of clearing, the Permit Holder shall construct a fence enclosing the area coloured orange on Plan 8983/1(d).
- (b) Prior to the expiry of this Permit, the Permit Holder shall construct a fence enclosing the area coloured grey on Plan 8983/1(d).
- (c) Fences should allow for the movement of wildlife by being raised 15cm from the ground.
- (d) Within one month of installing the above fences, the Permit Holder shall notify the *CEO* in writing that the fence has been completed.

## 8. 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) the direction that clearing was undertaken;
- (e) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 and condition 3 of this Permit;
- (f) actions taken to minimise the risk of the introduction and spread of *dieback* and *weeds* in accordance with condition 2 of this Permit; and
- (g) evidence supporting compliance with conditions 2, 3, 4, 5, 6 and 7 of this Permit.

## 9. Reporting

- (a) The permit holder must provide to the CEO, on or before 30 June of each calendar year, a written report containing:
  - (i) the records required to be kept under condition 8; and
  - (ii) records of activities done by the permit holder under this permit between 1 January and 31 December of the preceding 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 30 June of each calendar year.
- (c) The permit holder must provide to the CEO, no later than 90 calendar days prior to the expiry date of the permit, a written report of records required under condition 8, where these records have not already been provided under condition 9(a).

## DEFINITIONS

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

***black cockatoo habitat tree/s:*** means trees that have a diameter, measured at 1.5 metres from the base of the tree, of 50 centimetres or greater;

***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;

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

**land degradation** includes salinity, erosion, soil acidity and waterlogging;

**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;

**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.



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Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

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

3 November 2020

# Plan 8983/1(a)

115°49'10.200"E

115°49'12.900"E

115°49'15.600"E

32°5'19.500"S

32°5'22.200"S

32°5'24.900"S

32°5'19.500"S

32°5'22.200"S

32°5'24.900"S



115°49'10.200"E

115°49'12.900"E

115°49'15.600"E

 CPS 8983-1

## base layers


 Road Centrelines

Cadastre - LGATE 218



0 25 50 75 m



  
Mathew  
Gannaway  
2020.11.03  
08:36:48 +08'00'

Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA

MGA Zone 50  
Geocentric Datum of Australia 1994

# Plan 8983/1(b)

115°49'10.200"E

115°49'12.000"E

115°49'13.800"E

115°49'15.600"E

32°5'20.400"S

32°5'22.200"S

32°5'24.000"S

32°5'20.400"S

32°5'22.200"S

32°5'24.000"S



115°49'10.200"E

115°49'12.000"E

115°49'13.800"E

115°49'15.600"E

 CPS 8983-1

 CPS 8983-1 - Habitat trees retained

### base layers

 Road Centrelines

Cadastre - LGATE 218



0 20 40 60 m



  
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Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA

MGA Zone 50  
Geocentric Datum of Australia 1994

# Plan 8983/1(c)

115°53'31.200"E

115°53'34.800"E

115°53'38.400"E

32°7'55.200"S

32°7'58.800"S

32°8'2.400"S

32°7'55.200"S

32°7'58.800"S


32°8'2.400"S



115°53'31.200"E

115°53'34.800"E

115°53'38.400"E

 CPS 8983-1\_Offset Site

## base layers


 Road Centrelines

Cadastre - LGATE 218



0 25 50 75 100 m



  
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Officer delegated under section 20 of the  
Environmental Protection Act 1986

MGA Zone 50  
Geocentric Datum of Australia 1994



GOVERNMENT OF  
WESTERN AUSTRALIA

# Plan 8983/1(d)

115°53'16.800"E

115°53'31.200"E

115°53'45.600"E

115°54'0.000"E

32°7'40.800"S

32°7'55.200"S

32°8'9.600"S

32°7'40.800"S

32°7'55.200"S

32°8'9.600"S




115°53'16.800"E

115°53'31.200"E

115°53'45.600"E

115°54'0.000"E

 CPS 8983-1\_Offset Site

 Phase 1 fence

 Phase 2 fence

**base layers**

 Road Centrelines

Cadastre - LGATE 218



0 100 200 300 400 m



Mathew

Gannaway

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Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA

MGA Zone 50  
Geocentric Datum of Australia 1994



# Clearing Permit Decision Report

## 1. Application details and outcome

### 1.1. Permit application details

|                               |  |
|-------------------------------|--|
| <b>Permit number:</b>         | CPS 8983/1                                   |
| <b>Permit type:</b>           | Area Permit                                  |
| <b>Applicant name:</b>        | City of Cockburn                             |
| <b>Application received:</b>  | 27 July 2020                                 |
| <b>Application area:</b>      | 0.89 hectares of native vegetation           |
| <b>Purpose of clearing:</b>   | Building or Structure                        |
| <b>Method of clearing:</b>    | Mechanical                                   |
| <b>Property:</b>              | Lot 508 on Deposited Plan 414835, Bibra Lake |
| <b>Location (LGA area/s):</b> | City of Swan                                 |
| <b>Localities (suburb/s):</b> | Bibra Lake                                   |

### 1.2. Description of clearing activities

The City of Cockburn propose to construct an Aboriginal Cultural and Visitors Centre (the Centre) within a portion of Lot 508 on Deposited Plan 414835, Bibra Lake. The application area fronts Progress Drive which is adjacent to Bibra Lake reserve, and is located within Bush Forever Site No. 244 (North Lake and Bibra Lake) and Beeliar Regional Park. The application area is 0.89 hectares of which 0.65 hectares incorporates native vegetation requiring clearing to facilitate the construction of the Centre, which will include a building, car park, and landscaped native gardens. The Centre will require outdoor undercover areas with a total floor size of up to 1,500 m<sup>2</sup>. Inside the centre, spaces will be required for static and interactive displays, a visitor's information centre, administration areas, a café, a retail shop, and a number of multifunctional spaces for a variety of cultural awareness training, educational, and general activities.

### 1.3. Decision on application and key considerations

|                       |   |
|-----------------------|---|
| <b>Decision:</b>      | Granted   |
| <b>Decision date:</b> | 3 November 2020   |
| <b>Decision area:</b> | 0.89 hectares including native vegetation within a portion of Lot 508 on Deposited Plan 414835, Bibra Lake. Section 1.5 and Figure 1 below. |

### 1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Water and Environmental Regulation (DWER) on 27 July 2020. DWER advertised the application for public comment and no submissions were received.

In undertaking the assessment, and in accordance with section 51O of the EP Act, the Delegated Officer has given consideration to the Clearing Principles in Schedule 5 of the EP Act (Appendix C), supporting information provided by the applicant (Appendix A), relevant planning instruments, and any other pertinent matters they deemed relevant to the assessment (Section 3.3). The Delegated Officer also took into consideration the purpose of the clearing to establish an Aboriginal Cultural and Visitors Centre at Bibra Lake.

In particular, the Delegated Officer has determined that:

- The proposed clearing is likely to have a significant impact on the environmental values of a conservation area, that being the loss of 0.65 hectares of native vegetation in a Degraded to Good condition within Bush Forever Site No. 244 and Beeliar Regional Park.
- The provision of an offset that adequately counterbalances the significant residual impacts to a conservation area (see Section 4).



- The applicant has suitably demonstrated avoidance and minimisation measures, through the retention of habitat trees to mitigate impacts to potential black cockatoo breeding habitat (see Section 3.1).
- The implementation of weed and dieback management to mitigate the impact to adjacent vegetation associated with a conservation area (see Section 3.2).
- Slow and directional clearing towards areas of adjacent remnant vegetation will mitigate impacts against any ground-dwelling fauna utilising the application area at the time of clearing (see Section 3.2).

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

1.5. Site map

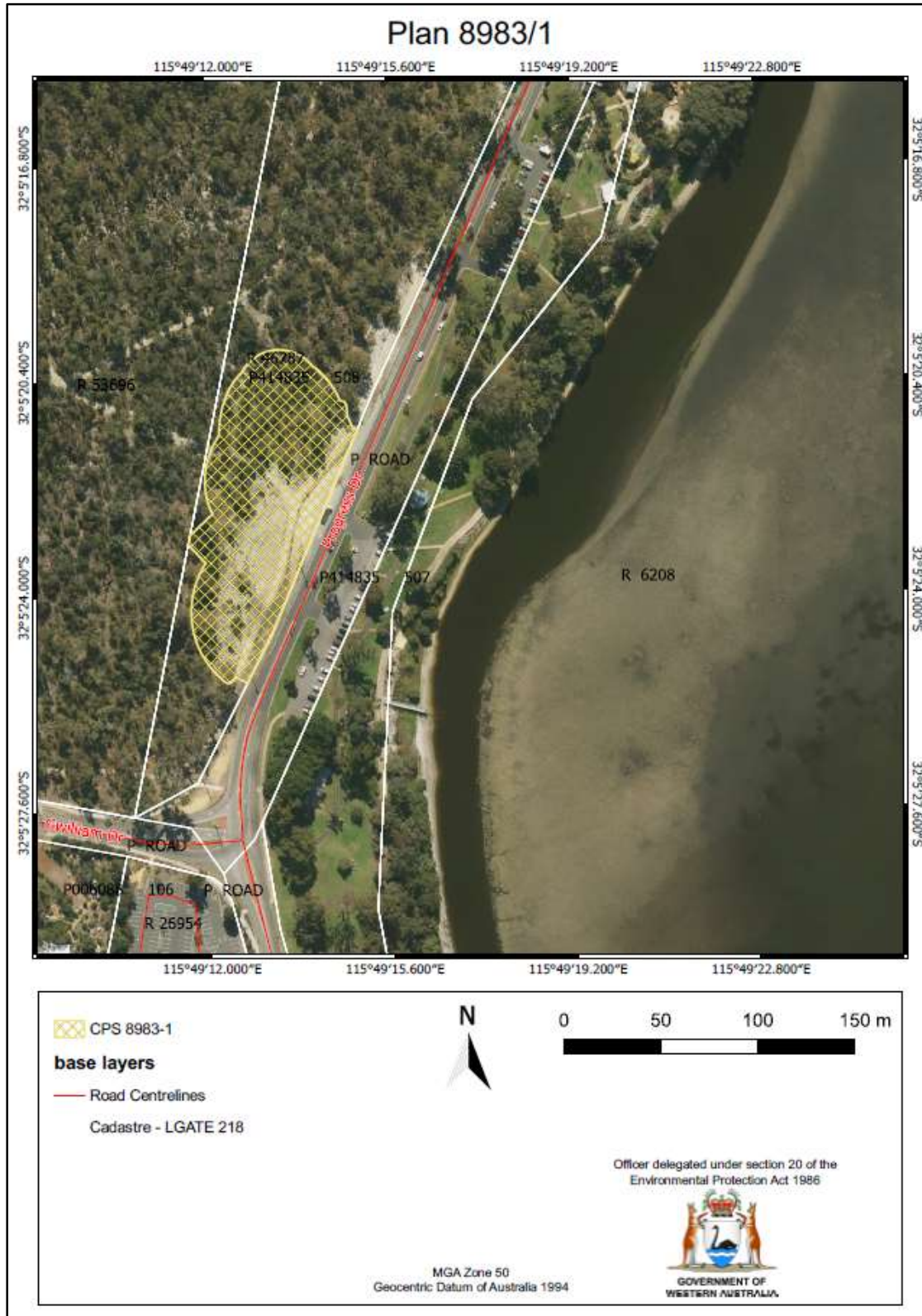


Figure 1. Map of the application area CPS 8983/1 - the area cross-hatched yellow indicates the areas authorised to be cleared under the granted clearing permit.

## 2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 3), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle;
- the principle of intergenerational equity; and
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment includes:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)

Relevant policies considered during the assessment were:

- State Planning Policy 2.8: *Bushland Policy for the Perth Metropolitan Region* (2010)
- *WA Environmental Offsets Policy* (September 2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER October 2019)
- *Environmental Offsets Guidelines* (August 2014)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016a)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA 2016b)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The applicant has provided the following avoidance and mitigation measures (Emerge 2020a).

#### Alternatives considered.

As a component of the development process, a feasibility study was undertaken to determine the most appropriate location within the City of Cockburn for the proposed Aboriginal Cultural and Visitors Centre. Several locations were considered including; Manning Park, the Wetlands Education Precinct, and coastal locations such as the old Fremantle Power Station and Port Coogee.

Through the process the applicant consulted with a number of stakeholder groups including; the City of Cockburn Aboriginal Reference Group, Beeliar Regional Park Community Advisory Committee, Native Arc, and the Wetlands Education Centre.

Through this process the current location was determined by the Indigenous stakeholders to be the most culturally appropriate whilst having minimal impact to flora and fauna values due to the historical degradation within the application area. As part of the consultation with the Indigenous community the concept design of the centre was discussed, including consideration around Indigenous tourism products and Indigenous engagement.

#### Avoidance

Avoidance measures taken include:

- Modifying the carpark design to fit within existing cleared areas.
- Rotating the building design to ensure that the majority of the building footprint is located within lower quality vegetation.
- Locating buildings and infrastructure to ensure six of the nine black cockatoo habitat trees identified are retained, including two with potentially suitable hollows (Appendix E - Figure 4 and Figure 5).
- Limiting clearing around the building to the minimum extent required to achieve compliance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015), and the *Guidelines for Planning in Bushfire Prone Areas* (WAPC and DFES 2017).
- Where compliant with asset protection zone standards, native vegetation will be retained adjacent to the future building (Appendix E - Figure 6). Whilst this application area applies to the entire 0.89 hectare application area, where possible, existing native vegetation will be retained including six large habitat trees.

## Mitigation

During construction, the vegetation removed will be salvaged wherever possible. This includes the salvaging of individual plants for transplanting, as well as harvesting of seeds to allow for direct seeding. Salvageable plants identified for storage and replanting include the Balgas *Xanthorrhoea preissii* and *Xanthorrhoea gracilis*, as well as Zamias (Djiriji) (*Macrozamia riedlei*). Salvaging and revegetation is intended to occur in spring of 2020, and ahead of anticipated construction in April 2021. The salvaged material is intended to be utilised in the following locations (and in the following priority):

- 1) Within the application area itself, as part of landscaping works.
- 2) Within the wider Lot 508 on Deposited Plan 414835, for revegetation works.
- 3) In the nearby Roe 8 corridor, for revegetation works.

On the completion of construction, landscaped native gardens and replanting will occur within the asset protection zone in accordance with the *Guidelines for Planning in Bushfire Prone Areas*.

Weed and dieback management will be controlled through the clearing process, including ensuring that all vehicles are washed down prior to entering the application area and ensuring that no dieback infected mulch, soil or fill is used.

The applicant has aimed to minimise impact to the environmental values of the surrounding area through the utilisation of existing degraded areas, altering the orientation of the buildings and designing low fuel environments (asset protection zones) to integrate existing vegetation values wherever possible (Appendix E – Figure 6).

As part of the operation of the Centre, the application area and surrounding Bush Forever site will be actively managed by the City together with local Indigenous stakeholders, which will ensure that the surrounding conservation values are maintained.

After consideration of the avoidance and mitigation measures provided, it was determined that an offset to counterbalance the significant residual impacts to the loss of 0.65 hectares of native vegetation in Degraded to Good condition within Bush Forever Site No. 244 and Beeliar Regional Park was necessary. In accordance with the WA State Government's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, as well as State Planning Policy 2.8 – *Bushland Policy for the Perth Metropolitan Region* (SPP 2.8), the significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided are summarised in Section 4.

## 3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix B) and considered whether the clearing poses a risk to environmental values and whether these can be managed to be environmentally acceptable. An assessment against the Clearing Principles is contained in Appendix C.

The assessment identified that the clearing may pose a risk to the environmental values of flora, fauna, remnant vegetation and conservation areas, and that these required further consideration. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

### 3.2.1. Environmental value: Biological values (flora) – Clearing Principles (a) to (d)

**Assessment:** The application area consists of 0.89 hectares located within the Swan Coastal Plain bioregion (SWA) of Thackway and Cresswell (1995), and the Perth subregion (SWA02). Focused Vision (2020b) described and mapped one vegetation unit over the application area: EmBaAfLOF, consisting of *Eucalyptus marginata* and *Banksia attenuata* Low Woodland over *Macrozamia riedlei*, *Hibbertia hypericoides*, *Gompholobium tomentosum* and *Bossiaea eriocarpa* Open Shrubland.

The majority of the application area (76 per cent) has been assessed as Degraded or Completely Degraded using the condition scale of Keighery (1994) with 0.21 hectares (or 24 per cent) assessed as Degraded to Good condition with just 0.01 hectares (or less than one percent), in Good condition (Appendix E – Plate 1 and Figure 3).

According to available databases, eight Threatened and 27 Priority listed flora taxa have been recorded within ten kilometres of the application area (Appendix B2b). Focused Vision (2020b) undertook a likelihood of occurrence for these taxa, and surveys were undertaken over the application area by Eco Logical (2018), Emerge (2020b) and Focused Vision (2020b). The Focused Vision surveys in particular included multiple site visits in spring 2019 that included targeted searches for flora of conservation significance. No Threatened or Priority flora species were identified during these surveys and there are no historical records of flora of conservation significance previously recorded within the application area. The application area is small, with the majority of vegetation in a Degraded

condition or worse, with an understorey dominated by exotic grasses (Appendix E – Plate 1). Due to the size and condition of the vegetation present, no flora taxa of conservation significance are likely to occur.

Analysis of known Threatened Ecological Communities (TECs) listed under the EPBC Act, or endorsed by the Western Australian Minister for Environment, or Priority Ecological Communities (PECs) listed by the Department of Biodiversity, Conservation and Attractions (DBCA) was undertaken by Focused Vision (2020b), and refined by Emerge (2020b). The Banksia Dominated Woodlands of the Swan Coastal Plain (Banksia Woodlands) is listed as Priority 3 PEC in Western Australia, and Endangered under the EPBC Act. Banksia Woodlands have been mapped within 125 metres to the west of the application area, and within 170 metres to the north.

Twenty-one Floristic Community Types (FCTs) described by Gibson *et al.* (1994), in Bush Forever (Government of Western Australia 2000b), Keighery *et al.* (2008) and Urban Bushland Council (2011) best correspond to the Banksia Woodlands TEC (TSSC 2016). The vegetation unit of EmBaAfLOF occurring over the application area is representative of the FCT 28 'Spearwood *Banksia attenuata* or *Banksia attenuata* – *Eucalyptus* woodlands' (Focussed Vision 2020b), which is one of the FCTs that corresponds to Banksia Woodland. In considering the occurrence of Banksia Woodland, both patch size and condition are relevant, and patches can extend beyond an impact area (TSSC 2016).

The vegetation under application itself does not meet condition thresholds for Banksia Woodland (TSSC 2016) with just 0.01 hectares, or less than one percent of the application area, in Good condition. However, vegetation is contiguous with native vegetation to the west and north, and the vegetation within and adjacent to the application area is considered to represent one large 37 hectare patch of Banksia Woodland (Emerge 2020a; Emerge 2020b).

Tuart Woodlands and Forests of the Swan Coastal Plain (Tuart Woodlands) is listed as Priority 3 PEC in Western Australia and Critically Endangered under the EPBC Act. The northern portion of the application area is mapped as Tuart Woodlands, and this TEC also occurs immediately to the west of the application area. The distribution of the community is limited by the distribution of Tuart, however Tuart trees also occur as a component of other vegetation communities, including Banksia Woodland (DoEE 2016).

When considering the presence of Tuart Woodland, both patch size and condition are relevant, and patches can extend beyond an impact area (DoEE 2019). Due to the presence of Tuart trees within and adjacent to the application area, it was determined by Emerge (2020b) that three patches of Tuart Woodland occur within the vicinity. One patch encroaches into the application area, overlapping that of the Banksia Woodland community. The extent of Tuart Woodland was determined to be all areas with a continuous Tuart canopy, and included 0.30 hectares within the western portion of the application area in a Degraded to Good condition (Emerge 2020a; Emerge 2020b).

The native vegetation under application represents approximately 1.8 per cent of the associated contiguous Banksia Woodland patch of 37 hectares, and approximately 10.6 per cent of Tuart Woodland patches mapped in the vicinity of the application area by Emerge 2020b. The application area represents the extreme edges of both these patches, with understorey predominantly introduced grasses and other edge effects (Appendix E – Plate 1). Adjacent native vegetation is in better condition but also susceptible to weed and dieback impacts.

The vegetation under application has been assessed as predominantly Completely Degraded or Degraded, with just 0.01 hectares in Good condition (Appendix E – Figure 3) (Focussed Vision 2020b). No Threatened or Priority flora taxa have been recorded (Emerge 2020a), and the application area is unlikely to comprise a high level of biodiversity. With regard for the extent, composition and condition of the vegetation proposed to be cleared, it is considered that conservation significant flora and ecological communities are unlikely to be impacted by the proposed clearing.

Outcome: Based on the above assessment, the Delegated Officer has determined that weed and dieback management practices will mitigate any potential impacts to the adjacent vegetation.

### **3.2.2. Environmental value: Biological values (fauna) – Clearing Principle (b)**

Assessment: According to available databases nine mammals, two reptiles and 52 birds, of conservation significance have been recorded within ten kilometres of the application area (Appendix B2c). In forming a view on the likelihood of these species occurring within the application area, the preferred habitat types and typical home ranges of these species and their recorded proximity to the application area were considered, along with the type and condition of the vegetation within the application area.

The majority of the mammals identified, are unlikely to occur due to the predominantly Degraded nature of the vegetation and, in particular the disturbed understorey. Relatively recent records of the Priority 4 Quenda (*Isodon fusciventer*) are known from the vicinity of the application area. Quenda require a dense understorey for cover (van Dyck and Strahan 2008) that can include exotic species, and any dense vegetation within the application area could potentially be utilised. Dispersing Quenda may intermittently frequent the application area, particularly from surrounding bushland in Bush Forever Site No. 244 in better condition. The Priority 4 Western False Pipistrelle (*Falsistrellus mackenziei*) (a bat) may potentially overfly the application area, however, its range has contracted to old growth forest and higher rainfall eucalypt woodlands (Richards *et al.* 2012), and is unlikely to be present.

Of the two reptiles of conservation significance recorded in the local area, the Priority 3 Perth Slider (*Lerista lineata*) (a skink) has been recorded in 2017 within 170 metres of the application area. This species occurs on the coastal plain with Banksia and/or Eucalyptus and shelters in the upper layers of loose soil beneath leaf litter, logs, at the base of shrubs (Maryan *et al.* 2015). *Lerista lineata* possibly occurs over the application area supported by populations in adjoining bushland.

Over 50 birds of conservation significance have been recorded within the local area. Due to the ten kilometre radius of the local area intersecting the coastline, 12 of the birds identified are largely marine species including albatrosses, shearwaters and terns. A further 32 of the birds are shorebirds and migratory wading species protected under International Agreements including Priority and Threatened species (particularly the Families: Scolopacidae, Charadriidae, and Glareolidae) (DBCA 2007-). Four of the species are wetland species such as bitterns, ducks and ibis. None of these species are likely to occur over the application area due to a lack of habitat, but may frequent the nearby Bibra Lake. 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. The Priority 3 Barking Owl (*Ninox connivens connivens*) has been recorded in bushland approximately one kilometre to the north-east in 2009, however, due to the predominantly Degraded nature of the vegetation and proximity to a main road it is unlikely to occur.

Of the birds of conservation significance identified, the species most likely to occur over the application area are the two species of black cockatoo known from the Perth metropolitan area: the Endangered Carnaby's Cockatoo (*Calyptorhynchus latirostris*) and the Vulnerable Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*), both of which are known from the vicinity of the application area. A third, the Endangered Baudin's Cockatoo (*Calyptorhynchus baudinii*), is predominantly associated with Jarrah-Marri forest of the Jarrah Forest bioregion. The application area is not within its recognised distribution and this species is unlikely to occur.

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), but may range up to 20 kilometres (Commonwealth of Australia 2017). Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (DAWE 2020a).

Focused Vision (2020a) undertook a black cockatoo habitat assessment over a larger survey area of 1.6 hectares that included the application area. Within this larger survey area they recorded 22 trees considered potential current, or future, nesting trees for black cockatoos. That is, with a diameter at breast height (DBH) greater than 500 millimetres. Of these trees, eight were located within the application area itself (Appendix E – Figure 4 and Figures 5). Of these eight habitat trees, two were identified as containing hollows that were potentially suitable for use by breeding black cockatoos, with no evidence of nesting recorded (such as chew marks). Emerge (2020b) also undertook a black cockatoo habitat assessment and recorded an additional habitat tree in a small additional area not surveyed by Focused Vision (2020a).

As part of the proposed design of the Centre, six of the nine potential breeding habitat trees will be retained, including both trees that were identified as containing potentially suitable hollows (Appendix E - Figure 4 and Figure 5).

BirdLife Australia Great Cocky Count data (Peck *et al.* 2019) includes records of roost sites for both Carnaby's Cockatoo and the Forest Red-tailed Black Cockatoo within two kilometres of the application area. No evidence of roosting activity such as droppings, feathers or branch clippings was observed by Focused Vision (2020a). The tallest trees with potential for roosting were recorded towards the southern end of their larger survey area near Gwilliam Drive, outside the application area. Black cockatoos are unlikely to roost in the application area.

Food resources within the range of roost sites are important to sustain populations of black cockatoos, and foraging resources should therefore be viewed in the context of the proximity to the known night roosting sites (Commonwealth of Australia 2017). Focused Vision (2020a) undertook an assessment of foraging habitat over the application area and concluded that foraging habitat for both Carnaby's Cockatoo and the Forest Red-tailed Black Cockatoo is present ranging in condition from 'Negligible to Low' to 'Moderate to High', but mostly 'Negligible to Low' for both species. In consideration of the context of the application area (Commonwealth of Australia 2017), the application area provides up to 0.39 hectares of quality foraging habitat black cockatoos (Emerge 2020b).

In the regional context, over 5,855 hectares of remnant vegetation occurs within 12 kilometres of the application area, which supports up to 4,663 hectares of Carnaby's Cockatoo foraging habitat and up to 4,749 hectares of Forest Red-tailed Black Cockatoo (Emerge 2020a; Glossop *et al.* 2011). Clearing of vegetation within the application area represents less than 0.02% of these areas. Of the areas of habitat present in the broader area, over 2,935 hectares (or 62 per cent) of foraging habitat is located in State controlled lands (zoned 'parks and recreation' and/or managed by DBCA) (Emerge 2020a).

The application area provides habitat for black cockatoos, consisting predominantly of foraging habitat. No evidence of active use of the application area by black cockatoos, such as chew marks, droppings, feathers or foraging evidence has been observed. Due to the amount of foraging habitat in the broader area, (including Beeliar Regional Park), it is unlikely that these species are reliant on vegetation within the application area. No known roosting habitat was recorded.

Of the nine potential habitat trees within the application area, six trees will be retained including all the trees that were identified as containing potentially suitable hollows for black cockatoos. Not all foraging habitat identified will be removed due to the retention of these six large trees (Appendix E - Figure 4 and Figure 5).

The application area is small, with the majority of vegetation in a Degraded condition with an understorey dominated by exotic grasses (Appendix E – Plate 1). Conservation significant fauna species occur within the vicinity of the application area, including two species of Threatened black cockatoos, the Priority 4 Quenda, and the Priority 3 Perth Slider (*Lerista lineata*). The adjacent vegetation within Bush Forever Site No. 244 is in better condition (Emerge 2020a; Focussed Vision 2020b), susceptible to weed invasion, and includes key flora species susceptible to dieback disease (*Phytophthora* sp).

Significant habitat refers to the resources (breeding, roosting, sheltering, and feeding), connectivity, or habitat area for a species that is critical for its survival. Noting the extent, composition and condition of the vegetation proposed to be cleared, its location within the broader remnant, and the retention of habitat trees, it is considered that the application area is unlikely to be significant for the survival of indigenous fauna, or be necessary for the maintenance of significant habitat.

Outcome: Based on the above assessment, and the avoidance and mitigation measures provided by the City of Cockburn (Section 3.1), the Delegated Officer has determined that the proposed clearing requires management conditions in relation to this environmental value.

Conditions: To address the above impacts, the following conditions will be added to the permit:

- Retention of six black cockatoo habitat trees.
- Slow and directional clearing to allow fauna to escape ahead of the clearing activity.
- Weed and dieback management to mitigate impacts to adjacent vegetation.

### **3.2.3. Environmental value: Significant remnant vegetation – Clearing Principle (e)**

Assessment: The national objectives and targets for biodiversity conservation in Australia has a target to prevent the 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 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 ten per cent of their pre-European extent (EPA 2008). At the local scale, approximately 4,270 hectares of native vegetation has been retained, representing 16.4 per cent native vegetation cover.

The application area is located within the Swan Coastal Plain bioregion as described by Thackway and Cresswell (1995). The Swan Coastal Plain bioregion (SWA) as a whole retains approximately 38.6 per cent of its pre-European vegetation extent, with the Perth subregion (SWA(02) retaining approximately 41.7 per cent of its pre-European vegetation extent (Shepherd *et al.* 2001) (Government of Western Australia 2019a).

Hedde *et al.* (1980) as updated by Webb *et al.* (2016) mapped the vegetation complexes of the Swan Coastal Plain, with one vegetation complex mapped over the application area; the Herdsman Complex (SCP 53) of:

- Sedgelands and fringing woodland of *Eucalyptus rudis* (Flooded Gum) and *Melaleuca* species.

However, this description does not align with the fine-scale mapping of the application area by Focussed Vision (2020b) described as:

- *Eucalyptus marginata* and *Banksia attenuata* Low Woodland over *Macrozamia riedlei*, *Hibbertia hypericoides*, *Gompholobium tomentosum* and *Bossiaea eriocarpa* Open Shrubland.

Emerge (2020a) acknowledge the discrepancy, and suggest the application area represents either the Karrakatta complex—central and south (SCP 49), or the Bassendean complex—central and south (SCP 44), both of which are mapped as occurring less than 200 metres from the application area:

- Karrakatta Complex-Central and South (SCP 49):
  - Predominantly open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) and woodland of *Eucalyptus marginata* (Jarrah) - *Banksia* species.
- Bassendean Complex-Central and South (SCP 44):

- Predominantly woodland of *Eucalyptus marginata* (Jarrah) - *Allocasuarina fraseriana* (Sheoak) - *Banksia* species to low woodland of *Melaleuca* species, and sedgelands on the moister sites.

The Karrakatta Complex occurs on the yellow sands of the Spearwood System to the west while the Bassendean Complex tends to occur on the light grey sands of the Bassendean System to the east. Soils of the application area are those of the Spearwood System, and the Karrakatta Complex-Central and South (SCP 49) aligns with the vegetation description of the application area. The application area therefore is considered to represent the Karrakatta Complex-Central and South (SCP 49) in a predominantly Degraded condition.

The Karrakatta Complex-Central and South (SCP 49) has approximately 12,467 hectares remaining, representing a 23.5 percent retention rate, which is less than the 30 per cent target of the Commonwealth of Australia (2001).

In assessing the risk of further loss and subsequent cumulative effects, consideration has been given to the extent of native vegetation currently managed for conservation purposes. The application area is located within Bush Forever Site No. 244. Bush Forever is a strategic plan that proposes to effectively protect 10 per cent of each of the original 26 vegetation complexes of the Swan Coastal Plain within the Perth Metropolitan Region, with a target of at least eight per cent protection for the Karrakatta Complex-Central and South (SCP 49) (Government of Western Australia 2000a). Just 1.39 per cent of the Karrakatta Complex-Central and South (SCP 49) is currently protected within lands secured for conservation purposes in the Perth Metropolitan Region (EPA definition) (Government of Western Australia 2019a).

The application area is located within a larger 24.5 hectare Bush Forever patch of bushland that is considered a significant remnant, forming a substantial component of the local vegetation retained within the local area.

**Outcome:** Based on the above assessment and the avoidance and mitigation measures provided by the City of Cockburn (Section 3.1) the Delegated Officer has determined that the proposed clearing requires management conditions in relation to this environmental value.

**Conditions:** To address the above impacts, the following conditions will be added to the permit:

- Weed and dieback management to mitigate impacts to adjacent vegetation.
- Retention of six black cockatoo habitat trees.

### **3.2.4. Environmental value: Nearby conservation areas – Clearing Principle (h)**

The application area is located within Bush Forever Site No. 244 'North Lake and Bibra Lake' as well as the Beelihar Regional Park.

The application area is bounded by remnant vegetation within Bush Forever Site No. 244 to the north, west and south. Progress Drive is immediately to the east with a car park and managed public open space areas of Bibra Lake on the opposite side of Progress Drive (Figure 1).

The closest lands managed by DBCA are approximately 670 metres to the north and 1,075 metres to the south (South Lake – Bush Forever Site 254). Bush Forever Site No. 244 (Bibra lake and surrounding bushland) forms a linkage between these two reserves.

The application area forms part of a larger 24.5 hectare bushland patch within the Beelihar Regional Park. Large patches of remnant vegetation, such as that which the proposed clearing is located in, are important for providing core habitat areas necessary to support species that cannot persist in smaller areas, and act as refugia (Davis 2009; Hopper 1979; Hopper et al. 1996; Main 1996; Reside et al. 2013).

In the regional context, the application area forms a component of Beelihar Regional Park which consists of two chains of wetlands in the Spearwood–Bassendean interface comprised of 26 lakes and numerous wetlands stretching approximately 25 kilometres along the coast. Bush Forever Site No. 244 provides an ecological linkage with other wetlands within the Beelihar Regional Park such as North Lake to the north, South Lake to the south, and Bibra Lake (within 100 metres to the west of the application area) (Appendix E – Figure 9).

The application area is suffering severe edge effects with the Completely Degraded area located adjacent to Progress Drive. Vegetation improves in condition sequentially to the west (Appendix E –Figure 3). This portion retains greater vegetation structure and contains native vegetation species that are more representative of the contiguous patch of vegetation to the north and west of the application area.

Due to the location of the proposed clearing (adjacent to a main road), and condition of the vegetation, the proposed clearing is not likely to impact ecological connectivity functions of Bush Forever Site No. 244. The adjacent vegetation immediately to the west in Bush Forever Site No. 244 is in better condition and susceptible to weed and dieback impacts.



The proposed clearing will effect a minor reduction to a regionally significant bushland remnant. It is considered that the loss of 0.65 hectares of native vegetation in Degraded to Good condition within Bush Forever Site No. 244 and Beeliar Regional Park is of a scale that can be offset. Further details on the offset are provided in Section 4.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing requires management conditions in relation to this environmental value.

Conditions: To address the above impacts, the following conditions will be added to the permit:

- Provision of an offset (see Section 4).
- Retention of six black cockatoo habitat trees.
- Weed and dieback management to mitigate impacts to adjacent vegetation.

### **3.2.5. Environmental value: Land resources – Clearing Principle (g)**

Acid sulphate soil (ASS) risk mapping indicates that the majority of the application area has been classified as having no known risk of ASS within three metres of the natural soil surface (DPIRD 2017). The eastern portion of the application area has been identified as having a high to moderate risk of ASS occurring within three metres of the natural soil surface (DPIRD 2017). The soils identified over the application area as part of ecological surveys were sandy, with no peaty soils.

The unconsolidated and permeable sands of the mapped Spearwood S7 Phase over the application area are prone to wind erosion (DPIRD 2017). Standard and staged construction methodologies will be implemented including strategies for drainage controls and wind and water erosion including dust suppression and surface stabilisation where required (Emerge 2020a). Any potential impacts to surrounding landscapes, soils, or drainage systems can also be managed through appropriate design. Exposed surfaces will be managed post-clearing, including the sealing for the carpark and the building, and landscaped gardens will be mulched and revegetated (Emerge 2020a).

Noting the condition of the vegetation, the minor extent of proposed clearing, and standard mitigation measures employed, the proposed clearing is not likely to cause appreciable land degradation.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing requires management conditions in relation to this environmental value.

Conditions: To address the above impacts, the following condition will be added to the permit:

- Construction works to commence within two months of the cessation of the clearing activity to minimise wind erosion.

### **3.3. Relevant planning instruments and other matters**

The application was advertised on the DWER website for a 21 day public comment period on 17 August 2020. No public submissions were received in relation to this application.

The proposal was referred by the City of Cockburn to the federal Department of Agriculture, Water and the Environment (DAWE) for assessment under the EPBC Act based on potential impacts to two federally-listed TECs, as well as potential black cockatoo foraging and breeding habitat (EPBC referral: 2020/8642). The proposal was determined to not be a controlled action under the EPBC Act on 15 June 2020, and no further consideration of the environmental factors are required under the federal legislation (Emerge 2020a).

The application area is reserved 'parks and recreation' under the Metropolitan Region Scheme (MRS) and the City of Cockburn Town Planning Scheme (TPS) No. 3. The land is owned by the State of Western Australia with a Management Order to the City of Cockburn. Lot 508 forms part of Crown Reserve 46787, which has the purpose of 'Recreational and Educational Use'. The Department of Planning, Lands and Heritage (DPLH) have confirmed that the development of the Centre falls within the scope of the Management Order (Emerge 2020a).

The application area is located within Bush Forever Site No. 244 and forms part of the broader Beeliar Regional Park. Whilst it is located within a Bush Forever site, the location of the Centre is supported within the Bibra Lake Landscape, Recreation and Environmental Management Plan (Emerge 2015).

In regard to State Planning Policy 2.8 – *Bushland Policy for the Perth Metropolitan Region* (SPP 2.8), DPLH advised DWER that the application area is reserved Parks and Recreation under the Metropolitan Region Scheme (MRS), and has the Bush Forever implementation category of Bush Forever reserves (existing or proposed). Given Lot 502 is reserved Parks and Recreation, the Aboriginal Cultural and Visitor Centre is consistent with the overall purpose and intent of the reserve. Land Use Policy has no objections to the proposal or clearing, however, an offset package should be prepared and approved by DWER in accordance with the *WA Environmental Offsets Policy (2011)* and

Appendix 4 of State Planning Policy 2.8. Where appropriate, a hard edge such as a footpath and/or uniform fencing, that is compatible with the natural environment, should be provided to restrict parking and/or access from foot-traffic into Bush Forever area 244.

A Development Application was prepared to facilitate the construction of the Centre, which was approved by the Western Australian Planning Commission (WAPC) on 21 May 2020 (WAPC ref no: 23-50457-3) (Emerge 2020a). No further approvals are required to support the construction of the Centre (excluding a native vegetation clearing permit).

The application area is located within the Cockburn Groundwater Area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act), but not within any surface water areas or irrigation districts proclaimed under the RIWI Act. No rivers proclaimed under the RIWI Act intersect the application area and no additional water licensing or permitting by DWER will be required. The application is not located in any *Country Areas Water Supply Act 1947* (CAWS Act) clearing control catchments or Public Drinking Water Source Areas.

The application area is located within the boundaries of the Native Title Registered Claims of the Whadjuk People (WAD242/2011) and the Whadjuk People Indigenous Land Use Agreement (ILUA) (WI2017/015). No Aboriginal Sites of Significance have been identified within the application area. Registered Aboriginal Heritage Place ID 3709 (North Lake and Bibra Lake) is located approximately 65 metres to the east and Heritage Place ID 3196 (Lake Bibra: Forrest Road) is located approximately 125 metres to the north. It is the Permit Holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

## **4. Suitability of offsets**

### **4.1. Offset summary**

In preparing the clearing permit application, the applicant has appropriately applied the impact mitigation sequence through avoidance, minimisation and mitigation to reduce the impacts of the proposed development (Section 3.1 and supporting documents). Minimising the environmental impact of the Centre has been a key driver for the project with avoidance strategies implemented that included: rotating the building design to ensure the majority of the footprint is located within lower quality vegetation, modifying the carpark design to fit within existing cleared areas, and locating infrastructure to retain six black cockatoo habitat trees (Section 3.1).

Through the assessment (Section 3.2), the Delegated Officer has determined that significant residual impact remains; that being the loss of 0.65 hectares of native vegetation in a Degraded to Good condition within Bush Forever Site No. 244 'North Lake and Bibra Lake' and Beeliar Regional Park..

The DPLH have also advised (DPLH 2020) that, although Land Use Policy has no objections to the proposal or clearing, an offset package should be prepared and approved by DWER in accordance with the *WA Environmental Offsets Policy (2011)* and Appendix 4 of State Planning Policy 2.8 (Section 3.3).

To counter-balance the significant residual impacts, the applicant has submitted an offset proposal (Emerge 2020c) that involves the protection, and ongoing management of 2.17 hectares of vegetation in at least 'Very Good' condition within Rose Shanks Reserve (Lot 500 on Plan 413034 - Crown Reserve R 1820), which is located within Bush Forever Site No. 390 (Fraser Road Bushland) approximately 8.2 kilometres to the south-east. The offset provides long-term security as well as ongoing vegetation management to maintain or elevate the current vegetation condition.

The purpose of the offset site is currently 'Recreation'. A change in purpose to 'Conservation' will be initiated. The change in purpose will ensure that the long-term security of the land holding is elevated, whereby any proposed land-use must be consistent with the conservation purpose, as opposed to the former recreation purpose. The change of purpose of Rose Shanks Reserve will also permit funding to be allocated through the City of Cockburn management responsibilities in accordance with the conservation purpose. Ongoing management of the vegetation within the proposed offset site will be undertaken by the City of Cockburn in accordance with the City of Cockburn's Natural Area Management Strategy (2012-2022). This will include fencing the area to control inappropriate access, control and management of environmental weeds, control of feral animals and managing dieback.

The change of purpose of Rose Shanks Reserve has been determined in consultation with DPLH who have provided in principle support (Emerge 2020c).

The City of Cockburn has identified Rose Shanks Reserve as a 'high' priority reserve for on-going management within their Natural Area Management Strategy (2012-2022), ensuring that the reserve is a high priority for management into the future (City of Cockburn 2018).

The proposed offset (Emerge 2020c) has been developed in accordance with the WA State Government's *Environmental Offsets Policy* and *Environmental Offsets Guidelines* and informed by the application of the

*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Offset Assessment Guide and calculator. The proposed offset also conforms with State Planning Policy 2.8.

The Delegated Officer considers that the offset provided adequately counterbalances the significant residual impact identified. The justification for the values used in the offset calculation is provided in Appendix F.

The proposed offset specifically addresses the identified loss of vegetation within a Bush Forever site through the long-term retention of vegetation within a separate Bush Forever site where the purpose is currently not secured.

#### **4.2. Offset suitability**

The applicant proposes to offset the significant residual impacts of the loss of 0.65 hectares of native vegetation within Bush Forever Site No. 244, through the changing of the purpose of Rose Shanks Reserve from 'Recreation' to 'Conservation' for management in perpetuity by the City of Cockburn. This has been determined in consultation with DPLH who have provided in principle support (Emerge 2020c). This is a banked offset by the City of Cockburn.

Below is an assessment of the offset proposed under the principles provided in the WA State Government's Environmental Offsets Policy, and based on the information within the offset proposal of Emerge (2020c).

##### **1) Offsets will only be considered after avoidance and mitigation options have been pursued**

In preparing the clearing permit application, the applicant has rigorously applied the impact mitigation sequence through avoidance, minimisation and mitigation to reduce the impacts of the proposed development (see Section 3.1, supporting documents summarised in Appendix A and Emerge (2020c).

##### **2) Offsets are not appropriate for all projects**

The applicability of offsets is determined on a project-by-project basis. Significant residual impact was determined in consideration of being at variance with Principle (h). That is, 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 (Section 3.2.4).

##### **3) Offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted**

Residual impact is considered to be the loss of 0.65 hectares of native vegetation within Bush Forever Site No. 244 and Beeliar Regional Park. The residual impact to the Bush Forever Site No. 244 will be offset through the ongoing protection of 2.17 hectares of vegetation in at least 'Very Good' condition (Keighery 1994) within Rose Shanks Reserve. The justification for the calculations used to determine the appropriate offset size is provided in Appendix F, and is based on the EPBC Act Offset Assessment Guide. The proposed offset results in a net environmental benefit through (Emerge 2020c):

- The protection of Bush Forever Site No. 390 through a change in purpose to Conservation over the Rose Shanks Reserve. This provides a cost-effective approach, using land that is already reserved for public purposes, but will now be protected for conservation purposes with funding able to be allocated through City of Cockburn management responsibilities.
- Protecting vegetation in at least 'Very Good' condition, compared to the vegetation being impacted which is in predominantly 'Degraded' condition. Ensuring that the vegetation within Bush Forever Site No. 390 is managed for conservation purposes, vegetation values within the broader City of Cockburn park network and Bush Forever Site network are retained and protected.
- Enhancing ecological linkages between conservation areas, as the Rose Shanks Reserve forms part of the broader Jandakot Regional Park. Due to the larger size of the offset site, and the existing vegetation condition within the application area, the proposed offset provides improved habitat quality.
- Increasing the amount of vegetation retained for protection within the 'Bassendean complex – central and south'. Currently only 1.86 per cent of this complex on the Swan Coastal Plain (Government of Western Australia 2018) is protected securely.

Based on an assessment against State Planning Policy 2.8 the proposed 2.17 hectare offset is identified as a 'substantial net gain', as more than two times the calculated loss (that is, 0.65 hectare of native vegetation clearing) is being offset.

##### **4) Offsets will be based on sound environmental information and knowledge**

The applicant has provided several technical documents to inform the assessment (Appendix A). In addition, the flora and vegetation survey undertaken within the proposed offset site was undertaken by experienced botanists from Eco Logical Australia (2019).

A number of environmental factors were considered in identifying a suitable offset location, including being located within a Bush Forever site, vegetation complex, plant community, Threatened Ecological Communities (TECs), and black cockatoo foraging habitat. The proposed offset site counterbalances the impacts to the environmental values within the application area due to (Emerge 2020c):

- The vegetation within the proposed offset site is in at least 'Very Good' condition providing for greater species diversity and fauna habitat than the vegetation within the application area, which is predominantly in a 'Degraded' condition.
- Vegetation within the proposed offset site is similar in composition to the plant communities identified within the application area and supports the Banksia Dominated Woodlands of the Swan Coastal community listed as Priority 3 PEC in Western Australia, and Endangered under the EPBC Act.
- Vegetation within the offset site provides foraging habitat for black cockatoo species.

The proposed offset site considered here will be included in a broader area of Rose Shanks Reserve that will be fenced prior to 17 April 2022. The fencing will prevent the impact of illegal access, and associated edge effects and weed invasion. The purpose of the offset site will be amended to 'Conservation' prior to 1 August 2021. These enforceable timeframes will ensure that the vegetation within the proposed offset are afforded ongoing protection.

**5) Offsets will be applied within a framework of adaptive management**

Ongoing management of the vegetation within the proposed offset site will be undertaken by the City of Cockburn in accordance with the City of Cockburn's Natural Area Management Strategy (2012–2022). This will include the management of environmental weeds, controlling feral animals and reducing the impact of plant diseases (e.g. dieback) within the reserve. The City of Cockburn has identified Rose Shanks Reserve as a 'High' priority reserve for maintenance and ongoing management within the natural area management strategy which ensures that the reserve is a high priority for management in the future (Emerge 2020c).



Figure 2. Map of proposed offset area - The area cross-hatched red indicates the offset area



Figure 3. Map of proposed offset area – Vegetation condition (Keighery 1994)



Figure 4. Map of proposed offset area and boundary fencing

## Appendix A – Information provided by the applicant

The applicant has provided several technical reports in support of application CPS 8983/1. Relevant excerpts are provided in Appendix E. The applicant has also provided an offset (Emerge 2020c), summarised in Section 4 and Appendix F.

**Emerge (2020a)** provided a document in support of the CPS 8983/1 clearing permit application that amalgamates and summarises previous ecological work undertaken over the application area including FaunaTrack (2018) and Eco Logical (2018). A number of figures were produced and presented (see Appendix E):

- Figure 1: Application area location
- Figure 2: Plant communities
- Figure 3: Vegetation condition
- Figure 4: Potential red-tailed black cockatoo foraging habitat and breeding habitat trees
- Figure 5: Potential Carnaby's cockatoo foraging habitat and breeding habitat trees
- Figure 6: Building and bushfire asset protection zone location
- Figure 7: Potential red-tailed black cockatoo foraging habitat - regional context
- Figure 8: Potential Carnaby's cockatoo foraging habitat - regional context
- Figure 9: Environmental features

**Focussed Vision (2020b)** undertook a detailed flora and vegetation assessment over a survey area larger than the application (but that included the application area) in accordance with EPA Technical Guidance for flora and vegetation assessments (EPA 2016a). The survey was completed by a Senior Botanist and Botanist/Ecologist during September 2019. The detailed assessment incorporated sampling of three vegetation quadrats, selective targeted survey for Threatened and Priority flora (carried out across numerous site visits) and targeted assessment for the TECs relevant to the area. A number of figures were produced and presented:

- Figure 1: Study area
- Figure 2: Climate data for Jandakot airport (009172)
- Figure 3: Soils
- Figure 4: Pre-European vegetation
- Figure 5: Vegetation complexes
- Figure 6: geomorphic wetlands of the swan coastal plain
- Figure 7: Threatened and priority flora
- Figure 8: Threatened and priority ecological communities
- Figure 9: Vegetation units
- Figure 10: Vegetation condition
- Figure 11: Selection of quadrat cluster analysis (dendrogram)
- Figure 12: Banksia woodland extent
- Figure 13: Banksia woodland patch
- Figure 14: Tuart woodland extent
- Figure 15: Tuart woodland patch

**Focussed Vision (2020a)** undertook a black cockatoo habitat assessment over a survey area larger than the application (but that included the application area) over a single day on 22 August 2019, carried out by a Senior Ecologist with experience in surveys for black cockatoos and their habitat, assisted by a Field Technician. The study area was traversed on foot and surveyed in detail to observe and record all suitable foraging, roosting and nesting habitat for black cockatoos. A number of figures were produced and presented:

- Figure 1: Study Area
- Figure 2a: Forest Red-tailed Black-cockatoo foraging habitat
- Figure 2b: Carnaby's Black-cockatoo foraging habitat
- Figure 3: Known regional roost sites
- Figure 4: Recorded potential nesting trees

**Emerge (2020b)** undertook a targeted TEC and black cockatoo assessment in January 2020 to consolidate previous surveys. Focussed Vision (2020a) and Focussed Vision (2020b) indicated that further technical studies were necessary to support the development of the Centre. The scope of work was to undertake an assessment of the Tuart Woodlands TEC to refine the previous mapping by Focused Vision (2019b), and an assessment of the black cockatoo1 habitat within a small area that extended beyond the survey boundary of Focused Vision (2019a). A number of figures were produced and presented:

- Figure 1: Survey locations
- Figure 2: Threatened ecological community
- Figure 3: Forest Red-tailed Black-cockatoo habitat
- Figure 4: Carnaby's Cockatoo Habitat



## Appendix B – Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix D.

### 1. Site summary

| Site characteristic   | Details  |            |           |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
|---|--|------------|-----------|----------|----------|------------------------------|------|------|------|----------|------|------|-----------|-----------------|------|------|------|------|-----|--------------|-------------|------------|--|
| <b>Local context</b>  | <p>The application area is situated within the Swan Coastal Plain bioregion (SWA) of Thackway and Cresswell (1995), and the Perth subregion (SWA02). The application area of 0.89 hectares comprises 0.65 hectares of native vegetation in Degraded to Good condition (with the remainder Completely Degraded / Cleared).</p> <p>Spatial data indicates that the local area (ten kilometre radius of the proposed clearing area) retains approximately 16.4 per cent of the original native vegetation cover.</p>  |            |           |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
| <b>Regional vegetation description (Hedde, et al. 1980)</b> | <p>The application area has been described and mapped by Hedde <i>et al.</i> (1980) as updated by Webb <i>et al.</i> (2016).</p> <ul style="list-style-type: none"> <li>• Herdsman Complex (SCP 53): <ul style="list-style-type: none"> <li>○ Sedgelands and fringing woodland of <i>Eucalyptus rudis</i> (Flooded Gum) - <i>Melaleuca</i> species.</li> </ul> </li> </ul> <p>However, the Herdsman regional vegetation complex does not align with the native vegetation present over the application area which is more likely representative of the Karrakatta Complex-Central and South (SCP 49) or Bassendean Complex-Central and South (SCP 44), both of which have been mapped within 200 metres of the application area.</p> <ul style="list-style-type: none"> <li>• Karrakatta Complex-Central and South (SCP 49): <ul style="list-style-type: none"> <li>○ Predominantly open forest of <i>Eucalyptus gomphocephala</i> (Tuart) - <i>Eucalyptus marginata</i> (Jarrah) - <i>Corymbia calophylla</i> (Marri) and woodland of <i>Eucalyptus marginata</i> (Jarrah) - <i>Banksia</i> species.</li> </ul> </li> <li>• Bassendean Complex-Central and South (SCP 44): <ul style="list-style-type: none"> <li>○ Predominantly woodland of <i>Eucalyptus marginata</i> (Jarrah) - <i>Allocasuarina fraseriana</i> (Sheoak) - <i>Banksia</i> species to low woodland of <i>Melaleuca</i> species, and sedgelands on the moister sites.</li> </ul> </li> </ul> |            |           |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
| <b>Fine scale vegetation mapping</b>                        | <p>Focussed Vision (2020b) described and mapped the vegetation of the application area and Emerge (2020b) further delineated vegetation in terms of Threatened Ecological Communities present. The native vegetation of the application area consists of 0.65 hectares of:</p> <ul style="list-style-type: none"> <li>• EmBaAfLOF: <ul style="list-style-type: none"> <li>○ <i>Eucalyptus marginata</i> and <i>Banksia attenuata</i> Low Woodland over <i>Macrozamia riedlei</i>, <i>Hibbertia hypericoides</i>, <i>Gompholobium tomentosum</i> and <i>Bossiaea eriocarpa</i> Open Shrubland.</li> </ul> </li> </ul>   |            |           |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
| <b>Vegetation condition (Keighery 1994)</b>                 | <p>Vegetation condition (Keighery 1994) was assessed by Focussed Vision (2020b). Of the 0.89 hectare application area, 0.24 hectares (or 26.8 percent) has been cleared and less than one percent is in Good condition.</p> <table border="1"> <thead> <tr> <th>Condition</th> <th>Ha</th> <th>Per cent</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>Cleared (Completed Degraded)</td> <td>0.24</td> <td>26.8</td> <td>East</td> </tr> <tr> <td>Degraded</td> <td>0.43</td> <td>49.3</td> <td rowspan="3" style="text-align: center;">↓<br/>West</td> </tr> <tr> <td>Degraded - Good</td> <td>0.20</td> <td>23.2</td> </tr> <tr> <td>Good</td> <td>0.01</td> <td>0.8</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>0.89</b></td> <td><b>100</b></td> <td></td> </tr> </tbody> </table> <p>Vegetation is degraded in the east and improves in condition to the west.</p>   | Condition  | Ha        | Per cent | Location | Cleared (Completed Degraded) | 0.24 | 26.8 | East | Degraded | 0.43 | 49.3 | ↓<br>West | Degraded - Good | 0.20 | 23.2 | Good | 0.01 | 0.8 | <b>TOTAL</b> | <b>0.89</b> | <b>100</b> |  |
| Condition   | Ha   | Per cent   | Location  |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
| Cleared (Completed Degraded)                                | 0.24   | 26.8       | East      |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
| Degraded  | 0.43   | 49.3       | ↓<br>West |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
| Degraded - Good   | 0.20   | 23.2       |           |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
| Good  | 0.01   | 0.8        |           |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |
| <b>TOTAL</b>  | <b>0.89</b>  | <b>100</b> |           |          |          |                              |      |      |      |          |      |      |           |                 |      |      |      |      |     |              |             |            |  |

| Site characteristic                                      | Details  |        |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
|--|--|--------|----------|--|---------------|--|--------------|------|------|---------------|-----|------|--------------|-----|------|------------------|--------|------|-------------------|-----|------|----------|-----|------|------------|-----|------|--------------------------|-----|------|---------------------|--|--|
|  | The vegetation criteria of Keighery (1994) are provided in Appendix D, with figures and plates representative of the application area provided in Appendix E.  |        |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| <b>Soil description (Schoknecht, <i>et al.</i> 2004)</b> | <p>The vast majority of the application area has been mapped as the Spearwood System of sand dunes and plains with yellow deep sands, pale deep sands and yellow/brown shallow sands. Soils have been mapped as the S7 Phase (211Sp_S7) of sand; pale and olive yellow, medium to coarse-grained, sub-angular to sub-rounded quartz, trace of feldspar, moderately sorted, of residual origin.</p> <p>A very small section of the eastern portion of the application area is mapped as the Pinjarra System with soils mapped as; peaty silt, black, friable silt with abundant organic material, variable fine quartz sand content, soft, of lacustrine origin.</p> <p>However, only sandy soils were identified by the ecological surveys of the application area with no peaty soils present (Emerge 2020a).</p>   |        |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| <b>Land degradation risk (DPIRD 2017).</b>               | <p>Due to the presence of sandy soils over the application area, land degradation risks are presented for the Spearwood S7 Phase soils occurring over the application area.</p> <table border="1" data-bbox="505 730 1057 1119"> <thead> <tr> <th data-bbox="505 730 756 772" rowspan="2">Aspect</th> <th colspan="2" data-bbox="756 730 1057 772">S7 Phase</th> </tr> <tr> <th colspan="2" data-bbox="756 772 1057 810">Hazard Rating</th> </tr> </thead> <tbody> <tr> <td data-bbox="505 810 756 842">Wind Erosion</td> <td data-bbox="756 810 915 842">High</td> <td data-bbox="915 810 1057 842">(H2)</td> </tr> <tr> <td data-bbox="505 842 756 873">Water Erosion</td> <td data-bbox="756 842 915 873">Low</td> <td data-bbox="915 842 1057 873">(L1)</td> </tr> <tr> <td data-bbox="505 873 756 905">Waterlogging</td> <td data-bbox="756 873 915 905">Low</td> <td data-bbox="915 873 1057 905">(L1)</td> </tr> <tr> <td data-bbox="505 905 756 936">Water repellence</td> <td data-bbox="756 905 915 936">Medium</td> <td data-bbox="915 905 1057 936">(M1)</td> </tr> <tr> <td data-bbox="505 936 756 968">Phosphorus export</td> <td data-bbox="756 936 915 968">Low</td> <td data-bbox="915 936 1057 968">(L2)</td> </tr> <tr> <td data-bbox="505 968 756 999">Salinity</td> <td data-bbox="756 968 915 999">Low</td> <td data-bbox="915 968 1057 999">(L1)</td> </tr> <tr> <td data-bbox="505 999 756 1031">Flood Risk</td> <td data-bbox="756 999 915 1031">Low</td> <td data-bbox="915 999 1057 1031">(L1)</td> </tr> <tr> <td data-bbox="505 1031 756 1073">Subsurface acidification</td> <td data-bbox="756 1031 915 1073">Low</td> <td data-bbox="915 1031 1057 1073">(L1)</td> </tr> <tr> <td data-bbox="505 1073 756 1119">Acid Sulphate Soils</td> <td colspan="2" data-bbox="756 1073 1057 1119">Low, but moderate to high in the eastern section</td> </tr> </tbody> </table> | Aspect | S7 Phase |  | Hazard Rating |  | Wind Erosion | High | (H2) | Water Erosion | Low | (L1) | Waterlogging | Low | (L1) | Water repellence | Medium | (M1) | Phosphorus export | Low | (L2) | Salinity | Low | (L1) | Flood Risk | Low | (L1) | Subsurface acidification | Low | (L1) | Acid Sulphate Soils | Low, but moderate to high in the eastern section |  |
| Aspect   | S7 Phase   |        |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
|  | Hazard Rating  |        |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Wind Erosion   | High   | (H2)   |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Water Erosion  | Low  | (L1)   |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Waterlogging   | Low  | (L1)   |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Water repellence   | Medium   | (M1)   |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Phosphorus export  | Low  | (L2)   |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Salinity   | Low  | (L1)   |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Flood Risk   | Low  | (L1)   |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Subsurface acidification                                 | Low  | (L1)   |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| Acid Sulphate Soils                                      | Low, but moderate to high in the eastern section   |        |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| <b>Waterbodies</b>                                       | <p>The application area is located in the Coastal Plain hydrological zone. No geomorphic wetlands have been mapped over the application area.</p> <ul style="list-style-type: none"> <li>• A 'multiple use' basin (Bibra Lake) (UFI 6601) has been mapped approximately 60 metres east of the application area.</li> <li>• A 'resource enhancement' basin (Bibra Lake) (UFI 6595) has been mapped approximately 145 metres east of the application area (that is, adjacent to and immediately east of the above).</li> <li>• A 'conservation category' wetland (North Lake) (UFI 6600) is located approximately 708 metres north of the application area.</li> <li>• Thomsons Lake is located 4.8 kilometres to the south and is listed in the directory of important wetlands of Australia (WA092), and is also a Ramsar listed wetland.</li> </ul> <p>No watercourses or drainage lines are located in the vicinity of the application area. The application area is also located in:</p> <ul style="list-style-type: none"> <li>• The Cockburn Groundwater Area proclaimed under the RIWI Act.</li> </ul> <p>The application area is <u>not</u> located in any surface water areas or irrigation districts proclaimed under the RIWI Act, nor any CAWS Act clearing control catchments, or a public drinking water source areas.</p> <p>Groundwater is mapped at less than 500 TDS mg/L. (That is, 'fresh').</p>  |        |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |
| <b>Conservation areas</b>                                | <p>The application area is located within Bush Forever Site No. 244 'North Lake and Bibra Lake'.</p> <p>In addition to the Bush Forever site, the application area is also located within Beeliar Regional Park.</p>   |        |          |  |               |  |              |      |      |               |     |      |              |     |      |                  |        |      |                   |     |      |          |     |      |            |     |      |                          |     |      |                     |  |  |

| Site characteristic  | Details  |
|----------------------|--|
| Climate and landform | <p>The climate of the application area is warm and temperate. The winter months have higher rainfall than summer months with an annual rainfall of approximately 733.2 millimetres (BOM 2020).</p> <p>The application area is located within the Spearwood System of sandplains with pale deep sand. Immediately east is the Pinjarra System with soils of peaty silt, black, friable silt, with abundant organic material (DPIRD 2017).</p> |

## 2. Ecosystem, flora and fauna analysis

With consideration for the site characteristics set out above, and relevant datasets (Appendix G), an analysis of relevant ecosystem, flora, and fauna factors are presented below.

### 2a) Ecological Linkages

The application area is located within Beeliar Regional Park which consists of two chains of wetlands comprised of 26 lakes and numerous wetlands stretching approximately 25 kilometres along the coast. Bush Forever Site No. 244 provides an ecological linkage with other wetlands within the Beeliar Regional Park to the north (e.g. North Lake), south (e.g. South Lake), in addition to the west of the application area (Bibra Lake).

### 2b) Ecological Communities

No TECs endorsed by the Western Australian Minister for Environment have been mapped within the vicinity of the application area. The closest is SCP30a occurring in a near coastal location over 5.7 kilometres to the west:

- *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (floristic community type 30a as originally described in Gibson *et al.* (1994))

No TECs endorsed by the Western Australian Minister for Environment are likely to occur over the application area due to the floristics and condition of the vegetation present.

#### (i) Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region

The Banksia Dominated Woodlands of the Swan Coastal Plain (Banksia Woodland) is listed as Priority 3 PEC in Western Australia and Endangered under the EPBC Act. Banksia Woodlands have been mapped within 125 metres to the west of the application area, and within 170 metres to the north.

One vegetation unit was described and mapped over the application area (Focussed Vision 2020b): EmBaAfLOF, described as *Eucalyptus marginata* and *Banksia attenuata* Low Woodland over *Macrozamia riedlei*, *Hibbertia hypericoides*, *Gompholobium tomentosum* and *Bossiaea eriocarpa* Open Shrubland.

The structure and composition of EmBaAfLOF is representative of FCT 28 'Spearwood *Banksia attenuata* or *Banksia attenuata* – *Eucalyptus* woodlands' (Focussed Vision 2020b). FCT 28 is considered representative of the Banksia Woodlands TEC (TSSC 2016). The 0.65 hectares of native vegetation within the application area in Degraded or better condition is considered to represent a component of a larger 37 hectare patch of Banksia Woodland.

#### (ii) Tuart Woodlands and Forests of the Swan Coastal Plain

Tuart Woodlands and Forests of the Swan Coastal Plain (Tuart Woodlands) is listed as Priority 3 PEC in Western Australia and Critically Endangered under the EPBC Act. The northern portion of the application area is mapped as Tuart Woodlands and this TEC also occurs immediately to the west of the application area.

Tuart Woodland occurs on the Swan Coastal Plain from Jurien to Busselton (DEE 2019b). The distribution of the community is limited by the distribution of Tuart, however Tuart trees also occur as a component of other vegetation communities, including within the Banksia Woodlands TEC (DoEE 2016).

One vegetation unit was described and mapped over the application area (EmBaAfLOF) (Focussed Vision 2020b). Due to the presence of Tuart trees within and adjacent to the application area, it was determined that three patches of Tuart Woodland occurs in the vicinity. The confirmed extent of Tuart Woodland was determined to be all areas containing a continuous Tuart canopy; including 0.30 hectares within the application area (Emerge 2020b).

#### (iii) Conclusion

No state-listed TECs have been identified within the application area. The EmBaAfLOF vegetation unit over the application area comprises elements of two Priority 3 PECs also listed as Threatened under the EPBC Act. Despite the condition of the vegetation within the application area, due to the contiguous nature of the vegetation patches identified:

- 0.65 hectares of Banksia Dominated Woodlands of the Swan Coastal Plain (P3 / EN) occur over the application area; and
- 0.30 hectares of Tuart Woodlands and Forests of the Swan Coastal Plain occur over the application area.

### 2c) Conservation significant flora recorded within ten kilometres of the application area

Eight Threatened and 27 Priority listed flora taxa have been recorded within ten kilometres of the application area. Five taxa have been recorded within 1.5 kilometres of the application area.

| Summary of Threatened flora summary recorded within 10 kms |             |
|--|-------------|
| Status   | No. of taxa |
| CR   | 4           |
| EN   | 3           |
| VU   | 1           |
|  | <b>8</b>    |

| Summary of Priority flora summary recorded within 10 kms |             |
|--|-------------|
| Status   | No. of taxa |
| P1   | 3           |
| P2   | 2           |
| P3   | 14          |
| P4   | 8           |
|  | <b>27</b>   |

Flora and vegetation surveys have been undertaken over the area by Focused Vision (2020b), Emerge (2020b), and Eco Logical (2018). No Threatened or Priority flora were recorded within the application area.

The majority of the application area is in a 'degraded' or worse condition and not likely to support conservation significant flora taxa.

| Taxon   | Status | Suitable soil type? | Suitable vegetation type / condition? | Are surveys adequate? | Closest records |
|---|--------|---------------------|---------------------------------------|-----------------------|-----------------|
| <i>Caladenia huegelii</i>   | CR     | Yes                 | No                                    | Yes                   | 1,350 m         |
| <i>Drakaea elastica</i>   | CR     | Yes                 | No                                    | Yes                   |                 |
| <i>Grevillea thelemanniana</i>  | CR     | Yes                 | No                                    | Yes                   |                 |
| <i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696)                                       | CR     | Yes                 | No                                    | Yes                   |                 |
| <i>Diuris purdiei</i>   | EN     | Yes                 | No                                    | Yes                   |                 |
| <i>Drakaea micrantha</i>  | EN     | Yes                 | No                                    | Yes                   |                 |
| <i>Eremophila glabra</i> subsp. <i>chlorella</i>  | EN     | Yes                 | No                                    | Yes                   |                 |
| <i>Diuris drummondii</i>  | VU     | Yes                 | No                                    | Yes                   |                 |
| <i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026) | P1     | No                  | No                                    | Yes                   | 439 m           |
| <i>Hydrocotyle striata</i>  | P1     | No                  | No                                    | Yes                   |                 |
| <i>Levenhookia preissii</i>   | P1     | Yes                 | No                                    | Yes                   |                 |
| <i>Bossiaea modesta</i>   | P2     | Yes                 | No                                    | Yes                   |                 |
| <i>Thelymitra variegata</i>   | P2     | Yes                 | No                                    | Yes                   |                 |
| <i>Angianthus micropodioides</i>  | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Austrostipa mundula</i>  | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Beyeria cinerea</i> subsp. <i>cinerea</i>  | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Byblis gigantea</i>  | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Cyathochaeta teretifolia</i>   | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Dampiera triloba</i>   | P3     | Yes                 | No                                    | Yes                   | 1,420 m         |
| <i>Dillwynia dillwynioides</i>  | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Hibbertia leptotheca</i>   | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Jacksonia gracillima</i>   | P3     | Yes                 | No                                    | Yes                   | 1,485 m         |
| <i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i>                                    | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Pimelea calcicola</i>  | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Stylidium maritimum</i>  | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Stylidium paludicola</i>   | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Styphelia filifolia</i>  | P3     | Yes                 | No                                    | Yes                   |                 |
| <i>Dodonaea hackettiana</i>   | P4     | Yes                 | No                                    | Yes                   | 1,112 m         |
| <i>Grevillea olivacea</i>   | P4     | Yes                 | No                                    | Yes                   |                 |
| <i>Hydrocotyle lemnoides</i>  | P4     | Yes                 | No                                    | Yes                   |                 |
| <i>Jacksonia sericea</i>  | P4     | Yes                 | No                                    | Yes                   |                 |
| <i>Kennedia beckxiana</i>   | P4     | Yes                 | No                                    | Yes                   |                 |
| <i>Microtis quadrata</i>  | P4     | Yes                 | No                                    | Yes                   |                 |
| <i>Stylidium longitubum</i>   | P4     | Yes                 | No                                    | Yes                   |                 |

| Taxon   | Status | Suitable soil type? | Suitable vegetation type / condition? | Are surveys adequate? | Closest records |
|---|--------|---------------------|---------------------------------------|-----------------------|-----------------|
| <i>Tripterooccus</i> sp. <i>Brachylobus</i> (A.S. George 14234) | P4     | Yes                 | No                                    | Yes                   |                 |

## 2d) Conservation significant fauna recorded within ten kilometres of the application area:

Fifty-seven birds, nine mammals and two reptiles of conservation significance have been recorded within ten kilometres of the application area.

Of the birds, 12 are marine/estuarine species unlikely to occur, 32 are migratory wading shorebirds unlikely to occur, and four are wetland species unlikely to occur.

Of the mammals and reptiles identified the Quenda (*Isodon fusciventer*) and Perth Slider (*Lerista lineata*) have the possibility of occurring.

| Vertebrate fauna recorded within 10 kms | Common Name                      | Status | Suitable habitat features | ~ Closest record (m) |
|---|----------------------------------|--------|---------------------------|----------------------|
| <b>Birds</b>                            |                                  |        |                           |                      |
| <i>Calyptorhynchus latirostris</i>      | Carnaby's Cockatoo               | EN     | Yes                       | 34 m                 |
| <i>Calyptorhynchus banksii naso</i>     | Forest Red-tailed Black Cockatoo | VU     | Yes                       | 260 m                |
| <i>Calyptorhynchus baudinii</i>         | Baudin's Cockatoo                | EN     | No                        |                      |
| <i>Cacatua pastinator</i>               | Muir's Corella                   | CD     | No                        |                      |
| <i>Falco peregrinus</i>                 | Peregrine Falcon                 | OS     | Possible                  | 562 m                |
| <i>Pandion cristatus</i>                | Osprey                           | IA     | No                        |                      |
| <i>Elanus scriptus</i>                  | Letter-winged Kite               | P4     | No                        |                      |
| <i>Ninox connivens</i>                  | Barking Owl (Southwest)          | P3     | No                        |                      |
| <i>Tyto novaehollandiae</i>             | Masked Owl (Southwest)           | P3     | No                        |                      |
| <i>Ixobrychus dubius</i>                | Australian Little Bittern        | P4     | No                        |                      |
| <i>Oxyura australis</i>                 | Blue-Billed Duck                 | P4     | No                        |                      |
| <i>Botaurus poiciloptilus</i>           | Australasian Bittern             | EN     | No                        |                      |
| <i>Plegadis falcinellus</i>             | Glossy Ibis                      | IA     | No                        |                      |
| <i>Calidris ferruginea</i>              | Curlew Sandpiper                 | CR     | No                        |                      |
| <i>Calidris tenuirostris</i>            | Great Knot                       | CR     | No                        |                      |
| <i>Numenius madagascariensis</i>        | Eastern Curlew                   | CR     | No                        |                      |
| <i>Calidris canutus</i>                 | Red Knot                         | EN     | No                        |                      |
| <i>Charadrius mongolus</i>              | Lesser Sand Plover               | EN     | No                        |                      |
| <i>Charadrius leschenaultii</i>         | Greater Sand Plover              | VU     | No                        |                      |
| <i>Thinornis rubricollis</i>            | Hooded Plover                    | P4     | No                        |                      |
| <i>Actitis hypoleucos</i>               | Common Sandpiper                 | IA     | No                        |                      |
| <i>Anous stolidus</i>                   | Common Noddy                     | IA     | No                        |                      |
| <i>Apus pacificus</i>                   | Fork-tailed Swift                | IA     | No                        |                      |
| <i>Arenaria interpres</i>               | Ruddy Turnstone                  | IA     | No                        |                      |
| <i>Calidris acuminata</i>               | Sharp-tailed Sandpiper           | IA     | No                        |                      |
| <i>Calidris alba</i>                    | Sanderling                       | IA     | No                        |                      |
| <i>Calidris melanotos</i>               | Pectoral Sandpiper               | IA     | No                        |                      |
| <i>Calidris ruficollis</i>              | Red-Necked Stint                 | IA     | No                        |                      |
| <i>Calidris subminuta</i>               | Long-toed Stint                  | IA     | No                        |                      |
| <i>Calonectris leucomelas</i>           | Streaked Shearwater              | IA     | No                        |                      |
| <i>Charadrius dubius</i>                | Little Ringed Plover             | IA     | No                        |                      |
| <i>Glareola maldivarum</i>              | Oriental Pratincole              | IA     | No                        |                      |
| <i>Hydroprogne caspia</i>               | Caspian Tern                     | IA     | No                        |                      |
| <i>Limicola falcinellus</i>             | Broad-billed Sandpiper           | IA     | No                        |                      |
| <i>Limosa lapponica</i>                 | Bar-tailed Godwit                | IA     | No                        |                      |
| <i>Limosa</i>                           | Black-Tailed Godwit              | IA     | No                        |                      |
| <i>Numenius phaeopus</i>                | Whimbrel                         | IA     | No                        |                      |
| <i>Oceanites oceanicus</i>              | Wilson's Storm-Petrel            | IA     | No                        |                      |
| <i>Phaethon rubricauda</i>              | Red-tailed Tropicbird            | IA     | No                        |                      |
| <i>Philomachus pugnax</i>               | Ruff                             | IA     | No                        |                      |
| <i>Pluvialis fulva</i>                  | Pacific Golden Plover            | IA     | No                        |                      |
| <i>Pluvialis squatarola</i>             | Grey Plover                      | IA     | No                        |                      |

| Vertebrate fauna recorded within 10 kms | Common Name               | Status | Suitable habitat features | ~ Closest record (m) |
|---|---------------------------|--------|---------------------------|----------------------|
| <i>Tringa glareola</i>                  | Wood Sandpiper            | IA     | No                        |                      |
| <i>Tringa nebularia</i>                 | Common Greenshank         | IA     | No                        |                      |
| <i>Tringa stagnatilis</i>               | Marsh Sandpiper           | IA     | No                        |                      |
| <i>Phoebastria fusca</i>                | Sooty Albatross           | EN     | No                        |                      |
| <i>Thalassarche melanophris</i>         | Black-Browed Albatross    | EN     | No                        |                      |
| <i>Thalassarche chrysostoma</i>         | Grey-Headed Albatross     | VU     | No                        |                      |
| <i>Diomedea exulans</i>                 | Wandering Albatross       | VU     | No                        |                      |
| <i>Ardenna carneipes</i>                | Flesh-footed Shearwater   | VU     | No                        |                      |
| <i>Stercorarius parasiticus</i>         | Arctic Jaeger             | IA     | No                        |                      |
| <i>Stercorarius pomarinus</i>           | Pomarine Jaeger           | IA     | No                        |                      |
| <i>Anous tenuirostris melanops</i>      | Australian Lesser Noddy   | EN     | No                        |                      |
| <i>Chlidonias leucopterus</i>           | White-winged Black Tern   | IA     | No                        |                      |
| <i>Sternula nereis</i>                  | Fairy Tern                | VU     | No                        |                      |
| <i>Sterna dougallii</i>                 | Roseate Tern              | IA     | No                        |                      |
| <i>Thalasseus bergii</i>                | Crested Tern              | IA     | No                        |                      |
| <b>MAMMALS</b>                          |                           |        |                           |                      |
| <i>Pseudocheirus occidentalis</i>       | Western Ringtail Possum   | CR     | No                        |                      |
| <i>Myrmecobius fasciatus</i>            | Numbat                    | EN     | No                        |                      |
| <i>Dasyurus geoffroii</i>               | Chuditch                  | VU     | No                        |                      |
| <i>Setonix brachyurus</i>               | Quokka                    | VU     | No                        |                      |
| <i>Isodon fusciventer</i>               | Quenda                    | P4     | Yes                       | 17 m                 |
| <i>Notamacropus eugenii derbianus</i>   | Tammar Wallaby            | P4     | No                        |                      |
| <i>Notamacropus irma</i>                | Western Brush Wallaby     | P4     | No                        |                      |
| <i>Hydromys chrysogaster</i>            | Water Rat                 | P4     | No                        |                      |
| <i>Falsistrellus mackenziei</i>         | Western False Pipistrelle | P4     | No                        |                      |
| <b>REPTILES</b>                         |                           |        |                           |                      |
| <i>Lerista lineata</i>                  | Perth Slider              | P3     | Possible                  | 163 m                |
| <i>Neelaps calonotos</i>                | Black-striped Snake       | P3     | No                        |                      |

### 3. Vegetation extent

#### 3a) Regional vegetation mapping

| Factor   |                                      | Pre-European Extent (ha) | Current Extent (ha) | Remaining (%) | Protected for Conservation (ha) | Protected for Conservation (%) |
|----------|--------------------------------------|--------------------------|---------------------|---------------|---------------------------------|--------------------------------|
| SCP (42) | Herdsmen Complex                     | 9,665                    | 3,104               | 32.11         | 1,047                           | 10.83                          |
| SCP (33) | Karrakatta Complex-Central and South | 53,081                   | 12,467              | 23.49         | 2,054                           | 3.87                           |
| SWA      | Swan Coastal Plain                   | 1,501,222                | 579,813             | 38.6          | 153,955                         | 10.3                           |
| SWA(02)  | Perth                                | 1,117,757                | 466,143             | 41.7          | 126,073                         | 11.3                           |

#### 3b) Remnant vegetation within ten kilometres of the application area

| Remnant Vegetation           | Hectares | Remaining % |
|------------------------------|----------|-------------|
| Total Area (10 km radius)    | 26,041   | (100 %)     |
| Remnant vegetation remaining | 4,270    | ~16.4 %     |

## Appendix C – Assessment against the Clearing Principles

| Assessment against the Clearing Principles   | Variance level               | Is further consideration required? |
|--|------------------------------|------------------------------------|
| <b>Environmental value: biological values</b>  |                              |                                    |
| <p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u> The majority of the application area (76 per cent) is in a Degraded (Keighery 1994), with evidence of weed invasion and edge effects. No Threatened or Priority flora species have been identified within the application area (Eco Logical 2018; Emerge 2020b; Focused Vision 2020b). One vegetation unit was described and mapped over the application area (Focussed Vision 2020b) that is representative of two Priority 3 PECs also listed as Threatened under the EPBC Act. Black cockatoo foraging and breeding habitat also occurs within the application area (Emerge 2020a).</p> | May be at variance           | Yes<br>See Section 3.2.1           |
| <p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u> Fauna species of conservation significance have been recorded within the vicinity of the application area that have the potential to occur within the application area including; two black cockatoo species, as well as the Priority 4 Quenda (<i>Isoodon fusciventer</i>) and Priority 3 Perth Slider (<i>Lerista lineata</i>). Black cockatoo foraging and breeding habitat also occurs over the application area (Emerge 2020a).</p>  | May be at variance           | Yes<br>See Section 3.2.2           |
| <p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u> Targeted flora surveys undertaken over the application area, including multiple visits during spring 2019, have not identified any Threatened flora (Eco Logical Australia 2018; Emerge 2020b; Focused Vision 2020b). The application area is not likely to be necessary for the continued existence of Threatened flora.</p>  | Not likely to be at variance | No                                 |
| <p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u> No TECs endorsed by the Western Australian Minister for Environment have been mapped within the vicinity of the application area. Vegetation over the application area does not align with any identified TECs within the local area.</p>  | Not at variance              | No                                 |
| <b>Environmental values: significant remnant vegetation and conservation areas</b>   |                              |                                    |
| <p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> The application area aligns closely with the Karrakatta Complex-Central and South (SCP 49) which has been mapped within 200 metres of the application area. Vegetation retention rates for this complex is under the 30 per cent threshold advocated by the Commonwealth of Australia (2001) at 23.5 per cent remaining for SCP 49 (Government of Western Australia 2019a).</p>   | May be at variance           | Yes<br>See Section 3.2.3           |
| <p><u>Principle (h):</u> <i>“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.”</i></p>   | At variance                  | Yes<br>See Section 3.2.3           |

| Assessment against the Clearing Principles  | Variance level               | Is further consideration required? |
|---|------------------------------|------------------------------------|
| <p><u>Assessment:</u> The application area is located within Bush Forever Site No. 244 'North Lake and Bibra Lake' as well as the Beeliar Regional Park.</p>  |                              |                                    |
| <b>Environmental values: land and water resources</b>   |                              |                                    |
| <p><u>Principle (f):</u> <i>"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."</i></p> <p><u>Assessment:</u> No geomorphic wetlands or water courses have been mapped over the application area. Flora surveys undertaken (Eco Logical Australia 2019; Emerge 2020b; Focused Vision 2020b) did not identify any wetland or riparian vegetation.</p>  | Not likely to be at variance | No                                 |
| <p><u>Principle (g):</u> <i>"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."</i></p> <p><u>Assessment:</u> The unconsolidated and permeable sands of the mapped Spearwood S7 Phase over the application area are prone to wind erosion (DPIRD 2017). Standard and staged construction methodologies will be implemented including strategies for drainage controls and wind and water erosion including dust suppression and surface stabilisation where required (Emerge 2020a).</p>   | May be at variance           | Yes<br>See Section 3.2.5           |
| <p><u>Principle (i):</u> <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."</i></p> <p><u>Assessment:</u> No watercourses occur within the application area with the closest wetland being a 'multiple use' basin (UFI 6601) mapped approximately 60 metres to the east. Regional groundwater is mapped as 'fresh' at 500 to 1,000 total dissolved salts (TDS) milligrams per litre (mg/L), and salinity risk is rated low (DPIRD 2017).</p> <p>Acid sulphate soil (ASS) risk mapping indicates that the majority of the application area has been classified as having no known risk of ASS within three metres of the natural soil surface (Emerge 2020a).</p> | Not likely to be at variance | No                                 |
| <p><u>Principle (j):</u> <i>"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."</i></p> <p><u>Assessment:</u> The unconsolidated and permeable sands of the mapped Spearwood S7 phase, and topographic contours in the surrounding area, do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. Flood risk has been assessed as low in the Spearwood system, and the application area is located well outside of any recognised floodplain areas (DPIRD 2017).</p>   | Not at variance              | No                                 |



## Appendix D – Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

### Measuring Vegetation Condition for the South West and Interzone Botanical Province (Keighery 1994)

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

**Appendix E – Biological survey information excerpts**



**Figure 1: Application Area Location**

**Project:** Clearing Permit Application  
Aboriginal Cultural and Visitor Centre, Bibra Lake  
**Client:** City of Cockburn

**Plan Number:** EP15-144(01)-F32  
**Drawn:** SCM  
**Date:** 09/07/2020  
**Checked:** SCM  
**Approved:** KK  
**Date:** 30/07/2020



0 50 100  
Metres  
Scale: 1:5,000@A4  
GDA 2014 MGA Zone 50



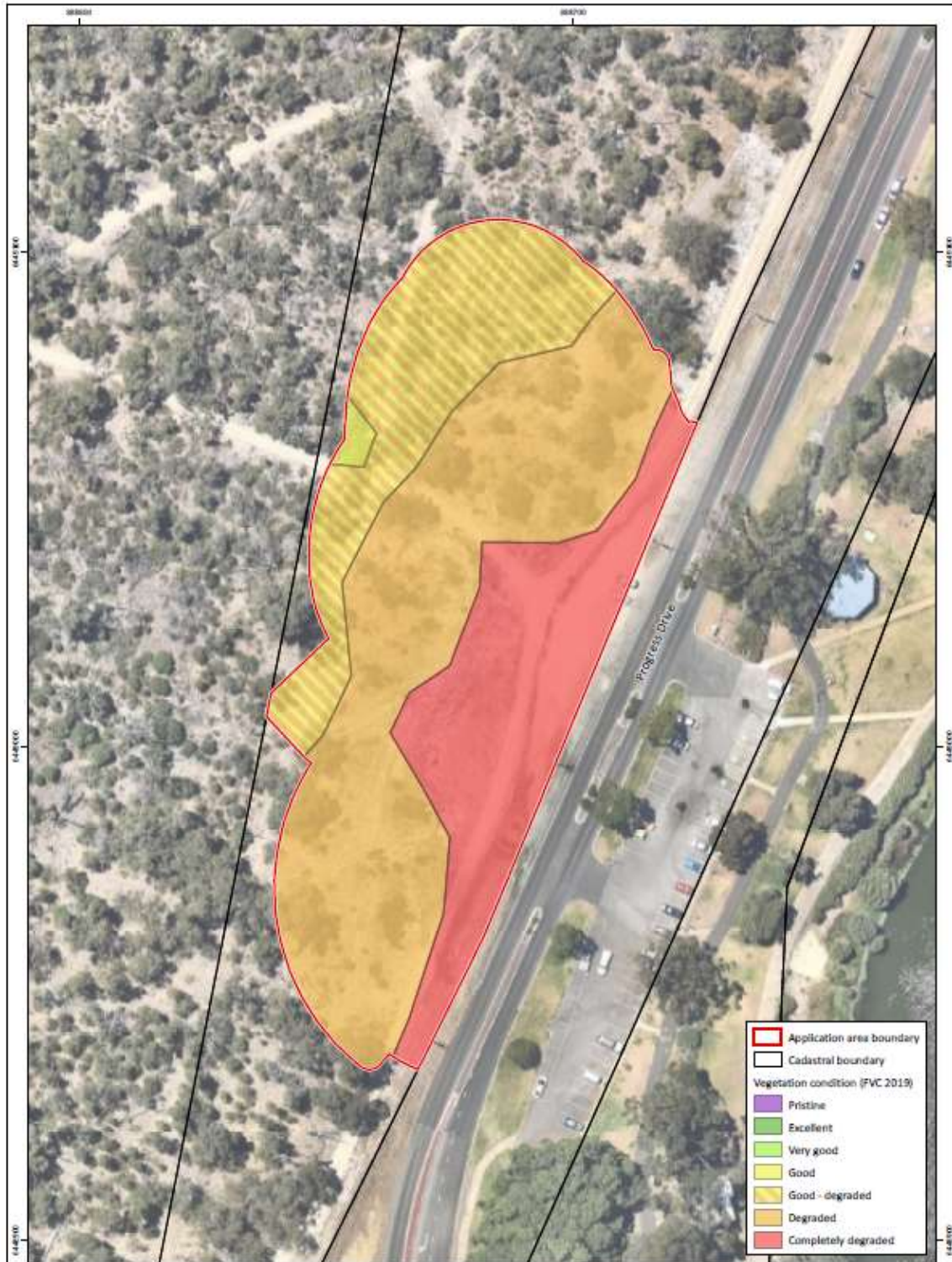
While Emmerge Associates makes every attempt to ensure the accuracy and completeness of data, Emmerge accepts no responsibility for externally sourced data used



*Plate 1: Plant community **EmBaAfLOF** in 'degraded - good' condition*



*Plate 2: Cleared areas in 'completely degraded' condition*



**Figure 3: Vegetation Condition**

**Project:** Clearing Permit Application  
Aboriginal Cultural and Visitor Centre, Bibra Lake  
**Client:** City of Cockburn

**Plan Number:** EP15-144(01)-F34  
**Drawn:** GAK  
**Date:** 10/07/2020  
**Checked:** SCM  
**Approved:** KK  
**Date:** 10/07/2020



0 10 20 30  
Metres  
Scale: 1:1,000@A4  
GDA 1994 MGA Zone 50



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used.

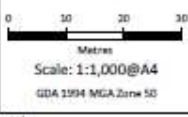


**Figure 4: Forest Red-tailed Black Cockatoo Foraging Habitat**

**Project:** Clearing Permit Application  
Aboriginal Cultural and Visitor Centre, Bibro Lake

**Client:** City of Cockburn

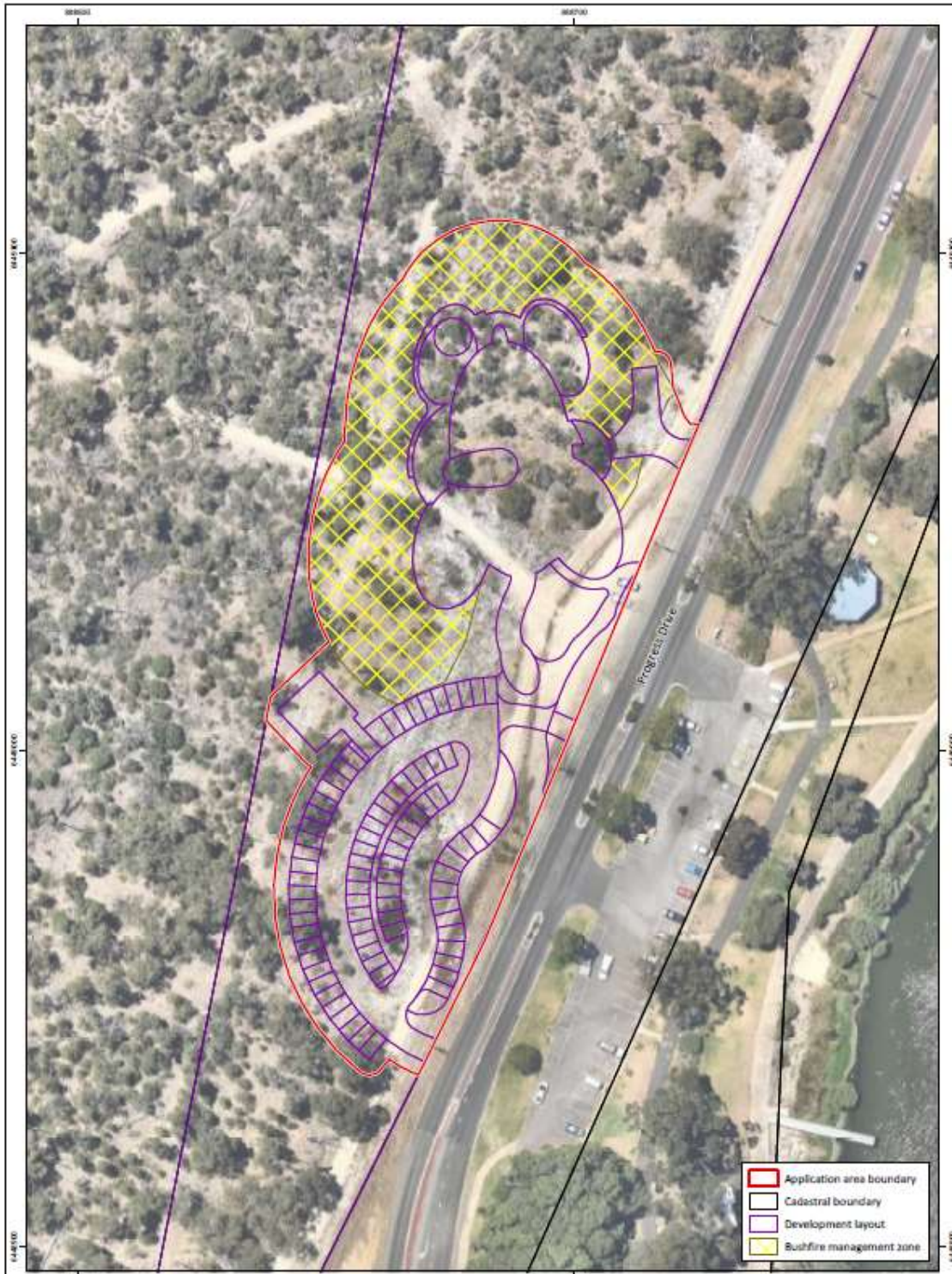
**Plan Number:** EP19-144(01)-P25  
**Drawn:** GAR  
**Date:** 10/07/2020  
**Checked:** SCM  
**Approved:** KK  
**Date:** 10/07/2020



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used





|   |  |   |   |
|---|--|---|---|
| <b>Project:</b> Clearing Permit Application<br>Aboriginal Cultural and Visitor Centre, Bbra Lake<br><b>Client:</b> City of Cockburn | <b>Plan Number:</b> EP15-144(01)-F36<br><b>Drawn:</b> GAR<br><b>Date:</b> 10/07/2020<br><b>Checked:</b> SCM<br><b>Approved:</b> KK<br><b>Date:</b> 10/07/2020                  | <br><br><b>Scale: 1:1,000@A4</b><br>GDA 1994 MGA Zone 50 |  |
|   | <small>While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used.</small> |   |   |



**Figure 6: Building and Bushfire Asset Protection Zone Location**

Project: Clearing Permit Application  
 Aboriginal Cultural and Visitor Centre, Bibra Lake  
 Client: City of Cockburn

|                                  |   |   |
|----------------------------------|---|---|
| Plan Number:<br>EP15-144(D1)-F40 |  | <br>Metres<br>Scale: 1:1,000@A4<br>GDA 1994 MGA Zone 50 |
| Drawn: SCM                       |   |   |
| Date: 23/07/2020                 |   |   |
| Checked: SCM                     |   |   |
| Approved: BK<br>Date: 23/07/2020 |   |   |



While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used



**Figure 9: Environmental Features**

**Project:** Clearing Permit Application  
 Aboriginal Cultural and Visitor Centre, Bibra Lake  
**Client:** City of Cockburn

**Plan Number:** EP13-144(01)-F39  
**Drawn:** GAB  
**Date:** 10/07/2020  
**Checked:** SCM  
**Approved:** KK  
**Date:** 10/07/2020

**Scale:** 1:15,000@A4  
 GDA 1994 MGA Zone 50



While Emmerge Associates makes every attempt to ensure the accuracy and completeness of data, Emmerge accepts no responsibility for externally sourced data used.



## Appendix F – Offset calculator value justification

| Field Name  | Description   | Justification for value used  |
|---|---|---|
| <i>IUCN Criteria</i>  | The IUCN criteria for the value being impacted  | (Other) value assigned based on residual impact to Bush Forever Site No. 244 - Beeliar Regional Park, currently reserved Parks and Recreation under the Metropolitan Region Scheme.   |
| <i>Area of impact (habitat/community) or Quantum of impact (features/individuals)</i>                           | The area of habitat/community impacted or number of features/individuals impacted   | 0.65 hectares of native vegetation has been assigned, being the residual impact to Bush Forever Site No. 244 - Beeliar Regional Park.   |
| <i>Quality of impacted area (habitat/community)</i>   | The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability.           | Quality score of (3) (Degraded to Good) has been assigned to the impact site based upon Focussed Vision (2020b) and Emerge (2020a) being:<br>0.43 ha (67.2 %) - considered Degraded*<br>0.20 ha (31.3%) - considered Degraded to Good*<br>0.01 ha (1.6 %) - considered Good*      |
| <i>Time over which loss is averted (habitat/community)</i>  | This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified   | The offset site will be managed for conservation. 20 years has been assigned, being the duration of the risk mitigation actions to be taken.  |
| <i>Time until ecological benefit (habitat/community) or Time horizon (features/individuals)</i>                 | This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised                      | (1) year has been assigned for the change in the tenure from 'recreation' to 'conservation'. That is, amending the purpose of the Rose Shanks Reserve offset site from 'Recreation' to 'Conservation' within Rose Shanks Reserve (Lot 500 on Plan 413034 - Crown Reserve R 1820). |
| <i>Start area (habitat/community) or Start value (features / individuals)</i>                                   | The area of habitat/community or number of features/individuals proposed to offset the impacts  | (2.17) hectares within Rose Shanks Reserve (Lot 500 on Plan 413034 - Crown Reserve R 1820) has been assigned based upon the offset proposal submitted.  |
| <i>Start quality (habitat/community)</i>  | The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability | A quality score of (6) (Very Good) has been assigned based upon the results of the Eco Logical (2019) vegetation mapping and Emerge (2020c), (Keighery 1994).   |
| <i>Future quality without offset (habitat/community) or Future value without offset (features/ individuals)</i> | The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset   | A quality score of (5) (Good to Very Good*) has been assigned due to an expected decline in vegetation condition with the current Recreation purpose and no active management and protections (including fencing).  |
| <i>Future quality with offset (habitat/community) or Future value with offset (features/ individuals)</i>       | The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset  | A quality score of (6) (Very Good*) has been assigned due to the expected retention, or exceedance, of vegetation condition values due to adequate management and protections being implemented.  |

| Field Name   | Description  | Justification for value used   |
|--|--|--|
| <i>Risk of loss (%) without offset (habitat/ community)</i>  | This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset | A risk of loss percentage without offset of (10%) has been assigned due to Rose Shanks Reserve (Lot 500 on Plan 413034 - Crown Reserve R 1820) currently being a Bush Forever site with a Parks and Recreation purpose under the Metropolitan Region Scheme.   |
| <i>Risk of loss (%) with offset (habitat/ community)</i>   | This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset    | A risk of loss percentage with an offset has been reduced to (5%) due to the purpose of Rose Shanks Reserve (Lot 500 on Plan 413034 - Crown Reserve R 1820) being elevated to 'Conservation' within a Bush Forever site.   |
| <i>Confidence in result (%) – risk of loss (habitat/ community)</i>  | The capacity of measures to mitigate risk of loss of the proposed offset site  | A confidence in result (risk of loss) value of (90%) has been assigned due to the high level of certainty about the risk without the proposed offset due to the Recreation purpose, unmanaged access, and susceptibility to dieback, weeds and inappropriate fires.  |
| <i>Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/ individuals)</i> | The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)  | A confidence in result (change in quality) value of (90%) has been assigned due to the high level of certainty about the successful achievement of the proposed offset due to the change to a 'Conservation' purpose and recognition of Rose Shanks Reserve as a 'high' priority reserve for ongoing management by the City of Cockburn within their Natural Area Management Strategy (2012-2022). |
| <i>% of impact offset</i>  | % of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)   | The offset proposal submitted by the applicant exceeds 100% of the significant residual impact based upon results of the EPBC Act offset calculator.   |

*\* Based on the vegetation condition scale of: Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.*

## Appendix G – References and databases

### 1. References

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## 2. GIS datasets

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)