GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

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

PERMIT DETAILS

Area Permit Number: CPS 8978/1

File Number: DWERVT6169

Duration of Permit: From 8 July 2021 to 8 July 2028

PERMIT HOLDER

City of Rockingham

LAND ON WHICH CLEARING IS TO BE DONE

Lot 24 on Deposited Plan 243261, Shoalwater

Arcadia Drive Road Reserve (PIN 11425501), Shoalwater

AUTHORISED ACTIVITY

The permit holder must not clear more than 0.254 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 8 July 2023.

2. Type of clearing authorised

The permit holder may clear *native vegetation* for the activities described as the authorised activity to the extent that the permit holder has the power to carry out works involving clearing for those activities under the *Local Government Act 1995* or any other written law.

3. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending 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.

4. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of 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.

5. Directional clearing

The permit holder must conduct *clearing* activities in a slow, progressive manner towards *native vegetation* to allow fauna to move into adjacent *native vegetation* ahead of the *clearing* activity.

6. Erosion management

The permit holder shall begin construction no later than two (2) months after undertaking the authorised *clearing* activities to reduce the potential for wind erosion.

7. Vegetation management – fencing

The permit holder must:

(a) within twelve months of commencing the authorised *clearing* activity, construct or install a fence within the area cross-hatched red in Figure 1 of Schedule 2 that allows for the movement of wildlife by being raised at least 15 centimetres from the ground; and

(b) within one month of installing the above fence, the permit holder shall notify the *CEO* in writing that the fencing has been completed.

8. Offset – revegetation and rehabilitation requirements

Within 12 months of the commencement of clearing, the permit holder must undertake *revegetation* and *rehabilitation* activities including but not limited to the following actions:

(a) retain the vegetative material and topsoil removed by clearing authorised under this permit within the area cross-hatched yellow in Figure 1 of Schedule 1 and stockpile the vegetative material and topsoil in an area that has already been cleared;

(b) commence *revegetation* and *rehabilitation* of at least 0.33 hectares of native vegetation in Completely Degraded or Degraded condition to Good or better condition based upon the condition scale of Keighery (1994) within the areas cross-hatched red in Figure 2 of Schedule 2 by;

(i) deliberately *planting* tube stock and salvaged native vegetation and/or direct seeding *native vegetation* seeds; and

(ii) ensuring only *local provenance* seeds and propagating material are used to *revegetate* the areas.

(c) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the *revegetation* sites;

(d) establish at least ten five metre by five metre quadrat monitoring sites within *revegetated* areas;

(e) monitor quadrats specified in condition in 8(d) at least biannually in autumn and in spring;

(f) monitoring of quadrats specified in condition 8(d) is to be undertaken by an *environmental specialist;*

(g) achieve the completion criteria specified in Schedule 3 (Revegetation Completion Criteria) after the three year monitoring period for areas *revegetated* and *rehabilitated* under this permit;

(h) undertake weed control activities on an 'as needs' basis to maintain the minimum criteria specified in Schedule 3 (Revegetation and rehabilitation completion criteria);

(i) undertake *remedial actions* for areas *revegetated* and *rehabilitated* where monitoring indicates that *revegetation* and *rehabilitation* has not met the completion criteria, outlined in Schedule 3 (Revegetation and rehabilitation completion criteria), including:

(i) *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation seeds that will result in the minimum targets specified in Schedule 3 (Revegetation Completion Criteria) ensuring only *local provenance* seeds and propagating material are used;

(ii) undertake further weed control activities;

(iii) undertake watering activities; and

(iv) undertake biannual monitoring of each *revegetated* and *rehabilitated* site, until the completion criteria outlined in Schedule 3 (Revegetation and rehabilitation completion criteria) are met.

9. Offset – revegetation and rehabilitation fencing

The permit holder must:

(a) within twenty-four months of *clearing* ensure appropriate fencing separates the areas cross-hatched red in Figure 2 of Schedule 2 from human activity, and allows for the movement of wildlife by being raised 15 centimetres from the ground; and

(b) within one month of installing the above fences, the permit holder shall notify the *CEO* in writing that the fencing has been completed.

10. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised *clearing* activities generally	(a) the species composition, structure, and density of the cleared area; (b) 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; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of *clearing* in accordance with *condition* 3; (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with *condition* 4; (g) actions taken to conduct *clearing* in a slow and progressive manner in accordance with *condition* 5; (h) actions taken to begin construction within two months of *clearing* in accordance with *condition* 6; and (i) actions taken to construct an appropriate fence within twelve months in accordance with *condition* 7.
2.	In relation to *revegetation* and *rehabilitation* requirements pursuant to *condition* 8 and *condition* 9 of this permit:	(a) the location of areas *revegetated* and *rehabilitated* 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) description of the *revegetation* and *rehabilitation* activities undertaken; (c) the size of the area *revegetated* and *rehabilitated* (in hectares); (d) evidence supporting compliance with *condition* 8(a) to 8(i) of this permit;

No.	Relevant matter	Specifications
		(e) *remedial actions* required to be undertaken; and (f) actions taken to construct appropriate fencing within twenty-four months in accordance with *condition* 9.

11. 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 under *condition* 10 of this permit; 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 carried out, must be provided to the *CEO* on or before 31 December of each calendar year.

(c) The permit holder must provide to the *CEO,* no later than 90 calendar days prior to the expiry date of this permit, a written report of records required under condition 10 of this permit, where these records have not already been provided under condition 11(a) of this permit.

DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of *Phytophthora* species on native vegetation.
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of two (2) years work

Term	Definition
	experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the CEO as a suitable environmental specialist.
EP Act	*Environmental Protection Act 1986* (WA)
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
plant/planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species
rehabilitate / rehabilitated /rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
remedial action/s	means for the purpose of this permit, any activity that is required to ensure successful re-establishment of *understorey* to its pre-clearing composition, structure and density, and may include a combination of soil treatments and *revegetation*.
revegetate / revegetated / revegetation	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

15 June 2021

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

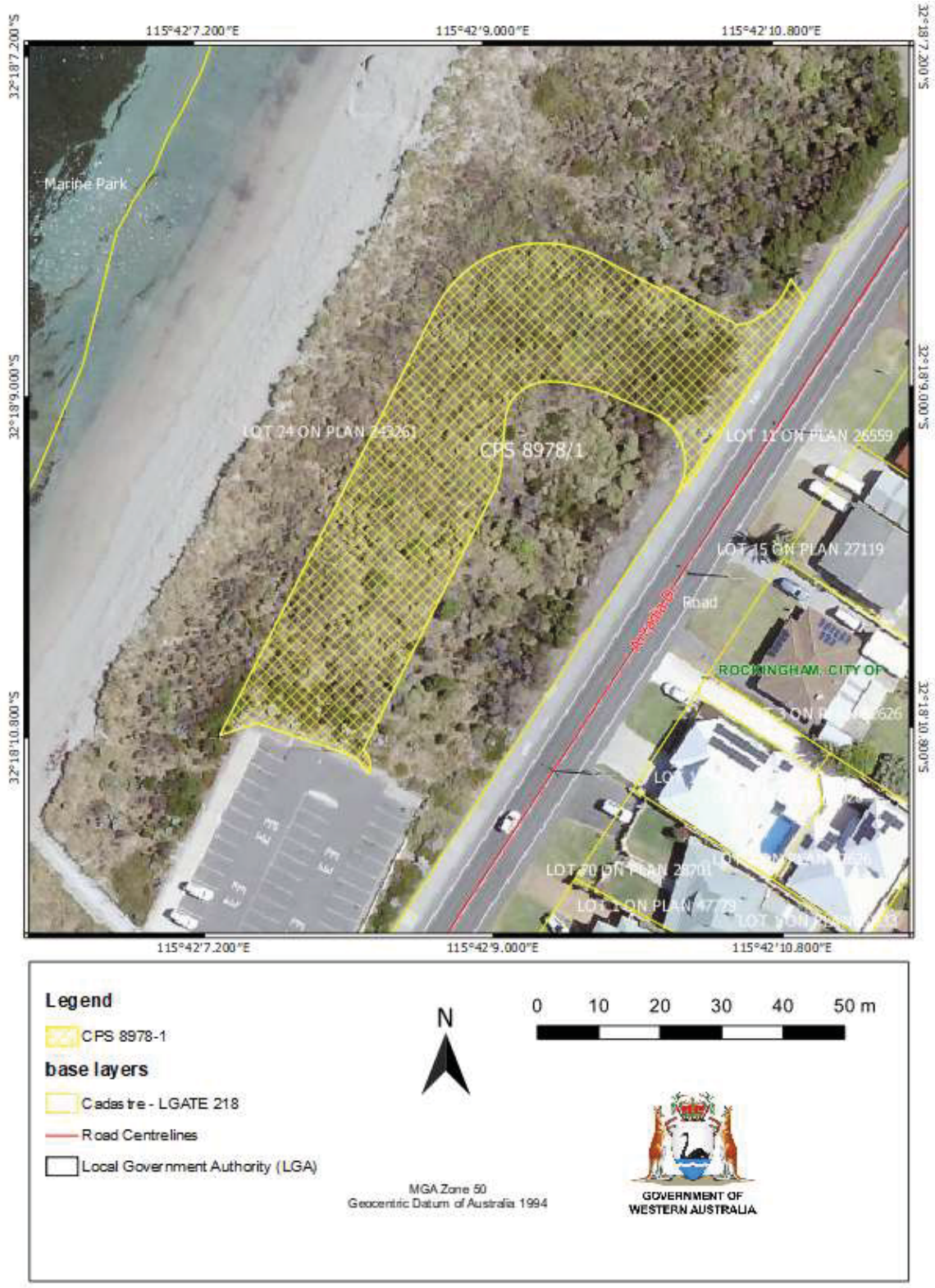

Figure 1: Map of the boundary of the area within which clearing may occur

SCHEDULE 2

The boundaries of the areas where specific conditions apply are shown in the maps below (Figure 1 and Figure 2)

Figure 1: Map of the boundaries of the areas where specific conditions apply - Fencing

SCHEDULE 2

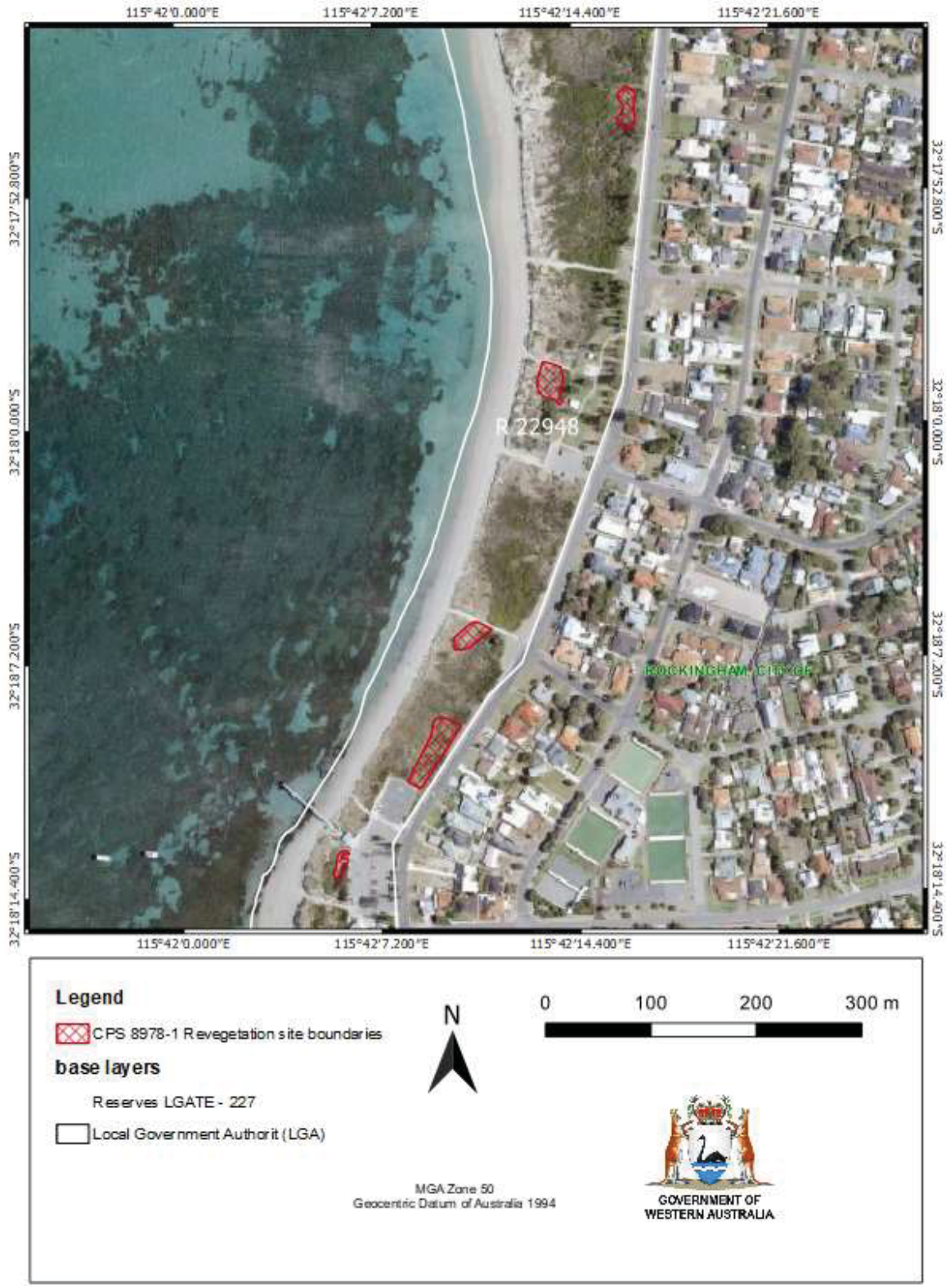

Figure 2: Map of the boundaries of the areas where specific conditions apply – Revegetation and rehabilitation and fencing

SCHEDULE 3

Specific conditions that apply to revegetation and rehabilitation completion criteria are provided in the two tables below

Table 1: Revegetation and rehabilitation completion criteria

Characteristic	Completion criteria
Density	at least one plant per square metre
Survivorship	at least 70 per cent survival of tubestock
Composition	at least 90 per cent of species on the revegetation species list below (Table 2)
Condition	at least 'Good' based upon the vegetation condition scale of Keighery (1994)
Weed cover	less than 5 per cent cover

Table 2: Revegetation species list

Revegetation species list
Acacia cochlearis
Acacia rostellifera
Acacia saligna
Acanthocarpus preissii
Alyxia buxifolia
Austrostipa flavescens
Carpobrotus virescens
Clematis linearifolia
Conostylis candicans subsp. *calcicola*
Eucalyptus gomphocephala
Ficinia nodosa
Hardenbergia comptoniana
Lepidosperma gladiatum
Leucophyta brownii
Lomandra maritima
Olearia axillaris
Rhagodia baccata
Scaevola crassifolia
Spinifex longifolia
Spyridium globulosum
Threlkeldia diffusa

Clearing Permit Decision Report

1. Application details and outcome

1.1 Permit application details

Permit number:	CPS 8978/1
Permit type:	Area permit
Applicant name:	City of Rockingham
Application received:	24 July 2020
Proposed clearing:	0.254 hectares
Purpose of clearing:	Extension of an existing asphalt car park to provide a bus terminus
Method of clearing:	Mechanical removal
Property:	Lot 24 on Deposited Plan 243261 (R 22948), Shoalwater Arcadia Drive Road Reserve (PIN 11425501), Shoalwater
Location:	City of Rockingham
Locality:	Shoalwater

1.2 Description of clearing activities

The application area is situated north of an existing car park at Mersey Point Jetty, Shoalwater, used by patrons to access Penguin Island. The application area is located within Bush Forever site 355 and within a broader remnant of coastal vegetation. The application form states that the total area of clearing is 0.287 hectares of native vegetation to extend an existing asphalt car park to accommodate a new Public Transport Authority (PTA) Bus Terminus. On digitising, the extent of proposed clearing was amended to 0.254 hectares. The extent of the proposed clearing is indicated in Figure 1 (Section 1.5).

1.3 Decision on application

Decision:	Granted
Decision date:	15 June 2021
Decision area:	0.254 ha (Figure 1, Section 1.5)

1.4 Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The application was advertised for 21 days and no public submissions were received.

In undertaking the assessment, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix G), the findings of a site survey undertaken by DWER (2020), results of a flora and vegetation survey, photographs of the vegetation proposed to be cleared (Appendix D), offset proposal, the clearing principles set out in Schedule 5 of the EP Act (Appendix B), and any other matters considered relevant to the assessment (Section 3). The assessment identified that the proposed clearing will result in the following:

- The loss of 0.252 hectares of Bush Forever site 355 representing a significant remnant of native vegetation.
- The potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.
- Impacts to fauna resident during the clearing process, and longer term due to the restriction of local movements.
- Potential land degradation in the form of wind erosion.

The applicant has suitably demonstrated avoidance and minimisation measures (Section 3.1), however the Delegated Officer considers that significant residual impacts remain, due to the loss of 0.252 hectares of Bush Forever site 355 representing a significant remnant of native vegetation (Section 4).

Consistent with the Western Australian Environmental Offset Policy (2011) and WA Environmental Offsets Guidelines (2014), and pursuant to section 51(2)(b) of the EP Act, in order to mitigate the significant residual impacts described

above, the Permit Holder is required to provide an offset. The offset involves the rehabilitation of five areas within Bush Forever site 355 (Point Peron and adjacent bushland, Peron/Shoalwater) that total 0.326 hectares from Completely Degraded or Degraded condition to Good or better condition (Section 4).

After consideration of the available information, as well as the applicant's minimisation and mitigation measures and the provision of a suitable offset, the Delegated Officer determined the proposed clearing can be minimised and managed to unlikely lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- Avoid and minimise to reduce the impacts and extent of clearing.
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback on adjacent vegetation.
- Ensure construction of the terminus commences within two months of the cessation of clearing to minimise the risk of wind erosion.
- Undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.
- Install conservation-style fencing that allows for the movement of wildlife by being raised 15 centimetres from the ground, whilst limiting unwarranted intrusion of members of the public into the Bush Forever site.
- Implement an offset as described above.

1.5 Site map

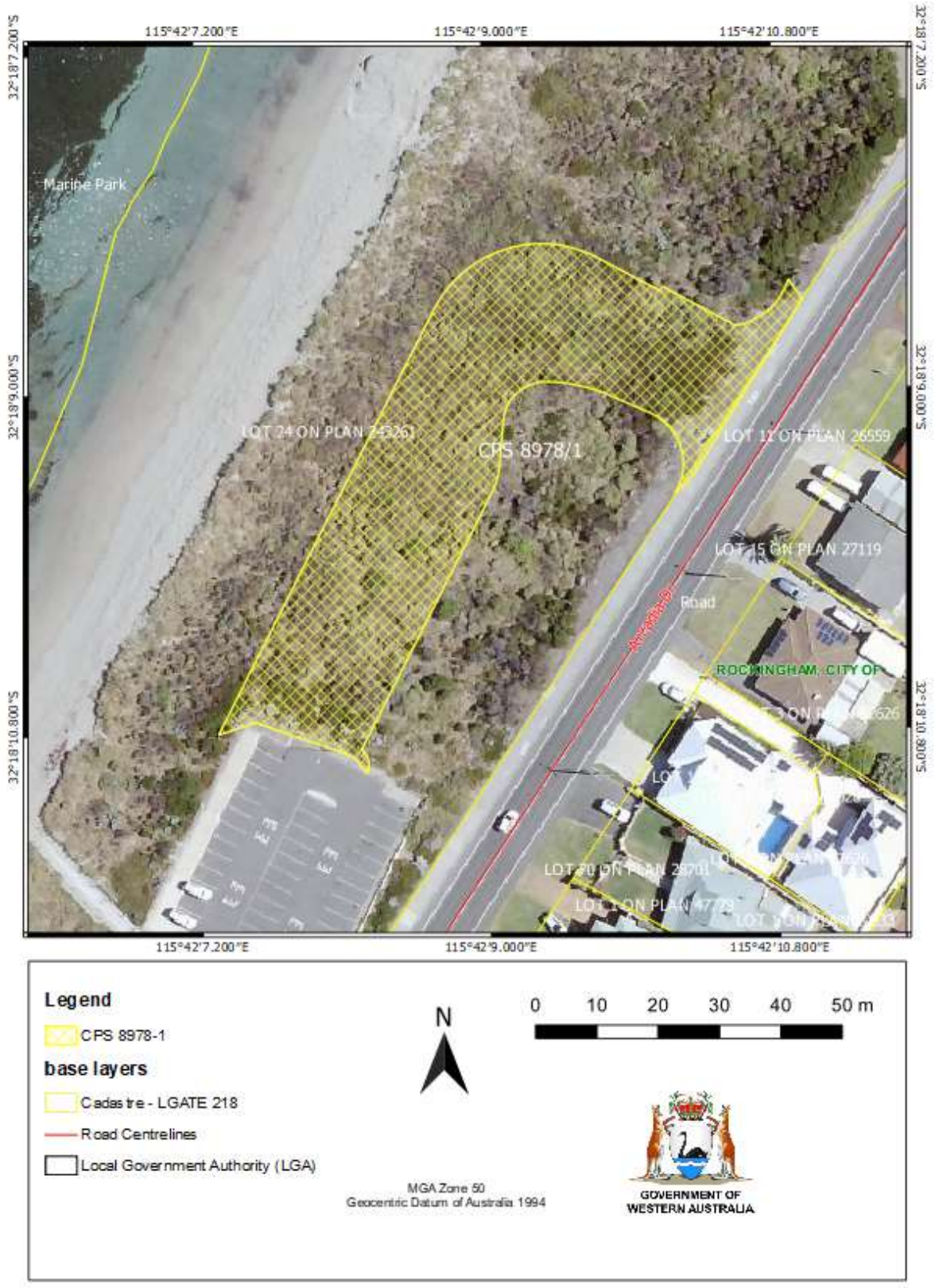

Figure 1: Map of area approved to clear. The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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 (Section 1.3), 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
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA)
- *Conservation and Land Management Act 1984* (WA)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
- *Rights in Water and Irrigation Act 1914*.

Relevant policies considered during the assessment were:

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

The key guidance documents which inform this assessment are:

- A guide to the assessment of applications to clear native vegetation (DWER, 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, 2016).

3. Detailed assessment of application

3.1 Avoidance and mitigation measures

The applicant has advised that a PTA Bus Terminus is required to replace the existing bus terminus at the Mersey Point car park which is causing a number of safety issues associated with sight distance due to parked buses (City of Rockingham 2020).

Alternative locations within the existing road network were considered as part of the development process, however, these were considered unsuitable due to road safety concerns. Accommodating a bus terminus within the existing car park was not supported by the PTA, with the PTA requiring a separated facility for effective operation due to the over utilisation of the existing patrons accessing Penguin Island. Placing the terminus to the south end of the car park would place it on a blind corner and not improve line of site for bus drivers exiting the terminus (City of Rockingham 2021).

Additional access for the current bus port cannot be placed anywhere there is not native vegetation present. Other portions of the foreshore vegetation zone support significant ecological communities including to the south of the application area, and at Point Peron to the north (Natural Areas 2021). Vegetation over the application area has been assessed as Degraded to Good (Keighery 1994), with the majority in a Degraded condition due to the presence of invasive weed species (DWER 2020). Vegetation condition north and south of the application area is generally in better condition than that of the application area itself (Natural Areas 2021), and the scale of clearing has been scaled back to reduce the impact on existing vegetation (City of Rockingham 2021).

The PTA has provided support to the City of Rockingham's proposal to enable the construction of a bus terminus at Mersey Point (City of Rockingham 2020).

After consideration of avoidance and mitigation measures, it was determined that an offset to counterbalance the significant residual impacts to 0.252 hectares of Bush Forever site 355 representing a significant remnant of native vegetation was necessary. In accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided is summarised in Section 4.

3.2 Assessment of environmental impacts

In assessing the application, the Delegated Officer has had regard for the site characteristics (Appendix A), and considered the extent to which the impacts of the proposed clearing present a risk to environmental values, and whether these can be managed. The assessment against the clearing principles is contained in Appendix B.

The assessment identified that the impacts of the proposed clearing may present a risk to flora and fauna habitat, vegetation considered significant as a remnant, a conservation area, and land resources. 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 Biological values (flora and vegetation) – Clearing Principles (a) to (d)

Assessment: A total of 26 flora species were recorded over the application area and surrounding areas by Natural Areas (2021) of which 14 were introduced species and 12 were native species.

No Threatened flora taxa have been recorded within ten kilometres of the application area (the local area) and none would be expected to occur within the proposed clearing area (DWER 2020).

Seven Priority (P) flora have been recorded in the local area, with the closest being two records of *Dodonaea hackettiana* (P4) recorded approximately 2.9 kilometres to the north. The descriptor for this record is Woodman Point Nature Reserve, Coogee much further north (over 19 kilometres), and the location data may be in error. *Dodonaea hackettiana* is found in association with outcropping limestone which does not occur over the application area (DWER 2020) and is unlikely to occur. *Sphaerolobium calcicola* (P3) has been recorded once in the local area approximately 4.7 kilometres east of the application area at Lake Walyunup. This species occurs in winter-wet flats, interdunal swamps, and low-lying areas; habitats not present over the application area and is also unlikely to occur.

Of the seven Priority flora taxa recorded in the local area *Calandrinia oraria* (P3) is found in analogous habitat and soil types (Appendix A2). This species is distributed from Green Head to Mandurah, occurring in low coastal heath (or forbland) on small white sand dunes immediately adjacent to the beach and up to 150 metres inland. At several sites it occurs over rocky limestone (Obbens 2014) not present over the application area. *Calandrinia oraria* has been recorded 9.1 kilometres to the south at Port Kennedy Scientific Park. This species was not recorded by DWER (2020) or Natural Areas (2021).

None of the Priority flora taxa recorded from the local area were recorded by DWER (2020) or Natural Areas (2021). Priority flora are unlikely to occur due to habitat and soil discrepancies, vegetation condition and in particular the dominance of invasive species comprising the majority of understorey vegetation (DWER 2020).

Four Threatened Ecological Communities (TECs) endorsed by the Western Australian Minister for Environment have been mapped within 10 kilometres of the application area. Vegetation over the application area does not align, nor is likely to be representative of any of these TECs and none were recorded by DWER (2020) or Natural Areas (2021) (Appendix A2).

Five Priority Ecological Communities (PECs) listed by DBCA (2020) have been mapped within 10 kilometres of the application area. Vegetation over the application area does not align, nor is likely to be representative of any of these PECs (Appendix A2). A further two PECs that occur within coastal vegetation communities have not been mapped within the local area but due to the coastal location, vegetation structure, and soil type have the possibility of occurring; Coastal shrublands on shallow sands (SCP29a), and Acacia shrublands on taller dunes (SCP29a). However, no PECs were recorded by DWER (2020) or Natural Areas (2021) (Appendix A2).

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. However, there is potential that the proposed clearing activities could result in the introduction or spread of weeds and dieback *(Phytophthora* spp) into adjacent vegetation, which could impact on its habitat quality and connectivity.

Conclusion: For the reasons set out above, and the avoidance and mitigation measures provided by the City of Rockingham (Section 3.1), it is considered that the potential impacts of the proposed clearing on biological values can be managed by taking steps to minimise the risk of the introduction and spread of weeds and dieback.

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

- Implement weed and dieback management measures to mitigate impacts to adjacent vegetation.

3.2.2 Biological values (fauna) – Clearing Principle (b)

Assessment: According to available databases, two mammals, three reptiles, 24 birds, and three invertebrates of conservation significance have been recorded within ten kilometres of the application area (Appendix A2). 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. Due to the proximity of the Indian Ocean many marine species were identified in data-base results. Marine species such as sharks and whales were excluded from results.

Of the 24 birds of conservation significance recorded, seven are shorebirds and migratory wading species protected under International Agreements including Priority and Threatened species (particularly the Families: Scolopacidae, Charadriidae, and Glareolidae) (DBCA 2007-). Shoreline habitat occurs within thirty metres west of the application

area but not within the Acacia shrubland vegetation within the application area itself. Similarly, no wetland habitat is present to support waterfowl such as the Blue-Billed Duck (*Oxyura australis)* (P4).

Nine sea birds protected under International Agreements including Priority and Threatened species have been recorded within the local area. The jagged limestone islands and outcrops of Shoalwater Bay are an important seabird breeding site for little penguins, pelicans, seagulls, silver gulls and terns. Of the sea birds identified, the albatrosses, skuas and petrels are unlikely to utilise the habitats, or adjacent habitats, of the application area. Of the terns, the Caspian Tern *(Hydroprogne caspia)* and Crested Tern *(Thalasseus bergii)* breed predominantly on islands (CALM 1992). The Bridled Tern (*Onychoprion anaethetus)* migrates to the area during summer with up to 1,000 pairs on the nearby Penguin Island and Roseate Tern (*Sterna dougallii)* are known to breed on Second Rock and unnamed rock off Point Peron (DEC 2007). Several tern species including Crested Terns and Caspian Terns are also known to roost and breed at the Tern Island Nature Reserve approximately one kilometre to the south east of the application area.

Seabirds, shorebirds and migratory wading species may utilise the shoreline to the west of the application area but none are likely to roost or breed there and none are likely to utilise the application area itself. These species, as well as the migratory Fork-tailed Swift *(Apus pacificus)* and Peregrine Falcon *(Falco peregrinus)* (other specially protected fauna) may overfly the application area without utilising any of the habitats present.

Three species of Threatened black cockatoo have been recorded in the local area. However, there are no trees that could be utilised for breeding and roosting habitat and the vegetation species present do not provide a quality foraging resource ((Bamford, (2013); DWaW (2013); DSEWPAC (2012); EPA (2019); Johnstone *et al.,* (2011); Shah (2006) Valentine and Stock (2008)).

Of the three reptiles of conservation significance recorded in the local area, the Black-striped Burrowing Snake (*Neelaps calonotos*) (P3) has been recorded within 2.5 kilometres of the application area. This fossorial (burrowing) species has a limited distribution on the Swan Coastal Plain inhabiting areas with sandy soils that support heathlands and/or *Banksia* and *Eucalypt* Woodlands (Storr *et al*. 1999; WAM 2017). Due to its cryptic burrowing habit, this species is rarely observed and due to the sandy habitat present and the record from the local area, the Black-striped Burrowing Snake possibly occurs over the application area.

Similarly the Perth Slider (*Lerista lineata*) (P3) is another rarely-observed fossorial reptile (a skink) that has been recorded within the local area. This species is largely restricted to the Swan Coastal Plain where its distribution is centred on the highly disturbed southern Perth metropolitan area (Maryan, *et al.* 2015). Habitat includes pale sands on coastal and low fixed dunes, supporting heathlands and shrublands, providing a well-developed patchy litter ground cover (Maryan, *et al.* 2015). Due to the soil type and vegetation present, and the record from the local area, the Perth Slider possibly occurs over the application area.

The Jewelled Southwest Ctenotus (Swan Coastal Plain) (*Ctenotus gemmula)* (P3) is a skink that has been recorded approximately 9.9 kilometres distant. This species is largely restricted to Banksia and/or Eucalyptus communities (Wilson and Swan 2017) and is unlikely to occur due to the separation distance to records and a lack of habitat.

In regard to the two mammals of conservation significance recorded within the local area, there is no woodland present to support a population of the 'conservation dependant' Brush-tailed Phascogale (South-West) (*Phascogale tapoatafa wambenger).* However, over 300 records of the Quenda *(Isoodon fusciventer)* (P4) have been made in the local area, including several relatively recent records within two kilometres of the application area (DBCA 2007-). 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.

Three invertebrates of conservation significance have also been recorded within ten kilometres of the application area. One is a freshwater mussel that would not occur due to a lack of freshwater habitat. Burrows of the Shield-backed Trapdoor Spider (SCP) *(Idiosoma sigillatum)* (P3) typically occur in Banksia woodland on sandy soils (Rix *et al.* 2018), utilising specific leaf litter to build their burrows and attract prey (DSEWPAC 2013; Rix *et al.* 2018). Preferred habitat for this species is not present over the application area.

The Graceful Sunmoth *(Synemon gratiosa)* (P4) is a diurnal flying sunmoth that occurs in open herbland, heathland and shrubland on sand and limestone close to the coast where it is known to breed on two species of mat-rushes; *Lomandra maritima* and *Lomandra hermaphrodita* (DEC 2011). No Lomandra species were identified by DWER (2020), and due to the dominance of invasive species comprising the majority of understorey vegetation, the species is unlikely to occur.

The application area provides habitat for the Quenda (P4), and possibly the Perth Slider (P3) and the Black-striped Burrowing Snake (P3). The proposed clearing of 0.254 hectares will further reduce available habitat for fauna species and isolate an additional 0.22 hectares Bush Forever Site 355 between the proposed parking area and Arcadia Drive. This has the potential to hinder ecological connectivity and faunal movements and impact dispersal and genetic vigour (Schlaepfer *et al.* 2018). Proposed clearing activities could also result in the introduction or spread of weeds and dieback into adjacent vegetation, which could impact on its habitat quality and connectivity.

Outcome: For the reasons set out above, and the avoidance and mitigation measures provided by the City of Rockingham (Section 3.1), it is considered that the potential impacts of the proposed clearing on fauna and fauna habitat can be managed by taking steps to ensure that the impact of clearing on any individuals present is minimised, the proposed fencing does not impede fauna movements and the risk of introduction and spread of weeds and dieback into adjacent fauna habitat is minimised.

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

- Implement slow and directional clearing to allow any fauna present to move into adjacent vegetation ahead of the clearing activity
- Install fencing that allows for the movement of fauna by being raised at least 15 centimetres from the ground.
- Implement weed and dieback management measures to mitigate impacts to adjacent vegetation and fauna habitat.

3.2.3 Environmental value: Significant remnant and conservation areas – Clearing Principles (e) and (h)

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

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

The Quindalup Complex (SCP 55) of Heddle *et al*. (1980) as updated by Webb *et al*. (2016) has been mapped over the application area. This is a coastal dune complex that includes 'closed scrub of summer-scented wattle *(Acacia rostellifera)'*. A site visit by DWER (2020) described the vegetation present as a shrubland of *Acacia rostellifera* which aligns with the Quindalup complex (SCP 55) in a Degraded to Good condition (Keighery 1994). The Quindalup complex retains approximately 33,012 hectares, or 60.5 per cent, of its pre-European distribution. At the local scale of a ten kilometre radius of the application area, approximately 36.4 per cent of native vegetation has been retained (Appendix A3) (Government of Western Australia 2019b).

In assessing the risk of further loss and subsequent cumulative effects, consideration has been given to the extent of native currently managed for conservation purposes. The Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region as a constrained area, which provides for the reduction of vegetation complexes to a minimum of 10 per cent of their pre-European extent (EPA 2008). Bush Forever is a strategic plan that proposes to protect at least 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 20 per cent for the Quindalup vegetation complex (Government of Western Australia 2000a).

Bush Forever Site 355 (Point Peron and adjacent bushland, Peron/Shoalwater Bay) forms a significant component of the local vegetation retained within the local area, with the application area situated within over 100 hectares of coastal vegetation (Government of Western Australia, 2000b). DBCA managed lands in the vicinity include the Shoalwater Islands Marine Park approximately 50 metres to the west (including Shoalwater Bay Islands Nature Reserve and Penguin Island Conservation Park), Tern Island Nature Reserve approximately 660 metres to the south and east, and Rockingham Lakes Regional Park 1.7 kilometres to the north.

Linear strips of native vegetation are routinely retained as traditional ecological corridors, with larger patches of remnant vegetation such as Rockingham Lakes Regional Park being important for providing core habitat areas necessary to support species that cannot persist in smaller areas (Davis 2009; Hopper 1979; Hopper *et al.* 1996; Main 1996; Reside *et al*. 2013). The application area forms part of approximately seven kilometres of largely contiguous native vegetation along the foreshore providing an ecological linkage from Rockingham Lakes Regional Park to reserves such as Tern Island Nature Reserve to the south.

Native vegetation retention rates within the local area are above Government targets (EPA 2008; Commonwealth of Australia 2001). However, the application area is within a Bush Forever site and part of a vegetated ecological linkage. On this basis it is considered significant as a remnant. Only 10.98 per cent of the Quindalup vegetation complex is protected within lands secured for conservation purposes, with just 4.6 per cent protected within the Perth Metropolitan Region (Government of Western Australia 2019b), that has a target of 20 per cent (Government of Western Australia 2000a).

The proposed clearing of 0.254 hectares of native vegetation is likely to impact a significant remnant, the environmental values of a conservation area (Bush Forever Site 355), and isolate an additional 0.22 hectares of native vegetation between the proposed parking area and Arcadia Drive with the potential to hinder ecological connectivity. There is potential that the proposed clearing activities could result in the introduction or spread of weeds and dieback into adjacent vegetation, which could impact on its habitat quality and connectivity.

Conclusion: Based on the above assessment, the proposed clearing will result in the loss of 0.252 hectares of Bush Forever site 355 that is also considered a significant remnant of native vegetation and the risk of introduction and spread of weeds and dieback into adjacent native vegetation.

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

- Provision of an offset (Section 4) for the significant residual impacts to Bush Forever site 355 that is also considered a significant remnant of native vegetation.
- Implement weed and dieback management measures to mitigate impacts to adjacent vegetation.

3.2.4 Environmental value: Land resources – Clearing Principle (g)

The unconsolidated and permeable sands of the calcareous white sands associated with the Quindalup System over the application area are prone to wind erosion (DPIRD 2017) and to a lesser extent a medium risk of water erosion and Phosphorus export (Appendix A1).

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 (City of Rockingham 2020). Any potential impacts to surrounding landscapes, soils, or drainage systems can also be managed through appropriate design with exposed surfaces managed post-clearing including the sealed carpark (City of Rockingham 2020). However, the unconsolidated sands of the Quindalup sands over the application area are prone to wind erosion and there is the risk of impacts to the surrounding native vegetation.

Outcome: For the reasons set out above, and the avoidance and mitigation measures provided by the City of Rockingham (Section 3.1), it is considered that the potential impacts of the proposed clearing on land and water resources can be managed by the implementation of staged clearing and the management of wind erosion.

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

- A staged clearing and wind erosion management condition to mitigate impacts of the proposed clearing on adjacent vegetation.

3.3 Relevant planning instruments and other matters

The application was advertised on the DWER website for a 21 day public comment period on 24 August 2020. No public submissions were received in relation to this application.

The application area is located within Bush Forever site 355 (Point Peron and adjacent bushland, Peron/Shoalwater). The Bush Forever implementation category is Bush Forever reserves (existing or proposed).

The City of Rockingham is the public authority that manages the application area. Lot 24 on Deposited Plan 243261 is a Class A Crown Reserve (R 22948) under management order (M471421) to the City of Rockingham from the Department of Planning, Lands and Heritage (DPLH) for the purpose of Recreation, with power to lease for any term not exceeding 21 years, subject to the consent of the Minister for Lands. Crown Reserve (R 22948) is zoned Parks and Recreation under the Metropolitan Region Scheme (MRS) and Town Planning Scheme (TPS) No. 2. Given the Parks and Reserves zoning category, the bus terminus is consistent with the overall purpose and intent of the reserve (DPLH 2020). A minor portion of the application area (17m²) intersects Arcadia Road reserve (PIN 11425501), zoned as a Local Road under TPS No. 2, and also managed by the City of Rockingham.

The Public Transport Authority (PTA) has provided a letter to the City of Rockingham in support of the City's application for a native vegetation clearing permit to enable the construction of a bus terminus at Mersey Point (Crown Reserve 22948) (City of Rockingham 2020).

State Planning Policy 2.8 *Bushland Policy for the Perth Metropolitan Region* sets out that proposals and decision-making in respect of Bush Forever areas should support a general presumption against the clearing of regionally significant bushland or other degrading activities, except where a proposal or decision is consistent with the overall purpose and intent of the existing Crown reserve, or can be reasonably justified with regard to wider environmental, social, economic or recreational needs (clause 5.1.2.1(i)(e)). The Policy also sets out that unavoidable adverse impacts on regionally significant bushland within a Bush Forever area should be offset at a ratio of at least 1:1 in habitat hectares.

In regard to State Planning Policy 2.8 – *Bushland Policy for the Perth Metropolitan Region* (SPP 2.8) DPLH advised DWER on 4 September 2020 that the proposed clearing is consistent with the overall purpose and intent of the reserve. Land Use Policy has no objections to the proposal, or the proposed clearing provided offsets are secured. An offset package should be prepared and approved by DWER prior to the clearing of any native vegetation, in accordance with the WA Environmental Offsets Policy (2011) and Appendix 4 of SPP 2.8 (DPLH 2020).

In addition, DPLH recommend that no additional disturbance or clearing within Bush Forever site 355 should occur, no rubbish or any other deleterious matter is to be deposited in the Bush Forever area, and uniform fencing that is compatible with the natural environment should be provided around the bus terminus development to stop parking and pedestrian traffic accessing the beach and/or road through Bush Forever site 355 (DPLH 2020).

The application area is located within the Rockingham Groundwater Area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The application area is located well outside of any RIWI Act surface water and irrigation districts, or any *Country Areas Water Supply Act* (CAWS Act) control catchments or reserves, or any Public Drinking Water Source Areas.

The application area is located within the boundaries of the Gnaala Karla Booja Indigenous Land Use Agreement (WI2015/005 - 11/09/2018). No registered Aboriginal sites of significance have been mapped within the application area, however several occur within the local area including Mersey Point Burial site (Place ID 22891) approximately 185 metres to the south, and Lake Richmond (Place ID 15974) approximately 1.58 kilometres to the north-west. Given the separation distance, the proposed clearing is unlikely to impact on these sites, however, 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 Offset

Through the detailed assessment outlined in Section 3.2, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- The loss of 0.252 hectares of Bush Forever site 355; and
- the loss of 0.252 hectares of a significant remnant of native vegetation.

The DPLH has advised that in regard to State Planning Policy 2.8 – *Bushland Policy for the Perth Metropolitan Region* (SPP 2.8), Land Use Policy has no objections to the proposal, or the proposed clearing, provided offsets are secured, and that an offset package should be prepared in accordance with the WA Environmental Offsets Policy (2011) and Appendix 4 of SPP 2.8 (Section 3.3).

The applicant has submitted an offset proposal consistent with the WA Environmental Offsets Policy (2011) (City of Rockingham 2021), and a revegetation plan consistent with DWER's guide to preparing revegetation plans for clearing permits under Part V of the EP Act (DWER 2018) (Natural Areas 2021).

Natural Areas (2021) undertook a detailed flora and vegetation assessment and basic fauna survey over the application area as well as proposed offset sites as the basis to an offset revegetation plan. The flora and vegetation survey was carried out in accordance with EPA Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016). Survey outcomes are presented in the plan and were used to guide revegetation methodology, maintenance and monitoring methods.

The offset revegetation plan:

- describes the offset sites, including location and description of key characteristics;
- outlines management aims and objectives for each offset site;
- describes rehabilitation activities, rationale, and methodology for each offset site;
- provides success criteria, monitoring and reporting requirements for each offset site;
- describes contingency plans if success criteria are not met for each offset site;
- outlines weed and pest control activities for the offset sites;
- provides an indicative implementation schedule for each offset site; and
- provides indicative costings for each offset site.

The offset consists of five areas totalling 0.326 hectares within Bush Forever site 355 (Point Peron and adjacent bushland, Peron/Shoalwater) (Figure 2). Offset sites will be revegetated from Completely Degraded or Degraded condition to Good or better condition in consideration of the vegetation condition scale of Keighery (1994) (Appendix C). Offset sites were chosen to be placed in close proximity within Bush Forever site 355, but in poorer condition than the application area (Natural Areas 2021).

Many of the coastal species are readily propagated and grown from seed, and can be restored across other portions of the foreshore. Current vegetation within offset sites lack understorey species, and contain limited numbers of common shrub species that would otherwise be common to the vegetation type. The offset revegetation plan takes into account missing understorey species, with species included in the plan present in other nearby areas of the Bush Forever Site, or known species that should occur in the vegetation type present. Weed control and revegetation in offset areas will improve the condition of the Bush Forever site overall and enhance biodiversity of the area.

The northern Offset Site 4 (Figure 2) is considered to once have been a Tuart Woodland with Tuart trees in close proximity. The Offset Revegetation Plan includes Tuart (*Eucalyptus gomphocephala)* which, once established, will restore this area to a Tuart Woodland (Natural Areas 2021). The objectives of the Offset plan are to:

- restore the sites to self-sustaining ecosystems that extend into the existing areas of vegetation;
- restore understorey cover and increase species diversity; and
- remove competition on native flora due to presence of invasive species.

Completion criteria are considered to be successful by year five and include:

- at least one plant per square metre;
- at least 70 per cent survival rates of tube stock;
- at least 90 per cent of species in the planting lists;
- a maximum of 5 per cent weed coverage in all offset sites; and
- vegetation condition Good or better.

Fencing is currently separating pathways and infrastructure from native vegetation along the Shoalwater Beach dune system. Much of this fencing creates a barrier between offset sites and human activity. Existing fencing will require replacement with new fencing along the new boundary separating remnant vegetation from Offset Site 1 (Figure 2). Additional fencing will be required at offset sites 3 and 4. Conservation style fencing will be installed that allows for the movement of fauna by being raised at least 15 centimetres from the ground.

Monitoring of revegetation will occur twice annually during autumn and spring and include:

- setting up 10 photo monitoring points (two in each offset site), with photos taken from the same direction;
- establishing one quadrat within each offset site (with two in Offset Site 1) with plant/species survival, vegetation health and community structure recorded; and
- reporting the outcomes of biannual monitoring events including any recommendations for infill planting and maintenance actions (Natural Areas 2021).

Monitoring of the revegetation works will guide any additional infill planting or weed control works needed to ensure completion criteria are met.

The Delegated Officer considers that the offset provided by the applicant (City of Rockingham 2021 and Natural Areas 2021) adequately counterbalances the significant residual impact identified and is consistent with the WA Environmental Offsets Policy (2011) and State Planning Policy 2.8. The justification for the values used in the offset calculation is provided in Appendix F.

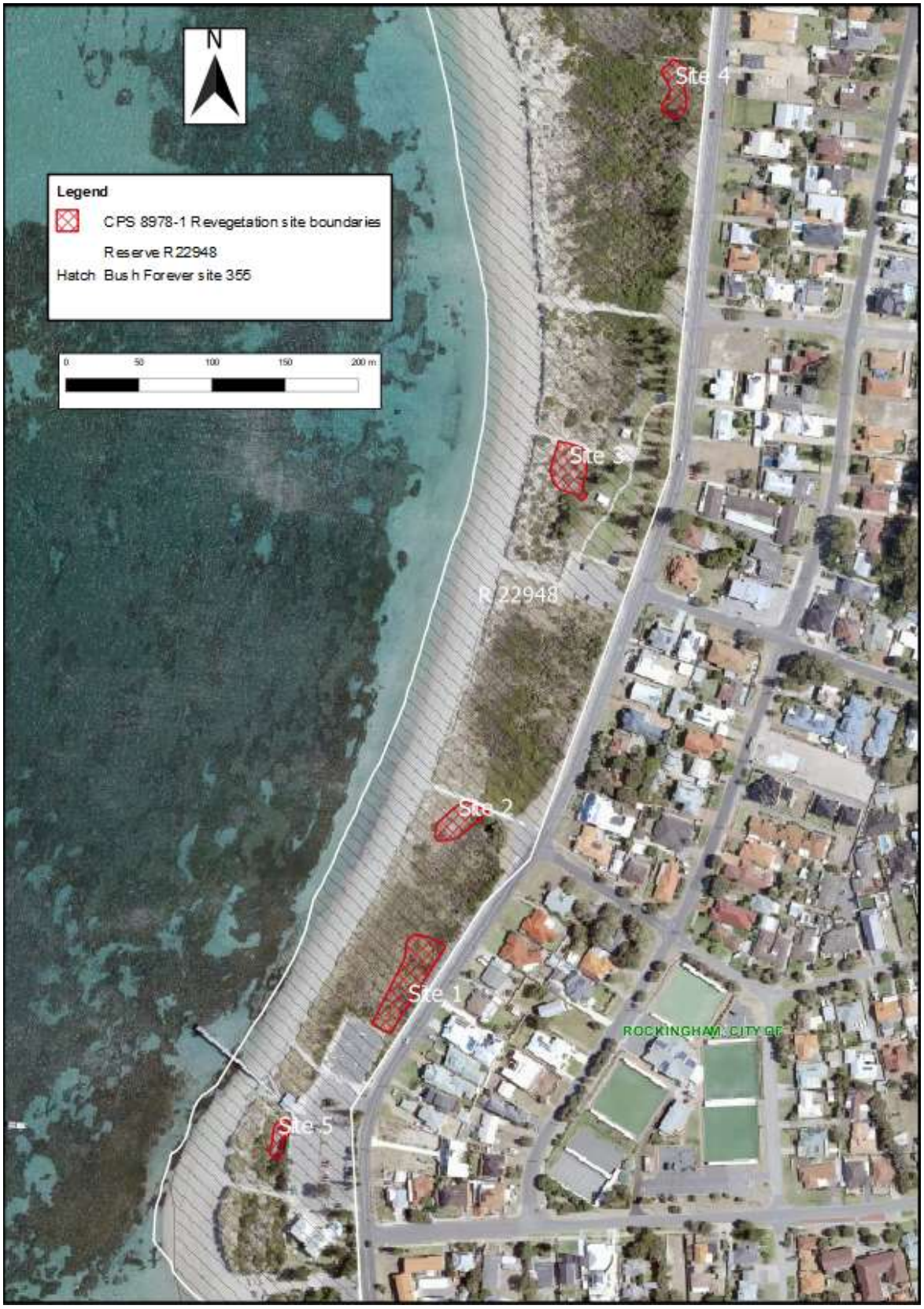

Figure 2: Offset areas locations

Appendix A – Site characteristics

The information below are the findings of a desktop assessment based on the best information available to the Department of Water and Environment Regulation (DWER) at the time of this assessment, and described the key characteristics of the application area. This information was used to inform the assessment of the clearing against the clearing principles (Appendix B).

1) Site characteristics

Site characteristic	Details
Local context	The application area is located within the Swan Coastal Plain (SWA) Bioregion of Thackway and Cresswell (1995). Proposed clearing is within a Bush Forever site (site 355) that occurs within a broader coastal remnant of vegetation that has a part in maintaining connectivity between remnants in the local area. The local area considered in the assessment of this application is defined as a 10 kilometre radius from the perimeter of the application area, that retains approximately 36.4 per cent of native vegetation cover.
Vegetation description	Heddle *et al,* (1980) as updated by Webb *et al.* (2016) have mapped the area as: • Quindalup Complex (SCP 55) described as a coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of Rottnest teatree *(Melaleuca lanceolata*) - Rottnest Island pine (*Callitris preissii*), and the closed scrub of summer-scented wattle (*Acacia rostellifera*). A site visit by DWER (2020) and survey by Natural Areas (2021) described the vegetation within the application as: • *Acacia rostellifera* Shrubland over a dense middle story of *Rhagodia baccata* and **Tetragonia decumbens,* with an understory dominated by the weed species primarily Wimmera Ryegrass (**Lolium rigidum*) and Great Brome (**Bromus diandrus*).
Vegetation condition	Vegetation condition was determined from the findings of a site visit by DWER (2020) and a flora and vegetation survey by Natural Areas (2021). The application area was assessed to be in a Degraded to Good condition based on the condition scale of Keighery (1994) (Appendix C). There is a noticeable degeneration in the *Acacia rostellifera* stands over the application area. Degeneration may be natura,l noting that in dune areas wattle is relatively short lived (DWER 2020).
Soil description	Soils over the application area are the deep calcareous white sands associated with the Quindalup System (211Qu) (Phase 1 and Phase 2). The majority of the application area is mapped as: • Quindalup South Qf1 Phase (211Qu_Qf1): Foredune/blowout complexes (semi-erosional) with very low relief ridge and swale topography with deep uniform calcareous sands. The minor of the application area in the eastern section is mapped as: • Quindalup South Qf2 Phase (211Qu_Qf2): Relict foredunes and gently undulating beach ridge plain with deep uniform calcareous sands.

<table>
<tr><th>Site characteristic</th><th>Details</th></tr>
<tr><td>Land degradation risk</td><td>Mapped land degradation risk factors
<table>
<tr><th rowspan="2">Risk categories</th><th colspan="2">Majority (West)</th><th colspan="2">Minority (East)</th></tr>
<tr><td colspan="2">211Qu_Qf1</td><td colspan="2">211Qu_Qf2</td></tr>
<tr><td>Wind erosion</td><td>High</td><td>H2</td><td>Medium</td><td>M2</td></tr>
<tr><td>Water erosion</td><td>Medium</td><td>M2</td><td>Low</td><td>L1</td></tr>
<tr><td>Salinity</td><td>Low</td><td>L1</td><td>Low</td><td>L1</td></tr>
<tr><td>Subsurface acidification</td><td>Low</td><td>L1</td><td>Low</td><td>L1</td></tr>
<tr><td>Flood risk</td><td>Low</td><td>L1</td><td>Low</td><td>L1</td></tr>
<tr><td>Waterlogging</td><td>Low</td><td>L1</td><td>Low</td><td>L1</td></tr>
<tr><td>Phosphorus export</td><td>Medium</td><td>M2</td><td>Low</td><td>L1</td></tr>
<tr><td>Acid Sulfate Soil Risk</td><td>No</td><td></td><td>No</td><td></td></tr>
</table></td></tr>
<tr><td>Waterbodies</td><td>The application area is located within the broader Becher consanguineous wetland suite.
The Becher Point Wetlands themselves, listed as a Ramsar site and within the Directory of Important Wetlands, occur 7.7 kilometres to the south of the application area.
Twenty-three mapped lakes, wetlands, watercourses, and the coastline occur within the local area. Those within two kilometres of the application area are outlined below (in order of proximity).
Apart from the coastal waterline, there are no wetlands or watercourses within the vicinity of the application area.
<table>
<tr><th>Type of inland water</th><th>Description</th><th>Proximity (m)</th></tr>
<tr><td>Rivers</td><td>Coastal Waterline</td><td>18</td></tr>
<tr><td>WA Coastline Water Mark</td><td>-</td><td>36</td></tr>
<tr><td>Geomorphic Wetlands (Classification) Swan Coastal Plain</td><td>Multiple Use - Sumpland</td><td>1,418</td></tr>
<tr><td>Geomorphic Wetlands (Classification) Swan Coastal Plain</td><td>Multiple Use – Not Assessed</td><td>1,658</td></tr>
<tr><td>Geomorphic Wetlands (Classification) Swan Coastal Plain</td><td>Conservation - Not Assessed</td><td>1,735</td></tr>
<tr><td>Geodata / Hydrography, Lakes (medium scale 250k GA)</td><td>Lake</td><td>1,762</td></tr>
<tr><td>Rivers</td><td>Major Trib – Lake Richmond</td><td>1,794</td></tr>
<tr><td>Rivers</td><td>Major Trib</td><td>1,800</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Site characteristic</th><th>Details</th></tr>
<tr><td>Conservation areas</td><td>The application area is located within Bush Forever site 355 and an Environmentally Sensitive Area (ESA). Within the local area there are an additional:
7 Bush Forever sites;
2 Bush Forever (Nominated Area) sites; and
13 sites managed by the Department of Biodiversity, Conservation and Attractions (DBCA)
Bush Forever site 355 (Point Peron and adjacent bushland) links to Bush Forever site 358 (Lake Richmond), approximately 1,700 metres to the north. The Shoalwater Islands Marine Park is located in the marine environment 51 metres to the west.

<table>
<tr><th>Theme</th><th>Description</th><th>Proximity (m)</th><th>Number in local area</th></tr>
<tr><td>Bush Forever Site</td><td>355 (Point Peron and adjacent bushland)</td><td>0</td><td>1</td></tr>
<tr><td>DBCA Managed Lands</td><td>Shoalwater Islands Marine Park Marine Parks and Reserves Authority</td><td>51</td><td>1</td></tr>
<tr><td>DBCA Managed Lands</td><td>Conservation Commission of WA</td><td>659</td><td>4</td></tr>
<tr><td>DBCA Managed Lands</td><td>Penguin Island Conservation Park Conservation Commission of WA WPL 21 Years Ministers Consent Required</td><td>783</td><td>1</td></tr>
<tr><td>Bush Forever Site</td><td>367 (Penguin, Seal, Bird, Gull Islands and Shag Rock)</td><td>786</td><td>1</td></tr>
<tr><td>DER/DPaW Managed Lands</td><td>Shoalwater Bay Islands Nature Reserve Conservation Commission Of WA</td><td>1,186</td><td>34</td></tr>
<tr><td>Bush Forever Site</td><td>358 (Lake Richmond)</td><td>1,708</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>Climate and landform</td><td>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 793 millimetres (BOM 2020).
The application area is located in the Quindalup Dune System (South) of the coastal dunes on the Swan Coastal Plain, with calcareous deep sands and yellow sands supporting coastal scrub.
The application area is on the coastal strip with topography at approximately 0 to 10 metres above sea level (DPIRD 2017).</td></tr>
<tr><td>Hydrology and hydrogeology</td><td>The application area is within the ‘Coastal Plain’ hydrological zone, and the ‘Coastal’ hydrographic catchment.
The application area is located within the mapped Rockingham Groundwater Area proclaimed under the RIWI Act.
The application area is not located in a CAWS Act clearing control catchment, or a public drinking water source area.
Groundwater salinity is mapped as 500 to 1,000 mg/l TDS(that is, ‘fresh’)
Flood risk mapped as low (L1), but high (H2) 14 metres to the west of the application area</td></tr>
</table>

2) Ecosystem, flora and fauna analysis

2a) Ecological Communities

Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs) mapped in the local area are presented below. None of the known TECs align with the vegetation occurring over the application area, and no TECs or PECs were recorded by Natural Areas (2021).

ID	TEC - Common Name	WA Status	EPBC Status	Suitable soil type?	Suitable vegetation type?	Closest record (m)
SCP19b	Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain (original description; Gibson *et al*. (1994).	CR	EN	Yes	No	1,780
SCP19a	Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (floristic community type 19 as originally described in in Gibson *et al.* (1994))	CR	EN	Yes	No	1,740
Richmond-microbial	Stromatolite like microbialite community of coastal freshwater lakes (Lake Richmond)	CR	EN	No	No	1,820
SCP30a	*Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain (floristic community type 30a as originally described in Gibson *et al.* (1994))	VU		Yes	No	2,370

ID	PEC - Common Name	WA Status	EPBC Status	Suitable soil type?	Suitable vegetation type?	Closest record (m)
Walyungup Microbial	Microbial community of a coastal saline lake (Lake Walyungup)	P1		No	No	8,050
Coastal Saltmarsh	Subtropical and Temperate Coastal Saltmarsh	P3	VU	No	No	8,80
Banksia WL SCP	Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	P3	EN	No	No	9,240
Tuart woodlands	Tuart *(Eucalyptus gomphocephala)* woodlands and forests of the SCP	P3	CR	No	No	6,110
SCP24	Northern Spearwood shrublands and woodlands	P3		No	No	7,090

A further two PECs that occur within coastal vegetation communities have not been mapped within the local area but due to the coastal location, vegetation structure, and soil type have the possibility of occurring:

ID	Common Name	WA Status	EPBC Status	Suitable soil type?	Suitable vegetation type?	Closest record (m)
SCP29a	Coastal shrublands on shallow sands	P3		Yes	No	16,320
SCP29b	Acacia shrublands on taller dunes	P3		Yes	No	46,750

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

Taxon	Status	No of Records	Closest Record (~km)	Suitable vegetation type?	Suitable soil type?
Acacia sp. Binningup (G. Cockerton *et al.* WB 37784)	P1	1	7.1	No	No
Beyeria cinerea subsp. *cinerea*	P3	1	9.8	No	No
Calandrinia oraria	P3	1	9.1	Yes	Yes
Dodonaea hackettiana	P4	2	2.9	No	No
Jacksonia sericea	P4	3	7.3	No	No
Pimelea calcicola	P3	1	8.0	Yes	No
Sphaerolobium calcicola	P3	1	4.7	No	No

The above species were not recorded by DWER (2020) or Natural Areas (2021) and are unlikely to occur noting the dominance of invasive species comprising the majority of understorey vegetation (DWER 2020).

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

Common name	Scientific name	Status	No. of records	Closest Record (~km)	Suitable habitat
Birds					
Forest Red-Tailed Black Cockatoo	*Calyptorhynchus banksii naso*	VU	11	2.6	No
Baudin's Cockatoo	*Calyptorhynchus baudinii*	EN	1	5.1	No
Carnaby's Cockatoo	*Calyptorhynchus latirostris*	EN	68	2.1	No
Peregrine Falcon	*Falco peregrinus*	OS	2	2.4	Overfly application area
Blue-Billed Duck	*Oxyura australis*	P4	5	2.4	No
Eastern Curlew	*Numenius madagascariensis*	CR	8	8.0	No but shoreline within 30m
Curlew Sandpiper	*Calidris ferruginea*	CR	10	7.5	No but shoreline within 30m
Hooded Plover	*Thinornis rubricollis*	P4	3	7.7	No but shoreline within 30m
Common Sandpiper	*Actitis hypoleucos*	IA	1	2.4	No but shoreline within 30m
Ruddy Turnstone	*Arenaria interpres*	IA	5	3.7	No but shoreline within 30m
Sharp-tailed Sandpiper	*Calidris acuminata*	IA	4	7.9	No but shoreline within 30m
Sanderling	*Calidris alba*	IA	1	7.8	No but shoreline within 30m
Red-Necked Stint	*Calidris ruficollis*	IA	16	2.2	No but shoreline within 30m
Whimbrel	*Numenius phaeopus*	IA	1	4.3	No but shoreline within 30m
Common Greenshank	*Tringa nebularia*	IA	13	2.0	No but shoreline within 30m
Australian Lesser Noddy	*Anous tenuirostris melanops*	EN	1	5.6	No
Caspian Tern	*Hydroprogne caspia*	IA	1	1.3	Possible
Crested Tern	*Thalasseus bergii*	IA	18	0.4	Possible
Roseate Tern	*Sterna dougallii*	IA	1	4.2	Overfly application area
Bridled Tern	*Onychoprion anaethetus*	IA	1	3.9	Overfly application area
Grey-Headed Albatross	*Thalassarche chrysostoma*	VU	2	5.6	No
Southern Giant Petrel	*Macronectes giganteus*	IA	1	3.9	No
Northern Giant Petrel	*Macronectes halli*	IA	1	5.2	No
South Polar Skua	*Stercorarius maccormicki*	IA	1	2.5	No
Mammals					
Brush-tailed Phascogale (SW)	*Phascogale tapoatafa wambenger*	CD	1	3.6	No
Quenda	*Isoodon fusciventer*	P4	302	0.8	Yes
Reptiles					
Perth Slider	*Lerista lineata*	P3	12	3.9	Possible
Jewelled Southwest Ctenotus	*Ctenotus gemmula* (SCP)	P3	1	9.9	No
Black-Striped Snake	*Neelaps calonotos*	P3	4	2.5	Possible
Invertebrates					
Carter's Freshwater Mussel	*Westralunio carteri*	VU	1	6.9	No
Shield-Backed Trapdoor Spider (SCP)	*Idiosoma sigillatum*	P3	7	2.5	No
Graceful Sunmoth	*Synemon gratiosa*	P4	39	8.8	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 (55)	Quindalup Complex	54,574	33,012	60.5	5,995	10.98
SWA	Swan Coastal Plain	1,501,222	579,814	38.6	153,955	10.3

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

Remnant Vegetation	Hectares	~Remaining %
Total Area (10 km radius excluding open water)	10,413	(100 %)
Remnant vegetation remaining	3,794	36.4 %

Appendix B – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Principle (a): "*Native vegetation should not be cleared if it comprises a high level of biodiversity*." Assessment: The application area is unlikely to include Threatened or Priority flora, TECs or PECs, and is unlikely to comprise significant habitat for indigenous fauna. The application area is unlikely to comprise a high level of biodiversity.	Not likely to be at variance	Yes Sections 3.2.1 and 3.2.2
Principle (b): "*Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna*." Assessment: The vegetation proposed to be cleared does not comprise significant habitat for threatened fauna. Noting the extent of the proposed clearing and its location within a broader remnant, the application area is unlikely to be significant for the survival of indigenous fauna (including conservation-significant species). However, fauna may utilise the application area in traversing the landscape.	May be at variance	Yes Section 3.2.2
Principle (c): "*Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora*." Assessment: No Threatened flora have been recorded within 10 kilometres of the application area and none are likely to occur. The application area is unlikely to include or be necessary for the continued existence of threatened flora.	Not at variance	Yes Section 3.2.1
Principle (d): "*Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community*." Assessment: Four TECs endorsed by the Western Australian Minister for Environment have been mapped within 10 kilometres of the application area. Vegetation over the application area does not align, or is likely to be representative of, any of these TECs. Noting the composition and condition of the vegetation over the application area, the vegetation present does not comprise the whole or a part of any TEC endorsed by the Western Australian Minister for Environment, nor is it necessary for the maintenance of any such TEC.	Not at variance	No
Principle (e): "*Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared*." Assessment: The application area is located within Bush Forever site 355 and forms part of a coastal remnant, with the northern component of Bush Forever site 355 forming a significant part of Rockingham Lakes Regional Park. Furthermore, Bush Forever site 355 forms an ecological connection with Bush Forever site 358 (Lake Richmond) inland to the east. The application area is a component of a significant remnant of coastal vegetation.	At variance	Yes Section 3.2.3
Principle (f): "*Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland*." Assessment: The application area is approximately 18 metres from the coastal shoreline and 36 metres from the Western Australian Coastline Water Mark. No watercourses or wetlands occur within the application area, or within the vicinity of the application area. The vegetation proposed to be cleared is a shrubland growing in association with a dunal system and is not growing in, or in association with, an environment associated with a watercourse or wetland.	Not at variance	No
Principle (g): "*Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation*."	May be at variance	Yes Section 3.2.4

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Assessment: The primary land degradation risk associated with the soil type mapped within the application area is a high risk of wind erosion, and to a lesser extent medium risk of water erosion. Standard design features and construction management strategies will help mitigate potential land degradation risks, and cleared areas will be progressively replaced with a hard road surface with controlled drainage.		
Principle (h): "*Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area*." Assessment: The entire application area is located within Bush Forever site 355 (Point Peron and adjacent bushland, Peron/Shoalwater Bay) that forms an ecological linkage of coastal vegetation north to the Rockingham Lakes Regional Park and east Tern Island Nature Reserve. Proposed clearing is likely to impact the environmental values of a conservation area.	At variance	Yes Section 3.2.4
Principle (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*." Assessment: The application area is approximately18 metres from the shoreline and 36 metres from the Western Australian Coastline Water Mark, however, no watercourses or wetlands occur within the application area, or within the vicinity of the application area. Groundwater is mapped at 500 to 1,000 Total Dissolved Solids (TDS) milligrams per litre (mg/L), that is, 'fresh' and the soils over the application area are unconsolidated, highly permeable, and conducive to infiltration. Soils will not be excavated at depth, and any impacts to surrounding landscapes, soils and drainage can be managed through appropriate design and proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.	Not likely to be at variance	No
Principle (j): "*Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding*." Assessment: The deep calcareous white sands associated with the Quindalup System occurring over the application area are unconsolidated, highly permeable, and conducive to infiltration and rated as a low flood risk. No floodplain areas occur within the local area. Proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.	Not likely to be at variance	No

Appendix C – 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 D – Photographs of the vegetation

Appendix D (1) Photographs provided by the applicant (City of Rockingham 2020)

Appendix D (2) Photographs taken during the site assessment of DWER (2020)

Fig 3: *Acacia rostellifera* with *Olearia axillaris* over *Scaevola crassifolia*

Fig 4: Feathers, potential silver gull, within understorey

Fig 5: Dominant **Tetragonia decumbens* groundcover

Fig 6: Stand of degenerating *Acacia rostellifera*

Fig 7: *Spinifex longifolius*

Fig 8: Understorey habitat for small terrestrial mammals and reptiles

Fig 9: Sprawling **Tetragonia decumbens* over degenerative Acacia rostellifera

Fig 10: Overview of entire application area facing south west from the north eastern corner

4.2 Survey Results – Mersey Point Bus Terminus Site

4.2.1 Flora

A total of 26 flora species from 16 families were recorded within the site. Of these, 14 were introduced species and 12 were native species. Examples of native flora species recorded are shown in Figure 3, with introduced species shown in Figure 4. A complete flora list is provided in Appendix 4.

4.2.2 Vegetation Type

One vegetation type was recorded within the proposed Mersey Point Site, namely *Acacia rostellifera* Shrubland. With no overstory vegetation, a dense middle story of *Acacia rostellifera*, *Rhagodia baccata* and *Tetragonia decumbens**, with an understory that consists of weedy grasses, primarily Wimmera Ryegrass (*Lolium rigidum*) and Great Brome (*Bromus diandrus*). Full species list and quadrat photos are provided in Appendix 6.

4.2.3 Threatened and Priority Ecological Communities

No threatened or priority ecological communities were recorded within the proposed Mersey Bus Terminus clearing area. The survey determined that no coastal freshwater lakes, *Banksia* species or *Eucalyptus gomphocephala* were present within the proposed clearing area and therefore their subsequent communities were not present.

The Department of Environment and Conservation Species and Community Branch (2011) provides a description of the key characteristics of the TEC, *Sedgelands of the Holocene dune swales of the southern Swan Coastal Plain*. Summarised as occurring in damplands or sumplands that are waterlogged throughout winter and retain high moisture in surface soil in summer, with the presence of typical and common native species including:

- *Acacia rostellifera*
- *Acacia saligna*
- *Xanthorrhoea preissii*
- *Baumea juncea*
- *Ficinia nodosa*
- *Lepidosperma gladiatum*
- *Poa porphyroclados.*

The vegetation and floristic survey did not identify this community or any other PEC or TEC within the proposed clearing area. Although the species *A. rostellifera* and *F. nodosa* (planted) were identified they are not considered to be within sedgeland vegetation type. Furthermore, the quadrat survey identified the area as having well-draining sand.

4.2.4 Vegetation Condition

The current vegetation condition is Good across the entire proposed clearing area, with no native overstory a dense native and weedy middle story of *Acacia rostellifera*, *Rhagodia baccata* and *Tetragonia decumbens** and a weedy understory of introduced grasses.

4.2.5 Fauna

A total of two fauna species were observed within the proposed clearing site, namely the Willie Wagtail (*Rhipidura leucophrys*) and Laughing Turtle Dove (*Spilopelia senegalensis*). These species are common throughout in the Perth Region and seem to thrive in urban and disturbed habitats.

Appendix F – Offset calculator value justification

Field Name	Description	Justification for value used (Revegetation)
IUCN Criteria	The IUCN criteria for the value being impacted	(Other) value assigned based on residual impact to Bush Forever Site 355 (Point Peron and adjacent bushland, Peron/Shoalwater Bay). Bush Forever Site do not have a IUCN criteria assigned.
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted or number of features/individuals impacted	(0.254) hectares has been assigned based on the proposed clearing resulting in the permanent loss of 0.254 hectares of Bush Forever Site 355 that is considered a significant remnant of native vegetation.
Quality of impacted area (habitat/community)	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.	A quality score of (3) has been assigned based on the vegetation within Bush Forever Site 355 being in predominantly Degraded to Good condition based upon the vegetation condition scale of Keighery (1994) as assessed by a site inspection by DWER (2020) and a flora and vegetation survey by Natural Areas (2021)
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	(20) years has been assigned based on the offset site being revegetated managed and protected. Twenty years is the maximum value associated with this field.
Time until ecological benefit (habitat /community) or Time horizon (features/ individuals)	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	(10) years has been assigned based on successful revegetated coastal vegetation producing fruiting and vegetative propagules.
Start area (habitat/community) or Start value (features/ individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	(0.30) hectares has been assigned based on the revegetation offset providing 100% of the offset requirement.
Start quality (habitat/ community)	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 start quality score of (2) has been assigned based on the offset vegetation condition being in predominantly Degraded condition based upon the condition scale of Keighery (1994) as assessed by Natural Areas (2021).

Field Name	Description	Justification for value used (Revegetation)
Future quality without offset (habitat/community) or Future value without offset (features/ individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	A future quality without offset score of (1) has been assigned based on the relevant offset area degrading without active management intervention.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	A future quality with offset score of (4) has been assigned based on the likelihood of the revegetated offset area attaining a vegetation condition ranking of Good or better based upon the condition scale of Keighery (1994) and the revegetation plan of Natural Areas (2021).
Risk of loss (%) without offset (habitat/community)	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 (20%) has been assigned due to the relevant offset sites currently being reserved as Parks and Recreation in the Metropolitan Region Scheme (MRS) with the Bush Forever implementation category of Bush Forever Reserves (existing or proposed).
Risk of loss (%) with offset (habitat/community)	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 offset of (10%) has been assigned based upon the risk reduction of a managed site that includes fencing, revegetating, weed control, pest control (rabbits) and monitoring and managed as a component of Bush Forever 355 as passive foreshore to be retained for conservation, and as vegetated areas to reduce foreshore erosion and maintain visual amenity (City of Rockingham 2021).
Confidence in result (%) – risk of loss (habitat/ community)	The capacity of measures to mitigate risk of loss of the proposed offset site	A confidence in result percentage of (90%) for the risk of loss has been assigned as there is a high level of confidence that management strategies presented in Natural Areas (2021) revegetation plan will mitigate the risk of loss.
Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	A confidence in result percentage of (90%) for the change in quality has been assigned as there is a high level of confidence that the proven coastal revegetation strategies presented in Natural Areas (2021) will result in providing increased vegetation condition to Good or better based upon the condition scale of Keighery (1994).
% of impact offset	% 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)	A percentage of impact offset of (100%) has been assigned based upon the revegetation of 0.3 hectares of coastal vegetation from Degraded to Good (based upon the condition scale of Keighery 1994) over ten years will appropriately offset the loss of 0.254 hectares of Bush Forever Site 355 (Point Peron and adjacent bushland, Peron/Shoalwater Bay) consistent with the State Government's Environmental Offsets Policy (2011) and State Planning Policy 2.8 (Appendix 4).

Appendix G– References and databases

1) References

Bamford Consulting Ecologists (Bamford) (2013). Plants known to be used for foraging, roosting and nesting by black-cockatoos in south-western Western Australia. Data compiled from the literature (Davies, 1966; Saunders, 1974, 1979a, b, 1980; Saunders et al. 1982; Saunders, 1986; Johnstone and Storr, 1998; Higgins 1999; Johnstone and Kirkby, 1999, 2008; Groom, 2011; Johnstone et al. 2011; DSEWPaC, 2012a, b; c, R. Johnstone pers. comm.) in Bamford (2013) Wedgetail Circle, Parkerville Fauna Assessment. Prepared for Coterra Environment. Bamford Consulting Ecologists. Prepared by Jeff Turpin, Simon Cherriman and Mike Bamford. 14th August 2013.

City of Rockingham (2020) Supporting Information for clearing permit application CPS 8978/1. City of Rockingham. Received by DWER on 24 July 2020 (DWER Ref: A1916916; A1938896).

City of Rockingham (2021) Supporting Information for clearing permit application CPS 8978/1. Offset Proposal. City of Rockingham. Received by DWER on 8 April 2021 (DWER Ref: A1998181).

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*. Commonwealth of Australia, Canberra.

Davis R. A. (2009) Scientific criteria and guidelines for Ecological Linkages Perth Region. NRM. Western Australia. School of Animal Biology. The University of WA.

Department of Biodiversity, Conservation and Attractions (DBCA) (2007-) *NatureMap: Mapping Western Australia's Biodiversity*. Department of Parks and Wildlife. Available at: http://naturemap.dpaw.wa.gov.au/ (accessed June 2020).

Department of Biodiversity, Conservation and Attractions (DBCA) (2020) *Priority Ecological Communities for Western Australia Version 30*. Dated 28 July 2020. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Perth, Western Australia.

Department of Conservation and Land Management (CALM) (1992) Shoalwater Islands Management Plan 1992-2002. Management Plan No 21 Prepared by the Department of Conservation and Land Management (now the Department of Biodiversity, Conservation and Attractions) for the National Parks and Nature Conservation Authority.

Department of Environment and Conservation (DEC) (2007) Shoalwater Islands Marine Park Management Plan 2007–2017. Management Plan No 58. Prepared by the Department of Environment and Conservation (now the Department of Biodiversity, Conservation and Attractions)

Department of Environment and Conservation (DEC) (2011) Conservation Advice for *Synemon gratiosa* (graceful sun-moth) – January 2011. Department of Environment and Conservation (now the Department of Biodiversity, Conservation and Attractions), January 2011.

Department of Parks and Wildlife (2013) *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan*. Department of Parks and Wildlife, Western Australia.

Department of Planning, Lands and Heritage (DPLH) (2020). Advice regarding Clearing Permit Application CPS 8878/1. 4 September 2020 (DWER Ref: A1930658)

Department of Primary Industries and Regional Development (DPIRD) (2017) *NRInfo Digital Mapping*. Available at: https://maps.agric.wa.gov.au/nrm-info/ (accessed June 2020).

Department of Sustainability, Environment, Water, Population and Communities (2012) Environment Protection and Biodiversity Conservation Act 1999 referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest red-tailed black cockatoo (vulnerable) *Calyptorhynchus banksii naso*. Commonwealth of Australia, Canberra.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) (2013) *Approved Conservation Advice for Idiosoma nigrum* (shield-back spider). Canberra: Department of Sustainability, Environment, Water, Population and Communities.

Department of Water and Environment Regulation (DWER) (2018) A Guide to Preparing Revegetation Plans for Clearing Permits under Part V of the Environmental Protection Act 1986. March 2018

Department of Water and Environment Regulation (DWER) (2020) Site Inspection Report for Clearing Permit Application CPS 8978/1. Site inspection undertaken 18 September 2020. Department of Water and Environment Regulation, Western Australia (DWER Ref: A1937972).

Environmental Protection Authority (2019) EPA Technical Report: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region. Advice of the Environmental Protection Authority under Section 16(j) of the Environmental Protection Act 1986. May 2019. Government of Western Australia.

Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H. and Lyons, M.N. (1994) *A Floristic Survey of the Southern Swan Coastal Plain*. Department of Conservation and Land Management and Conservation Council of Western Australia, Perth, Western Australia.

Government of Western Australia (2000a) Bush Forever. Volume 1. Policies, Principles and Processes. December 2000.

Government of Western Australia (2000b) Bush Forever. Volume 2. Directory of Bush Forever Sites. December 2000.

Government of Western Australia. (2019a) 2018 South West Vegetation Complex Statistics. Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth.

Government of Western Australia (2019b) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth.

Heddle, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

Hopper, S.D. (1979) Biogeographic aspects of speciation in the south western Australian flora. Annual Review of Ecology and Systematics 10: 399-422.

Hopper, S.D., Harvey, M.S., Chappill, J.A., Main, A.R. and Main, B.Y. (1996) The Western Australia biota as Gondwanan heritage. Chapter one. Pp. 1-46. In: S.D. Hopper, J.A. Chappill, M.S. Harvey and A.S. George (eds), Gondwanan Heritage. Past, Present and Future of the Western Australian Biota. Surrey Beatty & Sons in association with Australia Systematic Botany Society and Kings Park and Botanic Garden, Western Australia.

Johnstone, R.E., Johnstone, C. and Kirkby, T. (2011) Black Cockatoos on the Swan Coastal Plain. Report for the Department of Planning, Western Australia.

Keighery, B.J. (1994) Bushland plant survey - A guide to plant community survey for the community. Wildflower Society of WA (Inc.), Nedlands, Western Australia.

Main, A.R. (1996) Forest reservations: an overview. Journal of the Royal Society of Western Australia, 79:301-304.

Natural Areas (2021) City of Rockingham - Mersey Point Bus Terminus Offset Revegetation Plan. Natural Area Holdings Pty Ltd. 57 Boulder Road, Malaga, WA, 6090. Received by DWER on 8 April 2021 (DWER Ref: A1998179).

Maryan, B., Gaikhorst, G., O'Connell, M., And Callan, S. (2015) Notes on the distribution and conservation status of the Perth Lined Skink, *Lerista lineata:* A small lizard in a big city. www.researchgate. net/publication/ 280920313. August 2015.

Obbens, F.J. (2014) Two new species of Calandrinia (Portulacaceae) from southern Western Australia. *Nuytsia:* The journal of the Western Australian Herbarium. 24: 37–43. Published online 1 May 2014.

Reside, A. E., Van Der Wal, J., Phillips, B, L., Shoo, L. P., Rosauer, D.F., Anderson, B. J., Welbergen, J. A, Moritz, C, Ferrier, S, Harwood, T. D, Williams, K. J, Mackey, B, Hugh, S, Williams, Y. M., and Williams, S. E. (2013) Climate change refugia for terrestrial biodiversity: Defining areas that promote species persistence and ecosystem resilience in the face of global climate change, National Climate Change Adaptation Research Facility, Gold Coast, 216 pp.

Rix, M.G., Huey, J.A., Cooper, S.J.B., Austin, A.D. and Harvey, M.S. (2018) Conservation systematics of the shield-backed trapdoor spiders of the nigrum-group (Mygalomorphae, Idiopidae, Idiosoma): integrative taxonomy reveals a diverse and threatened fauna from south-western Australia. ZooKeys 756: 1-121. Available at: https://zookeys.pensoft.net/article/24397/.

Schlaepfer D.R., Braschler, B., Rusterholz H.P., and Baur, B. (2018) Genetic effects of anthropogenic habitat fragmentation on remnant animal and plant populations: a meta-analysis. Ecosphere 9: e02488.

Shah, B. (2006) *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia*. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.

Thackway, R and Cresswell, I.D. (eds) (1995) An interim biogeographical regionalisation of Australia. Australian Nature Conservation Agency (now Department of Environment and Energy), Canberra.

Valentine, L.E. and Stock, W. (2008) *Food Resources of Carnaby's Black Cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy Study Area*. Edith Cowan University and Department of Environment and Conservation. December 2008.

van Dyck, S., and Strahan, R. (2008). 'The Mammals of Australia.' 3rd edition. Reed New Holland: Sydney. ISBN-13: 978-1877069253.

Webb, A., Kinloch, J., Keighery, G. and Pitt, G. 2016. The Extension of Vegetation Complex Mapping to Landform boundaries within the Swan Coastal Plain Landform and Forested Region of South West Western Australia. Department of Parks and Wildlife, Bunbury, WA.

Western Australian Herbarium (1998–) *FloraBase—the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions. Available at: https://florabase.dpaw.wa.gov.au/ (accessed June 2020).

Western Australian Museum (WAM) (2017) *Meet the black-striped snake*. Available at: http://museum.wa.gov.au/explore/articles/meet-black-striped-snake

Western Australian Planning Commission (WAPA) (2010) State Planning Policy 2.8 – Bushland Policy for the Metropolitan *Region*. Government of Western Australia.

Wilson. S., and Swan., G. (2017) A Complete Guide to Reptiles of Australia. Fifth Edition. New Holland Publishing. ISBN: 9781925546026. August 2015.

2) GIS datasets

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Consanguineous Wetlands Suites (DBCA-020)
- 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)
- Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Remnant Vegetation, All Areas
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- RIWI Act, Groundwater Areas (DWER-034)

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