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Native Vegetation Clearing Permit - Supporting Documentation

Pinky's Beach Eco-retreat

DRAFT

Prepared for
Pinky's Beach Pty Ltd
by Strategen

February 2018



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February 2018

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Client: Pinky's Beach Pty Ltd

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1. Introduction

1.1 Purpose and scope

This Native Vegetation Clearing Permit (NVCP) application for a purpose permit has been prepared for assessment and approval to clear a small amount of native vegetation at the Pinky's Beach Eco-retreat, proposed by Pinky's Beach Pty Ltd. The resort is located on Rottnest Island, approximately 30 km east south-east of Perth.

The NVCP application relates to clearing of a maximum of 1.8 ha of native vegetation within the identified Proposal footprint (application area) to provide for the development (Figure 1). The proposed clearing area has been calculated based on a worst-case scenario of the maximum amount of clearing that might need to be undertaken within the application area (development envelope and Asset Protection Zone (APZ)) for construction and fire management.

The worst case scenario assumes a greater extent of clearing than is expected through the implementation of avoidance and mitigation strategies that will be implemented. As an eco-retreat, the character of the development relies on the retention and enhancement of the natural vegetation values of the Pinky's Beach Eco-retreat. The development proposed reflects extensive engagement between the proponent and the Rottnest island Authority and the character of the receiving environment has been a key consideration in the design.

The proposal involves the clearing of an area west of the existing campground, and directly adjacent to the existing Wastewater Treatment Plant (WWTP). The proposed clearing area is located on Crown Reserve R 16713. The Proposal will involve the construction and operation of the following:

- 83 small holiday canvas accommodation dwellings
- food and beverage "Beach Club" outlet with nearby shade structures
- managers residence permitting the site manager to remain onsite on a year-round basis.
- storage building
- formalised boardwalks walkways to each dwelling and through the dune system to both Pinky's Beach to the north and The Basin to the west, with some on-grade walkways throughout the site to provide access to each accommodation site.
- lawn area, landscaped garden with outdoor playground facility
- two fire water tanks (nominally 72 kL effective capacity each) with fire pump set to serve the onsite fire hydrant and fire hose reel system.

A Development Application (DA) for the Proposal was conditionally approved by the Rottnest Island Authority (RIA) (Ref: 17/62) on 21 September 2017. The approval required the development of a number of management plans designed to document and manage potential environmental impacts associated with the construction and operation of the Pinky's Beach Eco-retreat.

This document has been prepared to support the application for a Native Vegetation Clearing Permit proposed by Pinky's Beach Pty Ltd, for assessment under section 51 E of the *Environmental Protection Act 1986* (EP Act), including the following information:

- an overview of the existing environmental conditions of the site
- an evaluation of compliance of the proposed clearing against the 10 clearing principles listed under Schedule 5 of the EP Act
- environmental approvals and management requirements

1.2 Proposal

To facilitate development of the Pinky's Beach Eco-retreat, Pinky's Beach Pty Ltd is proposing to clear up to 1.8 ha of vegetation. The proposal site comprises native and introduced vegetation in variable condition. A significant portion of the site's vegetation is mapped as being in a Completely Degraded condition, or in a Good to Degraded Condition.

Careful consideration had gone into the development design to minimise impacts. The footprint of the development has been significantly aligned with Degraded and Completely Degraded areas, and undeveloped areas will be rehabilitated or landscaped to improve the condition of, and environmental value, of the vegetation on site. To this end, while up to 1.8 ha of clearing of native vegetation has been proposed, in reality this is a worst-case scenario, as much of the remnant vegetation within the proposed clearing area will be retained.

1.3 Timing and clearing method

Pinky's Beach Pty Ltd proposes to undertake clearing in 2018, immediately following all approvals being achieved. Vegetation clearing will involve the stripping of vegetation. Vegetation will be mulched and reused throughout the development.

1.3.1 Ownership

Ownership details of the proposed clearing area are provided in Table 1.

Table 1: Site identification details

Subject	Detail
Lot address (street number)	Lot 10976 on Plan 216860
Common name of site	Pinky's Beach, Rottnest Island
Primary Interest Holder	Rottnest Island Authority
Reserve	Crown Reserve (R 16713)
Landgate Register Number	10976/DP216860
Current site owner	State of Western Australia
Local Government Authority	City of Cockburn

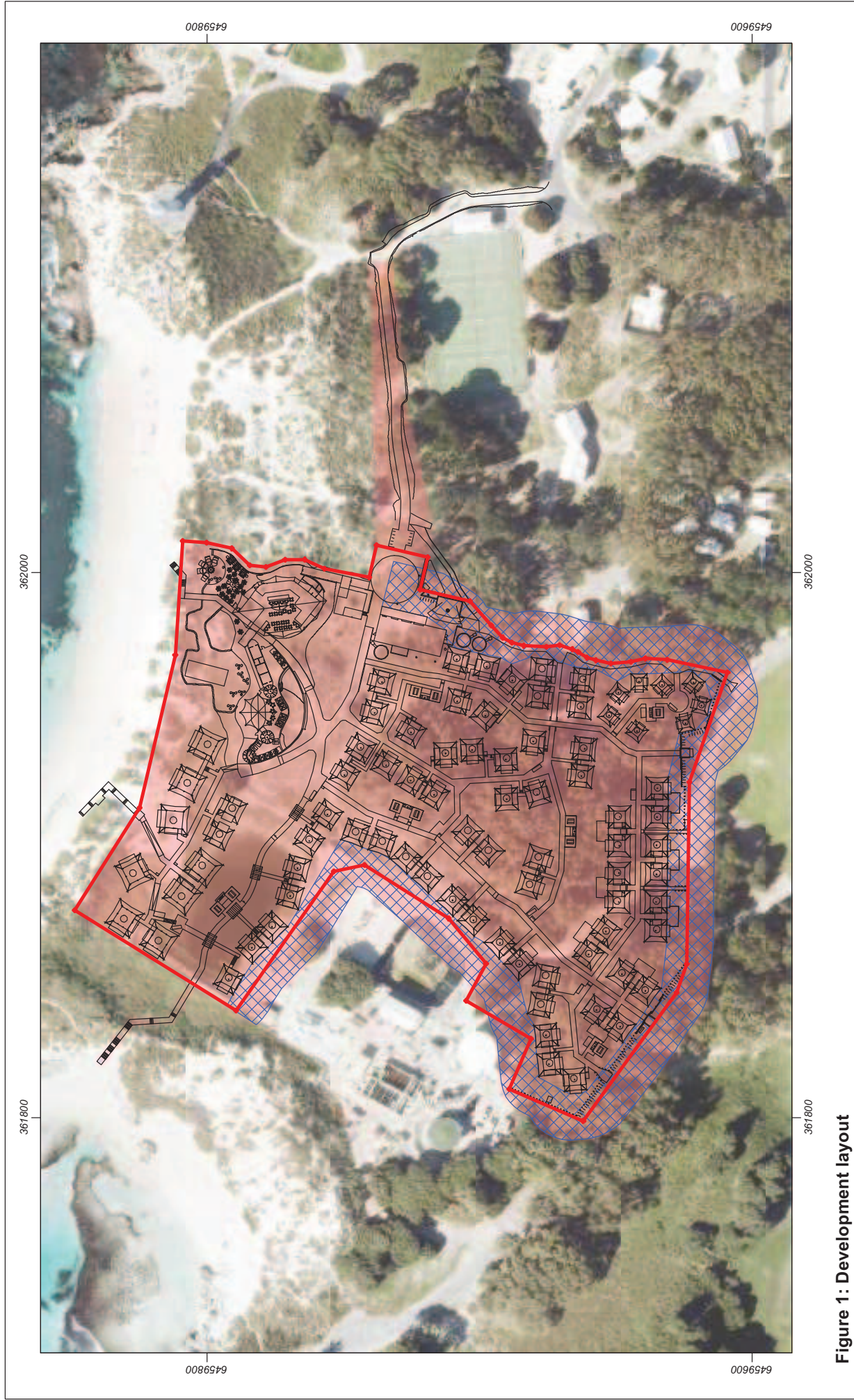


Figure 1: Development layout

Scale 1:1,851 at A4



Coordinate System: GDA 1994 MGA Zone 50
 Note that positional errors may occur in some areas

Date: 12/02/2018

Author: ydinh

Source: Landgate: Aerial Imagery - 20180208

Path: G:\Consult\2017\PE\PE17027\ArcMap_documents\PE17027_G026_RevB.mxd

Legend

-  Lease area
-  Application area
-  Development layout
-  Asset Protection Zone



2. Overview of existing environment

2.1 Geology, landform and soils

2.1.1 Topography

The coastline of Rottnest Island comprises sandy beaches backed by dunes, and rocky headlands and bays. The interior of the island is undulating, with the highest points being Oliver Hill, Radar Hill and Mount Herschel. The clearing area is located at the flatter, north-eastern end of the island, behind sandy dunes, where the elevation is approximately 10 m.

2.1.2 Geology

The proposed clearing area is located on the Swan Coastal Plain, which is characterised by a low-lying coastal plain, primarily covered with woodlands. Beard (1990) describes the Swan Coastal Plain as a low-lying coastal plain, often swampy, with sandhills also containing dissected country rising to the duricrusted Dandaragan plateau on Mesozoic, mainly sandy, yellow soils.

The surface geology of the proposed clearing area is Tamala Limestone. Tamala Limestone is a unit of friable to hard, medium grained eolian calcarenite composed of wind-blown shell fragments with variable amounts of quartz sand.

2.1.3 Soils

The clearing footprint is within the Coastal Dune Zone, characterised by deep sand. The soil type is Quaternary limestone, which have been locally differentiated as the Tamala and Herschell Limestones on Rottnest Island (Playford 1988). The Tamala limestone is an eolian calcarenite, while the Herschell Limestone comprises marine shell beds with a weak to strongly cemented lime sand (Playford 1988).

2.1.4 Acid sulphate soils

Acid Sulphate Soils (ASS) are naturally occurring, iron-sulphide rich soils, sediments or organic substrates, formed under waterlogged conditions. If exposed to air, these sulphides can oxidise and release sulphuric acid and heavy metals. This process can occur due to drainage, dewatering or excavation.

A search of the Swan Coastal Plain ASS risk maps (GoA 2018) indicates that there is no mapped risk of ASS occurring within 3 m of natural soil surface within the clearing footprint area.

2.2 Hydrology

2.2.1 Surface water

Rottnest Island is surrounded by the Indian Ocean, and the clearing footprint is located adjacent to the coastal waterline, at the north-eastern end of the island. Surface water runoff is not expected due to the sandy nature of onsite soils and their infiltration capacity. However, in high intensity rainfall events, runoff may occur in a northeast direction towards the Indian Ocean, or the inland lakes, following the natural topography of the site.

The wetlands on Rottnest Island comprise salt lakes, freshwater seeps and brackish swamps. Rottnest Island's salt lakes, swamps and seeps are listed as 'Wetlands of National Importance' under the Directory of Important Wetlands in Australia (Environment Australia, 2001). The Island's wetland system is represented in every category within the directory from highly saline to fresh. No wetlands are located within or adjacent to the proposed clearing footprint. The nearest wetland located approximately 680 m southwest of the site.

The Proposal will generally maintain the existing relationship between natural rainfall and local infiltration, with minimal formal management of stormwater required. The removal of up to 1.8 ha of vegetation within the proposed clearing area is not expected to be a significant impact to surface water, including wetlands, at a local or regional scale.

2.2.2 Groundwater

Groundwater on Rottnest Island comprises a thin lens of freshwater overlying saltwater (Playford 1998). The groundwater environment is sensitive, because of the limited freshwater. The main fresh water reserves are in groundwater lenses associated with the highest points on the island, around the Wadgemup and Oliver Hills (Playford, 1988).

The Rottnest Island Authority (RIA) maintains five groundwater monitoring bores at the Wastewater Treatment Plant (WWTP) located adjacent to the clearing area. The groundwater levels from the WWTP bores and the nearby golf course and oval bores, infer a groundwater flow direction toward the salt lakes. The groundwater depth is an average 0.5 m AHD. The site ranges from 6 m AHD to 24 m AHD. Groundwater at its closest point to the surface is therefore 5.5 m below the surface.

The Proposal will generally maintain the existing relationship between natural rainfall and local infiltration. The removal of up to 1.8 ha of vegetation within the proposed clearing area is not expected to be a significant impact to groundwater, at a local or regional scale.

2.3 Vegetation and flora

2.3.1 Regional vegetation

IBRA Subregion

The proposed clearing area occurs within the Swan Coastal Plain 2 IBRA subregion which is dominated by *Banksia* or Tuart on sandy soils, *Casuarina obesa* on outwash plains and paperbark (*Melaleuca*) in swampy areas (Mitchell et al. 2002).

Beard (1990) Botanical Subdistrict

The proposed clearing area occurs within the Drummond Botanical Subdistrict which is characterised by low *Banksia* woodlands on leached sands; *Melaleuca* swamps on poorly-drained depressions; and *Eucalyptus gomphocephala* (Tuart), *Eucalyptus marginata* (Jarrah) and *Corymbia calophylla* (Marri) woodlands on less leached soils (Beard 1990).

System 6 and vegetation association mapping

The proposed clearing area likely¹ occurs within the Quindalup Complex which is described as:

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

The proposed clearing area falls within the Rockingham 15 vegetation system association, which is described as Low forest of *Acacia*, Rottnest pine, coastal moort or mixed tropical forest *Acacia rostellifera*, *Callitris preissii*, *Eucalyptus lehmannii*, *Eucalyptus cornuta*, by the Government of Western Australia (2017).

¹ The proposed clearing area falls outside of the extent mapped by Government of Western Australia (2017). This is likely attributable to a georeferencing error associated with the mapped dataset and as such, the system association within the proposed clearing area has been inferred through a comparison of vegetation descriptions and location in the landscape.

Vegetation statistics for the Rockingham 15 vegetation system association are displayed in Table 2.

Table 2: Pre-European and current extent of Rockingham 15 vegetation system association

Vegetation system association	Pre-European extent (ha)	Current extent (ha)	% remaining	Maximum amount proposed to be cleared (ha)	% Current Extent Protected for Conservation
15	2,374.06	1,577.86	66.46	1.8	0

This vegetation association is very well represented locally and regionally, and currently extends over 66.46% of its pre-European area (Government of Western Australia 2017).

2.3.2 Site vegetation

Vegetation type and condition

An RIA botanist undertook a flora and vegetation assessment of the clearing area in December 2015.

The condition of native vegetation within the proposed clearing area ranges from Completely Degraded to Very Good (Table 3; Figure 2). Most of the proposed clearing area comprising native vegetation is Degraded or Completely Degraded (1.21 ha / 70%). The remaining 30% of the proposed clearing area containing native vegetation was assessed as Very Good-Good to Good-Degraded.

Table 3: Vegetation condition of native vegetation within the proposed clearing area

Condition	Area (ha)	Area (%)
Excellent	0	0
Very Good – Good	0.04	2
Good	0.31	18
Good – Degraded	0.18	11
Degraded	0.88	51
Completely Degraded	0.32	19
Total	1.74	100

The assessment identified nine vegetation types containing native vegetation, and four areas void of native vegetation within the clearing area (Figure 3). The area and condition of each vegetation type containing native vegetation is provided in (Table 4)

Table 4: Vegetation within the proposed clearing area

Vegetation Type	Area (ha)	Condition
* <i>Eucalyptus gomphocephala</i> to 20 m over <i>Melaleuca lanceolata</i> to 6 m over Low Open Heath of <i>Acanthocarpus preissii</i> and * <i>Trachyandra divaricata</i>	0.88	Degraded
* <i>Eucalyptus utilis</i>	0.01	Completely Degraded
Closed low heath dominated by <i>Spinifex longifolius</i> with <i>Scaevola crassifolia</i> and <i>Lepidosperma gladiatum</i>	0.04	Very Good to Good
Heath of <i>Olearia axillaris</i> , <i>Rhagodia baccata</i> , <i>Lepidosperma gladiatum</i> and <i>Scaevola crassifolia</i> over <i>Poa poiiformis</i> and * <i>Trachyandra divaricata</i>	0.07	Good to Degraded / Completely Degraded
Low Heath of <i>Scaevola crassifolia</i> , <i>Spinifex longifolius</i> , <i>Lepidosperma gladiatum</i> and * <i>Trachyandra divaricata</i> with occasional <i>Olearia axillaris</i>	0.07	Good to Degraded
Low Open Heath of <i>Scaevola crassifolia</i> , <i>Olearia axillaris</i> , <i>Rhagodia baccata</i> and <i>Acanthocarpus preissii</i> over * <i>Trachyandra divaricata</i> and <i>Conostylis candicans</i> subsp. <i>calvicola</i>	0.05	Good to Degraded
<i>Melaleuca lanceolata</i>	<0.01	Completely Degraded
<i>Poa poiiformis</i> and * <i>Trachyandra divaricata</i>	0.31	Completely Degraded
Tall, closed shrubland of <i>Callitris preissii</i>	0.31	Good

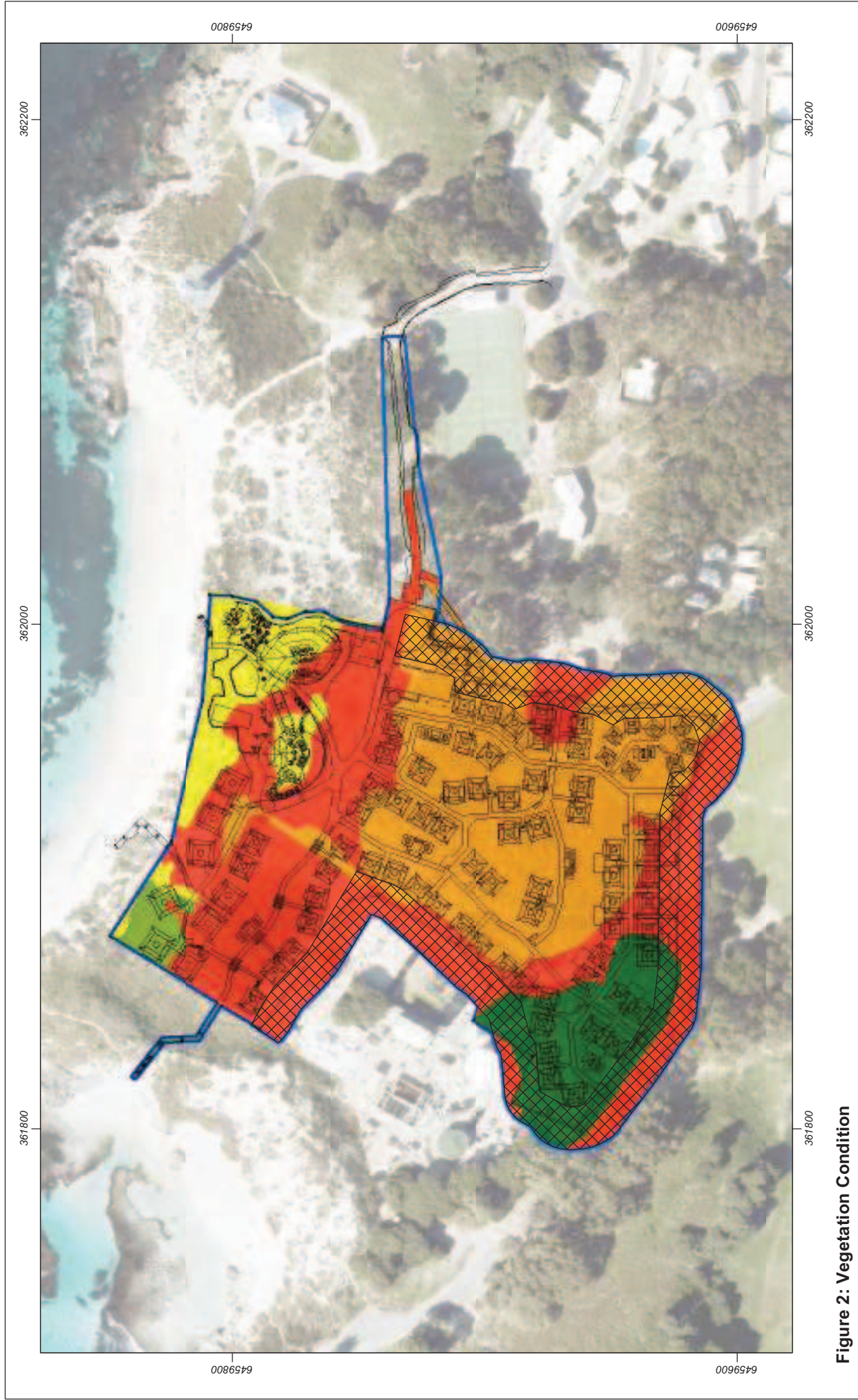


Figure 2: Vegetation Condition

Scale 1:2,000 at A4

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 50
 Note that positional errors may occur in some areas
 Date: 12/02/2018
 Author: ydinh
 Source: Landgate: Aerial Imagery - 20180208

Path: G:\Consult\2017\PE\PE17027\ArcMap_documents\PE17027_G028_RevB.mxd

Legend

—	Development layout	—	Vegetation condition
▨	Asset Protection Zone	■	Good to Degraded
□	Application area	■	Degraded
		■	Completely Degraded
		■	Very good to Good
		■	Good





Figure 3: Vegetation Type

Threatened and priority ecological communities

A Threatened Ecological Community (TEC) is defined under the EP Act as an ecological community listed, designated or declared under a written law or a law of the Australian Government as Threatened, Endangered or Vulnerable. There are four State categories of TECs (DEC 2010)²:

- presumed totally destroyed (PD)
- critically endangered (CR)
- endangered (EN)
- vulnerable (VU).

There are no commonwealth listed Threatened Ecological Communities (TECs) within the clearing area.

Two of the vegetation types recorded within the clearing area, closed shrubland of *Callitris preissii*, and *Melaleuca lanceolata* could potentially represent the state listed TEC *SCP 30 Callitris preissii (or Melaleuca lanceolata) forests and woodlands, Swan Coastal Plain*.

The location of the clearing area was cross checked against the Interim Recovery Plan for the TEC (DPaW 2014). There are two occurrences of TEC SCP 30 on Rottnest Island:

ROTTNEST01 occurs on the eastern side of Rottnest Island, east of Pearse Lakes and north of Government Lake. Geordie Bay Road borders to the south, Brand Way is on the eastern side and Rottnest accommodation occurs to the north and north east.

ROTTNEST02 is in the centre of Rottnest Island. Serpentine Lake borders the north of the occurrence with cleared bushland and unsealed tracks occur to the west, east and south.

Neither of these occurrences of TEC SCP 30 on Rottnest Island are within the proposed clearing area.

Ecological communities identified as threatened, but not listed as TECs, are classified as Priority Ecological Communities (PECs). These communities are under threat, but there is insufficient information available concerning their distribution to make a proper evaluation of their conservation status.

No PECs have been identified within the clearing area (DBCA 2018).

2.3.3 Site flora

A comprehensive survey of the vascular flora of Rottnest Island was undertaken between 1998 and 2000 by the Rottnest Voluntary Guides, in conjunction with the Western Australian Herbarium. The survey recorded a total of 196 vascular plant species, comprising 113 native species and 83 introduced flora species (Rippey et. al. 2003).

Threatened and priority flora

Conservation significant flora are determined at a state and federal legislative level.

At the national level, the EPBC Act lists Threatened species as extinct, extinct in the wild, critically endangered, endangered, vulnerable, or conservation dependent. The EPBC Act prohibits an action that has or will have a significant impact on a listed Threatened species without approval from the Australian Government Minister for the Environment.

²The Department of Environment and Conservation is still listed as the author of all TEC and PEC databases and have been referred to as such in this document instead of the Department of Biodiversity, Conservation and Attractions [DBCA]).

Flora within Western Australia that is under threat may be classed as either Threatened flora or Priority flora. Where flora has been gazetted as Threatened flora under the WC Act, the taking of such flora without the written consent of the Minister is an offence. The WC Act defines “to take” flora as to gather, pluck, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means.

Priority flora are species which are potentially under threat, but for which there is insufficient information available concerning their distribution and/or populations to make a proper evaluation of their conservation status.

A NatureMap database search was conducted to determine if there are any Threatened or Priority flora taxa known to occur on Rottneest Island (DBCA 2018). A total of seven Threatened and Priority flora species were identified, comprising one Threatened flora taxon, and six Priority flora taxa (Table 5). Of these, three were considered unlikely to occur and two were considered possible (Table 5).

Table 5: Likelihood of occurrence of Threatened and Priority flora identified by the NatureMap search

Species	Conservation status		Description	Potential to occur
	EPBC Act	WC Act		
<i>Banksia cuneata</i>	T	T	Small tree or shrub, 2-4 m high. Flowers pink, cream and yellow, September to December. Occurs in grey, yellow or yellow-brown sand in the wheatbelt region near Quairading. There are only about 500 of these plants left in the wild at 11 different sites	Unlikely Only one record is known from Rottneest Island and this was likely planted.
<i>Lachnagrostis nesomytica</i> subsp. <i>nesomytica</i>	N/A	P1	Loosely tufted, glabrous annual or perennial (short-lived), herb (grass), to 0.2 m high. Flowers are purple-green. Grows in brown peaty soil over limestone on the edges of saline lakes.	Unlikely There is no suitable habitat within the proposed clearing area
<i>Lachnagrostis nesomytica</i> subsp. <i>pseudofiliformis</i>	N/A	P1	Loosely tufted, weakly ascending, short-lived perennial or annual, grass, to 0.45 m high. Flowers are purple-green. Grows in peaty soil over limestone in coastal areas, on the edges of saline lakes.	Unlikely There is no suitable habitat within the proposed clearing area
<i>Lepidium puberulum</i>	N/A	P4	Erect annual herb, 0.1-0.35 m high. Flowers white-green, from July to August or October to November. Grows in sandy soils.	Possible There may be suitable habitat within the proposed clearing area
<i>Myosotis australis</i>	N/A	P4	Erect or procumbent annual herb, up to 0.3 m high. Flowers white/blue, August to November. Grows in grey sand over limestone.	Possible There may be suitable habitat within the proposed clearing area

None of these threatened or Priority flora have been identified within the clearing area by the NatureMap database search (DBCA 2018), or from the flora and vegetation assessment undertaken by RIA.

The removal of up to 1.8 ha of native vegetation within the proposed clearing area is not expected to be a significant impact to flora diversity, or conservation significant flora, at a local or regional scale.

Introduced (exotic) taxa

The Commonwealth of Australia, in collaboration with the states and territories, has identified 32 WoNS based on an assessment process that prioritised these weeds on their invasiveness, potential for spread and environmental, social and economic impacts. A list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) provides for management and control of listed organisms, including introduced flora species (weeds) in Western Australia. The main purposes of the BAM Act and its regulations related to Declared Plant Pests (DPPs) are to: prevent new plant pests (weeds) from entering Western Australia; manage the impact and spread of those pests already present in the state; and safely manage the use of agricultural chemicals.

A large proportion of the Rottnest Island vascular terrestrial flora are weed species, Dominant exotic taxa within the clearing area comprise:

**Eucalyptus gomphocephala*

**Eucalyptus utilis*

**Ficus* sp.

**Trachyandra divaricata*

None of these introduced taxa are listed as WoNS or DPPs.

Due to the degraded nature of parts of the proposed clearing area, it is likely that other introduced species occur that were not recorded during the flora and vegetation assessment.

2.4 Fauna

The EPBC Act aims to protect matters of national environmental significance. Under the EPBC Act, the Commonwealth Department of the Environment and Energy (DEE) lists protected species and Threatened Ecological Communities (TECs) by criteria set out in the Act. Species are conservation significant if they are listed as Threatened (i.e. Critically Endangered, Endangered and Vulnerable) or Migratory.

Bird species protected as Migratory under the EPBC Act include those listed under international migratory bird agreements relating to the protection of birds which migrate between Australia and other countries, for which Australia has agreed. This includes the Japan-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA), the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Some marine fauna or terrestrial fauna that use marine habitats are listed as Marine under the EPBC Act. These species are only considered conservation significant when a proposed development occurs in a Commonwealth marine area (i.e. any Commonwealth Waters or Commonwealth Marine Protected Area). Outside of such areas, the EPBC Act does not consider these species to be matters of national environmental significance so are not protected under the Act. As such, species listed as Marine only under the EPBC Act are not considered to be conservation significant in this assessment.

DBCA lists taxa under the provisions of the WC Act as protected and are classified as Schedule 1 to Schedule 7 according to their need for protection. The WC Act makes it an offence to 'take' threatened species without an appropriate licence. There are financial penalties for contravening the WC Act.

DBCA lists 'Priority' fauna that have not been assigned statutory protection as 'Scheduled' under the WC Act, but which are under consideration for declaration as 'Scheduled' fauna. In summary, Priority 1 fauna are those with few, poorly known populations on threatened lands, Priority 2 fauna are species with few poorly known populations on conservation lands and Priority 3 fauna are those with several poorly known populations, some on conservation lands. Priority 4 fauna are species in need of monitoring: not currently threatened or in need of special protection but could become so and usually represented on conservation lands. Priority 5 fauna are species in need of monitoring: not considered threatened, but the subject of a specific conservation programme, the cessation of which would result in the species becoming threatened within five years.

Certain populations or communities of fauna may be of local significance or interest because of their patterns of distribution and abundance. For example, fauna may be locally significant because they are range extensions to the previously known distribution or are newly discovered species (and have the potential to be of more than local significance). In addition, many species are in decline because of threatening processes (land clearing, grazing, and changed fire regimes) and relict populations of such species assume local importance for DBCA. It is not uncommon for DBCA to make comment on these species of interest.

Fauna is a key consideration of the proposal. Quokkas are known to access properties, houses and food preparation/serving areas throughout the Island creating health issues for both Island visitors and the Quokkas. Bird species such as swallows can reside in very small spaces in buildings, while seagulls, crows and ravens have all been known to create problems around food serving areas. Reptiles such as snakes also have the potential to create a safety hazard if encountered.

2.4.1 Fauna habitat

Significant habitat necessary for the maintenance of fauna indigenous to Western Australia as well as TECs is given special consideration in environmental impact assessments, and areas covered by TECs have special status as Environmentally Sensitive Areas (ESAs) under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

In addition, DBCA maintains a list of Priority Ecological Communities which identifies those communities that need further investigation before possible nomination for TEC status.

No TECs or PECs, or their buffers, occur within the proposed clearing area (DBCA 2018).

Rottnest Island provides critical habitat for a range of fauna species, including several species listed as conservation significant under State and Commonwealth legislation.

There are six main terrestrial habitats on Rottnest Island, each characterised by a variety of landforms and vegetation assemblages, (Winn 2007). The proposed clearing area lies within the island's Coastal Habitat.

Rottnest's Coastal habitat comprises limestone cliffs, mobile and stationary dunes, and sandy beaches. The mobile dunes occur on beach backshores, foredunes and blowouts, while the stable dunes are located behind the mobile sand dunes and are generally older.

2.4.2 Fauna diversity

A total of 186 terrestrial vertebrate fauna species are known to occur on the Rottnest Island, including two mammals, 157 birds, 24 reptiles and three amphibians (Appendix 1). Of these, 50 are conservation listed (Appendix 2).

2.4.3 Conservation listed fauna

Species of conservation significance have been divided into three categories including:

1. Conservation significance (CS) 1 - listed under legislation (EPBC Act; WC Act).
2. Conservation significance (CS) 2 - listed as Priority by Department of Biodiversity, conservation and Attractions.
3. Conservation significance (CS) 3 - locally significant or otherwise of note in the area.

The overall list of significant species includes 44 CS1 species, two CS2 species and 29 CS3 species (Table 6).

Table 6: Conservation significant terrestrial vertebrate species that occur on Rottnest Island.

Taxon	CS1	CS2	CS3	Total
Frogs	-	-	-	0
Reptiles	2	-	-	2
Birds	41	2	4	47
Mammals	1	-	-	1
Total	44	2	4	50

Of the 50 conservation listed vertebrate fauna species known to occur on the island, 39 are bird species that are vagrant or migrant visitors, and do not breed on Rottnest Island. These species are highly unlikely to occur within the proposed clearing area. The remaining 11 conservation listed taxa are known residents of Rottnest Island, and are also known to breed on the island, these species are considered to have a greater potential to occur within the proposed clearing area (Table 7).

The removal of up to 1.8 ha of potential habitat is not expected to be a significant impact to conservation significant fauna species, or populations at a local or regional scale.

Table 7: Fauna of conservation significance potentially occurring within the Clearing Area

Taxon	Conservation Status		Broad habitat type	Likelihood of occurrence
	EPBC Act	WC Act / DBCA		
Mammals				
Quokka <i>Setonix brachyurus</i>	Vulnerable (mainland)	Schedule 1 (mainland)	Quokkas are found in varying densities across the entire island, in all terrestrial habitat types (RIA 2014a).	Likely
Birds				
Bridled Tern <i>Sterna anaethetus</i>	Least Concern	Schedule 3	Bridled Terns occupy tropical and subtropical seas, breeding on islands, including vegetated coral cays, rocky continental islands and rock stacks. Nests are usually found in rocky areas or on coral, concealed in crevices or caves up to 1.8 m deep, under rocks, among talus or coral rubble, on ledges of cliffs, or on the ground beneath low shrubs, or among grasses. The Bridled Tern roosts onshore when breeding on branches of shrubs or low trees, on rocks, less often on the ground among vegetation or rubble or on the shoreline. However, at the start of the breeding season and when the chicks are older (about 40 days old), birds roost in groups on sandbanks or beaches. Roosting behaviour away from breeding colonies is poorly known, but birds appear not to roost ashore. Bridled Terns feed on a range of species of fish, crustaceans, cephalopods and insects, thus the ocean is their primary foraging habitat (DEE 2018)	Possible
Caspian Tern <i>Sterna caspia</i>	Least Concern	Schedule 3	The Caspian Tern is found in sheltered coastal embayments. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes, waterholes, reservoirs, rivers and creeks. Foraging is usually in open wetlands, including lakes and rivers, but can also include open coastal waters. Breeding occurs on low islands, cays, spits, banks, ridges, beaches of sand or shell, terrestrial wetlands and stony or rocky islets or banks. Generally roosting occurs on bare exposed sand or shell spits, banks or shores of coasts, lakes, estuaries, coastal lagoons and inlets (DEE 2018)	Possible
Crested Tern <i>Sterna bergii</i>	Least Concern	Schedule 3	The Crested Tern is found in coastal habitat. Nests are located on low-lying sandy, rocky, or coral islands, sometimes amongst stunted shrubs, often without shelter. When not breeding, the crested tern roosts or rests on open shores, less often on boats, pilings, harbour buildings and raised salt mounds in lagoons (DEE 2018)	Possible
Eastern Reef Egret <i>Egretta sacra</i>	Least Concern	Schedule 3	The Eastern Reef Egret prefers beaches, rocky shores, tidal rivers and inlets, mangroves, and exposed coral reefs (DEE 2018)	Possible
Fairy Tern <i>Sterna nereis</i>	Vulnerable	Not listed	The Fairy Tern is found on coastal beaches, inshore and offshore islands, sheltered inlets, sewage farms, harbours, estuaries and lagoons. It favours both fresh and saline wetlands and near-coastal terrestrial wetlands, including lakes and salt-ponds (Birdlife 2018).	Possible

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Taxon	Conservation Status		Broad habitat type	Likelihood of occurrence
	EPBC Act	WC Act / DBCA		
Rainbow Bee-eater <i>Merops ornatus</i>	Least Concern	Schedule 3	The Rainbow Bee-eater is most often found in open forests, woodlands and shrublands, and cleared areas, usually near water. It will be found on farmland with remnant vegetation and in orchards and vineyards. It will use disturbed sites such as quarries, cuttings and mines to build its nesting tunnels (Birdlife 2018)	Possible
Roseate Tern <i>Sterna dougallii</i>	Least Concern	Schedule 3	The Roseate Tern inhabits rocky and sandy beaches, coral reefs, sand cays and offshore islands. Foraging occurs along the seaward margin, within reef lagoons, or over the reef itself. The Roseate Tern usually roosts or floats in the intertidal zone on islands, including on the upper sections of beaches, above the high-water mark (but still in the wash-zone) (DEE 2018)	Possible
Wedge-tailed Shearwater <i>Puffinus pacificus</i>	Least Concern	Schedule 3	The Wedge-tailed Shearwater is a pelagic, marine bird known from tropical and subtropical waters. The species usually excavates burrows on flat or flattish areas with dense grassy and tussocky vegetation (Birdlife 2018)	Possible
Reptiles				
Rottneest Island Dugite <i>Pseudonaja affinis exilis</i>	Vu	Schedule 1	Coastal habitat, Limestone heath, Woodland, Settlement (RIA 2014a)	Possible
Rottneest Island Bobtail <i>Tiliqua rugosa korow</i>	Vu	Schedule 1	Coastal habitat, Limestone heath, Woodland, Settlement (RIA 2014a)	Possible

EPBC Act listed species: V = Vulnerable, E = Endangered, C = Critically Endangered,

WC Act listed species: S1 – S7 = Schedule 1 - 7; DPaw Priority Species: P1 - P5 = Priority 1 - 5.

2.4.4 Fauna of other significance

All of Rottnest Island's fauna is protected under the *Rottnest Island Authority Act 1987*.

The Rock Parrot (*Neophema petrophila*) has been identified by the RIA as requiring specific consideration by the Proposal given the presence of Rock Parrot habitat within the proposed clearing area, specifically the former WWTP settling pond which has historically provided a source of fresh water.

The Rock Parrot nests in limestone rock crevices on Rottnest Island (RIA 2014a). It was regarded as common on Rottnest from 1905 to 1929 but was uncommon by 1965 due to capture of juvenile birds for sale on the mainland (Storr 1964). The Rottnest Island population has continued to decline indicating that it is potentially no longer viable on the Island (RIA 2014a).

3. Impact mitigation

The area of clearing sought within the application area is 1.8 ha. Overlays of the worst case clearing anticipated totals 1.74 ha of vegetation. An application for a marginally greater area provides an additional layer of conservatism in the event that additional clearing is required. The calculation of area includes direct and indirect impacts in both construction and operation phases. Specific mitigation measures have been built into the proposal to ensure that environmental impacts are avoided or minimised. Section 3.1 to Section 3.4 detail mitigation for impacts to geology, landforms and soils, hydrology, flora and vegetation, and fauna.

3.1 Geology, landforms and soils

3.1.1 Avoidance:

- Formalised and hardened access routes to Pinky's Beach and the Basin are planned, which will manage and direct human traffic away from the dunes which are currently being impacted from uncontrolled access.

3.1.2 Minimisation:

- Improve current uncontrolled access through dunes from existing campground
- Stabilisation and rehabilitation of the large blowout in the dunes adjacent to the northwest corner of the Proposal site will reduce the current
- Due to high infiltration rates of Quindalup sands the dune areas expected to be difficult to rehabilitate and will be temporarily irrigated (during summer months) to encourage plant establishment and growth.

3.1.3 Residual impact

The removal of up to up to 1.8 ha of vegetation is not expected to be a significant impact to geology, landform, or soils. The Proposal results in a net positive outcome for the environment at Pinky's Beach and is expected to maintain the variety and integrity of distinctive physical landforms so that environmental values are protected. Furthermore, dune vegetation that is currently completely degraded will be rehabilitated with native species to improve existing vegetation condition and dune stabilisation.

3.2 Hydrology

3.2.1 Avoidance:

- Irrigation of landscaped areas cannot be avoided but will be minimized.
- All wastewater connected to the Rottnest Island reticulated sewerage system.

3.2.2 Minimisation:

- Irrigation is restricted to landscaped areas.

3.2.3 Residual impacts:

The Proposal will introduce water annually into the local environment through irrigation of landscaped and degraded dune areas until rehabilitation is successful. Given the proximity of the site to the ocean, the volume of water will be beneficial to the local environment (for vegetation growth and recovery purposes) and does not represent a risk to any terrestrial or hydrological values.

The Proposal also involves remediation of a redundant settlement pond to the north of the upgraded Waste Water Treatment Plant. Soil and groundwater sampling by the RIA has confirmed that residual impacts are limited to nutrient impacted groundwater, which is approximately 5 m below the surface. Given the proximity of the impacted groundwater to the ocean < 100m, the direction of groundwater flow which is generally toward the ocean and that no groundwater will be abstracted from the site, the impacted groundwater does not represent a risk to hydrological processes and the current environmental conditions are being improved by the proposed development.

Proposal will generally maintain the existing relationship between natural rainfall and local infiltration, with minimal formal management of stormwater required. As a result, significant impacts to Hydrological Processes are not expected.

3.3 Flora and vegetation

3.3.1 Avoidance

The design of the Proposal footprint predominantly incorporates existing disturbed areas where vegetation condition ranges from 'Completely Degraded' to 'Good-Degraded'. Clearing will be limited to the minimal amount required and construction activities will be developed to ensure that the clearing footprint is limited to areas required to be cleared for building and structure footprints, for example, boardwalk footprints will be marked, cleared and used as trafficable areas during construction, limiting additional clearing required for construction. Laydown areas have been identified on existing cleared areas in proximity to the development (tennis courts).

3.3.2 Minimisation

- Previously undeveloped or degraded areas within the Proposal area will be subject to rehabilitation/landscaping works to improve the condition of and environmental value of the vegetation (Figure 4).
- Clearing will be minimised by positioning a number of accommodation tents in areas with no understory vegetation.
- Retention of landscape features characteristic of the area, including large overstory vegetation will be maximised for the provision of shade and contribution to visual amenity. An arboricultural assessment has been undertaken to ensure that where possible overstory trees are retained, and managed for retention, to ensure patron safety.
- Design of the accommodation units and walkways to sit above the ground which limits ground disturbance and requirement for solid foundations or footings (which would involve clearing of the entire development footprint).
- Formalisation of controlled beach access to improve current unmanaged access regime which is contributing to vegetation and dune structure degradation.
- Implementation of a Construction Management Plan; action items will include delineation of clearing boundaries and weed and dieback hygiene measures.
- Implementation of a Landscape Plan; action items will identify proposed revegetation areas including plant species, density of plantings, vegetation to be cleared, any alteration of topography, hard landscaping and lighting.
- implementation of a Vegetation Retention Management Plan and Wildlife Management Plan, which details the management of flora, fauna and terrestrial environment including rehabilitation which will make use of native species for replanting and weed and dieback hygiene measures.
- Operation of the proposed Eco-retreat will provide for ongoing protection of the vegetation by ensuring that no informal pathways are developed throughout the facility and from the facility to the beach.

3.3.3 Residual impacts to vegetation and flora

The removal of up to up to 1.8 ha of vegetation is not expected to be a significant impact to any of the vegetation types represented within the proposed clearing area, at a local or regional scale. Furthermore, the Proposal is not expected to result in any significant residual impacts to any conservation significant flora species, threatened ecological communities or ecosystems.

There is potential that vegetation and flora values at the site will improve with the development of the Proposal, due to planting of native flora in revegetation and landscaping areas (Figure 4). Five different plant zones have been proposed, with varying assemblages to be planted in each. This will likely improve floristic diversity, reduce weed density, and reduce erosion on the existing dune blowout.

3.4 Fauna

3.4.1 Avoidance

- Proposal design minimises clearing of vegetation in 'Very Good–Good' condition. Rather, the design of the Proposal footprint utilises existing disturbed areas where vegetation condition ranges from 'Completely Degraded' and 'Good–Degraded'.
- A significant portion of the lease area remains vegetated and generally vegetation structure will be retained throughout the Proposal area, retaining current connectivity and relationship between vegetation types / habitat types.
- A Pest Bird Management Plan has been developed and will be implemented targeting design and operational actions. The management plan is designed to reduce the opportunities for pest bird species populations to be supported by the Proposal.
- A Wildlife Management Plan been developed and will be implemented targeting design and operational actions. The management plan provides for management of fauna and human interactions, through design such as elevated boardwalks to facilitate ground fauna movement and hard gates to exclude quokkas; deterrence via management of food availability and waste management; and through education of patrons.

3.4.2 Minimisation

- Undeveloped and degraded areas within the Proposal will be subject to rehabilitation/landscaping works to improve the condition and environmental value of the vegetation, through replanting of species endemic to the site and surrounds.
- Design of the walkways to allow the free and uninterrupted movement of fauna.
- Implementation of a Vegetation Retention Management Plan and Wildlife Management Plan to detail the management of flora, fauna and terrestrial environment; action items to include response to fauna encounters during construction and operation of the Proposal.

3.4.3 Residual impacts to fauna

These mitigation strategies are expected to be effective in mitigating potential impacts to Terrestrial Fauna from the Proposal and protect terrestrial fauna so that biological diversity and ecological integrity are maintained.

The removal of up to up to 1.8 ha of vegetation within the clearing area is not expected to be a significant negative impact to fauna values, at a local or regional scale.

Options for enhancement of fauna habitat available at the site including provision of fresh water sources for the Rock Parrot have been investigated, however advice has been received from the RIA and Bold Park Bird Banding group that as the area is proposed to become an operational site it would be best not to encourage them to forage in the area. The removal of Rock Parrot habitat, is not expected to be a significant impact to the species, at a local or regional scale.



PLANT ZONE 1

- ACACIA SPATHULIFOLIA 'DWARF'
- CALLITRIS PREISSII
- CARPOBROTUS VIRESCENS
- GREVILLEA CRITHMIFOLIA 'LOW SPREADING'
- MYOPORUM INSULARE 'DWARF'
- POA POIFORMIS
- SCAEVOLA CRASSIFOLIA
- WESTRINGIA 'LOW HORIZON'
- WESTRINGIA DAMPIERI 'PROSTRATE'

PLANT ZONE 2

- CALLITRIS PREISSII
- CALOTHAMNUS QUADRIFIDUS
- GREVILLEA CRITHMIFOLIA 'LOW SPREADING'
- LEPIDOSPERMA GLADIATUM
- MYOPORUM INSULARE 'DWARF'
- OLEARIA AXILLARIS
- WESTRINGIA DAMPIERI 'PROSTRATE'

PLANT ZONE 3

- ACACIA SPATHULIFOLIA 'DWARF'
- CALLITRIS PREISSII
- CARPOBROTUS VIRESCENS
- CHORIZEMA VARIUM 'PROSTRATE'
- GREVILLEA CRITHMIFOLIA 'LOW SPREADING'
- MELALEUCA LANCEOLATA
- MYOPORUM INSULARE 'DWARF'
- POA POIFORMIS
- SCAEVOLA CRASSIFOLIA
- WESTRINGIA 'LOW HORIZON'
- WESTRINGIA DAMPIERI 'PROSTRATE'

PLANT ZONE 4

- ACANTHOCARPUS PREISSII
- CARPOBROTUS VIRESCENS
- LEPIDOSPERMA GLADIATUM
- POA POIFORMIS
- RHAGODIA BACCATA
- SCAEVOLA CRASSIFOLIA
- SPINIFEX LONGIFOLIUS

PLANT ZONE 5

- CONOSTYLIS CANDICANS
- LEPIDOSPERMA GLADIATUM
- MYOPORUM INSULARE 'PROSTRATE'
- WESTRINGIA 'LOW HORIZON'

PINKYS BEACH ECO RETREAT AND BEACH CLUB

LANDSCAPE PLANTING PLAN
JANUARY 2018

JOB NO. 1701204
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4. Assessment against the ten clearing principles

An assessment of the proposed clearing against the ten clearing principles outlined in Schedule 5 of the EP Act is provided in Table 8. This assessment demonstrates that the proposed removal of up to 1.8 ha of native vegetation is not at variance with any of the clearing principles. On this basis, Pinky's Beach Pty Ltd anticipates that the proposed clearing of up to 1.8 ha of native vegetation can occur.

Table 8: Assessment against the ten clearing principles

Principle	Assessment	Conclusion
Native vegetation should not be cleared if it comprises a high level of biological diversity.	<p>The native vegetation types and the area of disturbance of each within the proposed clearing area include the following:</p> <ul style="list-style-type: none"> • 0.88 ha of <i>*Eucalyptus gomphocephala</i> to 20 m over <i>Melaleuca lanceolata</i> to 6 m over Low Open Heath of <i>Acanthocarpus preissii</i> and <i>*Trachyandra divaricata</i> • 0.01 ha of <i>*Eucalyptus utilis</i> • 0.04 ha of Closed low heath dominated by <i>Spinifex longifolius</i> with <i>Scaevola crassifolia</i> and <i>Lepidosperma gladiatum</i> • 0.07 ha of Heath of <i>Olearia axillaris</i>, <i>Rhagodia baccata</i>, <i>Lepidosperma gladiatum</i> and <i>Scaevola crassifolia</i> over <i>Poa poiformis</i> and <i>*Trachyandra divaricata</i> • 0.7 ha of Low Heath of <i>Scaevola crassifolia</i>, <i>Spinifex longifolius</i>, <i>Lepidosperma gladiatum</i> and <i>*Trachyandra divaricata</i> with occasional <i>Olearia axillaris</i> • 0.05 ha of Low Open Heath of <i>Scaevola crassifolia</i>, <i>Olearia axillaris</i>, <i>Rhagodia baccata</i> and <i>Acanthocarpus preissii</i> over <i>*Trachyandra divaricata</i> and <i>Conostylis candicans</i> subsp. <i>calcicola</i> • Less than 0.01 ha of <i>Melaleuca lanceolata</i> • 0.31 ha of <i>Poa poiformis</i> and <i>*Trachyandra divaricata</i> • 0.31 ha of Tall, closed shrubland of <i>Callitris preissii</i> <p>All native vegetation types recorded are well represented locally and regionally and the clearing of a total of 1.8 ha of vegetation will not represent a significant impact to any vegetation types.</p> <p>The vegetation association to be cleared has 66.46% of the pre-European extent remaining. The proposed clearance of up to 1.8 ha of this vegetation association is not considered likely to significantly impact the function or biological diversity of the vegetation association.</p> <p>No PECs, TECs or threatened flora have been identified within the proposed clearing area in the survey of the clearing area</p>	The proposed clearing is not considered to be at variance with this principle as the clearing proposed will not result in an impact to the biological diversity of the area.
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 indigenous to Western Australia.	<p>Although the proposed clearing area contains potential habitat for conservation listed species, removal of this habitat is not expected to result in a significant impact to any of the species, given the availability of continuous areas of habitat adjacent to the proposed clearing area.</p> <p>The proposed clearing of up to 1.8 ha of vegetation will result in some level of impact to fauna species potentially occurring in the area, however the clearing will not greatly restrict the habitat available for these species and due to the highly mobile nature of all species that may occur, any impacts are not expected to be significant.</p> <p>The habitat proposed to be removed is not considered to be habitat critical for the survival of any of the conservation significant species occurring or potentially occurring in the clearing area. The proposed clearing area is located on Rottnest Island where there are large continuous areas of protected habitat.</p>	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
Native vegetation should not be cleared	No Threatened flora species were recorded in the proposed clearing area during the RIA survey (RIA 2015), or have	Removal of vegetation within the proposed

Principle	Assessment	Conclusion
if it includes, or is necessary for the continued existence of, rare flora.	previously been identified within the proposed clearing area (DBCA 2018)	clearing area is not considered to be at variance with this principle.
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.	The proposed clearing area does not comprise vegetation that part of, or necessary for the maintenance of, a TEC or PEC as neither TECs nor PECs are known from or were recorded within the proposed clearance area. No TECs or PECs will be impacted by the proposed clearing or are known from the area.	The proposed clearing is not considered to be at variance with this principle.
Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	A total of up to 1.8 ha of vegetation is proposed to be permanently cleared. All native vegetation types recorded are well represented locally and regionally and the loss of a total of up to 1.8 ha of vegetation will not represent a significant impact to any of the vegetation types. The vegetation association to be cleared has 66.46% of the pre-European extent remaining. The proposed clearance of up to 1.8 ha of this vegetation association, given the largely intact pre-European extent, is not considered to be significant. Furthermore, the proposed clearing area is located on Rottnest Island where there are large continuous areas of protected remnant vegetation.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	Vegetation within the proposed clearing area is not growing in, or in association with a watercourse or wetland.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The risk of land degradation because of vegetation clearing is low, as much of the area is already disturbed. While the area proposed to be cleared is up to 1.8 ha, it is unlikely to contribute to land degradation outside the areas of proposed clearing. The proposed clearing area is in a coastal environment and does not involve the clearing of deep-rooted remnant native vegetation in areas prone to salinity, or disturbance of acid sulphate soils.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
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.	Rottnest Island is an A-class reserve; however, parts of the Island have been set aside for accommodation and recreation and the Proposal has been approved by the RIA. The proposed clearing is unlikely to have a negative impact on the environmental impact on the values of the reserve outside the clearing area.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
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.	The proposed clearing is not of a sufficient area and a large amount of vegetation will be retained locally and therefore will not affect groundwater. Furthermore, surface water runoff is not expected due to the sandy nature of onsite soils and their infiltration capacity. However, in high intensity rainfall events, runoff may occur in a northeast direction towards the Indian Ocean, or the inland lakes, following the natural topography of the site.	Clearing of vegetation is not expected to cause any deterioration in the quality of surface or underground water. Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
Native vegetation should not be cleared if clearing the vegetation is likely to	The proposed clearing of vegetation is unlikely to cause or exacerbate the incidence of flooding. The Proposal will generally maintain the existing relationship between natural rainfall and local infiltration, with minimal	Removal of vegetation within the proposed clearing area is not considered to be at

Principle	Assessment	Conclusion
cause, or exacerbate, the incidence of flooding.	formal management of stormwater required. As a result, significant impacts to Hydrological Processes are not expected.	variance with this principle as the vegetation clearing proposed will not cause or exacerbate the incidence of flooding.

5. Environmental approval and management

5.1 Environmental approvals

A Development Application (DA) for the Proposal was conditionally approved by the Rottnest Island Authority (RIA) (Ref: 17/62) on 21 September 2017. The approval required the development of a number of management plans designed to document and manage potential environmental impacts associated with the construction and operation of the Pinky's Beach Eco-retreat.

The key approval required to support the proposed clearing is a NVCP under section 51 E of the EP Act.

The assessment against the 10 clearing principles concluded that the proposed clearing, whilst resulting in some reduction in remnant native vegetation will not result in a significant impact to any flora or fauna species or threatened ecological communities.

Based on the outcomes of environmental investigations, it is considered unlikely that further environmental approvals are required. The impacts associated with vegetation clearing will be assessed through a NVCP.

5.2 Key mitigation strategies

The key mitigation actions to reduce the impacts of clearing within the proposed clearing area are:

- design of the Proposal to minimise clearing of vegetation by utilising existing disturbed areas where vegetation condition ranges from Completely Degraded to Good-Degraded
- design of the Proposal avoids clearing of vegetation in 'Very Good–Good' condition
- existing trees to be retained and protected where possible
- previously undeveloped areas within the Proposal area will be subject to rehabilitation/landscaping works to improve the condition of and environmental value of the vegetation
- clearing will be minimised by positioning accommodation tents in areas with no understory vegetation and to maximise retention of interesting vegetative form and provision of shade
- rehabilitation of the dune systems through sculpting and stabilisation of an existing dune blowout and replanting in areas adjacent to the Proposal area to increase stabilisation, reduce erosion and improve the existing condition of the environment
- formalised and hardened access routes to Pinky's Beach and the Basin are planned, to manage and direct human traffic away from the dunes.
- implementation of a Construction Management Plan; action items will include delineation of clearing boundaries, weed and dieback hygiene measures
- implementation of a Landscape Plan; action items will identify all proposed new vegetation including species, density of plantings, vegetation to be cleared (including justification), any alteration of topography, hard landscaping and lighting.
- implementation of a Flora, Fauna and Marine Management Plan to detail the management of flora, fauna and marine environment including rehabilitation which will make use of native species for replanting and weed and dieback hygiene measures.

5.3 Environmental management

A Terrestrial Management Strategy (TMS) has been developed for Rottnest Island which provides an overarching management direction towards ensuring that the condition and integrity of the flora, fauna, landforms, geology and hydrology are protected, and enhanced where necessary. The objective of the TMS is to provide for sustainable management of the terrestrial environment, sustainable recreation and protection of the natural asset on which RIA bases its holiday and recreation business, and to assist the RIA in achieving financial sustainability (RIA 2014a).

Management plans have been prepared for the proposed Pinky's Beach Eco-resort, which integrate existing RIA management practices outlined in the TMS. This includes integration of relevant elements of the TMS that has been implemented by the RIA since 2008. The management plans prepared for the proposed eco-resort are complementary to the TMS for Rottnest Island; however, will be implemented separately by the Pinky's Beach Pty Ltd.

The management plans being prepared for the proposed Pinky's Beach Eco-retreat comprise:

- Construction Management Plan
- Landscape Plan
- Bushfire Management Plan
- Bushfire Emergency Evacuation Plan
- Pest Bird Management Plan
- Waste Management Plan
- Wildlife Management Plan
- Vegetation Retention Management Plan

Implementing and adherence to the measures in these Management Plans will ensure minimal impact as the result of the proposed clearing.

6. Conclusion

No significant impacts to environmental values are expected from the proposed clearing of up to 1.8 ha of native and introduced vegetation in variable condition.

Careful consideration had gone into the development design to minimise impacts. The footprint of the development has been significantly aligned with Degraded and Completely Degraded areas, and undeveloped areas will be rehabilitated or landscaped to improve the condition of, and environmental value, of the vegetation on site. To this end, while a up to 1.8 ha of clearing has been proposed, in reality this is a worst-case scenario, as much of the remnant vegetation within the proposed clearing area will be retained.

Management action and mitigation strategies will be employed that will further minimise the scale of impact on the environment.

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Appendix 1
Rottnest Island Fauna

Taxon	Common Name	Encounter Rate on Rottnest	Breeding Status on Rottnest	Residency Status	IUCN Redlist Global Status	EPBC Act National Status	Wildlife Conservation Act 1950 Status	DBCA Priority Status
Birds								
<i>Pachyptila desolata</i>	Antarctic Petrel	Rare	Non-breeding	Migrant	Least Concern			
<i>Stercorarius parasiticus</i>	Arctic Jaeger	Rare	Non-breeding	Migrant	Least Concern			
<i>Anhinga novaehollandiae</i>	Australasian Darter	Rare	Non-breeding	Unknown	Least Concern			
<i>Morus serrator</i>	Australasian Gannet	Moderately Common	Non-breeding	Migrant	Least Concern			
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe	Rare	Non-breeding	Vagrant	Least Concern			
<i>Anhinga novaeseelandiae</i>	Australasian Pipit	Uncommon	Breeding	Resident	Least Concern			
<i>Falco longipennis</i>	Australian Hobby	Rare	Non-breeding	Unknown	Least Concern			
<i>Nycticorax nycticorax</i>	Australian Little Bittern	Rare	Non-breeding	Vagrant	Near Threatened		Priority 4	
<i>Gymnorhina tibicen</i>	Australian Magpie	Moderately Common	Non-breeding	Vagrant	Least Concern			
<i>Pelecanus conspicillatus</i>	Australian Pelican	Common	Non-breeding	Resident	Least Concern			
<i>Haematopus longirostris</i>	Australian Pied Oystercatcher	Very Common	Breeding	Resident	Least Concern			
<i>Corvus coronoides</i>	Australian Raven	Very Common	Breeding	Resident	Least Concern			
<i>Barnardius zonarius</i>	Australian Ringnecked Parrot	Rare	Non-breeding	Vagrant	Least Concern			
<i>Tadorna tadornoides</i>	Australian Shelduck	Very Common	Breeding	Resident	Least Concern			
<i>Chenonetta jubata</i>	Australian Wood Duck	Rare	Non-breeding	Vagrant	Least Concern			
<i>Vanellus tricolor</i>	Banded Lapwing	Moderately Common	Breeding	Resident	Least Concern			
<i>Cladorhynchus leucocephalus</i>	Banded Stilt	Very Common	Non-breeding	Unknown	Least Concern			
<i>Limosa lapponica</i>	Bar-tailed Godwit	Common	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Calyptrornis bairdii</i>	Baird's Cockatoo	Rare	Non-breeding	Vagrant	Endangered			
<i>Cygnus atratus</i>	Black Swan	Uncommon	Unknown	Vagrant	Least Concern			
<i>Thalassarche melanophrys</i>	Black-browed Albatross	Rare	Non-breeding	Migrant	Endangered	Vulnerable	Vulnerable, Schedule 1	
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	Rare	Non-breeding	Vagrant	Least Concern			
<i>Eisayornis melanops</i>	Black-fronted Dotterel	Rare	Non-breeding	Vagrant	Least Concern			
<i>Elaenia axillaris</i>	Black-shouldered Kite	Moderately Common	Unknown	Resident	Least Concern			
<i>Himantopus himantopus</i>	Black-winged Stilt	Moderately Common	Breeding	Unknown	Least Concern			
<i>Sterna anaethetus</i>	Bridled Tern	Moderately Common	Breeding	Migrant	Least Concern		Schedule 3	
<i>Falco berigora</i>	Brown Falcon	Rare	Non-breeding	Vagrant	Least Concern			
<i>Accipiter fasciatus</i>	Brown Goshawk	Rare	Non-breeding	Vagrant	Least Concern			
<i>Lichmera indistincta</i>	Brown Honeyeater	Rare	Non-breeding	Vagrant	Least Concern			
<i>Calharacta antarctica</i>	Brown Skua	Rare	Non-breeding	Migrant	Least Concern			
<i>Phalaropus elegans</i>	Brush Bronzewing	Extinct on Rottnest	Unknown	Unknown	Least Concern			
<i>Gallinulus philippensis</i>	Buff-banded Rail	Uncommon	Breeding	Resident	Least Concern			
<i>Daption capense</i>	Cape Petrel	Rare	Non-breeding	Migrant	Least Concern			
<i>Calyptrornis leucostriatus</i>	Carnaby's Cockatoo	Rare	Non-breeding	Vagrant	Endangered	Endangered	Endangered, Schedule 1	
<i>Sterna caspia</i>	Caspian Tern	Very Common	Breeding	Resident	Least Concern		Schedule 3	
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk	Rare	Unknown	Resident	Least Concern			
<i>Tringa nebularia</i>	Common Greenshank	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Phasianus colchicus</i>	Common Pheasant	Very Common	Breeding	Resident	Least Concern			
<i>Actitis hypoleucos</i>	Common Sandpiper	Uncommon	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Oxyphaps lophotes</i>	Crested Pigeon	Rare	Non-breeding	Vagrant	Least Concern			
<i>Sterna bergii</i>	Crested Tern	Very Common	Breeding	Resident	Least Concern		Schedule 3	
<i>Callitis ferruginea</i>	Curlew Sandpiper	Moderately Common	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Tyto javanica</i>	Eastern Barn Owl	Rare	Unknown	Resident	Least Concern			
<i>Numerus madagascariensis</i>	Eastern Curlew	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Ardea modesta</i>	Eastern Great Egret	Rare	Non-breeding	Vagrant	Not Evaluated		Schedule 3	
<i>Pandion cristatus</i>	Eastern Osprey	Very Common	Breeding	Resident	Not Evaluated		Schedule 3	
<i>Egretta sacra</i>	Eastern Reef Egret	Common	Breeding	Resident	Least Concern		Schedule 3	
<i>Sterna nereis</i>	Fairy Tern	Very Common	Breeding	Resident	Vulnerable			
<i>Caecymantis flabelliformis</i>	Fan-tailed Cuckoo	Uncommon	Breeding	Vagrant	Least Concern		Schedule 3	
<i>Puffinus carmelis</i>	Flesh-footed Shearwater	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Apus pacificus</i>	Fork-tailed Swift	Rare	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Eolophus rosicapilla</i>	Galah	Moderately Common	Breeding	Resident	Least Concern			
<i>Paciophthalus pectoralis</i>	Golden Whistler	Common	Breeding	Resident	Least Concern			
<i>Phalacrocorax carbo</i>	Great Cormorant	Rare	Non-breeding	Unknown	Least Concern			
<i>Podiceps cristatus</i>	Great Crested Grebe	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Callidris tenuirostris</i>	Great Knot	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Charadrius leschenaultii</i>	Greater Sand Plover	Uncommon	Non-breeding	Unknown	Least Concern		Schedule 3	
<i>Rhipidura fuliginosa</i>	Grey Fantail	Rare	Unknown	Vagrant	Least Concern		Schedule 3	
<i>Pluvialis squatarola</i>	Grey Plover	Moderately Common	Non-breeding	Migrant	Least Concern			
<i>Colluricincla harmonica</i>	Grey Shrike-thrush	Rare	Non-breeding	Resident	Least Concern			
<i>Anas gracilis</i>	Grey Teal	Very Common	Breeding	Resident	Least Concern			
<i>Thalassarche chrysostrama</i>	Grey-headed Albatross	Rare	Non-breeding	Migrant	Vulnerable	Endangered	Vulnerable, Schedule 1	
<i>Heteroscelus brevipes</i>	Grey-tailed Tattler	Common	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Aythya australis</i>	Hardhead	Rare	Non-breeding	Vagrant	Least Concern			

<i>Polocephalus poliocephalus</i>	Hoary-headed Grebe	Moderately Common	Non-breeding	Unknown	Least Concern			
<i>Thimomis rubricollis</i>	Hooded Plover	Rare	Non-breeding	Vagrant	Near Threatened			Priority 4
<i>Chrysococcyx basalis</i>	Horsfield's Bronze-Cuckoo	Uncommon	Breeding	Migrant	Least Concern			
<i>Pavo cristatus</i>	Indian Peafowl	Very Common	Breeding	Resident	Least Concern			
<i>Streptopelia senegalensis</i>	Laughing Turtle-Dove	Very Common	Breeding	Resident	Least Concern			
<i>Sterna bengalensis</i>	Lesser Crested Tern	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Anous tenuirostris</i>	Lesser Noddy	Rare	Non-breeding	Vagrant	Least Concern	Vulnerable, Schedule 1		
<i>Charadrius mongolus</i>	Lesser Sand Plover	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	Rare	Non-breeding	Unknown	Least Concern			
<i>Cactusa sanguinea</i>	Little Cormorant	Rare	Non-breeding	Vagrant	Least Concern			
<i>Hieraaetus morphnoides</i>	Little Eagle	Rare	Non-breeding	Resident	Least Concern			
<i>Egretta garzetta</i>	Little Egret	Rare	Non-breeding	Vagrant	Least Concern			
<i>Eudiptula minor</i>	Little Plover	Rare	Non-breeding	Vagrant	Least Concern			
<i>Phalacrocorax melanoleucos</i>	Little Pied Cormorant	Very Common	Breeding	Resident	Least Concern			
<i>Charadrius dubius</i>	Little Ringed Plover	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Puffinus assimilis</i>	Little Shearwater	Rare	Breeding	Vagrant	Least Concern			
<i>Anthrochaera chrysopetra</i>	Little Wattlebird	Rare	Non-breeding	Vagrant	Least Concern			
<i>Gallinula cyanoleuca</i>	Magpie-lark	Rare	Non-breeding	Resident	Least Concern			
<i>Tringa stagnatilis</i>	Marsh Sandpiper	Rare	Non-breeding	Vagrant	Least Concern			
<i>Bizura lobata</i>	Musk Duck	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Falco cenchroides</i>	Nankeen Kestrel	Very Common	Breeding	Resident	Least Concern			
<i>Nycticorax calidonicus</i>	Nankeen Night Heron	Rare	Non-breeding	Vagrant	Least Concern			
<i>Anas superciliosa</i>	Pacific Black Duck	Very Common	Breeding	Resident	Least Concern			
<i>Plover pacificus</i>	Pacific Golden Plover	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Larus pacificus</i>	Pacific Gull	Rare	Unknown	Vagrant	Least Concern			
<i>Turnix varia</i>	Painted Button-quail	Uncommon	Breeding	Resident	Least Concern			
<i>Cuculix pallidus</i>	Pallid Cuckoo	Rare	Breeding	Migrant	Least Concern			
<i>Calidris melanotos</i>	Pectoral Sandpiper	Rare	Non-breeding	Vagrant	Least Concern			
<i>Falco peregrinus</i>	Peregrine Falcon	Rare	Non-breeding	Vagrant	Least Concern			
<i>Phalacrocorax varius</i>	Pied Cormorant	Very Common	Breeding	Resident	Least Concern			
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	Rare	Non-breeding	Vagrant	Least Concern			
<i>Merops ornatus</i>	Rainbow Bee-eater	Moderately Common	Breeding	Migrant	Least Concern	Schedule 3		
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	Rare	Unknown	Vagrant	Least Concern			
<i>Calidris canutus</i>	Red Knot	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Anthrochaera carunculata</i>	Red Wattlebird	Rare	Non-breeding	Vagrant	Least Concern			
<i>Charadrius ruficapillus</i>	Red-capped Plover	Very Common	Breeding	Resident	Least Concern			
<i>Petroica goodenovii</i>	Red-capped Robin	Common	Breeding	Resident	Least Concern			
<i>Erythrogenys cinctus</i>	Red-kneed Darter	Rare	Non-breeding	Vagrant	Least Concern			
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet	Common	Occasionally breeding	Unknown	Least Concern			
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Uncommon	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Calidris ruficollis</i>	Red-necked Stint	Very Common	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	Rare	Non-breeding	Vagrant	Least Concern			
<i>Polytelus anthopopus</i>	Regent Parrot	Rare	Non-breeding	Vagrant	Least Concern			
<i>Anthus novaeseelandiae</i>	Richard's Pipit	Rare	Unknown	Resident	Least Concern			
<i>Columba livia</i>	Rock Dove	Rare	Non-breeding	Vagrant	Least Concern			
<i>Neophema petrophila</i>	Rock Parrot	Uncommon	Breeding	Resident	Least Concern			
<i>Eudyptes chrysocome</i>	Rockhopper Penguin	Rare	Non-breeding	Vagrant	Vulnerable			
<i>Sterna dougalli</i>	Rosette Tern	Uncommon	Occasionally breeding	Unknown	Least Concern	Schedule 3		
<i>Arenaria interpres</i>	Ruddy Turnstone	Very Common	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Pachycephala rufiventris</i>	Rufous Whistler	Extinct	Unknown	Unknown	Least Concern			
<i>Todiramphus sanctus</i>	Sacred Kingfisher	Very Common	Breeding	Resident	Least Concern			
<i>Calidris alba</i>	Sanderling	Moderately Common	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Uncommon	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Chrysococcyx lucidus</i>	Shining Bronze-Cuckoo	Rare	Breeding	Vagrant	Least Concern			
<i>Larus novaehollandiae</i>	Silver Gull	Very Common	Breeding	Resident	Least Concern			
<i>Zosterops lateralis</i>	Silvereye	Very Common	Breeding	Resident	Least Concern			
<i>Lichenostomus virescens</i>	Singing Honeyeater	Very Common	Breeding	Resident	Least Concern			
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	Rare	Non-breeding	Vagrant	Least Concern			
<i>Ninox novaeseelandiae</i>	Southern Boobook	Rare	Unknown	Resident	Least Concern			
<i>Fulmarus glacialis</i>	Southern Fulmar	Rare	Non-breeding	Migrant	Least Concern			
<i>Macronectes giganteus</i>	Southern Giant-Petrel	Rare	Non-breeding	Migrant	Least Concern	Endangered		
<i>Porzana tabuensis</i>	Spotted Crane	Rare	Unknown	Vagrant	Least Concern			
<i>Streptopelia chinensis</i>	Spotted Dove	Common	Breeding	Resident	Least Concern			
<i>Circus assimilis</i>	Spotted Harrier	Rare	Non-breeding	Vagrant	Least Concern			
<i>Eurostoopodus argus</i>	Spotted Nightjar	Rare	Non-breeding	Unknown	Least Concern			
<i>Pardalotus punctatus</i>	Spotted Pardalote	Rare	Non-breeding	Vagrant	Least Concern			

<i>Threskiornis spinicollis</i>	Straw-necked Ibis	Rare	Non-breeding	Unknown	Least Concern	
<i>Pardalotus striatus</i>	Striated Pardalote	Rare	Non-breeding	Vagrant	Least Concern	
<i>Circus approximans</i>	Swamp Harrier	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3
<i>Xenus chereus</i>	Terek Sandpiper	Rare	Non-breeding	Vagrant	Least Concern	
<i>Petrochelidon nigricans</i>	Tree Martin	Very Common	Unknown	Migrant	Least Concern	Vulnerable
<i>Diomedea exulans</i>	Wandering Albatross	Rare	Non-breeding	Unknown	Vulnerable	Schedule 1
<i>Puffinus pacificus</i>	Wedge-tailed Shearwater	Very Common	Breeding	Resident	Least Concern	Schedule 3
<i>Sminornis brevirostris</i>	Weebill	Rare	Breeding	Resident	Least Concern	
<i>Hirundo neoxena</i>	Welcome Swallow	Very Common	Breeding	Resident	Least Concern	
<i>Gerygone fusca</i>	Western Gerygone	Very Common	Breeding	Resident	Least Concern	
<i>Acanthiza lineolata</i>	Western Thornbill	Rare	Non-breeding	Vagrant	Least Concern	
<i>Numerius phaeopus</i>	Whimbrel	Uncommon	Non-breeding	Migrant	Least Concern	Schedule 3
<i>Chlidonias hybridus</i>	Whiskered Tern	Rare	Non-breeding	Vagrant	Least Concern	
<i>Haliaeetus spheerulus</i>	Whistling Kite	Rare	Non-breeding	Vagrant	Least Concern	
<i>Charadrius leucosternum</i>	White-backed Swallow	Rare	Occasionally breeding	Vagrant	Least Concern	
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3
<i>Senecornis frontalis</i>	White-browed Scrubwren	Very Common	Breeding	Resident	Least Concern	
<i>Egretta novaehollandiae</i>	White-faced Heron	Uncommon	Non-breeding	Resident	Least Concern	
<i>Ephialtina albifrons</i>	White-fronted Chat	Very Common	Breeding	Resident	Least Concern	
<i>Pterodroma lessonae</i>	White-headed Petrel	Rare	Non-breeding	Unknown	Least Concern	
<i>Ardea pacifica</i>	White-necked Heron	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3
<i>Chlidonias leucopterus</i>	White-winged Black Tern	Rare	Non-breeding	Vagrant	Least Concern	
<i>Lalage sueurii</i>	White-winged Triller	Rare	Non-breeding	Vagrant	Least Concern	
<i>Rhipidura leucophrys</i>	Willie Wagtail	Rare	Non-breeding	Vagrant	Least Concern	
<i>Oceanites oceanicus</i>	Wilson's Storm-Petrel	Rare	Non-breeding	Migrant	Least Concern	Schedule 3
<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	Uncommon	Non-breeding	Vagrant	Endangered	
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	Rare	Non-breeding	Vagrant	Least Concern	
Reptiles						
<i>Aprasia repens</i>	South-western Sandplain Worm Lizard				Not Evaluated	
<i>Acritoscincus trilineatum</i>	Western Three-lined Skink				Not Evaluated	
<i>Bassiana trilineata</i>	South-western Cool Skink				Not Evaluated	
<i>Christinus marmoratus</i>	Marbled Gecko				Not Evaluated	
<i>Ctenolius fallens</i>	West Coast Ctenolius				Not Evaluated	
<i>Egernia kingii</i>	King's Skink				Not Evaluated	
<i>Egernia napoleonis</i>	South-western Crevice Skink				Not Evaluated	
<i>Hemiergis quadrilineata</i>	Two-toed Earless Skink				Not Evaluated	
<i>Lerista chrisinae</i>	Bold-striped Four-toed Lerista				Not Evaluated	
<i>Lerista elegans</i>	West Coast Four-toed Lerista				Not Evaluated	
<i>Lerista lineata</i>	Perth Lined Lerista				Not Evaluated	
<i>Lerista lineopunctulata</i>	Western Worm Lerista				Not Evaluated	
<i>Lerista praepedita</i>	Burton's Legless Lizard				Not Evaluated	
<i>Lialis furtivus</i>	Common Dwarf Skink				Not Evaluated	
<i>Menetia grayii</i>	Western Pale-flecked Morethia				Not Evaluated	
<i>Morethia lineocellata</i>	Rottnest Island Dugite				Not Evaluated	
<i>Pseudonaja affinis exilis</i>	Southern Blind Snake	Uncommon	Breeding	Resident	Not Evaluated	Vulnerable, Schedule 1
<i>Ramphophyllus australis</i>	Southern Blind Snake				Not Evaluated	
<i>Strophurus spinigerus spinigerus</i>	South-western Spiny-tailed Gecko				Not Evaluated	
<i>Tiliqua rugosa konowi</i>	Rottnest Island Bobtail	Rare	Breeding	Resident	Not Evaluated	Vulnerable, Schedule 1
<i>Skink (sp. unknown)</i>					Not Evaluated	
<i>Gecko (sp. unknown)</i>					Not Evaluated	
<i>Lerista (sp. unknown)</i>					Not Evaluated	
<i>Other species</i>					Not Evaluated	
Amphibians						
<i>Heleioporus eyrei</i>	Moaning Frog				Not Evaluated	
<i>Cinia insignifera</i>	Sandplain Froglet				Least Concern	
<i>Litoria moorei</i>	Motorbike Frog				Least Concern	
Mammals						
<i>Salix brachyurus</i>	Quokka	Very Common	Breeding	Resident	Vulnerable (mainland)	Vulnerable
<i>Tadarida australis</i>	White-striped Free-tailed Bat				Least Concern	Schedule 1 (mainland)

Appendix 2
Rottnest Island Conservation Listed
Fauna

Species	Common Name	Encounter Rate on Rottnest	Breeding Status	Residency	IUCN	EPBC Act	WC Act	DBCAs
BIRDS								
<i>Ixobrychus minutus dubius</i>	Australian Little Bittern	Rare	Non-breeding	Vagrant	Near Threatened			Priority 4
<i>Limosa lapponica</i>	Bar-tailed Godwit	Common	Non-breeding	Migrant	Least Concern		S3	
<i>Calyptrorhynchus baidinii</i>	Baudin's Cockatoo	Rare	Non-breeding	Vagrant	Endangered			
<i>Thalassarche melanophrys</i>	Black-browed Albatross	Rare	Non-breeding	Migrant	Endangered	Vu	Vu, S1	
<i>Sterna anaethetus</i>	Bridled Tern	Moderately Common	Breeding	Migrant	Least Concern		S3	
<i>Calyptrorhynchus latirostris</i>	Carnaby's Cockatoo	Rare	Non-breeding	Vagrant	Endangered	En	En, S1	
<i>Sterna caspia</i>	Caspian Tern	Very Common	Breeding	Resident	Least Concern		S3	
<i>Tringa nebularia</i>	Common Greenshank	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Actitis hypoleucos</i>	Common Sandpiper	Uncommon	Non-breeding	Migrant	Least Concern		S3	
<i>Sterna bergii</i>	Crested Tern	Very Common	Breeding	Resident	Least Concern		S3	
<i>Calidris ferruginea</i>	Curlew Sandpiper	Moderately Common	Non-breeding	Migrant	Least Concern		S3	
<i>Numenius madagascariensis</i>	Eastern Curlew	Rare	Non-breeding	Vagrant	Least Concern		S3	Priority 4
<i>Ardea modesta</i>	Eastern Great Egret	Rare	Non-breeding	Vagrant	Not Evaluated		S3	
<i>Egretta sacra</i>	Eastern Reef Egret	Common	Breeding	Resident	Least Concern		S3	
<i>Sterna nereis</i>	Fairy Tern	Very Common	Breeding	Resident	Vulnerable			
<i>Puffinus carneipes</i>	Flesh-footed Shearwater	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Apus pacificus</i>	Fork-tailed Swift	Rare	Non-breeding	Migrant	Least Concern		S3	
<i>Calidris tenuirostris</i>	Great Knot	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Charadrius leschenaultii</i>	Greater Sand Plover	Uncommon	Non-breeding	Unknown	Least Concern		S3	
<i>Pluvialis squatarola</i>	Grey Plover	Moderately Common	Non-breeding	Migrant	Least Concern		S3	
<i>Thalassarche chrysostrama</i>	Grey-headed Albatross	Rare	Non-breeding	Migrant	Vulnerable	En	Vu, S1	
<i>Heteroscellus brevipes</i>	Grey-tailed Tattler	Common	Non-breeding	Migrant	Least Concern		S3	
<i>Thinornis rubricollis</i>	Hooded Plover	Rare	Non-breeding	Vagrant	Near Threatened			Priority 4
<i>Sterna bengalensis</i>	Lesser Crested Tern	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Anous tenuirostris</i>	Lesser Noddy	Rare	Non-breeding	Vagrant	Least Concern		Vu, S1	
<i>Charadrius mongolus</i>	Lesser Sand Plover	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Charadrius dubius</i>	Little Ringed Plover	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Tringa stagnatilis</i>	Marsh Sandpiper	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Pluvialis fulva</i>	Pacific Golden Plover	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Merope ornatus</i>	Rainbow Bee-eater	Moderately Common	Breeding	Migrant	Least Concern		S3	
<i>Calidris canutus</i>	Red Knot	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Uncommon	Non-breeding	Migrant	Least Concern		S3	
<i>Calidris ruficollis</i>	Red-necked Stint	Very Common	Non-breeding	Migrant	Least Concern		S3	
<i>Eudyptes chrysocome</i>	Rockhopper Penguin	Rare	Non-breeding	Vagrant	Vulnerable			
<i>Sterna dougalli</i>	Roseate Tern	Uncommon	Occasionally breeding	Unknown	Least Concern		S3	
<i>Arenaria interpres</i>	Ruddy Turnstone	Very Common	Non-breeding	Migrant	Least Concern		S3	
<i>Calidris alba</i>	Sanderling	Moderately Common	Non-breeding	Migrant	Least Concern		S3	
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Uncommon	Non-breeding	Migrant	Least Concern		S3	
<i>Macronectes giganteus</i>	Southern Giant-Petrel	Rare	Non-breeding	Migrant	Least Concern	En	En, S1	
<i>Xenus cinereus</i>	Terek Sandpiper	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Diomedea exulans</i>	Wandering Albatross	Rare	Non-breeding	Migrant	Vulnerable	Vu	Vu, S1	
<i>Puffinus pacificus</i>	Wedge-tailed Shearwater	Very Common	Breeding	Migrant	Least Concern		S3	
<i>Numenius phaeopus</i>	Whimbrel	Uncommon	Non-breeding	Migrant	Least Concern		S3	
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Chlidonia leucopterus</i>	White-winged Black Tern	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Oceanites oceanicus</i>	Wilson's Storm-Petrel	Rare	Non-breeding	Migrant	Least Concern		S3	
<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	Uncommon	Non-breeding	Vagrant	Endangered			
REPTILES								
<i>Pseudonaja affinis exilis</i>	Rottnest Island Dugite	Uncommon	Breeding	Resident	Not Evaluated		Vu, S1	
<i>Tiliqua rugosa konowi</i>	Rottnest Island Bobtail	Rare	Breeding	Resident	Not Evaluated		Vu, S1	
MAMMALS								
<i>Setonix brachyurus</i>	Quokka	Very Common	Breeding	Resident	Vulnerable (mainland)	Vu	Vu, S1 (mainland)	



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Native Vegetation Clearing Permit - Supporting Documentation

Pinky's Beach Staff Accommodation

DRAFT

Prepared for
Pinky's Beach Pty Ltd
by Strategen

February 2018



Native Vegetation Clearing Permit - Supporting Documentation

**Pinky's Beach Staff
Accommodation**

DRAFT

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February 2018

Limitations

Scope of services

This report ("the report") has been prepared by Strategen Environmental Consultants Pty Ltd (Strategen) in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

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Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

Client: Pinky's Beach Pty Ltd

Report Version	Revision No.	Purpose	Strategen author/reviewer	Submitted to Client	
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Appendix 2 Rottnest Island Conservation Listed Fauna

1. Introduction

1.1 Purpose and scope

This Native Vegetation Clearing Permit (NVCP) application for a purpose permit has been prepared for assessment and approval to clear a small amount of native vegetation at the Pinky's Beach Staff Accommodation, proposed by Pinky's Beach Pty Ltd. The accommodation is located on Rottnest Island, approximately 30 km east south-east of Perth. The NVCP application relates to clearing of a maximum of 0.27 ha of native vegetation (including the development envelope and the fire Asset Protection Zone [APZ]) proposed to provide for the development (Figure 1).

The proposal involves the clearing of a portion of Lot 10976 on Plan 216860, at the corner of Kelly Street and Mapleson Drive, within the Settlement Area on Rottnest Island. The proposed clearing area is located on Crown Reserve R 16713. The Proposal will involve the construction and operation of the following:

- an existing laundry building on the site is to be retained and renovated to become an ablutions block
- 25 accommodation units
- Store room
- a kitchen/dining/and living building
- several external alfresco areas

A Development Application (DA) for the Proposal was conditionally approved by the Rottnest Island Authority (RIA) (Ref: 17/32) on 13 November 2017.

This document has been prepared to support the application for a Native Vegetation Clearing Permit proposed by Pinky's Beach Pty Ltd, for assessment under section 51 E of the *Environmental Protection Act 1986* (EP Act), including the following information:

- an overview of the existing environmental conditions of the site
- an evaluation of compliance of the proposed clearing against the 10 clearing principles listed under Schedule 5 of the EP Act
- environmental approvals and management requirements

1.2 Proposal

To facilitate development of the Pinky's Beach Staff Accommodation, Pinky's Beach Pty Ltd is proposing to clear a maximum of 0.27 ha of vegetation (Figure 1). The proposal site comprises over storey dominated by the introduced Aleppo Pine (*Aleppo halepensis*), with natives Rottnest Island Tea-Tree (*Melaleuca lanceolata*) and Tuart (*Eucalyptus gomphocephala*) over an understorey dominated by introduced weed species of mixed grasses and herbs. The entire site has been parkland cleared and is Completely Degraded.

Where appropriate, trees within the proposed clearing area will be retained based on an assessment against fire safety and structural considerations. Furthermore, where appropriate existing ground, including shrubs and groundcover will also be retained.

1.3 Timing and clearing method

Pinky's Beach Pty Ltd proposes to undertake clearing in 2018, immediately following all approvals being achieved. Vegetation clearing will involve the stripping of vegetation. Vegetation will be mulched and reused throughout the development.

1.3.1 Ownership

Ownership details of the proposed clearing area are provided in Table 1.

Table 1: Site identification details

Subject	Detail
Lot address (street number)	Lot 10976 on Plan 216860
Common name of site	Corner of Kelly Street and Mapleson Road, Rottnest Island
Primary Interest Holder	Rottnest Island Authority
Reserve	Crown Reserve (R 16713)
Landgate Register Number	10976/DP216860
Current site owner	State of Western Australia
Local Government Authority	City of Cockburn



Figure 1: Proposed clearing area

Scale 1:600 at A4

Coordinate System: GDA 1994 MGA Zone 50
 Note that positional errors may occur in some areas
 Date: 12/02/2018
 Author: vdlmh
 Source: Landgate: Aerial imagery - 20171124.

- Legend**
- Lease boundary
 - Concept design
 - Proposed clearing area
 - Building footprint
 - 22m wide APZ
 - Offsite vegetation modification
 - Onsite vegetation modification



2. Overview of existing environment

2.1 Geology, landform and soils

2.1.1 Topography

The coastline of Rottnest Island comprises sandy beaches backed by dunes, and rocky headlands and bays. The interior of the island is undulating, with the highest points being Oliver Hill, Radar Hill and Mount Herschel. The clearing area is located at the flatter, north-eastern end of the island, behind sandy dunes, where the elevation is approximately 9 m.

2.1.2 Geology

The proposed clearing area is located on the Swan Coastal Plain, which is characterised by a low-lying coastal plain, primarily covered with woodlands. Beard (1990) describes the Swan Coastal Plain as a low-lying coastal plain, often swampy, with sandhills also containing dissected country rising to the duricrusted Dandaragan plateau on Mesozoic, mainly sandy, yellow soils.

The surface geology of the proposed clearing area is Tamala Limestone. Tamala Limestone is a unit of friable to hard, medium grained eolian calcarenite composed of wind-blown shell fragments with variable amounts of quartz sand.

2.1.3 Soils

The clearing footprint is within the Coastal Dune Zone, characterised by deep sand. The soil type is Quaternary limestone, which have been locally differentiated as the Tamala and Herschell Limestones on Rottnest Island (Playford 1988). The Tamala limestone is an eolian calcarenite, while the Herschell Limestone comprises marine shell beds with a weak to strongly cemented lime sand (Playford 1988).

2.1.4 Acid sulphate soils

Acid Sulphate Soils (ASS) are naturally occurring, iron-sulphide rich soils, sediments or organic substrates, formed under waterlogged conditions. If exposed to air, these sulphides can oxidise and release sulphuric acid and heavy metals. This process can occur due to drainage, dewatering or excavation.

A search of the Swan Coastal Plain ASS risk maps (GoA 2018) indicates that there is no mapped risk of ASS occurring within 3 m of natural soil surface within the clearing footprint area.

2.2 Hydrology

2.2.1 Surface water

Rottnest Island is surrounded by the Indian Ocean, and the clearing footprint is located adjacent to the coastal waterline, at the north-eastern end of the island. Surface water runoff is not expected due to the sandy nature of onsite soils and their infiltration capacity. However, in high intensity rainfall events, runoff may occur in an eastern direction towards the Indian Ocean.

The wetlands on Rottnest Island comprise salt lakes, freshwater seeps and brackish swamps. Rottnest Island's salt lakes, swamps and seeps are listed as 'Wetlands of National Importance' under the Directory of Important Wetlands in Australia (Environment Australia, 2001). The Island's wetland system is represented in every category within the directory from highly saline to fresh. No wetlands are located within or adjacent to the proposed clearing footprint. The nearest wetland located approximately 740 m southwest of the site.

The Proposal will generally maintain the existing relationship between natural rainfall and local infiltration, with minimal formal management of stormwater required. The removal of up to 0.27 ha of vegetation within the proposed clearing area is not expected to be a significant impact to surface water, including wetlands, at a local or regional scale.

2.2.2 Groundwater

Groundwater on Rottnest Island comprises a thin lens of freshwater overlying saltwater (Playford 1998). The groundwater environment is sensitive, because of the limited freshwater. The main fresh water reserves are in groundwater lenses associated with the highest points on the island, around the Wadgemup and Oliver Hills (Playford, 1988).

The Proposal will generally maintain the existing relationship between natural rainfall and local infiltration. The removal of up to 0.27 ha of vegetation within the proposed clearing area is not expected to be a significant impact to groundwater, at a local or regional scale.

2.3 Vegetation and flora

2.3.1 Regional vegetation

IBRA Subregion

The proposed clearing area occurs within the Swan Coastal Plain 2 IBRA subregion which is dominated by *Banksia* or Tuart on sandy soils, *Casuarina obesa* on outwash plains and paperbark (*Melaleuca*) in swampy areas (Mitchell et al. 2002).

Beard (1990) Botanical Subdistrict

The proposed clearing area occurs within the Drummond Botanical Subdistrict which is characterised by low *Banksia* woodlands on leached sands; *Melaleuca* swamps on poorly-drained depressions; and *Eucalyptus gomphocephala* (Tuart), *Eucalyptus marginata* (Jarrah) and *Corymbia calophylla* (Marri) woodlands on less leached soils (Beard 1990).

System 6 and vegetation association mapping

The proposed clearing area likely¹ occurs within the Quindalup Complex which is described as:

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

The proposed clearing area falls within the Rockingham 15 vegetation system association, which is described as Low forest of *Acacia*, Rottnest pine, coastal moort or mixed tropical forest *Acacia rostellifera*, *Callitris preissii*, *Eucalyptus lehmannii*, *Eucalyptus cornuta*, by the Government of Western Australia (2017).

¹ The proposed clearing area falls outside of the extent mapped by Government of Western Australia (2017). This is likely attributable to a georeferencing error associated with the mapped dataset and as such, the system association within the proposed clearing area has been inferred through a comparison of vegetation descriptions and location in the landscape.

Vegetation statistics for the Rockingham 15 vegetation system association are displayed in Table 2.

Table 2: Pre-European and current extent of Rockingham 15 vegetation system association

Vegetation system association	Pre-European extent (ha)	Current extent (ha)	% remaining	Amount proposed to be cleared (ha)	% Current Extent Protected for Conservation
15	2,374.06	1,577.86	66.46	0.27	0

This vegetation association is very well represented locally and regionally, and currently extends over 66.46% of its pre-European area (Government of Western Australia 2017).

2.3.2 Site vegetation

Vegetation type and condition

The proposal site comprises over storey dominated by the introduced Aleppo Pine (*Aleppo halepensis*), with natives Rottneest Island Tea-Tree (*Melaleuca lanceolata*) and Tuart (*Eucalyptus gomphocephala*) over, an understorey dominated by introduced weed species of mixed grasses and herbs. The entire site has been parkland cleared and is Completely Degraded.

The removal of up to 0.27 ha of vegetation (most of which is introduced) is not expected to be a significant impact to any of the vegetation types represented within the proposed clearing area, at a local or regional scale.

Threatened and priority ecological communities

A Threatened Ecological Community (TEC) is defined under the EP Act as an ecological community listed, designated or declared under a written law or a law of the Australian Government as Threatened, Endangered or Vulnerable. There are four State categories of TECs (DEC 2010)²:

- presumed totally destroyed (PD)
- critically endangered (CR)
- endangered (EN)
- vulnerable (VU).

There are no commonwealth listed Threatened Ecological Communities (TECs) within the clearing area.

Ecological communities identified as threatened, but not listed as TECs, are classified as Priority Ecological Communities (PECs). These communities are under threat, but there is insufficient information available concerning their distribution to make a proper evaluation of their conservation status.

No PECs have been identified within the clearing area (DBCA 2018).

The RIA have confirmed that no TECs or PECs occur within the proposed clearing area.

2.3.3 Site flora

A comprehensive survey of the vascular flora of Rottneest Island was undertaken between 1998 and 2000 by the Rottneest Voluntary Guides, in conjunction with the Western Australian Herbarium. The survey recorded a total of 196 vascular plant species, comprising 113 native species and 83 introduced flora species (Rippey et. al. 2003).

²The Department of Environment and Conservation is still listed as the author of all TEC and PEC databases and have been referred to as such in this document instead of the Department of Biodiversity, Conservation and Attractions [DBCA].

Given the Completely Degraded condition of the proposed clearing area, a flora and vegetation survey was not deemed necessary. An assessment of the trees within the proposed clearing area was undertaken by arborists in December 2017 (Arbor Logic 2017). Where appropriate, trees within the proposed clearing area will be retained based on an assessment against fire safety and structural considerations. Furthermore, where appropriate existing ground, including shrubs and groundcover will also be retained.

The removal of up to 0.27 ha of vegetation (most of which is introduced) is not expected to be a significant impact to flora diversity, at a local or regional scale.

Threatened and priority flora

Conservation significant flora are determined at a state and federal legislative level.

At the national level, the EPBC Act lists Threatened species as extinct, extinct in the wild, critically endangered, endangered, vulnerable, or conservation dependent. The EPBC Act prohibits an action that has or will have a significant impact on a listed Threatened species without approval from the Australian Government Minister for the Environment.

Flora within Western Australia that is under threat may be classed as either Threatened flora or Priority flora. Where flora has been gazetted as Threatened flora under the WC Act, the taking of such flora without the written consent of the Minister is an offence. The WC Act defines “to take” flora as to gather, pluck, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means.

Priority flora are species which are potentially under threat, but for which there is insufficient information available concerning their distribution and/or populations to make a proper evaluation of their conservation status.

A NatureMap database search was conducted to determine if there are any Threatened or Priority flora taxa known to occur on Rottneest Island (DBCA 2018). A total of seven Threatened and Priority flora species were identified, comprising one Threatened flora taxon, and six Priority flora taxa (Table 3). Of these, three were considered unlikely to occur and two were considered possible (Table 3).

Table 3: Likelihood of occurrence of Threatened and Priority flora identified by the NatureMap search

Species	Conservation status		Description	Potential to occur
	EPBC Act	WC Act		
<i>Banksia cuneata</i>	T	T	Small tree or shrub, 2-4 m high. Flowers pink, cream and yellow, September to December. Occurs in grey, yellow or yellow-brown sand in the wheatbelt region near Quairading. There are only about 500 of these plants left in the wild at 11 different sites	Unlikely Only one record is known from Rottneest Island and this was likely planted.
<i>Lachnagrostis nesomytica</i> subsp. <i>nesomytica</i>	N/A	P1	Loosely tufted, glabrous annual or perennial (short-lived), herb (grass), to 0.2 m high. Flowers are purple-green. Grows in brown peaty soil over limestone on the edges of saline lakes.	Unlikely There is no suitable habitat within the proposed clearing area. Furthermore, the understorey is completely degraded.
<i>Lachnagrostis nesomytica</i> subsp. <i>pseudofilliformis</i>	N/A	P1	Loosely tufted, weakly ascending, short-lived perennial or annual, grass, to 0.45 m high. Flowers are purple-green. Grows in peaty soil over limestone in coastal areas, on the edges of saline lakes.	Unlikely There is no suitable habitat within the proposed clearing area. Furthermore, the understorey is completely degraded.

Species	Conservation status		Description	Potential to occur
	EPBC Act	WC Act		
<i>Lepidium puberulum</i>	N/A	P4	Erect annual herb, 0.1-0.35 m high. Flowers white-green, from July to August or October to November. Grows in sandy soils.	Unlikely Furthermore, the understorey is completely degraded.
<i>Myosotis australis</i>	N/A	P4	Erect or procumbent annual herb, up to 0.3 m high. Flowers white/blue, August to November. Grows in grey sand over limestone.	Unlikely Furthermore, the understorey is completely degraded.

None of these threatened or Priority flora have been identified within the clearing area by the NatureMap database search (DBCA 2018).

The removal of up to 0.27 ha of vegetation within the proposed clearing area is not expected to be a significant impact to flora diversity, or conservation significant flora, at a local or regional scale.

Introduced (exotic) taxa

The Commonwealth of Australia, in collaboration with the states and territories, has identified 32 WoNS based on an assessment process that prioritised these weeds on their invasiveness, potential for spread and environmental, social and economic impacts. A list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) provides for management and control of listed organisms, including introduced flora species (weeds) in Western Australia. The main purposes of the BAM Act and its regulations related to Declared Plant Pests (DPPs) are to: prevent new plant pests (weeds) from entering Western Australia; manage the impact and spread of those pests already present in the state; and safely manage the use of agricultural chemicals.

A large proportion of the Rottnest Island vascular terrestrial flora are weed species. The understorey of the proposed clearing area is dominated by introduced grasses and herbs.

2.4 Fauna

The EPBC Act aims to protect matters of national environmental significance. Under the EPBC Act, the Commonwealth Department of the Environment and Energy (DEE) lists protected species and Threatened Ecological Communities (TECs) by criteria set out in the Act. Species are conservation significant if they are listed as Threatened (i.e. Critically Endangered, Endangered and Vulnerable) or Migratory.

Bird species protected as Migratory under the EPBC Act include those listed under international migratory bird agreements relating to the protection of birds which migrate between Australia and other countries, for which Australia has agreed. This includes the Japan-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA), the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Some marine fauna or terrestrial fauna that use marine habitats are listed as Marine under the EPBC Act. These species are only considered conservation significant when a proposed development occurs in a Commonwealth marine area (i.e. any Commonwealth Waters or Commonwealth Marine Protected Area). Outside of such areas, the EPBC Act does not consider these species to be matters of national environmental significance so are not protected under the Act. As such, species listed as Marine only under the EPBC Act are not considered to be conservation significant in this assessment.

DBCA lists taxa under the provisions of the WC Act as protected and are classified as Schedule 1 to Schedule 7 according to their need for protection. The WC Act makes it an offence to 'take' threatened species without an appropriate licence. There are financial penalties for contravening the WC Act.

DBCA lists 'Priority' fauna that have not been assigned statutory protection as 'Scheduled' under the WC Act, but which are under consideration for declaration as 'Scheduled' fauna. In summary, Priority 1 fauna are those with few, poorly known populations on threatened lands, Priority 2 fauna are species with few poorly known populations on conservation lands and Priority 3 fauna are those with several poorly known populations, some on conservation lands. Priority 4 fauna are species in need of monitoring: not currently threatened or in need of special protection but could become so and usually represented on conservation lands. Priority 5 fauna are species in need of monitoring: not considered threatened, but the subject of a specific conservation programme, the cessation of which would result in the species becoming threatened within five years.

Certain populations or communities of fauna may be of local significance or interest because of their patterns of distribution and abundance. For example, fauna may be locally significant because they are range extensions to the previously known distribution or are newly discovered species (and have the potential to be of more than local significance). In addition, many species are in decline because of threatening processes (land clearing, grazing, and changed fire regimes) and relict populations of such species assume local importance for DBCA. It is not uncommon for DBCA to make comment on these species of interest.

Fauna is a key consideration of the proposal. Quokkas are known to access properties, houses and food preparation/serving areas throughout the Island creating health issues for both Island visitors and the Quokkas. Bird species such as swallows can reside in very small spaces in buildings, while seagulls, crows and ravens have all been known to create problems around food serving areas. Reptiles such as snakes also have the potential to create a safety hazard if encountered.

2.4.1 Fauna habitat

Significant habitat necessary for the maintenance of fauna indigenous to Western Australia as well as TECs is given special consideration in environmental impact assessments, and areas covered by TECs have special status as Environmentally Sensitive Areas (ESAs) under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

In addition, DBCA maintains a list of Priority Ecological Communities which identifies those communities that need further investigation before possible nomination for TEC status.

No TECs or PECs, or their buffers, occur within the proposed clearing area (DBCA 2018).

Rottnest Island provides critical habitat for a range of fauna species, including several species listed as conservation significant under State and Commonwealth legislation.

There are six main terrestrial habitats on Rottnest Island, each characterised by a variety of landforms and vegetation assemblages, (Winn 2007). The proposed clearing area lies within the island's Coastal Habitat.

Rottnest's Coastal habitat comprises limestone cliffs, mobile and stationary dunes, and sandy beaches. The mobile dunes occur on beach backshores, foredunes and blowouts, while the stable dunes are located behind the mobile sand dunes and are generally older.

2.4.2 Fauna diversity

All of Rottnest Island's fauna is protected under the *Rottnest Island Authority Act 1987*.

A total of 186 terrestrial vertebrate fauna species are known to occur on the Rottnest Island, including two mammals, 157 birds, 24 reptiles and three amphibians (Appendix 1). Of these, 50 are conservation listed (Appendix 2).

2.4.3 Conservation listed fauna

Conservation listed species have been divided into three categories including:

1. Conservation significance (CS) 1 - listed under legislation (EPBC Act; WC Act).
2. Conservation significance (CS) 2 - listed as Priority by Department of Biodiversity, conservation and Attractions.
3. Conservation significance (CS) 3 - locally significant or otherwise of note in the area.

The overall list of significant species includes 44 CS1 species, two CS2 species and 29 CS3 species (Table 4).

Table 4: Conservation significant terrestrial vertebrate species that occur on Rottnest Island.

Taxon	CS1	CS2	CS3	Total
Frogs	-	-	-	0
Reptiles	2	-	-	2
Birds	41	2	4	47
Mammals	1	-	-	1
Total	44	2	4	50

Of the 50 conservation listed vertebrate fauna species known to occur on the island, 39 are bird species that are vagrant or migrant visitors, and do not breed on Rottnest Island. These species are highly unlikely to occur within the proposed clearing area. The remaining 11 conservation listed taxa are known residents of Rottnest Island, and are also known to breed on the island, these species are considered to have a greater potential to occur within the proposed clearing area (Table 5).

The removal of 0.27 ha of potential habitat is not expected to be a significant impact to conservation significant fauna species, or populations at a local or regional scale.

Table 5: Fauna of conservation significance potentially occurring within the Clearing Area

Taxon	Conservation Status		Broad habitat type	Likelihood of occurrence
	EPBC Act	WC Act / DBCA		
Mammals				
Quokka <i>Setonix brachyurus</i>	Vulnerable (mainland)	Schedule 1 (mainland)	Quokkas are found in varying densities across the entire island, in all terrestrial habitat types (RIA 2014a).	Likely
Birds				
Bridled Tern <i>Sterna anaethetus</i>	Least Concern	Schedule 3	Bridled Terns occupy tropical and subtropical seas, breeding on islands, including vegetated coral cays, rocky continental islands and rock stacks. Nests are usually found in rocky areas or on coral, concealed in crevices or caves up to 1.5 m deep, under rocks, among talus or coral rubble, on ledges of cliffs, or on the ground beneath low shrubs, or among grasses. The Bridled Tern roosts onshore when breeding on branches of shrubs or low trees, on rocks, less often on the ground among vegetation or rubble or on the shoreline. However, at the start of the breeding season and when the chicks are older (about 40 days old), birds roost in groups on sandbanks or beaches. Roosting behaviour away from breeding colonies is poorly known, but birds appear not to roost ashore. Bridled Terns feed on a range of species of fish, crustaceans, cephalopods and insects, thus the ocean is their primary foraging habitat (DEE 2018)	Unlikely
Caspian Tern <i>Sterna caspia</i>	Least Concern	Schedule 3	The Caspian Tern is found in sheltered coastal embayments. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes, waterholes, reservoirs, rivers and creeks. Foraging is usually in open wetlands, including lakes and rivers, but can also include open coastal waters. Breeding occurs on low islands, cays, spits, banks, ridges, beaches of sand or shell, terrestrial wetlands and stony or rocky islets or banks. Generally roosting occurs on bare exposed sand or shell spits, banks or shores of coasts, lakes, estuaries, coastal lagoons and inlets (DEE 2018)	Unlikely
Crested Tern <i>Sterna bergii</i>	Least Concern	Schedule 3	The Crested Tern is found in coastal habitat. Nests are located on low-lying sandy, rocky, or coral islands, sometimes amongst stunted shrubs, often without shelter. When not breeding, the crested tern roosts or rests on open shores, less often on boats, pilings, harbour buildings and raised salt mounds in lagoons (DEE 2018)	Unlikely
Eastern Reef Egret <i>Egretta sacra</i>	Least Concern	Schedule 3	The Eastern Reef Egret prefers beaches, rocky shores, tidal rivers and inlets, mangroves, and exposed coral reefs (DEE 2018)	Unlikely
Fairy Tern <i>Sterna nereis</i>	Vulnerable	Not listed	The Fairy Tern is found on coastal beaches, inshore and offshore islands, sheltered inlets, sewage farms, harbours, estuaries and lagoons. It favours both fresh and saline wetlands and near-coastal terrestrial wetlands, including lakes and salt-ponds (Birdlife 2018).	Unlikely

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Taxon	Conservation Status		Broad habitat type	Likelihood of occurrence
	EPBC Act	WC Act / DBCA		
Rainbow Bee-eater <i>Merops ornatus</i>	Least Concern	Schedule 3	The Rainbow Bee-eater is most often found in open forests, woodlands and shrublands, and cleared areas, usually near water. It will be found on farmland with remnant vegetation and in orchards and vineyards. It will use disturbed sites such as quarries, cuttings and mines to build its nesting tunnels (Birdlife 2018)	Unlikely
Roseate Tern <i>Sterna dougalli</i>	Least Concern	Schedule 3	The Roseate Tern inhabits rocky and sandy beaches, coral reefs, sand cays and offshore islands. Foraging occurs along the seaward margin, within reef lagoons, or over the reef itself. The Roseate Tern usually roosts or floats in the intertidal zone on islands, including on the upper sections of beaches, above the high-water mark (but still in the wash-zone) (DEE 2018)	Unlikely
Wedge-tailed Shearwater <i>Puffinus pacificus</i>	Least Concern	Schedule 3	The Wedge-tailed Shearwater is a pelagic, marine bird known from tropical and subtropical waters. The species usually excavates burrows on flat or flattish areas with dense grassy and tussocky vegetation (Birdlife 2018)	Unlikely
Reptiles				
Rottneest Island Dugite <i>Pseudonaja affinis exilis</i>	Vu	Schedule 1	Coastal habitat, Limestone heath, Woodland, Settlement (RIA 2014a)	Possible
Rottneest Island Bobtail <i>Tiliqua rugosa korow</i>	Vu	Schedule 1	Coastal habitat, Limestone heath, Woodland, Settlement (RIA 2014a)	Possible

EPBC Act listed species: V = Vulnerable, E = Endangered, C = Critically Endangered,

WC Act listed species: S1 – S7 = Schedule 1 - 7; DPaw Priority Species: P1 - P5 = Priority 1 - 5.

2.5 Surrounding Reserves

Rottnest Island is an A-class reserve, however parts of the Island, specifically the settlement area, which includes the proposed clearing area have been set aside for accommodation and recreation. The proposed clearing is unlikely to have a negative impact on the environmental impact on the values of the reserve outside the clearing area.

3. Assessment against the ten clearing principles

An assessment of the proposed clearing against the ten clearing principles outlined in Schedule 5 of the EP Act is provided in Table 6. This assessment demonstrates that the proposed removal of up to 0.27 ha of native vegetation is not at variance with any of the clearing principles. On this basis, Pinky's Beach Pty Ltd anticipates that the proposed clearing of up to 0.27 ha of native vegetation can occur.

Table 6: Assessment against the ten clearing principles

Principle	Assessment	Conclusion
Native vegetation should not be cleared if it comprises a high level of biological diversity.	The vegetation within the proposed clearing area is completely degraded with poor diversity. Where appropriate, trees within the proposed clearing area will be retained based on an assessment against fire safety and structural considerations. Furthermore, where appropriate existing ground, including shrubs and groundcover will also be retained.	The proposed clearing is not considered to be at variance with this principle as the clearing proposed will not result in an impact to the biological diversity of the area.
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 indigenous to Western Australia.	<p>Although the proposed clearing area contains some low quality potential habitat for conservation listed species, removal of this habitat is not expected to result in a significant impact to any of the species, given the availability of continuous areas of habitat on Rottnest Island, outside of the Settlement Area.</p> <p>The proposed clearing of up to 0.27 ha of vegetation will result in some level of impact to fauna species potentially occurring in the area, however the clearing will not greatly restrict the habitat available for these species and due to the highly mobile nature of all species that may occur, any impacts are not expected to be significant.</p> <p>The habitat proposed to be removed is not considered to be habitat critical for the survival of any of the conservation significant species occurring or potentially occurring in the clearing area. The proposed clearing area is located on Rottnest Island where there are large continuous areas of protected habitat.</p>	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No Threatened flora species have previously been recorded (DBCA 2018) or are likely to occur within the proposed clearing area.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
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.	No TECs or PECs will be impacted by the proposed clearing or are known from the proposed clearing area (DBCA 2018).	The proposed clearing is not considered to be at variance with this principle.
Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	<p>Up to 0.27 ha of Completely Degraded vegetation is proposed to be cleared. Within the area proposed to be cleared there are currently eight mature trees, of which three are proposed to be retained.</p> <p>The vegetation association to be cleared has 66.46% of the pre-European extent remaining. The proposed clearance of up to 0.27 ha of this vegetation association, given the largely intact pre-European extent, and the Completely Degraded nature of the site, is not considered to be significant.</p> <p>Furthermore, the proposed clearing area is located on Rottnest Island where there are large continuous areas of protected remnant vegetation.</p>	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.

Principle	Assessment	Conclusion
Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	Vegetation within the proposed clearing area is not growing in, or in association with a watercourse or wetland. The nearest wetland is 740 m southwest of the site.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The risk of land degradation because of vegetation clearing is low, as the area is already disturbed. The area proposed to be cleared is up to 0.27 ha and is unlikely to contribute to land degradation outside the areas of proposed clearing. The proposed clearing area is in a coastal environment and does not involve the clearing of deep-rooted remnant native vegetation in areas prone to salinity, or disturbance of acid sulphate soils. Where appropriate, trees within the proposed clearing area will be retained based on an assessment against fire safety and structural considerations. Furthermore, where appropriate existing ground, including shrubs and groundcover will also be retained.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
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.	Rottnest Island is an A-class reserve; however, parts of the Island have been set aside for accommodation and recreation and the Proposal has been approved by the RIA. The proposed clearing is unlikely to have a negative impact on the environmental impact on the values of the reserve outside the clearing area.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
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.	The proposed clearing area is small, and a relatively large amount of vegetation will be retained, therefore groundwater will not be affected by the proposed clearing. Furthermore, surface water runoff is not expected due to the sandy nature of onsite soils and their infiltration capacity. However, in high intensity rainfall events, runoff may occur in a northeast direction towards the Indian Ocean, or the inland lakes, following the natural topography of the site.	Clearing of vegetation is not expected to cause any deterioration in the quality of surface or underground water. Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle.
Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.	The proposed clearing of vegetation is unlikely to cause or exacerbate the incidence of flooding. The Proposal will generally maintain the existing relationship between natural rainfall and local infiltration, with minimal formal management of stormwater required. As a result, significant impacts to Hydrological Processes are not expected.	Removal of vegetation within the proposed clearing area is not considered to be at variance with this principle as the vegetation clearing proposed will not cause or exacerbate the incidence of flooding.

4. Environmental approval and management

4.1 Environmental approvals

The key approval required to support the proposed clearing is a NVCP under section 51 E of the EP Act.

The assessment against the 10 clearing principles concluded that the proposed clearing, whilst resulting in some reduction in remnant native vegetation will not result in a significant impact to any flora or fauna species or threatened ecological communities.

Based on the outcomes of environmental investigations, it is considered unlikely that further environmental approvals are required. The impacts associated with vegetation clearing will be assessed through a NVCP.

4.2 Key mitigation strategies

The key mitigation actions to reduce the impacts of clearing within the proposed clearing area are:

- where appropriate, trees within the proposed clearing area will be retained based on an assessment against fire safety and structural considerations;
- retention of existing groundcover where appropriate; and
- groundcover planting of native vegetation where appropriate.

4.3 Environmental management

A Terrestrial Management Strategy (TMS) has been developed for Rottnest Island which provides an overarching management direction towards ensuring that the condition and integrity of the flora, fauna, landforms, geology and hydrology are protected, and enhanced where necessary. The objective of the TMS is to provide for sustainable management of the terrestrial environment, sustainable recreation and protection of the natural asset on which RIA bases its holiday and recreation business, and to assist the RIA in achieving financial sustainability (RIA 2014a).

Management plans have been prepared for the proposed Pinky's Beach Eco-resort, which integrate existing RIA management practices outlined in the TMS. This includes integration of relevant elements of the TMS that has been implemented by the RIA since 2008. The management plans prepared for the proposed eco-resort are complementary to the TMS for Rottnest Island; however, will be implemented separately by the Pinky's Beach Pty Ltd.

The management plans being prepared for the proposed Pinky's Beach Staff Accommodation comprise:

- Bushfire Management Plan
- Waste Management Plan
- Wildlife Management Plan

Implementing and adherence to the measures in these Management Plans will ensure minimal impact as the result of the proposed clearing.

5. Conclusion

No significant impacts from the proposed clearing are expected. Management action and mitigation strategies will be employed that will further minimise the scale of impact on the environment.

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Appendix 1
Rottnest Island Fauna

Taxon	Common Name	Encounter Rate on Rottnest	Breeding Status on Rottnest	Residency Status	IUCN Redlist Global Status	EPBC Act National Status	Wildlife Conservation Act 1950 Status	DBCA Priority Status
Birds								
<i>Pachyptila desolata</i>	Antarctic Petrel	Rare	Non-breeding	Migrant	Least Concern			
<i>Stercorarius parasiticus</i>	Arctic Jaeger	Rare	Non-breeding	Migrant	Least Concern			
<i>Anhinga novaehollandiae</i>	Australasian Darter	Rare	Non-breeding	Unknown	Least Concern			
<i>Morus serrator</i>	Australasian Gannet	Moderately Common	Non-breeding	Migrant	Least Concern			
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe	Rare	Non-breeding	Vagrant	Least Concern			
<i>Anhinga novaeseelandiae</i>	Australasian Pipit	Uncommon	Breeding	Resident	Least Concern			
<i>Falco longipennis</i>	Australian Hobby	Rare	Non-breeding	Unknown	Near Threatened		Priority 4	
<i>Nycticorax nycticorax</i>	Australian Little Bittern	Rare	Non-breeding	Vagrant	Least Concern			
<i>Gymnorhina tibicen</i>	Australian Magpie	Moderately Common	Non-breeding	Vagrant	Least Concern			
<i>Pelecanus conspicillatus</i>	Australian Pelican	Common	Non-breeding	Resident	Least Concern			
<i>Haematopus longirostris</i>	Australian Pied Oystercatcher	Very Common	Breeding	Resident	Least Concern			
<i>Corvus coronoides</i>	Australian Raven	Very Common	Breeding	Resident	Least Concern			
<i>Barnardius zonarius</i>	Australian Ringnecked Parrot	Rare	Non-breeding	Vagrant	Least Concern			
<i>Tadorna tadornoides</i>	Australian Shelduck	Very Common	Breeding	Resident	Least Concern			
<i>Chenonetta jubata</i>	Australian Wood Duck	Rare	Non-breeding	Vagrant	Least Concern			
<i>Vanellus tricolor</i>	Banded Lapwing	Moderately Common	Breeding	Resident	Least Concern			
<i>Cladorhynchus leucocephalus</i>	Banded Stilt	Very Common	Non-breeding	Unknown	Least Concern			
<i>Limosa lapponica</i>	Bar-tailed Godwit	Common	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Calyptrornis bairdii</i>	Baird's Cockatoo	Rare	Non-breeding	Vagrant	Endangered			
<i>Cygnus atralis</i>	Black Swan	Uncommon	Unknown	Vagrant	Least Concern			
<i>Thalassarche melanophrys</i>	Black-browed Albatross	Rare	Non-breeding	Migrant	Endangered	Vulnerable	Vulnerable, Schedule 1	
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	Rare	Non-breeding	Vagrant	Least Concern			
<i>Eisayornis melanops</i>	Black-fronted Dotterel	Rare	Non-breeding	Vagrant	Least Concern			
<i>Elianus axillaris</i>	Black-shouldered Kite	Moderately Common	Unknown	Resident	Least Concern			
<i>Himantopus himantopus</i>	Black-winged Stilt	Moderately Common	Breeding	Unknown	Least Concern			
<i>Sterna anaethetus</i>	Bridled Tern	Moderately Common	Breeding	Migrant	Least Concern		Schedule 3	
<i>Falco berigora</i>	Brown Falcon	Rare	Non-breeding	Vagrant	Least Concern			
<i>Accipiter fasciatus</i>	Brown Goshawk	Rare	Non-breeding	Vagrant	Least Concern			
<i>Lichmera indistincta</i>	Brown Honeyeater	Rare	Non-breeding	Vagrant	Least Concern			
<i>Calharacta antarctica</i>	Brown Skua	Rare	Non-breeding	Migrant	Least Concern			
<i>Phalaropus elegans</i>	Brush Bronzewing	Extinct on Rottnest	Unknown	Unknown	Least Concern			
<i>Gallinulus philippensis</i>	Buff-banded Rail	Uncommon	Breeding	Resident	Least Concern			
<i>Daption capense</i>	Cape Petrel	Rare	Non-breeding	Migrant	Least Concern			
<i>Calyptrornis leucostriatus</i>	Carmaby's Cockatoo	Rare	Non-breeding	Vagrant	Endangered	Endangered	Endangered, Schedule 1	
<i>Sterna caspia</i>	Caspian Tern	Very Common	Breeding	Resident	Least Concern		Schedule 3	
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk	Rare	Unknown	Resident	Least Concern			
<i>Tinga nebulosa</i>	Common Greenshank	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Phasianus colchicus</i>	Common Pheasant	Very Common	Breeding	Resident	Least Concern			
<i>Actitis hypoleucos</i>	Common Sandpiper	Uncommon	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Oxyphaps lophotes</i>	Crested Pigeon	Rare	Non-breeding	Vagrant	Least Concern			
<i>Sterna bergii</i>	Crested Tern	Very Common	Breeding	Resident	Least Concern		Schedule 3	
<i>Callitis ferruginea</i>	Curlew Sandpiper	Moderately Common	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Tyto javanica</i>	Eastern Barn Owl	Rare	Unknown	Resident	Least Concern			
<i>Numerus madagascariensis</i>	Eastern Curlew	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	Priority 4
<i>Ardea modesta</i>	Eastern Great Egret	Rare	Non-breeding	Vagrant	Not Evaluated		Schedule 3	
<i>Pandion cristatus</i>	Eastern Osprey	Very Common	Breeding	Resident	Not Evaluated		Schedule 3	
<i>Egretta sacra</i>	Eastern Reef Egret	Common	Breeding	Resident	Least Concern		Schedule 3	
<i>Sterna nereis</i>	Fairy Tern	Very Common	Breeding	Resident	Vulnerable			
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo	Uncommon	Breeding	Vagrant	Least Concern		Schedule 3	
<i>Puffinus carmelis</i>	Flesh-footed Shearwater	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Apus pacificus</i>	Fork-tailed Swift	Rare	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Eolophus roseicapilla</i>	Galah	Moderately Common	Breeding	Resident	Least Concern			
<i>Pachycephala pectoralis</i>	Golden Whistler	Common	Breeding	Resident	Least Concern			
<i>Phalacrocorax carbo</i>	Great Cormorant	Rare	Non-breeding	Unknown	Least Concern			
<i>Podiceps cristatus</i>	Great Crested Grebe	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Callidris tenuirostris</i>	Great Knot	Rare	Non-breeding	Vagrant	Least Concern		Schedule 3	
<i>Charadrius leschenaultii</i>	Greater Sand Plover	Uncommon	Non-breeding	Unknown	Least Concern		Schedule 3	
<i>Rhipidura fuliginosa</i>	Grey Fantail	Rare	Unknown	Vagrant	Least Concern		Schedule 3	
<i>Pluvialis squatarola</i>	Grey Plover	Moderately Common	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Colluricincla harmonica</i>	Grey Shrike-thrush	Rare	Non-breeding	Resident	Least Concern			
<i>Anas gracilis</i>	Grey Teal	Very Common	Breeding	Resident	Least Concern			
<i>Thalassarche chrysostrama</i>	Grey-headed Albatross	Rare	Non-breeding	Migrant	Vulnerable	Endangered	Vulnerable, Schedule 1	
<i>Heteroscelus brevipes</i>	Grey-tailed Tattler	Common	Non-breeding	Migrant	Least Concern		Schedule 3	
<i>Aythya australis</i>	Hardhead	Rare	Non-breeding	Vagrant	Least Concern			

<i>Polocephalus poliocephalus</i>	Hoary-headed Grebe	Moderately Common	Non-breeding	Unknown	Least Concern			
<i>Thimomis rubricollis</i>	Hooded Plover	Rare	Non-breeding	Vagrant	Near Threatened			Priority 4
<i>Chrysococcyx basalis</i>	Horsfield's Bronze-Cuckoo	Uncommon	Breeding	Migrant	Least Concern			
<i>Pavo cristatus</i>	Indian Peafowl	Very Common	Breeding	Resident	Least Concern			
<i>Streptopelia senegalensis</i>	Laughing Turtle-Dove	Very Common	Breeding	Resident	Least Concern			
<i>Sterna bengalensis</i>	Lesser Crested Tern	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Anous tenuirostris</i>	Lesser Noddy	Rare	Non-breeding	Vagrant	Least Concern	Vulnerable, Schedule 1		
<i>Charadrius mongolus</i>	Lesser Sand Plover	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	Rare	Non-breeding	Unknown	Least Concern			
<i>Cactusa sanguinea</i>	Little Cormorant	Rare	Non-breeding	Vagrant	Least Concern			
<i>Hieraaetus morphnoides</i>	Little Eagle	Rare	Non-breeding	Resident	Least Concern			
<i>Egretta garzetta</i>	Little Egret	Rare	Non-breeding	Vagrant	Least Concern			
<i>Eudiptula minor</i>	Little Plover	Rare	Non-breeding	Vagrant	Least Concern			
<i>Phalacrocorax melanoleucos</i>	Little Pied Cormorant	Very Common	Breeding	Resident	Least Concern			
<i>Charadrius dubius</i>	Little Ringed Plover	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Puffinus assimilis</i>	Little Shearwater	Rare	Breeding	Vagrant	Least Concern			
<i>Anthrochaera chrysopetra</i>	Little Wattlebird	Rare	Non-breeding	Vagrant	Least Concern			
<i>Gallina cyanoleuca</i>	Magpie-lark	Rare	Non-breeding	Resident	Least Concern			
<i>Tringa stagnatilis</i>	Marsh Sandpiper	Rare	Non-breeding	Vagrant	Least Concern			
<i>Bizura lobata</i>	Musk Duck	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Falco cenchroides</i>	Nankeen Kestrel	Very Common	Breeding	Resident	Least Concern			
<i>Nycticorax calidonicus</i>	Nankeen Night Heron	Rare	Non-breeding	Vagrant	Least Concern			
<i>Anas superciliosa</i>	Pacific Black Duck	Very Common	Breeding	Resident	Least Concern			
<i>Pluvialis fulva</i>	Pacific Golden Plover	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Larus pacificus</i>	Pacific Gull	Rare	Unknown	Vagrant	Least Concern			
<i>Turnix varia</i>	Painted Button-quail	Uncommon	Breeding	Resident	Least Concern			
<i>Cuculus pallidus</i>	Pallid Cuckoo	Rare	Breeding	Migrant	Least Concern			
<i>Callidris melanotos</i>	Pectoral Sandpiper	Rare	Non-breeding	Vagrant	Least Concern			
<i>Falco peregrinus</i>	Peregrine Falcon	Rare	Non-breeding	Vagrant	Least Concern			
<i>Phalacrocorax varius</i>	Pied Cormorant	Very Common	Breeding	Resident	Least Concern			
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	Rare	Non-breeding	Vagrant	Least Concern			
<i>Merops ornatus</i>	Rainbow Bee-eater	Moderately Common	Breeding	Migrant	Least Concern	Schedule 3		
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	Rare	Unknown	Vagrant	Least Concern			
<i>Callidris canutus</i>	Red Knot	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3		
<i>Anthrochaera carunculata</i>	Red Wattlebird	Rare	Non-breeding	Vagrant	Least Concern			
<i>Charadrius ruficapillus</i>	Red-capped Plover	Very Common	Breeding	Resident	Least Concern			
<i>Palaea goodenovii</i>	Red-capped Robin	Common	Breeding	Resident	Least Concern			
<i>Erythrogenys cinctus</i>	Red-kneed Darter	Rare	Non-breeding	Vagrant	Least Concern			
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet	Common	Occasionally breeding	Unknown	Least Concern			
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Uncommon	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Callidris ruficollis</i>	Red-necked Stint	Very Common	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	Rare	Non-breeding	Vagrant	Least Concern			
<i>Polytelus anthopopus</i>	Regent Parrot	Rare	Non-breeding	Vagrant	Least Concern			
<i>Anthus novaeseelandiae</i>	Richard's Pipit	Rare	Unknown	Resident	Least Concern			
<i>Columba livia</i>	Rock Dove	Rare	Non-breeding	Vagrant	Least Concern			
<i>Neophema petrophila</i>	Rock Parrot	Uncommon	Breeding	Resident	Least Concern			
<i>Eudyptes chrysocome</i>	Rockhopper Penguin	Rare	Non-breeding	Vagrant	Vulnerable			
<i>Sterna dougalli</i>	Rosate Tern	Uncommon	Occasionally breeding	Unknown	Least Concern	Schedule 3		
<i>Arenaria interpres</i>	Ruddy Turnstone	Very Common	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Pachycephala rufiventris</i>	Rufous Whistler	Extinct	Unknown	Unknown	Least Concern			
<i>Todiramphus sanctus</i>	Sacred Kingfisher	Very Common	Breeding	Resident	Least Concern			
<i>Callidris alba</i>	Sanderling	Moderately Common	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Callidris acuminata</i>	Sharp-tailed Sandpiper	Uncommon	Non-breeding	Migrant	Least Concern	Schedule 3		
<i>Chrysococcyx lucidus</i>	Shining Bronze-Cuckoo	Rare	Breeding	Vagrant	Least Concern			
<i>Larus novaehollandiae</i>	Silver Gull	Very Common	Breeding	Resident	Least Concern			
<i>Zosterops lateralis</i>	Silvereye	Very Common	Breeding	Resident	Least Concern			
<i>Lichenostomus virescens</i>	Singing Honeyeater	Very Common	Breeding	Resident	Least Concern			
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	Rare	Non-breeding	Vagrant	Least Concern			
<i>Ninox novaeseelandiae</i>	Southern Boobook	Rare	Unknown	Resident	Least Concern			
<i>Fulmarus glacialis</i>	Southern Fulmar	Rare	Non-breeding	Migrant	Least Concern			
<i>Macronectes giganteus</i>	Southern Giant-Petrel	Rare	Non-breeding	Migrant	Least Concern	Endangered		
<i>Porzana tabuensis</i>	Spotted Crane	Rare	Unknown	Vagrant	Least Concern			
<i>Streptopelia chinensis</i>	Spotted Dove	Common	Breeding	Resident	Least Concern			
<i>Circus assimilis</i>	Spotted Harrier	Rare	Non-breeding	Vagrant	Least Concern			
<i>Eurostoopodius argus</i>	Spotted Nightjar	Rare	Non-breeding	Unknown	Least Concern			
<i>Pardalotus punctatus</i>	Spotted Pardalote	Rare	Non-breeding	Vagrant	Least Concern			

<i>Threskiornis spinicollis</i>	Straw-necked Ibis	Rare	Non-breeding	Unknown	Least Concern		
<i>Pardalotus striatus</i>	Striated Pardalote	Rare	Non-breeding	Vagrant	Least Concern		
<i>Circus approximans</i>	Swamp Harrier	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3	
<i>Xenus chereus</i>	Terek Sandpiper	Rare	Non-breeding	Vagrant	Least Concern		
<i>Petrochelidon nigricans</i>	Tree Martin	Very Common	Unknown	Migrant	Least Concern	Vulnerable	
<i>Diomedea exulans</i>	Wandering Albatross	Rare	Non-breeding	Unknown	Vulnerable	Schedule 1	
<i>Puffinus pacificus</i>	Wedge-tailed Shearwater	Very Common	Breeding	Resident	Least Concern	Schedule 3	
<i>Sminornis brevirostris</i>	Weebill	Rare	Breeding	Resident	Least Concern		
<i>Hirundo neoxena</i>	Welcome Swallow	Very Common	Breeding	Resident	Least Concern		
<i>Gerygone fusca</i>	Western Gerygone	Very Common	Breeding	Resident	Least Concern		
<i>Acanthiza lineolata</i>	Western Thornbill	Rare	Non-breeding	Vagrant	Least Concern		
<i>Numerius phaeopus</i>	Whimbrel	Uncommon	Non-breeding	Migrant	Least Concern	Schedule 3	
<i>Chlidonias hybridus</i>	Whiskered Tern	Rare	Non-breeding	Vagrant	Least Concern		
<i>Haliaeetus spheerulus</i>	Whistling Kite	Rare	Non-breeding	Vagrant	Least Concern		
<i>Charadrius leucosternum</i>	White-backed Swallow	Rare	Occasionally breeding	Vagrant	Least Concern		
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3	
<i>Senecornis frontalis</i>	White-browed Scrubwren	Very Common	Breeding	Resident	Least Concern		
<i>Egretta novaehollandiae</i>	White-faced Heron	Uncommon	Non-breeding	Resident	Least Concern		
<i>Ephialtina albifrons</i>	White-fronted Chat	Very Common	Breeding	Resident	Least Concern		
<i>Pterodroma lessonae</i>	White-headed Petrel	Rare	Non-breeding	Unknown	Least Concern		
<i>Ardea pacifica</i>	White-necked Heron	Rare	Non-breeding	Vagrant	Least Concern	Schedule 3	
<i>Chlidonias leucopterus</i>	White-winged Black Tern	Rare	Non-breeding	Vagrant	Least Concern		
<i>Lalage sueurii</i>	White-winged Triller	Rare	Non-breeding	Vagrant	Least Concern		
<i>Rhipidura leucophrys</i>	Willie Wagtail	Rare	Non-breeding	Vagrant	Least Concern		
<i>Oceanites oceanicus</i>	Wilson's Storm-Petrel	Rare	Non-breeding	Migrant	Least Concern	Schedule 3	
<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	Uncommon	Non-breeding	Vagrant	Endangered		
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	Rare	Non-breeding	Vagrant	Least Concern		
Reptiles							
<i>Aprasia repens</i>	South-western Sandplain Worm Lizard				Not Evaluated		
<i>Acritoscincus trilineatum</i>	Western Three-lined Skink				Not Evaluated		
<i>Bassiana trilineata</i>	South-western Cool Skink				Not Evaluated		
<i>Christinus marmoratus</i>	Marbled Gecko				Not Evaluated		
<i>Ctenolius fallens</i>	West Coast Ctenolius				Not Evaluated		
<i>Egernia kingii</i>	King's Skink				Not Evaluated		
<i>Egernia napoleonis</i>	South-western Crevice Skink				Not Evaluated		
<i>Hemiergis quadrimaculata</i>	Two-toed Earless Skink				Not Evaluated		
<i>Lerista chrisinae</i>	Bold-striped Four-toed Lerista				Not Evaluated		
<i>Lerista elegans</i>	West Coast Four-toed Lerista				Not Evaluated		
<i>Lerista lineata</i>	Perth Lined Lerista				Not Evaluated		
<i>Lerista lineopunctulata</i>	Western Worm Lerista				Not Evaluated		
<i>Lerista praepedita</i>	Burton's Legless Lizard				Not Evaluated		
<i>Lialis furtivus</i>	Common Dwarf Skink				Not Evaluated		
<i>Menetia grayii</i>	Western Pale-flecked Morethia				Not Evaluated		
<i>Morethia lineocellata</i>	Rottnest Island Dugite				Not Evaluated		
<i>Pseudonaja affinis exilis</i>	Southern Blind Snake	Uncommon	Breeding	Resident	Not Evaluated	Vulnerable, Schedule 1	
<i>Ramphophyllus australis</i>	South-western Spiny-tailed Gecko				Not Evaluated		
<i>Strophurus spinigerus spinigerus</i>	Rottnest Island Bobtail	Rare	Breeding	Resident	Not Evaluated	Vulnerable, Schedule 1	
<i>Tiliqua rugosa konowi</i>					Not Evaluated		
<i>Skink (sp. unknown)</i>					Not Evaluated		
<i>Gecko (sp. unknown)</i>					Not Evaluated		
<i>Lerista (sp. unknown)</i>					Not Evaluated		
<i>Other species</i>					Not Evaluated		
Amphibians							
<i>Heleioporus eyrei</i>	Moaning Frog				Not Evaluated		
<i>Cinia insignifera</i>	Sandplain Froglet				Least Concern		
<i>Litoria moorei</i>	Motorbike Frog				Least Concern		
Mammals							
<i>Salix brachyurus</i>	Quokka	Very Common	Breeding	Resident	Vulnerable (mainland)	Vulnerable	Schedule 1 (mainland)
<i>Tadarida australis</i>	White-striped Free-tailed Bat				Least Concern		

Appendix 2
Rottnest Island Conservation Listed
Fauna

Species	Common Name	Encounter Rate on Rottnest	Breeding Status	Residency	IUCN	EPBC Act	WC Act	DBCAs
BIRDS								
<i>Ixobrychus minutus dubius</i>	Australian Little Bittern	Rare	Non-breeding	Vagrant	Near Threatened			Priority 4
<i>Limosa lapponica</i>	Bar-tailed Godwit	Common	Non-breeding	Migrant	Least Concern		S3	
<i>Calyptrorhynchus baidinii</i>	Baudin's Cockatoo	Rare	Non-breeding	Vagrant	Endangered			
<i>Thalassarche melanophrys</i>	Black-browed Albatross	Rare	Non-breeding	Migrant	Endangered	Vu	Vu, S1	
<i>Sterna anaethetus</i>	Bridled Tern	Moderately Common	Breeding	Migrant	Least Concern		S3	
<i>Calyptrorhynchus latirostris</i>	Carnaby's Cockatoo	Rare	Non-breeding	Vagrant	Endangered	En	En, S1	
<i>Sterna caspia</i>	Caspian Tern	Very Common	Breeding	Resident	Least Concern		S3	
<i>Tringa nebularia</i>	Common Greenshank	Rare	Non-breeding	Migrant	Least Concern		S3	
<i>Actitis hypoleucos</i>	Common Sandpiper	Uncommon	Non-breeding	Migrant	Least Concern		S3	
<i>Sterna bergii</i>	Crested Tern	Very Common	Breeding	Resident	Least Concern		S3	
<i>Calidris ferruginea</i>	Curlew Sandpiper	Moderately Common	Non-breeding	Migrant	Least Concern		S3	
<i>Numenius madagascariensis</i>	Eastern Curlew	Rare	Non-breeding	Vagrant	Least Concern		S3	Priority 4
<i>Ardea modesta</i>	Eastern Great Egret	Rare	Non-breeding	Vagrant	Not Evaluated		S3	
<i>Egretta sacra</i>	Eastern Reef Egret	Common	Breeding	Resident	Least Concern		S3	
<i>Sterna nereis</i>	Fairy Tern	Very Common	Breeding	Resident	Vulnerable			
<i>Puffinus carneipes</i>	Flesh-footed Shearwater	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Apus pacificus</i>	Fork-tailed Swift	Rare	Non-breeding	Migrant	Least Concern		S3	
<i>Calidris tenuirostris</i>	Great Knot	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Charadrius leschenaultii</i>	Greater Sand Plover	Uncommon	Non-breeding	Unknown	Least Concern		S3	
<i>Pluvialis squatarola</i>	Grey Plover	Moderately Common	Non-breeding	Migrant	Least Concern		S3	
<i>Thalassarche chrysostrama</i>	Grey-headed Albatross	Rare	Non-breeding	Migrant	Vulnerable	En	Vu, S1	
<i>Heteroscellus brevipes</i>	Grey-tailed Tattler	Common	Non-breeding	Migrant	Least Concern		S3	
<i>Thinornis rubricollis</i>	Hooded Plover	Rare	Non-breeding	Vagrant	Near Threatened			Priority 4
<i>Sterna bengalensis</i>	Lesser Crested Tern	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Anous tenuirostris</i>	Lesser Noddy	Rare	Non-breeding	Vagrant	Least Concern		Vu, S1	
<i>Charadrius mongolus</i>	Lesser Sand Plover	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Charadrius dubius</i>	Little Ringed Plover	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Tringa stagnatilis</i>	Marsh Sandpiper	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Pluvialis fulva</i>	Pacific Golden Plover	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Merope ornatus</i>	Rainbow Bee-eater	Moderately Common	Breeding	Migrant	Least Concern		S3	
<i>Calidris canutus</i>	Red Knot	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Uncommon	Non-breeding	Migrant	Least Concern		S3	
<i>Calidris ruficollis</i>	Red-necked Stint	Very Common	Non-breeding	Migrant	Least Concern		S3	
<i>Eudyptes chrysocome</i>	Rockhopper Penguin	Rare	Non-breeding	Vagrant	Vulnerable			
<i>Sterna dougalli</i>	Roseate Tern	Uncommon	Occasionally breeding	Unknown	Least Concern		S3	
<i>Arenaria interpres</i>	Ruddy Turnstone	Very Common	Non-breeding	Migrant	Least Concern		S3	
<i>Calidris alba</i>	Sanderling	Moderately Common	Non-breeding	Migrant	Least Concern		S3	
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Uncommon	Non-breeding	Migrant	Least Concern		S3	
<i>Macronectes giganteus</i>	Southern Giant-Petrel	Rare	Non-breeding	Migrant	Least Concern	En	En, S1	
<i>Xenus cinereus</i>	Terek Sandpiper	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Diomedea exulans</i>	Wandering Albatross	Rare	Non-breeding	Migrant	Vulnerable	Vu	Vu, S1	
<i>Puffinus pacificus</i>	Wedge-tailed Shearwater	Very Common	Breeding	Migrant	Least Concern		S3	
<i>Numenius phaeopus</i>	Whimbrel	Uncommon	Non-breeding	Migrant	Least Concern		S3	
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Chlidonias leucopterus</i>	White-winged Black Tern	Rare	Non-breeding	Vagrant	Least Concern		S3	
<i>Oceanites oceanicus</i>	Wilson's Storm-Petrel	Rare	Non-breeding	Migrant	Least Concern		S3	
<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	Uncommon	Non-breeding	Vagrant	Endangered			
REPTILES								
<i>Pseudonaja affinis exilis</i>	Rottnest Island Dugite	Uncommon	Breeding	Resident	Not Evaluated		Vu, S1	
<i>Tiliqua rugosa konowi</i>	Rottnest Island Bobtail	Rare	Breeding	Resident	Not Evaluated		Vu, S1	
MAMMALS								
<i>Setonix brachyurus</i>	Quokka	Very Common	Breeding	Resident	Vulnerable (mainland)	Vu	Vu, S1 (mainland)	