

PROPOSED PERTH SEAWATER
DESALINATION PROJECT
KWINANA
FAUNA ASSESSMENT

AUGUST 2004

On behalf of:
WATER CORPORATION

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1. INTRODUCTION

This report has been prepared in response to an invitation from the Water Corporation to carry out a fauna assessment over an area required for the proposed Perth Seawater Desalination Plant. The site is located near the existing Kwinana Power Station and is approximately centred on latitude 32° 12' 11" and longitude 115° 46' 27".

The area assessed was limited to and includes all remnant vegetation located north of Barter Road within the proposed Kwinana Power Station Site and along the coastal strip between the proposed desalination plant site and the beach. The remnant vegetation covers an area of about 2.7ha (see Figure 1).

For the purpose of the fauna assessment it has been assumed that all remnant vegetation within the study area will be cleared or potentially cleared.

The Water Corporation has defined the fauna assessment objectives as being:

- Conduct a desktop analysis and field survey (no trapping) to determine the fauna composition of the area
- Document the impacts on fauna as a result of the proposed works.
- Conduct services in accordance with the best-practise flora and fauna surveys.
- Recommend best practice management techniques to minimise impacts on endemic or protected fauna.
- Recommend any requirements that the proponent must follow under the federal Environmental Protection and Biodiversity Conservation Act 1999 and the Wildlife Conservation Act 1950.

2. METHODOLOGY

2.1 HABITAT ASSESSMENT

A habitat assessment was carried out specifically targeting the likely habitats of threatened vertebrate species listed under the relevant Federal and State Acts and are shown as potentially occurring in the general area. The aim of the habitat assessment was to determine if it was likely any threatened species would be utilising the areas that were to be impacted on during construction of the proposed desalination plant.

The initial phase of the assessment involved the review of available information on the habitats of the threatened species listed as potentially occurring in the



area. During the field survey the habitat at the site was assessed to determine its potential to be hosting any of the listed threatened species in addition to aiding in the compilation of an expected fauna list based on available habitats and direct observations.

2.2 FAUNA

2.2.1 Expected Fauna

A list of vertebrate fauna expected to occur within the study area was been compiled from searches done on the WA Museum Database, the Department of Conservation and Land Managements Threatened Fauna Database, Department of the Environment and Heritage Departments Commonwealth Environment Protection and Biodiversity Conservation Database, published and unpublished reports and specialist books detailing fauna of the general area. Species observed during field work have also been included.

2.2.2 Fauna of Conservation Significance

The conservation status of fauna species in Western Australia is assessed under the federal *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the state administered *Western Australian Wildlife Conservation Act 1950* (WAWC Act).

Under the EPBC Act threatened fauna may be listed in any one of the following categories as defined in Section 179 of the Act:

- Extinct;
- *Extinct in the wild;
- *Critically endangered;
- *Endangered;
- *Vulnerable; and
- Conservation dependent.

*Only species in those categories marked with an asterisk are matters of national environmental significance under the EPBC Act.

The WAWC Act uses a set of schedules (see Table 1) in addition to utilising the categories defined by the EPBC Act.



Table 1: Western Australian Threatened Fauna Categories

Category	Code	Description
Schedule 1	S1	Fauna which is rare or likely to become extinct
Schedule 2	S2	Fauna which is presumed extinct
Schedule 3	S3	Birds which are subject to an agreement between the governments of Australia and Japan (JAMBA) relating to the protection of migratory birds and birds in danger of extinction
Schedule 4	S4	Fauna that is otherwise in need of special protection

In Western Australia, the Department of Conservation and Land Management (CALM) also produce a supplementary list of priority fauna. The species listed are not considered threatened under the WAWC Act, but due to lack of knowledge or where species are poorly represented in secure conservation reserves some concern for their long term survival exists. The four classifications levels are shown in Table 2.

Table 2: CALM Priority Fauna Categories

Category	Code	Description
Priority 1	P1	Taxa with few, poorly known populations on threatened lands.
Priority 2	P2	Taxa with few, poorly known populations on conservation lands.
Priority 3	P3	Taxa with several, poorly known populations, some on conservation lands.
Priority 4	P4	Taxa in need of monitoring

The EPBC Act also requires the compilation of a list of migratory species that are recognized under international treaties including the Japan Australia Migratory Bird Agreement (JAMBA), the China Australia Migratory Bird Agreement (CAMBA) and the Bonn Convention (The Convention on the conservation of Migratory Species of Wild Animals). Species listed under JAMBA are also protected under Schedule 3 of the WAWC Act.

The conservation status of all the vertebrate fauna species listed as occurring or possibly occurring in the vicinity of the study area have been assessed using



the most recent lists published in accordance with the above-mentioned Acts and CALM's priority fauna list.

2.3 LIMITATIONS OF THE STUDY

Due to the fact that the study area has a very limited extent and a history of intense disturbance and clearing, no trapping or seasonal sampling of fauna was not considered necessary. The fauna assessment has therefore been limited to a desktop analysis to provide a list of expected species and a site visit primarily aimed at habitat assessment targeting listed threatened species.

The lack of observational data on some species, for example reptile species, can be attributed to the assessment being carried out at a time of the year when specific fauna classes are least active and therefore less likely to be observed.

3. RESULTS

3.1 HABITAT ASSESSMENT

A site survey was conducted on the 12th August 2004 by Greg Harewood.

The site is immediately adjacent to the beach and the landforms consist principally of a 500 metre long, narrow (~10 to 20m wide) line of foredunes, with a 150 metre section in the southwest extending further inland about 150 metres. The south west area appears to have been re-contoured and would have originally consisted of interdunal swale and back dune landforms.

On a broad scale the study area forms part of the Coastal Belt of the Drummond Botanical subdistrict of the Southwest Botanical Province. The original vegetation would have fallen into the Quindalup vegetation complex and consisted of herblands, sedge lands and Acacia shrublands.

As stated within the tender document for this assessment, the site has very little remnant vegetation and due to historical clearing is highly modified. As a consequence of its limited extent (~2.7ha) and high level of disturbance the area has a low structural diversity. The area is also characterised by the presence of a number of exotic plant and weed species.

An Acacia thicket dominates the vegetation within the northern half of the study area, with the southern section being largely a mosaic of parkland cleared, *Agonis flexuosa*, *Acacia sp*, *Melaleuca sp* and stunted *Euclayptus sp*. The extreme southern section of the area is dominated by open areas of grasslands/herblands (see Figure 1). A large percentage of the southern area appears to have been hand planted as indicated by the presence of exotic



species and in-line plantings. Some small areas within the central, relatively protected parts of the line of foredunes have a dense covering of swordgrass (*Lepidosperum sp*) and shrub sized *Acacia sp*.

As the majority of the area is “parkland” cleared and lacks understorey the value of the site to terrestrial vertebrates is significantly reduced. No “habitat” trees or fallen hollow logs (those with hollows suitable for avian obligate nesters and some nocturnal marsupials) are present in the study area.

The low structural diversity, lack of understorey and absence of significant habitat components such as tree hollows makes the area deficient in habitat variety and those that are present are significantly degraded and have low values. Based on these observations fauna species diversity can be expected to be greatly restrained.

3.2 FAUNA

The vertebrate fauna of Western Australia can be broadly classified as having affinities to one of three biogeographical zones that have been defined across the continent. These are the Torresian (Northern), Eyrean (Central) and Bassian (Southern) divisions. These biogeographical patterns of fauna distribution have arisen due to interactions between fauna species and communities and all the components of their environment over time. The Kwinana study area is likely to contain a strong Bassian element with species present being adapted to regular winter rainfall patterns with cool temperatures and infrequent summer droughts typical of South Western Australia.

Due to the obvious separation of a number of species between the Swan Coastal Plain and the Darling Range it has been possible to further subdivide the South West Bassian division into bioregions. The study area falls totally within the Swan Coastal Plain bioregion to which some fauna species are totally restricted.

No detailed systematic fauna surveys in the proposed desalination site have been undertaken. Considerable field work has however been carried out in nearby areas such as Woodman Point and areas of the Beelii Regional Park, the results of which are documented in the relevant draft management plans (CALM et al, 2000 & 2001).

3.2.1 Expected Fauna

Table 3 summarises the numbers of expected species based on vertebrate class. A complete list of vertebrate fauna expected in the study area is held in Appendix A. Details on specially protected and priority species expected and/or listed as potentially occurring in the general area are given in the section 3.2.2.



Table 3: Summary of Expected Vertebrate Species

CLASS	Total number of expected species	Number of specially protected species	Number of priority species	Number of species observed (opportunistic)
Amphibians	0	0	0	0
Reptiles	37	0	0	1
Birds	69	2	2	6
Mammals	16	0	1	1

3.2.2 Fauna of Conservation Significance

A search of EPBC Act's Threatened Fauna list and CALM's Threatened Fauna Database identified 7 vertebrate species as potentially occurring in the general study area (see Table 4).

Table 4: Listed Threatened and Priority Species

Common Name	Scientific Name	EPBC Act	WAWC Act	CALM Priority
Carnaby's Black- Cockatoo	<i>Calyptorhynchus latirostris</i>	Endangered	S1	
Baudin's Black- Cockatoo	<i>Calyptorhynchus baudinii</i>	Vulnerable	S1	
Peregrine Falcon	<i>Falco peregrinus</i>		S4	
White-bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	Migratory	S3	
Quenda	<i>Isoodon obesulus fusciventer</i>			P4
Chuditch	<i>Dasyurus geoffroi</i>	Vulnerable		
Quokka	<i>Setonix brachyurus</i>	Vulnerabel	S1	

An account of each species and details on their distribution and habitat preference is given below.



Carnaby’s Black-Cockatoo *Calyptorhynchus latirostris*

Carnaby’s Black-Cockatoo breeds in uncleared or remnant areas of eucalypt woodland, principally salmon gum or wandoo, and shrubland dominated by Hakea, Dryandra and Banksia species, located in inland areas of the south west. Following breeding, flocks move to the higher rainfall coastal areas with Banksia woodland and/or pine plantations, accessible water, and trees surrounding watercourses.

The study area may possibly be visited by this mobile and transient species for short periods of time as it travels between areas of more suitable habitat. The study site cannot however be considered to be of any significance to this species due to the lack of trees suitable for foraging and the areas limited extent.

Baudin’s Black Cockatoo *Calyptorhynchus baudinii*

Baudin’s Cockatoo is a seasonal visitor from the more densely forested areas of the south west, its preferred breeding area. It feeds largely on the seeds of eucalypts. The species prefers Jarrah/Marri Open Forest and Jarrah/Marri/Banksia Open Woodland areas for foraging.

Like Carnaby’s Black Cockatoo this species may rarely pass over the study area but due to a lack of suitable trees for foraging, the study area cannot be considered of importance to this species.

Peregrine Falcon *Falco perigrinus*

Individuals of this species are uncommon but wide ranging across Australia. The species prefers areas characterised by rocky ledges, cliffs, watercourses, open woodland or margins with cleared land and utilises the ledges, cliff faces and large hollows/broken spouts of trees for nesting. It will also occasionally use the abandoned nests of other birds of prey.

This species may possibly utilise the general area as part of a much larger home range. Lack of suitable nest sites mean that the site would not be utilised for breeding and the proposed development will therefore not impact on this species.

White-bellied Sea Eagle *Haliaeetus leucogaster*

White-bellied sea eagles are common in coastal and near coastal areas of Australia and are also found in New Guinea, Indonesia, China, southeast Asia and India.



They nest and forage mainly near the coast but will also live near large rivers and lakes inland, often moving on a seasonal basis. White-bellied Sea-Eagles build a large stick nest, which is used for many seasons in succession.

No evidence of this species nesting on the site was found and although the species is likely to use the general area for foraging, impacts from the proposed development are unlikely due to its widespread distribution and transient behaviour.

Quenda *Isodon obesulus fusciventer*

This species preferred habitat is dense scrubby, often swampy, vegetation with dense cover. It often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover. On the Swan Coastal Plain, Quendas are often associated with wetlands as this is generally where dense vegetation is still persists.

The lack of significant areas of dense understorey and the fact that no evidence (conical diggings) of this species was found during the field survey suggest that it is not present in the study area. The likely presence of feral cats (indicated by tracks and half eaten Bobtail skink) also suggests that a viable population of Quenda's could not persist at this location.

Chuditch *Dasyurus geoffroi*

This carnivorous marsupial occupies large home ranges, is highly mobile and appears to utilise bush remnants and corridors. Chuditch are known to have occupied a wide range of habitats from woodlands, dry sclerophyll (leafy) forests, riparian vegetation, beaches and deserts.

It is extremely unlikely that this species exists in the study area. The area contains limited daytime refuges and a very limited food source for this medium size marsupial carnivore. It has not been recorded in nearby, more significant suburban bushland remnants in recent times.

Quokka *Setonix brachyurus*

Mainland populations of this species are currently restricted to densely vegetative coastal heaths, swamps and riverine habitats where they are less vulnerable to predation. Due to habitat destruction and predation the Quokka is almost completely extinct in areas of the Swan Coastal Plain.

This species can not be considered as being likely to be present in the study area due to the lack of suitable habitat, the limited size of the area and its long isolation from areas where the species may have persisted.



4. ECOLOGICAL IMPACTS OF PROPOSAL

Because of the limited extent and degraded nature of the remnant vegetation over the study area the impacts of clearing on fauna during construction of the proposed desalination plant site can not be considered significant. Of the listed threatened species that potentially exist in the area, only the more wide ranging transient avian species are likely to visit the site and then only for brief periods. The lack of suitable habitat and the study areas limited extent suggests that no threatened species breed on the site.

5. CONCLUSIONS AND RECOMMENDATIONS

Remnant vegetation within the proposed Perth Seawater Desalination Project site consists largely of regrowth and replantings over an area of highly disturbed Quindalup Dunes in close proximity to Coburn Sound. The habit appraisal carried out as part of this fauna assessment found the area to have a very low structural diversity and no habitat components of significance to any listed threatened species potentially occurring in the area. As a consequence of the degraded nature of the site and its limited extent, terrestrial fauna species richness is expected to be low and the site is also considered to have little or no importance to any of the relevant listed threatened species.

Despite the sites current degraded nature it is recommend that clearing be minimised where possible. The implementation of the proposed vegetation rehabilitation program subsequent to the desalination plants construction will assist in the ongoing survival of the existing endemic species in the area.



6. REFERENCES

Department of Conservation and Land Management et al (2000), Beeliar Regional Park , Draft Managemnt Plan 2001-201

Department of Conservation and Land Management et al (2001), Woodman Point Reginal Park , Draft Managemnt Plan 2002-2012



FIGURES

APPENIDIX A

FAUNA SPECIES LIST