Mangles Bay Marina Project, Rockingham

Significance for Migratory Birds

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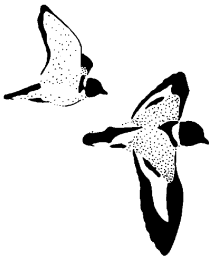

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INTRODUCTION

As part of the environmental impact assessment process for a proposed marina development at Mangles Bay, Rockingham, at the southern end of Cockburn Sound, the question of the significance of the site for migratory birds has been raised. Therefore, Bamford Consulting Ecologists was commissioned to undertake a review of the likely importance of the site for these birds. This review considers only migratory birds and does not address other environmental values of the site. Ideally, the review and field investigations would provide very site-specific information, such as the species, their abundance and locations of importance within and adjacent to the proposed development area.

The Mangles Bay Marina Project involves development of an area of land adjacent to Mangles Bay, between Cape Peron and Lake Richmond in Rockingham. Most of the project area lies to the east of the Garden Island Causeway, but with a small parcel of land to the west. Te total area of land to be developed is about 51ha, of which up to 40ha is native vegetation. The Project includes construction of a marina of approximately 12ha, breakwaters and a small area of reclamation (combined area up to 2.1ha), and dredging of an access channel. The Project also has an approximate 1.5km frontage along Mangles Bay, although direct impact should affect only about 300m of this frontage.

APPROACH

Definition of Migratory Birds

Migratory birds are listed as such under the federal *Environment Protection and Biodiversity Conservation Act* (1999) and under Schedule 3 of the *State Wildlife Conservation Act* (1950); many of the species are also listed under international conservation treaties. The majority of migratory birds are waterbirds and especially waders or shorebirds such as sandpipers and plovers, although a few landbirds are included.

Sources of Information

Sources of information on migratory birds in the region are widely available, such as from field guides, from Bamford *et al.* (2008), and from databases maintained by Birds Australia (Shorebirds 2020 database) and the WA Department of Environment and Conservation. However, these tend not to have very site specific information, and for the purposes of this assessment the ideal information needed is very site specific. The Shorebirds 2020 did include some old (early 1980s) waterbird counts from the southern end of Garden Island. Furthermore, even publications with a local focus (eg. Van Delft 1997, Kwinana, Rockingham and Mandurah Branch of the WA Naturalists' Club 1988 and Conservation Commission WA 2010) do not contain count and location data specific to Mangles Bay. Therefore, sources of information can be used only to provide a list of migratory species known from the region, although Bamford *et al.* (2008) identify sites in the region of known importance for migratory waterbirds.

Ideally, site-specific information could be collected through a survey programme over the spring and summer period when migratory birds occur in the region, but the Project schedule did not allow for this. However, some local information was gained through a meeting with Mr Bob

Goodale, a naturalist with considerable local knowledge. He was able to provide extensive written records dating back to the early 1990s. The Kwinana, Rockingham and Mandurah Branch of the WA Naturalists' Club apparently has further records but it was not possible to access these at short notice. Observations from Mr Goodale and those from the Naturalists' Club are from the Shoalwater Bay, Cape Peron, Mangles Bay and Lake Richmond area.

MIGRATORY SPECIES AND ABUNDANCE

Table 1 lists migratory birds known from the project area. Excluding vagrants and wholly marine species that may occur irregularly and in small numbers, 27 migratory bird species may be present regularly, of which 25 are waterbirds. Only limited count data are readily available for these waterbirds, but these data do make it possible to propose estimates for the number of each species likely to be regularly present (see Table 1). These estimated numbers are for the region including Shoalwater Bay (and islands), Garden Island, Lake Richmond and Cape Peron, and only low numbers of most species are expected. The high count for the Bridled Tern is for a breeding colony on Penguin Island in Shoalwater Bay.

One of the counts from Garden Island, 485 Sanderling, meets the Ramsar Convention's 1% of a population criterion, and therefore Garden Island is listed as an internationally important site by Bamford *et al.* (2008). This record is over a decade old and it is not known if such numbers still occur on the island, but numbers are lower on the adjacent mainland. The 1% criterion for Sanderling is 220 birds (Bamford *et al.* 2008), and while this number of birds is unlikely on the mainland, such an aggregation could occur.

All the migratory bird species may occur in the project area at times, although numbers are likely to be much lower than indicated for the slightly larger region. For example, species such as the Bridled Tern probably occur in Mangles Bay only in small numbers. Within the Mangles Bay project area, the western end (around and just west of the Garden Island causeway) is reported (R. Goodale) to be where waterbirds sometimes congregate. Such congregations probably involve the birds roosting on a sheltered beach, but foraging of species like sandpipers and plovers is likely to occur anywhere along the shoreline in the Project Area. R Goodale also notes that waterbirds move regularly between sites in the region, thus birds on Lake Richmond or in Shoalwater Bay may use Mangles Bay to roost or forage under some conditions, and *vice versa*. With respect to highly mobile species such as waterbirds, Mangles Bay needs to be considered as part of a local system of sites.

The majority of the migratory waterbird species breed in the northern hemisphere, but five (possible six if Roseate Tern is included) of the species, Eastern Great Egret, Eastern Osprey, White-bellied Sea-Eagle, Caspian Tern and Bridled Tern, breed locally. The Eastern Osprey is known to breed in the region, with several nests on the western side of Garden Island, while the Caspain and Bridled Terns breed on islands in Shoalwater Bay (Kwinana, Rockingham and Mandurah Branch of the WA Naturalists' Club 1988). The Roseate Tern may also breed on these islands in small numbers.

Two of the migratory species are landbirds: the Rainbow Bee-eater and Fork-tailed Swift. The latter is a largely aerial species that breeds in central Asia and may over-fly the project area occasionally. In contrast, the Rainbow Bee-eater is a regular breeding visitor in the region, and can be expected to breed in the project area. Rainbow Bee-eaters construct a burrow, often in a low bank on the edge of a clearing or track, and breed in summer. Several breeding pairs may be present in the project area each summer.

OTHER SPECIES OF CONSERVATION INTEREST

The focus of this report is migratory species, but it should be noted that the Fairy Tern *Sternula nereis* is a summer breeding visitor to the region and has recently been added to the list of significant species under the *Environment Protection and Biodiversity Conservation Act* (2999) as Vulnerable. It nests opportunistically on sandbars and headlands.

SIGNIFICANCE OF MANGLES BAY FOR MIGRATORY BIRDS

Numbers of migratory birds expected in the general area (encompassing Shoalwater Bay and islands, Garden Island, Cape Peron, Mangles Bay and Lake Richmond) are low with the exception of Sanderling, which has been reported in internationally significant numbers and may still occur in such numbers on occasions. Although Mangles Bay is only a small part of this system, the mobility of birds is such that any part of the system may occasionally support a large proportion of the birds present within the system, at least for those species for which Mangles Bay provides suitable habitat. For example, while the island-nesting Bridled Tern would be unlikely to use Mangles Bay as the birds favour rocky ledges and cliffs, for most other species the sandy beaches and shallows would be suitable roosting and foraging habitat. Therefore, impacts in the Project Area could affect waterbird numbers over a slightly larger area.

IMPACTS OF THE PROPOSED DEVELOPMENT UPON MIGRATORY BIRDS

Main impacts of the proposed development in the project area upon migratory birds would be habitat loss, habitat modification and disturbance.

- Habitat loss. Would affect the Rainbow Bee-eater due to development of terrestrial environments. Also a small area of loss along the shoreline that would affect roosting and foraging mostly by sandpipers and plovers.
- Habitat modification. This includes possible changes due to changing patterns of sedimentation along the shoreline, as well as the creation of new habitats such as breakwaters and reclamation areas. Breakwaters and reclamation areas could even attract some birds, although are likely to be subject to high levels of disturbance from humans. There could be opportunities for deliberate habitat creation as part of the project, such as forming a small island offshore for secure roosting and breeding.
- Disturbance is likely to b a major issue due to increasing levels of human activity even along those sections of the shoreline that are not directly impacted. Disturbance could

even increase outside the Project Area. Disturbance can be managed but requires a commitment to do so.

The consequences of impacts can be viewed in terms of the effects upon populations of migratory birds. Examples of consequences include:

- Rainbow Bee-eater. Local population decline due to loss of nesting and foraging habitat in terrestrial environment. However, this is a widespread and abundant species.
- Sandpipers, Plovers and Caspian Tern. Possible local population decline due to loss of roosting and foraging habitat, with the greatest loss likely to be due to disturbance making the shoreline unavailable to the birds. This is considered only possible as the shorelines in the local area are complex and provide a lot of varying roosting and foraging sites, and on Garden Island in particular human access is restricted so levels of disturbance are likely to remain low.

Other migratory birds occur in such low numbers, range over such large areas (eg. Osprey and Sea-Eagle) or are unlikely to use Mangles Bay (eg. Bridled Tern), and are therefore considered unlikely to be affected by the proposed development.

Table 1. Listed migratory species recorded in the Mangles Bay area, excluding species that may occur as vagrants or are wholly marine. Count and estimated numbers present are indicated.

Species		Garden Island	Shoalwater/ Peron/Mangles Bay
Apodidae (swifts)			
Fork-tailed Swift	*Apus pacificus*		intermittent
Ardeidae (herons and egrets)			
Eastern Great Egret	*Ardea modesta*		<5
Accipitridae (kites, hawks and eagles)			
Eastern Osprey	*Pandion cristatus*		2
White-bellied Sea Eagle	*Haliaeetus leucogaster*		2
Scolopacidae (sandpipers)			
Bar-tailed Godwit	*Limosa lapponica*	7	<20
Whimbrel	*Numenius phaeopus*		<5
Eastern Curlew	*Numenius madagascariensis*		<5
Common Greenshank	*Tringa nebularia*		<20
Terek Sandpiper	*Tringa terek*		<5
Common Sandpiper	*Tringa hypoleucos*	2	<5
Grey-tailed Tattler	*Tringa brevipes*	2	<100
Ruddy Turnstone	*Arenaria interpres*	40	<100
Great Knot	*Calidris tenuirostris*	170	<200
Red Knot	*Calidris canutus*	200	<200
Sanderling	*Calidris alba*	485	<200
Red-necked Stint	*Calidris ruficollis*	10	<200
Sharp-tailed Sandpiper	*Calidris acuminata*		<5
Curlew Sandpiper	*Calidris ferruginea*	2	<10
Charadriidae (lapwings and plovers)			
Pacific Golden Plover	*Pluvialis fulva*		<5
Grey Plover	*Pluvialis squatarola*	23	<50
Lesser Sand Plover	*Charadrius mongolus*	2	<5
Greater Sand Plover	*Charadrius leschenaultii*	4	<5
Laridae (gulls and terns)			
Caspian Tern	*Hydroprogne caspia*		100
Roseate Tern	*Sterna dougallii*		Vagrant only?
Bridled Tern	*Onychoprion anaethetus*		>1000
Common Tern	*Sterna hirundo*		Vagrant only?
Meropidae (bee-eaters)			
Rainbow Bee-eater	*Merops ornatus*		<50

Notes:

Garden Island. Data from Shorebirds 2020 database, southern end of Island from 1981-1985.

Shoalwater/Peron/Mangles Bay. Likely maximum numbers present regularly, based on discussions with Mr Goodale and review of his field notes, and some personal observations. The Bridled Tern estimate is for Penguin Island, from Higgins and Davies (1996).

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