

**Shell Cove  
Boat Harbour Precinct**

**Concept Plan Application  
and Environmental Assessment  
Appendix H - Flora and Fauna**

prepared by

LFA (Pacific) Pty Ltd

date

February 2010



# **FLORA AND FAUNA ASSESSMENT**

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## **CONCEPT PLAN APPLICATION SHELL COVE BOAT HARBOUR PRECINCT BOOLLWARROO PARADE CITY OF SHELLHARBOUR**

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*May 2009  
08/15*

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## **Document Reference**

Kevin Mills & Associates (2008). Concept Plan Application, Shell Cove Boatharbour Precinct, Boolwarroo Parade, City Of Shellharbour. Australand, Shellharbour, May.

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## **1. Introduction**

This Flora and Fauna Assessment was commissioned by Australand Corporation (NSW) Pty. The proposed development is for the construction of various facilities and infrastructure associated with the Shell Cove Boatharbour. The development site, hereinafter referred to as the "subject land", would be intensively developed and contain, among other things, residential and commercial areas, hotel, retail, marine facilities, public parklands and technology park. The proposal would require subdivision of Lot 8032 DP 8072187, part Lot 8100 DP 1082981, part Lot 206 DP 857030, Lot 1168 DP 1076113, Lot 8031 DP 1072187 and Lot 30 DP 229374.

This report accompanies other studies aimed at addressing those matters in the Director-General's Requirements for the Concept Plan Application, set out in the letter from the Department of Planning dated 9 November 2007 to Australand. This report is concerned only with those matters related to terrestrial flora and fauna; note that another consultant is dealing with aquatic ecology.

The subject land was inspected by Kevin Mills & Associates on 13 May 2008, prior to the preparation of this report. The land and the surrounding area has been studied on numerous occasions over the past 16 years, so that a throughout understanding of the site has been obtained.

## **2. The Subject Land**

The subject land is located off Boolwarroo Parade, directly to the south of the township of Shellharbour; see **Figure 1**. The land surrounds but does not include the Shell Cove Boatharbour development site, which is approved and is currently under construction.

The land is immediately behind South Shellharbour Beach and is low lying. Much of the land has been filled and/or levelled over the years and is no longer exhibiting a natural topography. The land can be divided into several distinct zones, namely:

- the sand dunes behind the beach;
- the remains of Shellharbour Swamp;
- the old golf course;
- urban land across the northern and eastern parts of the land; and
- farmland, mainly in the south.

The land extends inland from South Shellharbour Beach, across Shellharbour Swamp and onto parts of the disused Shellharbour Golf Course, to the west of the swamp. To the south, the land extends behind the above beach and inland across disused farmland. None of the land supports completely natural vegetation, although the sand dunes have been revegetated with indigenous plants and there is some natural beach vegetation and the swamp is dominated by indigenous species.

## **3. Survey Methodology**

### ***Date of Survey***

A flora and fauna survey was undertaken on the subject land on 13 May 2008. Bearings were taken from the plans provided by Australand and a colour aerial photograph of the site. The land and/or the surrounding area has been the subject of various ecological studies, primarily by the consultant, over the past 16 years. This large body of information has been used in this report where relevant.

### ***Purpose***

The purpose of the flora survey was to classify and describe the vegetation, to map the distribution of the plant communities, to record as many as possible of the plant species present and to search for threatened plant species and communities.

The purpose of the fauna survey was to detect as many as possible of the fauna species present, to describe the fauna habitat on the subject land, and to assess the potential for the habitat on the subject land to support threatened fauna.

The survey results indicate which fauna species were observed during the survey, but should not be regarded as a complete inventory of the species that would occur there; this could be obtained only by a long study spanning all seasons. Previous surveys have, however, resulted in a quite comprehensive picture of the fauna of the area to be obtained.

### **Survey Technique**

The vegetation survey technique combined multiple traverses of the subject land. The traverses, which were undertaken on foot, were targeted to cover the full topographic variation of the site, the full range of plant communities and potential habitat for threatened and significant plant species and plant communities.

Field notes were made on the floristic composition, structure and condition of the plant communities. A general description of each community was then prepared and a map was prepared in the field with the aid of a colour aerial photograph.

A diurnal fauna survey was undertaken for this study, where all species observed or recorded by other means were recorded. Previous field surveys are relied upon for a full account of the fauna present in the area. The type of habitats present were surveyed afresh in May 2008.

### **Vegetation Classification**

The plant communities on the subject land were classified on the basis of their structure and the name(s) of the dominant species in the tallest stratum, using the structural classification system devised by Walker and Hopkins (1990). There are various vegetation classes within the system; these include closed forest (rainforest), open forest, woodland, open woodland, isolated trees, shrubland, heathland, grassland, sedgeland and fernland, etc., depending on the growth form of the plants in the tallest stratum and the crown separation between the plants in the tallest stratum (whether touching, overlapping, separated, isolated, etc.).

### **Nomenclature**

The plant species names in this report are the current names published by the National Herbarium of New South Wales in the *Flora of New South Wales* (Harden 1992-2002). Most of the common names are from the *Flora of New South Wales* (op. cit.), *Australian Plant Genera* by Baines (1981) and *Weeds of the South-east* by Richardson, Richardson and Shepherd (2006).

Most of the fauna species' names in this report are from the Australian Museum's *The Mammals of Australia* (Strahan 1995), *Australian Bats* (Churchill 1998), *The Taxonomy and Species of Birds of Australia and its Territories* (Christidis & Boles 1994) and *Reptiles and Amphibians of Australia* (Cogger 1992).

## **4. Flora**

### **4.1 Description of the Vegetation**

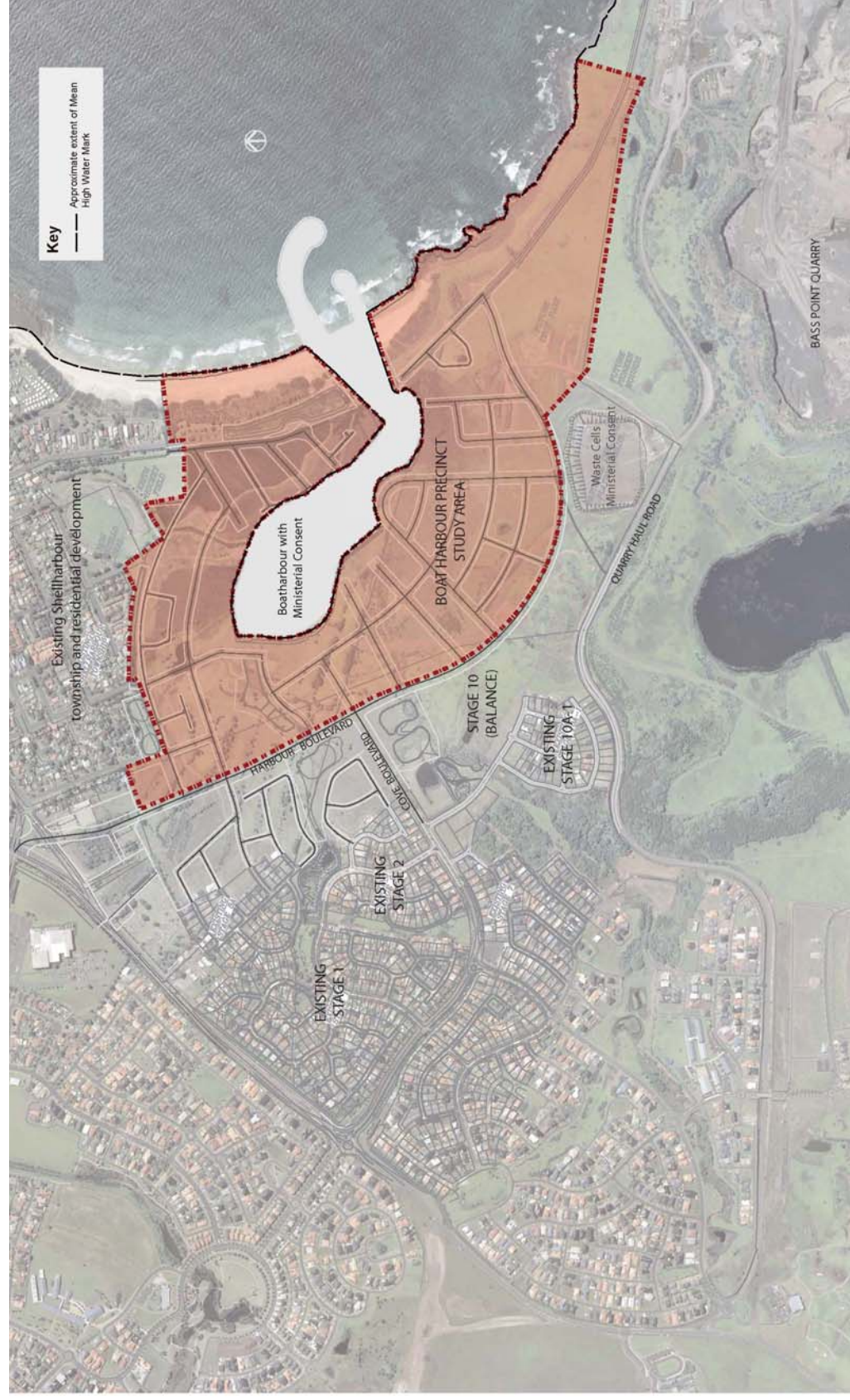
Five plant communities occur on the subject land, these are summarised in **Table 1**.

### **4.2 Plant Species Recorded**

The plant species recorded on the subject land have been listed in **Appendix 1**. Both indigenous and exotic (weed) species are listed. In total, 33 indigenous plants species and 87 exotics were recorded on the subject land in May 2008. The high number of exotic species and small number of indigenous species reflect the highly modified character of the subject land.

The indigenous species recorded are mainly typical coastal species, primarily those growing on sand dunes. The exotic species include several species of invasive weeds, including a few declared noxious weeds. The species recorded that are listed under the *Noxious Weeds Act 1993* (NSW), are listed in **Table 2**. The control classes for noxious weeds are explained in **Appendix 2**.





**Figure 1. The Subject Land**  
(LFA (Pacific) Pty Ltd, 2009)

**Table 1**  
**Plant Communities on the Subject Land**

| Community                | Key species  | Occurrence  |
|--------------------------|--|---|
| Coastal Banksia Woodland | <i>Banksia integrifolia</i><br><i>Leptospermum laevigatum</i>                  | On sand dunes along the eastern edge of the subject land.                       |
| Brackish Wetland         | <i>Juncus kraussii</i>   | Covering the remains of Shellharbour Swamp.                                     |
| Spinifex Grassland       | <i>Spinifex sericeus</i>   | Frontal dunes above the beach.  |
| Artificial Fresh Wetland | <i>Typha orientalis</i>  | Drains and small dams on disused golf course and old farmland.                  |
| Planted trees            | <i>Pinus radiata</i><br><i>Casuarina glauca</i><br><i>Melaleuca armillaris</i> | In avenues on the old golf course, across the western part of the subject land. |

**Table 2**  
**Noxious Weeds Recorded on the Subject Land**

| Species  | Habit            | Control Class | Distribution                                     |
|--|------------------|---------------|--|
| Blackberry<br><i>Rubus fruticosus</i>            | Scrambling shrub | 4             | Patches scattered across the whole area.         |
| Bitou Bush<br><i>Chrysanthemoides monilifera</i> | Shrub            | 4             | Occasional across the northern part of the area. |
| Lantana<br><i>Lantana camara</i>                 | Scrambling shrub | 5             | Occasional small thickets across the whole area. |

## 5. Fauna

### 5.1 Fauna Habitat

The fauna habitat on the subject land consists primarily of cleared treeless land supporting exotic grassland. Planted trees only occur on the old golf course and on the sand dunes.

### 5.2 Fauna Species Recorded

The fauna species recorded on the subject land and nearby are listed in **Appendix 3**. This list has been compiled over many years; those species recently recorded are highlighted in the appendix.

The species recorded reflect the wetland (swamp and coastal), rural and urban environments on and near the subject land. The main fauna found on the subject land is that associated with cleared and developed land and consists mainly of adaptable native species, mostly birds, and introduced species. Few native mammals or reptiles occur in the area.



## 6. **Potential for Threatened Species, Populations and Communities, etc., to occur on the Subject Land**

### 6.1 **Introduction**

Threatened species, populations and communities in New South Wales are listed on Schedules attached to the New South Wales *Threatened Species Conservation Act 1995* (TSC Act). Endangered species, populations and communities are listed on Schedule 1. Critically endangered species and ecological communities are listed on Schedule 1A. Vulnerable species are listed on Schedule 2.

The "Threatened Species Assessment Guidelines; the Assessment of significance", published by the Department of Environment and Climate Change (DECC) in August 2007, state that the assessment of significance must be "applied to species, populations and ecological communities listed on Schedules 1, 1A and 2 of the TSC Act and Schedules 4, 4A and 5 of the FM Act [and that] the applicant/proponent should develop a list of threatened species, populations and ecological communities which may be affected directly or indirectly by the proposed action, development or activity" (p.2, para.6) [and that] "adequate reasons should be provided to show how the list was derived" (p.2, para.6).

In order to develop the required list of threatened species, populations and ecological communities which may be affected directly or indirectly by the proposed development it was necessary, firstly, to identify which threatened species, populations and ecological communities occur in the vicinity of the subject land. This was done by undertaking a search of the NSW Wildlife Atlas and other relevant sources, such as Council's State of the Environment Report. The NSW Wildlife Atlas, which is maintained by the NSW Department of Environment and Climate Change (DECC), is a database of species records that is searchable online.

After developing the required list, attention was directed towards determining whether or not the threatened species, populations and ecological communities occur on the subject land, whether the on-site habitats will be used by any of those threatened species on occasion, and whether any of the threatened species are likely to be influenced by off-site impacts of the proposal.

In order to assess whether or not each threatened species will use the on-site habitats on occasion, consideration was given to determining the extent to which the subject land satisfies the habitat requirements and habitat preferences of the threatened species in question. The frequency of the previous records in the NSW Wildlife Atlas and the date of the last reliable record were also taken into account in assessing whether the threatened species are likely to use the on-site habitats on occasion.

### 6.2 **Threatened Species**

Previous reports on the Shell Cove precinct and the NSW Wildlife Atlas were searched for threatened species previously recorded in the local area, i.e. within a five kilometres of the subject land. The search results have been presented in **Table 3**, where the following information is provided for each species recorded in the local area.

- the threatened species' classification under the TSC Act and EPBC Act;
- information on each species' habitat preferences/requirements;
- presence/absence data for each species and an assessment of the potential for each species to occur on the subject land (low/medium/high); and
- a statement as to whether the species needs further assessment.

Those species that have been potential habitat within the subject land have been assessed below; these are identified by a 'yes' in the second last column in **Table 3**.

#### Grey-headed Flying-fox

The Flying-fox could visit some of the trees in the area in summer when they are active throughout the region. Most of the trees do not provide food for this bat and there is no likelihood of the species camping in the area.

#### Australasian Bittern

The Bittern occurs in freshwater wetlands and has been recorded at Barrack Swamp, to the north of Shellharbour township. It is possible that the species could visit the small dams and drains in the area, but this would only ever be brief. It is noted that a substantial area of fresh wetland has been constructed at the compensatory Myimbarr Wetlands just north of Shellharbour township (Kevin Mills & Associates 2007). The removal of the above dams and drains on and near the golf course is very unlikely to impact upon this species.

#### Painted Snipe

The Painted Snipe has been recorded once at Shellharbour Swamp, in 1986. This is a rare migratory species that could turn up in almost any wetland. It is noted that a substantial area of compensatory wetland has been constructed at the Myimbarr Wetlands (Kevin Mills & Associates 2007); that area would provide habitat for this species. Removal of the wetlands at Shell Cove is unlikely to have a serious impact on this species.

#### Swift Parrot

The Swift Parrot has been recorded at Bass Point, mainly in the 1980s. The species could visit the stand of Coast Banksia *Banksia integrifolia* near the beach as this tree flowers in winter when the birds are in NSW. This area will not be cleared for the Boatharbour facilities so there is unlikely to be any negative impact on the Swift Parrot.

#### Green and Golden Bell Frog

The GGBF was recorded in the drain along the far northern edge of the land in the 1980s. There have been no subsequent observations, despite several targeted surveys in more recent times. The wetlands in the area are infested with Plague Minnow *Gambusia holbrooki* so that the habitat is less suitable for this frog. It seems at most the GGBF could occasionally wander from Killalea Lagoon onto the Shellharbour site but breeding habitat is probably not present.

A targeted survey and assessment by Dr Arthur White, an expert on this frog, in 1995 (Kevin Mills & Associates 1995) made the following conclusions:

"The widespread occurrence of *Gambusia* greatly diminishes the number of potential habitat areas in the Shellharbour district for Green and Golden Bell Frogs. The proposed Shell Cove Boatharbour site does not offer secure breeding sites for Green and Golden Bell Frogs and has very limited refuge habitat. It appears that Green and Golden Bell Frogs have ventured into this area during a dispersal period prior to reproducing, but have not remained because of the unsuitability of the habitats." A recent survey by the consultant (Kevin Mills & Associates 2005) also failed to locate the species on the site.

### **6.3 Endangered Populations**

No endangered populations occur on the subject land; no further assessment of significance is therefore required. Endangered populations do occur in the City of Shellharbour, but are not anywhere near the subject land.

### **6.4 Endangered Ecological Communities**

The Coastal Saltmarsh endangered ecological community occurs within the Shellharbour Swamp. This community will be removed as a part of the separate, approved development of the Boat Harbour (Consent 95/133). As noted above, the 'saltmarsh' consists of very densely growing Sea Rush *Juncus kraussii* with very few other species of plant present. It is noted that the Myimbarr compensatory wetlands contain a substantial area of saltmarsh; this is developing well (Kevin Mills & Associates 2007).

**Table 3**  
**Assessment of Threatened Species Previously Recorded in the Local Area**

| Species   | TSC Act <sup>+</sup> | EPBC Act <sup>+</sup> | Habitat Requirements/Preferences, etc.  | Recorded on the Site? | Suitable habitat Present on site? | Likely to be affected by off-site impacts? |
|---|----------------------|-----------------------|---|-----------------------|-----------------------------------|--|
| <b>Plants</b>   |                      |                       |   |                       |                                   |  |
| Illawarra Zieria<br><i>Zieria granulata</i>             | E                    | E                     | Edges of rainforest, rocky sites in farmland. Occurs in the upper catchment of Shellharbour Swamp.  | No                    | No                                | No   |
| White Cynanchum<br><i>Cynanchum elegans</i>             | E                    | E                     | Edges of rainforest, lantana thickets. Known from the upper catchment of Shellharbour Swamp.  | No                    | No                                | No   |
| <b>Mammals</b>  |                      |                       |   |                       |                                   |  |
| Grey-headed Flying-fox<br><i>Pteropus poliocephalus</i> | V                    | V                     | Rainforest, mangroves, paperbark forest, eucalypt forest, woodland, orchards and gardens. Mainly present in region in summer, large numbers congregate in camps to breed and raise their young. | No                    | Yes                               | No   |
| <b>Birds</b>  |                      |                       |   |                       |                                   |  |
| Australasian Bittern<br><i>Botaurus poiciloptilus</i>   | V                    | -                     | Reed beds and edges of fresh wetlands, usually large wetland areas.   | No                    | Yes                               | No   |
| Large Sand Plover<br><i>Charadrius leschenaultia</i>    | V                    | -                     | Mainly sandy beaches.<br>Recorded once on South Shellharbour Beach, in 1984.  | No                    | No                                | No   |
| Little Tern<br><i>Sterna albigrons</i>                  | E                    | -                     | Sandy beaches. No breeding habitat nearby.<br>Recorded rarely on South Shellharbour Beach.  | No                    | No                                | No   |
| Orange-bellied Parrot<br><i>Neophema chrysogaster</i>   | E                    | -                     | Usually saltmarsh along the coast. Local record was in exotic grassland.<br>One record of a bird in the Bass Point area in June 2003.   | No                    | No                                | No   |
| Painted Snipe<br><i>Rostratula benghalensis</i>         | V                    | -                     | Fresh wetlands.<br>One record in Shellharbour Swamp in 1986.  | Yes                   | Yes                               | No   |
| Pied Oystercatcher<br><i>Haematopus longirostris</i>    | V                    | -                     | Coastal beaches, rock platforms and estuaries (breeding sites).<br>Occasional visitor to South Shellharbour Beach.  | No                    | No                                | No   |
| Sanderling<br><i>Calidris alba</i>                      | V                    | -                     | Coastal beaches and rock platforms..<br>Occasional visitor to South Shellharbour Beach.   | No                    | No                                | No   |
| Sooty Oystercatcher<br><i>Haematopus fuliginosus</i>    | V                    | -                     | Coastal beaches, rock platforms, estuaries and oceanic islands (breeding sites).<br>Occasional visitor to South Shellharbour Beach.   | No                    | No                                | No   |
| Swift Parrot  | E                    | E                     | Swift Parrots breed only in Tasmania, in the east and up in the midlands.   | No                    | Yes                               | No   |

*Lathamus bicolor* After breeding most of the parrots migrate to the mainland.

| Table 3 cont...<br>Assessment of Threatened Species Previously Recorded in the Local Area |                      |                       |  |                       |  |
|---|----------------------|-----------------------|--|-----------------------|--|
| Species   | TSC Act <sup>+</sup> | EPBC Act <sup>+</sup> | Habitat Requirements/Preferences, etc.   | Recorded on the Site? | Suitable habitat Present on site? Likely to be affected by off-site impacts? |
| <b>Frogs</b>  |                      |                       |  |                       |  |
| Green and Golden Bell Frog  | E                    | V                     | Green and Golden Bell Frogs occur in freshwater streams, swamps, lagoons, dams, soaks and ponds, preferably with bullrushes or spikerushes. However, they sometimes occur on highly disturbed sites, e.g. disused industrial sites, brick pits and landfill areas. Recorded in the drain along the northern edge of the land in the 1980s. | Yes                   | No   |
| <i>Litoria aurea</i>  |                      |                       |  |                       |  |
| + V = vulnerable, E = endangered, - = not listed.   |                      |                       |  |                       |  |

## 6.5 Critical Habitat

No critical habitat has been declared on the subject land; no further assessment of significance is therefore required.

## 6.6 Migratory Species

The EPBC Act allows for the listing of internationally protected migratory species, i.e. species listed under the Japan - Australia Migratory Bird Agreement (JAMBA), the China - Australia Migratory Bird Agreement (CAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Various internationally protected migratory species occur on the subject land from time to time, but there is no important habitat on the land for these species and the habitat on the site is not likely to support an ecologically important proportion of a population of such species.

## 6.7 Other Significant Features

The subject land contains coastal sand dune vegetation along its eastern edge, behind South Shellharbour Beach; this is semi-natural and forms the only stand of this vegetation locally.

# 7. The Assessment Process under Part 3A

### Guidelines for Threatened Species Assessment

Guidelines that identify matters relevant to the assessment of potential impact on threatened species, populations or ecological communities of proposed development under Part 3A of the *Environmental Planning and Assessment Act 1979* (NSW) have been prepared by the Department of Environment and Conservation (now Department of Environment and Climate Change) and the Department of Primary Industries (DEC 2005).

The *Guidelines for Threatened Species Assessment* identifies the following objectives in regard to conserving threatened species, etc.:

- 1 "Maintain or improve biodiversity values (i.e. there is no net impact on threatened species or native vegetation).
- 2 Conserve biological diversity and promote ecologically sustainable development.
- 3 Protect areas of high conservation value (including areas of critical habitat).
- 4 Prevent the extinction of threatened species.
- 5 Protect the long-term viability of local populations of a species, population nor ecological community.
- 6 Protect aspects of the environment that are matters of national environmental significance."

Note that matters of national environmental significance (NES) are those matters listed under the *Environment Protection & Biodiversity Conservation Act 1999* (Commonwealth); these matters are not listed under state legislation.

The *Guidelines* outline a broad five-step process for assessing impacts on threatened species. Note that 'threatened species' refers here to species, populations and communities listed as threatened under the *Threatened Species Conservation Act 1995* (NSW) or the *Fisheries Management Act 1994* (NSW).

As this project is being assessed under Part 3A of the *EP&A Act*, this investigation and report follows the *Guidelines* where relevant.

### Step 1 – Preliminary Assessment

"The main purpose of a preliminary assessment is to determine the likelihood of the study area and subject site supporting threatened species" (*Guidelines*, page 2). As noted in the *Guidelines*, this step is primarily a 'desktop' study, using existing information, literature and data bases to identify relevant threatened species. The *Guidelines* state that the following matters should be included in the preliminary assessment:

- a description of the location and nature of the proposed development;
- a description of dominant vegetation types;
- a description of habitat features;
- a list of threatened species that are known or likely to occur within the study area;
- an assessment of which of the threatened species that are known or likely to occur are likely to be directly or indirectly affected by the proposal provides a list of factors for consideration in identifying adverse impacts. This list is not necessarily exhaustive and is not development-specific.” (*Guidelines*, page 3)

The matters identified under Step 1 in the *Guidelines* are dealt with in Sections 1 to 6 of this report.

#### Step 2 – Field Survey and Assessment

As noted in the *Guidelines*, “the required intensity and extent of survey will vary greatly depending upon the species likely to be present, size of the development area, the level of biological and habitat diversity on the site, and the type and complexity of vegetation on the site.” (*Guidelines*, page 3)

The *Guidelines* point out the need “to ensure that a reliable assessment of the presence or absence of threatened species can be made” (*Guidelines*, page 3). It is also noted that consideration needs to be given to the relevance of climatic or seasonal conditions for the target species.

Where relevant, the survey methods set out in the document titled *Threatened Species Survey & Assessment: Guidelines for Developments and Activities* (DECC 2004) should be followed. As noted above, the level of the survey will very much depend upon site conditions.

The outcome of Step 2 should be that adequate field surveys are undertaken for all target species identified in Step 1 such that confident statements can be made regarding the potential for the presence of the species on the subject site. In some instances, the precautionary principle should be adopted and the presence of a species assumed for the purposes of impact assessment.

The survey methods are set out in Section 3 of this report and in the documents referenced in the report. The surveys that have been undertaken by Kevin Mills & Associates and others provide an adequate basis for assessing the proposal.

#### Step 3 – Evaluation of Impact

This step involves identifying the potential magnitude and extent of the impact, if any, the development will have on each of the target species.

The *Guidelines* suggest that “impacts will be more significant if:

- areas of high conservation value are affected;
- individual animals and/or plants and/or subpopulations that are likely to be affected by the proposal play an important role in maintaining the long-term viability of the species, population or ecological community;
- habitat features that are likely to be affected by the proposal play an important role in maintaining the long-term viability of the species, population or ecological community;
- the duration of impacts are long-term;
- the impacts are permanent and irreversible.” (*Guidelines* page 4)

**Section 6.2** and **Table 3** in the report provide a discussion of the potential impact of the proposal on threatened species.

#### Step 4 – Avoid, mitigate and then offset

Where there is a potential to impact on threatened species, this should be addressed through, firstly, avoiding the impact; this may mean making some changes to the proposed development. If avoidance is not possible, then some form of mitigation may be required. Finally, if neither avoidance nor mitigation is possible, then some form of offset or compensation will be required. This could entail the rehabilitation of similar habitat nearby.

It is concluded that there is no significant habitat on the subject land for threatened species or populations. There is therefore no need to avoid, mitigate or offset any impact upon threatened species or populations. Coastal saltmarsh will be removed under the separate approval for the Boat Harbour; this is unavoidable. As an offset for this loss of an endangered ecological community, an area of saltmarsh was developed at the Myimbarr Wetlands. As noted elsewhere, this has developed quite successfully over the past two years (Kevin Mills & Associates 2007).

#### Step 5 – Key thresholds

The *Guidelines* state that “the development application needs to contain a justification of the preferred option based on:

- whether or not the proposal, including actions to avoid or mitigate impacts or compensate to prevent unavoidable impacts will maintain or improve biodiversity values.
- whether or not the proposal is likely to reduce the long-term viability of a local population of the species, population or ecological community.
- whether or not the proposal is likely to accelerate the extinction of the species, population or ecological community or place it at risk of extinction.
- whether or not the proposal will adversely affect critical habitat.” (*Guidelines* page 4)

Appendix 3 to the *Guidelines* contains more detail for identifying potential impacts on threatened species.

The ‘key thresholds’ have been applied below to the identified threatened species and community.

#### Maintain or improve biodiversity values

##### Grey-headed Flying-fox and Swift Parrot

The small number of trees to be removed, the only habitat of any value to either species, will not adversely affect these two species. In fact, in the long term many more suitable food trees are likely to be planted in the area, thus improving the habitat for these occasional visitors to the locality.

##### Australasian Bittern, Painted Snipe and Green and Golden Bell Frog

The loss of potential habitat for these wetland species is adequately compensated for by the development of the Myimbarr Wetland complex. There will be no diminution of habitat opportunities for these two species.

#### Coastal Saltmarsh

Compensatory wetland construction, including saltmarsh, ensures that biodiversity values are not diminished. In fact the ‘new’ area of saltmarsh is far more diverse than the mono-specific stands of *Juncus kraussii* at Shellharbour Swamp.

Although some coastal saltmarsh will be lost, this has been compensated for through provision of saltmarsh in the Myimbarr Wetlands complex nearby. Because of this, long term viability of coastal saltmarsh in the local area remains viable.

#### Reduce long-term viability

##### Grey-headed Flying-fox, Swift Parrot, Australasian Bittern, Painted snipe and Green and Golden Bell Frog

Because of the provision of compensatory habitat and the other issues discussed above, there will be no reduction in the long term viability of populations of any of the above species.

#### Accelerate the extinction of the species

##### Grey-headed Flying-fox and Swift Parrot, Australasian Bittern, Painted Snipe and Green and Golden Bell Frog

Because of the wetlands offset and other matters discussed above, the proposal will not accelerate the extinction of any of the above species.

#### Coastal Saltmarsh

Adequate compensation has been provided for the loss of the saltmarsh community on Shellharbour Swamp so that the loss there will not accelerate the extinction of the community locally or more broadly.

#### Adversely affect critical habitat

There is no critical habitat on or near the subject land; to date no such habitat has been declared in New South Wales.



## Conclusion

The conclusion of the above assessment is that the proposed development is not likely to have a significant impact upon threatened species, populations or communities. It is further concluded that the proposal will not lead to a diminution of biodiversity values as the loss of the highly modified habitats present there have been compensated for by the completion of a large area of wetland and other habitats nearby (the Myimbarr Wetlands) along with revegetation and enhancement of the coastal vegetation on the subject land. In summary, the proposal will maintain and improve biodiversity values.

## 8. Commonwealth Assessment Process

The impact of a proposed action on matters of national environmental significance is assessed under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Matters of national environmental significance are World Heritage properties, National Heritage places, wetlands of international importance (RAMSAR wetlands), threatened species and ecological communities listed under the EPBC Act, migratory species listed under the EPBC Act, Commonwealth marine environment, and nuclear actions (including uranium mining).

An "action" is a project, a development, an undertaking, an activity or a series of activities, and an alteration of any of the above. An action can be on Commonwealth land, State land council land, private land, or water.

Approval is required from the Commonwealth Environment Minister for actions that are likely to have a significant impact on a matter of national environmental significance; these are called "controlled actions". A proposed action is a "controlled action" if:

- is likely to have a significant impact on a matter of national environmental significance,
- is likely to have a significant impact on the environment of Commonwealth land,
- is to be undertaken on Commonwealth land and is likely to have a significant impact on the environment anywhere, and
- is an action to be taken by the Commonwealth that is likely to have a significant impact on the environment anywhere.

The development of the Boat Harbour and proposed associated shore based land development has been referred to the Federal Department of the Environment, Water, Heritage and the Arts. The department has considered the proposal in respect of the EPBC Act and has decided that the proposed action is not a controlled action. Accordingly assessment and approval is not required by the Federal Minister for the Environment, Heritage and the Arts (refer to Appendix 4 for a copy of the 'Decision on referral').

## 9 Assessment under SEPP 44 - Koala Habitat Protection

*State Environmental Planning Policy No.44 - Koala Habitat Protection* (SEPP 44) (New South Wales 1995) encourages the conservation and management of natural vegetation providing habitat for Koalas, to ensure a permanent free-living population over the species' present range and to reverse the current trend of Koala population decline. SEPP 44 applies in the local government areas listed under Appendix 1 of the policy.

SEPP 44 helps to identify "potential Koala habitat", i.e. "areas of native vegetation where the trees of the types listed in Schedule 2 [of SEPP 44] constitute at least 15% of the total number of trees in the upper or lower strata of the tree component". If no Schedule 2 tree species are present or if they constitute less than 15% of the total number of trees present, then no further provisions of the Policy apply.

If more than 15% of the trees in the area are Schedule 2 tree species, then an assessment must be made by a qualified person to determine whether the area contains "core Koala habitat", a term applied to "an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population".

Shellharbour is one of the local government areas in which *State Environmental Planning Policy No.44 - Koala Habitat Protection* (SEPP 44) applies. No Schedule 2 Koala food trees occur on the subject land. The area is therefore not "potential Koala habitat" and no further provisions of the Policy apply.

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## Appendix 1

### Plant Species List for the Subject Land

#### PTERIDOPHYTA (Ferns)

##### SINOPTERIDACEAE

*Cheilanthes sieberi* Mulga Fern

#### GYMNOSPERMAE (Conifers)

##### ARAUCARIACEAE

\**Araucaria heterophylla* Norfolk Island Pine

##### PINACEAE

\**Pinus pinaster* Cluster Pine

\**Pinus radiata* Radiata Pine

#### ANGIOSPERMAE (Flowering Plants)

##### AIZOACEAE

*Carpobrotus glaucescens* Pig Face

##### ALISMATACEAE

\**Sagittaria graminea* ssp. *platyphylla* Sagittaria

##### APIACEAE

*Centella asiatica* Indian Pennywort

\**Foeniculum vulgare* Fennell

\**Hydrocotyle bonariensis* Pennywort

##### APOCYNACEAE

\**Nerium oleander* Oleander

##### ARACEAE

\**Colocasia esculenta* Taro

##### ASCLEPIADACEAE

\**Araujia hortorum* Moth Vine

\**Gomphocarpus fruticosus* Narrow-leaved

##### ASTERACEAE

*Cassinia quinquefaria* Rosemary Cassinia

*Pseudognaphalium luteoalbum* Jersey Cudweed

\**Aster subulatus* Bushy Starwort

\**Bidens pilosa* Cobbler's Pegs

\**Chrysanthemoides monilifera* Bitou Bush

\**Cirsium vulgare* Spear Thistle

\**Conyza bonariensis* Tall Fleabane

\**Delairea odorata* Cape Ivy

\**Gamolepis chrysanthemoides* Paris Daisy

\**Helianthus annuus* Sunflower

\**Hypochaeris radicata* Flatweed

\**Senecio madagascariensis* Fireweed

\**Solidago canadensis* Canada Goldenrod

\**Sonchus oleraceus* Common Sowthistle

\**Taraxacum officinale* Dandelion

\**Xanthium occidentale* Noogoora Burr

##### BASELLACEAE

\**Anredera cordifolia* Madeira Vine

**BIGNONIACEAE**

*Pandorea pandorana*

Wonga Vine

**BRASSICACEAE**

\**Cakile maritima*

Sea Rocket

\**Capsella bursa-pastoris*

Shepherd's Purse

**CANNACEAE**

\**Canna indica*

Canna

**CARYOPHYLLACEAE**

\**Cerastium fontanum*

Mouse-ear Chickweed

**CASUARINACEAE**

*Casuarina glauca*

Swamp Oak

**CHENOPODIACEAE**

\**Chenopodium album*

Fat Hen

**COMMELINACEAE**

*Commelina cyanea*

Wandering Sailor

\**Tradescantia albiflora*

Wandering Jew

**CONVOLVULACEAE**

*Convolvulus erubescens*

Australian Bindweed

\**Ipomoea indica*

Morning Glory

**CYPERACEAE**

*Baumea articulata*

Jointed Twigrush

*Isolepis nodosa*

Knobby Club-rush

**EPACRIDACEAE**

*Leucopogon parviflorus*

Coastal Beard-heath

**EUPHORBIACEAE**

\**Chamaesyce prostrata*

Red Caustic Weed

\**Euphorbia peplus*

Petty Spurge

**FABACEAE**

**CAESALPINIOIDEAE (subfamily)**

\**Senna pendula* var. *glabrata*

Winter Senna

**FABOIDEAE (subfamily)**

*Canavalia rosea*

Coastal Jack Bean

*Kennedia rubicunda*

Dusky Coral Pea

\**Erythrina x sykesii*

Coral Tree

\**Medicago* sp.

Medic

\**Medicago polymorpha*

Burr Medic

\**Psoralea pinnata*

Blue Proralea

\**Trifolium repens*

White Clover

\**Vicia sativa*

Vetch

**MIMOSOIDEAE (subfamily)**

*Acacia binervata*

Two-veined Hickory

*Acacia longifolia*

Golden Wattle

\**Acacia saligna*

Golden Wreath Wattle

**GOODENIACEAE**

*Selliera radicans*

Swamp Weed

**IRIDACEAE**

\**Watsonia meriana*

Bulbil Watsonia

**IRIDACEAE**

\**Watsonia meriana*

Bulbil Watsonia

**JUNCACEAE**

*Juncus kraussii*

Sea Rush

**JUNCAGINACEAE**

*Triglochin procerum*

*Triglochin striatum*

Water Ribbons

Streaked Arrowgrass

**LAMIACEAE**

\**Westringia fruticosa*

Coast Rosemary

**LOMANDRACEAE**

\**Lomandra longifolia*

Spiny-headed Mat-rush

**MALVACEAE**

\**Lagunaria patersonia*

\**Modiola caroliniana*

\**Sida rhombifolia*

White Oak

Red-flowered Mallow

Paddy's Lucerne

**MENISPERMACEAE**

*Stephania japonica*

Snake Vine

**MORACEAE**

\**Ficus rubiginosa*

Port Jackson Fig

**MYOPORACEAE**

\**Myoporum acuminatum*

Boobialla

**MYRTACEAE**

*Eucalyptus* sp.

*Eucalyptus botryoides*

*Leptospermum laevigatum*

\**Lophostemon confertus*

\**Melaleuca armillaris*

\**Melaleuca nesophila*

Gum

Bangalay

Coastal Teatree

Brush Box

Bracelet Honey-myrtle

Showy Honey Myrtle

**OLEACEAE**

\**Ligustrum sinense*

Small-leaved Privet

**OXALIDACEAE**

*Oxalis* sp.

*Oxalis rubens*

Wood Sorrel

Yellow Wood Sorrel

**PHYTOLACCACEAE**

\**Phytolacca octandra*

Inkweed

**PLANTAGINACEAE**

\**Plantago lanceolata*

Ribbed Plantain

**POACEAE**

*Austrofestuca littoralis*

*Cynodon dactylon*

*Eragrostis leptostachya*

*Spinifex sericeus*

\**Ammophila arenaria*

Beach Fescue

Couch Grass

Paddock Love-grass

Hairy Spinifex

Marram Grass

|                                  |                   |
|----------------------------------|-------------------|
| * <i>Andropogon virginicus</i>   | Whiskey Grass     |
| * <i>Axonopus fissifolius</i>    | Carpet Grass      |
| * <i>Bromus cartharticus</i>     | Prairie Grass     |
| * <i>Chloris gayana</i>          | Rhodes Grass      |
| * <i>Echinochloa crus-galli</i>  | Barnyard Grass    |
| * <i>Eleusine indica</i>         | Crowsfoot Grass   |
| * <i>Eleusine tristachya</i>     | Goose Grass       |
| * <i>Lagurus ovatus</i>          | Hare's tail grass |
| * <i>Melinis repens</i>          | Red Natal Grass   |
| * <i>Paspalum dilatatum</i>      | Paspalum          |
| * <i>Pennisetum clandestinum</i> | Kikuyu Grass      |
| * <i>Pennisetum villosum</i>     | Feathertop Grass  |
| * <i>Phyllostachys aurea</i>     | Golden Bamboo     |
| * <i>Sporobolus indicus</i>      | Parramatta Grass  |

#### **POLYGONACEAE**

|                              |             |
|------------------------------|-------------|
| * <i>Polygonum aviculare</i> | Wireweed    |
| * <i>Rumex crispus</i>       | Curled Dock |

#### **PORTULACACEAE**

|                           |          |
|---------------------------|----------|
| <i>Portulaca oleracea</i> | Purslane |
|---------------------------|----------|

#### **PRIMULACEAE**

|                             |                |
|-----------------------------|----------------|
| * <i>Anagallis arvensis</i> | Blue Pimpernel |
|-----------------------------|----------------|

#### **PROTEACEAE**

|                             |               |
|-----------------------------|---------------|
| <i>Banksia integrifolia</i> | Coast Banksia |
| * <i>Hakea</i> sp.          | Hakea         |

#### **RANUNCULACEAE**

|                            |                    |
|----------------------------|--------------------|
| * <i>Ranunculus repens</i> | Creeping Buttercup |
|----------------------------|--------------------|

#### **ROSACEAE**

|                                    |             |
|------------------------------------|-------------|
| * <i>Cotoneaster</i> sp.           | Cotoneaster |
| * <i>Rubus fruticosus</i> sp. agg. | Blackberry  |

#### **SALICACEAE**

|                           |                |
|---------------------------|----------------|
| * <i>Salix babylonica</i> | Weeping Willow |
|---------------------------|----------------|

#### **SOLANACEAE**

|                                  |                     |
|----------------------------------|---------------------|
| * <i>Solanum sisymbriifolium</i> | Viscid Nightshade   |
| * <i>Solanum americanum</i>      | American Nightshade |
| * <i>Lycopersicon esculentum</i> | Tomato              |

#### **TRITONACEAE**

|                             |                   |
|-----------------------------|-------------------|
| * <i>Gladiolus gueinzii</i> | Coastal Gladiolus |
|-----------------------------|-------------------|

#### **TYPHACEAE**

|                         |          |
|-------------------------|----------|
| <i>Typha orientalis</i> | Cumbungi |
|-------------------------|----------|

#### **VERBENACEAE**

|                              |                |
|------------------------------|----------------|
| * <i>Lantana camara</i>      | Lantana        |
| * <i>Verbena bonariensis</i> | Purpletop      |
| * <i>Verbena rigida</i>      | Veined Verbena |



## Appendix 2

### The Control Classes for Noxious Weeds

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#### Weed control classes

- (1) The following weed control classes may be applied to a plant by a weed control order:
    - (a) Class 1, State Prohibited Weeds,
    - (b) Class 2, Regionally Prohibited Weeds,
    - (c) Class 3, Regionally Controlled Weeds,
    - (d) Class 4, Locally Controlled Weeds,
    - (e) Class 5, Restricted Plants.
  - (2) The characteristics of each class are as follows:
    - (a) Class 1 noxious weeds are plants that pose a potentially serious threat to primary production or the environment and are not present in the State or are present only to a limited extent.
    - (b) Class 2 noxious weeds are plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies and are not present in the region or are present only to a limited extent.
    - (c) Class 3 noxious weeds are plants that pose a serious threat to primary production or the environment of an area to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area.
    - (d) Class 4 noxious weeds are plants that pose a threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area.
    - (e) Class 5 noxious weeds are plants that are likely, by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State.
  - (3) A noxious weed that is classified as a Class 1, 2 or 5 noxious weed is referred to in this Act as a *notifiable weed*.
  - (4) Legal Requirements
 

Class 1. The plant must be eradicated from the land and the land must be kept free of the plant.

Class 2. The plant must be eradicated from the land and the land must be kept free of the plant.

Class 3. The plant must be fully and continuously suppressed and destroyed.

Class 4. The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority.

Class 4\*. The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed.

Class 5. The requirements in the *Noxious Weeds Act* for a notifiable weed must be complied with.
-

### Appendix 3

#### Fauna List for the Shell Cove Precinct

##### MAMMALS

|                         |                               |
|-------------------------|-------------------------------|
| Black Rat*              | <i>Rattus rattus</i>          |
| Brown Hare*             | <i>Lepus capensis</i>         |
| Cat*                    | <i>Felis catus</i>            |
| Common Brushtail Possum | <i>Trichosurus vulpecula</i>  |
| Dog*                    | <i>Canis lupus</i>            |
| Domestic Cattle*        | <i>Bos taurus</i>             |
| Fox*                    | <i>Vulpes vulpes</i>          |
| Grey-headed Flying-fox  | <i>Pteropus poliocephalus</i> |
| House Mouse*            | <i>Mus musculus</i>           |
| Rabbit*                 | <i>Oryctolagus cuniculus</i>  |
| Short-beaked Echidna    | <i>Tachyglossus aculeatus</i> |

##### BIRDS

Notes:

Estimate of abundance in New South Wales.

Six orders of magnitude were defined by Morris, McGill and Holmes (1981) to describe maximum population size in any given year:

|              |                |                        |                     |
|--------------|----------------|------------------------|---------------------|
| Rare (R)     | < 100          | Moderately common (MC) | 10,000 - 100,000    |
| Scarce (S)   | 100 - 1,000    | Common (C)             | 100,000 - 1,000,000 |
| Uncommon (U) | 1,000 - 10,000 | Abundant (A)           | > 1,000,000         |

Introduced bird species are indicated by an asterisk (\*).

Key to recording areas: 1. Dunmore Catchment; 2. Shellharbour Swamp; 3. Other locations; 4. This study (2008).

| Family/Species           |                                    | Abundance in NSW | Record |   |   |   |
|--------------------------|------------------------------------|------------------|--------|---|---|---|
| <b>PHASIANIDAE</b>       |                                    |                  |        |   |   |   |
| Stubble Quail            | <i>Coturnix pectoralis</i>         | A                | 2      |   |   |   |
| <b>ANATIDAE</b>          |                                    |                  |        |   |   |   |
| Black Swan               | <i>Cygnus atratus</i>              | C                | 1      |   |   |   |
| Australian Wood Duck     | <i>Chenonetta jubata</i>           | A                | 2      | 3 |   |   |
| Pacific Black Duck       | <i>Anas superciliosa</i>           | A                | 1      | 2 | 3 | 4 |
| Australian Shoveler      | <i>Anas rhynchotis</i>             | MC               | 1      |   |   |   |
| Grey Teal                | <i>Anas gracilis</i>               | A                | 1      |   |   |   |
| Chestnut Teal            | <i>Anas castanea</i>               | MC               | 1      |   |   | 4 |
| <b>PODICIPEDIDAE</b>     |                                    |                  |        |   |   |   |
| Australasian Grebe       | <i>Tachybaptus novaehollandiae</i> | A                | 1      |   | 3 |   |
| Hoary-headed Grebe       | <i>Poliocephalus poliocephalus</i> | C                | 1      |   |   |   |
| <b>PHALACROCORACIDAE</b> |                                    |                  |        |   |   |   |
| Little Pied Cormorant    | <i>Phalacrocorax melanoleucos</i>  | A                | 1      | 2 |   | 4 |
| Little Black Cormorant   | <i>Phalacrocorax sulcirostris</i>  | A                |        | 2 |   |   |
| Great Cormorant          | <i>Phalacrocorax carbo</i>         | C                |        | 2 |   |   |
| <b>PELECANIDAE</b>       |                                    |                  |        |   |   |   |
| Australian Pelican       | <i>Pelecanus conspicillatus</i>    | C-MC             | 1      | 2 |   | 4 |
| <b>ARDEIDAE</b>          |                                    |                  |        |   |   |   |
| White-faced Heron        | <i>Egretta novaehollandiae</i>     | A                | 1      | 2 |   | 4 |
| Little Egret             | <i>Egretta garzetta</i>            | MC               |        | 2 |   |   |
| White-necked Heron       | <i>Ardea pacifica</i>              | C                | 1      |   | 3 |   |
| Great Egret              | <i>Ardea alba</i>                  | C                | 1      | 2 |   |   |
| Intermediate Egret       | <i>Ardea intermedia</i>            | MC               |        |   |   |   |
| Cattle Egret             | <i>Ardea ibis</i>                  | MC               |        | 2 | 3 | 4 |

|                          |                                  |      |   |   |   |
|--------------------------|----------------------------------|------|---|---|---|
| Australasian Bittern     | <i>Botaurus poiciloptilus</i>    | MC   | 1 |   |   |
| <b>THRESKIORNITHIDAE</b> |                                  |      |   |   |   |
| Glossy Ibis              | <i>Plegadis falcinellus</i>      | MC   | 1 |   |   |
| Australian White Ibis    | <i>Threskiornis molucca</i>      | A    | 1 | 2 |   |
| Straw-necked Ibis        | <i>Threskiornis spinicollis</i>  | A    | 1 | 2 |   |
| Royal Spoonbill          | <i>Platalea regia</i>            | MC   | 1 | 2 |   |
| Yellow-billed Spoonbill  | <i>Platalea flavipes</i>         | MC   | 1 | 2 |   |
| <b>ACCIPITRIDAE</b>      |                                  |      |   |   |   |
| Black-shouldered Kite    | <i>Elanus axillaris</i>          | C-MC | 1 | 2 |   |
| Whistling Kite           | <i>Haliastur spheurnus</i>       | MC   | 1 |   |   |
| White-bellied Sea-Eagle  | <i>Haliaeetus leucogaster</i>    | U    | 1 |   |   |
| Swamp Harrier            | <i>Circus approximans</i>        | MC   | 1 | 2 | 4 |
| Spotted Harrier          | <i>Circus assimilis</i>          | MC-U | 1 |   |   |
| Brown Goshawk            | <i>Accipiter fasciatus</i>       | MC   | 1 |   |   |
| Grey Goshawk             | <i>Accipiter novaehollandiae</i> | U    | 1 |   | 3 |
| Collared Sparrowhawk     | <i>Accipiter cirrhocephalus</i>  | MC   |   | 2 |   |
| Little Eagle             | <i>Hieraaetus morphnoides</i>    | MC   | 1 |   |   |
| <b>FALCONIDAE</b>        |                                  |      |   |   |   |
| Brown Falcon             | <i>Falco berigora</i>            | MC   | 1 |   |   |
| Australian Hobby         | <i>Falco longipennis</i>         | MC   | 1 |   |   |
| Peregrine Falcon         | <i>Falco peregrinus</i>          | U    | 1 | 2 |   |
| Nankeen Kestrel          | <i>Falco cenchroides</i>         | C    | 1 | 2 | 3 |
| <b>RALLIDAE</b>          |                                  |      |   |   |   |
| Buff-banded Rail         | <i>Gallirallus philippensis</i>  | MC   |   | 2 |   |
| Lewin's Rail             | <i>Rallus pectoralis</i>         | U    |   |   | 3 |
| Purple Swampphen         | <i>Porphyrio porphyrio</i>       | A    | 1 |   |   |
| Dusky Moorhen            | <i>Gallinula tenebrosa</i>       | A    |   | 2 |   |
| Eurasian Coot            | <i>Fulica atra</i>               | A    |   |   | 3 |
| <b>SCOLOPACIDAE</b>      |                                  |      |   |   |   |
| Latham's Snipe           | <i>Gallinago hardwickii</i>      | MC   |   | 2 |   |
| Whimbrel                 | <i>Numenius phaeopus</i>         | U    |   | 2 |   |
| Common Greenshank        | <i>Tringa nebularia</i>          | U    |   | 2 |   |
| Ruddy Turnstone          | <i>Arenaria interpres</i>        | U    |   | 2 |   |
| Sanderling               | <i>Calidris alba</i>             | R    |   | 2 |   |
| Sharp-tailed Sandpiper   | <i>Calidris acuminata</i>        | C    |   | 2 |   |
| Curlew Sandpiper         | <i>Calidris ferruginea</i>       | MC   |   | 2 |   |
| <b>ROSTRATULIDAE</b>     |                                  |      |   |   |   |
| Painted Snipe            | <i>Rostratula benghalensis</i>   | U    |   | 2 |   |
| <b>JACANIDAE</b>         |                                  |      |   |   |   |
| Comb-crested Jacana      | <i>Iredipara gallinacea</i>      | U    | 1 |   |   |
| <b>HAEMATOPODIDAE</b>    |                                  |      |   |   |   |
| Pied Oystercatcher       | <i>Haematopus longirostris</i>   | S    |   | 2 |   |
| Sooty Oystercatcher      | <i>Haematopus fuliginosus</i>    | S    |   | 2 |   |
| <b>RECURVIROSTRIDAE</b>  |                                  |      |   |   |   |
| Black-winged Stilt       | <i>Himantopus himantopus</i>     | C    | 1 | 2 |   |
| <b>CHARADRIIDAE</b>      |                                  |      |   |   |   |
| Red-capped Plover        | <i>Charadrius ruficapillus</i>   | C    |   | 2 |   |
| Greater Sand Plover      | <i>Charadrius leschenaultii</i>  | S    |   | 2 |   |
| Double-banded Plover     | <i>Charadrius bicinctus</i>      | U    |   | 2 |   |
| Black-fronted Dotterel   | <i>Elseyaornis melanops</i>      | C    |   | 2 |   |

|                              |                                     |      |   |   |   |   |
|------------------------------|-------------------------------------|------|---|---|---|---|
| Masked Lapwing               | <i>Vanellus miles</i>               | A    | 1 | 2 | 3 | 4 |
| Lesser Golden Plover         | <i>Pluvialis dominica</i>           | U    |   | 2 |   |   |
| <b>LARIDAE</b>               |                                     |      |   |   |   |   |
| Kelp Gull                    | <i>Larus dominicanus</i>            | R    |   | 2 |   |   |
| Silver Gull                  | <i>Larus novaehollandiae</i>        | A    | 1 | 2 | 3 | 4 |
| Crested Tern                 | <i>Sterna bergii</i>                | C    |   | 2 |   |   |
| White-fronted Tern           | <i>Sterna striata</i>               | R    |   | 2 |   |   |
| <b>COLUMBIDAE</b>            |                                     |      |   |   |   |   |
| Spotted Turtle-Dove*         | <i>Streptopelia chinensis</i>       | A    | 1 | 2 | 3 | 4 |
| Crested Pigeon               | <i>Ocyphaps lophotes</i>            | A    |   | 2 |   | 4 |
| Bar-shouldered Dove          | <i>Geopelia humeralis</i>           | C    | 1 |   |   |   |
| Topknot Pigeon               | <i>Lopholaimus antarcticus</i>      | MC   | 1 |   |   |   |
| <b>CACATUIDAE</b>            |                                     |      |   |   |   |   |
| Yellow-tailed Black-Cockatoo | <i>Calyptorhynchus funereus</i>     | MC   | 1 |   |   |   |
| Galah                        | <i>Cacatua roseicapilla</i>         | A    |   | 2 | 3 |   |
| Sulphur-crested Cockatoo     | <i>Cacatua galerita</i>             | C    | 1 |   |   | 4 |
| <b>PSITTACIDAE</b>           |                                     |      |   |   |   |   |
| Rainbow Lorikeet             | <i>Trichoglossus haematodus</i>     | C    |   |   | 3 | 4 |
| Crimson Rosella              | <i>Platycercus elegans</i>          | A    | 1 |   |   |   |
| Eastern Rosella              | <i>Platycercus eximius</i>          | A    | 1 |   |   |   |
| <b>CUCULIDAE</b>             |                                     |      |   |   |   |   |
| Fan-tailed Cuckoo            | <i>Cacomantis flabelliformis</i>    | C    | 1 | 2 |   |   |
| Shining Bronze-Cuckoo        | <i>Chrysococcyx lucidus</i>         | S    | 1 | 2 |   |   |
| <b>STRIGIDAE</b>             |                                     |      |   |   |   |   |
| Barking Owl                  | <i>Ninox connivens</i>              | U    | 1 |   |   |   |
| Southern Boobook             | <i>Ninox novaeseelandiae</i>        | C    | 1 |   |   |   |
| <b>TYTONIDAE</b>             |                                     |      |   |   |   |   |
| Barn Owl                     | <i>Tyto alba</i>                    | C-MC | 1 |   |   |   |
| <b>APODIDAE</b>              |                                     |      |   |   |   |   |
| White-throated Needletail    | <i>Hirundapus caudacutus</i>        | A    | 1 |   |   |   |
| <b>HALCYONIDAE</b>           |                                     |      |   |   |   |   |
| Laughing Kookaburra          | <i>Dacelo novaeguineae</i>          | A    | 1 |   |   | 4 |
| Sacred Kingfisher            | <i>Alcedo pusilla</i>               | A    |   |   | 3 |   |
| <b>MALURIDAE</b>             |                                     |      |   |   |   |   |
| Superb Fairy-wren            | <i>Malurus cyaneus</i>              | A    | 1 | 2 | 3 | 4 |
| Variegated Fairy-wren        | <i>Malurus lamberti</i>             | C    | 1 | 2 |   |   |
| Southern Emu-wren            | <i>Stipiturus malachurus</i>        | MC   | 1 |   |   |   |
| <b>PARDALOTIDAE</b>          |                                     |      |   |   |   |   |
| White-browed Scrubwren       | <i>Sericornis frontalis</i>         | A    | 1 |   | 3 |   |
| Brown Gerygone               | <i>Gerygone mouki</i>               | A    | 1 | 2 | 3 |   |
| Brown Thornbill              | <i>Acanthiza pusilla</i>            | A    | 1 |   | 3 |   |
| Yellow-rumped Thornbill      | <i>Acanthiza chrysorrhoa</i>        | A    | 1 | 2 |   | 4 |
| Yellow Thornbill             | <i>Acanthiza nana</i>               | A    | 1 | 2 | 3 |   |
| <b>MELIPHAGIDAE</b>          |                                     |      |   |   |   |   |
| Little Wattlebird            | <i>Anthochaera chrysoptera</i>      | C    |   |   | 3 | 4 |
| Lewin's Honeyeater           | <i>Meliphaga lewinii</i>            | A    | 1 |   | 3 |   |
| New Holland Honeyeater       | <i>Phylidonyris novaehollandiae</i> | A    | 1 | 2 |   | 4 |
| Eastern Spinebill            | <i>Acanthorhynchus tenuirostris</i> | A    | 1 |   | 3 |   |

|                            |                                  |    |   |   |   |   |
|----------------------------|----------------------------------|----|---|---|---|---|
| White-fronted Chat         | <i>Epthianura albifrons</i>      | C  | 1 | 2 |   |   |
| <b>PETROICIDAE</b>         |                                  |    |   |   |   |   |
| Eastern Yellow Robin       | <i>Eopsaltria australis</i>      | A  | 1 |   |   |   |
| <b>CINCLOSOMATIDAE</b>     |                                  |    |   |   |   |   |
| Eastern Whipbird           | <i>Psophodes olivaceus</i>       | A  | 1 |   | 3 |   |
| <b>PACHYCEPHALIDAE</b>     |                                  |    |   |   |   |   |
| Golden Whistler            | <i>Pachycephala pectoralis</i>   | A  | 1 |   | 3 |   |
| Rufous Whistler            | <i>Pachycephala rufiventris</i>  | A  | 1 |   |   |   |
| Grey Shrike-thrush         | <i>Colluricincla harmonica</i>   | A  | 1 |   | 3 |   |
| <b>DICRURIDAE</b>          |                                  |    |   |   |   |   |
| Magpie-lark                | <i>Grallina cyanoleuca</i>       | A  | 1 | 2 | 3 | 4 |
| Rufous Fantail             | <i>Rhipidura rufifrons</i>       | C  | 1 |   |   |   |
| Grey Fantail               | <i>Rhipidura fuliginosa</i>      | A  | 1 | 2 | 3 |   |
| Willie Wagtail             | <i>Rhipidura leucophrys</i>      | A  | 1 | 2 | 3 | 4 |
| <b>CAMPEPHAGIDAE</b>       |                                  |    |   |   |   |   |
| Black-faced Cuckoo-shrike  | <i>Coracina novaehollandiae</i>  | A  | 1 | 2 | 3 | 4 |
| <b>ORIOLIDAE</b>           |                                  |    |   |   |   |   |
| Olive-backed Oriole        | <i>Oriolus sagittatus</i>        | C  |   |   | 3 |   |
| <b>ARTAMIDAE</b>           |                                  |    |   |   |   |   |
| Grey Butcherbird           | <i>Cracticus torquatus</i>       | A  | 1 |   |   |   |
| Australian Magpie          | <i>Gymnorhina tibicen</i>        | A  | 1 | 2 | 3 | 4 |
| Pied Currawong             | <i>Strepera graculina</i>        | A  | 1 | 2 | 3 | 4 |
| <b>CORVIDAE</b>            |                                  |    |   |   |   |   |
| Australian Raven           | <i>Corvus coronoides</i>         | A  | 1 | 2 | 3 | 4 |
| <b>PTILONORHYNCHIDAE</b>   |                                  |    |   |   |   |   |
| Satin Bowerbird            | <i>Ptilonorhynchus violaceus</i> | C  |   |   | 3 |   |
| <b>ALAUDIDAE</b>           |                                  |    |   |   |   |   |
| Skylark*                   | <i>Alauda arvensis</i>           | MC | 1 | 2 |   |   |
| <b>MOTACILLIDAE</b>        |                                  |    |   |   |   |   |
| Richard's Pipit            | <i>Anthus novaeseelandiae</i>    | A  | 1 | 2 | 3 |   |
| <b>PASSERIDAE</b>          |                                  |    |   |   |   |   |
| House Sparrow*             | <i>Passer domesticus</i>         | A  | 1 | 2 | 3 |   |
| Zebra Finch                | <i>Taeniopygia guttata</i>       | A  | 1 | 2 |   |   |
| Red-browed Finch           | <i>Neochmia temporalis</i>       | A  | 1 |   | 3 |   |
| Chestnut-breasted Mannikin | <i>Lonchura castaneothorax</i>   | MC | 1 |   |   |   |
| <b>FRINGILLIDAE</b>        |                                  |    |   |   |   |   |
| European Goldfinch*        | <i>Carduelis carduelis</i>       | A  | 1 | 2 | 3 |   |
| <b>DICAEIDAE</b>           |                                  |    |   |   |   |   |
| Mistletoebird              | <i>Dicaeum hirundinaceum</i>     | A  |   |   | 3 |   |
| <b>HIRUNDINIDAE</b>        |                                  |    |   |   |   |   |
| Welcome Swallow            | <i>Hirundo neoxena</i>           | A  | 1 | 2 | 3 | 4 |
| Tree Martin                | <i>Hirundo nigricans</i>         | A  | 1 |   |   |   |
| Fairy Martin               | <i>Hirundo ariel</i>             | A  | 1 | 2 |   |   |

**PYCNONOTIDAE**

|                       |                           |   |   |   |   |
|-----------------------|---------------------------|---|---|---|---|
| Red-whiskered Bulbul* | <i>Pycnonotus jocosus</i> | C | 1 | 2 | 3 |
|-----------------------|---------------------------|---|---|---|---|

**SYLVIIDAE**

|                         |                                |    |   |   |     |
|-------------------------|--------------------------------|----|---|---|-----|
| Clamorous Reed-Warbler  | <i>Acrocephalus stentoreus</i> | A  |   | 2 |     |
| Little Grassbird        | <i>Megalurus gramineus</i>     | A  | 1 | 2 |     |
| Tawny Grassbird         | <i>Megalurus timoriensis</i>   | MC | 1 |   |     |
| Golden-headed Cisticola | <i>Cisticola exilis</i>        | A  | 1 | 2 | 3 4 |

**ZOSTEROPIDAE**

|           |                            |   |   |   |     |
|-----------|----------------------------|---|---|---|-----|
| Silvereye | <i>Zosterops lateralis</i> | A | 1 | 2 | 3 4 |
|-----------|----------------------------|---|---|---|-----|

**MUSCICAPIDAE**

|                |                          |   |   |  |  |
|----------------|--------------------------|---|---|--|--|
| Bassian Thrush | <i>Zoothera lunulata</i> | C | 1 |  |  |
|----------------|--------------------------|---|---|--|--|

**STURNIDAE**

|                  |                             |   |   |   |     |
|------------------|-----------------------------|---|---|---|-----|
| Common Starling* | <i>Sturnus vulgaris</i>     | A | 1 | 2 | 3 4 |
| Common Mynah*    | <i>Acridotheres tristis</i> | A | 1 | 2 | 3 4 |

**REPTILES AND AMPHIBIANS**

|                        |                              |  |   |   |     |
|------------------------|------------------------------|--|---|---|-----|
| Common Eastern Froglet | <i>Crinia signifera</i>      |  | 1 | 2 | 3 4 |
| Brown-striped Frog     | <i>Limnodynastes peronii</i> |  |   | 2 | 3   |
| Smooth Toadlet         | <i>Uperoleia laevigata</i>   |  |   | 2 | ?   |

**HYLIDAE**

|                            |                        |  |  |   |   |
|----------------------------|------------------------|--|--|---|---|
| Green and Golden Bell Frog | <i>Litoria aurea</i>   |  |  | 2 |   |
| Bleating Tree Frog         | <i>Litoria dentata</i> |  |  | 2 |   |
| Eastern Dwarf Tree Frog    | <i>Litoria fallax</i>  |  |  |   | 3 |

|                      |                           |  |  |   |   |
|----------------------|---------------------------|--|--|---|---|
| Peron's Tree Frog    | <i>Litoria peronii</i>    |  |  | 2 | 3 |
| Verreaux's Tree Frog | <i>Litoria verreauxii</i> |  |  | 2 | 3 |

**CHELIDAE**

|                      |                              |  |  |   |   |
|----------------------|------------------------------|--|--|---|---|
| Long-necked Tortoise | <i>Chelodina longicollis</i> |  |  | 2 | 3 |
|----------------------|------------------------------|--|--|---|---|

**AGAMIDAE**

|              |                               |  |  |  |   |
|--------------|-------------------------------|--|--|--|---|
| Jacky Lizard | <i>Amphibolurus muricatus</i> |  |  |  | 3 |
|--------------|-------------------------------|--|--|--|---|

**SCINCIDAE**

|                             |                                |  |   |   |   |
|-----------------------------|--------------------------------|--|---|---|---|
| Eastern Water Skink         | <i>Eulamprus quoyii</i>        |  |   |   | 3 |
| Delicate Skink              | <i>Lampropholis delicata</i>   |  | 1 | 2 | 3 |
| Grass Skink                 | <i>Lampropholis guichenoti</i> |  | 1 | 2 | 3 |
| Three-toed Skink            | <i>Saiphos equalis</i>         |  | 1 |   |   |
| Eastern Blue-tongued Lizard | <i>Tiliqua scincoides</i>      |  |   |   | 3 |

**ELAPIDAE**

|                         |                                |  |  |  |   |
|-------------------------|--------------------------------|--|--|--|---|
| Red-bellied Black Snake | <i>Pseudechis porphyriacus</i> |  |  |  | 3 |
| White-lipped Snake      | <i>Drysdalia coronoides</i>    |  |  |  | 3 |

**FISH**

|                |                           |  |  |  |   |
|----------------|---------------------------|--|--|--|---|
| Plague Minnow* | <i>Gambusia holbrooki</i> |  |  |  | 3 |
|----------------|---------------------------|--|--|--|---|

**Appendix 4**

**Notification of 'Decision on referral' under the EPBC Act**

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## Australian Government

### Department of the Environment, Water, Heritage and the Arts

Mr Glenn Colquhoun  
Project Director – Shell Cove  
Australand Corporation Pty Ltd  
PO Box A148  
SHELLHARBOUR NSW 2529

Date: 30 January 2008  
EPBC Ref: 2007/3935  
EPBC contact: Lyndell Davis  
02 6274 2125  
lyndell.davis@environment.gov.au

Dear Mr Colquhoun

#### Decision on referral

#### Shellcove Boatharbour - Residential and Commercial Development

This proposed action, to develop an in-shore boatharbour and associated shore-based land development located near Shellharbour, NSW, has now been considered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

**We have decided that the proposed action is not a controlled action and, as such, does not require assessment and approval by the Minister for the Environment, Heritage and the Arts before it can proceed.**

A copy of the document recording this decision is enclosed.

Please note that this decision relates only to the potential for significant impact on the specific matters protected by the Australian Government under Chapter 4 of the EPBC Act.

There may be a need for separate state or local Government environment assessment and approval to address potential impacts on state, regional or local environmental values.

The department has an active audit program for proposals that have been referred or approved under the EPBC Act. The audit program aims to ensure that proposals are implemented as planned and that there is a high degree of compliance with any associated conditions. You should be aware that your project may be selected for audit by the department at any time and all related records and documents may be subject to scrutiny. Information about the department's audit strategy is enclosed.

I have written separately to Mr Brian Weir of Shellharbour City Council advising him of this decision.

If you have any questions about the referral process or this decision, please contact the EPBC project manager and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

Cathy Skippington  
Assistant Secretary  
Environment Assessment Branch



## Australian Government

### Department of the Environment, Water, Heritage and the Arts

#### Notification of REFERRAL DECISION – not controlled action

#### Shellcove Boatharbour - Residential and Commercial Development

This decision is made under Section 75 of the *Environment Protection and Biodiversity Conservation Act 1999*.

#### Proposed action

|                              |   |
|------------------------------|---|
| person named in the referral | Australand Corporation Pty Ltd  |
| proposed action              | The proposed action involves the development of an in-shore boatharbour and associated shore-based land development located near Shellharbour, NSW, as described in referral documentation received on 19 December 2007 and additional information received on 21 January 2008. |

#### Referral decision: Not a controlled action

|                           |   |
|---------------------------|---|
| status of proposed action | The proposed action is not a controlled action. |
|---------------------------|---|

#### Person authorised to make decision

|                   |   |
|-------------------|---|
| Name and position | Cathy Skippington<br>Assistant Secretary<br>Environment Assessment Branch |
|-------------------|---|

signature

date of decision

30-1-08