

# **CONSERVATION OF THE BUSSELTON WETLANDS**



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**For the**

**Western Australian Department of Conservation and Land Management**

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## SUMMARY

The Busselton wetlands are a chain of coastal wetlands covering 2 500 ha and extending from 15 km northeast of Busselton to 10 km west. The wetlands are of international importance for the conservation of waterbirds. In recognition of the conservation importance of the area, substantial portions of the wetlands have been listed under the Ramsar Convention and the Register of the National Estate. The wetlands are also afforded some protection by the Environmental Protection (Swan Coastal Plain Lakes) Policy of 1992.

At present only 8% of the wetlands are protected in conservation reserves. The remainder of the land is held in private ownership (48%), reserves vested in the Shire of Busselton (6%), other Crown vesting and Crown ownership (14%) or is presently not covered by the Land Act (24%).

The conservation values of the wetlands are being threatened and diminished by increasing nutrient loads, loss of native vegetation, dramatic fluctuations in water levels and residential development. This report, funded by the Australian Heritage Commission through the WA State Heritage Committee (now the WA Heritage Council), has been developed in response to these issues and in particular to a proposed harbour/residential development (the Port Geographe project) in East Busselton adjacent to the Vasse estuary. In approving the Port Geographe Project (and foreign investment in it), State and Commonwealth Governments have emphasized the need for a conservation plan for the wetlands.

A number of environmental protection and planning policies cover the wetlands. A single conservation proposal that embraces these existing policies and the conservation needs of the wetlands is needed. A conservation proposal which integrates other Government land use plans and policies would not only enable the development of comprehensive management arrangements for the area, but would also provide guidelines for land use decisions on and adjacent to the wetlands.

Opportunities currently exist for the integration of conservation objectives into the review of the Busselton Town Planning Scheme, the development of an Integrated Catchment Plan and other issue-based approval processes such as subdivision applications.

To maintain the conservation values of the Busselton wetlands it is recommended that the Western Australian Department of Conservation and Land Management adopt the following Busselton Wetlands Conservation Strategy:

1. Prepare a conservation proposal for the Busselton wetlands. This involves the following actions:

- 1.1 Prepare a draft Busselton Wetlands Conservation Proposal, including details of the proposed boundary, tenure and management of the conservation area and the implications for use and management of land adjacent to the conservation area;
  - 1.2 Prior to the public release of the draft Proposal, hold discussions with private landowners and Government agencies who may be affected by its recommendations;
  - 1.3 Release the draft Busselton Wetlands Conservation Proposal for public comment;
  - 1.4 Review the draft Proposal following consideration of comments received, then formally adopt the final Proposal.
2. Make a submission (based on the Busselton Wetland Conservation Proposal) to the current review of the Busselton Town Planning Scheme, seeking the adoption of planning policies that will facilitate the maintenance of the conservation values of the wetlands.
3. Prepare a Management Plan for the wetland conservation area following the implementation of most Crown land tenure-change proposals as outlined in the Busselton Wetlands Conservation Proposal.
4. Actively participate in the integrated catchment management process, advocating appropriate attention to the conservation needs of the wetlands.
5. Use the Busselton Wetlands Conservation Proposal for guidance in consideration of specific development proposals that may impact on the Busselton wetlands.

## **SECTION 1. INTRODUCTION**

### **1.1 Background**

The Busselton wetlands consist of a 2 500 ha chain of coastal wetlands extending from the north-east to the west of the Busselton townsite. The waters of four Rivers - the Ludlow, Abba, Sabina and part of the flow of the Vasse - all run through the wetlands into Geographe Bay. The wetlands have been dramatically altered in the past 160 years by farming and the development of the Busselton townsite. These activities have involved extensive clearing of native vegetation, construction of a regional drainage system and construction of weirs near the mouths of the Vasse and Wonnerup estuaries.

The wetlands are of major conservation importance for waterbirds with up to 33 000 individuals and 78 species having been counted. Many trans-equatorial migratory bird species use the wetlands during September - April each year. The wetlands have been identified as being of international importance for three species of migratory shorebirds and two species of resident shorebirds (Watkins in press).

The conservation values of the wetlands are being threatened and/or diminished by high levels of nutrient input, the loss of native vegetation, steadily encroaching residential development and increasing disturbance caused by people and pets.

The need for improved management arrangements for the wetlands has been recognised by the State and Commonwealth Governments and both have called for a conservation plan to be developed.

### **1.2 The Study Area**

The study area for this Strategy can be divided into a wetland zone and a catchment zone.

The wetland zone covers the wetlands and extends out to the nearest major road or proposed road. The zone extends from Forrest Beach (15 km north-east of Busselton) to the Buayanyup Drain (10 km west of Busselton). The inland boundaries of the wetland zone are the Vasse Highway and the proposed Busselton by-pass road.

The catchment zone extends inland from the wetland zone. The catchments included are South Drain, Ludlow River, part of the Ruabon, Abba, Sabina and Vasse Rivers, the Vasse River Diversion and part of the Broadwater wetland.

## SECTION 2. OVERVIEW OF THE STUDY AREA

### 2.1 Land Use

Agricultural development of the coastal plain in the catchment of the Busselton wetlands has resulted in the clearing of 87% of the native vegetation (McAlpine et al. 1989) and major alterations in natural drainage. The most significant hydrological changes came in the 1930's with the commencement of construction of a regional drainage system. This involved the diversion of the Capel River, most of the flow of the Vasse River and part of the flow of the Sabina. These rivers formerly flowed through the Vasse and Wonnerup estuaries and then into Geographe Bay. The catchment of the Vasse and Wonnerup wetlands now covers only 26% of the original area (McAlpine et al. 1989).

Riggert (1974) has also estimated that 75 % of the wetlands on the Swan Coastal Plain had been filled or drained by 1964 and that the Busselton area suffered the greatest losses.

Additional dramatic changes occurred to the Vasse and Wonnerup estuaries in the late 1920s with the building of weirs near their mouths to stop the flooding of pasture with seawater and to prevent storm surges from flooding the Busselton town site. The weirs resulted in the loss of many of these wetlands' estuarine characteristics.

The Busselton townsite abuts the wetland system in the New River and Western Vasse sections of the study area. Other major land uses in the study area are farming, mining and forestry. Farming is the most extensive activity with grazing and dairying being the dominant types. Areas fringing the Busselton wetlands provide valuable summer grazing for livestock and were among the first areas of the State used for this purpose.

Mining is currently restricted to extraction of mineral sand and some construction material (sand). Mineral sand mining operations are located immediately to the north of the Vasse estuary and to the west of the upper reaches of the Wonnerup estuary. The mineral strand on which these operations are based continues northward along the coast. Larger strands of mineral sands (and mining) occur further inland within the catchment area. There is a large area of prospective coal at considerable depth beneath (and to the south and west of) the Broadwater.

Limited harvesting of timber occurs in the jarrah forest in the upper catchment area. Pine plantations on former tuart *Eucalyptus gomphocephala* forest soil types near Ludlow are gradually being logged and replanted with tuart. It is intended that the other pine plantations in the area will continue to be managed for pine timber production.

The study area catchment is within the catchment of Geographe Bay. Approximately 211 fish species occur in Geographe Bay and nearby waters, 98 of amateur angling interest and 87 of professional interest (State Planning Commission 1987).

Maintenance of the seagrass plains of Geographe Bay is dependent upon good management of the Bay's catchment area. The Vasse and Wonnerup estuaries serve as breeding areas for some fish and a small amount of professional netting occurs in Wonnerup Inlet.

The environments in the study area provide for a large diversity of recreational opportunities. Major nature-based recreation activities include birdwatching, sightseeing, picnicking, bushwalking and nature observation. Within the Busselton townsite, more intensive recreational use of the Vasse River environment is catered for. Paddleboats may be hired and adjoining parklands have well-maintained lawns, picnic facilities and playground equipment.

The juxtaposition of the tuart forest, the wetlands and the coast provides an attractive diversity of high quality landscape features.

## 2.2 Conservation Values

The key conservation values in the study area are associated with the Vasse, Wonnerup, New River and Broadwater wetlands, the Ludlow tuart forest and the WA Peppermint *Agonis flexuosa* woodlands. Other important habitats in or adjoining the study area include Locke Estate, McCarleys Swamp, the RGC Mineral Sands Ltd artificial wetlands and the Peppermint Beach wetlands.

Existing conservation reserves in the area are the Tuart National Park, Sabina River Nature Reserve and the Broadwater Nature Reserve.

The southern-most extension of the tuart forest is contained in the Tuart National Park. The Park adjoins the Busselton wetlands and contributes to the wetland ecosystem in a number of ways including the provision of nesting habitat for waterfowl, principally Grey Teal. The tuart forest is highly valued as a landscape feature.

Peppermint woodlands (and the tuart forest having Peppermint understorey) provide habitat for the gazetted rare Western Ringtail Possum *Pseudocheirus occidentalis*.

### 2.2.1 Waterbirds

The Vasse-Wonnerup wetlands are recognised as important for waterbirds at the international, national and regional level. The wetlands are listed under the (Ramsar) "Convention on Wetlands of International Importance, Especially as Waterfowl Habitat" (Department of Conservation and Land Management 1990).

78 waterbird species have been recorded, 26 being listed under either the Japan Australia Migratory Birds Agreement (JAMBA) or the China Australia Migratory Birds Agreement (CAMBA).

Uncommon species recorded include the Australasian Bittern *Botaurus poiciloptilus* (a gazetted rare species in WA), Painted Snipe *Rostratula benghalensis*, Pectoral Sandpiper *Calidris melanotos*, Long-toed Stint *C. subminuta*, a *Gallinago* snipe, Ruff *Philomachus pugnax* and Fairy Tern *Sterna nereis* (Jaensch 1993).

Thirteen waterbird species have been recorded breeding in the Vasse-Wonnerup wetland system including the Black Swan *Cygnus atratus* (largest known breeding concentration in Western Australia), the Pacific Black Duck *Anas superciliosa*, Grey Teal *A. gibberifrons*, Buff-banded Rail *Rallus philippensis*, Spotless Crake *Porzana tabuensis* and Dusky Moorhen *Gallinula tenebrosa* (Jaensch 1993).

The wetlands support 20,000 to 30,000 waterbirds each year (highest number of 33,047 counted in January 1986). There are substantial seasonal changes in species presence and abundance; with numbers usually peaking from December to February each year (Lane 1990). The most abundant species are Grey Teal (regional rank 4), Australian Shelduck *Tadorna tadornoides* and Black-winged Stilt *Himantopus himantopus* (regional rank 1, national rank 4) (Jaensch 1993).

The system supports more than 1% of the national population of Black-winged Stilt, Red-necked Avocet *Recurvirostra novaehollandiae* (regional rank 1, national rank 9), Wood Sandpiper *Tringa glareola* (regional rank 1, national rank 5), Greenshank *T. nebularia* (regional rank 2), Sharp-tailed Sandpiper *Calidris acuminata*, Long-toed Stint and Curlew Sandpiper *C. ferruginea* (Jaensch 1993).

Other species of which the system supports regionally significant numbers are: Australian Pelican *Pelecanus conspicillatus* (rank 1), Australasian Grebe *Tachybaptus novaehollandiae* (rank 3), White-faced Heron *Ardea novaehollandiae* (rank 5), Great Egret *Egretta alba* (rank 1), Yellow-billed Spoonbill *Platalea flavipes* (rank 3), Black Swan (rank 6), Pacific Black Duck (rank 6), Australasian Shoveler *Anas rhynchos* (rank 8), Eurasian Coot *Fulica atra* (rank 9), Whiskered Tern *Chlidonias hybrida* (rank 3), and White-winged Tern *C. leucoptera* (rank 3) (Jaensch 1993).

## 2.2.2 Vegetation

Wetland vegetation consists of samphire dominated by *Sarcocornia blackiana* and *Halosarcia pergranulata* with sedgeland commonly consisting of *Juncus kraussii* or *Bolboschoenus caldwellii* and occurrences of *Lepidosperma leptostachyum* and *Carex divisa*. Open scrub comprises *Melaleuca cuticularis*, *M. hamulosa* and *M. raphiophylla* and is most extensive and intact near Sabina River and parts of the Broadwater and the New River. *Eucalyptus rudis* fringes the Abba River, Malbup Creek and the New River (Jaensch 1993, Tingay & Tingay 1980).

The samphire associations of the estuaries have been cleared, grazed and ploughed in many places, but extensive and vigorous communities remain, particularly toward the north-eastern end of both estuaries.

Tall samphire community, seasonally covered with dense *Bolboschoenus caldwellii*, occurs extensively at the Vasse River deltaic marshes and in smaller areas around the Vasse Estuary (Jaensch 1993).

The vegetation fringing the New River is generally in good condition to the east of Queen Elizabeth Avenue where there are fine stands of *Melaleuca cuticularis* low closed forest and *Juncus kraussii* sedgeland. South of these is an extensive low lying area of mixed shrub low open woodland and *Eucalyptus rudis* open woodland. This is the only relatively undisturbed flood plain vegetation in the study area (Tingay & Tingay 1980).

The wetlands are bordered on the seaward side by a series of low dunes aligned parallel to the coast, and on the landward side by land gently increasing in elevation. The dunes support Peppermint associations of various densities and heights. However, much vegetation has been cleared for housing and agriculture.

The higher inland areas originally supported Marri *Eucalyptus calophylla* open forest to the west and south of Busselton and Tuart *Eucalyptus gomphocephala* high woodland and high open forest east of the Vasse and Wonnerup estuaries. Much of the original Marri open forest has been cleared for agriculture leaving remnant trees only. The more elevated and better-drained soils in the catchment support jarrah or jarrah-marri forest associations where these have not been cleared for agriculture.

As a consequence of the extensive clearing for agriculture in the catchment, remnants of natural vegetation cover are valuable for nature conservation.

### 2.2.3 Other Fauna

The Western Ringtail Possum and the Southern Brown Bandicoot *Isodon obesulus* are two gazetted rare mammal species which occur in the study area.

The Western Ringtail Possum is dependent upon the Peppermint associations for food and, in the absence of other suitable trees, for nesting. In areas of dense tree crown cover the Ringtail Possum is able to avoid serious predation from foxes (Jones 1992).

The Busselton area, incorporating Locke Estate (a Crown reserve) and the Tuart National Park, is an important area for the Western Ringtail Possum. Tuart National Park is one of only four existing/proposed conservation reserves known to support viable populations of the Western Ringtail Possum.

There is evidence of Southern Brown Bandicoots in vegetation fringing the wetlands of the study area. Areas of dense ground-cover appear to be necessary for the survival of the Southern Brown Bandicoot (J.A. Friend pers. comm.).

The Common Wambenger *Phascogale tapoatafa* is considered by the Department of Conservation and Land Management to be vulnerable to decline, but not at present

sufficiently endangered to be gazetted rare and endangered. It has been observed in Tuart and *Melaleuca* associations in the Ludlow area (Jones 1992).

Large numbers of Grey Kangaroos *Macropus fuliginosus* occur in the Broadwater area and are a potential tourist attraction.

### 2.3 Recognition of Significance

Recognition of the environmental significance of the Busselton wetlands is exemplified by the number and diversity of documents which exist relating to the conservation values of these wetlands.

Documents (including many public submissions) have been prepared by the following community groups:

- (a) Local: Busselton Naturalists Club; Busselton Peace and Environment Group; Friends of the Tuart Forrest; Waterbird Rescue Group.
- (b) State: Conservation Council of Western Australia; Wetland Conservation Society.
- (c) National: Royal Australasian Ornithologists Union; National Trust.

Local, State and Commonwealth Governments have recognised the conservation significance of the wetlands in the following statutory plans, policies, publications and actions (see Section 3):

- (a) Local Government: Busselton Town Planning Scheme; South Busselton Structure Plan; Busselton Rural Strategy.
- (b) State Government:
  - Department of Planning and Urban Development - Leeuwin Naturaliste Regional Plan;
  - Environmental Protection Authority - Port Geographe Environmental Review, Study of the Vasse-Wonnerup wetlands, Lakes Protection Policy;
  - Western Australian Government - Nomination for Ramsar listing.

(c) Commonwealth Government

Australian Heritage Commission - heritage listing, funding for study;  
Australian National Parks and Wildlife Service - Nomination for Ramsar listing;

Foreign Investment Review Board - conditions of approval of foreign funds for the Port Geographe proposal.

The significance of the wetlands as waterbird habitat has also received international recognition through formal listing of the Vasse and Wonnerup estuaries under the (Ramsar) "Convention on Wetlands of International Importance, Especially as Waterfowl Habitat". Vasse-Wonnerup is one of only forty sites in Australia (nine in Western Australia) currently listed under this Convention.

## **SECTION 3. EXISTING PLANNING AND LAND USE POLICY**

### **3.1 Planning and Land Use Policy**

The development of a conservation proposal for the Busselton wetlands needs to take into account, and as far as possible be consistent with, the policies developed in previous planning studies. Major planning studies relevant to the Busselton wetlands are listed below.

#### Conservation Through Reserves Committee Report - System 1 - 1974

In 1974 the Conservation Through Reserves Committee in its report to the Environmental Protection Authority called for the Vasse and Wonnerup wetlands to become a National Park (Conservation through Reserves Committee 1974). This proposal included the Tuart Forest and the coastal dunes. The Tuart Forest has now become a National Park but there has not been any substantial change to the status of the wetlands or the coastal reserve.

#### Busselton Town Planning Scheme - February 1983

The current Town Planning Scheme, adopted in 1983, provides the primary development approval process for the study area. Most of the study area is zoned rural with small areas zoned Rural/Residential, Residential and Light Industrial.

The Scheme incorporates provisions to protect landscape values and most of the wetland area is included in the Landscape Protection Area. The implications of this are that development and clearing of any of this land requires special approval from the Busselton Shire Council.

#### Busselton Regional Flood Study - November 1987

The Water Authority of Western Australia's Busselton Regional Flood Study (Bretnall 1987) is an important planning document because it gives detailed information on the areas likely to be affected by flooding. Of most relevance is the "Limit of Development Line" developed by the Water Authority. This defines the area within which the Water Authority recommends there be no development. The Busselton Shire Council and the Department of Planning and Urban Development refer to this line when considering rezoning applications for rural land.

#### South Busselton Structure Plan - June 1988

The Busselton Shire has developed a Structure Plan for South Busselton which sets out in detail the development plans for the area. This Structure Plan recognises the major environmental issues concerning development as being flooding, drainage and conservation of the wetlands. It draws from the Busselton Regional Flood Study and information from the Department of Conservation and Land Management to define a "conservation value area". The Structure Plan recommends that there be no development on the flood plain and that the wetland area become a Nature Reserve to link the Broadwater Nature Reserve to the Vasse estuary.

#### Leeuwin Naturaliste Regional Plan - August 1988

This Plan was the first regional planning study for a country area of Western Australia (Department of Planning and Urban Development 1988). It developed 84 specific strategies for land use in the region. The overall objective of the Plan was to;

*"provide for the economic and social development of the region whilst maintaining and enhancing the natural values on which the development is dependent".*

The Regional Plan identifies the conservation of the Broadwater and the Vasse and Wonnerup wetlands as a major planning issue.

#### Port Geographe Project Review - September 1988

The Port Geographe Project is a major harbour/residential development proposed for East Busselton. Environmental (and other) aspects of the project have undergone an extensive review (LeProvost, Semeniuk and Chalmer 1988; Environmental Protection Authority 1989; LeProvost Environmental Consultants 1990) which has set many precedents for land use planning and development in the study area.

The Environmental Review and Management Program for the Port Geographe Project recognised the international importance of the Vasse - Wonnerup wetlands (LeProvost, Semeniuk and Chalmer 1988). It proposed the donation of 112 ha of land for a wetland conservation area and the contribution of \$53 000 for a research and relocation program for the Ringtail Possum, \$80 000 for a wetland research program and \$100 000 for a Wetland Interpretation Centre. The Project proponent has also given commitments for a comprehensive program to minimise adverse impacts on the wetlands (LeProvost Environmental Consultants 1990).

In granting approval for the project in January 1990, the State Government declared that the Vasse - Wonnerup wetlands and the adjacent Crown land should be protected and managed for conservation. This was to be achieved by;

- (a) the development of planning controls to avoid developments which are likely to have a detrimental effect on the wetlands,
- (b) nomination of the wetland for inclusion under the (Ramsar) "Convention on Wetlands of International Importance, Especially as Waterfowl Habitat".
- (c) the development and implementation of a Conservation Strategy for the wetlands, co-ordinated by the Department of Conservation and Land Management,
- (d) the development and implementation of an Integrated Catchment Management Plan,
- (e) further studies on the management needs of the wetlands,
- (f) referral of all development proposals of environmental significance to the Environmental Protection Authority for assessment.

### National Estate Listing for the Ludlow Wonnerup Area - 1989

In recognition of the conservation and heritage value of the Vasse - Wonnerup wetlands and the Tuart National Park, the area has been listed on the register of the National Estate, maintained by the Australian Heritage Commission. The listing covers the Wonnerup and the north-eastern half of the Vasse estuary. Farmland between the wetlands and the Tuart National Park is also included.

The register of the National Estate operates under Commonwealth Government legislation and is administered by the Department of Arts, Sport, Environment and Territories. The legislation is binding only on Commonwealth government agencies, requiring them to seek comment from the Heritage Commission on the acceptability of development proposals that may affect National Estate sites.

### Environmental Protection Authority Study of the Vasse - Wonnerup Wetland System - May 1989

This study assessed the environmental condition of the Vasse - Wonnerup wetlands and evaluated a range of water quality management options for the system (McAlpine et al. 1989). It was conducted in response to public concern about fish deaths near the mouth of the inlet in summer.

The Vasse - Wonnerup wetlands were found to have the highest nutrient loads measured in any estuary in the southwest of Western Australia (note that Vasse-Wonnerup is no longer a true estuary). The Environmental Protection Authority considered the maintenance of waterbird habitat the most important environmental objective for the Vasse - Wonnerup wetlands and recommended that the area be nominated for listing under the Ramsar Convention.

The Environmental Protection Authority concluded that the present weirs had changed the ecology of the wetlands from estuarine to essentially freshwater wetlands. As the wetlands dry out in summer they become saline to hypersaline (they are fresh in winter). It was concluded that if the wetlands did not dry out then;

*"the high nutrient loads would undoubtedly precipitate catastrophic algal blooms, probably far worse than those experienced in the Peel -Harvey system".*

The Environmental Protection Authority recommended that the goals for management of the wetland system be:

- (a) maintain the system's function as an important waterbird habitat,
- (b) improve the water quality of the system over the summer period,
- (c) prevent further fish deaths in the system,
- (d) reduce the annual nutrient load retained in the wetlands,
- (e) maintain productivity in the catchment.

#### Coastal Reserves and Building Setbacks for Geographe Bay - January 1990

This study was conducted by the Department of Planning and Urban Development for the Busselton Shire (Department of Planning and Urban Development 1990). It gives important recommendations on the tenure and management of the coastal land adjacent to the Vasse and Deadwater wetlands. The report identifies several parcels of private land within the study area that should eventually be included in the coastal reserve.

#### Ramsar Convention - February 1990

Australia is a Contracting Party to the "Convention on Wetlands of International Importance, Especially as Waterfowl Habitat". This Convention was first adopted at an international gathering in the city of Ramsar in Iran, in 1972. The Convention commits Contracting Parties to the conservation of listed sites of international importance and the wise use of wetlands generally. The Vasse-Wonnerup wetlands are one of nine areas nominated by the Western Australian Government for listing under the Ramsar Convention (Department of Conservation and Land Management 1990). The nominated area covers the Wonnerup and Vasse estuaries and some adjacent Crown Land. The nomination was accepted by the Commonwealth Government and the Ramsar Bureau and the site is now included in the Ramsar List of Wetlands of International Importance. The Commonwealth Government has delegated responsibility for implementation of the Convention to the State and Territory Governments, in the first instance. At the same time, Commonwealth Government ministers are obliged to ensure that their departments or instrumentalities do not conduct or permit actions which are counter to Australia's responsibilities under the Ramsar Convention.

#### Environmental Protection (Swan Coastal Plain Lakes) Policy 1992

The purpose of this policy is to protect lakes on the Swan Coastal Plain from being further degraded and destroyed.

Potential causes of degradation or destruction of the lakes specified in the Policy include:

- a) *the filling of lakes with materials*
- b) *the excavation and mining of lakes*
- c) *the discharge and disposal of effluent into lakes; and*
- d) *the drainage of water into or out of lakes.*

The Busselton wetlands are covered by this policy and Environmental Protection Authority approval is required before any action is taken that may cause the degradation or destruction of these wetlands.

#### The Draft Shire of Busselton Rural Strategy 1991

The Draft Shire of Busselton Rural Strategy seeks to establish land use principles for the rural areas of the Shire that will provide a balance between natural values, agricultural values and human values. The Strategy is being developed as the

foundation for longer term planning of rural areas and to provide the basis against which future land use proposals will be assessed.

The Rural Strategy recognises the need for integrated catchment management within the Vasse-Wonnerup and Broadwater system and for land use to ensure:

- a) environmentally sustainable resource use;
- b) continuity of agricultural production and economic output;
- c) maintenance of the quality and availability of water resources;
- d) protection of estuarine and marine environments;
- e) protection of vegetation, landscape and soil systems; and
- f) rehabilitation of degraded areas.

Wonnerup estuary and the Ludlow tuart forest are recognised as significant environmental features. The Strategy recommends that land use strategies for this area be aimed at the conservation of significant environments while enabling the continuation of adjacent land uses in a manner consistent with those environments.

For the catchment area of the Vasse-Wonnerup and Broadwater wetlands the Draft Strategy recommends that:

- (a) *"Land use proposals for the area need to be considered in the context of integrated catchment management of the Vasse-Wonnerup estuarine system.*
- (b) *Assessment criteria for land use proposals include management of nutrient export, protection of groundwater resources, conservation of remnant vegetation including within farmland wherever practical, and encouragement of reforestation".*

### 3.2 Implications for Land Use

There are many major recommendations within the planning and land use studies described above that need to be recognised in developing a conservation strategy for the wetlands.

#### 3.2.1 General Recommendations

The following general recommendations from existing planning and land use policies are relevant to the Busselton Wetlands Conservation Strategy.

- \* The Vasse and Wonnerup estuaries and adjacent Crown land should be protected and managed for conservation (Port Geographe Project Review).
- \* As significant visual features, the Busselton wetlands should be maintained through appropriate management of the Crown lands and through guidelines on

activities on private land such as clearing controls and rate concessions to encourage retention of vegetation (Leeuwin Naturaliste Regional Plan).

- \* The Broadwater and associated wetlands should be retained as wetlands for their entire length (Leeuwin Naturaliste Regional Plan).
- \* The wetland area from the Broadwater Nature Reserve to the Vasse wetlands should become a Nature Reserve (South Busselton Structure Plan).
- \* Wetlands in the Capel-Wonnerup area should remain in agricultural use recognising the importance of the conservation and recreation values of the entire wetland system (Leeuwin Naturaliste Regional Plan).
- \* Subdivision of the higher and well-drained areas west of Pigeon Grove, adjacent to the Vasse estuary, into Special Rural blocks should be supported, with the lower portions of the parent blocks becoming public land and managed for waterbird habitat and recreation (Leeuwin Naturaliste Regional Plan).
- \* The Commonwealth and State Governments have an international obligation to conserve and wisely manage the Vasse and Wonnerup wetlands (Ramsar Convention).

### 3.2.2 Land Management

The following recommendations from existing planning and land use policies are relevant to land management issues to be addressed by the Busselton Wetlands Conservation Strategy.

- \* The most important environmental objective for the Vasse-Wonnerup wetlands is considered to be maintenance of waterbird habitat (Environmental Protection Authority Study).
- \* Management of the Vasse and Wonnerup wetlands should continue to exclude marine water from the wetlands using a system of weirs (Environmental Protection Authority Study).
- \* A Catchment Management Plan for the wetlands needs to be developed and implemented (Port Geographe Project, Environmental Protection Authority Study).
- \* Government agencies such as the Department of Conservation and Land Management and the Environmental Protection Authority should provide advice on maintaining environmental values to private land owners (Leeuwin Naturaliste Regional Plan).

- \* Additional environmental studies are needed to develop appropriate management techniques for the wetlands. For example: the current seasonal patterns of change in water quality (including salinity), particularly as the lagoons dry out; the value to waterbirds of grazed land compared with ungrazed land fringing the lagoons; effects of mosquito and midge control techniques on waterbird food supply and wetland ecological processes (Port Geographe Project, Environmental Protection Authority Study).
- \* Public use of the Busselton wetlands should be encouraged so long as it is consistent with the maintenance of environmental values (Leeuwin Naturaliste Regional Plan).
- \* Mosquito and midge control programs should be limited to residential areas because of their potential severe impacts on the invertebrate fauna and on the food supply of waterbirds using the wetlands (Environmental Protection Authority Study, Port Geographe Project).

### 3.2.3 Development

The following provisions of existing planning and land use policies are relevant to development proposals that may affect the Busselton wetlands.

- \* Planning controls need to be implemented to avoid developments which are likely to have detrimental effects on the wetlands (Port Geographe Project Review).
- \* Development proposed for landscape protection areas (most of the Busselton wetlands) should be limited and carefully investigated to ensure that the areas affected are not degraded (Leeuwin Naturaliste Regional Plan).
- \* Clearing of native vegetation and development in Landscape Protection Areas requires special approval of Council (Busselton Town Planning Scheme).
- \* Development of flood prone land is opposed by the Water Authority and a "Limit of Development" line has been defined by the Water Authority to guide the Busselton Shire and the Department of Planning and Urban Development in their review of development applications (Busselton Regional Flood Study).
- \* Development in the South Busselton area is constrained by flooding and the need to conserve wetlands (South Busselton Structure Plan). The Plan adopts the advice of the Water Authority of Western Australia on the limits to development due to potential flooding and from the Department of Conservation and Land Management on the area needed for conservation of the wetlands.

- \* Proposals for land management and tenure contained in the report on Coastal Reserves and Building Setbacks for Geographe Bay should be included in the Wetland Conservation Strategy.
- \* Changes in land use on wetland areas covered by the Environmental Protection (Swan Coastal Plain Lakes) Policy that may have adverse impacts on the wetlands need to be referred to the Environmental Protection Authority for approval.
- \* The Environmental Protection Authority should review development proposals of environmental significance (Port Geographe Project Review).

In addition, the Port Geographe Project provides a useful model of environmental protection measures that developers need to address. These are:

- (a) transfer of important wetland areas to the Crown;
- (b) development of adequate buffers to minimise adverse impacts on the wetlands,
- (c) detailed attention to the management of storm water run off with no direct discharge into the wetlands,
- (d) minimisation of the export of nutrients from the development,
- (e) the need to protect rare and endangered species that may occur on the development site,
- (f) monitoring of potential impact of groundwater disturbance on water (quality) in the wetland,
- (g) provision of appropriate access controls including fence design to manage impacts of people and pets on wildlife.

#### SECTION 4. A CONSERVATION STRATEGY FOR THE BUSSELTON WETLANDS

A clear need to maintain the nature conservation values of the Busselton wetlands has been identified. The existing land tenure situation is complex; and involves private landholders and State and Local government. There is a pressing need for an overall conservation plan to be developed.

In approving the proposed Port Geographe development adjacent to the Vasse estuary, the Minister for the Environment determined (January 17, 1990) as follows.

"2. *The Vasse-Wonnerup estuary and adjacent Crown land should be protected and managed for conservation purposes. To achieve this, the following shall be undertaken at times to be determined by, and to the satisfaction of the Minister for the Environment:*

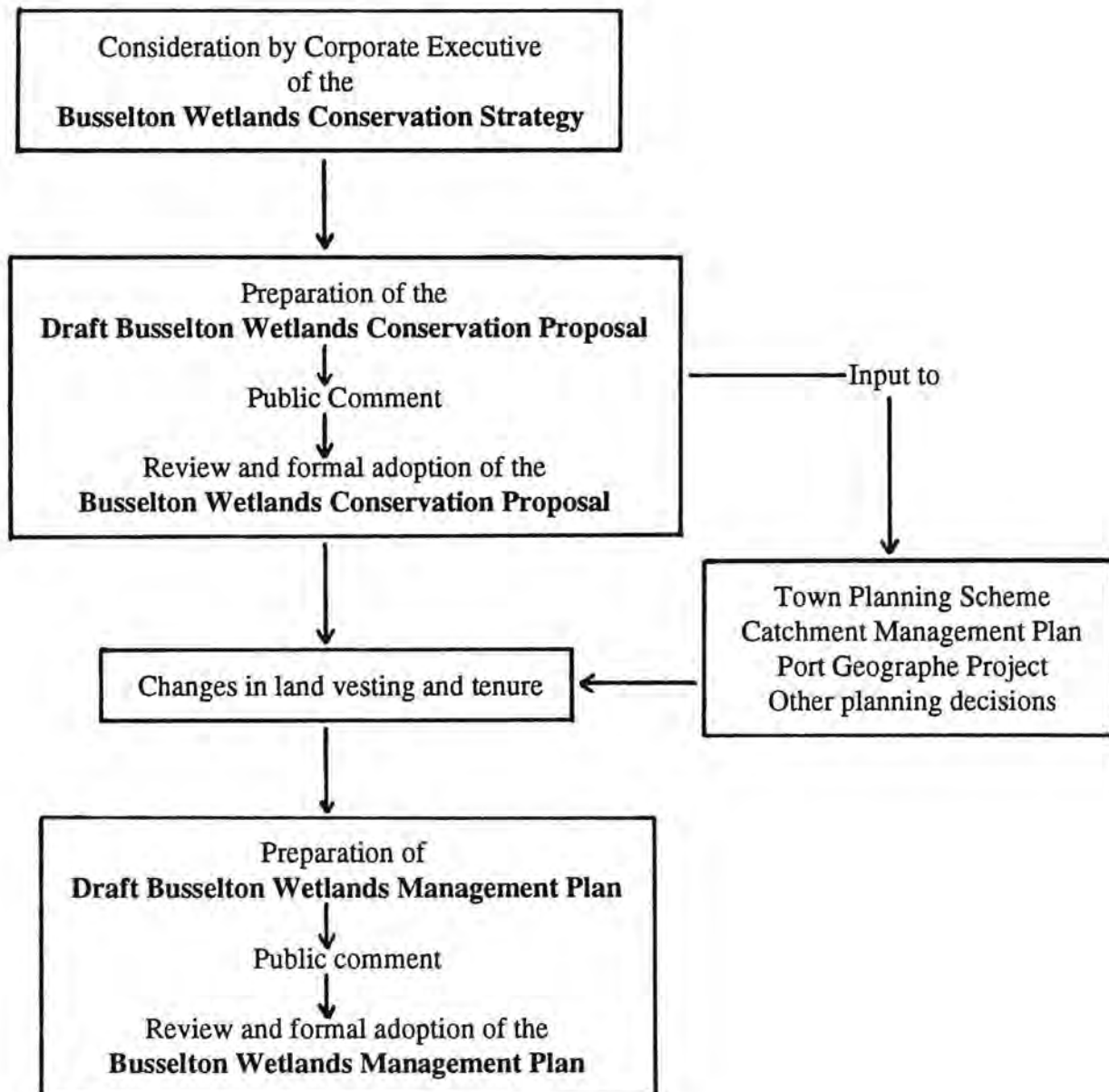
- (1) *the application of appropriate mechanisms by the Department of Planning and Urban Development and the Shire of Busselton to avoid development (of land adjacent to the estuary) which is likely to have a detrimental effect on the estuary;*
- (2) *...*
- (3) *the development and implementation by the Integrated Catchment Management Policy Group of an Integrated Catchment Management Plan which will include practical means of encouraging appropriate management practices on privately owned agricultural land adjacent to the estuary, and within the overall estuary catchment;*
- (4) *the implementation of an overall Vasse-Wonnerup Conservation Plan prepared and coordinated by the Department of Conservation and Land Management in consultation with other appropriate agencies and groups and the proponent;*
- (5) *further studies of the Vasse-Wonnerup wetland system conducted by the relevant agencies as recommended in the above Conservation Plan to determine the most appropriate method of management for the waterways and adjacent land areas; and*
- (6) *the referral of proposals of environmental significance in the locality of the estuary to the Environmental Protection Authority for assessment".*

Accordingly, it is recommended that the Department of Conservation and Land Management adopt the following Strategy (also presented diagrammatically in Figure 1).

- (1) Prepare a draft conservation proposal for the Busselton wetlands. The proposal should:
  - (a) give details of the proposed boundary, tenure and management of the conservation area;
  - (b) discuss the implications for use and management of land adjacent to the conservation area.
- (2) Prior to the public release of the draft Proposal, hold discussions with private landowners and Government agencies that may be affected by its recommendations.
- (3) Release the draft Busselton Wetlands Conservation Proposal for public comment.
- (4) Review the draft Proposal in the light of public comment and submissions and then release the final Busselton Wetlands Conservation Proposal.
- (5) Make a submission, based on the Busselton Wetland Conservation Proposal, to the current review of the Busselton Town Planning Scheme. This submission should seek the adoption of planning policies that will facilitate the maintenance of the conservation values of the wetlands.
- (6) Prepare a Management Plan for the wetland conservation area following the implementation of the most important Crown land tenure-change proposals that this document (Section 5.3a) recommends be included in the Busselton Wetlands Conservation Proposal.
- (7) Actively participate in the integrated catchment management process, advocating appropriate attention to the conservation needs of the wetlands.
- (8) Use the Busselton Wetlands Conservation Proposal for guidance in consideration of specific development proposals that may impact on the Busselton wetlands.

Figure 1

## Busselton Wetlands Conservation Strategy



## **SECTION 5. IMPLEMENTING THE WETLAND CONSERVATION STRATEGY**

### **5.1 Preparation of a Wetland Conservation Proposal**

The first stage of the recommended Strategy is to prepare a Wetland Conservation Proposal.

It is recommended that the Conservation Proposal contain the following:

- (a) Identification of wetland areas of high conservation value and definition of a conservation area boundary that takes these values and existing planning policies and current land uses into account.
- (b) Tenure proposals for the conservation area.
- (c) Guidelines for management of the conservation area.
- (d) Discussion of the implications of (a) - (c) for use and management of land adjacent to the conservation area.
- (e) Discussion of broader catchment management issues which affect the wetlands.

A draft Conservation Proposal is presented in Section 6.

It is recommended that the Department of Conservation and Land Management seek public comment on the draft Conservation Proposal and review it in the light of submissions received.

### **5.2 Integration of Conservation Proposals into Land Use and Management Policies**

#### **5.2.1 Busselton Town Planning Scheme**

The current review of the Busselton Town Planning Scheme provides a mechanism for Local Government to provide statutory planning support for certain key elements of the Proposal. It is particularly important for the Department of Conservation and Land Management to seek to have the conservation area boundary recommended in Section 6 of this document adopted into the Town Planning Scheme. The submission should also seek statutory planning support for the proposed land tenure and land use elements of the Conservation Proposal. This would facilitate the retention of existing conservation values on relevant privately-owned land.

#### **5.2.2 Integrated Catchment Management Planning**

Appropriate water quality and flow into the wetlands is fundamental to maintaining the conservation values of the wetlands in the long term. The development of an Integrated Catchment Management Plan, presently being coordinated by the Department of Planning and Urban Development, offers the best opportunity to influence land use and

management practices in the catchment of the wetlands. The Department of Conservation and Land Management should provide significant input due to its major management responsibilities in the area, including responsibility for ensuring the conservation of the wetland habitats.

Another important issue that the Department of Conservation and Land Management needs to pursue is the protection of remnant vegetation in the catchment area.

### 5.2.3 Port Geographe Project

An extensive environmental review of the Port Geographe Project has been completed and Government approval has been given. The draft Busselton Wetlands Conservation Proposal has been developed to complement the Port Geographe Environmental Management and Monitoring Program and conform with the conditions of approval for that project.

Environmental management proposals to be implemented as part of the Port Geographe Project provide a useful model for other development proposals.

Implementation of the Wetland Conservation Proposal will be assisted by several of the commitments given by the Port Geographe developers (LeProvost Environmental Consultants 1990). These commitments are;

- (a) the transfer of 112 ha of land to the Crown for vesting as a Nature Reserve,
- (b) funding (\$100 000) for the development of interpretation facilities in the Wetland Conservation Area.
- (c) funding (\$80 000) for research into the management of the wetlands,
- (d) funding to assist in the conservation of the Ring-tail Possum.

### 5.2.4 Other Planning Processes

A number of other planning studies and reviews are being conducted in the Busselton area.

A Rural Drainage Study is being conducted by the Western Australian Water Resources Council and the Western Australian Soil and Land Conservation Council to provide advice to the Minister for Water Resources. Three aspects of the brief for this study that are relevant to the wetlands are:

- (a) *"how drainage should be handled for the benefit of the land and water resources, water bodies and the natural resources the region;*
- (b) *general principles of how the costs of drainage should be met, and*
- (c) *how drainage interacts with pollution, irrigation, flood control, river management, protection of nature (including wetlands), protection of capital works and total catchment management".*

The Water Authority is conducting two other studies at present examining the financing and administration of the Busselton Drainage Area and evaluating the replacement need of the weirs on the Vasse and Wonnerup.

### 5.3 Changes in Land Tenure and Management

The draft Conservation Proposal recommends a number of changes in land vesting and tenure. The following types of changes are proposed.

- (a) Areas not currently under the Land Act (the "beds" of the Vasse and Wonnerup estuaries) should be brought under that Act and reserved for the purpose of Conservation of Flora and Fauna and vested in the National Parks and Nature Conservation Authority. It is expected that these changes could occur within a short time frame (e.g. 6 months).
- (b) Some Crown Reserves currently vested in a variety of government agencies and local government should be re-vested in the National Parks and Nature Conservation Authority or the Busselton Shire Council, as appropriate (see Section 6). It is expected that these changes could also be brought about within a short time frame.
- (c) As opportunities arise (usually as a condition of subdivision approval) some portions of freehold land should be ceded to the Crown and vested in the National Parks and Nature Conservation Authority. This process will necessarily occur over a number of years.
- (d) Some land proposed for reservation as Nature Reserve may need to be purchased where opportunities to acquire the land as a condition of development approval do not arise and where the owners are willing to sell.

It is also recommended that the Department of Conservation and Land Management enter into discussions with private landowners with the aim of encouraging land management practices that are in sympathy with the conservation values of the wetlands.

### 5.4 Management Plan for the Busselton Wetlands Conservation Area

A comprehensive Management Plan for the wetland conservation area will need to be developed. It is recommended that, whilst recognising that management arrangements for privately-owned land will require the agreement of the landholders, the Plan be developed for the entire conservation area.

As part of the management planning process a management advisory committee should be established. The membership and terms of reference of this committee should be determined following the public consultation phase of the draft Wetland Conservation Proposal. It is recommended that the advisory committee be chaired by the

Department of Conservation and Land Management and that its membership include representatives of relevant State Government agencies, the Busselton Shire Council and the community.

The most important issues to be addressed in the Management Plan will be the management of water levels in the wetlands, public access, the maintenance of conservation values on private land within the conservation area, the impact of adjoining land uses on the conservation area and catchment management.

## **SECTION 6. A DRAFT CONSERVATION PROPOSAL FOR THE BUSSELTON WETLANDS**

### **6.1 Introduction**

Fundamental to the Wetland Conservation Proposal is the delineation of a wetland conservation area. It is proposed that, in the long term, a primary purpose of management over this area should be nature conservation. The area that is recommended covers approximately 2 150 ha of wetlands and farmland and is based upon a review of existing planning policies and of the conservation values of the area.

Tenure of the area is currently: private ownership (48%), Crown Lease (8%), Nature Reserve (7%), Busselton Shire (6%), Vacant Crown Land (2%), National Park (1%), other Crown land (4%) and land not covered under the Land Act (24%) (Map 1). The proposed conservation area boundary and current (and proposed) land tenures are shown on Maps 2 (a), 2 (b) and 2 (c).

In considering the conservation proposal for the Busselton wetlands it is useful to divide the area into six sub-units: the Broadwater, New River, Town Wetlands, Vasse, Deadwater and Wonnerup (see Map 1).

### **6.2 Boundary of the Wetland Conservation Area**

The recommended boundary of the conservation area defines the minimum area necessary to ensure the conservation of the wetlands. The boundary has been defined on the basis of the principles listed below.

The boundary of the proposed conservation area generally corresponds with the 1 in 100 year flood level, which is the lower limit for development prescribed by the Water Authority of Western Australia. This boundary approximates the upper limit of wetland vegetation (existing and former) and is therefore soundly based from both a biological and a management perspective.

Principle (1): The core of the conservation area should include the wetland areas already identified in Government policies, plans and reports as being important for conservation; i.e.:

- (a) Wetland areas defined by the Environmental Protection Authority's statutory Swan Coastal Plain Lakes Protection Policy,
- (b) Area defined by the Limit of Development boundary in the Busselton Regional Flood Study,
- (c) Conservation area defined in the South Busselton Structure Plan,
- (d) Conservation areas defined in the Coastal Reserve and Building Setback Report,

(e) The Vasse-Wonnerup Ramsar site area.

Principle (2): Remnant vegetation that is adjacent to the wetland and provides important nesting areas for waterbirds or habitat for rare and endangered fauna, or has other significant conservation value, should be included in the conservation area.

Vegetation adjacent to wetlands also has an important function in reducing the movement of nutrients from adjacent lands and assists in preventing the movement of midges (chironomids) from wetlands to nearby urban areas. Remnant vegetation also has inherent nature conservation value.

Principle (3): The conservation area should be sufficient in extent to ensure that there is adequate buffering of the core areas from any adverse impacts that may result from adjacent land uses.

The buffer requirements for the proposed conservation area have been based upon the assumption that the land included within the buffers, and the land adjacent (upslope) to them, will continue to be used in ways consistent with the present Town Planning Scheme. In the event of land being rezoned and developments that may result in increased impacts on the conservation area being allowed, the buffers will need to be widened. This is particularly the case for the western Broadwater, the eastern Vasse, the Deadwater and the Wonnerup areas where conservation values are particularly high and the current land use zoning of both the land within the proposed conservation area and land adjacent is rural.

## 6.3 Tenure of the Wetland Conservation Area

### 6.3.1 Overview and General Principles

It is proposed that the conservation area be managed by the Department of Conservation and Land Management, the Busselton Shire Council and private land owners. To ensure that management practices are appropriate to the values and uses of the various components of the area, a number of changes in tenure are proposed. These proposed changes in tenure are presented in Maps 2a, 2b and 2c and are summarised in Table 1.

Table 1 Existing and Proposed Tenure of the Busselton Wetlands

Tenure	Existing		Proposed	
	ha	%	ha	%
Private Ownership	1 035	48	429	20
Busselton Shire	127	6	225	11
Nature Reserve	154	7	1 442	67
National Park	28	1	28	1
Crown Lease	170	8		
Vacant Crown Land	35	2		
Other Crown Land	89	4	17	1
Non Land Act	503	24		
Totals	2 141	100	2 141	100

The proposed changes in tenure within the wetland conservation area are based on the following principles;

Principle (1): The most important wetland areas for nature conservation should become Nature Reserves, vested in the National Park and Nature Conservation Authority and managed by the Department of Conservation and Land Management.

Nature Reserve status with National Parks and Nature Conservation Authority vesting provides security of purpose, and gives recognition to the high conservation value of the area. The Department of Conservation and Land Management manages Nature Reserves on behalf of this statutory Authority.

Principle (2): Wetland and coastal areas that currently have high recreational use should be managed by the Busselton Shire for this purpose, whilst maintaining their conservation values or functions.

The Wetland Conservation Proposal recognises the advantages of Shire management of areas of high recreational usage and relatively low conservation significance.

Principle (3): Wetland areas where the native vegetation has already been replaced by pasture, and continued use for this or similar purposes does not compromise the conservation values or management of the Busselton

wetlands, need not be acquired by the Crown and in such circumstances should remain in private ownership.

Continued livestock grazing of pasture on freehold land may contribute to the diversity of habitats available for waterbirds and may be an acceptable means of providing buffer zones between potentially disturbing land uses or activities and the wetlands.

In relation to the tenure changes proposed below, it should be noted that:

- (a) The transfer of the beds of the Vasse and Wonnerup estuaries to the Land Act and the vesting (and re-vesting) of Crown land should occur as soon as the Wetland Conservation Proposal has been finalised.
- (b) Further residential development may occur on the boundary of the proposed conservation area and, in such circumstances, opportunities to cede land within the conservation area to the Crown will arise.
- (c) Acquisition of private land (where this is considered necessary) is expected to be a long term process and it is recommended that it only occur with the agreement of the landowner.

#### 6.3.2 Tenure Proposals

The general tenure proposals are as follows:

- (a) The Town Wetlands and the Deadwater areas should each be consolidated into single reserves and should be managed by the Shire of Busselton for the purposes of recreation, whilst maintaining their conservation values and functions;
- (b) The Vasse and New River areas should be vested in the National Parks and Nature Conservation Authority as (two) Nature Reserves, managed by the Department of Conservation and Land Management;
- (c) The core areas of the Broadwater and the Wonnerup should be vested in the National Parks and Nature Conservation Authority as Nature Reserves, managed by the Department of Conservation and Land Management. Surrounding rural land may remain in private ownership, provided that changes in land use that are detrimental to the conservation values of the wetlands do not occur.

The proposed tenure of each of the sub-units of the wetland conservation area is shown in Table 2 and on Maps 2a, 2b, and 2c.

Table 2 Proposed Tenure of the Busselton Wetlands Conservation Area (%)

	Broadwater	Town Wetlands	Deadwater	Total	
Tenure	New River	Vasse	Wonnerup		
Private Ownership	35		46	20	
Busselton Shire	5	100	100	11	
Nature Reserve	59	100	96	52	67
National Park		3		1	
Other Crown Land	1	1	2	2	

It is proposed that the tenure of 1 401 ha (65 %) of the conservation area should change (Table 3). Most (72 %) of the 1 401 ha is either Crown land or land not presently under the Land Act (i.e. the beds of the Vasse and Wonnerup estuaries).

Most (67 %) of the proposed changes (606 ha) in the tenure of private land are not new; they have previously been proposed in land use plans or studies of the Busselton area. Thus, the Leeuwin Regional Planning Study calls for the low lying land (approx 110 ha) between Pigeon Grove and Busselton to become a conservation area. The South Busselton Structure Plan calls for approximately 66 ha of the New River area and 120 ha of the Broadwater area to become Nature Reserve. In the case of the Port Geographe Project, the proponent has agreed to transfer to the Crown 112 ha of land adjacent to the Vasse estuary.

The largest single area (503 ha) proposed for designation as Nature Reserve comprises the "beds" of the Vasse and Wonnerup estuaries. Before the construction of the weirs at the mouths of these two waterbodies they were estuarine and as such did not come under the Land Act. The Vasse and the Wonnerup now dry in each summer. These areas should, therefore, now come under the Land Act as Crown land and be vested as Nature Reserves. The Department of Conservation and Land Management has already gained agreement in principle to these changes from several relevant Government authorities.

Table 3 Summary of Proposed Land Transfers (ha)

Existing Tenure	Nature Reserve	Proposed Tenure		Total
		Busselton Shire	Other Crown Reserve	
Private Ownership	551	53	2	606
Busselton Shire	13			13
Crown Lease	170			170
Vacant Crown Land	26	9		35
Other Crown Land	39	35		74
Non Land Act	489	14		503
Total	1 288	111	2	1 401

#### 6.4 Land Management

##### 6.4.1 Management of the Wetland Conservation Area

It is recommended that a Management Plan be developed for the wetland conservation area following transfer of the beds of the Vasse and Wonnerup to the Land Act and their vesting in the National Parks and Nature Conservation Authority.

Principles upon which the Management Plan should be based include the following:

- (a) The Plan should be developed in consultation with the local community.
- (b) Land within the conservation area should be managed by the Government agency in which it is vested and, in the case of freehold land, by the land owner.
- (c) The support of private landowners will be required if freehold land is to be managed in ways which are compatible with the conservation of the wetlands as waterbird habitat. This may require the provision of advice and assistance by the Department of Conservation and Land Management.
- (d) Grazing may be compatible with continued use by waterbirds in particular cases.

- (e) The Vasse and Wonnerup estuaries have important flood mitigation functions and the Water Authority of Western Australia should continue to be responsible for the management of the weirs.
- (f) Major fluctuations in water levels during waterbird breeding seasons (particularly winter-spring) severely disrupt breeding activity and success. In this regard, substantial improvement in current water level regimes is required.
- (g) Public access to and enjoyment of the conservation area should be provided. This needs to be managed so as to prevent disturbance of waterbird populations.

#### 6.4.2 Management of land adjacent to the Wetland Conservation Area

There is a need to recognise that activities on land adjacent to the wetland conservation area may impact adversely upon the conservation values of that area if those activities are inappropriate or inappropriately managed.

Potentially adverse impacts of adjacent residential development need to be prevented. For this to be achieved, it is necessary for residential development plans to provide for the following:

- (a) the maintenance of landscape values,
- (b) the provision of landscaped buffers between developments and the wetland conservation area,
- (c) fencing of the boundaries between development and conservation areas,
- (d) guided public access as appropriate,
- (e) prevention of direct discharge of storm water into the wetland conservation area,
- (f) minimisation of the movement of nutrients into the conservation area,
- (g) conservation of any gazetted rare and endangered fauna (and flora) occurring on the development site,
- (h) transfer of freehold land inside the conservation area to the Crown.

#### 6.4.3 Land management in the wetland catchment area

Land use practices within the catchment area are indirectly impacting upon the wetlands and may threaten their conservation values. The issue of greatest concern is excessive discharge of nutrients from the catchment to the wetlands. Other issues are sediment discharge, water supply regime, remnant vegetation protection and the need for wildlife corridors.

Two Land Conservation District Committees have been formed to address land management issues in the catchment of the wetlands and the Department of Planning

and Urban Development is at present preparing an Integrated Catchment Management Plan.

In relation to management of the catchment of the Busselton wetlands it is recommended that:

- (a) The Department of Conservation and Land Management be actively involved in the development of the Integrated Catchment Management Plan.
- (b) Improved land management techniques be adopted in the catchment to lower the export of nutrients and sediment into the wetlands.
- (c) Retention of remnant vegetation in the catchment area be promoted by the Department of Conservation and Land Management. This should include support for funding applications (e.g. to Greening Australia) for fencing of remnant vegetation.
- (d) Mining companies consider the creation of wetlands in the rehabilitation of mine sites within the catchment. The artificial wetlands being developed by RGC Mineral Sands Ltd at Capel provide a good example of this type of rehabilitation.

## 6.5 Community Involvement

Implementation of the Wetland Conservation Proposal will require the agreement and cooperation of Commonwealth, State and Local Governments, private land owners and the local community.

Initial consultation should be with private landowners to outline the proposals, seek their suggestions and participation in the Conservation Proposal and to explain that proposals that involve private land will only be carried out with their agreement.

It is recommended that the Department of Conservation and Land Management meet with other Government authorities to discuss the draft Wetland Conservation Proposal. Most important among these will be the Shire of Busselton. Other key agencies are the Department of Planning and Urban Development, the Water Authority of Western Australia and the Department of Agriculture.

It is recommended that meetings also be held to inform local community groups of the conservation proposals. Several community groups have demonstrated concerns about various aspects of management, e.g. floodgate operation and development impacts, and have called for a Conservation Plan to be developed for the wetlands.

The draft Wetland Conservation Proposal should be revised (and then adopted) following the consultation recommended above.

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