

# Boyers Lane Wetlands Environmental Education Plan



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## Executive Summary

Environmental Education is becoming an important emerging issue in planning, policy, legislation and research, as the importance of the impacts that human activity places on the environment is coming into the spotlight.

This plan works within guidelines, visions, values and goals laid out in a number of policy, strategy, planning and legislative documents – in particular the *Boyers Lane Playing Fields and Wetlands Plan of Management*, and the *Kempsey Shire Council Ecologically Sustainable Development Strategy* – to develop a comprehensive environmental education plan for the Boyters Lane Wetlands, located in the South West Rocks area of Kempsey Shire Council.

This report considers the prehistory of the Boyters Lane site and the many and varied stakeholder, legislative and policy requirements in order to develop detailed recommendations, in the form of educational goals, themes and messages, that form the Boyters Lane Environmental Education Plan. This plan also details implementation, delivery and evaluation methods for the plan, and recommends a number of infrastructure developments for the site, primarily being the development of the proposed picnic area as a multi-functional outdoor teaching area, the construction of a linking pathway from the picnic area to Teal Lagoon, a bridge/boardwalk over a small inlet, and provision for car and bus parking.

A major finding of this report is the need for the creation of a Boyters Lane working group or steering committee, not only to develop the educational goals of the site but to also oversee the initial development stages.

This report should be read in conjunction with the *Boyers Lane Playing Fields and Wetlands Plan of Management* and the *Boyers Lane Wetland Audit*.

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# 1 Introduction

## 1.1 Environmental Education

Environmental Education is defined, by the Federal Environmental Education Plan, as:

“Environmental Education” is defined in its broadest sense to encompass raising awareness, acquiring new perspectives, values, knowledge and skills, and formal and informal processes leading to changed behaviour in support of an ecologically sustainable environment.<sup>1</sup>

The importance of environmental education and increasing community awareness of environmental issues has formed a significant part of Federal, State and Local government policy and legislation in the past decade, as the importance of the impacts that humans place on the environment has come to the forefront of research, policy and planning.

Whilst high-level strategic environmental education plans, such as those at the Federal and State level, are well established and provide a suitable framework for the development of further initiatives, there is still a lack of area-specific, targeted environmental education planning and policy. This report details the relevant policy framework, information and directions necessary to develop site-specific environmental education for the Boyters Lane site.

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<sup>1</sup> Environment Australia Environmental Education Unit 2000, p. 3.

## 1.2 Purpose and Overall Goals

This Environmental Education Plan has been developed to provide a guide through which the Boyters Land Playing Fields and Wetlands can become a relevant, informative, practical and environmentally sustainable educational facility for the Kempsey and wider community. The plan aims to maximise the environmental education and community awareness potential of the site.

It is hoped that this report will be adopted and form a part of the *Boyters Lane Playing Fields and Wetlands Plan of Management*, completed in April 2005 (hereafter referred to as the *Plan of Management*); and appropriately complement the visions of Kempsey Shire Council.

This plan has been designed to meet the major goals (both management and educational) set out in:

1. The *Boyters Lane Playing Fields and Wetlands Plan of Management*;
2. The *Kempsey Shire Council Ecologically Sustainable Development Policy*;
3. The *New South Wales Wetlands Management Policy 1996*.

The relevant goals are outlined in the following sections.

### 1.2.1 Boyters Lane Playing Fields and Wetlands Plan of Management

This plan aims to achieve the educational goals set out in the *Boyters Lane Playing Fields and Wetlands Plan of Management*<sup>2</sup>:

1. To provide community environmental education opportunities on the site without impacting on the wetland values;
2. Provide an educational experience that is both unique and informative and has a central aim of increasing the community's awareness of the role of floodplain and estuarine wetlands; and
3. Provide opportunities for a hands-on wetland experience that has minimal impacts on wetland values.

Additionally, this plan has been developed within additional goals set out in the Plan of Management:

4. Provide facilities and interpretative material that enable the community to appreciate and learn about the Boyters Lane wetland, and wetland values in general; and
5. Maximisation of community enjoyment and understanding of the ecological values of the site, through communication.<sup>3</sup>

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<sup>2</sup> Pont et al. 2005, pp. 1-2.

<sup>3</sup> Pont et al. 2005.

### 1.2.2 Kempsey Shire Council Ecologically Sustainable Development Policy

The *Kempsey Shire Council's Ecologically Sustainable Development Policy* provides a set of values, guiding principles and goals, each developed under the vision of the policy:

The beauty of the natural environment and the country and coastal lifestyles in the Kempsey Shire will be both preserved and enhanced for the benefit of current and future generations by providing for the environmental, social and economic aspirations of its communities.<sup>4</sup>

The development of the Boyters Lane site as an educational resource is consistent with this vision. The guidelines and recommendations contained within this report are consistent with this vision and the values, goals and guiding principles outlined below.

#### Values

The values of the *Kempsey Shire Council Ecologically Sustainable Development Policy* are:<sup>5</sup>

- |                   |               |
|-------------------|---------------|
| 1. Sustainability | 4. Service    |
| 2. Trust          | 5. Innovation |
| 3. Cooperation    | 6. Pride      |

#### Guiding Principles

The Guiding Principles<sup>6</sup> that relate the key values above to the vision are of particular relevance to the Boyters Lane site, including:

- The promotion and practice of Ecologically Sustainable Development principles;
- Ensuring the sustainable use of natural resources;
- Engaging the community in decision making processes; and
- Promoting learning and encouraging creativity.

#### Goals

The development of the Boyters Lane site will also contribute towards achieving a number of goals that are given in the Ecologically Sustainable Development policy<sup>7</sup>:

##### *Environmental Sustainability*

- By offering a number of hands-on activities the Boyters Lane site will assist in the goal of forming a Total Catchment Management (TCM) aware, involved and practicing community.
- The site will showcase the use of artificial wetlands to promote and encourage the responsible use and consumption of water.

<sup>4</sup> Kempsey Shire Council 2007b, p. 15.

<sup>5</sup> Kempsey Shire Council 2007b, p. 20.

<sup>6</sup> Kempsey Shire Council 2007b, p. 20.

<sup>7</sup> Kempsey Shire Council 2007b, p. 16.



- Rehabilitation and conservation activities on site will enhance the integrity and diversity of the indigenous flora and fauna, and their ecosystems.
- Rehabilitation activities and Initiating projects such as WeedBusters on site will manage, control and reduce the presence of and adverse impacts of introduced weed species and feral and domesticated animals.

#### *Social Sustainability*

- The inclusion during the consultation stages plus future involvement of members of the Booroongen Djugun Aboriginal Corporation/Booroongen Djugun College assists coastal indigenous communities to both participate fully in mainstream society and hand down traditional cultural attributes. This will be enhanced through the inclusion of an outdoor classroom area and the planting of traditional bush food plants at the proposed picnic area site (see 5.3).
- Development of the site into a multi-functional education and recreation site supports the goals to provide and maintain a diverse range of open spaces and reserves in the Shire, and to provide and promote a variety of recreational facilities and activities to the residents of the Shire.
- The site could also provide a high quality outdoor ecological educational facility available to all members of the community.

#### *Economic Sustainability*

- The site will add to the tourist appeal of the shire, and assist in the goal to establish a world-class eco-tourism industry that promotes and sustains the natural beauty of the Shire's coastal regions, National Parks and State Recreation Areas.

### **1.2.3 NSW Wetlands Management Policy**

In accordance with Principle 9 of the *NSW Wetlands Management Policy*, this plan supports educational initiatives that promote the adoption of an ethos of environmental stewardship and cooperative action between land and water owners and managers, government authorities, non-government agencies, in order to achieve effective wetland management.<sup>8</sup> The creation of a wetlands education area at Boyters Lane will assist the Kempsey Shire Council in fulfilling a number of specific principles under the *NSW Wetlands Management Policy*<sup>9</sup>:

- 9.1 Community involvement in managing and rehabilitating wetlands will be promoted and supported by providing technical and financial assistance.
- 9.2 Education and awareness of the values and functions of wetlands and their management will be promoted.
- 9.3 The development of a sound scientific understanding of the physical, chemical and biological processes in wetlands will be promoted.

<sup>8</sup> NSW Department of Land and Water Conservation 1996, p. 24

<sup>9</sup> NSW Department of Land and Water Conservation 1996, pp. 24-25



### **1.3 Scope**

This plan presents an Environmental Education Plan that meets the targets given in Section 1.2 by:

- Assessing the Boyters Lane site and assessing it's environmental state and thus it's ability to form an effective educational site;
- Documenting the requirements of relevant stakeholders, as well as legislative and policy requirements for the site's management and development;
- Development of a set of educational 'goals', 'themes' and 'messages' that should be portrayed at the site and in any co-existing material, that are based on the previously developed requirements;
- Determining responsibility for the implementation, delivery and evaluation of the plan; and assessment of the availability and accessibility of monetary resources.

## **1.4 Limitations**

While striving to provide a comprehensive Environmental Education Plan, due to a number of limitations imposed on the researchers this should only be seen as a starting point towards developing the Boyters Lane site as an educational resource. It is recommended that a more in-depth study be conducted with a longer time-frame and with closer consultation with both the Kempsey Shire Council and the local community. It is only through such research that the level of community interest in both developing the site and using it as an educational resource can be ascertained. This is crucial in determining the level of community funding that can be directed towards the site, and therefore the extent of educational infrastructure and resources that can be provided. The development of the educational infrastructure such as that recommended in this report, and thus the extent to which the site is used for educational purposes, is dependant on the levels of future funding and as such these recommendations should undergo some level of community consultation.

## 1.5 Environmental Policy and Legislative Requirements

There are also a number of further environmental policy and legal requirements within which this plan must comply. The major instruments are<sup>10</sup>:

1. *Kempsey Local Environment Plan 1987 as amended*
2. *State Environmental Planning Policy No. 71 – Coastal Protection*
3. *State Environmental Planning Policy No. 14 – Coastal Wetlands*

Secondary instruments (generally those through which the major instruments are constructed) include:

4. *NSW Wetlands Management Policy*
5. *Development Control Plan 10*
6. *Environmental Planning and Assessment Act 1979*
7. *Crown Lands Act 1989*
8. *Local Government Act 1993*
9. *NSW Fisheries Management Act 1994*
10. *NSW Rivers and Foreshores Improvement Act 1948*
11. *Rural Fires Act 1997*
12. *NSW Estuary Management Policy and Manual*
13. *NSW Coastal Policy*
14. *Threatened Species Conservation Act 1995*

The requirements of each of the major instruments are briefly outlined in the following pages. Detailed assessments for all instruments are given in Section 10 of the *Boyers Lane Playing Fields and Wetlands Plan of Management*.

### 1.5.1 Kempsey Local Environment Plan 1987

The *Kempsey Local Environment Plan 1987* (as amended) is the guiding instrument, created under the *Environmental Planning and Assessment Act 1979*, that controls development in a sustainable manner in the Shire of Kempsey. The Boyers Lane site is zoned as Open Space 6(a), and as such the usage of the land must meet the objectives to:

- A. to identify publicly owned land that is used or is capable of being used for the purpose of active or passive recreation; and
- B. to conserve and protect the visual and environmental qualities of foreshore reserves and encourage development compatible with the natural environment and landscape; and
- C. to encourage the development of public recreation in a manner which maximises the satisfaction of the community's diverse recreational needs; and
- D. to enable development associated with, ancillary to, or support of uses compatible with those uses.

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<sup>10</sup> Pont et al. 2005, pp. 31-41.



Landscaping, gardening and bushfire hazard reduction works are permitted without consent, buildings for (among others) recreational areas are permitted with consent. Usage for any other purpose is prohibited under the Local Environment Plan. In addition, particular restrictions are placed on development where soils are deemed either actual or potential acid sulphate soils.

### **1.5.2 State Environmental Planning Policy No. 71 – Coastal Protection**

*State Environmental Planning Policy No. 17 – Coastal Protection* (SEPP71) aims to protect coastal areas by requiring approval before development and promoting strategic management approaches.

The Boyters Land Playing Fields and Wetlands site is mapped under SEPP71, and therefore the restrictions contained within it apply.

### **1.5.3 State Environmental Planning Policy No. 14 – Coastal Wetland**

*State Environmental Planning Policy No. 14 – Coastal Wetlands* (SEPP14) is designed to preserve coastal wetlands by placing restrictions on development in certain mapped areas of the State and requiring approval before development takes place. Although the Boyters Lane Wetlands are not mapped under SEPP14, they are adjacent to three SEPP14 mapped areas (Wetlands 443, 444 and 446). As such, it is a possibility that work carried out on the Boyters Lane site will impact upon the mapped wetlands. In consideration of the goals of environmental stewardship contained within the *NSW Wetland Management Policy*, this plan will treat the wetland as if it were mapped by SEPP14.



**Photo 1: View from the proposed picnic/outdoor classroom area.**

## **2 Background**

### **2.1 Site Description**

Following is a brief description of the Boyters Lane site. For a more detailed description see *Boyters Lane Playing Fields and Wetlands Plan of Management* (including the Fauna Component) and the *Boyters Lane Wetland Audit*.

#### **2.1.1 Site Location**

The Boyters Lane Wetland is located approximately 3km south of the coastal village of South West Rocks within the Kempsey Local Government Area on the mid-north coast of NSW. Specifically, the area covered includes Lots 78, 79 and 802 Boyters Lane, South West Rocks. Boyters Lane Wetland is a small tidally influenced estuarine area of approximately 25.8 hectares with a direct connection to Spencers Creek, a tributary of the Macleay River, which in turn is connected to the Macleay River. The area is generally humid and typical of a warm temperate to subtropical zone. A site map is given in Appendix B, Map 1.

#### **2.1.2 History of the site ownership**

The need to provide new playing fields for the township of South West Rocks has been discussed amongst the sporting community since the late 1980's. At Council's ordinary meeting in September 2000 it was reported that there was an urgent need to provide fields at South West Rocks. There have been many site options considered for new playing fields before the parcel of land at Boyters Lane was considered in 2002. Council in conjunction with the South West Rocks Sporting Association considered site options at Spencerville, Gordon Young Drive, the Old Caltex Terminal Site, and Trial Street. At the Council meeting of May 2002, as part of a review of land options for provision of a sporting field at South West Rocks, a large parcel of land on Boyters Lane was considered. The property was originally owned by the Boyter family (lots 78 and 79) and the Salmon family (lot 80 now lot 802). At the Council meeting of June 2002 it was resolved that the purchase of land in Boyters Lane be approved.

The *Boyters Lane Playing Fields and Wetlands Plan of Management* were prepared by Wetlands Australia with the plan adopted by Council at the December 2005 Council meeting, after a 28-day period of public exhibition. A revised design was prepared considering the additional information required to further process the Development Application, as well as the comments received from the community through public consultation. In mid-June 2007 the Council accepted the Director Shire Services recommendation that Stage 1 of the Boyters Lane Playing Fields development be undertaken, being playing fields and amenities block, and that \$467,000 for the project be included in the draft 2007/08 budget and that Council seek funding under the Department of Sport and Recreation grant funding for sporting facilities.



### **2.1.3 Environmental History of the site**

The site has undergone extensive modification. During the period of ownership by the Boyter and Salmon families, the land was cleared and utilised as a dairy farm. It is reported that the land was farmed along 'traditional lines' and has not been used for dairy farming since the 1950's. The shed and yard associated with the early dairy farm are still located on the property. Based on the available information it is evident that cattle grazing and associated dairy activities have been the major agricultural land uses on the site. These activities have had a substantial impact as cattle grazing have influenced both the distribution and extent of wetland vegetation on the site.<sup>11</sup>

Other than the initial tree clearing, the creation of Teal Lagoon in the 1960's had the most visible impact on the site. The site is characterised by several parallel tidal inlets, which were most likely historic creek channels.<sup>12</sup> Bund walls were constructed in the 1960's halting the tidal flows into these inlets, changing these inlets from an estuarine system to a predominantly fresh or brackish system with little or no flow through the bund walls.<sup>13</sup> Deterioration of PVC pipes placed in the bunds in the mid-1990's to restore some tidal flow has led to increased tidal flows into Teal Lagoon than were originally planned.<sup>14</sup> The creation of a large brackish water-body on the site has led to a large increase in the numbers of bird species.

### **2.1.4 Climate and Rainfall**

The area is characterised by a wet Summer to Autumn period and a dry Winter to Spring season. Intense rainfall events are common in the wet period. Rainfall is quite high, with an annual average of 1,367 mm. Despite the high rainfall, many months in the dry period result in a soil water deficit, due to a mean annual evaporation of 1,502 mm/year.<sup>15</sup>

### **2.1.5 Geology**

Boyers Lane is located on Gladstone Alluvial Plains, which contain complex patterns of sedimentation with fluvial deltaic deposition over estuarine muds of coastal lagoons. These sediments are believed to have been deposited in the Pleistocene (roughly pre-10,000 years ago) and Holocene (within the last 10,000 years) periods. It is thought that the Boyters Lane site results from the development of point bars in the meander belt of the lower Macleay or a tributary. As the point bars built outwards towards the present-day Spencers Creek, 'sloughs' and meander scrolls were left behind.<sup>16</sup>

<sup>11</sup> Sandpiper Environmental 2005, p. 2.

<sup>12</sup> Sandpiper Environmental 2005, p. 2.

<sup>13</sup> Sandpiper Environmental 2005, p. 2.

<sup>14</sup> Sandpiper Environmental 2005, p. 2.

<sup>15</sup> Pont et al. 2005.

<sup>16</sup> Pont et al. 2005.



### 2.1.6 Soils

Two different soil types can be found within Boyters Lane Wetlands, one at Maria River and the other at Toomina. The Maria River site contains various alluvial clays forming moderately deep (100 - 150 cm) Humic Clays and grey and yellow duplex soils. These overlie buried Pleistocene barrier sands or Holocene estuarine sediments. The Toomina site contains Sulfidic Intertidal and Supratidal Hydrosols (Humic Gleys and Solonchaks) on muddy sediments, with Arenaceous Intertidal Hydrosols (Siliceous Sands) on sand flats.

Although there is very little visual evidence of Acid Sulphate Soil (ASS) formation at the site, it is very likely that much of the Boyters Lane Wetlands is underlain by ASS soils. As such, some areas of the site have been classified as very high risk ASS areas using the Kempsey Shire Councils GIS mapping service.

### 2.1.7 Hydrology

The Boyters Lane Wetlands are tidally influenced wetlands connected to Spencers Creek and made up of a number of habitats characterised by different hydrological features. Different tides affect different areas of the site, resulting in varying levels of inundation and water salinity (salt, fresh or brackish).

Extensive modification of the natural hydrology has occurred in the past due to the construction of a berm wall in the 1950's, which crosses all three inlets. The berm wall was constructed for the purpose of altering tidal inundation in the wetlands. It resulted in the creation of a permanent, fresh/brackish body of water called Teal Lagoon.<sup>17</sup> Initially, the berm wall almost completely prevented any tidal exchange through the wall. To combat this, PVC piping was built through the berm wall to allow tidal exchange between Teal Lagoon and the rest of the wetlands. The result has been an increase in tidal exchange to Teal Lagoon.<sup>18</sup>

### 2.1.8 Fauna

The Boyters Lane wetlands are an important component of the myriad of wetlands that are found on the Macleay floodplain. Due to the destruction of and widespread removal of many wetlands in the area, Boyters Lane provides essential habitat for waterbirds, especially in times of drought.<sup>19</sup> Over the past 12 years 143 species of birds have been identified on or near the site, including 9 species listed under the NSW TSC Act and approximately 47 migratory species listed under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*.<sup>20</sup> Presently the major users of the site are local and regional ornithologists. A full list of bird species identified on site is included in the *Plan of Management*.<sup>21</sup>

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<sup>17</sup> Pont et al. 2005.

<sup>18</sup> Pont et al. 2005.

<sup>19</sup> Pont et al. 2005.

<sup>20</sup> Sandpiper Environmental 2005, p. 5.

<sup>21</sup> Pont et al. 2005, p. 95-96.

### 2.1.9 Flora

Many different vegetation communities can be found at Boyters Lane. The dominant vegetation types are grasslands, salt marsh/*Juncus* and mangroves. Thirteen different plant species have thus far been recorded in these communities. Different vegetation communities and a large variety of flora provide habitat for a diverse range of fauna.<sup>22</sup> A number of noxious weeds, including two species listed as Weeds of National Significance, have been identified at the Boyters Lane site (see also Section 4.3.3). A full list of identified weed species is included in Appendix C.

### 2.1.10 Habitat areas

A number of different habitats have been identified at Boyters Lane Wetlands, including:

- Grassland;
- Brackish Lagoon;
- Dotteral Inlet;
- Mangroves and Mudflat; and
- Salt Marsh and Sedge Land.

Each habitat has unique attributes which sustain different communities of plants and animals that are essential to the survival of the ecosystem as a whole.<sup>23</sup> The large diversity of habitat areas within a relatively small area makes the site ideal for educational purposes (Appendix B, Map 2).

#### Grassland

Grassland habitat consists of areas above the highest astronomical tide of the site. It mainly consists of exotic grasses, with a dense ground cover of between 90-100% and grass height ranges from 25 cm-60 cm. Some animals use the grassland for foraging purposes, such as the grass owl, small mammals, bird, reptiles and amphibians.<sup>24</sup>

#### Brackish Lagoon

The brackish lagoon area contains a mixture of freshwater inflow and salt water, resulting in a brackish water habitat. The lagoon covers approx 2.24 ha, with water depth estimated at 0.1-0.75 m. Some mangrove cover consisting of grey mangrove (*Avicennia marina*) is present, although not substantial. Also growing in the lagoon is *Juncus spp.* And salt couch (*Sporobolus spp.*). A number of water birds and waterfowl utilise the permanent water source as habitat, including silts, spoonbills and egrets.<sup>25</sup>

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<sup>22</sup> Pont et al. 2005.

<sup>23</sup> Pont et al. 2005.

<sup>24</sup> Pont et al. 2005.

<sup>25</sup> Pont et al. 2005.



### **Dotteral Inlet**

Variable inundation occurs in this habitat depending on the prevailing tide. Dotteral Inlet areas contain both freshwater and estuarine vegetation. These include a band of *Juncus*, *Schoenoplectus sp.*, salt couch and *Cotula cornoropifolia*. Grasses and dense sedges provide suitable habitat for small mammals and birds, whilst open water and tidal flats are ideal habitat for many bird species.<sup>26</sup>

### **Mangroves and Mudflat**

Mangroves and mudflats cover almost 4 ha of the site, but mangroves occur only in a small tidal channel linked to Spencers Creek. Recent grazing exclusion has led to an expansion in the area covered by mangroves, with dense areas of mangrove seedlings dominating some areas. Some areas of old growth mangrove still remain that contain numerous branch hollows. These could potentially provide habitat for a number of bats. Mangroves and mudflats also provide food and roosting potential for a number of common and waterbird species, including ibis, spoonbills and herons.<sup>27</sup>

### **Salt marsh and Sedge land**

Salt marsh habitat is located in the Northern third of the site, covering approx 6.14 ha. It consists of two distinct sections; the upper and the lower tidal areas. The upper section is dominated by a dense layer of *Juncus sp.*, growing to a maximum height of 1 m, whilst the lower layer is covered more sparsely by a combination of *Juncus* and salt couch, growing to a height of 10-50 cm. Saltmarsh and sedeland provide habitats for Australasian Bittern, birds, small mammals and grass owls.<sup>28</sup>



**Photo 2: Saltmarsh and sedgeland cover much of the site.**

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<sup>26</sup> Pont et al. 2005, p. 4.

<sup>27</sup> Pont et al. 2005, p. 4.

<sup>28</sup> Pont et al. 2005, p. 4.



## **2.2 Stakeholders**

### **2.2.1 Kempsey Shire Council**

Kempsey Shire Council, the owners of the Boyters Lane site and the major stakeholder, have a vision to:

...develop the site into an environmental awareness facility and a sustainable ecological community asset.<sup>29</sup>

The major educational goals the Kempsey Shire Council have adopted for the site are detailed in Section 3.1 of this report.

### **2.2.2 Additional Stakeholders**

Additional individuals and groups with a possible interest in the site include:

- Individuals
  - local residents
  - bird watchers
  - recreational fishers
  - photographers
  - tourists
- Educational groups
  - local pre-school (South West Rocks Preschool)
  - local primary school (South West Rocks Public School)
  - regional high schools and colleges
  - Universities
- Indigenous groups
  - Booroongen Djugun College
  - Booroongen Djugun Aboriginal Corporation
  - NSW Aboriginal Land Council - Central Coast Branch
- Community organisations
  - Lions Club of South West Rocks Inc
  - Macleay Valley Coastal Working Group (Coastcare)
  - Macleay Valley Landcare
  - Rotary Club of South West Rocks
  - South West Rocks Country Women's Association (CWA)
  - South West Rocks View Club
- State Government
  - NSW Northern Rivers Catchment Management Authority
  - NSW Department of Environment and Climate Change
  - NSW Department of Natural Resources
  - NSW Department of Primary Industries

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<sup>29</sup> Kemsley, R 2007, pers. comm.

The needs of these groups have been taken into account when developing the educational goals, themes and messages contained in this report. The educational goals for specific stakeholders are described in Section 3.2.



### 3 Educational Elements

This section outlines the major educational goals as determined in the Plan of Management, and then details how these goals would be relevant to specific stakeholders. From the educational goals for the site four 'educational themes' were identified, with a number of 'educational messages' attached to each theme.

#### 3.1 Major Educational Goals

As identified in Section 1, the main environmental goals of this plan are:

- To provide community environmental education opportunities on the site without impacting on the wetland values;
- Provide an educational experience that is both unique and informative and has a central aim of increasing the community's awareness of the role of floodplain and estuarine wetlands; and
- Provide opportunities for a hands-on wetland experience that has minimal impacts on wetland values.



**Photo 3: Remnant vegetation along one of the inlets.**

## **3.2 Educational Goals for Specific Stakeholders**

In addition and complementary to the major education goals are a number of education goals for specific stakeholders. These are an expansion of the major educational goals, tailored to each specific audience. As the site is further developed stakeholder groups should be consulted to further refine each group's educational goals.

### **3.2.1 Formal and Non-formal Educators**

To identify and provide educators with themes and messages and identify delivery mechanisms that can be used to educate students about floodplain and estuarine wetlands, the ecological services and benefits they provide, their management and rehabilitation, and why it is important to conserve them. Identify hands-on experiences that can be incorporated into the local schools curriculum.

### **3.2.2 Landowners**

To provide information that increases understanding of basic floodplain and estuarine wetlands values, increases knowledge of how agricultural activities can impact on wetlands conservation can coexist, and provide information on programs that aid landowners in conserving wetlands.

### **3.2.3 Community/Environmental Organisations**

To identify opportunities to assist in local conservation, restoration, and preservation efforts on the Boyters Lane site, and to provide information about land rehabilitation methods and techniques. Some community and environmental organisations that are potential stakeholders are listed in Section 2.2.

### **3.2.4 Local community**

To provide information about wetland conservation issues and impacts that result from urban and wetland interactions, identify opportunities to participate in wetlands conservation, restoration, and preservation, and identify avenues available to assist in local planning efforts.

### **3.2.5 User Groups (birdwatchers, anglers, photographers, tourists, etc)**

To identify educational opportunities and activities that will enhance personal awareness about the need to conserve floodplain and estuarine wetlands habitats, and identify and reinforce the role they can play as individuals in floodplain and estuarine wetland conservation and management.



### **3.3 Educational Themes**

The following four educational themes form a basis for the messages and goals of this plan. These themes have been developed from the *Plan of Management* and the *Kempsey Shire Ecologically Sustainable Development Strategy*. A number of educational messages have been developed to expand on each theme (see Section 4).

#### **3.3.1 Theme 1: Ecological importance of wetlands and floodplains**

Coastal floodplains and estuarine wetlands within the Kempsey Shire perform a variety of important environmental functions, and are sources of terrestrial and estuarine biological diversity.

#### **3.3.2 Theme 2: Wetlands - A history of use and rehabilitation**

Wetlands traditionally provided a source of food and materials for indigenous communities, with some wetland areas also being of spiritual significance. However over the past 200 years the history of wetlands in Australia has been one of misuse and rehabilitation.

#### **3.3.3 Theme 3: Threatened coastal and floodplain ecosystems**

Wetland and coastal floodplain environmental values are threatened by a number of processes, including some agriculture practices, urban run-off, and introduced weeds and feral animals.

#### **3.3.4 Theme 4: Learning from nature**

Artificially created wetlands and lagoons can perform important functions such as cleansing stormwater and polluted run-off, while also creating ecosystems for endangered species.



## **4 Educational Messages**

Education is one of the best tools that can be used by the Kempsey Shire Council to ensure its constituents practise and abide by the principles of Ecologically Sustainable Development. Educating the community about the importance of wetlands in the Kempsey Shire Council from a young age will help to ensure that the future leaders and decision makers in the region act responsibly and make decisions which conserve and enhance wetland values. The messages need to target a large range of stakeholders, and tailored to suit individual stakeholder needs.

Without education, people may never be aware of the past mistakes made in relation to land management that have severely degraded and in some cases destroyed wetlands in the area. Hopefully, with knowledge of past mistakes, future decisions regarding land use and wetland management will avoid repetition of these mistakes.

The educational messages presented in this plan need to incorporate many aspects of wetlands, including values of wetlands at a local and broad scale, history of wetlands management and threats to wetland conservation. This will ensure people have an understanding of the complexity of wetland management and the issues facing the Boyters Lane Wetlands today and into the future.

The following educational messages have been developed with due consideration of all the above information and form the crux of the plan.

## **4.1 Theme 1: Ecological importance of wetlands & floodplains**

### **4.1.1 Our wetlands are of national and international significance.**

The important ecological services provided by rivers and associated wetlands are only just beginning to receive the attention they deserve.<sup>30</sup> The Kempsey Shire has over 15,000 hectares of wetlands on the floodplain, mainly in the Clybucca, South West Rocks, Belmore-Kinchela and Crescent Head areas, with SEPP 14 wetlands accounting for 12,951ha of this.<sup>31</sup> A number of areas are listed in the *Directory of Important Wetlands in Australia*, including Clybucca Estuary/Yarrahapinni Broadwater and the Belmore and Kinchela swamps, with significant local wetlands also located in dune hind-swamps in Hat Head National Park.<sup>32</sup> The Boyters Lane Wetland can provide an easily accessible site for people to gain an initial introduction to the wetlands in the Kempsey region, and help increase the community's awareness of the role of floodplain and estuarine wetlands.

### **4.1.2 Wetlands and coastal floodplains are an important habitat for native birds, fish, crabs and prawns.**

Wetlands are the habitat for a diverse range of native flora and fauna including waterbirds, frogs, invertebrates and fish species, as well as plants such as rushes, sedges, and various tree species. Waterfowl in particular depend upon wetland areas for breeding and refuge.<sup>33</sup> A number of habitat areas have been identified on the site, creating the potential to build an educational program around a wide range of species.

### **4.1.3 Wetlands perform a number of important ecological functions.**

Coastal and estuarine wetlands are a buffer zone between land and water and form an important ecological 'edge'. Wetlands help to trap and recycle nutrients and reduce water pollution, help control floods, help prevent soil erosion, and assist in recharging groundwater.

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<sup>30</sup> Pigram 2007, p. 50.

<sup>31</sup> Kempsey Shire Council 2007a, p. 22.

<sup>32</sup> Kempsey Shire Council 2007a, p. 22.

<sup>33</sup> Pigram 2007, p. 48.

## **4.2 Theme 2: Wetlands: A history of use and rehabilitation**

### **4.2.1 The importance of wetlands to indigenous Aboriginal people.**

For traditional indigenous people wetlands were both spiritual and functional places. Wetlands were particularly significant to Aboriginal people as a traditional and important source of food and water, as well as being a site of cultural ceremony.

The following aspects arose from a discussion with a representative from the Booroongen Djugun Aboriginal Corporation/Booroongen Djugun College: To reflect the local traditional usage of the area, plantings should include *Acmena smithii* (Lilly Pilly), *Podocarpos elatus*, *Casuarina glauca*, *Smilax australis*, and *Avicenna marina*. The plantings should reflect the natural surroundings and be scattered throughout the area, not just in block/park style plantings. The local algae species, traditionally used as fish bait, should have signs explaining the use and requesting people do not over-harvest. A list of bush food plants suitable for planting on the site is included in Appendix D.

### **4.2.2 Boyters Lane - a place of restored environment.**

This message would deal with the history of the site and the measures adopted to restore and manage habitats. The initial condition of the site would be described, followed by a listing of the damaging activities that have occurred on site. The current condition would then be described with explanations on the rehabilitation and revegetation techniques employed. The overall message would be one of restoration and potential enhancement of natural areas.