

## Appendix A

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# 1 Land Use and Management

## 1.1 State Forests

State Forests manage approximately 64% of the land in the catchment of Lake Curalo. Timber production is dispersed as widely as possible, over space and time, on a compartment basis. Compartments are further broken down into coups. Half the area of a coup is harvested about every 20 years. This 20 year cycle is almost complete for forests in the Lake Curalo catchment, see logging history **Figure 1.1**.

The Integrated Forestry Operations Approval (IFOA) for the Eden Region (issued under the *Forestry and National Parks Estate Act 1998*) came into effect on 1 January 2000. This, together with a Harvest Planning and Implementation Strategy, Forest Practices Code and the Harvest Planning Manual governs activities within Nullica State Forest.

Indicative logging operations are set out for a three year period and are subject to mill demand for saw logs and wood chips and requirements for the protection of the environment (eg tree retention for habitat purposes and buffer zones) and silvicultural considerations. No logging is scheduled in the Lake Curalo catchment in the next three years (pers. comm. Joe O’Gara, State Forests).

State Forests are divided into a number of Forest Management Zones (FMZs), which have been developed using a multi-criteria values system. Zoning tables set out activities that are not permitted in the zone, and activities that are permitted and what conditions apply. For example, in Zone 2 (‘Special Management’ areas for the protection of natural and cultural values) activities which are not permitted include timber harvesting, removal of forest product and materials, grazing by domestic stock and gravel/hard rock quarrying. In Zone 3a ‘Harvesting Exclusions’, harvesting is excluded to conserve identified values, while Zone 3b ‘Special Prescriptions’ protects specific values, while allowing other uses including limited harvesting, subject to conditions (State Forests 2000a).

As shown in **Figure 1.1** Special Management (Zone 2), Special Prescription (Zone 3) and General Management (Zone 4) zones are located in Nullica State Forest, within the catchment of Lake Curalo. Logging exclusions also apply adjacent to streams. **Figure 1.1** also shows that harvesting is excluded from ridgelines and the compartment boundary adjacent to Ben Boyd National Park.

The IFOA specifies the terms of licences (valid for five years) under the *Protection of the Environment Operations Act 1997*, *Threatened Species Conservation Act 1995*, *Fisheries Management Act 1994*, together with heritage guidelines. The licence conditions under the *Protection of the Environment Operations Act* cover soil and water management and monitoring.

Pre-harvest soil assessments are undertaken to determine the ‘Inherent Hazard Level’, soil dispersibility and mass movement potential, and to prescribe appropriate conditions for the protection of soil and water values (State Forests 2000b). Limitations on harvesting include logging slope limits (generally a maximum of 30% depending on soil hazard category); and snig track slope limits (ie tracks used to pull logs back to stockpile areas) – usually up to 5% steeper than logging slope limits (pers. comm. Joe O’Gara). A detailed assessment of roads and drainage crossings is also undertaken to develop appropriate prescriptions to provide safe access while protecting soil and water values.

This information is used to set Harvesting Plan conditions. On-site erosion and sediment control in the Eden Region is overseen by an officer seconded from the Department of Land and Water Conservation (DLWC). Performance monitoring and

auditing of erosion control measures is carried out both internally and externally by the Environment Protection Authority (EPA), under their audit and enforcement program.

In addition to timber production, Nullica State Forest is used for trail bike riding and 4 wheel driving (permitted on fire trails) and firewood gathering. It also houses an outdoor classroom, used by primary, secondary and university students, with a nearby spotlighting track and marked transects for fauna surveys. State Forest personnel conduct interpretive tours of this area for local and visiting groups, and in conjunction with commercial operators during the peak tourist season. An area of State Forest adjacent to the golf course is leased to the Eden Pony Club.

## 1.2 National Parks

Areas of Ben Boyd National Park were previously used for logging, grazing and pine plantations (NPWS 1985). The park is managed in accordance with the Ben Boyd National Park Management Plan, which is currently under review. Approximately 6% of the catchment of Lake Curalo is contained within the park. The northern section of the park is primarily a day-use area, with access roads to Worange Point (North Head) and a walking track along Calle Calle Bay and north along the coast.

Sheltered beaches and surfing beaches are a feature of Ben Boyd National Park, which is popular for picnicking, swimming and generally exploring the coastal zone (NPWS 1996). There are no formal recreational facilities within the park near Lake Curalo.

## 1.3 Eden Urban Area and North Eden Rural Small Holdings

### 1.3.1 Zoning

Under the *Bega Valley Local Environmental Plan 1987*, land at Eden is zoned 2(e) (Urban Zone). This is a general zone with more detailed controls contained in Development Control Plan (DCP) No. 38(A7) - Eden Urban Area, draft DCP No.89 - North Eden Small Rural Holdings and DCP No. 20.

Urban zones are shown in **Figures 1.2** and **1.3**. **Figure 1.4** shows the North Eden area which is zoned 1(c). **Table 1.1** provides details on the type of developments permitted in each zone.

**Table 1.1**  
**Zoning Descriptions**

	<b>Zone</b>	<b>Type of Development</b>
R1	<b>Residential 1</b>	predominantly dwelling houses
R2	<b>Residential 2</b>	dwelling houses plus multi-unit housing and motels
B	<b>Business</b>	retail, commercial and related development (other development such as multi-unit housing, dwelling houses and light industry may also be approved)

**Table 1.1** continued  
**Zoning Descriptions**

<b>Zone</b>	<b>Type of Development</b>
Bt <b>Business (Tourist)</b>	retail and commercial development, eg eat-in and take away food outlets, restaurants, fishing and tourist related sporting goods etc
I <b>Industrial</b>	industrial, storage, transport and other compatible uses (development adjoining other zones should form a buffer zone, eg appropriate light industrial adjacent to residential zones – compatible uses may also be approved, eg business uses)
S <b>Special Uses</b>	major public facilities
O <b>Open Space</b>	active and passive recreation, conservation of vegetation and scenery, sports/recreation facilities (does not imply public access over private land)
U <b>Undetermined</b>	
1(c) <b>Rural (Small Holdings) Zone</b>	small holdings or hobby farms (a wide range of other developments may be permitted in this zone with development consent)
RR <b>Rural Residential</b>	
R3 <b>Low Density Residential</b>	(this reflects environmental characteristics and constraints of the land)

Lake Curalo itself, and much of the foreshores are zoned open space, with the bed of the lake being Crown land. Accordingly, SEPP 14 wetlands fall under this zoning.

Foreshore setbacks from the lake are specified in DCP No.24 – Minimum Setbacks from Nominated Waterways. The minimum setback is 75 m (but there is scope for Council to vary this). In the case of animal boarding, breeding and training establishments, pig farming or poultry farming, or development involving on-site disposal of sewage, the minimum distance is 150 m. Clause 27 of the Bega Valley LEP specifies that tourist facilities and serviced apartments are not permitted within 400 m of a Nominated Waterway, except with the concurrence of the Director of the Department of Urban Affairs and Planning (DUAP).

### **1.3.2 Existing Development**

On the southern side of Lake Curalo, north of Barclay Street, are:

- two caravan parks - Eden Tourist Park (180 sites, 10 cabins and 10 on-site vans) and the Garden of Eden Caravan Park, zoned Residential 2 (215 sites and 16 cabins) (NRMA 1999);
- four sealed netball courts and clubhouse, Eden Tennis Club (four artificial turf courts and clubhouse), soccer field and club house, AFL field, skateboard ramp (all within the Eden Showground Reserve which is a combination of Crown and Council owned land); and
- Eden Technology High School, zoned Special Uses (including cricket practice nets, rugby field and agricultural plot).

South of Barclay Street is the Eden historic cemetery and adjacent to this, a triangular parcel of undeveloped land subject to DCP No.20. Further to the south is residential development (schedule 3 of DCP No. 38(A7) permits a bulk storage tank within this area – old Caltex Drum Depot), an industrial zone and the Eden town centre.

On the western side of the lake, east of the Princes Highway, development is mainly single dwellings fronting Lake Curalo Reserve, with some unit development (Zones Residential 1 and 2) and a retail nursery, zoned Residential 1 (the boundary of which extends to the high water mark). The George Brown Memorial Reserve (defined as undetermined under DCP No.38(A7) and owned by Council) north of this residential development is used for rugby league, rugby union and hockey. A large area of the reserve is currently undeveloped bushland.

Open space on the northern shore of Lake Curalo is generally Crown land (it is intended that this be reserved for public recreation and coastal environmental protection, with Council as trustee). This fronts the Eden Cove subdivision area (Timms Estate, off Government Road), which is yet to be fully developed (stage 1 is nearing completion). The proposed subdivision contains land zoned residential (mix of single dwelling, multi-unit housing and low density residential) and a special zone for development of a tourist lodge (see **Figure 1.3**). Ben Boyd National Park adjoins the subdivision to the north.

Development along the Princes Highway to the north includes the Eden Country Club and Fishermens Sports Club (golf course) and industries, including the Blue Ridge Hardwoods saw mill. To the west is Nullica State Forest.

### 1.3.3 Stormwater

Stormwater from the piped system is directed to Lake Curalo at two locations and into the creek south of Palestine Creek. Freshwater Creek flows through the Garden of Eden Caravan Park and Eden High School (where part of it is an open, concrete-lined channel) and an open channel flows between the soccer and AFL fields, see **Figure 1.5**. The stormwater system does not incorporate any pollution mitigation devices, however, booms are employed in the case of emergency spills.

### 1.3.4 Sewerage

Existing residential development within the catchment of Lake Curalo is serviced by town water and sewerage (see **Figure 1.6** which shows the coverage of the sewerage system near Lake Curalo and two pumping stations located close to the lake foreshores). The current Eden Cove subdivision release is to be fully serviced.

There are, however, some areas/facilities not connected to the sewerage system. These include properties on Government Road, properties along Palestine Creek and the tennis clubhouse on the south side of the lake.

There are two premises in the catchment licensed by the EPA:

- Blue Ridge Hardwoods (formerly Duncans Sawmill) located in Storey Avenue; and
- Eden Sewage Treatment Works, west of the golf course.

With regard to water pollution, **Tables 1.2** and **1.3** show the limits specified in the Environment Pollution Licences. For the sawmill the limits relate to overflows from the water storage dams, which should only occur during a design storm with a 1 in 5 year Average Recurrence Interval (ARI) or greater.

**Table 1.2**  
**Sawmill Pollutant Concentration Limits**

<b>Pollutant</b>	<b>Units</b>	<b>100%ile concentration limit</b>
Oil and Grease	mg/L	no visible
pH	pH	6.5-8.5
Total Suspended Solids	mg/L	30

The license also requires that timber products be handled and stored in an appropriate manner to prevent the generation of leachate, which could potentially pollute groundwaters or surface waters. Monitoring of the above parameters, together with Total Phenolics, is required during overflow events.

The limits shown in **Table 1.3** relate to treated effluent piped to the golf course for irrigation purposes.

**Table 1.3**  
**Pollutant Concentration Limits for Effluent Re-use**

<b>Pollutant</b>	<b>Units</b>	<b>100%ile concentration limit</b>
Oil and Grease	mg/L	10
Biochemical Oxygen Demand	mg/L	20
Total Suspended Solids	mg/L	30

Other conditions include that:

- effluent application must not occur in a manner that causes surface runoff; and
- application must not exceed the capacity of the area to effectively utilise the effluent (“effectively utilise” includes the ability of soil to absorb nutrients, salt, hydraulic load and organic matter).

Monitoring of the pollutants listed in **Table 1.3** is required once a month, together with faecal coliform monitoring at Aslings Beach from November to March. Council is required to notify the EPA when wet and dry weather bypasses of the sewage treatment plant (STP) occur.

Dry weather bypasses could occur as a result of power or equipment failure and wet weather bypasses may occur during major rainfall events (the licence defines a wet weather bypass as when the flow rate of effluent to the STP is equal to, or greater than 2000 KL/day). Bypasses would occur to a tributary of Freshwater Creek, however, this would only be expected in a rare event as the STP has one day’s storage capacity.

Overflows from the reticulated sewerage system may also occur at pump stations. There are two sewer pump stations near the western foreshore of Lake Curalo, as well as a pump station at the Eden Tourist Park. Council records show only one overflow event (March 2000) has occurred in the past four years. Some of the measures Council has taken to protect against overflows are:

- provision of a permanent standby generator at the main sewer pump station (south of Emblem Street) and construction of an emergency overflow storage as an additional safeguard; and

- provision of a connection point for a standby generator at the secondary station north of Lakeside Drive as well as additional storage capacity at that station.

EPA approved procedures are in place in the event of an overflow and Council staff are alerted to any high levels in the pump stations through the telemetry system.

### **1.3.5 Foreshore Management**

Maintenance of Crown and Council owned foreshore reserves is carried out by Council staff and a community committee (which now incorporates the EMC and also has responsibility for management of the Eden Tourist Park). There are no formal procedures set down for management, such as the type and application of fertilisers and disposal of lawn clippings. At the time of a site inspection, in September 1999, horses were being grazed on Lake Curalo Reserve.

### **1.3.6 Entrance Management**

The artificial opening of Lake Curalo is undertaken primarily for flood mitigation purposes. Opening the lake to introduce seawater to alleviate odours from decaying aquatic vegetation has also been attempted, with limited success. The current entrance opening procedure is set out below.

1. Council personnel (Quality Assurance Inspector - South or nominated alternative) currently monitor the lake level visually by checking the level of water compared to a peg located near the edge of the carpark, at the northern end of Aslings Beach. When the level reaches the top of the green paint on the peg, the following series of responses occur. Note that the top of the green paint corresponds to a level of about 1.2 m Australian Height Datum (AHD) and at this level there is flooding of grassed low-lying areas along the foreshores of the caravan parks.

In the event that the level is exceeded out of hours, residents can call an after-hours phone number to contact a rostered duty officer. This number is for all after-hours emergencies. The call-out procedure followed by the duty officer is to contact the Quality Assurance Inspector - South (or nominated alternative) who then undertakes the following actions.

2. In the absence of an environmental impact assessment prepared under State Environmental Planning Policy (SEPP) No.35 - Maintenance Dredging of Tidal Waterways, interim approvals are required. Prior to further action, the Quality Assurance Inspector - South is required to obtain the following verbal approvals:

- NSW Fisheries Approval - Contact Merimbula Office as well as the Habitat Management Officer from NSW Fisheries at Nowra
- Bega Valley Shire Council - (Manager – Administration and Design)

The Aslings Beach Surf Life Savers are also to be advised when patrols are operating.

For flood events outside of normal business hours, the approval is to be sought as soon as possible the next working day.

For water quality deterioration, consultation with a wider group of State Government authorities, including DLWC and the EPA is required. This is likely to occur over a period of two to three weeks.

3. The Quality Assurance Inspector then contacts an earthmoving contractor to undertake the mechanical breakout. Two suitable plants are available in the local area:

- Track Loader (Robert Mitchell at Eden)

- 4WD Backhoe (Robert Gordon at Merimbula).

The Quality Assurance Inspector needs to make an assessment of the time of arrival of the plant in relation to the tidal cycle. The timing for the breakout is described below and this information needs to be conveyed to the contractor.

4. Plant can reach the entrance from the southern side via the road parallel to Aslings Beach and then along the beach. A pilot channel is excavated the width of the bucket and of a similar depth to that near the lakeside edge of the entrance channel. The pilot channel is started from the lakeside edge, working towards the ocean as close as possible to the rock boundary on the northern side of the entrance. Past experience indicates that this usually takes approximately two to three hours, however this is dependent on the volume of sand to be excavated. The length of channel to be excavated is generally in the order of 50 m from lake to beach high tide mark. Ideally, the pilot channel is excavated in time for the final section to be completed (ie the pilot channel opened to the ocean) to coincide with the highest tide of the day. The recession of the tide then creates a driving head difference between the lake water level and the ocean level which will result in a successful breakout. The success of the breakout is also aided by a rising water level within the lake (ie as a result of continuing rainfall in the catchment).

## 2 Future Development

### 2.1 Demand and Constraints

Overall, between 1971 and 1991, Eden experienced an averaged, annual population growth of 2.4%. It is difficult to estimate the future population of Eden because the area has a higher percentage of working age residents, compared to other areas in the Shire, and so is heavily influenced by changes in traditional industries (BVSC 1995). As at the last census (1996) the population of Eden was 3,106. This figure represents a decline of 5.3% from the previous census (1991), which can be attributed to a decline in the forestry and fishing industries (BVSC et al 2000).

In addition, expansion of Eden is constrained by the ocean to the east and south, national park to the north and state forest to the west. There are significant areas within the current 2(e) zone that are undeveloped but large portions of these face significant constraints relating to issues such as topography, environmental values and servicing (BVSC 1995).

### 2.2 Future Development Potential

Bega Valley Shire Council (1995) identified a number of scenarios for the town including growth rates up to 3% per annum, if there is a significant shift towards the retirement and tourism markets (**Section 3** provides information on tourism).

**Table 2.1** shows the residential development potential in the Eden 2(e) zone (to 2016) within the catchment of Lake Curalo (BVSC 1995). It was assumed that only 20% of standard residential allotments would be subject to dual occupancy development by 2016. It was also noted that Boydtown (south of Eden) has the theoretical capacity to address any outstanding needs for Eden beyond the current residential sectors, up until the year 2016.

**Table 2.1**  
**Future Development Potential within the Catchment of Lake Curalo**

Development Type	Lot Yield
Low density	53
Low/medium density	65
Medium density	70
Eden Cove subdivision	up to 500 (stage 1 is almost complete)
Crown land south of Nicholson Street	about 100
<b>Total</b>	<b>788</b>

### 2.3 Current Development Potential

In the shorter term, DCP No. 38(A7) sets out a residential strategy for Eden to the year 2006 which aims to apportion the remaining capacity of the STP, see **Table 2.2**.

**Table 2.2**  
**Development Potential to 2006**

<b>Type of Development</b>	<b>Maximum No. of Dwellings</b>	<b>Comments</b>
<b>Infill and Multi-unit Housing in zones R1, R2, B and I</b>	70	
<b>Industrial Lots</b>	some limited creation would be possible (allowance included in the above 70 lots)	water service appears adequate provided new industries do not have large water requirements
<b>South-West Eden</b>	40	not in catchment of Lake Curalo
<b>Eden Cove Subdivision</b>	150	future releases would require augmentation of STP and some upgrading of town water supply
<b>Eden Golf Club</b>	a tourist development is proposed by Eden Fishermens Club	provision of water appears possible from current infrastructure – provision of sewerage would either be by private plant or augmentation of STP
<b>Public Housing</b>	none proposed	land is available south of Nicholson Street (classified as “undetermined” in DCP 38(A7))
<b>Total Lots</b>	<b>260</b>	(220 in Lake Curalo catchment)

**Figure 1.2** shows areas of land fronting Lake Curalo which are in private ownership. The R1 zoned land has subdivision potential. DCP No.20 provides for retired persons units, “living areas”, neighbourhood businesses and community uses.

DCP No. 89 provides a strategy for land zoned 1(c) Rural (Small Holdings) in North Eden. **Figure 1.4** shows land in this area with subdivision potential and the maximum number of lots. Reticulated water and sewerage is not available to the area, therefore on-site sewage disposal is required.

### 3 Tourism

Bega Valley, known as the Sapphire Coast, is part of the South Coast Tourism Region, which also includes the Shoalhaven and Eurobodalla Local Government Areas (LGAs). For the financial year 1995/96 Shoalhaven received 44% of visitors, Eurobodalla 29% and Bega Valley 27% (Tourism NSW 1999).

During 1998/99, there were approximately 2,637,000 domestic overnight visitors (representing 10% of domestic visitors in NSW) and 2,138,000 domestic day visitors to the South Coast. The average length of stay for overnight visitors was 3.9 nights, which is amongst the highest in NSW (BTR 2000). Of the international visitors to NSW, 3% or 72,100 visited the South Coast in 1998/99 (BTR 2000). From the previous survey periods it appears that visitation to the South Coast has decreased but that the length of stay has increased (survey methodology changed in 1998, so previous data is not readily comparable).

Obviously different areas within the South Coast Region attract visitors from different origins. The Sapphire Coast (particularly Merimbula) is popular with Melbourne and rural Victorian residents, while Eurobodalla is popular with ACT residents (NSW Tourism Commission 1990).

For the year ended June 1999, most overnight visitors travelled to the South Coast in January (18%) followed by April (10%) and February and May (9% each). The percentage of visitors for these peak summer and school holiday periods was 1 to 2% higher than the NSW State average, apart from the month of January when visitation was 6% higher than the State average (BTR 2000).

More families with school age or younger children and more older non-working married people visit the South Coast Region, compared to the State average (BTR 2000).

The Sapphire Coast Tourism Strategy (ERM Mitchell McCotter 1997) recommended that the existing family, retiree and 'empty nester' markets be catered for, as well as other markets to increase off-peak visitation. Recommendations are:

- *to develop additional nature-based attractions and tours that are designed to exploit the natural attributes of the region in a sustainable manner. This includes ecotourism and could consist of educational and guided forest or coastal walks, whale-watching, or more active adventurous pursuits such as canoeing and diving;*
- *to develop farmstays, guesthouses and other forms of rural accommodation, agricultural educational attractions, and expand the role of rural towns in the overall tourism experience;*
- *to develop special interest products including cultural and heritage tours and attractions, special events and festivals;*
- *to develop a small number of executive type conference facilities at attractive locations within a maximum 30 minutes travel from the regional airport;*
- *to develop a network of backpacker accommodation facilities in towns that are accessible by public transport; and*
- *to develop a range of packages which include accommodation, attractions, transport and related services - they should reflect the themes described above and generally be orientated to middle and low price budgets.*

## 4 References and Bibliography

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## Appendix B

## State Government Plans, Policies and Legislation Relevant to Estuary Management

Local plans and policies relevant to planning and management of Lake Curalo are discussed throughout the document and in **Appendix A**. Reference is also made in the main report to some State Environmental Planning Policies (SEPPs) which have particular relevance to Lake Curalo, ie SEPP No.14 – Coastal Wetlands and SEPP No.35 - Maintenance Dredging of Tidal Waterways.

The following State Government plans, legislation, policies and strategies provide the framework for development of policies and plans at a local level.

### Regional Plans

#### **Lower South Coast Regional Environmental Plan (REP) No.1 – High Rise Buildings**

This applies to coastal land within Bega Valley and Eurobodalla shires. The plan aims to conserve scenic and environmental character and to protect the coast's visual quality by setting height limits of 14 m on most buildings.

#### **Lower South Coast REP No.2**

This REP provides a framework to guide decisions on local planning and development, and government and private investment in Bega Valley and Eurobodalla Shires. It provides regionally relevant guidelines for the preparation of local plans and lists matters to be considered when assessing development applications. This includes the policies and guidelines of the NSW Coastal Policy.

#### **Lower South Coast Regional Settlement Strategy**

This strategy identifies a hierarchy of settlement based on the varying roles and functions of existing town and villages and their capacity and suitability for further growth. Eden has been identified as a District Centre, which has the potential to develop a greater tourism role in conjunction with its servicing role. Bega Valley Shire Council plans to develop a staged strategy for supply of new release areas in Eden.

#### **South Coast Design Guidelines**

The design guidelines provide general principles, ie development should avoid headlands, ridges, banks, swales, wetlands, foredunes and the banks of inland waterways. Guidelines are also provided for site layout, building form, roofline, materials, colours and landscaping. Development should ensure the connection of open space systems by allowing linking of cycleways, paths and wildlife corridors (Mitchell McCotter 1997).

### Main State Government Authorities with a role in Estuary Management

Authority	Relevant Legislation	Responsibility
Department of Land & Water Conservation (DLWC)	Native Vegetation Conservation Act 1997 Native Title Act 1993 (Commonwealth legislation administered by the State) Catchment Management Act 1989 Crown Lands Act 1989 Coastal Protection Act 1979 Rivers & Foreshores Improvement Act 1948 Soil Conservation Act 1938 Water Act 1912 (the Water Management Act 2000 repeals the Water Act and Rivers & Foreshores Improvement (R&FI) Act, however, permit arrangements under the R&FI Act will remain until 2002)	DLWC is responsible for developing, controlling and managing the State's water resources (both surface and ground water) for human use / recreation and ecological needs. It is responsible for Crown lands assessments and the leasing and licensing of Crown land; the conservation of soil and preventing erosion; and carries out soil surveys (including acid sulphate soil mapping) and land capability studies. DLWC is also involved in: catchment, vegetation, coastal zone and floodplain management; the provision of waterway infrastructure such as wharves, boat ramps and fishing ports; and provides technical and policy advice on country water and sewerage programs.
Environment Protection Authority (EPA)	Protection of the Environment Operations Act 1997	The EPA is responsible for controlling, reducing and preventing pollution from premises required to hold an Environmental Pollution Licence or for which the EPA is the appropriate regulatory authority. It is also involved in waste management and minimisation, sewage management, stormwater management and contaminated sites.
Department of Urban Affairs & Planning (DUAP) now Planning NSW	Environmental Planning & Assessment Act 1979 Heritage Act 1977	DUAP coordinates planning in NSW and oversees the operation of the environmental impact assessment legislation. It is responsible for planning at regional and State level and produces publications relating to planning, changes in planning laws, environmental issues, policies and heritage protection.
NSW Fisheries	Fisheries Management Amendment Act 1997 Fisheries Management Act 1994	NSW Fisheries is responsible for managing the State's inland, estuarine and ocean fisheries including the protection of commercial and recreational fisheries, threatened fish species, fish habitats and marine vegetation.
Waterways Authority	Maritime Services Act 1935 Navigation Act 1901	Waterways is responsible for: developing and managing waterways for recreation; controlling non-port traffic; and maintaining non-port waterways / navigation channels.
National Parks & Wildlife Service (NPWS)	Threatened Species Conservation Act 1995 National Parks & Wildlife Act 1974	NPWS is responsible for acquiring and managing national parks, historic sites, nature reserves, State game reserves and areas of Aboriginal significance. It is also responsible for the protection of threatened plant and animal species and threatened plant and animal communities.
State Forests	Forestry and National Park Estate Act 1998 Forestry Act 1916	State Forests is responsible for ecologically sustainable management of State Forests. This includes conserving biodiversity and cultural heritage, producing timber and forest products and providing for recreation.

## Principles and Policy Objectives relevant to Estuary Management

(largely based on DLWC Sydney/South Coast Region's requirements for Environmental Impact Statements)

In addition to the following strategies and policies an Urban Streams Policy is being developed by DLWC, a Riparian Zone Policy by DUAP and policies and guidelines will flow from the Water Reforms Act. The following strategies and policies have been produced by DLWC. There are many other guidelines and policies produced by other authorities which are also relevant to estuary management, such as NSW Fisheries habitat management guidelines and the *Aquatic Habitat Management and Fish Conservation Policy and Guidelines*.

The policies are listed in order from the broad to the more issue specific. The goals and objectives developed for the Lake Curalo Management Plan constitute the application of these broad policies for a specific geographic area.

### NSW Biodiversity Strategy

The aim of the strategy is to protect the native biodiversity of NSW and to maintain ecological processes and systems. The following principles apply:

- Proposals/activities should not decrease native biodiversity of either individual species or communities of a site or area.
- Proposals/activities should not be part of any threatening process to the native biodiversity of a site or area.
- The precautionary principle is to be taken into account by careful evaluation of the consequences of management/development options to avoid, wherever possible, serious or irreversible damage to native biodiversity.

### NSW Coastal Policy

For the purposes of this policy, the coastal zone includes coastal lakes, lagoons and the estuarine sections of coastal rivers, as well as the open coast.

The goals of the Coastal Policy are to:

- Protect, rehabilitate and improve the natural environment.
- Recognise and accommodate natural processes.
- Protect and enhance aesthetic qualities.
- Protect and conserve the cultural heritage.
- Provide for ecologically sustainable development and use of resources.
- Provide for ecologically sustainable human settlement.
- Provide for appropriate public access and use.
- Provide information to effectively manage the coastal zone.
- Provide for integrated planning and management of the coastal zone.

### NSW State Rivers and Estuaries Policy

The aim of the policy is to encourage sustainable development of the natural resources of the State's rivers, estuaries, wetlands and adjacent riverine plains. This is to reduce and where possible halt:

- declining water quality;
- loss of riparian vegetation;
- damage to river banks and channels;
- loss of biodiversity; and
- declining natural flood mitigation.

It is also to encourage projects and activities which will restore the quality of the river and estuarine systems such as:

- rehabilitating remnant habitats;
- re-establishing vegetation buffer zones adjacent to streams and wetlands;
- restoring wetland areas;
- rehabilitating of estuarine foreshores; and
- ensuring adequate streamflows to maintain aquatic and wetland habitats.

### **NSW Wetlands Policy**

The aim of this policy is to encourage projects and activities, which will restore the quality of the States wetlands. The following principles apply.

- Water regimes needed to maintain or restore the physical, chemical and biological processes of wetlands will have formal recognition in water allocation and management plans.
- Land use and management practices that maintain or rehabilitate wetland habitats and processes will be encouraged.
- New developments are to allow for suitable water distribution to and from wetlands.
- Water entering natural wetlands is to be of sufficient quality so as not to degrade the wetlands.
- The construction of purpose-built wetlands on the site of viable natural wetlands is discouraged.
- Natural wetlands should not be destroyed, but when this is required as a result of social or economic imperatives, compensatory wetlands are to be constructed or existing wetlands rehabilitated.
- Degraded wetlands and their habitats and processes are to be actively rehabilitated as far as is practical.
- Wetlands of regional or national significance are to be conserved, and
- The adoption of a stewardship ethos and co-operative action between land and water owners and managers, government authorities, non-government agencies and the general community is necessary for effective wetland management.

### **NSW Estuary Management Policy**

The NSW Government recognises the ecological, social and economic importance of the State's estuaries and is concerned about the long-term consequences of their accelerating degradation. The general goal of this policy is to achieve an integrated, balanced, responsible and ecologically sustainable use of the State's estuaries.

As such, the State's estuaries should be managed to ensure:

- No adverse impacts on the physical processes operating within the estuary, for example:
  - a reduction in the existing tidal prism as a result of reclamation may affect an estuary's flushing and water quality characteristics, and
  - any associated retaining wall construction may result in erosion of adjacent properties and destruction of foreshore flora and fauna.
- Intertidal and aquatic flora and fauna are adequately protected.
- Potential impacts on water quality of proposals during construction and operational phases are appropriately mitigated.
- Conflict between estuary users and uses are minimised.
- The visual impact of potential development is assessed, for example, the length of jetties, the extent of foreshore walls, the form and colour of structures, the degree of land clearing, etc.
- The cumulative impacts of activities/proposals are considered in terms of their contribution to overall habitat loss and disturbance, water quality degradation, alienation of intertidal areas, increase in boat traffic etc.

### **NSW Flood Policy**

The primary objective of the State Government's Flood Policy is to reduce the impact of flooding and flood liability on individual owners and occupiers, and to reduce the potential private and public losses resulting from all levels of flooding.

With regard to new development, the Policy is merits based, in which the impacts of flooding are balanced against planning, social, environmental and economic issues. In assessing development proposals, consideration needs to be given, where appropriate, to:

- the potential impacts of flooding on the proposed development;
- the impact of the proposed development on flood behaviour both upstream and downstream of the site; and
- the possible impacts of flooding on residents and other users of the floodplain.

Particular attention should also be given to the availability of safe access and egress from flood affected property in times of flood. In this regard, the full range of potential flood events, up to the probable maximum flood (PMF) should be considered, together with the likely cumulative effects of future development.



## Appendix C

## Consultation

Consultation included:

- Individual meetings/telephone discussions with EMC representatives, local officers of State Government authorities and other local stakeholders.
- Distribution of a community questionnaire over the 1999/2000 Christmas school holiday period (see following report on questionnaire results for more information). The questionnaire included an invitation to register on a mailing list (over 40 people registered to receive further information).
- Distribution of an Issues and Options Paper (**Section 4** of the main report is based on this Paper), with submissions page to people registered on the mailing list (three submissions were received).
- Review of the preliminary drafts of the Estuary Management Study and Plan by government authorities and the EMC.

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