

DISCUSSION PAPER 6

MANAGING BIODIVERSITY IN RURAL AREAS

A DISCUSSION PAPER TO GUIDE
THE EUROBODALLA SHIRE COUNCIL
RURAL STRATEGY



Prepared by: **Garret Barry Planning Services Pty Ltd**

For: EUROBODALLA COUNCIL

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1 INTRODUCTION

1.1 PURPOSE OF THIS DISCUSSION PAPER

The Draft Eurobodalla Rural Strategy is presented in three volumes:

Volume One: The Strategy – this is a summary document of the recommended preferred options, strategies and action plans.

Volume Two: The Discussion Papers – there are 10 broad papers in this volume presenting a discussion on the more significant issues applicable to Council’s role in the rural lands of Eurobodalla.

This is Discussion Paper 6 and it explores options for protection and enhancement of Biodiversity and related natural values across the rural areas of Eurobodalla.

Volume three: A compendium of larger scale maps – given the size of the Shire and the detail sometimes required, the more important maps of general land use information and those from the Discussion Papers are presented at A3 page size. In addition, if accessing the pdf version, there is the capacity to “zoom in” to explore more detail.

The draft strategy package as presented in the three volumes, represents the work of the consultant team Garret Barry Planning Services (GBPS). It is stressed these documents are drafts prepared for community comment and input. Council has not concluded any view on the draft recommendations and will resolve a final strategy when it has considered community feedback.

We welcome suggestions from the community and look forward to your feedback.

1.2 EXECUTIVE SUMMARY

The natural values of Eurobodalla's rural lands are more significant than many other Local Government Areas in New South Wales.

While nearly three-quarters of the area of the Shire is protected in public lands such as National Parks or State Forests, the private rural lands form an essential part of the Shire's overall biodiversity values.

Without retaining and enhancement of connectivity of habitat across the private landscape, further decline in native species seems certain. Also, as early agricultural clearing and development naturally focused on better soils and land types such as river flats, these habitat types are under-conserved in the public estate. The more fertile soils of the valleys, floodplains and undulating hills are suitable for agriculture and habitation. Native woody vegetation within these areas tends to be poorly reserved and over 70% is cleared. (Source: Southern Rivers Catchment Management Authority CAP April 2013).

The biodiversity assets on both private and public lands in Eurobodalla are the basis of part of the Shire's largest industry- Tourism. They form much of the backdrop and special landscapes that so appeal to visitors and the variety of wildlife to be experienced is a major attraction for visitors.

Biodiversity protection has some positive aspects for landholders. There are a range of benefits from emerging bush tucker markets through to pest control by native birds and other wildlife. There is a growing market and sometimes price premium for rural properties where biodiversity is well conserved and the related landscape values it can generate.

Council's roles in protection of biodiversity have limitations. Broad scale clearing of native vegetation on private lands in the Shire requires approval at State level. Council gets involved if development approval is required and as part of such DAs Council has responsibilities to protect threatened species and improve overall biodiversity. To guide Council in assessment of DAs, there are a range of tools from zoning for environmental protection and overlays depicting biodiversity in the local environmental plan to informal guidelines and data.

This Discussion Paper concludes by recommending Council retain a Native Vegetation Overlay in the LEP but base it on the revised data from Office of Environment and Heritage. It is suggested Council not identify Bio-corridors in the LEP given the need for these to be flexible in terms of negotiated outcomes as part of major developments and rezonings.

Other than some additional E4 – Environmental Living zoning to facilitate some dwelling development in appropriate locations, no additions to environmental protection zones are recommended at this stage. This is contingent upon the appropriate use of overlays.

Council can also have a role in education and support for land care and other programs to improve biodiversity and support landholders in such work.

It is recommended Council consider the use of Planning Agreements and similar voluntary and negotiable techniques to add to biodiversity as part of planning proposals, for example, for expansion of rural or residential lands.

2 STRATEGY WORK TO DATE RELATING TO BIODIVERSITY

2.1 TERMS OF REFERENCE OF THE RURAL STRATEGY

The Brief states that the purpose of the Strategy is to prepare a Rural Lands Strategy to set a clear vision and policy framework for the management of the Shire's rural areas.

In regard to Biodiversity:

- The Rural Lands Strategy brief includes the following outcome:
 - identify and manage landscape and environmental qualities, sites of Aboriginal, natural and cultural heritage, land use conflicts and environmental hazards.
- The project will result in the following outputs:
 - a Rural Lands Strategy that provides a strategic framework to guide the zoning, land use, protection and development of landscape and environmental values.

The focus of this Discussion Paper is biodiversity. Cultural heritage and landscape issues are addressed in Discussion Paper 5.

At present the binding directions for amendments to the Councils LEP for environmental matters are in Section 117 Directions issued by the Minister for Planning. The South Coast Regional Strategy 2007 was also given legal effect as s117 Direction in to the land use strategy, policies, outcomes and actions contained in regional strategies in 2007. The South Coast Regional Conservation Plan was prepared as an action of the regional strategy and adopted in 2010.

2.2 SOUTH COAST REGIONAL CONSERVATION PLAN

The South Coast Regional Conservation Plan (RCP) guides natural heritage conservation on lands on the South Coast excluding National Parks and State Forests. It provides direction to Local Government on planning and development decision making so that the biodiversity of the South Coast can be maintained or improved. It seeks to align restoration activities on the South Coast and to ensure that such activities complement future development that will be guided by the State Government's South Coast Planning Strategy.

A copy of the full plan can be accessed at:

<http://www.environment.nsw.gov.au/biodiversity/regconsplans.htm>.

The RCP also guides implementation of the conservation objectives of the South Coast Regional Strategy through:

- Identifying areas of high conservation value that will be protected as the Strategy directs new residential, rural residential, industrial and commercial zonings away from these areas;

- Verifying important wildlife corridors across the region and providing a consistent approach to their protection and enhancement across local government areas;
- Identifying coastal lakes and estuaries that the Strategy will protect by ensuring further residential or rural residential zonings are allowed only if a neutral or beneficial effect on water quality can be demonstrated.

The RCP also:

- Identifies how bio-banking and biodiversity certification could be employed within the South Coast as mechanisms to maintain or improve biodiversity;
- Encourages cooperation with the Commonwealth Government with the aim of having NSW planning and assessment processes accredited as addressing matters of national environmental significance;
- Flags that a detailed analysis is required of areas that are zoned for development but which support high conservation values; the analysis will be undertaken by the State Government with the aim of providing landholders with information to assist them in their development planning.

The RCP sets out how Local Government should:

- Protect lands of validated high conservation value in new Local Environmental Plans (LEPs);
- Identify important wildlife corridors and priority restoration areas in new LEPs and include clauses to protect these features;
- Utilise offset provisions to ensure that any loss of native vegetation from approved developments is offset, thus achieving an overall 'improve or maintain' biodiversity outcome.

Effective ongoing biodiversity management and planning are necessary to ensure that the South Coast Region can continue to grow in a sustainable way. Effective management and planning can enable appropriate development to proceed while preserving a finite and highly valuable environmental resource.

The principles of biodiversity planning adopted in this RCP are:

- To improve or maintain ecological processes and the dynamics of terrestrial ecosystems in their landscape context;
- To improve or maintain viable examples of terrestrial ecosystems throughout their natural ranges;
- To improve or maintain viable populations of the various biological organisms throughout their natural ranges;
- To improve or maintain the genetic diversity of the living components of terrestrial ecosystems;

- To recognise Aboriginal knowledge of biodiversity value, the connection of Aboriginal communities to Country, and the right of Aboriginal people to be involved in decision making.

The key priorities for biodiversity planning in relation to maintaining or improving biodiversity values are as follows:

- The first priority is to avoid losses to biodiversity and promote protection of biodiversity values in situ;
- The second priority, where the first priority is unachievable, is to mitigate against adverse impacts to biodiversity; and
- The last resort is to compensate for unavoidable losses to biodiversity by applying offsets in the priority locations identified in this RCP.

Section 5 of the RCP describes environmental assets of high conservation value and maps those assets. Assets that are mapped in the ESC include: endangered ecological communities; over-cleared vegetation types; poorly conserved vegetation types; old growth forests; threatened fauna and flora habitats. Much of this mapping was based on regional data sets. Chapter 8 (p. 44) describes the process for validating the data before being used in LEPs. In Eurobodalla's case more detailed mapping has been carried out since the report was prepared.

In particular regard to rural areas relevant to this study, the RCP notes that there also needs to be a recognition of the wider benefits of the most valuable agricultural lands in rural areas, and that these lands should not be targeted for restoration. (p. 43).

2.3 PROPOSED SOUTH EAST AND TABLELANDS REGIONAL PLAN

This Plan is under preparation by the NSW Department of Planning and Environment. It is proposed to replace the current South Coast Regional Strategy 2006 and the South Coast Regional Conservation Plan 2010.

The Plan will be modelled on the draft Illawarra Regional Growth Plan and that plan includes a chapter on the region's environment and heritage incorporating quite detailed mapping of private land with biodiversity values including:

- Native vegetation of high conservation values;
- Threatened species populations or ecological communities;
- Wetlands coastal lakes and lagoons;
- Areas of geological significance such as Karst systems; and
- Biodiversity corridors.

An extract of the Draft Illawarra Plan forms Appendix 1 of this Paper.

Compared to the Terrestrial Biodiversity mapping in the Shoalhaven Council's Local Environmental Plan, which maps all extant native vegetation, the regional strategy mapping limits definition to areas OEH has identified as High Environmental Value lands.

2.4 RURAL ISSUES PAPER

2.4.1 Environmental attributes

The Rural Issues Paper identifies the following biodiversity attributes (listed in the South Coast Regional Conservation Plan):

- Endangered ecological communities, such as Bangalay Sand Forest and Littoral Rainforests;
- Rare, poorly conserved and over-cleared vegetation types;
- Old-growth forests;
- Threatened and significant species, such as the Yellow-bellied Glider;
- Wetlands and significant aquatic habitats, including Durras, Brou and Corunna Lakes;
- Wilderness, such as in the Wadbilliga and Deua National Parks;
- Wildlife corridors; and
- Sites of geological or landform significance, such as the limestone caves at Bendethera.

The Issues Paper goes on to say that some specific landscape types in the Shire have been heavily cleared, including coastal valleys, wetlands and floodplains, and coastal sandplains. Consequently, many of the vegetation types that occur in these landscapes have been classified as threatened or endangered.

The Issues Paper notes that the full extent of native animal and plant species diversity in the Eurobodalla Shire Council area is not known. About 1,568 plant species (native and introduced) and 782 animal species have been recorded, but these records are not comprehensive.

2.4.2 Land degradation

Land degradation issues for rural landholders in the Eurobodalla include the acidification and loss of soils.

Acid sulphate soils are a primary concern in the management of soils in some low-lying areas of the Eurobodalla within the floodplains of rivers and streams.

The removal of native vegetation, rabbits and grazing without pasture improvement in some areas has resulted in gully erosion, sheet erosion and landslip.

2.4.3 Invasive species

Key invasive species in the Eurobodalla Shire include foxes, wild dogs, and rabbits, Bitou Bush, Lantana, Fireweed and African Love Grass. These species have the potential to greatly impact on the rural lands of the Eurobodalla both in terms of impact on biodiversity and agriculture if regular control programs are not in place.

2.5 RURAL OPPORTUNITIES AND CONSTRAINTS REPORT

The Report references the following state, regional and local studies undertaken identifying and detailing management objectives for areas of significant environmental values and hazards:

- Draft New South Wales Biodiversity Strategy – identifies priority terrestrial ecosystems and sets out objectives and actions for investment;
- Southern Rivers Catchment Action Plan;
- Sensitive Urban Lands Report; and
- South Coast Regional Conservation Plan.

It further lists additional biodiversity surveys and assessment undertaken by Council including:

- Eurobodalla Shire Biodiversity Survey – a biodiversity assessment of lands zoned as urban expansion (Long Beach, Malua Bay, Rosedale, West and South Moruya, Moruya Heads, Dalmeny, West Kianga and South Narooma).
- Endangered Ecological Communities Survey and Mapping in Eurobodalla Shire 36 – this report describes the results of the re-mapping of vegetation communities found within Eurobodalla Shire which are listed as Endangered Ecological Communities (EECs) under the *Threatened Species Conservation Act*, in southern NSW.
- Batemans Bay and Clyde River Estuary Management Study, Moruya/Deua River Estuary Management Study, Tuross Estuary and Coila Lake Estuary Management Study, Tomaga River Estuary Management Study and Wagonga Inlet Estuary Management Study provide an assessment of tidal waterway, foreshore and adjacent land to underpin the Estuary Management Plan.

2.5.1 Areas of high conservation value

The Office of Environment and Heritage in February 2013 prepared a detailed description of environmental assets on rural lands in Eurobodalla drawing on the findings of the South Coast Regional Conservation Plan. Key findings of this work are summarised here:

- There are 15 listed Endangered Ecological Communities (EECs).
- 111 threatened fauna species and 98 threatened flora species could occur within the Eurobodalla Shire.

- Eurobodalla Shire includes 3,161 ha of coastal wetlands protected under State Environmental Planning Policy 14; 15 coastal lakes listed as Important Coastal Lakes and 8 wetlands are included in the Directory of Important Wetlands.
- The hinterland and escarpment are well connected. The identification of 'Wildlife Corridors' is important to maintain (and in some cases, improve) connections between these areas and coastal habitats, and also up and down the coastal strip.
- The report makes reference to the vegetation mapping verification undertaken by Eco Logical and OEH – reported in Section 4.4 of this Discussion Paper.

2.5.2 Policy context

The Report notes that Federal, State and regional policies and strategies provide strong and clear support for protection of environmental values. The report goes on to reference the South Coast Regional Strategy which seeks to:

- Maintain or enhance the quality and distribution of the Region's biodiversity;
- Direct urban development away from areas known to be or likely to be important for conservation;
- Protect important natural assets through the land use planning process;
- Improve or maintain the condition of sensitive catchments;
- Protect water quality for town water supply and coastal waterways; and
- Protect, enhance and reinstate the values and functions of riparian corridors and coastal wetlands.

The South Coast Regional Strategy seeks to provide long term protection of water quality and natural waterways, conserve biodiversity including native flora, fauna and natural ecosystems on private lands, and manage and enhance the Eurobodalla Nature Coast values in perpetuity by ensuring that development does not harm or compromise significant environmental values.

2.5.3 Opportunities

- Improved agricultural practices to manage environmental values on rural land.
- Potential for alternative land uses on land that has important environmental or scenic values, such as low impact tourism activities and accommodation.

2.5.4 Constraints

- Degradation or loss of environmental values due to development.
- Degradation of water quality as a result of catchment land use impacting on town water supplies, river health, estuary health, aquaculture, fisheries and tourism.
- Demand for development along the coastal strip concentrates growth in highly sensitive environments.
- Natural hazards (such as steep and erodible land, acid sulphate soils and extreme bushfire risk).

2.5.5 Principles for policy direction

The Report makes the following proposal: that the development of policy directions recognises high conservation values mapped in Volume 2 of the Opportunities and Constraints Report and considers the policy recommendations outlined in the South Coast Regional Conservation Plan.

2.6 POLICY DIRECTIONS PAPER

2.6.1 Policy Direction 5 - Promote Sustainable Resource Use

To promote sustainable management of resources the Paper suggests the following actions:

- Collaborate with relevant Agencies to facilitate the provision of information to rural land owners on sustainable land management practices;
- Support operators of existing and new extractive industries to manage potential land use conflicts and environmental impacts;
- Collaborate with relevant Stage Agencies and land owners with regard to facilitating sustainable forestry activities on private land; and
- Collaborate with relevant State Agencies and land owners with regard to managing the quality of water in aquaculture and drinking water catchment.

Council can support this in a number of ways, such as through delivery of environmental programs (e.g. pest and weed management, Landcare) and business workshops (e.g. food packaging).

Water quality and availability is important for all forms of primary production, but in particular for Eurobodalla's aquaculture industry. Good quality and supply of water also supports tourism and recreation in Eurobodalla and the health of the population through the drinking water supply.

2.6.2 Policy Direction 6 Recognise and Manage Environmental Hazards and Values

The intent of this policy direction is to ensure rural development and land use has minimal impacts on important natural hazards and environment values, having regard to the potential impacts of climate change.

To achieve the above objective the following actions are proposed by the Policy Directions Paper:

- Provide for the sustainable management of high conservation value vegetation and important aquatic values;
- Collaborate with relevant State Agencies to define, map and validate mapping of natural hazards and environmental values,
- Collaborate with relevant agencies and land owners to develop locally appropriate programs for protecting areas of high conservation value and environmental hazards; and

- Collaborate with relevant Agencies to facilitate the provision of information to rural land owners to assist with adaptation to the potential impacts of future climate change.

It should be noted that Council resolved on 22 July 2014 that:

“Overlays not be included in the Local Environmental Plan” and that “the Rural Lands Committee gives further consideration to....the options for the appropriate use of the overlays...in consultation with the Departmental advisors that currently sit on the Rural Lands Committee.”

3 BIODIVERSITY VALUE OF THE PRIVATE RURAL LANDS OF EUROBODALLA

3.1 SPECIAL VALUES AND BENEFITS OF BIODIVERSITY

3.1.1 Special values of the Eurobodalla LGA

The Eurobodalla Shire provides substantial biodiversity values within the coastal and escarpment landscapes of the south coast of NSW. These values are provided through extensive areas of retained native vegetation, including large areas in public reserve systems (i.e. National Parks and State Forests), as well as substantial areas of native vegetation on private land.

The Shire occupies a total land area of about 3,400 square kilometres. It is estimated that more than 72% of this land is reserved in either National Parks or State Forests (ESC, 2015). Therefore, some 2,500 square kilometres of land in this region is reserved, subject to either no development impacts (such as National Parks) or intermittent impacts of localised clearing and subsequent regeneration of land under forestry management. In addition to the National Parks and State Forests, approximately 110 kilometres of the coastline within the Shire boundaries is included under the Bateman's Bay Marine Park, occupying a total area of about 85,000 hectares (NSW Government, MPA 2015).

The vast extent of National Parks, State Forests, Marine Parks, and Rural Lands ultimately provides for a bioregion with a small urban footprint and minimal densification of residential and related developments. The Shire provides numerous special values in relation to biodiversity and natural history. Residents and visitors to the region are able to regularly see and hear rare and threatened native species, as well as enjoy substantial amenity because of the extensive areas of undeveloped or partially developed landscapes.

Particular special values of the region that locals and visitors are likely to come across include:

- The Yellow-bellied Glider (*Petaurus australis*), listed as Vulnerable under the *NSW Threatened Species Conservation Act*. This large, highly vocal and charismatic gliding mammal can be seen and heard in many areas of the LGA, particularly around the Bateman's Bay region and Broulee (as well as further south to Eden and the South East Coastal Ranges) (OEH, 2015). The species requires tall mature eucalypt forest, generally in areas with high rainfall and nutrient rich soils. Its persistence in the Shire is largely due to the extensive areas of reserved land, but also because of the interconnectivity of these reserves through the large areas of native vegetation that has been retained on private (rural) lands (OEH 2015).
- Other rare or threatened gliders such as the Greater Glider and Squirrel Glider are also present in the Shire, and have been recorded in both reserved and private lands. In particular, the Greater Glider population in the Eurobodalla LGA is specifically identified as an Endangered Population (OEH 2015).
- The Grey-headed Flying-fox (*Pteropus poliocephalus*), listed as Vulnerable under the *NSW TSC Act* and the *Commonwealth EPBC Act*. This species is a unique and iconic

part of the local landscape with numerous camp sites in the region, as well as regular and obvious sights of thousands of flying-foxes seen flying at dusk throughout the region. The persistence of this species has and continues to rely on extensive food sources, including both locally indigenous as well as cultivated crops, such as imported fruit trees, all of which are relatively abundant in the Shire (OEH 2015).

- Declining iconic frog species such as the Green and Golden Bell Frog (*Litoria aurea*) known to occur in wetlands in or near the coast. This species has undergone significant declines west of the Great Dividing Range, and regions such as the Eurobodalla Shire are becoming part of the last refuge for this species. The species is often found in well-kept farm dams on private properties (OEH 2015).
- Numerous seabirds and shorebirds including Little Terns, Hooded Plovers, Sooty and Pied Oyster Catchers and Albatross as well as the migratory Little Tern (*Sterna albifrons*) and the resident Beach Stone Curlew (*Esacus neglectus*), both listed as endangered under the *Threatened Species Conservation Act*, have been recorded nesting or foraging in many locations throughout the Bateman's Bay Marine Park. Oystercatcher nests are minimal scrapes on sand beaches that are vulnerable to trampling (NSW Government, MPA 2015).
- There are several rare or threatened bird species including the Glossy Black and the Gang Gang Cockatoos that utilise habitat and feed trees such as allocasurina across the rural private and public lands. Other rare or endangered birds like Powerful Owls need wide habitats and hollow trees.

Even common fauna species such as wallaby species and eastern grey kangaroos, and the striking Yellow-tailed Black Cockatoos, can be seen throughout the region moving between forests and watering habitats, and often seen in or at the edge of residential areas where suitable food resources are present. Lorikeets and parrots use urban bird feeders and plantings, and provide a lot of enjoyment for locals and tourists, where they can be regularly seen feeding in parks and gardens and rural properties, as well as more intact natural habitat.

Under the State Government's Save Our Species Program threatened species currently or proposed to be funded for site management actions in Eurobodalla LGA are listed below.

Table 1: Threatened species currently listed in Eurobodalla for site management actions under the save our species program

Site Name	Threatened species
Tuross Brou	Hooded Plover (<i>Thinornis rubricollis</i>)
Tilba Wallaga	Hooded Plover (<i>Thinornis rubricollis</i>)
Tathra	Hooded Plover (<i>Thinornis rubricollis</i>)
Tuross Brou	Little Tern (<i>Sternula albifrons</i>)
Little Dromedary	Warty Zieria (<i>Zieria tuberculata</i>)
Gulaga NP (north-west)	Warty Zieria (<i>Zieria tuberculata</i>)
Tilba Tilba Private property	Warty Zieria (<i>Zieria tuberculata</i>)
Wadbilliga	Smoky Mouse (<i>Pseudomys fumeus</i>)
Bevian swamp	Tall Knotweed (<i>Persicaria elatior</i>)
Bendethera	Araluen Gum (<i>Eucalyptus kartzoffiana</i>)
Tuross Brou	Pied Oystercatcher (<i>Haematopus longirostris</i>)
Deua National Park	Kydra Dampiera (<i>Dampiera fusca</i>)
Moruya	Waterwheel Plant (<i>Aldrovanda vesiculosa</i>)
Clyde Mountain	Dense Cord-rush (<i>Baloskion longipes</i>)

3.1.2 Private lands and their importance in conserving biodiversity

Although an estimated 72% of the region is reserved under National Parks or State Forests, the continued persistence of iconic species and other natural values of biodiversity importance relies on both the continued protection of reserved land in the parks and State forests, but also requires ongoing protection, maintenance and enhancement of private land, and in particular, rural lands within the Shire.

The main functions of ecological importance provided by rural landscape include not only the preservation of foraging and nesting/breeding habitats within these lands, but also the preservation of connectivity between the larger intact habitats within the National Parks and State Forests.

Some species, such as the Yellow-bellied Glider, have (or may have, depending on habitat suitability) extremely large home ranges (in some circumstances up to 85 ha and 200 ha respectively) (OEH 2015), and require the ability to move freely throughout the landscape in order to maintain viable populations. Primarily, the dietary requirements throughout the year mean that these species and many others need to continually move to seek out fresh growth to support them throughout the year given the seasonal variations between native vegetation species with respect to flowering, fruiting and the development of fresh new shoots (OEH 2015).

Scattered trees, such as those found on rural lands, are important in enabling movements of many arboreal species between more highly favoured habitats as these species often will not travel along the ground and therefore require suitably spaced trees to enable their movements.

Connectivity of habitats to enable movements between them are considered to be of very high importance as the movements of animals through these corridors between larger habitats and their resident populations helps to avoid inbreeding depressions, as well as stochastic risks such as bushfires and floods (OEH 2015). The reserve system is therefore never going to be able to fully provide for these needs in the long term if movement opportunities between them are not provided for or maintained.

Private rural lands therefore play a vital role in providing this function and so the continued management of these landscapes needs to consider these roles and how to protect these important values over time.

In addition to the requirements for species to move safely and freely between their preferred habitats, many native (and threatened) species require specific habitat resources for sheltering, including nesting and roosting habitats. Specifically, the Shire supports numerous hollow-dependant fauna such as Gliders, Forest Owls, Glossy Black Cockatoos, Microbats, Possums, all of which utilise tree hollows for shelter sites. Some species require numerous hollows within their home range. The Greater Glider for example may occupy up to 18 hollows within its home range (OEH 2015). As such, the requirements of this, and other species, for large, mature hollow-bearing trees within the landscape of their home ranges is extremely important, and may not always be able to be met by the availability of such resources within a State forest alone.

It is not uncommon for private rural lands that were previously cleared for grazing, to have left a few scattered trees within paddocks for shade. In some circumstances, these trees were, or now are, very old and large trees, and often support numerous medium to large sized hollows that provide important nesting habitat for hollow-dependant fauna.

In the Shire, many parts of the current National Parks were once used as State forests and were regularly logged to provide timber to the mills for building materials. Because of this historic land use, they often do not contain the proportion of very old trees that develop hollows and which are required by many species. Large hollows can take between 100-150 years to develop (DECC 2007).

The large trunks and fallen hollows also provide key habitat for terrestrial species such as the Spotted-tailed Quoll (*Dasyurus maculatus*) which rely heavily on the presence of these resources not only for their own shelter, but also, to provide shelter for their main prey items (OEH 2015).

Private lands also often provide important aquatic habitats, including watering points for animals, through the water impoundment devices (i.e. dams) that have been created to cater for their stock watering or crop irrigation needs. Many of these features now provide important aquatic habitat for a range of fauna including frogs, turtles and, in some circumstances, migratory waterbirds, particularly in larger farm dams that provide excellent wetland environments.

In addition to the creation of artificial aquatic habitats, extensive areas of flood-prone land, such as creek and river floodplains and terraces were actively sought for rural agricultural development given the more fertile soils these landscapes provide, as well as the easy access to water in the riverine systems for irrigation. The expansion of agriculture into these more fertile landscapes for higher productivity and yields, leads to particular pressure on species and communities that rely on these habitats alone.

This is one of the reasons why the low land grassy woodlands, most suited for grazing and containing valuable riparian vegetation, with good access to water and high nutrient alluvial soils, are listed as threatened. A number of flora and fauna species occur predominantly in these areas, and it is therefore no surprise that these species are now becoming increasingly more threatened over time (EPA 2015).

Many of these aquatic systems now provide important, if not the only, linkages in the landscape. Should the agricultural pursuits in these areas or extensions of rural residential living put increasing pressure on use of these natural resources, as well as designing land use to maximise productivity at the expense of maintaining natural habitats, then further species declines are likely.

There is a special need for private land managers in such communities to play a role in conserving these habitat features or species.

3.1.3 Biodiversity is compatible with and can benefit private landholders/land use

As well as the lifestyle and amenity benefits of living in close proximity to nature, there are other ways that maintaining and improving biodiversity can benefit local landholders and the broader community.

A primary example of this is in relation to drought and water management as it relates to pasture biomass and overall land yield and productivity. Native pastures that have evolved over time and adapted to the Australian climate are more resistant to drought than most introduced pasture species. They can germinate and often grow faster with less water (Department of Agriculture 2015). In some locations, this makes them potentially ideal for use by pastoralists, particularly on steeper country, lighter soils and where irrigation is not possible.

Many species of native pastures are also high in protein which can make them suitable for livestock grazing as stock can fatten quicker and/or eat less total volume of food when fed on high-protein diets (Department of Agriculture 2015).

Native vegetation, and particularly, native grasses, also requires less fertiliser application than introduced species, which has multiple compound effects, including both reducing ongoing costs to the pastoralist, but also, helps to improve water quality by reducing the total nutrient loads that enter these systems and can lead to algal blooms, and in extreme cases, fish kills. Algal blooms from over-application of fertilisers can also reduce water quality so that is unpalatable to stock, and in extreme cases, can affect stock health.

None the less, improved pastures are a core foundation of the dairy and beef industries of the Shire with most areas of good soils and particularly areas with access to irrigation operating to improved pastures. The extent and intensity of pasture improvement varies with economic and seasonal conditions. There is more reliance on native grasses in the poorer quality soil types and steeper lands.

In addition to the presence of native grasses, many native shrubs can also be beneficial for rural lands, and can assist overall pasture health. For example, the native shrub *Bursaria spinosa*, which is extremely hardy and can last for 30-50 years, is an aggressive coloniser of marginal or disturbed sites and regeneration from rhizomes, such as after fire, can be rapid and extensive (Bonney 1997, Cayer et al. 1999). It has excellent erosion control properties and this can be extremely valuable to agriculturalists as topsoil loss after disturbance events

can be extensive, and in extreme cases, the total loss of the organic topsoil layer may occur, which then renders the land infertile and limited for continued pastoralising and grazing uses, as well as decreasing water quality downstream through sediment-laden run-off from eroding sites. *Bursaria spinosa* is also of high wildlife value, as a habitat for birds and as a nectar source. It can be a useful honey plant in poor seasons, producing medium to heavy quantities of pollen. The drug aesculin is extracted from leaves and has been harvested commercially in Australia (Kent et al. 2002). As such, this native shrub has both excellent biodiversity and commercial values.

Oyster Farming is an important part of the local economy and relies on the Shire's estuaries. Reduced water quality from run-off of land that has been over-fertilised can be catastrophic to an oyster farm, reducing the commercial output of sales.

Native fauna, particularly birds, play an important part in controlling insect pests. Retaining a diversity of habitat close to agricultural land enables insect predators to cover the agricultural areas and harvest pest insect species.

With regard to the coastal environments, native vegetation is highly resilient and performs important coastal functions like dune and foreshore stability, which is very important in dynamic systems such as these where storm events can cause extensive damage. The native Coastal Wattle *Acacia longifolia* var. *sophorae* plays a very important role in maintaining dune stability (Native Vegetation Management Unit 2014), and has been commonly used in dune rehabilitation programs in areas of high dune erosion, as well as in areas where eradication of the introduced Bitou Bush or Boneseed (*Chrysanthemoides monolifera*), a weed of national significance, has been undertaken (Department of the Environment, 2015).

Native shrubs such as the Coastal Rosemary (*Westringia fruticosa*), tea trees (*Leptospermum* spp.), and banksias (*Banksia* spp.), can cope with elevated salt loads and high-wind environments (ANBG 2015), that most introduced species could not tolerate, or if they could, may become problematic such as highly invasive weeds including the Bitou Bush, previously mentioned.

All of these native vegetation types play an important role in providing habitat for coastal species, but also help to stabilise the dune systems and protect them against risks of severe storm surges and rising water levels (likely to become an increasing threat in future with the effects of climate change). This can have a positive impact on protecting properties along the coastlines from these impacts.

The retention and use of native vegetation in rural landscapes therefore can have significant commercial benefits above and beyond the biodiversity values for which they are most commonly thought to provide. In particular, one of the main inputs into the regional economy of the Shire is tourism (ESC 2015). The natural and scenic landscapes and pristine beaches of the area, developed and maintained through the extent of native vegetation present and the iconic native animals and plants that inhabit these areas, are a unique attraction to tourists visiting the Shire. These directly benefit tourism and recreation in the region by providing numerous opportunities for recreation and tourism ventures such as bushwalking, horse riding, fishing, camping, whale watching, as well as ecotourism accommodation.

Rural farm stay retreats are also popular in this area, and the natural and scenic values of the rural regions in the Shire are a significant factor in that popularity. Eurobodalla has

established itself as the 'nature coast' and 'unspoilt coast' of south-east NSW and this is a marketing edge for tourism that it retains over many other Local Government Areas.

Further commercial benefits that may arise from the protection and maintenance of native vegetation include the expansion of (new) rural industries such as bush foods which have seen a growth in interest and demand in recent years. These bush foods can include items such as picked edible fruits, nuts and plants like samphire, native cherry, as well as meats (such as Kangaroo), and even various new medicinal treatments (including Manuka Honey which is able to be made from bees pollinating the Jelly Bush, *Leptospermum polygalifolium* that grows along the east coast of Australia, Florabank 2015).

There is growing anecdotal evidence of a preference by some purchasers of rural properties for rural lands where there is evidence of good management of biodiversity. A well-managed farming property with biodiversity assets such as corridors, retained old trees and water habitats can fetch a sale premium. This is even more the case in Eurobodalla where demand for rural land is higher than many other rural Local Government Areas, with a proportion of that demand relating to the lifestyle qualities of the region.

3.1.4 Biodiversity has an important link to indigenous culture and land use

It is estimated that Aboriginal people have lived in NSW for at least the past 40,000 years. The cultural heritage of the Aboriginal people is inextricably linked to the natural environment in the form of their history of how the land and waterways were formed through their dreamtime stories, their links to, knowledge of, and wide variety of uses for individual plants and animals as either bush tucker, healing or medicinal foods, or how certain species (and/or their behaviours) can inform them about natural processes, including for warning against flooding, or drought. The current biodiversity we see around us today is thought to be a reflection of thousands of years of Aboriginal land management practices through their "fire-stick" burning practices, to the planting of seeds for various purposes, including landmark trees, including "totem" species that are valued as part of "Country" (OEH 2015).

Over the last few years, OEH and Aboriginal communities in different parts of NSW have been working together to develop approaches to land management that recognise the cultural values of biodiversity and the environment. Strategies are being developed that bridge the gap between 'natural' and 'cultural' heritage. Examples include:

- The joint management of national parks such as Mutawintji National Park;
- Aboriginal involvement in land management, biodiversity surveys and research;
- The mapping of people's attachment to landscapes using oral history and participatory planning techniques.

The Eurobodalla coast contains numerous sites of cultural significance, including Gulaga (Mount Dromedary), Baranguba (Montague Island), Murramarang National Park and Cullendulla Nature Reserve, both of which contain numerous Aboriginal sites of importance, Hanging Mountain in Deua National Park, and the Bingi Dreaming Track to name but a few (Eurobodalla Coast Tourism, 2015). The continued management of these sites for both Aboriginal cultural heritage as well as for their natural values together are important in helping to protect and maintain biodiversity in the region, and in particular, demonstrate good examples for the broader community on how to manage these assets for future generations.

Council in partnership with the Kianga Dalmeny Rural Fire Service has implemented an innovative project to reintroduce traditional Aboriginal methods of using fire for management at three headlands where Themeda Grassland on Seacliffs and Coastal Headlands EEC exist. The new management has resulted in an increase in biodiversity, reduction in weeds and has received state wide attention from other land managers interested in applying the same techniques.

3.2 THREATS TO EUROBODALLA BIODIVERSITY

While there is a substantial portion (more than 70%) of the total land area of the Eurobodalla LGA located within reserves, there nevertheless exists numerous and substantial threats to the biodiversity values of the region. These threats are mainly related to development, including both agricultural and residential developments, which may result in both direct impacts through clearing/removal of habitats supporting biodiversity values, as well as indirect impacts, such as pollution and run-off from developed areas into natural environments, as well as fragmentation of natural environments and reserves by developments that are inappropriately located or designed.

The key threats to biodiversity in the Eurobodalla Region are discussed below in more detail.

3.2.1 Fragmentation of remaining habitats

The fragmentation of habitats is a key threat to biodiversity, and can substantially affect species like the Yellow-bellied Gliders which naturally occurs at low densities throughout its range and populations require large areas of forested land to remain viable. The Recovery Plan for this species suggests that for a population of 500 animals to remain viable, it would need about 15,000 ha of unfragmented suitable habitat. Continued developments, particularly in or near areas of known populations such as at Broulee, would need to ensure that actual or even potential habitat links for this species are protected and maintained. Improvement of linkages should also be considered where appropriate/practical.

Further species, such as the White-footed Dunnart (*Sminthopsis leucopus*) send out 'scouts' searching for special mix of habitat structure. As coastal habitats become increasingly fragmented, the ability of the 'scouts' to find new/suitable habitats becomes reduced, and ultimately the local population is put at risk from loss of habitat, as well as secondary threats, like increased predation and disease risk (OEH 2015).

Fragmentation of habitats therefore can reduce genetic variability, increase the risk of disease and sickness, limit habitat resource availability and ultimately, make a population more prone to localised extinctions.

3.2.2 Removal of old growth and mature forest

The removal of old growth forest, including mature forests with numerous hollow-bearing trees, is a key threatening process under the *NSW Threatened Species Conservation Act*.

In particular, old growth forests provide larger trees with larger hollows that are required for species such as forest owls and Greater Gliders. The Brush-tailed Phascogale (*Phascogale tapoatafa*) also has a special association with very large trees, and other glider species (such as the vulnerable Squirrel Glider, *Petaurus norfolcensis*) also prefer tall, old forests

that provide numerous hollow-bearing trees as well as taller trees for achieving suitable heights that enable them to glide over greater distances. These are particularly important near roads where a glider may need to glide up to 50 m or more over the road (or other barrier). Very large trees are necessary to support this, and these types of trees are becoming increasingly rare.

An exacerbating factor in regard to the impacts from the loss of old growth hollow-bearing trees is the time taken for the loss of such features to be replaced. Hollows in trees can often take more than 100 years to develop, whereas the larger hollows in very old and large trees can often take up to 200 years or more to develop (DECC 2007). As such, when these habitat resources are lost, they will not be replaced naturally within the lifespan of any of the species that use them.

Furthermore, clearing and similar events can often lead to homogenising the age of a forest which can further put at risk species that require a variety in age and structure of the forests so that when one hollow-bearing tree is lost, there are other recruitment trees that either have or will soon have developed hollows of their own. The removal of old growth or mature forests with large hollow-bearing trees therefore puts these species at direct risk of localised extinctions.

3.2.3 Replacement of native grasses with exotic pasture

The ongoing pasture improvement practices on rural lands in the Shire can lead to reduced biodiversity for the reasons outlined above, including loss of vegetation cover through drought intolerance. Pasture improvement practices also threaten particular species such as the Vulnerable Austral Toadflax (*Thesium australe*) which is often found in association with native Kangaroo Grass (*Themeda spp.*) and is directly threatened by pasture improvement practices (Department of Agriculture 2015, and OEH 2015).

3.2.4 Indirect impacts of urbanisation and agricultural developments

There are numerous impacts to biodiversity that are associated with urbanisation, rural residential development and intensified agricultural developments. These include:

- Increased predation on native animals by cats and dogs. The predation can exacerbate other effects such as reducing the numbers of animals that play an important role in ecosystem function by controlling biomass through grazing, or assisting pollination or seed dispersal and germination through feeding behaviour.
- Increased abundance of weeds. This can be brought about by garden escapees that are invasive in areas (i.e. Agapanthus). Inappropriate application of fertilisers can also lead to decreased health of native pastures whilst artificially promoting growth in other non-native species.
- Increased or inappropriate application of fertilisers. This can lead to nutrient enriched run-off from agricultural lands that can lead to algal blooms and decreased water quality, including at the extreme end, fish kills or reduced numbers of aquatic macro invertebrates that are essential to healthy waterways.
- Over-grazing. This can lead to reduced ground cover making soils more prone to erosion and gradual loss of the organic topsoil layer. The faecal matter from these grazing animals can also enter waterways leading to nutrient enrichment and the

associated problems described in the point above. Given the number of sensitive wetlands in the Shire, uncontrolled grazing within or adjoining wetlands can have adverse impacts.

- Clearing of land for pasture or residential and rural residential development. This can lead to the loss of recruitment of hollow bearing trees, the impacts of which have been previously discussed.
- Extension of clearing and/or modification of bushland (especially woodlands and forests) for bushfire protection associated with new development. This can lead to a loss of food resources for many species, particularly many flowering shrubs and small trees species, as well as a loss of cover required for shelter. Clearing may also result in the loss of hollow-bearing trees.
- Illegal dumping of rubbish in forests and along fire trails, etc. This can lead to contaminants entering waterways, as well as attract species such as rats and other vermin which can then start to outcompete small native terrestrial fauna if the vermin species become well-established.
- More intensive use of fire trails for recreational driving and motorbike riding. This can lead to increased erosion along the trails which may then reduce water quality in the catchment. The activities can also compact soil, and increase the spread of weeds through spreading soil containing weeds from other places where the motor vehicles have been. The noise of these vehicles can also impact wildlife, particularly nocturnal wildlife that may have their sleep patterns affected during the day.
- Removal of rocks, fallen timber, debris in creeks. These activities are often undertaken to make land management easier but these features all provide important habitat for native species such as lizards, robins, frogs and fish that would be impacted by such activities.

3.3 EXISTING BIODIVERSITY OVERLAYS AND IMPORTANCE TO MAINTAINING BIODIVERSITY ON RURAL LANDS

Under the current Local Environmental Plan (LEP), Council utilises a number of planning overlays (or maps) to define areas of natural importance, and to establish a planning process or strategy via the LEP through which these natural values can be protected. Of particular note are the Terrestrial Biodiversity Map and the Wetlands, Riparian and Watercourse Map.

These maps are a planning guide for both Council and landowners to point to areas of possible constraint in the preparation and assessment of development applications. Including an area of land in an overlay is not an indication of a prohibition on development, just an indication more thorough assessment may be required compared to development outside of mapped constraint areas.

The original terrestrial biodiversity overlay has now been subjected to further ground truthing and refinement and the revised map is recommended to supersede the current version in LEP 2012.

But even this map remains indicative and ground review of proposed development areas may be required and may establish that reasonable further development can occur within mapped constraint areas. Field review can make allowances for regrowth and lower value vegetation plus allow adjustment to edges of overlay constraint areas to match the detail revealed by actual field examination.

Conversely, the benefit of the overlay is land that is not mapped as constrained can, in most cases, proceed to development assessment without further on-site vegetation or habitat assessment.

In the case of application of the Wetlands, Riparian Lands and Watercourses map, some flexibility in interpreting the overlay on the ground is also possible to deal with the wide variety of habitats and their associated values on a site-based and case-by-case situation. There should be no “one size fits all” approach to this. The values and associated protection of a shallow gully that only intermittently has some surface water flows should not be treated the same (with the same buffering and set-back requirements) as a well-defined creek or river.

Whilst protection of all areas that contain some form of water is important, specific measures, treatments, buffer designs should be able to be considered on a case-by-case basis that allows a landowner to properly manage their land and to receive possible concessions in less sensitive areas in return for conserving higher order habitat.

4 THE LEP OVERLAYS

4.1 THE ROLE OF OVERLAYS

A more detailed discussion on the use of overlays is presented in Discussion Paper 3. The following section is a summary.

The use of Overlays is not a statutory requirement of preparing an LEP. Overlays are viewed as an “Additional Local Provision” in the Standard Instrument LEP. This use was envisaged and indeed encouraged by the Department of Planning in its Planning Practice Note PN09-002 “Environment Protection Zones” which states:

Local environmental provisions

“Local environmental provisions may be applied where zone provisions need to be augmented in order to ensure that special environmental features are considered. For example, rural land that is still principally for agriculture but which contains environmentally sensitive areas may be zoned RU1 or RU2 and the environmental sensitivities managed through a local provision and associated (‘overlay’) map.

The benefits of this approach include:

- *The intended conservation or management outcomes for land can be clearly articulated in the LEP.*
- *Areas are clearly defined and controls streamlined.*
- *Sub-zones are not created. (These are not permitted under the standard instrument).*

Provisions for environmentally sensitive areas may include multiple natural resource or other features such as acid sulphate soils and riparian land. A local provisions clause may include objectives and, where the sensitivity is a mappable attribute, a map would accompany the provision.

Any local provision will apply in addition to the objectives and land use table for zones. The local provision must be consistent with mandated objectives and permissible or prohibited uses of the relevant zone/s.”

(Department of Planning (2009) Planning Practice Note PN09-002).

4.2 PERCEIVED BENEFITS OF AN OVERLAY APPROACH

A good summary of the benefits of using overlays in the LEP to depict environmentally sensitive lands is contained in the following practice note:

<http://www.environment.nsw.gov.au/resources/biodiversity/09353PNforESI.pdf>

“Practice Note for using spatial information in Local Environmental Plans to protect and manage Environmentally Sensitive Lands - Murray-Murrumbidgee Region.” (NSW Department of Water and Energy, NSW Department of Primary Industries, NSW Department of Environment and Climate Change, 2009).

- Zones are traditionally the main tool in LEPs, but can sometimes prohibit some developments which could otherwise be undertaken with little risk to the natural environment, if sensitively designed and constructed. Overlays do not affect the range of permitted land used within a zone.
- ESL (Environmentally Sensitive Lands) overlays are considered a more simple solution – particularly where there may be limited spatial data.
- Overlays are simply a map, with an associated clause in the LEP that details the matter that must be considered in assessing a DA. The overlay approach does not introduce absolute prohibitions on land use or development and is a flexible planning approach that is often more acceptable to the community and landowners.
- Zoning and ESL overlays can be readily used in combination.

The following points also are relevant to the impact of overlays:

- ESL overlays are only triggered by a DA within the area covered by the map. The overlays do not need to be taken into consideration if a DA is not required.
- Clearing of native vegetation in rural zones where agriculture is a permitted use that does not require a DA as it is a matter considered under the *Native Vegetation Act 2003* (NV Act).
- Overlays encourage adoption of an ‘avoid and minimise’ approach, consistent with the Government’s offset policy by ensuring that the potential impacts of development have been avoided and minimised to the fullest extent practicable.
- Provide some consistency with wider Government legislation.
- Provides guidance and builds capacity of Councils – DAs outside of mapped constraint areas can be locally processed without further review.
- Can reduce the need for referrals to State agencies.

4.3 EXISTING ENVIRONMENTAL OVERLAYS IN THE EUROBODALLA LEP

4.3.1 Acid Sulphate Soils Map

Most coastal Councils have areas of acid sulphate soils where acidic runoff can occur if disturbed. The higher risk areas have been mapped and are included in overlays of most Coastal Councils.

The current overlay in Eurobodalla is appropriate to retain and utilise to lessen the risk of water pollution.

4.3.2 Wetlands, Riparian Lands and Watercourses Map

Just over 60% of all Councils with the Standard Instrument LEP have an overlay defining important waterways and riparian lands. Eurobodalla has such an overlay and it is considered appropriate to retain and to have adequate accuracy to guide planning decisions on DAs.

4.3.3 Terrestrial Biodiversity Map

Eurobodalla has a terrestrial biodiversity (TB) overlay in the 2012 LEP, however, the deferred areas in the current LEP are not shown in the overlay, as these lands continue to fall under the Rural Local Environmental Plan 1987. Issues were also raised by the community which has resulted in further revision and ground truthing by OEH as detailed in Section 4.4.

A revised map has been prepared by OEH and recommended to Council for consideration. A small scale version of this map and some sample insets are outlined in Section 4.5.

Discussion Paper 3 also presents a survey of the use of terrestrial biodiversity overlays by other Councils.

Of the 19 Councils surveyed, 6 are not currently using TB overlays, 2 have them under review and 11 have a Shire wide application.

State-wide approximately 60% of all Councils with a gazetted Standard Instrument LEP have some form of overlay relating to biodiversity. (Survey of NSW legislation website).

4.4 REVISED VEGETATION MAPPING BY OEH

In 2013 OEH completed a project to collate and review all existing vegetation mapping data within the South Coast area, including regional scale, Local Government scale, reserve scale, publically available development application (site) scale and EEC map products. Eurobodalla Shire Council then contracted Eco Logical Australia Pty Ltd to undertake an independent determination of the accuracy of the 2013 OEH vegetation map and to determine its suitability for use in local strategic and land use planning processes. Eco Logical Australia concluded that based on survey of 97 sites, there was 100% accuracy within these sites of mapped extent of vegetation and 70% accuracy of vegetation type.

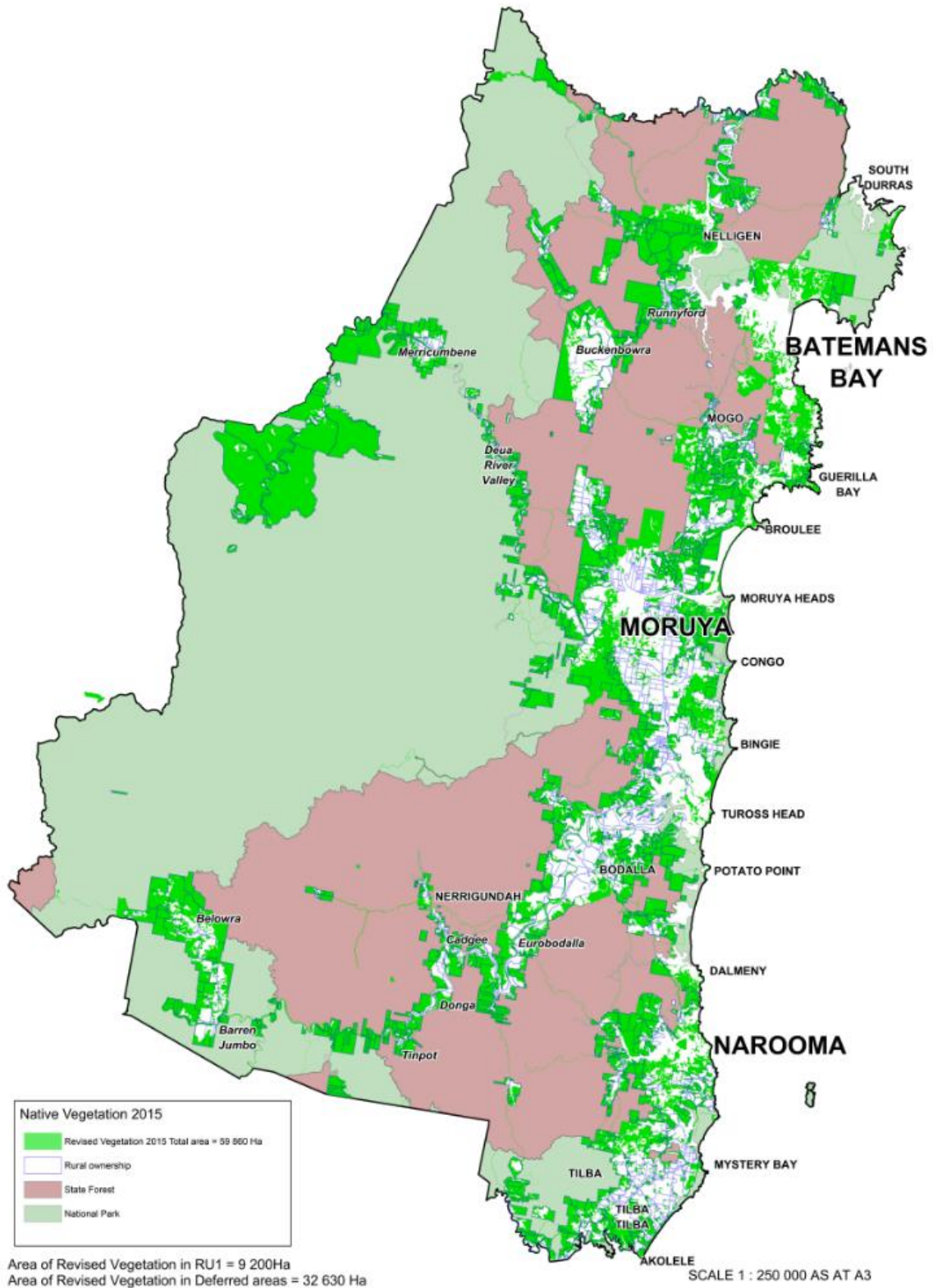
Notwithstanding this level of accuracy, there is still significant community concern about the use of OEH High Conservation Value mapping within the Eurobodalla LEP. This concern

appears to be based on accuracy of EEC mapping and the identification of EECs on private property. The extent of native vegetation which can be more simply observed from aerial photography seems to be less controversial. It is therefore recommended that unlike the existing Terrestrial Biodiversity Overlay in the Eurobodalla LEP (2012) which identifies EECs, that a revised Native Vegetation overlay be based just on extent of vegetation and not delineate EECs.

4.5 REVISED DRAFT NATIVE VEGETATION MAP

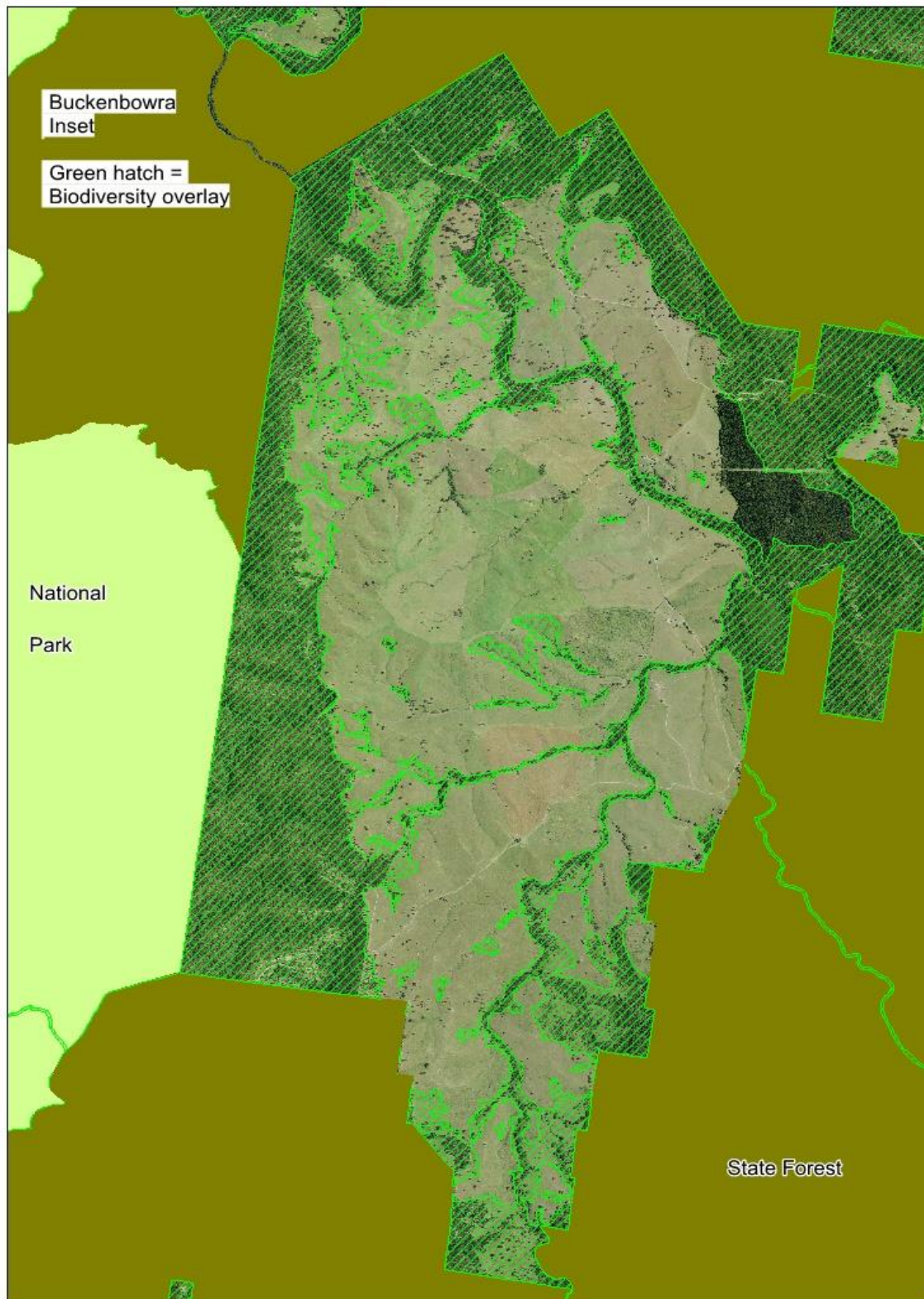
Following the revision of Mapping by OEH and validation review by Eco Logical, a revised draft Native Vegetation Overlay Map was prepared. A small scale version of this map forms Map 1 on the following page. A larger scale version of this Map is available in the Map Folder (Volume Three). This map identifies the extent of native vegetation. It does not delineate EECs. While it is difficult for the map to be 100% accurate across the entire Shire, the benefit of using extent of vegetation in the overlay, not EECs, is that if development consent is required and the overlay applies but it is established in the field that minimal native vegetation present, the landowner will not be required to prepare a flora and fauna assessment as part of the development application process.

Map 1: Revised Native Vegetation Map



The following 3 maps are enlarged insets of the revised Biodiversity Overlay superimposed on the aerial photograph.

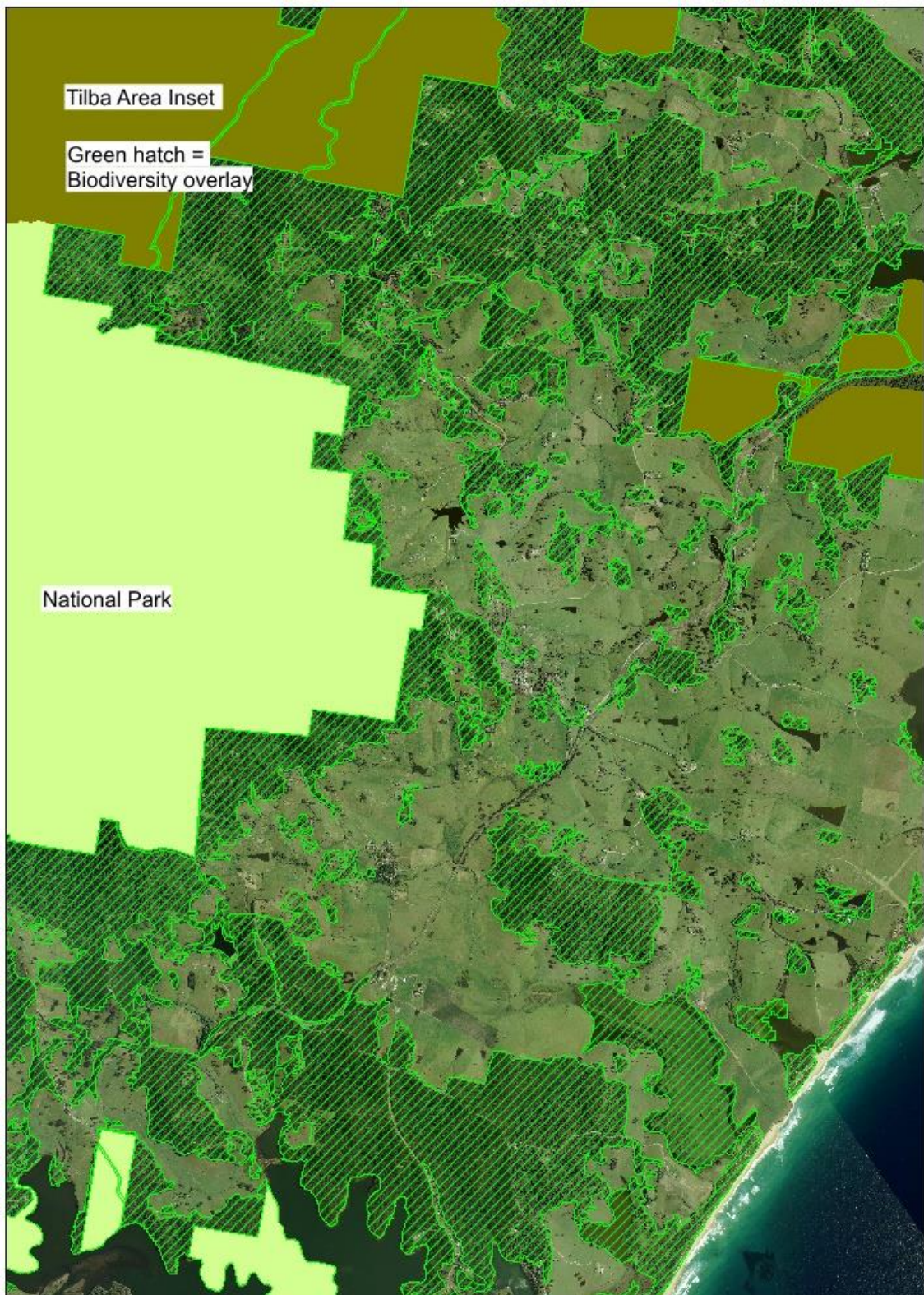
Map 2: Buckenbowra Area Inset



Map 3: Bodalla Area Inset



Map 4: Tilba Inset Area



5 OPTIONS FOR PROTECTION OF BIODIVERSITY

5.1 INCENTIVES

There is concern amongst rural landholders that the application of some biodiversity controls amounts to a form of public constraint of private land (for public benefit) but without any compensation for loss of development potential or land value.

Rural planning controls have existed for many decades and most seem justified in terms of public benefit- even if at some constraint cost to private owners.

A significant proportion of private lands under some level of native vegetation cover, are lands with low prospects of further development given often poor soils, steep terrain and sometimes high risk of erosion if cleared. But other areas do have some economic agricultural potential if clearing permission was granted. There is a case for some benefit being returned to landowners who conserve this category of land.

The State Government is considering an expanded type of biodiversity fund as part of the current review of the biodiversity legislation but it is not likely to have the resources to compensate all rural landowners who have land of economic value subject to clearing but which also contains biodiversity value. Additional incentives would be desirable.

One alternative is to encourage the use of biodiversity offset sites over lands with economic potential but which contain native vegetation. This can be done now but is an underutilised mechanism for biodiversity protection. A landowner who agrees to conserve specified biodiversity in perpetuity might sell offsets to developers seeking to clear lands elsewhere.

A further option is requiring the permanent conservation of high value vegetation as part of a planning proposal to rezone land for development, through the use of conservation agreements.

The issues surrounding selection of the preferred options for Councils planning role in protecting biodiversity are detailed in Discussion Papers 3 and 4. The following is a summary of the conclusions from those Papers.

5.2 OPTIONS FOR CONTROLS

5.2.1 Await the review

The State Government is in the process of a major review of the biodiversity legislation and procedures. Council could await the outcome of this review. But in terms of planning control, the review work to date suggests Council's current role will be at least retained if not expanded to include vegetation clearing controls in rural zones that are currently administered at State level. The review may also be some time in reaching a conclusive position and as such it is considered appropriate Council resolve a structure for biodiversity controls within the existing framework.

The State review is also looking at improved incentives for land owners to undertake biodiversity enhancement on private land, for example, through expanding grants and related assistance. This is encouraging and will add to the biodiversity protection tools available to Council and the community.

5.2.2 Leave formal data to the Regional Plan

The proposed South East Regional Plan will include high level objectives and mapping to protect regional biodiversity. Council might leave formal mapping to that level of plan and rely on informal data to assess local scale development applications and Planning Proposals. However, the transparency and accessibility of an LEP environmental overlay is considered a superior option.

5.2.3 Use the DCP

Council might elect to place environmental overlay mapping in a DCP. While this would retain some public notification and accessibility as DCPs are included on 149 certificates, LEP mapping is more publicly understood and accessible.

5.2.4 Use E zoning

Council has resolved not to use E3 Environmental Management zoning and has confined the use of E2 Environmental Conservation zoning to more important wetlands and similar riparian lands.

This approach is supported subject to retention of environmental overlay mapping in the LEP. However, if overlays were not to be used in the LEP it is felt there is a case to expand E zoning to include the higher level conservation values in the mapping such as EECs.

It is also important that Council justify zoning decisions having regard to the provisions of Ministerial Directions, included 2.1, which states:

A planning proposal that applies to land within an environment protection zone or land otherwise identified for environment protection purposes in a LEP must not reduce the environmental protection standards that apply to the land (including by modifying development standards that apply to the land). This requirement does not apply to a change to a development standard for minimum lot size for a dwelling in accordance with clause (5) of Direction 1.5 "Rural Lands".

Ultimately, it is the Department of Planning and Environment that determines whether the Ministerial Directions have been complied with, or whether any variations are justified. If the Department has a different view, it may seek further use of the E zones.

5.2.5 Use LEP overlays

Section 4.2 and Discussion Papers 3 and 4 offer a detail argument about the benefits of retaining the environmental overlays in the LEP. This approach is recommended as offering the best mix of flexibility yet public display of constraint areas. The overlays are less constraining than zoning prohibitions but are still in the LEP as an indicator of matters to be considered should development consent be required.

The revised Native Vegetation overlay has had greater validation than most council biodiversity overlays and is recommended to replace the current overlay in the LEP. None the less it will remain a living data layer that can still be refined over time.

5.2.5.1 Protecting bio-corridors

The current overlays in the Eurobodalla LEP 2012 includes mapping of some bio-corridors for future planning. While the corridors could be retained, they present an issue in that they are only options and better alternatives can perhaps be resolved as part of specific Planning Proposals for rezoning for more intensive development or through the normal development assessment process.

Clause 6.6 of the LEP currently requires consideration for corridors in the assessment process and the provisions could be retained with minor modification without the need to include corridor mapping.

6 RECOMMENDED STRATEGIES FOR BIODIVERSITY

6.1 ECONOMIC RELATED STRATEGIES

- **Incentives fund:** The State Government has indicated it may expand funding programs to assist landholders who conserve high conservation value habitat. Council might monitor these programs as they develop as part of the biodiversity legislation review and provide encouragement to the State Government for such initiatives. But it would appear important that public moneys from such funds only be allocated where landholders can demonstrate the land so conserved had further prospects for real commercial agricultural use.
- **Education and awareness:** Some of these initiatives may involve or could be brought about by promoting increased education and awareness of the benefits of managing land in a way that maintains or improves biodiversity. This can also extend to funding or other assistance for land owners to investigate incorporating new commercial opportunities associated with developing new products/technologies that assist in maintaining biodiversity. This may include assistance programs to develop “bush tucker” foods, bush medicines and other use of local natural products. There may be scope for more extensive use of native pastures and improved varieties of native grasses on the lighter grazing lands and focusing exotic pasture improvement on the better soils.
- **Bio-banking:** The structure exists in the current biodiversity legislation to allow bio-banking and initiatives such as offsets where a developer wanting to clear land purchases offsets from a landowner with high biodiversity land for permanent conservation. But uptake and usage has been limited to date. Council should closely monitor the coming review of the biodiversity legislation to see if more user friendly mechanisms can be developed for offset purchases as another tool to equitably grow the area of high biodiversity land under active private conservation.
- **Environmental Levies:** In some Council areas with high environmental values, residents have been amenable to paying a levy for additional management costs of protecting these values. In areas like Gold Coast hinterland, Queensland, protection of iconic koalas is supported by ratepayers. This can be used in marketing the area to tourists and a source of pride for residents.

6.2 LAND USE PLANNING STRATEGIES

6.2.1 Recommended strategy on environmental zones

Council has resolved not to utilise E3 zone and to limit E2 zone usage to high sensitivity wetlands.

Provided the overlays related to native vegetation and waterways are retained, Council's position is supported. However, it must be noted that State Government agencies may have a different view on the use of E zones and during the subsequent LEP amendments may seek further use of the E zones.

6.2.2 Recommended strategy on environmental overlays

Council to retain the following overlay maps in the rural areas:

- Native Vegetation (replacing the current Terrestrial Biodiversity Overlay);
- Wetlands, Riparian Lands and Watercourses Map; and
- Acid Sulfate Soils map.

The Native Vegetation map to be based on extent of native vegetation outlined in Map 1. It should not distinguish the various categories of habitat or vegetation.

The Native Vegetation overlay should not depict the habitat corridors defined in the OEH mapping program. Corridor planning can be addressed in the Regional Plan and through the development assessment and Planning Proposal phases.

6.2.3 Planning agreements and conservation agreements

6.2.3.1 Action through Development Applications

Council might seek that developers of rural land such as rural and rural residential subdivisions enter into Planning Agreements under Section 93F *Environmental Planning and Assessment Act 1979*, to conserve remnant biodiversity lands and corridors. Such land can still be retained in private ownership but might be the subject of a formal Conservation Agreement (*National Parks and Wildlife Act 1974*).

Encourage additional species specific policies (such as Broulee yellow-bellied glider policy) to underscore the special requirements of these species to developers, and the requirement to incorporate or otherwise protect area of habitat value for this species within or adjacent to development sites.

Asset Protection Zones (APZs) for bushfire management and protection should be encouraged to be contained within lots and not extend into adjoining forest lots – the landowner should take the responsibility for developing their lot appropriately, including the management of all land, be it for biodiversity protection or bushfire risk mitigation, within their own properties.

Council could adopt a policy on offsetting. The uptake on bio-banking has been low to-date because it has been a voluntary process for smaller developments in areas where the native vegetation act doesn't apply. There are many benefits for Councils and landowners in receiving an income to manage land for biodiversity. Some Councils have adopted policies

to encourage offsets as standard practice. Increasing consent expectations regarding how a DA offsets its impacts could have benefits.

6.2.3.2 Action through Rezoning

As part of Planning Proposals to rezone rural lands for more intensive uses (such as Rural Residential or tourist developments) Council might require high conservation value lands to be placed under a formal Conservation Agreement similar to 6.2.3.1 above.

6.2.3.3 Rate relief incentives

Most Local Councils have very limited discretionary funds, especially in NSW where rate pegging controls are in force on Council income. The legislation surrounding Conservation Agreements and similar programs, allows for rate relief but leaves the discretion with the Local Council as to whether to grant such relief.

It is unlikely Eurobodalla could fund a large program of relief but, if Council sees the further protection of biodiversity and landscape values as being a high priority for tourism and general regional wellbeing, then perhaps a small annual fund or similar Council program might be developed where owners who commit to a conservation agreement over high value biodiversity or landscape lands, perhaps get a one-off rate reduction to, say, assist with fencing or other capital works associated with the Conservation Agreement Area.

6.2.3.4 Philanthropic gestures

Quite a number of landowners across NSW have voluntarily entered into Conservation Agreements as a type of philanthropic gesture towards the long term future of their local area's biodiversity. The Office of Environment and Heritage encourages such owners to come forward. Council might help promote the access to Conservation Agreements so that the notion of philanthropic gestures to protect the Shire's biodiversity perhaps gains wider appreciation/acceptance across the community.

To facilitate this, it may be worthwhile that the Council liaise with real estate agents who often are the best contact point with potential/prospective land buyers, to gauge the level of interest in the community for prospective property buyers to enter into such agreements, and how purchasers of such land may develop a greater interest in entering into agreements.

6.3 EDUCATION STRATEGIES

- Many landholders are conserving biodiversity on their lands as a matter of choice. Some have been doing so for generations. Council might provide awards and recognition for properties with conservation plans and demonstrated protection activities. Sponsors might be sought and formal nominations requested annually for an award.
- Council might work with Local Lands Services to further encourage landholder programs to improve biodiversity:
 - open days to understand issues like weed management, native pasture management, threatened species that may be in an area;
 - provision of tube stock and tree guards to encourage planting corridors of appropriate species in sensitive locations (riparian corridors, wildlife corridors); or
 - provision of nest boxes to supplement natural hollows in key areas.
- Council might expand its good neighbour programs where there is interaction with neighbours of natural Council areas and reserves to achieve mutual biodiversity enhancement – from pest/weed control to corridor improvement.
- Council might provide additional interpretation and boardwalks in areas of natural value to increase understanding of importance of natural areas.

Appendix 1: Extract from the Draft Illawarra Regional Growth Plan – relating to Biodiversity

6

MANAGING THE ILLAWARRA'S ENVIRONMENT AND HERITAGE

The Illawarra is fortunate to have many unique environmental and heritage features which contribute to an attractive lifestyle for residents, and which provide tourism and recreational opportunities that help to enhance the economy.

Our draft Plan for the Illawarra acknowledges the conservation and tourist values of these environment and heritage assets and the importance of protecting biodiversity at the regional and local level.

Our focus is on where the Regional Growth and Infrastructure Plan can influence significant regional environmental and heritage outcomes, as well as give direction to Councils on the management of these issues at the local level.

The Illawarra Region is one of the most biologically diverse in NSW. It supports both high conservation value terrestrial and aquatic biodiversity. These values provide the basis for the Region's tourism and recreation, and provides significant scenic amenity for its residents.

The Region has major hazards such as flooding, coastal inundation, bushfire and sea level rise; with a changing climate likely to present new longer term challenges to our environment. Protection of key environment and heritage assets, and protection from and mitigation of natural hazards, are important issues that need to be considered at the State, regional and local level. Our draft Plan for the Illawarra provides an opportunity to focus on regional opportunities to protect key environment and heritage assets.

A strategic approach to the planning for environment and heritage protection

An enduring criticism of the interaction of development assessment and environment or heritage protection processes is that they do not provide a strategic approach to land use planning and are often reactive. Our draft Plan for the Illawarra recognises that a more strategic approach to identifying key environment and heritage assets is needed so that councils can ensure their planning controls avoid and minimise the impact of development on significant areas.














The Office of Environment and Heritage has mapped key environmental and heritage values across the Region based on the criteria set out below:

- existing conservation areas: including national parks and reserves, declared wilderness areas, marine parks, crown reserves dedicated for environmental protection and conservation, and flora reserves
- native vegetation of high conservation value: including vegetation types which have been over-cleared or occur within over-cleared landscapes; old growth forest, and rainforest
- threatened species, populations and ecological communities or their habitats
- major rivers and streams and their riparian areas; Important wetlands; and coastal lakes and estuaries.

Other important heritage values include:

- Aboriginal heritage, including Aboriginal places, Aboriginal objects, and cultural landscapes
- non-Aboriginal heritage, including places and sites listed on the NSW Heritage Inventory.

Legend

	Reserves		Major Highways
	High Environmental Values		Railway Line
	Biodiversity Corridor		Regional City
	State Forests		Major Regional Centre
	Sydney Catchment Authority		Major Town
	Marine Park		Town
	Mineral Resources		

Disclaimer

The map is recommended for use at a regional planning level and gives an indication of relative biodiversity values at this scale. While this data may provide an indication of relative biodiversity significance at the local level, users should be aware that the data has limitations including those of scale and positional accuracy of attributes.



Councils will be required to utilise this map when undertaking local strategic planning so that areas identified for new or more intensive development can be located so that the potential impacts on environment and heritage values are avoided or mitigated. Where it is not possible to avoid impacts, Councils will be required to consider how the impacts can be best managed through particular planning controls or other environmental management

mechanisms. Our draft Plan for the Illawarra also identifies that it may be necessary to pursue development that could impact on key assets and in these areas, such as in West Dapto, offset mechanisms such as biodiversity certification may be necessary.

Councils will also be expected to ensure existing environmental protections in local plans are maintained.

	ACTION	RESPONSIBILITY	TIMING
6.1	<p>Local plans will be prepared using key environment and heritage assets (as mapped) to:</p> <ul style="list-style-type: none"> avoid and minimise the impact of development on key assets and where not possible, consider appropriate offset or other mitigation mechanisms maintain existing environmental protections for key assets 	<p>Wollongong City Council; Shellharbour City Council; Kiama Municipal Council; Shoalhaven City Council</p>	<p>Ongoing</p>

Protecting the Illawarra Biodiversity Corridor

The *Illawarra Biodiversity Action Plan 2011* and work done by the Office of Environment and Heritage under the *South Coast Regional Conservation Plan* have identified key regional biodiversity corridors in the Illawarra which run from the Woronora Special Area in the north, along the escarpment south and connect to the corridor around Jervis Bay and south to beyond Ulladulla. These include a number of important east-west links between coastal parks and forests, and the hinterland. Maintaining and improving these corridor values is important to ensure they protect and enhance ecological connections and the movement and dispersal of plants and animals.

Identifying environmental corridors that expand upon and provide linkages and pathways between different areas of habitat is a critical step in securing ecological connectivity and long term viability. These corridors incorporate many different values including a diversity of vegetation types across different landscape features including the escarpment, foothills and coastal plain; habitat for a range of threatened and non-threatened fauna and flora, and threatened ecological communities.

The Illawarra Escarpment is a defining feature of the Illawarra Biodiversity Corridor, especially in the north of the Region. Vegetation on the foothills and coastal plain of the Illawarra is more dispersed and vulnerable. Due to the historic loss of vegetation through agricultural uses and settlement, many of the plant communities on the coastal plain have high conservation value, or are listed as Threatened Ecological Communities. Some of these communities, such as Illawarra Subtropical Rainforests, Illawarra Lowlands Grassy Woodland are only found in the

Illawarra Region. Accordingly, they have very high conservation priority for the Region. The Region also contains significant habitat for a number of threatened flora and fauna species.

The pressures of population growth, fragmentation of landholdings and increasing urban development and invasive species have the potential to threaten the landscape connections in the Region.

While the biodiversity corridors identified represent important biodiversity links within the Region, they can support mixed uses where those impacts can protect or improve the corridor values. For example, the areas identified for Dunmore Hills and Yallah Corridor are also identified for extraction and urban development. Opportunities to maximise and improve the conservation of the corridors will be considered through the planning process for development of these areas.

	ACTION	RESPONSIBILITY	TIMING
6.2	Clarify the location of the corridor and the important environmental values that need to be protected	Office of Environment and Heritage; Wollongong City Council; Shellharbour City Council; Kiama Municipal Council; Shoalhaven City Council	Short
6.3	Local Plans should aim to protect the lands identified within the Illawarra Biodiversity Corridor while also having regard to other land uses in the corridor including extraction and urban development	Wollongong City Council; Shellharbour City Council; Kiama Municipal Council; Shoalhaven City Council	Ongoing

Protecting biodiversity in new release areas

Protecting biodiversity assets is an important consideration as the Region grows, particularly in new release areas such as West Dapto and Nowra-Bomaderry.

Biodiversity certification gives planning authorities the option to integrate biodiversity conservation with proposed development outcomes at the strategic planning stage. It looks at development and environment planning at the landscape scale and ensures that new development will improve or maintain biodiversity values. It encourages development to be located away from areas of high conservation value and enables these areas to be protected in perpetuity. However, where impacts to biodiversity values are unavoidable, those impacts are offset by applying conservation measures to land identified for biodiversity protection.

If biodiversity certification is conferred on an area, individual development applications are not required to assess impacts on biodiversity values and threatened species. This is because the issue has been addressed at a strategic scale, saving time and money. The process assures housing outcomes while also protecting biodiversity values.

Working cooperatively, Wollongong Council, the Department of Planning and Environment and the Office of Environment and Heritage will continue to progress biodiversity certification for the West Dapto urban release area. In the next twelve months, a detailed package will be brought forward that will set out the areas available for development, the areas identified for protection and the offset areas and potential funding mechanisms, which may include a levy.

In the Shoalhaven, the planning for new release areas at Nowra-Bomaderry did incorporate a strategic approach and it was identified that biodiversity certification wasn't needed over all release areas. However, recording the processes, outcomes and justifications showing how biodiversity planning for the release areas generally achieved a maintain or improve outcome will be important so that the issue does not need to be repeated with every development application.

The Nowra-Bomaderry Structure Plan has already identified the areas that require clearing and the areas of high value vegetation that have been protected through zoning. We will continue to work with Shoalhaven Council and the Office of Environment and Heritage to determine the best way to identify the natural biodiversity in these areas and whether broader or more specific offsetting strategies are needed for places like Mundamia or Cramms Road release area.

More broadly, when Councils are considering the rezoning of new release areas, particularly in the southern part of the Region, they will be expected to ensure a clear and comprehensive understanding exists of the biodiversity values of the area. While the protection provided by the *Threatened Species Conservation Act* continues to apply, Councils should avoid putting pressure on areas with threatened species unless there is a means identified to minimise or improve biodiversity and habitat values.

	ACTION	RESPONSIBILITY	ACTION
6.4	Continue with biodiversity certification for West Dapto.	NSW Office of Environment and Heritage; Wollongong City Council	Short
6.5	Record the processes, justifications and biodiversity outcomes in the planning of Nowra-Bomaderry land releases	NSW Office of Environment and Heritage; Shoalhaven City Council	Short
6.6	Protect key environment and heritage assets when rezoning land	Wollongong City Council; Shellharbour City Council; Kiama Municipal Council; Shoalhaven City Council	Ongoing

Supporting the continued health of coastal landscapes

The Region includes a number of important coastal lakes and lagoons, significant coastal wetlands, sensitive estuaries and the protected waters of Jervis Bay. The catchments of these lakes and estuaries need to be appropriately managed to avoid impacting on their aquatic habitats. Vulnerable estuaries and coastal lakes that require environmental protection include:

- Bellambi Lake
- Berrara Creek
- Burrill Lake
- Butlers Creek
- Currarong Creek
- Elliot Lake
- Fairy Creek
- Lake Illawarra
- Lake Wollomboola
- Meroo Lake
- Narrawallee Inlet
- Nerindillah Creek
- Shoalhaven River
- Spring Creek
- St Georges Basin
- Swan Lake
- Tabourie Lake
- Termeil Lake
- Towradgi Creek
- Werri Lagoon
- Willinga Lake
- Wowly Gully

The environmental, social and economic values of the Region's lakes, estuaries and rivers can be affected by over-extraction of water, contamination, and conflicting land uses such as urban expansion.

Lake Illawarra

Lake Illawarra is one of the largest coastal lake estuaries in NSW with a 37-kilometre foreshore. The lake is a popular destination for fishing, prawning and sailing. There are several caravan parks located on the foreshores of the lake, and visitation numbers increase significantly during school holiday periods.

Given the planned urban growth in the lake's catchment, there is potential for water quality issues and increased pressure for recreational uses and foreshore access to the lake, particularly on the western side.

To help support and manage potential impacts, the Environment Protection Authority and the Office of Environment and Heritage have developed a risk-based decision framework to integrate water quality outcomes in the strategic planning process. This approach uses contemporary catchment and ecosystem response modelling to help identify where priorities for investment should be made within the catchment.

The framework allows different development scenarios to be modelled to identify the potential impact on waterways. The potential risks to waterway health can then be considered as part of a broader strategic impact assessment. Where necessary, practitioners can assess the performance of various combinations of land use scenarios and stormwater treatment levels, against agreed management objectives.



Source: Shoalhaven City Council

Shoalhaven Sensitive Urban Lands

The Sensitive Urban Lands Panel was set up by the NSW Government in 2006 and has guided the planning outcomes for seven potential urban development sites in sensitive coastal locations within Shoalhaven (Culburra Beach, Badgee Lagoon, Comberton Grange, Berrara, North Bendalong, Bendalong, Berringer Lake/Manyana). The Panel's recommendations have been reflected in planning that is either finalised or substantially progressed for all but one site – the Culburra Beach site.

The Culburra Beach development site contains land within the catchment of Lake Wollumboola. The lands within the catchment are considered unsuitable for urban development because of potential negative impacts on the Lake, which is a sensitive intermittently closing and opening lake with very high conservation values.

The Office of Environment and Heritage has also completed a study on the Environmental Sensitivity of Lake Wollumboola. Its report will form part of the consideration of development proposals at Culburra and potential implications on Lake Wollumboola.

The outcomes and recommendations of the Sensitive Urban Lands Review and the report on the environmental sensitivity of Lake Wollumboola will guide future development proposals within the Lake Wollumboola catchment.

It will be important for any future planning proposals in this area to protect the environmental values of Lake Wollumboola. This may require strong environmental zonings and other appropriate provisions in a Local Plan.

The Sensitive Urban Lands Review will continue to guide land use planning decisions for the sites yet to be finalised as well as any future planning proposals within the seven sensitive coastal locations.

	ACTION	RESPONSIBILITY	TIMING
6.7	Local Plans should ensure the ongoing protection of vulnerable estuaries and coastal lakes from inappropriate development types	Wollongong City Council; Shellharbour City Council; Kiama Municipal Council; Shoalhaven City Council	Ongoing
6.8	Outcomes of the risk-based decision framework to integrate water quality outcomes in the strategic planning process will be implemented by Councils through planning and infrastructure programming of development sites within Lake Illawarra catchment	Wollongong City Council; Shellharbour City Council	Short/ Medium
6.9	Continue to implement the recommendations of the Sensitive Urban Lands Panel, including guiding the development form and environmental management of Lake Wollumboola	Department of Planning and Environment; NSW Office of Environment and Heritage; Shoalhaven City Council	Short

Supporting the protection of Aboriginal cultural heritage

The Illawarra has a rich and diverse Aboriginal history. Previous Aboriginal cultural heritage studies within the Region have identified a large and diverse range of Aboriginal sites, including sites with high scientific and cultural values. Because of the richness of Aboriginal heritage in the Region, it is inevitable that urban growth and development will impact on existing and yet to be identified cultural heritage sites and places. The loss of cultural heritage can be distressing to Aboriginal people, particularly the loss of, or damage to, places of cultural significance. There is a need for effective mechanisms for Aboriginal people to be consulted in regard to their heritage.

The *National Parks and Wildlife Act 1974* (NPW Act) provides for the statutory protection of Aboriginal objects and Aboriginal places. The objects generally protected by the NPW Act are archaeological sites with tangible evidence of pre-contact presence.

Harm to Aboriginal objects and places and areas of significance to Aboriginal people should be avoided wherever possible. Where such harm cannot be avoided, proposals that reduce the extent and severity of this harm should be developed in accordance with relevant statutory processes.

In the Illawarra, the assessment of Aboriginal cultural heritage is most relevant where there are growth pressures associated with the development of new release areas such as those in West Lake Illawarra and Nowra-Bomaderry, or when there is a rezoning of land to allow for more intensive development.

Navigating the process to ensure that Aboriginal cultural heritage is fully considered and protected through the development of new release areas is often complex and challenging. In West Dapto for example, significant investigations have been undertaken across the release area to determine areas of particular risk for Aboriginal cultural heritage.

Outcomes of these investigations, which followed relevant Office of Environment and Heritage guidelines, require different levels of additional investigations depending on the values of particular parcels of land. For some parts of the release area, there is a low risk of Aboriginal heritage values and no additional work is required, while in other areas, there is a need for additional detailed studies to manage high risk areas.

There is a need to provide clarity about what the outcomes of this work means for individual development areas within West Dapto and to guide the development of more detailed precinct and neighbourhood plans. This would identify triggers for the appropriate assessment process, and when each part of the process should be completed.

	ACTION	RESPONSIBILITY	TIMING
6.10	Develop an Aboriginal cultural heritage process map to clarify and guide the additional investigations for the development of precinct and neighbourhood plans in West Dapto	NSW Office of Environment and Heritage; Department of Planning and Environment	Short

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