NEFA Submission to:
Northern Councils EZone Review Interim Report

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The Local Government areas of Tweed, Byron, Ballina, Lismore and Kyogle encompass the spectacular volcanic remnants of the Tweed Shield Volcano, centred on Mount Warning, and the Focal Peak Shield Volcano, centred near Mount Barney. The volcanic ranges support rainforests, and the sedimentary soils of the valleys eucalypt forests and wetlands. Heathlands, swamps, melaleuca wetlands, saltmarshes and mangroves characterise coastal vegetation.

These Local Government areas are part of "Border Ranges North and South", one of Australia's 15 outstanding biodiversity hotspots, areas which are rich in biodiversity but also under immediate threat. The supporting information states:

> *This sub-tropical and temperate hotspot is one of Australia's most diverse areas - and it is* the *most biologically diverse area in New South Wales and southern Queensland. It has a variety of significant habitats: subtropical rainforest, wet sclerophyll forest, mountain headlands, rocky outcrops and transition zones between forests.*
>
> *These habitats support a huge variety of bird and macropod species. Many are rare or threatened …*
>
> *This region's high population growth, with associated urban and tourist developments along the coast, is a major cause of habitat loss and fragmentation. Although most remaining natural areas are protected, they are under considerable threat from weeds, fire and recreational use.*

The rainforests of the area are of international significance as evidenced by the inclusion of many of the National Parks in the World Heritage Gondwana Rainforests of Australia, with more recent national parks identified as qualifying for addition. The Big Scrub once covered 75,000ha and was Australia's largest area of subtropical rainforest. It is estimated that there is now only some 664 ha of the Big Scrub remaining as small fragments scattered across its former distribution.

As well as being identified as one of Australia's biodiversity hotspots, these landscapes have been branded as Australia's Green Cauldron, a centrepiece of national tourism as one of Australia's15 'National Landscapes' – *"places that capture the essence of our country - our most inspirational environments offering world class natural and cultural experiences"*. Tourism is a major driver of the regional economy.

The region has been extensively cleared, particularly floodplain and lowland vegetation. The review by Smith and Siversten commissioned by DLWC (2001) considers that in regions that have between 15% to 40% of their native vegetation remaining, the biodiversity will suffer

"Rapid decline as connectivity and minimum habitat requirements are exceeded". They summarise work that showed:

> *"In landscapes where less than 30% of habitat remained the loss of species was disproportionate to the amount of habitat that is lost. Andren argued that the rate of species loss greatly accelerates after this indicative threshold is exceeded and that every corresponding loss of habitat in highly fragmented landscapes has a disproportionate affect on species diversity. …"*
>
> *"This accelerated loss continues until a point is reached at which only those native species that can survive in the agricultural or urban landscapes remain, the so-called matrix species".*
>
> *"The decline in biodiversity, resulting from habitat loss, often continues for many decades or even centuries after the major disturbance has occurred."*

The goal established by Smith and Siversten (DLWC 2001) for regions that have suffered the level of loss of native vegetation experienced by this region is:

> *"For regions or landscapes that have been developed to the extent that they have suffered or risk major biodiversity (and ecological infrastructure) decline, that no further clearing take place and that major revegetation works be undertaken. Such regions or landscapes to be returned to at least 50% native vegetation cover in all provinces and a biodiversity level above the Phase 2 decline point."*

The Border Ranges Rainforest Biodiversity Management Plan (2010) identifies that:

> *Currently a relatively small area of private and public land (less than one per cent) within the Planning Area is protected to varying degrees under a range of voluntary conservation covenants including Land for Wildlife, wildlife refuges, nature refuges or local government environmental protection zoning arrangements.*

There is a need to increase the area of native vegetation, maintain and enhance linkages between remnant areas, and to ensure the retention and enhancement of remnant vegetation. It is particularly important to identify the high conservation value vegetation and habitats remaining in the region and ensure they are appropriately zoned.

The EZone Review proposes that Extensive Agriculture should be permitted with consent in E2 zones. Extensive Agriculture includes production of crops or fodder, grazing, bee keeping and dairying. The Review notes "*additional local provision should require extensive agriculture within the E2 Zone to identify and manage the potential impacts of that land use on the environment".* Extensive Agriculture is likely to be incompatible with many of the values being protected in the E2 zone and should not be allowed in those areas.

It is important to recognise that "existing use" rights prevail, such that any existing lawful activity can continue irrespective of any rezoning. As stated in the EZone report, If an existing lawful use is carried out on land and a new LEP is introduced that makes that land use prohibited, nothing in the EP&A Act or an environmental planning instrument (EPI) prevents the continuance of that use.

Byron is the only one of the northern Councils applying an E4 Zone. The objective of the E4 Zone is to "*to provide for low-impact residential development in areas with special ecological, scientific or aesthetic values and to ensure that residential development does not have an*

adverse effect on those values". The EZone Review recommends that *"instead of opting for a blanket E4 Zone, the use of a Tree Preservation Order under clause 5.9 of the SILEP to protect sensitive vegetation within urban areas may be a suitable and effective option".* The concept of an E4 zone is supported and should be retained as a zoning option.

The EZone Review recommends "*The DP&I should consider providing assistance to Kyogle Council to undertake a comprehensive biodiversity strategy".* Vegetation mapping is still incomplete in Lismore and needed in Kyogle, and in need of review and enhancement elsewhere.

The NSW Government needs to assist all Councils to complete accurate and consistent vegetation and core Koala habitat mapping across the region. The NSW Government needs to take responsibility for identification and mapping of wetlands and endangered ecological communities. Providing particular assistance to Kyogle to undertake a Biodiversity Strategy is supported.

Contents

1. ALLOCATION OF ENVIRONMENTAL VALUES TO E ZONES AND OVERLAYS

In general we welcome the support for protecting high conservation value native vegetation in E zones given in the review. The EZone Review recognises that *"where high conservation value features or other 'special' features occur in each council, they should be mapped and zoned appropriately as an EZone"*.

Practice Note PN 09-002 (Environmental Protection Zones) states that:

> *The environment protection zones E2 through to E4 are applied where the protection of the environmental significance of the land is the primary consideration. Their importance for visitation, tourism and job creation should also be carefully considered.*
>
> *Prior to applying the relevant zone, the environmental values of the land should be established, preferably on the basis of a strategy or from an environmental study developed from robust data sources and analysis. This is particularly important where land is identified as exhibiting high ecological, scientific, cultural or aesthetic values outside national parks and nature reserves. For example, in most cases, council's proposal to zone land E2 needs to be supported by a strategy or study that demonstrates the high status of these values. Under such a strategy or study, zoning would need to be appropriate and land uses would need to be capable of being sustained.*

The Far North Coast Regional Strategy includes the following actions.

> *Local environmental plans will protect and zone land with State or regional environmental, agricultural, vegetation, habitat, waterway, wetland or coastal values*
>
> *Local environmental plans will identify and zone land of landscape value (including scenic and cultural landscapes) to protect those values.*
> *Local environmental plans will include provisions to encourage habitat and corridor establishment in future zoning of Environmental Assets and Rural Land area.*
>
> *New development adjoining or adjacent to farmland, extractive resources, waterways, wetlands and areas of high biodiversity value will incorporate buffers to avoid land-use conflict.*
>
> *Local environmental plans will not rezone land within town water supply catchments and significant groundwater areas if this has the potential to reduce the quality and quantity of these assets*

The Far North Coast Regional Conservation Plan (DECCW 2010) emphasises "*As outlined in this RCP and in the FNCRS, areas of validated high conservation value land should be protected in new LEP provisions"*.

The EZone Review considers that:

> *With the exception of Kyogle Council and Tweed SC, a consistent approach has been taken to the use of supporting documents and information to guide development of the LEPs. Byron SC was the only council to base the EZones off a*

detailed LGA wide biodiversity strategy. Ballina SC and Lismore CC are preparing biodiversity strategies at the time of this review.

DEP identifies the E2 zone is to be for:

This zone is for areas with high ecological, scientific, cultural or aesthetic values outside national parks and nature reserves. The zone provides the highest level of protection, management and restoration for such lands whilst allowing uses compatible with those values

DEP identifies the E3 zone is to be for:

This zone is for land where there are special ecological, scientific, cultural or aesthetic attributes or environmental hazards/processes that require careful consideration/management and for uses compatible with these values.

The EZone review proposes to allocate specific zones to specific environmental values, that can be summarised as

E2 :SEPP 26 Littoral Rainforests, SEPP 14 Wetlands, areas of habitat for threatened species, EECs, over-cleared (>70%) vegetation communities, over-cleared (>70%) Mitchell Landscapes, culturally significant Aboriginal sites

E3: rainforest, oldgrowth forest, wetlands, riparian vegetation, mangroves, saltmarsh, rare, endangered and vulnerable forest ecosystems, vegetation on coastal foreshores and land subject to coastal hazards, native vegetation on land at risk of severe erosion and landslides, vegetation that is critical to watershed protection

Environmental Overlays: Drinking water catchments, scenic escarpments, coastal risk lands, areas of terrestrial biodiversity, camphor laurels, Koala habitat (identified in a PoM), buffers to streams, wetlands, rainforests, and estuaries

This submission focuses on the key environmental values identified in various processes, and considers their appropriate allocation in light of the EZone review recommendations. The Byron Shire Council (2004) Biodiversity Conservation Strategy is used as a reference for current protection. It is apparent that many of the values ascribed in the E zone review to E3 are *areas with high ecological, scientific, cultural or aesthetic values* and thus should be more properly assigned to E2. A variety of additional vegetation and habitat attributes are identified. These additions are not comprehensive.

The EZone Review's proposed allocation of environmental attributes to zones is not consistent with the ecological values of many attributes, and is often contrary to the recommendations of regional strategies and plans, such as the Far North Coast Regional Strategy, the Far North Coast Regional Conservation Plan, the Border Ranges Rainforest Biodiversity Management Plan and the Northern Rivers Regional Biodiversity Management Plan.

In summary, the proposed allocations of environmental values is (those underlined are proposed for increased protection, with those bolded are additional values to those considered in the review):

E2: <u>All rainforests</u>, <u>oldgrowth forest</u>, **<u>identified wilderness</u>**, <u>all wetlands</u>, areas of habitat for threatened species, <u>Koala habitat (identified in a PoM)</u>, EECs, over-cleared (>70%) vegetation communities, over-cleared (>70%) Mitchell Landscapes,

riparian vegetation, mangroves, saltmarsh, rare, endangered and vulnerable forest ecosystems, **heathlands, shorebird roosting & nesting sites, sand dunes & beaches,** culturally significant Aboriginal sites, **vegetated Wildlife Corridors,** vegetated Drinking Water Catchments, **poorly reserved ecosystems**.

E3: vegetation on coastal foreshores and land subject to coastal hazards, native vegetation on land at risk of severe erosion and landslides, vegetation that is critical to watershed protection, vegetated scenic escarpments, unvegetated Drinking Water Catchments

New Coastal risk lands zone: coastal risk lands,

Environmental Overlays: **cleared Wildlife Corridors**, unvegetated scenic escarpments, other areas of terrestrial biodiversity, buffers to streams, wetlands, rainforests, and estuaries

2. ENVIRONMENTAL VALUES

Key environmental values proposed for upgrading or addition to Ezones are detailed below. This is not a complete list, and does not include those that are not proposed for a change in status from that recommended.

Some of the attributes are poorly defined, such as "areas of habitat for threatened species". Byron's Biodiversity Strategy identifies an array of values which contribute to this requirement, such as 'Significant animal habitats', 'Grey – headed and Black Flying Fox maternity/roost sites', 'Threatened animal species', 'Significant Byron Shire flora habitats', and 'Rare and Threatened plant locations' (Appendix 1). It is assumed that all these values are encompassed by 'areas of habitat for threatened species' and thus included in E2. Such values are thus not discussed.

2.1. Rainforest

Rainforests have long been recognised as being of particular biodiversity, environmental and social significance. Numerous inquires and assessments have concluded they should be protected.

In the region covered by Kyogle, Ballina, Byron and Tweed Councils are some of the most important rainforests in the world. Many of the National Parks are included in the World Heritage Gondwana Rainforests of Australia, and most of the more recent parks have been identified as qualifying for listing. World Heritage quality rainforests extend onto private properties. The Big Scrub once covered 75,000ha and was Australia's largest area of subtropical rainforest. It is estimated that there is now only some 664 ha of the Big Scrub remaining as small fragments scattered across its former distribution. The region's lowland rainforests are identified as the Critically Endangered Lowland Rainforest of Subtropical Australia.

The Border Ranges Rainforest Biodiversity Management Plan (2010) recognises *"Rainforest and related vegetation throughout the Planning Area has been significantly degraded and fragmented, particularly in lower elevation areas. The extent of decline at the landscape level makes it imperative that all remaining areas of rainforest and related vegetation are managed for their conservation values and, where possible, restored toward self-sustaining systems"*. The Border Ranges Rainforest Biodiversity Management Plan (2010) has as actions:

> *Ensure that adequate planning controls, such as environmental zonings and development control plans, are included in environmental planning instruments and schemes to protect areas of rainforest and related vegetation ...*
>
> *Ensure that the likely impacts of developments and activities adjacent to rainforest and related vegetation are fully assessed and appropriate buffers included.*
>
> *Ensure that landuse objectives for local environment plan environmental zones (for the types of activities permissible) are compatible with the long-term protection and management of rainforest and related vegetation, including corridors, buffers, and ecological restoration activities*

The Far North Coast Regional Conservation Plan (DECCW 2010) recognises *"several categories of biodiversity values are considered to warrant special priority for conservation through legislation or Government policy", ..." Vegetation types considered to be of high conservation value for their biodiversity and support of threatened species include" ... "all types of rainforest".*

The EZone Review recommends that *"all types of rainforest other than SEPP 26 mapped areas"* be included in E3. Only SEPP 26 littoral rainforest is recommended for E2.

All remaining rainforests are of high conservation value and should be zoned E2.

2.2. Rare, endangered and vulnerable forest ecosystems

For the purposes of the national reserve criteria (JANIS 1997), rare ecosystems are taken to be of limited extent, vulnerable ecosystems have less than 30% of their original distribution left, and an Endangered ecosystem is one with less than 10% of its original distribution left. These have been identified in all CRA regions. The national reserve criteria (JANIS 1997) specify that *"All remaining occurrences of rare and endangered forest ecosystems should be reserved or protected by other means as far as is practicable".*

The Far North Coast Regional Conservation Plan (DECCW 2010) recognises *"several categories of biodiversity values are considered to warrant special priority for conservation through legislation or Government policy", ..." Vegetation types considered to be of high conservation value for their biodiversity and support of threatened species include" ... "JANIS rare, endangered and vulnerable forest ecosystems".*

The EZone Review considers that the E3 zone should include *"Land identified within a validated spatial dataset comprising areas of rare, endangered and vulnerable forest ecosystems based on criteria defined by the Joint ANZECC/MCFFA National Forest Policy Statement Implementation sub-committee (JANIS) (Commonwealth of Australia 1997)*".

Ecosystems identified as rare, vulnerable or endangered in accordance with national criteria should be given the highest protection in E2 zones.

2.3. Poorly Reserved Forest Ecosystems

The North East Regional Forest Agreement identifies (NERFA Appendix 2) poorly reserved ecosystems that are “Private Land priorities for the North East CAR Reserve System”. 63 ecosystems are recognised in the Upper North East

The Far North Coast Regional Conservation Plan (DECCW 2010) recognises ‘Under-target forest ecosystems (less than 15% of original distribution in reserves)’ as being of regional significance, noting *“The FNCRS states that land with State or regionally significant values should be protected and zoned”*. The Byron Biodiversity Strategy (2004) identifies ‘Adequacy of reservation’ as a criterion, with “Currently very poor. > 60 % needs to be reserved to meet reservation targets” identified as very high ecological value (Appendix 1).

Poorly reserved ecosystems should be included in E2.

2.4. Heathlands

Heathlands are dominated by flowering shrubs and herbs typical of infertile or waterlogged sites. The copious amounts of pollen and nectar they produce provide key seasonal resources for a diverse array of nectar-feeding birds and mammals, which also feed on insects drawn by the abundant flowers.They are of high biodiversity value and have high aesthetic appeal when flowering. .Byron's Biodiversity Strategy identifies them as being of relatively high ecological value (Appendix 1). They are not considered in the EZone Review.

Heathlands should be included in the E2 zone.

2.5. Mangroves, saltmarsh

Around estuaries and in protected bays saltmarsh, mudflats and mangroves dominate the interdidal zone. Mangroves are nurseries for economically important fisheries and provide habitats for a large number of species. They filter and trap pollutants and stabilize coastal land by trapping sediment and providing protection against storm damage. Coastal salt marshes usually occur landward of mangroves in areas sheltered from strong wave action. They characterised by salt tolerant herbs, grasses or low shrubs interspersed with bare saltpans. Saltmarshes are important and productive ecosystems that have been recognised as an Endangered Ecological Community in NSW.

Mangroves and saltmarshes are recognised as being of very high conservation value and should be included in E2 zones.

Planning for management of mangroves and saltmarsh when sea-levels are expected to rise over a metre this century and continue into the foreseeable future, requires managing for recession reserves that they can move into in response to rising sea-levels. The Northern Rivers Regional Biodiversity Management Plan includes as an action:

> *Identify areas that allow for wetland and saltmarsh habitats to migrate inland and re-establish as a result of rising sea levels impacting existing areas.*

2.6. Wetlands

The NSW Wetlands Policy documents the importance of wetlands. The Natural Resources Commission of NSW has defined 'important wetlands' as being those listed under the Ramsar Convention or in the *Directory of important wetlands of Australia* (Natural Resources Commission 2005). The NSW Wetlands Policy confirms these as wetlands of particular importance, also identifying as significant "*State environmental planning policy no. 14 – Coastal wetlands (SEPP 14) and others listed as endangered ecological communities under the Threatened Species Conservation Act 1995".* The Policy also focuses on wetlands of *"regional significance, for example, sites identified by regional organisations dealing with natural resource management in consultation with their communities".*

The Far North Coast Regional Conservation Plan (DECCW 2010) identifies 'primary wetlands (forest and non-forest)' as being of state significance, noting *"The FNCRS states that land with State or regionally significant values should be protected and zoned"*. It elaborates *"Significant aquatic habitats, including nationally important wetlands, habitat of migratory wetland species, ICOLLs and their catchments".*

The Far North Coast Regional Conservation Plan (DECCW 2010) notes:

> *Riparian corridors provide a natural network of connectivity through the landscape, improve stream bed and bank stability, and enhance vegetation and ecosystem qualities, including improved water quality. As a general principle for planning purposes, DECCW advocates a 50-metre riparian zone on either side of the watercourse protected from development or clearing. This cannot be satisfactorily mapped at regional scale, but councils are encouraged to develop local provisions with an accompanying map in their EPIs that establish protective mechanisms for these riparian zones*

The Northern Rivers Regional Biodiversity Management Plan includes as an action:

> *Encourage local councils to provide appropriate zoning of wetlands in local environmental plans, including provision of buffers to maintain viability and connectivity*

The DPE zoning guidelines identify that the E2 Zone lands should include lands with *"very high conservation values such as ...wetlands".* The E Zone review proposes that the E3 Zone comprise *"areas of riparian, wetland and estuarine vegetation other than SEPP 14 mapped areas"*.

As well as SEPP14 coastal wetlands, all wetlands qualifying as "important wetlands", wetlands listed as EECs, and those identified in regional studies as regionally significant should be provided the highest level of protection in E2 zones. Wetlands identified as being of local significance should at least be included in E3.

2.7. Oldgrowth

Oldgrowth forests are ecologically mature forest where the effects of disturbances are now negligible. The community has consistently recognised oldgrowth forests as precious remnants of the original forest and of the highest conservation value. Their heritage and conservation values are well documented and their protection has been identified in numerous forums. The 1992 National Forest Policy Statement singled out oldgrowth and

wilderness for special consideration *"because of their very high aesthetic, cultural and nature conservation values and their freedom from disturbance".*

The Far North Coast Regional Conservation Plan (DECCW 2010) states:

> *Old-growth forests have been identified as irreplaceable (RAC 1992) and are recognised as having high aesthetic, cultural and nature conservation values. These forests are extremely important in the maintenance of biodiversity and ecological functions. More than 78 species of fauna, including many threatened species, are known to be dependent on tree hollows and other key resources found in old-growth forests*

The DPE zoning guidelines identify that the E2 Zone lands should include lands with *"very high conservation values such as old growth forests".* Byron Shire Council has allocated its mapped oldgrowth to the E2 Zone. The Far North Coast Regional Conservation Plan (DECCW 2010) recognises *"several categories of biodiversity values are considered to warrant special priority for conservation through legislation or Government policy", ..." Vegetation types considered to be of high conservation value for their biodiversity and support of threatened species include" ... "old-growth forest".*

The EZone Review proposes to allocate oldgrowth forest to E3.

Oldgrowth forests deserve the highest level of protection in E2 zones and the wider range of uses allowed in an E3 zone would be detrimental to oldgrowth values.

2.8. Identified wilderness

A wilderness is defined as *"an area, together with its plant and animal communities, in a state that has not been substantially modified by humans and their works or is capable of being restored to such a state".* They are taken to be large areas that remain in a natural state. The protection of wilderness was one of the foundations of the NSW conservation movement and has been recognised as being a rare and declining resource in numerous inquiries.

The importance of wilderness to the community is recognised by the Wilderness Act 1987, National Forest Policy Statement and national reserve criteria (JANIS 1997). The 1992 National Forest Policy Statement singled out oldgrowth and wilderness for special consideration *"because of their very high aesthetic, cultural and nature conservation values and their freedom from disturbance",* stating *"forested wilderness areas will be protected by means of reserves developed in the broad context of protecting the wilderness values of all lands."*

There have been lengthy wilderness investigations. The Far North Coast Regional Conservation Plan (DECCW 2010) recognises 'identified or declared wilderness areas or land of recognised high wilderness quality' as being of state significance, noting *"The FNCRS states that land with State or regionally significant values should be protected and zoned"*.

Given its undoubted very high conservation values and vulnerability to disturbance, wilderness areas as identified by OEH should be included in E2 where they occur.

Wilderness has not been identified on private lands in Tweed, Byron, Ballina, Lismore and Kyogle shires. Though it will be an issue if the recommendations are rolled out elsewhere.

2.9. Coastal risk lands

Coastal risk lands are primarily those lands at risk of erosion and long-term recession as a consequence of wave-erosion and inundation, particularly as a result of sea level rises over this century. Sea-levels are expected to rise over a metre this century and continue into the foreseeable future. On sandy beaches coastal recession can be 70-200metres in response to each metre rise in sea level. The affects of rising sea-levels will impact well up estuaries and those lands at risk need to be considered. Lands at risk have distinct management and planning requirements.

The DPE Guidelines require that the E2 zone include *"coastal foreshores and land subject to coastal hazards, including climate change effects"*. The EZone Review proposes making the coastal risk lands into an overlay, recommending:

> *Ballina SC and Byron SC should amend their SILEPs to address the following matters in relation to coastal risk planning:*
>
> > *a) Provide a Coastal Risk map and relevant clause.*
> >
> > *b) Ensure land that was proposed to be zoned for coastal risk purposes, are designated as 'Coastal Risk'.*
> >
> > *c) Ensure the clause contains appropriate considerations for assessing the risk of development on coastal protection matters, before development consent is granted.*

The EZone review proposes placing native vegetation within coastal risk areas into E3, With E3 to include *" areas of native vegetation on coastal foreshores and land subject to coastal hazards (as listed under the Coastal Protection Act 1979), including climate change effects.*

The incorporation of cleared and urban areas of the coastal erosion zones into E2 is not appropriate given that the primary function of the existing coastal erosion zones (ie 7f(1&2) lands in Byron Shire) is to address coastal hazards, particularly relating to coastal recession. Constraints required to protect high conservation value native vegetation may not be appropriate for cleared and urban areas,

Native vegetation on coastal risk lands is of very high conservation value, particularly for its stabilisation of coastal systems, though due to the complex management responses to coastal recession an E3 zoning may be more appropriate for vegetation not identified as E2 for other reasons. Due to the complex issues involved with cleared and urban areas within coastal, and estuarine, recession hazard areas, a separate zoning is required. An environmental overlay is not of sufficient weight for dealing with this significant threat and inclusion in E2 is not appropriate.

2.10. Sand dunes, beaches,

Sand dunes are the most obvious component of the active beach shoreface, which extends from their crests, across the beach and out to the "depth of closure", where waves no longer have a significant effect on sand movements. The dunes provide a distinctive habitat in their own right, and many ecosystems develop in their lee, notably wetlands and littoral rainforest.

They shelter vegetation and settlements from the winds and salt-spray, while providing protection and a buffer from coastal hazards such as storm surges and erosion. They provide nesting sites for turtles and shorebirds.

The beaches have their own distinct fauna. Beaches have significant economic, social, recreational and environmental values that are highly valued by the community. They are valuable public assets.

These are dynamic systems, regularly changing and shifting with the coastline. Planning for management of sand dunes and beaches when sea-levels are expected to rise over a metre this century and continue into the foreseeable future, requires managing for recession reserves that they can move into in response to rising sea-levels.

Beaches and their hind-dunes should be zoned E2 due to their high conservation values.

2.11. Shorebird roosting and nesting sites

Many waterbirds, including migratory waders, forage along beaches, across mudflats and around rocky foreshores. A variety of seabirds and shorebirds require open sandy areas for nesting, relying upon camouflage of themselves, their eggs and their chicks, along with distance from dense vegetation, to protect them from predators. Some of our shorebirds, such as the endangered Little Tern, are threatened with extinction and some breed in other countries and migrate to Australia for feeding each year, with many of the seasonal visitors migrating over 4,000 km from breeding grounds in arctic regions. Sandy areas and mudflats in the vicinity of estuary openings are of particular importance. Any diminishment of such areas, particularly known nesting sites, will have significant impacts on dependent species. . These areas have largely been identified in various studies, particularly for threatened species. Most shorebirds are readily scared, and young killed in breeding areas, by passive recreational activities, vehicles on beaches, companion animals and feral animals.

Byron' Biodiversity Strategy (2004) identifies *shorebird nest & roost sites* as being of the highest conservation value (Appendix 1) and they were mapped for inclusion in the E2 zone. The Far North Coast Regional Conservation Plan (DECCW 2010) recognises 'important shorebird habitats (mangrove and saline estuarine vegetation)' as being of state significance, noting *"The FNCRS states that land with State or regionally significant values should be protected and zoned"*.

There can be no doubting that the limited *shorebird nest & roost sites* remaining warrant inclusion in E2 zones.

Planning for management of shorebird nest & roost sites when sea-levels are expected to rise over a metre this century and continue into the foreseeable future, requires managing for recession reserves that they can move into in response to rising sea-levels.

2.12. Wildlife Corridors

A wildlife corridor has been defined as *"... a narrow strip, stepping stone or series of stepping stones of hospitable territory traversing inhospitable territory providing access from one area to another."* They functions as either a movement route for individuals or an avenue for

gene-flow among native fauna and flora, often over generations. For fauna, individuals need to move between localities and successfully mate for genetic exchange to occur or habitat to be recolonised. Animals can also use corridors to move around the landscape seeking seasonal resources.

Due to global warming climate is expected to change faster than at any time since the last major extinction episode heralded the demise of the dinosaurs. For many species to survive the consequences of global warming they will be required to track changing climates and resources by migrating across the increasingly fragmented landscape.

In north-east NSW, existing and potential vegetation and habitat linkages for fauna assemblages were identified by Scotts (2003). Further refinement of this work has been undertaken and has identified areas significant for the dispersal of wildlife that may be vulnerable to the adverse effects of climate change (DECC 2007b). Byron Shire Council (see Byron Shire Council 2004) has refined the corridors within the shire that were identified by Scotts (2003). The Border Ranges Rainforest Biodiversity Management Plan (2010) has as an action *"Encourage local governments to protect climate change linkages through relevant environmental planning instruments".*

The Far North Coast Regional Conservation Plan (DECCW 2010) identifies 'regional wildlife corridors of Scotts (2003)' as being of state significance and 'sub-regional wildlife corridors of Scotts (2003)' as being of regional significance, noting *"The FNCRS states that land with State or regionally significant values should be protected and zoned"*.

The Far North Coast Regional Conservation Plan (DECCW 2010) elaborates on the importance of corridors, noting:

> *...prevention of further fragmentation and degradation and increased linkages across landscapes are acknowledged to be effective measures for the conservation of biodiversity. These measures should be incorporated into natural resource planning*.
> *...*
> *The FNCRS (and the superseded North Coast Regional Environmental Plan) has, as one of its actions, that LEPs will include provisions to encourage habitat and corridor establishment in future zoning of land with environmental and rural values.*
> *...*
> *Drawing on regional biodiversity datasets built over a decade of forest assessment, Scotts's (2003) key habitats and corridors project aimed to develop a conservation framework across the landscape at a regional scale to address this need. Both the key habitats and the corridors component have been included in the BCL dataset as lands having high conservation value, as habitat for key forest fauna assemblages and appropriate linkages for that habitat.*

The Northern Rivers Regional Biodiversity Management Plan includes as an action:

> *Encourage local governments to protect climate change and fauna corridors through relevant environmental zoning within local environment plans, development control plans and other planning instruments.*

Byron's 2004 Biodiversity Strategy refined regional corridor mapping done by the NPWS for north-east NSW to map wildlife corridors across the shire. The Biodiversity Strategy identified "vegetated wildlife corridors" as being of the highest conservation value (Appendix

1) and they were subsequently included in E2. The cleared parts of corridors were initially included in E3, though were subsequently removed from E3 to be an overlay.

The DPE Guidelines identify "riparian corridors" as being of high conservation value and for inclusion in E2.

2.13. Koala habitat (identified in a PoM)

Koalas are an iconic species that is in trouble throughout NSW. Core Koala habitat is an "area of land with a resident population of koalas". SEPP 44 'Koala Habitat Protection' requires Councils to undertake studies to identify potential and core Koala habitat and to *"include land identified as a core koala habitat within an environmental protection zone".* Byron Council's 2004 Biodiversity Strategy identifies core Koala habitat as being of very high conservation value and thus required be included in E2 where mapped..

The EZone review recommends:

> *Ballina SC, Byron SC and Tweed SC are currently preparing Koala Plans of Management for the coastal zones within their respective councils. Each council should insert a clause into the relevant SILEP that regulates development in areas of Koala habitat (identified on an accompanying Koala habitat overlay) upon completion of the relevant Koala Plans of Management.*

Lismore, Tweed, Byron and Ballina have now undertaken Koala habitat assessments over parts of their lands and identified core Koala habitat. Overlays provide inadequate protection for such areas. In accordance with SEPP 44 these lands should be given the highest protection in an E2 zoning.

2.14. Drinking Water Catchments

Drinking Water Catchments provide an important resource that deserves the strongest protection. The DPE states the E2 Zone should be applied to:

> *... land under the care, control and management of another catchment authority such as the Department of Water and Energy or a council for critical town water supply, aquifer or catchment as appropriate.*

The EZone review recommends putting land that was proposed to be zoned E3 for drinking water catchments into an overlay, with a clause that *"contains appropriate considerations addressing the risk of development within a drinking water catchment, before development consent is granted"*.

An overlay does not provide sufficient protection for drinking water catchments. In the absence of specific zoning, native vegetation in Drinking Water Catchments should be zoned E2 and cleared lands E3.

3. ENVIRONMENTAL OVERLAYS

Practice Note PN 09-002 (Environmental Protection Zones) states that:

> *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 ...*
>
> *Provisions for environmentally sensitive areas may include multiple natural resource or other features such as acid sulfate 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.*

The EZone Review notes:

> *Advice note: Overlays and associated clauses are triggered only when development requiring consent is proposed. In circumstances where development is proposed that does not require consent, or if no development is proposed, overlays and associated clauses are of no effect.*

The EZone Review states:

> *... councils should be encouraged to develop local provisions for values requiring protection and management (for example, drinking water catchments, scenic escarpment zones and urban buffer zones) with an accompanying 'overlay' map in the respective LEP. Overlays are relevant and appropriate protective mechanisms for these features where they occur on productive agricultural land that is actively farmed, and may play a key role in integrating agricultural productivity with biodiversity conservation.*
>
> *An overlay may be more applicable in place of an E3 Zone to manage the following features on actively farmed land:*
>
> - *drinking water catchments*
> - *scenic/escarpment zones*
> - *steep land (where unvegetated)*
> - *riparian land and buffer zones (where unvegetated)*
> - *buffer zones to wetlands or rainforest (where unvegetated).*

Overlays are a weak regulatory instrument whereas zones are strong. For high conservation value vegetation and lands requiring robust controls on uses, E2 is the appropriate zone. Drinking Water Catchments are dealt with in the previous section.

3.1. Steep lands and buffers

The E zone review recommends that the E3 zone include:

> *6 Land identified within a validated spatial dataset comprising areas of land where strict controls on development should apply. Such land includes those areas of native vegetation where the ecosystem services provided by the vegetation is critical including:*

- *where the risks of severe erosion and landslides are extremely high (i.e. steep land) and the consequences are potentially catastrophic*
- *where native vegetation that is critical to watershed protection (i.e. when vegetation protects against catastrophic floods or drought and the destruction of fisheries where spawning grounds are protected by mangroves or riparian forests).*

The EZone review identifies that overlays should include 'steep land (where unvegetated)', 'riparian land and buffer zones (where unvegetated)', and 'buffer zones to wetlands or rainforest (where unvegetated)', The identification of steep and eroding lands and buffer zones for streams, wetlands and rainforest when redevelopment of lands is proposed is an important consideration.

The EZone review states:

> *Consequently, mapping areas of steep land on the sides of gullies as environmental protection and environmental management zones may be an important step in preserving key habitat features in the landscape. However, an E3 Zone based on steep land should accurately reflect on ground conditions in the extent of vegetation. Steep land that does not possess vegetation should be managed via a local provision and overlay.*

The use of overlays to depict, and clauses to control inappropriate uses of, unvegetated steep lands, unvegetated wildlife corridors and unvegetated buffers to streams, wetlands and rainforests is supported.

3.2. Aesthetic values

The protection of scenic values has long been an objective of the planning process. These aesthetic values comprise a significant contribution to residential amenity and are a major part of the tourist attraction of the region. The appropriate management of viewsheds from prominent public places is a necessity. Scenic escarpment zones have been used in Byron Shire zoning since 1988, though have not been redone using current modelling tools to map scenic viewsheds in a systematic manner..

Practice Note PN 09-002 (Environmental Protection Zones) states that the E3 Zone may be applied to scenic protection areas, The EZone Review recommends *"The DP&I should remove aesthetic values as a relevant attribute from the E3 Zone"*.
The EZone Review states:

> *Recognising the land uses that contribute to scenic amenity, applying a zoning that facilitates these land uses, and ensuring scenic amenity is protected and managed through a relevant clause and overlay within the LEP, ensures that both values are protected.*
>
> *It is inappropriate to remove the E3 Environmental Management Zone from areas of high scenic amenity, where the use of that land is clearly for environmental protection works.*

The EZone Review recommends:

The DP&I should consider the preparation of a guideline that assists councils to identify areas of scenic amenity.

The development and application of systematic criteria for the identification of scenic amenity would be a welcome addition. Areas of native vegetation identified within scenic viewsheds should be identified as at least E3. It is agreed that it may be more appropriate to protect the scenic amenity of cleared land through an overlay.

3.3. Camphor Laurels

The EZone Review discusses the values of Camphor Laurel dominated forests, stating *"Camphor laurel forests may be worthy of inclusion in a biodiversity overlay in the Far North Coast region as they possess 'special' ecological values"*. Forests mapped as having greater than 50%canopy cover by Camphor Laurels can include numerous rainforest canopy species and rainforest patches. There is merit in giving them special consideration as an overlay to ensure they are properly assessed.

4. APPENDIX 1

EXTRACT FROM BYRON SHIRE COUNCIL'S BIODIVERSITY CONSERVATION STRATEGY ON REVs:

Relative Ecological Values Matrix

Following review of the above listed environmental data a Relative Ecological Values Matrix (REVM) was developed (Table 1), which assesses the ecological significance of native vegetation (mapped as Forest Ecosystems) and other variables at a regional and local level.

The Relative Ecological Values Matrix allows for any mapped criteria to be valued for its ecological attributes on the ground and to determine its conservation status from a national, state, regional and local perspective. Values were derived by giving each mappable category (eg forest ecosystem, growth stage) a numerical value based on its conservation value (determined through adding the values for each mappable category together). This process allows areas with multiple values to score a higher ranking than areas with single values. Conservation value was partly determined by what percentage of each ecosystem on private land still requires protection to fulfil national, state and regional reservation targets set out by the Commonwealth accepted JANIS criteria for the Comprehensive Regional Assessment (Table 1). Other local, regional and state conservation criteria and constraints were also used to determine conservation significance. The ecological significance matrix thereby applies available mappable data to identify the relative importance of areas of vegetation for biodiversity conservation within the Byron Shire in a manner that also accounts for its state and national significance.

How the Matrix Works

The Relative Ecological Value Matrix for the Byron LGA shows the relative ecological values of different ecological criteria. Each criterion is assigned point values or scores, which are tallied according to the number of criteria known within a given area of vegetation. Areas of land that score a total of 27 or more are regarded as having very high ecological value. These areas need to be prioritised for conservation planning and assessment, active beneficial management and community education. The matrix identifies the most ecologically significant lands and provides a framework that can allocate scarce resources to the most significant areas as an order of priority (this is determined through a hierarchical process, which places a numerical value on various ecological attributes).

Box 1. Identification of High Conservation Value Vegetation.

High Conservation Value Vegetation

High Conservation Value (HCV) vegetation was determined according to the REVM, which has taken into account the Northern Rivers Blueprint requirements for the identification of HCV vegetation. Criteria used to determine HCV vegetation is outlined in Table 1. HCV vegetation and habitats is land that scored a value of 27 or higher according to the REVM. Native vegetation and habitats (including rainforest with < 50% camphor laurel) within identified wildlife corridors was classified as being HCV on its own merit. This is because

such areas are considered fundamental to the restoration of corridors within a fragmented landscape and because these sites are invaluable as:

- habitat (including that of threatened species);
- stepping stone habitat for nomadic and migratory fauna;
- reference communities from which to gain information on local species assemblages (important for restoration actions on previously cleared lands); and
- contain source material (fauna and flora) for dispersal into the surrounding landscape or for collection as propagation material.

Areas that scored a value higher than 80.999 have been depicted on map 2 as being of Extremely High Conservation Value. This category is regarded the same as HCV, just that it has an extremely high ranking.

Table 1. Relative Ecological Value Matrix for the Byron Shire.

NB: mapping not yet completed or available for rows with light shading.

Mapping for patch/remnant size will be displayed separate to the Ecological Values Matrix and be used in association with distance from/proximity to ecologically resilient or ecologically threatened vegetation to prioritise restoration works.

Ecological criterion	**Very high ecological value**	**Relatively high ecological value**	**Medium ecological value**	**Lower ecological value**	**Very low ecological value**
Points Value	**27**	**9**	**3**	**1**	**0**
A. Forest Ecosystems					
1. Growth stage of vegetation (based on Byron Flora and Fauna old growth mapping)	old growth forest				Cleared land
2. Rare, endangered and vulnerable forest ecosystems (including rainforest) (based on conservation criterion as defined in JANIS)	Rare and Endangered forest ecosystems R & E FE's with 100 % target set	Vulnerable ecosystems (FE's with 60% target set) or ecosystems identified as being Severely Depleted (SD=> *55% cleared)*			
3. FE with limited extent in Shire (except introduced scrub, forestry plantations & water surfaces)	< 100 & > 0 ha in Shire ie FE = < 0.19 % of Shire	> 100 & </= 500ha in Shire ie FE = < 0.96 % of Shire	> 500 & </= 1000 ha in Shire ie FE = < 1.92 % of Shire		
4. Adequacy of reservation (% of each forest ecosystem remaining on private property that needs to be formerly reserved to meet CRA reservation targets once all reservation categories on public land have been accounted for)	Currently very poor. > 60 % needs to be reserved to meet reservation targets.	Currently poor. >30 & </= 60 % needs to be reserved to meet reservation targets.	Currently moderate. > 10 & </= 30 % needs to be reserved to meet reservation targets.	Currently reasonable. </= 10 & > 0 % needs to be reserved to meet reservation targets.	Currently good. 0 - no reservation is required to meet targets.
5. % of FE cleared in Upper North East (based on CRA estimates of original vegetation at	> 70 % cleared. (< 30 % of the original forest ecosystem in the	> 55 & </= 70 % cleared. (between 30 – 45 % of the original forest	> 40 & </= 55 % cleared. (between 45 - 60 % of the original forest	> 25 & </= 40 % cleared. (between 75 - 60 % of the original	</= 25 % cleared. (more than 75 % of the

1750 for the region – does not include rainforest, heath or wetlands)	UNE region remains)	ecosystem in the UNE region remains)	ecosystem in the UNE region remains)	forest ecosystem in the UNE region remains)	original forest ecosystem in the UNE region remains)
6. Locally endemic FE (> 75 % of FE distribution in Byron Shire compared to area in UNE)	> 75% of FE distribution in Byron Shire (excluding wattle)				
7. FE's whose target cannot be met wholly on public lands		Ecosystems identified as being Private Land Priority (PLP) for protection			
B. Native Fauna					
8. Fauna corridors Mapping shown as: vegetated corridor (habitat); and non vegetated corridor (environmental repair & enhancement)	➢ Vegetated identified corridors *(derived and mapped by NPWS and refined by BSC - incorporates escarpment zone)* ➢ Rivers (20 m buffer)	➢ Exotic Vegetated identified corridors ➢ Local corridors** ** (local corridors currently unmapped – to be delineated by local groups/landholders in consultation with Council and have long term security of title and/or landuse via zoning, covenant or property management plan)*	Non vegetated identified corridors		
9. Significant animal habitats. *Key fauna habitats based on NPWS derivation (ground truthed to BSC veg mapping), *Class 1 modelled habitat based on NPWS modelling (ground truthed to BSC veg mapping), *Shorebird roost/nest sites mapped by BSC.	Shorebird nest & roost sites Class 1 modelled habitat for select key threatened fauna species	Key fauna habitats derived by NPWS and refined by BSC to fit to native vegetation			
10. Grey – headed and Black Flying Fox maternity/roost sites (both are listed threatened species)	Identified maternity/roost sites for the Grey headed Flying Fox and Black Flying Fox				
11. Koala habitat Based on Byron Veg mapping modelled using Koala Habitat Categories developed by Australian Koala Foundation.	Identified core Koala habitat (SEPP 44)	Primary habitat (FE's = 73, 102, 142) Secondary habitat (class A) (FE = 154) Secondary habitat (class B) (FE's = 26, 95, 101, 109, 152)	Secondary habitat (class C) (FE's = 23, 37, 50, 65, 71, 74, 103, 106, 147, 148)	Tertiary habitat (FE's = 22, 76, 112, 143, 151, 169)	
12. Threatened animal species (based on methodology for North Ocean Shores LES)	Recorded locations and known habitat of animal species listed on the Commonwealth Environment Protection &	Recorded locations and known habitat of animal species listed on the NSW Threatened Species Conservation Act	Recorded locations and known habitat of animal species identified as regionally significant *(no mapping currently available)*		

Develop buffers for different guilds of species.	Biodiversity Conservation Act				
C. Native flora					
13. Significant Byron Shire flora habitats. (based on CRA data – not available yet - to be prepared by NPWS)	Centres of endemism (habitats for plants restricted to the Tweed, Brunswick and Richmond Valleys or those that also have isolated outlying populations eg Dorrigo)				
14. Subject to threatening processes within Byron (FE negatively impacted by dieback, disturbance by fire, fragmentation, high levels of weed invasion and > 10 % in 2A zone)	> 10% of FE in Byron Shire occurs in 2A zone.		Weed = 5, 22, 65, 112, 141, 142, 143, 152, 154, 168. Dieback = 26, 73, 154. Fire = 5, 22, 50, 77, 112, 143, 152, 154, 168.	Subject to overall threats regionally (based on CRA data) Overall threat classes = clearing, logging, grazing, weed, burning, other)	
15. Other significant flora habitats		Key habitats *(no mapping currently available)*			
16. Rare and Threatened plant locations (point locations only – buffers to be determined) same methodology as for Nth Ocean Shores LES 1996	Recorded locations and known habitat of plant species listed on the Commonwealth Endangered Species Protection Act	Recorded locations and known habitat of plant species listed on the NSW Threatened Species Conservation Act	Recorded locations and known habitat of plant species identified as regionally significant *(no mapping currently available)*		
D. Non-forest ecosystems					
17. Wetlands (wetland mapping based on combining 2 different DIPNR mapping products for Richmond & Brunswick as well as SEPP 14) Richmond mapping by Early Brunswick mapping by Lenehan/Green		Dunal swamps & lagoons Estuarine lakes & lagoons Floodplain complex or forest Mangrove or saltmarsh Upland lakes & lagoons Upland swamps SEPP 14 wetlands			
18. Native Grasslands *(no mapping currently available)*	Native Grasslands				
19. Heath and Banksia		Mapped heath and banksia			
20. Register of the National Estate (need to get mapping)		Lands mapped for biodiversity values (flora and fauna species richness	Lands mapped for their naturalness values		
21. Floodplains (based on DIPNR floodplain/wetland mapping)	Woody native vegetation on floodplain				

22. SEPP 26 mapping	Lands mapped as SEPP 26				
23. Endangered Ecological Communities listed under the NSW Threatened Species Conservation Act	Lowland Rainforest on Floodplain Byron Bay Dwarf Graminoid Clay Heath				