

Bellingen Shire  
COUNCIL



# Bellingen Shire Council Coastal Area Koala Management Strategy

January 2017

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This Strategy was adopted by Bellingen Shire Council at its meeting of **16 December 2015**.

The Bellingen Shire Council Coastal Area Core Koala Habitat Koala Plan of Management was conditionally approved on **17 November 2016** by the Director of the Department of Planning and Environment under the provisions of Clause 13 of State Environmental Plan No. 44 – Koala Habitat Protection, and takes effect from **14 December 2016**, when council resolved to accept the terms of the conditional approval.

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# Bellingen Shire Council Coastal Area Koala Management Strategy

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## 1 Background

### 1.1 Land to which the Bellingen Shire Council Coastal Area Koala Management Strategy applies.

The Bellingen Shire Council Coastal Area Koala Management Strategy (the Strategy) applies to land within the Bellingen Shire Coastal Area Koala Planning Area (KPA).

The extent of the Bellingen Shire Council Coastal Area KPA is depicted in Figure 1.

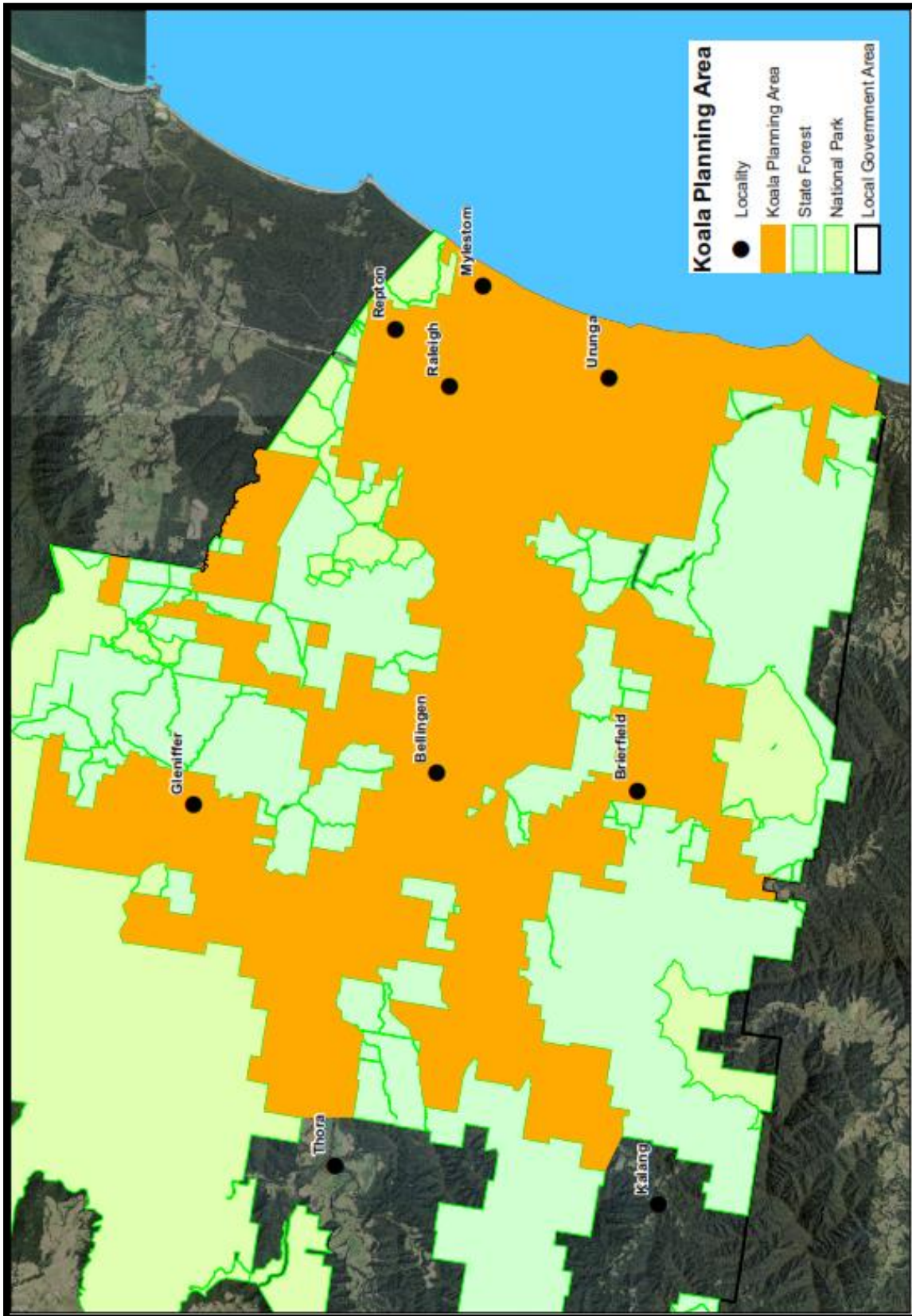
Areas within the Bellingen Local Government Area (LGA), but outside of the KPA remain subject to the individual koala habitat assessment statutory requirements of State Environmental Planning Policy 44 - Koala Habitat Protection (SEPP 44).

### 1.2 Objectives

The objectives of the Strategy are to:

1. Manage the long-term sustainability and recovery of koalas and their habitat.
2. Ensure that there is no net loss of preferred koala habitat (PKH) and, where appropriate, create, manage and/or restore koala habitat linkages to allow for safe koala movement across the landscape.
3. Identify and list the preferred koala food tree species likely to be found in the Bellingen LGA and to map PKH.
4. Minimise and manage threats affecting koalas and their habitat that are within Council's sphere of control and influence.
5. Establish relationships with industry, landholders and the community to ensure the objectives of the plan are met in respect to koala long-term sustainability and recovery.
6. Provide consistent assessment criteria for the processing of development applications, including guidelines for koala habitat assessment, food tree and koala habitat retention and, where appropriate, compensation for the loss of food trees and koala habitat.
7. Promote koalas as an asset for Bellingen's economic development and tourism.
8. Build upon the private land outcomes of this Plan by advocating for a landscape approach to management of koalas and their habitat, including establishment of koala habitat linkages across all land tenures.

Figure 1. Bellingen Shire Coastal Area Koala Planning Area (KPA)





### **1.3 Who is affected by this Strategy?**

If you are preparing a development application to develop land with core koala habitat, the Core Koala Habitat Comprehensive Koala Plan of Management (CKPOM) in Chapter 2 of the Strategy confirms Councils requirements for addressing potential impacts on koalas, or their habitat, in your development application.

Chapter 3 of the Strategy proposes a Development Assessment Framework for koala habitat that has not been identified as core koala habitat. This will be used by Council to draft new development controls to be inserted into Councils Local Environmental Plan (LEP) and Development Control Plan (DCP) where relevant. This is necessary because the Department of Planning & Environment (DPE) have advised Council that the CKPOM cannot apply unless land meets the definition of core koala habitat in SEPP 44.

Where a development application or consent from council is not required for a proposed activity on your land, the statutory components of the CKPOM, or relevant provisions in the LEP or DCP, will not apply. Chapter 4 of the Strategy does however outline a suite of Management Activities for Council, other tiers of government, and the community, that are designed to protect and manage koalas and their habitat in the shire.

Whilst forestry is not actually regulated by the Strategy or the CKPOM, Council was made aware during the first exhibition period, by the NSW Environment Protection Authority (the EPA) , that core koala habitat mapping would also be considered by them in the process of issuing forestry permits to private landowners. Therefore, restrictions may be imposed by the EPA upon landowners wishing to undertake Private Native Forestry on land mapped as core koala habitat.

### **1.4 The Bellingen Shire Council Coastal Area Koala Habitat Study – June 2014**

The Bellingen Shire Council Coastal Area Koala Habitat Study – June 2014 (the Study) contains the background scientific research study informing the Strategy. It outlines the status of koalas in Bellingen & elsewhere, the threats that exist to koalas and the outcomes of historic and current research into the existence or otherwise of koalas in the study area.

It also confirms the types of vegetation used by koalas in the study area and where preferred koala habitat exists throughout the Shire on the basis of these preferred species. The key findings of the Study are summarised in this section.

#### **1.4.1 What is the status of koalas in Bellingen and elsewhere?**

Whilst the status of koalas nationally varies from region to region, it is recognised that koala populations in many areas of NSW and south-east Queensland are in decline. A recent example is in the ‘Koala Coast’ area of south-east Queensland where the adverse impact of urbanisation has reduced koala numbers to about a half of the population in 2006 (Department of Environment and Heritage Protection 2013). Severe declines are also occurring in many other areas such as the Tweed coast and Iluka area.

The analysis of historical koala records undertaken as part of the Study indicates there has been range contractions in some areas of the coastal part the Bellingen LGA (eg: south-west of Bellingen town, south and west of Urunga and in the southern coastal part of the LGA), whilst in other areas

the analysis indicates that koalas have persisted over the last six koala generations, ie: 36 years (OEH 2014). Field surveys also indicate a trend (which is common to other areas) of a decline in the amount of otherwise suitable habitat that is occupied by koalas. Although the reasons behind this finding remain uncertain, it is a worrying trend and may indicate that a range of threats influencing koala viability are not being adequately managed. Refer to the Study for further information.

#### **1.4.2 What are the threats to koalas?**

The Study outlines the processes threatening koala populations and their habitat in the Bellingen area. These processes include.

1. Clearing of koala habitat for urban and rural residential development, roadwork, forestry and agricultural activities.
2. Fragmentation of koala habitat, which isolates individuals and populations, impedes gene flow and the ability to maintain effective recruitment levels.
3. Mortalities caused by dog attack and vehicle strike.
4. Mortalities caused by random events such as wildfire and/or extreme weather conditions.
5. Disease, mainly associated with Chlamydia.

The Strategy focuses on those threats which can be managed or influenced by Council, through a combination of regulatory measures (consistent with Council's core land-use responsibilities) and complementary non-regulatory management activities that will help to manage the level of threats facing koalas in Bellingen.

The Strategies regulatory measures (Chapters 2 & 3) focus on points 1 and 2 above by aiming to avoid, minimise, mitigate and/or compensate for the clearing and fragmentation of koala habitat caused through urban development, roadwork and associated infrastructure. Council's regulatory role aligns with its core responsibility to assess development applications and apply conditions on development to minimise a wide range of potential environmental impacts.

The non-regulatory management activities in the Strategy (Chapter 4) focus on points 3 and, to a lesser extent, 4 above (i.e. mortalities resulting from dog attacks, vehicle strike and fire). Whilst past records in the Bellingen area indicate a low number of koala mortalities have occurred due to vehicle strike and dog attack, this Strategy nevertheless includes specific actions to help manage these threats in the future.

The impact of fire on koala populations is well documented for other areas of the state such as the Tweed coast, Hastings and Port Stephens areas. Wildfire has occurred infrequently in the Bellingen LGA during periods of low rainfall (drought) and unfavourable weather conditions, although primarily on public lands (refer to wildfire mapping in the Study). Wildfires during extreme conditions can have severe impacts on koalas although given the somewhat fragmented nature of koala habitat on private lands in the Bellingen LGA, wildfires on private lands have not historically been seen as a high threat. However, given predictions associated with Climate Change such as the likelihood of more frequent hotter days and extreme fire weather conditions, specific actions are included in the Plan to develop best practices for fire management in koala habitat.

Disease is recognised as having a major impact on koalas, with euthanasia of diseased animals accounting for the majority of known mortalities of koalas that come into care. Disease can naturally

occur due to reduced metabolic/genetic fitness and/or immunity caused by natural stressors such as disturbances to habitat, and reduced food tree availability and/or increased levels of threats to koalas.

With human development in and around koala habitat, koalas face additional stress from habitat loss, impediments to movement, vehicle strike, and dog attack, which consequently may lead to increased levels of disease. Management of stress factors that are likely to make koalas more prone to disease are therefore of a high priority.

### 1.5 Preferred Koala Habitat

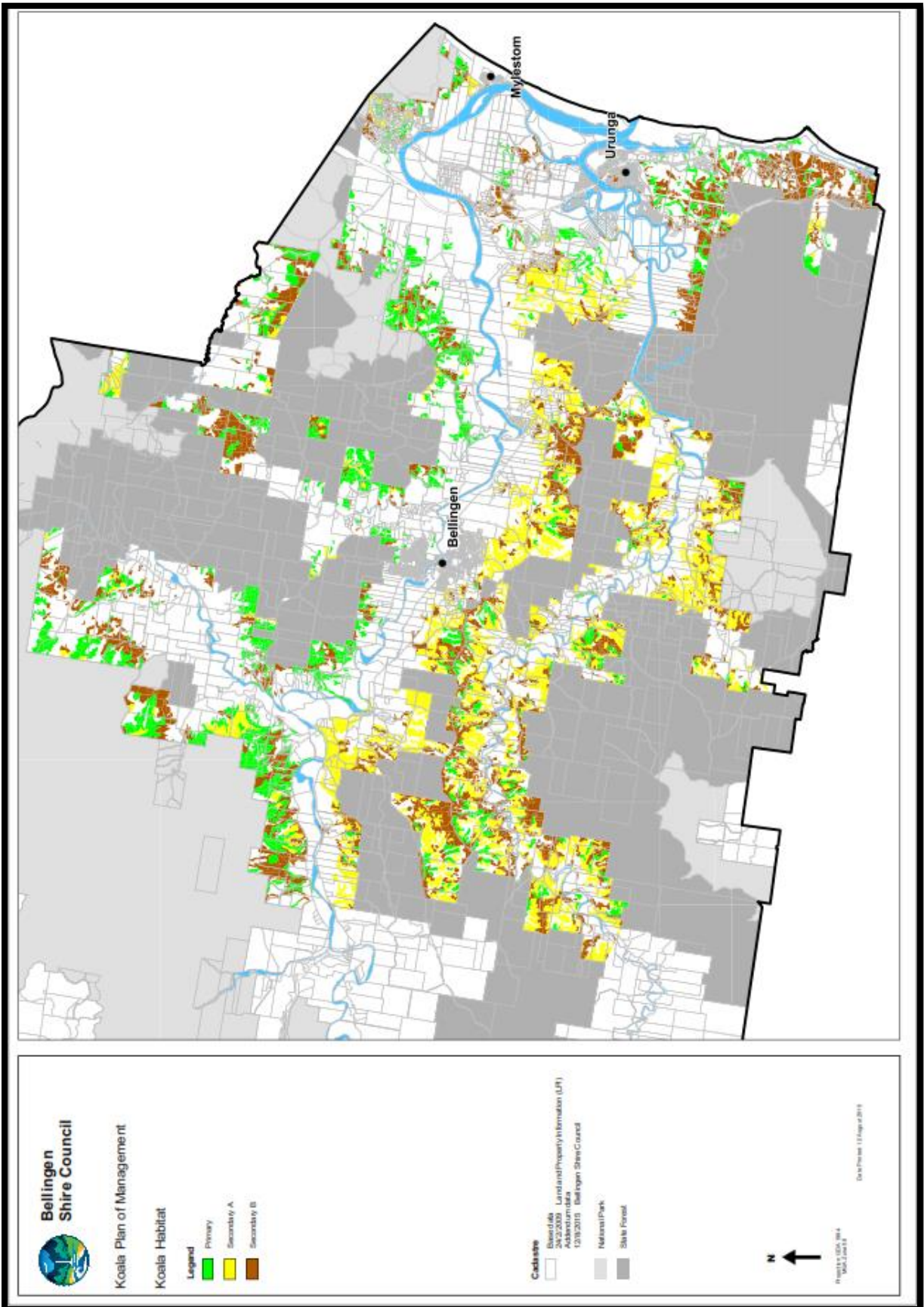
The Preferred Koala Habitat Map aims to depict the location of any area identified within the KPA as either Primary, Secondary A or Secondary B koala habitat, as defined in Table 1 below.

Preferred Koala Habitat is shown in Figure 2.

**Table 1. Preferred Koala Habitat**

Vegetation	Category	Definition
Vegetation classified as Preferred Koala Habitat	Primary	Vegetation associations and/or communities wherein “primary” food tree species form $\geq 50\%$ of the canopy.
	Secondary A	Vegetation associations and/or communities wherein; <ul style="list-style-type: none"> <li>• “primary” food tree species form 30-50% of the of the canopy or wherein;</li> <li>• “primary” and “secondary” species combine to form <math>\geq 50\%</math> of the canopy or wherein;</li> </ul>
	Secondary B	Vegetation associations and/or communities wherein “secondary” food tree species form $\geq 50\%$ of the canopy.
Koala Linkage Area	As above or where other tree species combine to link one area of existing native vegetation with another and therefore provide habitat for movement, linkage and dispersal.	

Figure 2. Preferred Koala Habitat Map



The primary and secondary koala food tree species that occur in different densities within vegetation categories are documented in Table 2.

**Table 2. Koala food trees**

<b>Primary koala food trees</b>
Tallowwood ( <i>Eucalyptus microcorys</i> )
Swamp Mahogany ( <i>Eucalyptus robusta</i> )
Forest Red Gum ( <i>Eucalyptus tereticornis</i> )
Small-fruited Grey Gum ( <i>Eucalyptus propinqua</i> )
<b>Secondary koala food trees</b>
Flooded Gum ( <i>Eucalyptus grandis</i> )
Sydney Blue Gum ( <i>Eucalyptus saligna</i> )
Note: Flooded Gum & Blue Gum should be considered as Primary Food Trees where they occur as a co-dominant canopy species with Tallowwood.

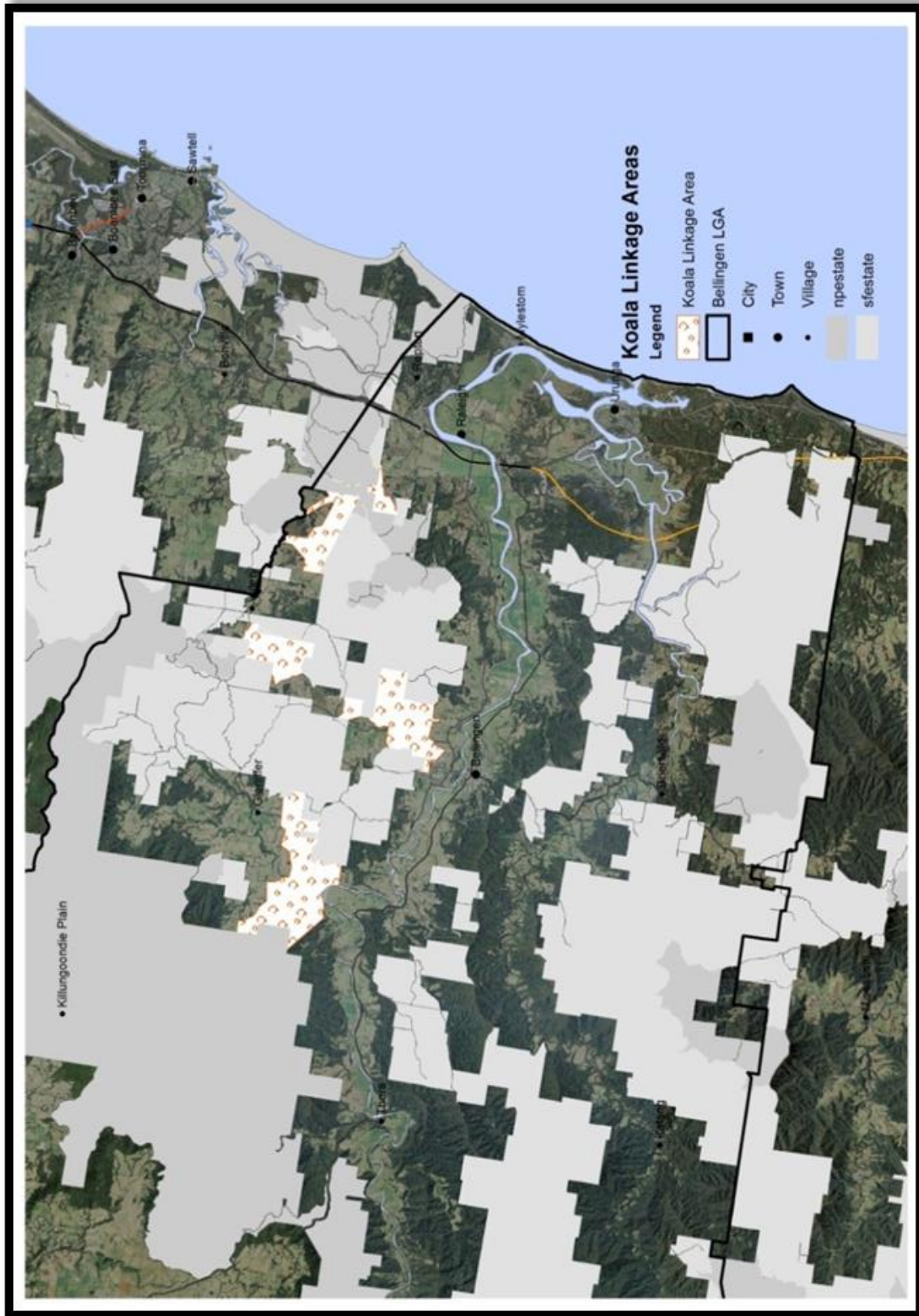
Koalas also forage and rest / shelter in other tree species which together with the above Primary and Secondary trees form an important component of their habitat. In the Bellingen area Forest Oak has been documented as being browsed by koalas (Smith and Andrews 1997) and should be considered as an important sub canopy species requiring protection in areas of identified preferred koala habitat. Additionally, a number of other species including White Mahogany (*Eucalyptus acmenoides*), Red Mahogany (*E. resinifera*) and Turpentine (*Syncarpia glomulifera*) may also be utilised where they occur in association with the Primary food trees.

## 1.6 Koala Linkage Areas

Koala Linkage Areas represent areas of land that are used, or could be used, by koalas when moving between different areas of their home range, or dispersing to find new areas of habitat. Major koala linkage areas identified as part of this Strategy are shown in Figure 3.

More detailed information can be obtained from Council on request to help determine applicability to any property.

Figure 3. Koala Linkage areas



## **2 Bellingen Shire Council Coastal Area - Core Koala Habitat Comprehensive Koala Plan of Management**

### **2.1 Legislative context**

*The Bellingen Shire Council Coastal Area - Core Koala Habitat Comprehensive Koala Plan of Management* (the Plan) has been adopted under the provisions of Clause 13 of State Environmental Plan No. 44 – Koala Habitat Protection.

### **2.2 Where does this plan apply?**

The provisions in this Plan apply to land;

- a) identified as being core koala habitat, (as defined in Clause 4 of SEPP 44) on the “Core Koala Habitat Map” included as Figure 4 in this Plan, and
- b) that has an area of more than 1 hectare, or has, together with any adjoining land in the same ownership, an area of more than 1 hectare.

### **2.3 Development Assessment Framework**

#### **2.3.1 When is the Development Assessment Framework triggered?**

The Development Assessment Framework of this Plan only applies to development activities that require development consent under the Bellingen LEP or another environmental planning instrument. The Plan is ‘triggered’ when a development application is received by Council.

Development activities that are permitted without consent under the Bellingen LEP do not require a development application. Such activities do not ‘trigger’ this Plan and do not need to comply with the Plan. These include development activities listed as exempt and complying development listed in any environmental planning instrument.

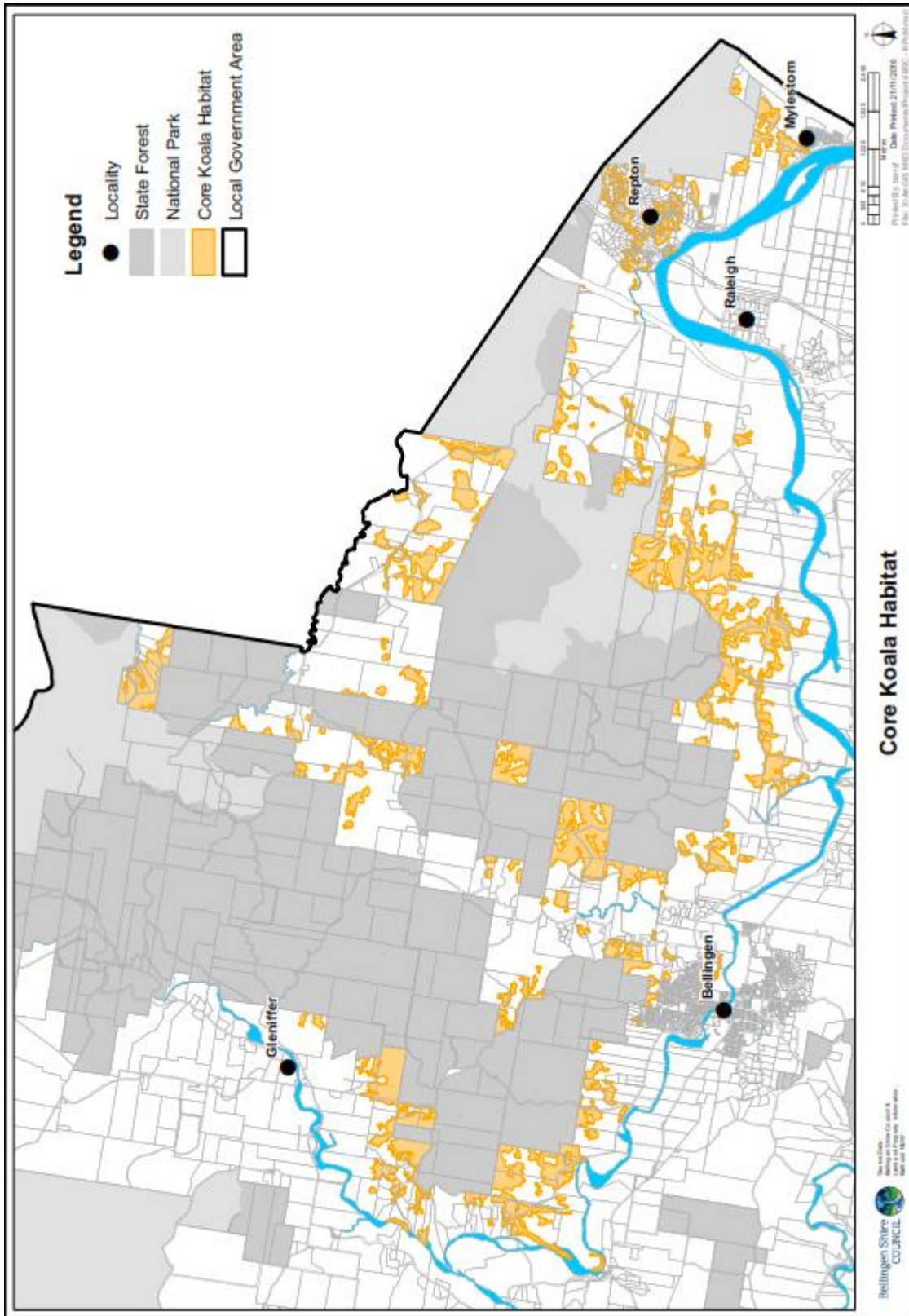
#### **2.3.2 What information must be submitted with any application for development consent on land containing core koala habitat**

##### ***2.3.2.1 If no clearing of vegetation is necessary***

If the proposed development does not require the clearing of vegetation (defined as the removal of trees greater than 3m in height and/or greater than 100mm diameter at breast height above bark) within any area mapped as core koala habitat then a statement will be required addressing any likely indirect impacts of the proposal that may affect PKH or koala activity in accordance with Clause 2.3.4 of this Plan.

In determining whether the proposal would result in the clearing of vegetation, all consequential clearing likely to be associated with the development must be considered. For example, a subdivision of land must consider not only the direct impacts associated with road construction and infrastructure supply, but must also address any consequential clearing of house sites and Bushfire Asset Protection Zones on lots created as a result of the approved subdivision.

Figure 4. Core Koala Habitat Map





### ***2.3.2.2 If clearing of vegetation is required***

A Koala Habitat Assessment Report (KHAR) must be included in the documentation supporting the development application (DA) that meets the requirements of this subclause. The KHAR must include a Site Survey and a Report prepared in accordance with the following specifications.

#### **Site Survey**

A survey detailing the location and extent of the following must be submitted with the DA that identifies.

- a. Preferred koala habitat for any development areas >0.2 Ha and/or
- b. all koala food trees greater than or equal to 100 mm diameter at breast height over bark (dbhob) within any development areas < 0.2Ha.

Specifically, the survey must identify the spatial extent of forest and/or woodland and validate or identify the preferred koala habitat classes within the development area in accordance with the preferred koala habitat and koala food tree descriptions listed in Tables 1 and 2 respectively.

The methodology for undertaking the survey is contained within Appendix 1 – Koala Habitat Survey Method.

#### **Report**

The KHAR must include the following structure and content detailed in Table 3 below. Additional information to that detailed in Table 3 may be required by Council to address the potential impacts of the proposed development.

**Table 3. Minimum structure and content for a Koala Habitat Assessment Report**

<b>1. Background</b>	
• Describe the nature of the proposed development.	<input type="checkbox"/>
• Identify the Bellingen LEP zoning(s) of the development area and adjacent areas.	<input type="checkbox"/>
<b>2. Links to legislation, other plans and documents</b>	
• Demonstrate how all required legislation, other plans and documents that relate to the proposed development have been addressed.	<input type="checkbox"/>
<b>3. Study Area</b>	
• Identify the location and extent of the development area to be covered by the KHAR including any other areas that may be directly or indirectly impacted by the proposed development.	<input type="checkbox"/>
• Describe the formation, extent and current condition of existing koala habitat at the development area.	<input type="checkbox"/>
• Describe the broader context of other vegetation in the adjoining landscape, including linkages.	<input type="checkbox"/>
• Detail any environmental constraints and any significant or sensitive environmental features of the development area.	<input type="checkbox"/>
<b>4. Methods</b>	
• Describe and provide justification for any variation in methodology to identify PKH classes or KFT within the development area.	<input type="checkbox"/>
<b>5. Results</b>	
• Include a map detailing the location of: <ul style="list-style-type: none"> <li>○ the proposed development and associated infrastructure and any requirement for an asset protection zone;</li> <li>○ PKH classes and or KFT</li> <li>○ any PKH <i>and or</i> KFT that are proposed to be directly and/or indirectly impacted, removed, regenerated and/or revegetated.</li> </ul>	<input type="checkbox"/>
Include a table detailing the:  area (Ha) of PKH classes proposed to be removed, regenerated and/or revegetated;  KFT species, diameter at breast height over bark (dbhob) and size class (<100 mm dbhob, 100–300 mm dbhob and >300 mm dbhob) proposed to be removed or isolated from koala use;	<input type="checkbox"/>
<b>6. References</b>	
• Include a list of all references cited in the report.	<input type="checkbox"/>
<b>7. Appendices</b>	
• Include any additional information or supplementary material pertinent to the DA proposal.	<input type="checkbox"/>

### **2.3.3 What are the matters for consideration for any application for development consent on land containing core koala habitat?**

#### **2.3.3.1 Preferred koala habitat and koala food trees**

Council may grant development consent only if it is satisfied that the development;

- a. is located, designed, constructed and managed to avoid adverse impacts on koala food trees and/or preferred koala habitat, or
- b. if adverse impacts cannot be avoided, it does not result in any overall net loss of koala food trees and/or preferred koala habitat.

**Note:** This plan provides opportunities for habitat compensation as a Strategy for demonstrating compliance with subclause b.

#### **2.3.3.2 Maintain habitat linkages and safe koala movement**

Council may grant development consent only if it is satisfied that the development;

- a. maintains any linkages between areas of preferred koala habitat across the development area and between areas;
- b. does not contribute to fragmentation and/or isolation of preferred koala habitat or koala linkages across the development area;
- c. does not result in development which would impede safe koala movement across the development area;
- d. includes measures which maintain habitat linkages that allow for the safe movement of koalas and these measures are incorporated into the design and construction of the development;
- e. considers the need and potential where appropriate to revegetate cleared land within koala movement corridors.

**Note:** A Koala habitat linkage area may include land mapped in Figure 3, or land identified as such as part of the KHAR process.

#### **2.3.3.3 Asset Protection Zones**

Council may grant development consent only if it is satisfied that the development activities proposed bushfire asset protection zone will not result in the clearing of koala food trees and/or preferred koala habitat unless this clearing has been explicitly addressed and compensated for as part of the assessment of the application;

#### **2.3.3.4 No-build zones**

In assessing the proposed development, Council will give consideration to;

- a. establishing no-build zones within the outline of the canopy of retained trees as to not damage or pose a future hazard to persons, property or tree;
- b. precluding the construction of dwellings and buildings and the like within no-build zones;
- c. identifying the location of any no-build zones on the deposited plan and registering them as a restriction on the land title.

#### **2.3.3.5 Protection of koala food trees and koala habitat during construction works**

- a. Council may grant development consent only if it is satisfied that the following measures are in place to ensure retained koala food trees and/or preferred koala habitat is/are protected during construction works on the site;
  - i. establishment of a tree protection zone beyond the outline of the canopy of any retained koala food trees;
  - ii. erection of temporary koala fencing around the tree protection zone of any retained koala food trees to protect retained trees during construction works;
  - iii. erection of signage to provide clear and accessible information to indicate that a tree protection zone has been established;
  - iv. preclusion of activities such as construction, excavation, storage of materials and the parking of vehicles and plant within any tree protection zone.
- b. Where approved clearing of vegetation is proposed, development consent may be granted only if Council is satisfied that measures are in place to ensure that on the day of clearing and prior to any clearing taking place, all trees within 30 metres of those trees to be cleared are to be inspected for the presence of koalas.

Should koalas be found on site during the clearing of native vegetation, all tree removal works;

- i. must be temporarily suspended within a range of 30 metres from any tree which is occupied by a koala;
- ii. must be avoided in any area between the koala and the nearest areas of habitat to allow the animal to move to adjacent undisturbed areas;
- iii. must not resume until the koala has moved from the tree of its own volition.

### **2.3.4 What indirect impacts must be considered for any application for development consent on land containing core koala habitat?**

In circumstances where direct impacts on PKH have been avoided, there remains the potential for indirect impacts on koalas. These impacts may occur elsewhere on land the subject of the development proposal, or on adjoining land that contains PKH.

The key indirect impacts on koala populations relate to fencing, swimming pools, domestic dogs and road design.

#### **2.3.4.1 External or Internal Lot boundary fencing**

Council may grant development consent only if it is satisfied that any new internal lot boundary fencing on land adjacent to preferred koala habitat is constructed to exclude koalas from the development area.

Note: Fences that exclude koala movement include:

- a. steel sheet metal at a minimum of 1.8m high or;
- b. other flat surfaced fencing which does not allow a koala to climb up the fence (eg. not be constructed of timber or have timber posts) and which is a minimum of 1.8m high and less than 200mm from the ground.
- c. Other potential alternatives which may be discussed with Council in different situations in order to minimise the visual impact of fencing options. This could include options such as part timber part metal, the use of swimming pool style fences (open steel bars) and potentially floppy top style fencing.

#### **2.3.4.2 Swimming pools**

Council may grant development consent for the installation of swimming pools on land containing or adjacent to preferred koala habitat, only if the pool design:

- a. notwithstanding the provisions of the Swimming Pools Act 1992, includes a type of fence that excludes entry by koalas (eg. not be constructed of timber or have timber posts);
- b. incorporates features that will allow a koala that mistakenly enters the pool area to easily escape from the pool, namely, a shallow ramp and/or a stout rope (minimum 50 mm diameter) that trails in the pool at all times and is secured to a stable poolside fixture;
- c. excludes shrubs and/or trees within 1 metre of the pool fence so that koalas do not use these to climb over the fence.

Note: This clause does not apply to the installation of farm dams.

#### ***2.3.4.3 Keeping of domestic dogs***

Council may grant development consent to rural residential subdivisions and the like on land containing or immediately adjacent to preferred koala habitat only if:

- a. the movement of domestic dogs is restricted by a lot boundary fence or internal dog enclosure that effectively contains dogs within the property and excludes koalas;
- b. pursuant to subclause (a) above, any fence that is intended to contain dogs and exclude koalas should be located as far as practical (and no less than 2 metres away) from any tree that koalas could use to cross the fence.

#### ***2.3.4.4 Road design standards***

Council may grant development consent to residential subdivisions and the like on land containing or adjacent to preferred koala habitat only if it is satisfied that the proposed development has made provision for:

- a. appropriate road design standards, warning signage, traffic calming devices, and roadside lighting which restrict motor vehicles to a maximum speed of 40 kilometres per hour within the development area where possible;
- b. appropriate measures to be installed to exclude koalas from roads and minimise the likelihood of impediments to safe koala movement across roads where the maximum speed of motor vehicles must be greater than 50 kilometres per hour in urban areas or greater than 60 kilometres per hour in rural areas;
- c. the specifications for road design standards, signage, koala exclusion fencing, underpasses and associated fencing, traffic calming devices and any other mitigation measures to be explicitly included with the documentation supporting the application;
- d. the maintenance of any mitigation measures detailed in the above.

## 2.3.5 What must be considered if koala food trees and/ or preferred koala habitat are to be removed and compensation works are required?

### 2.3.5.1 Application of the Habitat Compensation Policy

The Bellingen Shire Council Coastal Area Koala Habitat Compensation Policy is included in Section 2.3.6 of this Plan. The Policy is designed to provide a system for determining appropriate compensation for the removal of koala food trees or habitat in association with development activities.

- a. The minimum area required for compensation works for each class of preferred koala habitat and for each category of compensation works is to be calculated using the compensation multiplier formula detailed in the Habitat Compensation Policy.
- b. Compensation for adverse impacts of a proposed development activity through the application of the Policy should only be approved if Council is satisfied that:
  - i. all feasible strategies to avoid, minimise and mitigate clearing of koala food trees and/or preferred koala habitat have been fully exhausted;
  - ii. there is substantial evidence that proposed compensation works will lead to an improvement in the environmental values of koala food trees and/or preferred koala habitat. In cases where compensation works are not feasible or there is a high risk that the works may fail, application of this framework is not appropriate and should not be considered.
  - iii. application of compensation works has been conducted in accordance with the principles outlined in the Habitat Compensation Policy.

**Note:** Where appropriate, habitat compensation works may be undertaken concurrently with other activities that protect, rehabilitate or establish habitat (i.e. on the same receiving land). These works may include the establishment of riparian corridors and rehabilitation of vegetated linkages or the restoration of vegetated buffers.

### 2.3.5.2 Receiving land for habitat compensation

- a. For compensation works to be applied, council must ensure that the:
  - i. Owners of the receiving land provide owners consent prior to the lodgement of the development application;
  - ii. receiving land is within and/or adjacent to the development area, or in cases where it is not feasible, the receiving land must also contain core koala habitat as mapped by this Strategy.
- b. For habitat establishment to be applied as a compensation strategy, the proposed protection or rehabilitation strategies need to be investigated first. If these strategies have been found to be impractical, there must be sound ecological evidence and basis to justify establishment of habitat within the site, such as:

- i. within gaps of contiguous preferred koala habitat or adjacent to preferred koala habitat;
  - ii. on land determined to be a koala linkage area;
- c. Where these are met and habitat establishment is proposed, an appropriate planting regime and mix of koala food trees and other local native plant species must be developed which mimics the structure and species mix of the surrounding native forest. This planting regime and mix of species is to be documented in the vegetation management plan and approved by council.



## 2.3.6 The Habitat Compensation Policy

### 2.3.6.1 Background

This policy is designed to provide a system for determining appropriate compensation for any activity associated with the removal of koala food trees and/or preferred koala habitat that has the potential to adversely impact koalas and/or impede safe koala movement.

The policy aims to achieve no net loss of koala food trees and/or preferred koala habitat as a basis for ecologically sustainable development, to protect and rehabilitate areas of existing preferred koala habitat and to restore preferred koala habitat where there is a sound ecological justification and reason to do so.

### 2.3.6.2 Guiding principles

The principles that underpin this policy are:

a) The primary objective of habitat compensation must be to:

- protect,
- rehabilitate or
- restore

ecologically viable koala food trees and/or preferred koala habitat in this order of preference.

b) Compensation must only be considered once all options to:

- avoid,
- minimise and
- mitigate

any adverse impacts have been applied in this order of preference and, exhausted.

c) Clearing must not be approved where the impact of clearing cannot be satisfactorily compensated. If a proposal is unable to meet the strict requirements of the compensation policy, Council may however consider alternative outcomes that are able to demonstrate satisfactory koala outcomes.

d) Habitat restoration compensation works should lead to a net gain in the area of preferred koala habitat, and an improvement in the condition of preferred koala habitat.

e) The receiving land on which compensation works are proposed must:

- i. have PKH of the same or higher class to that being removed,
- ii. be within, adjoining or as close as possible to the development area and;
- iii. be within the related Koala Precinct Area and;
- iv. be ecologically suitable and appropriate for protection, rehabilitation or restoration of preferred koala habitat.

- f) An activity that leads to the loss of preferred koala habitat (especially clearing) should only proceed once the management arrangements on the receiving land are legally secure.
- g) Compensation works must not lead to permanent adverse environmental impacts and must not be used as a justification for granting approval to a Development Application where the adverse environmental impacts of a development are greater than the benefit to be obtained from the compensation works;
- h) Management and monitoring of habitat compensation activities should be undertaken over an ecologically meaningful timeframe (i.e. a minimum of five years).
- i) Council should consider a register of receiving lands.

#### ***2.3.6.3 Components of the Habitat Compensation Policy***

Where council gives approval to clear an area of preferred koala habitat, this policy requires the proponent to undertake compensation works to compensate for the loss of preferred koala habitat. The compensation works must benefit another area of preferred koala habitat or a koala linkage area to that being impacted by development. The policy is based on two main components:

- a) the nature of and level of legal protection afforded an area of receiving land;
- b) a loss / gain multiplier that takes into account:
  - i. the relative conservation value of the area of preferred koala habitat ( Primary, Secondary A and Secondary B and koala linkage area) adversely impacted by the proposed development;
  - ii. a time / risk factor that takes into account the time lag before ecological benefits are realised and the risk of the compensation works failing.

#### ***2.3.6.4 Koala Habitat Compensation Strategies***

Based on the type of compensation works to be undertaken and the level of legal protection afforded an area of receiving land, this compensation policy recognises three category priorities of compensation works that can be applied to preferred koala habitat, namely:

- Protection,
- Rehabilitation and
- Restoration.

Habitat compensation works may be undertaken concurrently with other activities that protect, rehabilitate or restore habitat. For example, this may include the restoration of biological buffers, linkage areas or rehabilitation of riparian corridors.

This policy recognises four classes of Preferred Koala Habitat defined as Primary, Secondary A or Secondary B Habitat or koala linkage area as reprinted in Table 4 below.

**Table 4. Four classes of Preferred Koala Habitat**

Vegetation	Category	Definition
Vegetation classified as Preferred Koala Habitat	Primary	Vegetation associations and/or communities wherein “primary” food tree species form $\geq 50\%$ of the canopy.
	Secondary A	Vegetation associations and/or communities wherein; “primary” food tree species form 30-50% of the of the canopy or wherein; “primary” and “secondary” species combine to form $\geq 50\%$ of the canopy or wherein;
	Secondary B	Vegetation associations and/or communities wherein “secondary” food tree species form $\geq 50\%$ of the canopy.
Koala Linkage Area	As above or where other tree species combine to link one area of extant native vegetation with another and therefore provide habitat for movement, linkage and dispersal.	

For receiving land, all compensation protection, rehabilitation and restoration works must be detailed with timelines, milestones and key performance indicators, in a Vegetation Management Plan (VMP) prior to approval by council. All works are to be fully funded by the proponent with a minimum five-year management period following the completion of the initial phase of habitat enhancement works. Compliance with the VMP must be enforceable and secured by legal agreement (refer Table 5).

Where ‘Protection’ is proposed as the mechanism for compensatory habitat, this must also include enhancement works to improve the integrity and viability of habitat over time, which must be documented in the VMP.

Where ‘Rehabilitation’ or ‘Restoration’ are proposed as the mechanisms for compensatory habitat, these must be detailed, fully funded, and documented in the VMP.

#### **2.3.6.5 Protection**

Koala habitat protection is the priority 1 compensation Strategy to implement for any adverse impact of a development proposal. All classes of koala habitat can receive protection under this policy. There are four acceptable primary protection mechanisms for this category of habitat compensation works (Table 5).

It is acknowledged that whilst the mechanisms identified are all legally viable, the acquisition or eligibility guidelines of the agencies involved may not correspond with the lands in question. Accordingly, these mechanisms should not be proposed for compensation unless proof of prior discussion and agreement by these agencies is presented as part of the assessment of any Development Application.

**Table 5. Potential protection mechanisms for each class of habitat compensation works**

	Habitat Compensation Works		
	Protection	Rehabilitation	Restoration
<b>Primary protection mechanisms</b>			
Donation of land to the Crown for dedication as a conservation reserve (NPW Act)	Yes	No	No
Voluntary conservation agreement (NPW Act)	Yes	No	No
In perpetuity trust agreement under the Nature Conservation Trust Act 2001	Yes	No	No
Transfer of land to council for dedication as a reserve either as a donation and/or in lieu of Section 94 contributions (EP&A Act) (Note: limited likely potential)	Yes	No	No
Voluntary planning agreement (EP&A Act)	No	Yes	Yes
Incentive property vegetation plan (NV Act)	No	Yes	Yes
<b>Land use protection mechanism</b>			
Positive covenants or equivalent instrument (Section 88E, Conveyancing Act 1919)	Yes	Yes	Yes
Rezoning within the Bellingen LEP to zone E2 Environmental Conservation, E3 Environmental Management, RE1 Public Recreation (EP&A Act)	Yes	Yes	Yes
<b>Management and funding mechanisms</b>			
VMP/PoM fully funded with a minimum five-year management period as a condition of development consent (EP&A Act)	Yes	Yes	Yes
Environmental levy (Local Government Act 1993)	Yes	Yes	Yes

Another alternative to protect koala habitat is the implementation of a land use protection mechanism which can be applied to all three categories for compensation and are listed in the above table as follows:

- Positive covenants (Section 88E, Conveyancing Act 1919) or equivalent instrument; and/or

- Rezoning within the Bellingen LEP to zone E2 Environmental Conservation, E3 Environmental Management, RE1 Public Recreation (EP&A Act).

#### **2.3.6.6 Rehabilitation**

Rehabilitation is the next priority for compensation when all protection avenues on the property have been exhausted and/or justified as unsuitable. Adverse impacts of a development proposal may seek to be offset by managing an area of receiving land to improve the integrity and viability of preferred koala habitat and/or prevent/minimise threats to preferred koala habitat. (i.e. rehabilitation works and koala protection measures). Under this policy all classes of preferred koala habitat can be afforded rehabilitation.

#### **2.3.6.7 Restoration**

Restoration is the last resort to offset the adverse impacts of preferred koala habitat loss or degradation from a development proposal by restoring koala habitat on an area of receiving land (i.e. Restoration works). Habitat may be restored in an area of receiving land within the Koala Planning Area where there is a sound ecological justification and reason to do so (e.g. within gaps of contiguous preferred koala habitat, areas adjacent to preferred koala habitat, within a koala linkage area or a denuded riparian corridor). Appropriate works for an area of receiving land afforded Restoration works will depend on the individual features of the land and the type of ecological community to be created. It should be noted that for the purposes of this plan, restoration works do not require the establishment of an entire ecological community, but are focused upon the establishment of Preferred Koala Habitat only. Rehabilitation works and threat prevention (e.g. koala protection measures) all contribute to the restoration of preferred koala habitat. All classes of koala habitat can be afforded Restoration under this policy.

#### **2.3.6.8 Determining Compensation Area**

To ensure that the loss of preferred koala habitat caused by development activity does not lead to a net loss of habitat, the area to be secured by compensation works needs to be larger than the area of habitat that is impacted. The compensation multiplier presented in this habitat compensation policy takes into account all of the following ecological factors:

- a) the relative conservation value of the area of koala habitat adversely impacted by development activity and consequently the net gain required for environmental improvement;
- b) risk of all or some of the compensation works failing;
- c) time lag before the positive ecological benefits of compensation works are realised;
- d) area of clearing and the negative ecological impacts of the clearing;
- e) area of the compensation works and the positive ecological impact of the compensation works.

The compensation multiplier can only be represented as a relative value as it is not possible to quantify the true value of preferred koala habitat impacted by development activity. The relative values detailed in Table 8, were chosen to ensure that this policy is workable and does not place an unreasonable or prohibitive cost burden on proponents. At the same time, the values need to be high enough to accommodate the inherent risks associated with compensation works.

### **2.3.6.9 Conservation value**

The conservation value represents the relative ecological value of the area of preferred koala habitat adversely impacted by development activity. A relative value has been assigned to each of the four classes of koala habitat identified in this policy ranging from 2 (low) to 4 (high) (Table 8).

### **2.3.6.10 How do I calculate the habitat compensation works?**

In determining the area of vegetation to be removed, the following methods for calculation shall be used.

- Single tree/s with no part of canopy overlapping another tree – area within the drip line of the trees Crown (see example for Trees A & B in figure 5 below)
- Multiple trees with overlapping canopy – outer edge of total canopy (see example for Area A in Figure 5 below).

After calculating the area of vegetation to be removed, the “Single Tree” or “Area” compensation multipliers shall be used as follows;

- If the area of proposed tree removal is less than 0.2ha, apply the Single Tree multiplier;
- If the area of the proposed tree removal is greater than 0.2ha, apply the Area multiplier.



**Figure 5. Example calculation of compensation areas**

**2.3.6.11 Single Tree Compensation provisions**

Where removal of koala food trees is proposed, any koala food trees removed must be replaced according to the ratio detailed in Table 6, or, at council’s discretion the applicant may conduct enhancement works which improve the integrity and viability of koala food trees and/or preferred koala habitat or a koala linkage area within the development area.

**Table 6. Replacement ratios for three size classes of koala food trees.**

Food tree size class (dbhob)	Replacement ratio (loss:gain)
<100 mm	1:6
100–300 mm	1:8
>300 mm	1:10

Note: these ratios only apply to the koala food tree species listed in Table 9

\* replacement ratios are higher than 1:1 because of the time lag before the ecological benefits of compensatory plantings are realised and risk of compensatory plantings failing.

## **Table 7. Koala food trees**

### **Primary koala food trees**

Tallowwood (*Eucalyptus microcorys*)

Swamp Mahogany (*Eucalyptus robusta*)

Forest Red Gum (*Eucalyptus tereticornis*)

Small-fruited Grey Gum (*Eucalyptus propinqua*)

### **Secondary koala food trees**

Flooded Gum (*Eucalyptus grandis*)

Blue Gum (*Eucalyptus saligna*)

Note: Flooded Gum & Blue Gum should be considered as Primary Food Trees where they occur as a co-dominant canopy species with Tallowwood.

Where habitat establishment is proposed, an appropriate planting regime and mix of koala food trees and other plant species must be developed which mimics the structure and species mix of the surrounding native forest. This planting regime and mix of species is to be documented in the vegetation management plan and approved by council. Plantings should be targeted:

- within gaps of contiguous preferred koala habitat or adjacent to preferred koala habitat;
- on land determined to be a koala linkage area;

All plant stock must be sourced from local provenance seed.



### 2.3.6.12 Area Compensation

The compensation multiplier used for each class of koala habitat and each type of compensation works identified in this policy is detailed in Table 8 and is calculated by the following formula:

$$\text{Compensation Multiplier} = \text{Conservation Value} \times \text{Time/Risk Factor}$$

**Table 8. Compensation Multiplier values based on the formula**

		Compensation Multiplier			Conservation Value <sup>1</sup>
		Protection	Rehabilitation	Restoration	
Class of koala habitat impacted by development activity	Primary	4	8	12	4
	Secondary A	3	6	9	3
	Secondary B	2	4	6	2
	Koala linkage area	2	4	6	2
Time/Risk Factor		<b>1 (low)</b>	<b>2 (medium)</b>	<b>3 (high)</b>	

<sup>1</sup> This policy is based on the Habitat Offsets Policy Framework detailed in Eco Logical Australia (2003).

### 2.3.6.13 Time/risk factor

The time/risk factor recognises that for any area of receiving land there is an inherent risk in the habitat compensation works failing and/or a time lag before the positive ecological benefits of the activity are realised. Each of the three classes of habitat compensation works (i.e. Protection, Rehabilitation and Restoration) was ranked as having either low, medium or high time lag and/or risk of failure (i.e. time/risk factor). The three types of compensation works were then assigned a numerical value to represent time lag and/or risk of failure (Table 8).

#### 2.3.6.14 Worked example

Within a 50 hectare proposed subdivision, there are 20 hectares of degraded primary koala habitat located on undevelopable land on the development area. After all efforts to avoid, minimise and mitigate the adverse impacts of the proposed subdivision on koala habitat have been exhausted, clearing of 0.46 hectares of primary koala habitat is proposed to upgrade an existing road servicing the proposed development.

Should the development proposal process apply Protection as the measure to compensate for clearing of 0.46 hectares of primary koala habitat, the area of receiving land required is calculated as follows.

Area of Habitat Compensation Works = Area impacted x Compensation Multiplier

$$= 0.46 \text{ ha} \times 4$$

$$= 1.88 \text{ hectares}$$

Similarly, should the development proposal be suited to Rehabilitation or Restoration as the measure to compensate for proposed clearing, the area of receiving land required is therefore, 3.76 hectares and 5.64 hectares respectively as follows.

**Table 9. Example of the Area of Habitat Compensation Works required**

Based on an area of 0.46 ha of primary koala habitat proposed to be impacted by development activity.

<b>Class of Habitat Compensation Works chosen by proponent</b>	<b>Area Impacted (ha)</b>	<b>Compensation Multiplier (from)</b>	<b>Area of Habitat Compensation Works (ha)</b>
Protection	0.46	4	1.88
Rehabilitation	0.46	8	3.76
Restoration	0.46	12	5.64

### **3 Other Preferred Koala Habitat – Development Assessment Framework**

**Not adopted upon commencement of Strategy**

## 4 Management Activities

The objectives of the Strategy cannot be achieved through reliance upon regulatory measures only, and threats to koalas cannot be effectively mitigated unless a co-ordinated effort occurs across all tiers of government and across all land tenures.

In order to provide guidance to both private landowners and government agencies, a series of Koala Protection Measures have been developed that generally prescribe best practice methods for koala protection, and can be observed when making a range of land management decisions. These are discussed in Section 4.1 of the Strategy.

A more prescriptive set of management actions has also been developed that provide Council with a Strategy, and indicative timeframe for undertaking new projects to improve koala conservation outcomes across the KPA. These are discussed in Section 4.2 of the Strategy. Some of these projects can occur as part of Councils normal planning work, however other projects may require the allocation of funding by Council and / or external funding partners. The benefit of identifying these projects as part of a holistic package of measures is that when funding might become available for completion of one or more of these projects, Council can demonstrate that they are part of an overall Strategy that has strong community and council support.



**Example of Koala injured by dog attack and educational signage erected at Bellingen cemetery**

Photos: Anthony Heidemann & Mick Cooper

## 4.1 Koala Protection Measures

A range of measures have been designed to mitigate the potential indirect and direct threats that operate within the Koala Planning Area.

For each threat a series of objectives and protection measures have been identified for consideration by land managers and other relevant organisations or individuals.

These measures are shown in Table 10 - Koala Protection Measures.

**Table 10. Koala Protection Measures**

<b>FIRE MANAGEMENT</b>	
<b>Objective</b>	<ul style="list-style-type: none"> <li>• To adopt a landscape approach regarding fire and koala management;</li> <li>• To reduce the risk of high-intensity fire to an area(s) of preferred koala habitat and specifically Primary Habitat where identifiable;</li> <li>• To reduce the risk of koala mortality due to prescribed burn events.</li> <li>• To reduce the risk of habitat destruction and/or modification as a result of the establishment and management of an asset protection zone</li> </ul>
<b>Protection Measures</b>	
<b>Bush fire risk management committee</b>	<p>To encourage the Bushfire Risk Management Committee to support the intent of this Plan to protect koalas and their habitat and</p> <ul style="list-style-type: none"> <li>• set a framework to assist in identifying activities, roles and personnel to undertake mitigation strategies;</li> <li>• establish best practice methods regarding fire management and impacts of fire on koalas for council, NPWS, SF, RFS, landholders and wildlife carers.</li> </ul> <p>Council will support the amendment of the Mid North Coast Bush Fire Risk Management Plan to achieve:</p> <ul style="list-style-type: none"> <li>• inclusion of all preferred koala habitat within the Koala Management Area, and</li> <li>• best practice fire management practices for preferred koala habitat areas and koala food trees as specified in this Plan.</li> </ul>
<b>Management regime for prescribed burns</b>	<p>Encourage all land managers to adopt the intent of this Plan when creating a FMP. Encourage all land managers to plan burn intervals to reflect the Keith vegetation classes required ecological requirements for fire as per RFS standards (Rural Fire Service (2006), <i>NSW RFS Bushfire Environmental Assessment Code for New South Wales</i>. National Parks and Wildlife Service, Bushfire Research Unit, Fire Interval Guidelines in Kenny, B., Sutherland, E., Tasker, E. &amp; Bradstock, R. (2004), <i>Guidelines for Ecologically Sustainable Fire Management</i>, NSW National Parks &amp; Wildlife Service, Hurstville).</p> <p>In addition, the following also should be implemented:</p>

- plan prescribed burns greater than 6 years apart to allow for a koala generational breeding cycle to survive and establish;
- to prioritise mechanical fuel reduction methods for asset protection zones where appropriate (around homes and infrastructure);

Prescribed burns should:

- be targeted to occur outside of the most active period for koala movement, being breeding and dispersal season from August to November;
- adopt a mosaic burn pattern to reduce fire intensity and minimise the extent of burning so that the risk of injuring or killing koalas is reduced, the risk of canopy scorch is lowered.
- be prioritised to start within non-habitat, then sec B, then sec A habitat where identified;
- exclude areas of Primary habitat from prescribed burns where possible;
- burns to only be carried out during appropriate weather conditions (i.e. low temperature, low wind) and soil-moisture conditions.

In order to better manage fire for koala conservation in the long-term, the BFRM committee should collaborate with local land managers, to develop additional treatment strategies as follows;

- maintenance and improvement of existing fire trails where appropriate for fire suppression purposes.
- adopt a range of options for vegetation management techniques for fuel reduction within and around PKH;
- identify strategic locations for hazard reduction burning within and around PKH;
- create a pre-incident plan for north of Bellinger River
- identify and formalise a rapid response protocol for fire events north of Bellinger River, and
- use of a single sheet operational bush fire plan for use by crews responding to an incident which includes koala habitat mapping.

**Management regime for wildfire**

**Management of asset protection zones**

Where practical, asset protection needs to be undertaken with the implementation of manual methods, (thinning, slashing and raking), to avoid broad hectare burning outside of Keith Vegetation Class RFS burn intervals.

Council will assist the above by:

**Landholder Support**

1. provision to all land management authorities and land holders with up to date mapping on areas of PKH;
2. adopting the BRMC fire management strategies on Council owned land to protect PKH;

3. supporting koala awareness training for bush fire management personnel via education material, including those involved with the preparation of the Mid North Coast Bush Fire Risk Management Plan and assessors of hazard reduction applications;
4. contributing guidelines to the development and delivery of landholder and community fire management strategies to protect koala via the BKPoM, when preparing a FMP for property and asset protection;

Council to deliver community education information in a s149 certificate regarding;

- Preferred Koala Habitat mapping

Council will seek the input of all relevant land managers at each review of the Plan with regard to the above provisions, and in light of the results of koala population monitoring.

Council will assist in the preparation of protocols for land management agencies to co-operate with the local wildlife care groups concerning fauna welfare issues following bush fires, including post fire searches of burnt creeks and other sheltered areas where koala may seek refuge.

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## ROAD STRIKE AND MORTALITIES

### Objectives

- Avoid koala injury and fatalities from vehicle strike in Koala areas

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### Protection Measures

#### Koala proof fencing

- Periodically review available information to identify koala road kill ‘black spots’
- Koala road “black spots” should have koala exclusion fencing adjacent to PKH areas and be a;
  - minimum 2m high; and
  - 5m from any retained trees or plantings; and
- minimum 50cm wide scratch panelling or ‘floppy tops’ installed along the length of the fence; and
  - fully-funded agreement with a relevant organisation or authority for the maintenance and monitoring of the fencing in perpetuity.

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#### Road design

- Apply appropriate road design standards such as reduced speed limits, warning signage, traffic calming devices, and roadside verge clearing and lighting;
- Maximum speed of 40km/hr for roads within PKH and linkage areas;
- For roads where the maximum speed of motor vehicles must be greater than 50 kilometres per hour in urban areas or greater than 60 kilometres per hour in rural areas, appropriate measures are required to exclude koalas

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from roads and minimise the likelihood of impediments to safe koala movement;

- Standardise koala road signage
- 

**Road design effectiveness**

Council to review road kill records of identify koala “black spots” and refine mitigation strategies where required.

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**Community**

Council to provide media and koala information to residents at the beginning of each breeding season in August, to remind drivers that koalas are on the move.

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**BARRIERS TO MOVEMENT**

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**Mitigation Objectives**

- Maintain and improve contiguous forested landscapes to allow koalas to establish new territories, facilitate gene flow and respond to environmental changes.
  - Reduce any barrier to koala dispersal.
- 

**Protection Measures**

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Fences that traverse across PKH or linkage areas should be constructed to allow free movement of koala’s, these include;

**Lot and Boundary Fencing**

- hedges or screens of trees and/or shrubs;
  - fences where the bottom of the fence is a minimum of 300 mm above the ground to allow koalas to freely move underneath;
  - fences that are easy for koalas to climb (e.g. sturdy chain mesh fences not topped by barbed wire, or solid style fences with a timber ‘post and bridge’ system over the fence at regular intervals of less than 20 metres);
  - open post and rail fences; (Urban yard fences should be constructed to exclude koala’s)
- 

**Swimming Pool design**

- Incorporate features that allow koalas to easily escape from the pool, namely, a shallow ramp and/or a stout rope (minimum 50 mm diameter) that trails in the pool at all times and is secured to a stable poolside fixture;
  - (notwithstanding the provisions of the *Swimming Pools Act 1992*), include fencing that exclude koalas (i.e. not be constructed of timber or have timber posts);
  - exclude shrubs and/or trees within 1 metre of the pool fence that koalas could use to climb over
- 

**Roads**

- ensure roads within PKH areas have the required infrastructure to provide safe koala passage.
-



## DOG ATTACK

### Objectives

- Avoid koala injury and fatalities from dog attack within and adjacent to PKH

### Protection Measures

Fences that exclude koala movement include:

### Dog and Koala proof fencing

- steel sheet metal at a minimum of 1.8m high or;
- other flat surfaced fencing which does allow a koala to climb up the fence (eg. not be constructed of timber or have timber posts) and which is a minimum of 1.8m high and less than 200mm from the ground.
- any fence that is intended to contain dogs and exclude koalas should be located as far as practical and no less than 2 metres away from any tree that koalas could use to cross the fence.

### Dog Control

Council should explore the following strategies to better secure koalas within or adjacent to PKH as follows;

- Council Rangers to target roaming dogs during koala breeding and dispersal season (August- December) within and adjacent to identified PKH and linkage areas along roads.

### Signage and education

Council should undertake a community engagement program to ensure that the community is aware of its responsibility towards koala protection when living within or near koala habitat. Council should review, in consultation with the community the;

- identification of urban dog exercise areas;
- identification of significant koala usage areas that interface with urban and or rural residential areas;
- signage to indicate dogs can harass, injure or kill koalas;
- remind the public via the *Companion Animal Act 1998*, that all public areas are “on leash’ areas unless specified otherwise;
- the effectiveness of dog control strategies on rural residential lands, and
- any required infrastructure to assist in the protection of koalas in urban areas

## HABITAT LOSS, FRAGMENTATION AND DEGRADATION OF HABITAT

### Objectives

- To prevent loss, fragmentation and degradation of koala habitat.

### Protection Measures

#### Environmental Zoning

Council should investigate introducing a consent requirement for vegetation removal within Zones R5, E2 & E3 via adoption of the optional sub-clause 5.9 (9) of the Standard Instrument Principal Local Environmental Plan. Council should consider the refinement of existing zonings to zone areas of PKH as E3 – Environmental Management (as documented in Clause 15(b)(i) of SEPP 44 – Koala Habitat Protection.

## KOALA WELFARE

### Objectives

- To identify a best practice care management Strategy for sick, injured or disorientated koalas.

### Protection Measures

#### Welfare Communication Plan

Council should work with wildlife care organisations such as WIRES to establish a rapid response plan to manage sick, injured and disorientated koalas.

#### Community education program

- Program to target communities near PKH and includes information about koala threats, disease and koala welfare contacts.

## CLIMATE CHANGE

### Objectives

- To apply conservation and management strategies to assist koalas to adapt to Climate Change affects

### Protection Measures

To make land-use managers and landholders aware of increased koala exposure to fire and dog attack during periods of heat waves and drought by considering;

### Decrease koala exposure

- Enforcement of relevant legislation to protect PKH and KFT within public and private lands;
- Fire management strategies listed in the Fire section above, to protect primary habitat and refuge areas such as creek lines, protected aspects and rainforest;
- Provision of koala linkages to both extant vegetated areas and higher altitude areas to provide a greater diversity of environmental conditions and ecosystems to buffer impacts of climate extremes and potential changes in leaf nutrition; and
- Dog control strategies listed above to lessen the potential threat of dogs when koalas seek water or refuge on ground level.
- Enact koala welfare strategies for disorientated, sick or injured koalas

### Community education program

Council to engage the community regarding the significance of Primary Koala Habitat and refuges (habitat and trees) and the heightened exposure of koalas to dog attack and fire during periods of heat waves and drought.

## 4.2 Schedule of Management Activities

The aim of this section of the Strategy is to provide a non-regulatory framework for management activities that complement the Development Assessment Framework presented in Chapters 2 & 3 of the Strategy. It is necessary to undertake these management activities to:

- minimise threats to koalas and their habitat that are not related to development activity
- increase the amount of koala habitat in the koala planning area
- maintain and, where possible, improve the quality of existing koala habitat in the koala planning area
- ensure effective implementation and monitoring of the Plan by Council.

Management activities to be conducted as part of this Plan are detailed in Table 11 and have been classified into the following categories:

- implementation and monitoring
- regulatory processes
- restoration and management
- communication and education
- road and traffic management
- dog management
- koala health and welfare
- bushfire management
- funding
- research and advocacy
- habitat restoration & management

The development of this management framework has been informed by the Bellingen Shire Council Coastal Area Koala Habitat Study (OEH 2014). Many of the management activities and actions outlined in Table 11 may be able to be completed under existing Council service levels and recurrent budgets. However, it is noted that completion of some activities and actions will require additional funding through allocation of funds within Council's budgetary constraints and/or through successful applications for external funding.

**Table 11. Management Activities proposed to be conducted as part of this Strategy**

**Note:** Acronyms used in table are as follows;

H = high; M = medium; L = low; N/A = not applicable; OEH = Office of Environment and Heritage

Activity	Management Action	Priority H/M/L	Target Start	Indicative action Duration	Indicative budget	Funding Source
<b>Implementation and monitoring</b>						
1	Council to establish a Koala Advisory Group to oversee the implementation of management activities identified in this Strategy.	H	Within 3 months of adoption	Bi-annually	N/A	Council (under existing recurrent budget)
2	The Koala Advisory Group is to produce an annual monitoring report to Council on the effectiveness of this Strategy. This report is to include details of:	L	1 year following adoption	Annually	N/A	Council (under existing recurrent budget)
	a. progress of implementation of the management activities identified in this Strategy					
	b. any additional activities that may be required					
	c. the amount of <i>food trees</i> and <i>koala habitat</i> retained, removed, restored and/or replaced					
3	Council is to integrate management actions into the Delivery Plan & Operational Plan cycle to monitor.	M	First available opportunity	Ongoing	N/A	Council (under existing recurrent budget)
	a. the long-term compliance of DA conditions of consent					
	b. the quantity and quality of <i>food trees</i> and <i>koala habitat</i> removed, retained, restored and/or replaced under the plan's compensation measures					
	c. update GIS mapping to identify the location of koala habitat removed, restored and/or replaced					
4	Council to develop a process to update koala habitat mapping based on additional information becoming available (e.g. Koala Habitat Assessment Report for a development application).	H	When adopted	2 months	N/A	Council (under existing recurrent budget)
5	Council is to investigate development of a compliance mechanism to ensure the long-term viability of food tree and habitat compensation measures.	M	Within 2 years of adoption	12 months	TBC on investigation	Council
6	Council is to assess the effectiveness and the quality of compensation	H	1 year following	12 months	N/A	Council (under existing

Activity	Management Action	Priority H/M/L	Target Start	Indicative action Duration	Indicative budget	Funding Source
	outcomes gained from implementation of the <i>food tree</i> and <i>koala habitat</i> compensation measures detailed in this Plan.		adoption			recurrent budget)
<b>Regulatory processes</b>						
7	Council is to consider and implement appropriate measures for amendment of BLEP 2010 to give effect to the aims of this Strategy (as required by SEPP 44).	H	When adopted	12 months	N/A	Council (under existing recurrent budget)
8	Council is to amend Bellingen DCP Chapter 16 to document the tree species defined as preferred koala food trees in this Strategy and confirm consent requirements for removal.	H	When adopted	1 month	N/A	Council (under existing recurrent budget)
9	Council to consider the Development Assessment Framework of this Strategy as relevant to the consideration of any Planning Proposal to rezone land. The intent of this consideration is to ensure that any issues requiring resolution are identified and actioned at the initial planning stages. This will ensure the future potential for any adverse impact on koala habitat is minimised.	H	When adopted	Ongoing	N/A	Council (under existing recurrent budget)
10	Council is to include information regarding the presence of mapped <i>core koala habitat &amp; preferred koala habitat</i> on certificates issued under Section 149 (5) of the EP&A Act	M	When adopted	1 month	N/A	Council (under existing recurrent budget)
11	Council is to include information on the existence of additional koala habitat mapping (obtained through the development application process) on certificates issued under Section 149 (5) of the EP&A Act.	M	When additional information is received.	Ongoing	NA	Council (under existing recurrent budget)
12	Council is to develop and deliver a training program for Council staff involved in implementation of this Strategy.	H	Within 3 months of adoption	3 months	N/A	Council (under existing recurrent budget)

13	In conjunction with OEH, Council is to develop and deliver information for staff/consultants on the requirements of Koala Habitat Assessment Reports, the Spot Assessment Technique and its application for assessment purposes	H	Within 6 months of adoption	3 months	TBC	External grant funding, OEH, Council
<b>Communication and education</b>						
14	In conjunction with OEH, Council is to develop and implement an integrated communication program to inform and educate the community about threats to koalas and their habitat	H	Within 12 months of adoption	3 months, ongoing	TBC	Council and external grant funding
15	Council is to make the Comprehensive Koala Plan of Management and associated maps available on the Council website and provide access to GIS files upon request	H	Within 1 month of adoption	1 month	N/A	Council (under existing recurrent budget)
16	Council is to update any existing guidelines for vegetation management plans to reflect the preferred koala food tree and habitat compensation guidelines.	M	Within 12 months of adoption	1 month	N/A	Council (under existing recurrent budget)
17	Council is to develop a fact sheet explaining the development consent process.	H	Upon adoption	On-going	N/A	Council (under existing recurrent budget)
<b>Road and traffic management</b>						
18	For existing and proposed roads within the <i>koala planning area</i> , Council is to:	M	Within 12 months adoption	6 months, ongoing	TBC on investigation	Council and external grant funding
	a. from time to time, audit existing koala road safety measures					
	b. develop a program of koala road safety measures that may be used at identified vehicle strike black spots					
19	For any new roads proposed by Council within the <i>koala planning area</i> , Council is to apply the Development Assessment Framework of this Plan.	H	When adopted	Ongoing	N/A	Council (under existing recurrent budget)
<b>Dog management</b>						
20	In relation to dog management within the koala planning area, Council is to:	H	Within 12 months of adoption	6 months, ongoing	TBC on investigation	Council and external grant funding
	a. identify areas where koalas are at a high risk of contact with domestic dogs					
	b. target monitoring of compliance in these areas in accordance with the provisions of the <i>Companion</i>					

	<i>Animals Act 1998</i>					
	c. target education on responsible pet ownership to new dog owners and dog owners in high risk areas					
	d. review restrictions within existing dog exercise areas and ensure that use of these areas is compatible with the objectives of this Strategy					
	e. ensure any new leash-free areas are compatible with the objectives of the Strategy					
<b>Koala health and welfare</b>						
21	Council is to encourage and support community representatives to be trained as koala carers for the Bellingen area	M	Within 1 year of adoption	12 months	N/A	Council (under existing recurrent budget)
22	Council is to consult with WIRES, other relevant wildlife carer groups and local Vets regarding best practice koala care and welfare	L	Within 1 year of adoption	6 months	N/A	Council (under existing recurrent budget)
<b>Bushfire management</b>						
23	Council is to a. provide mapping of preferred koala habitat as a GIS layer to the Rural Fire Service and the Bushfire Risk Management Plan Committee	M	Upon adoption	3 months	N/A	Council (under existing recurrent budget)
	b. develop in association with OEH and then distribute within the community best practice guidelines for fire management in preferred koala habitat		Within 3 months of adoption	6 months		
	c. provide advice to the RFS as part of any Local Government Property Search regarding the existence of preferred koala habitat on the subject land.					
24	Council is to consult with the Rural Fire Service and the Bushfire Risk Management Plan Committee regarding:	M	Within 12 months of adoption	6 months	N/A	Council (under existing recurrent budget)
	a. updating the Bushfire Risk Management Plan for Bellingen LGA to take into account the location and significance of <i>preferred koala habitat</i>					
	b. provision of a GIS layer to Council regarding fire history maps in the Bellingen LGA					
	c. in association with OEH develop best practice guidelines for use by brigades located within the					



	Bellingen LGA					
<b>Funding</b>						
25	Council is to investigate potential financial incentives for landholders who have koala habitat on their land and/or conduct koala habitat restoration works that will assist with the long term preservation of koala habitat	M	Within 12 months of adoption	6 months	N/A	Council (under existing recurrent budget)

<b>Research and advocacy</b>						
26	The Koala Advisory Group is to identify and prioritise potential koala research projects on the basis of their application to <i>koala habitat</i> and population management, as well as implementation and monitoring of the Strategy	L	Within 2 years of adoption	6 months	N/A	Council (under existing recurrent budget)
27	To ensure that the responsibility for koala habitat management occurs across all landscapes, Council and the Koala Advisory Group are to advocate for an integrated management approach across all land tenures and land managers.	M	Within 12 months of adoption	Ongoing	N/A	Council (under existing recurrent budget)
28	Council will, in association with OEH, undertake further on-site koala surveys to the west of the Never Never River in Precinct 1, to map any areas that meet the "Core koala habitat" definition under SEPP 44.	H	Within 12 months of adoption		Subject to available funding & resources	Council (under existing recurrent budget) and OEH
<b>Habitat restoration and management</b>						
29	Identify public lands (such as roads and road reserves, parks and other public lands) and areas of possible koala habitat in Council and public ownership potentially suitable for revegetation and restoration projects in partnership with rural landholders.	M	Within two years of adoption	6 months		Council (under existing recurrent budget)
30	Establish a register of landholders who are willing to be involved in habitat restoration.	M	Within two years of adoption	Ongoing		Council (under existing recurrent budget)
31	Seek external funding for habitat restoration works, focusing upon identified koala linkage areas and other high value koala habitat.	H	Upon adoption When funding opportunities announced	Ongoing		Council (under existing recurrent budget and using Grants Officer)

## 5 Definitions & Acronyms

In this Strategy, the following definitions apply:

**“Assessment Report”** means “Koala Habitat Assessment Report” for either “small impact development” or “large impact development” as detailed in Section 4.2 of this Plan.

**“Bellingen DCP”** means Bellingen Development Control Plan 2010.

**“Bellingen LEP”** means the Bellingen Local Environment Plan 2010.

**“building envelope”** means an area of land designated for construction of a dwelling, buildings and ancillary infrastructure as well as any land required to be cleared for a bushfire asset protection zone, ancillary gardens and landscaping.

**“Comprehensive Koala Plan of Management”** means a plan of management prepared in accordance with State Environmental Planning Policy 44 – Koala Habitat Protection.

**“core koala habitat”** means an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population. This is the same meaning as that defined by State Environmental Planning Policy 44 – Koala Habitat Protection and is mapped in Figure 4 of the Plan.

**“development”** means:

- (a) the use of land, and
- (b) the subdivision of land, and
- (c) the erection of a building, and
- (d) the carrying out of a works, and
- (e) the demolition of a building or works, and
- (f) any other act, matter or thing referred to in section 26 (of the Environmental Planning & Assessment Act 1979) that is controlled by an environmental planning instrument, but does not include any development of a class or description prescribed by the regulations for the purposes of this definition.

This is the same meaning as that defined by the Environmental Planning & Assessment Act 1979.

**“development application”** or **“DA”** means an application for consent under Part 4 of the Environmental Planning & Assessment Act 1979 to carry out development but does not include an application for a complying development certificate. This is the same meaning as that defined by the Environmental Planning & Assessment Act 1979.

**“diameter at breast height over bark”** or **“dbhob”** is the diameter of a tree measured 1.4 metres above the ground.

**“EP&A Act”** means the Environmental Planning and Assessment Act 1979.

**“infrastructure”** means all structures or works associated with the completion of any development. This includes, but is not restricted to gardens, landscaping, water tanks, on-site waste water management systems, electricity supply, extensions of reticulated water and sewer, and any access route, road or driveway; but excludes farm dams.

**“koala habitat”** means “core koala habitat” and/or “preferred koala habitat” (Primary, Secondary A and Secondary B).

**“koala linkage area”** means an area or tract of land that is used, or could be used, by koalas when moving between different areas of their home range or habitat or used for dispersal to new habitat.

**“koala food tree”** means the tree species as listed in the Koala Habitat Study, Bellingen Coastal Area (OEH 2014) and Table 2 of this Strategy.

**“LGA”** means local government area.

**“no-build zone”** means a designated area of land where the construction of dwellings, buildings and the like are precluded.

**“PoM”** means plan of management.

**“preferred koala habitat”** means any area identified as either Primary, Secondary A or Secondary B koala habitat as defined in the Koala Habitat Study, Bellingen Coastal Area (OEH 2014) and as described in Section 1.5 of this Strategy.

**“receiving land”** means the area of land receiving the benefit of food tree compensation measures and/or habitat compensation measures.

**“RG-bSAT”** means Regularised Grid-based Spot Assessment Technique.

**SEPP 44** means State Environmental Planning Policy 44 – Koala Habitat Protection.

**“stadia survey”** means stadiametric survey, the recording of the precise location and species identity of all “preferred koala food trees” on a site, and is to be carried out by a registered surveyor and an appropriately qualified ecologist.

**“study area”** means the “development area” and any additional areas that are likely to be directly and/or indirectly impacted by a “large impact development”, including any asset protection zone, ancillary and off-site works.

**“development area”** means the allotment(s) to which a development application applies.

**“suitably qualified person”** means a person with a minimum undergraduate qualification in ecology, environmental management, forestry or similar from a recognised university and with experience in flora and fauna identification, survey and management, including experience in conducting koala surveys.

**“the Plan” or “this Plan”** means The Bellingen Shire Council Coastal Area - Core Koala Habitat Comprehensive Koala Plan of Management.

**“the Strategy” or “this Strategy”** means The Bellingen Shire Council Coastal Area Koala Management Strategy.

**“TSC Act”** means the Threatened Species Conservation Act 1995.

**“tree”** is defined in this Plan as any plant which:

(a) is over 3 metres in height; and/or

(b) has a diameter at breast height above bark of more than 100mm

**“tree protection zone”** means the area above and below the ground and at a given distance from the trunk set aside to protect a tree’s roots and crown from development activity.

**“VMP”** means vegetation management plan.

**“VCA”** means voluntary conservation agreement.

## 6 References

Department of Environment and Climate Change (DECC). 2008. Approved Recovery Plan for the Koala (*Phascolarctos cinereus*). Department of Environment and Climate Change, Sydney, NSW.

Phillips, S., Hopkins, M. and Warnken, J. 2011. Splines in the sand: Modelling metapopulation structure across the landscape to provide greater planning certainty for an arboreal marsupial (Koala *Phascolarctos cinereus* Goldfuss).

Phillips, S. and Callaghan, J. 2011. The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*.

Office of Environment and Heritage 2014. Koala Habitat Study, Bellingen Shire Council Coastal Area. A report to Bellingen Shire Council.

## Appendices

### Appendix 1: Koala Habitat Survey Method

The following **koala habitat survey method** is based on the approach detailed in the Scat Assessment Technique (SAT) and Regularised, Grid-based SAT (RG-bSAT) approach by Phillips & Callaghan 2011. The **koala habitat survey method** detailed below will be adopted by council as the standardised sampling tool for determining koala activity and preparing *Koala Habitat Assessment Reports* in the koala planning area. For the purposes of this Plan, it is intended that this assessment be undertaken by a suitably qualified person with relevant experience and training in both the application and interpretation of the SAT and RG-bSAT approach. The sampling principles of RG-bSAT key elements of data analysis and modelling of associated koala activity data are currently the subject of a separate publication (Phillips, S., Hopkins, M. and Warnken, J. 2011).

Set out below are the steps to be undertaken in applying the **koala habitat survey method**. Any deviation from this approach must be fully justified and approved by council prior to lodgement of the *Koala Habitat Assessment Report*.

#### Koala Habitat Survey grid cell sampling intensities for three categories of land area

Area of study area	Survey sampling intensity
<15 ha	75 m x 75 m
15–50 ha	125 m x 125 m
>50 ha	175 m x 175 m

The assessment must be undertaken by a suitably qualified person with relevant experience in the application and interpretation of koala habitat surveys;

#### STEP 1

Determine appropriate sampling intensities for the site to be assessed using Table above.

#### STEP 2

Overlay a map/aerial photo of the development area with a square grid the dimensions of which correspond to the “survey sampling intensity” detailed above.

Use the grid-cell intersections to identify sampling points that fall upon areas of land containing woodland or forest with Eucalypt trees ( $\geq 3\text{m}$  and  $100\text{mm}$  dbhob).

Disregard any sampling points that fall within areas such as water bodies or areas that do not have measurable forest cover or are a vegetation type not utilised by Koala (eg heathland or treeless wetlands).

#### STEP 3

Field site sampling for the presence / absence of koala usage is to be undertaken at each sampling point using the **Spot Assessment Technique (SAT) (Phillips & Callaghan, 2011)**.

The resulting koala activity level at each field site within *PKH* are then interpreted as either “Low” (less than 6%) or “High” use (equal to or greater than 6%).

## Appendix 2: Legislative Context

### **Environmental Planning & Assessment Act 1979**

The principal piece of planning legislation in NSW is the *Environmental Planning and Assessment Act 1979* (EP&A Act). This Act provides a legislative framework for environmental planning, including the assessment of proposed development. Council's assessment of a proposed development is guided by this legislation and relevant environmental planning instruments. The EP&A Act provides for preparation of environmental planning instruments, including State Environmental Planning Policies and local environmental plans. *State Environmental Planning Policy No. 44 – Koala Habitat Protection* is an environmental planning instrument which provides for the protection and conservation of koalas.

### **State Environmental Planning Policy No. 44 – Koala Habitat Protection**

*State Environmental Planning Policy No. 44 – Koala Habitat Protection* (SEPP 44) came into effect in 1995. Its objective is to halt the decline in koala populations and to provide for the recovery of koala populations. SEPP 44 applies to local government areas in NSW where koalas are found. The policy encourages protection and management of natural vegetation that provides food and habitat for koalas. The policy applies to any development application (DA) on contiguous areas of land under the same ownership that are greater than 1 hectare in area, and where 'potential' and/or 'core' koala habitat (as defined in SEPP 44) is found. In cases where such a DA proposes to disturb 'potential' or 'core' koala habitat, the DA assessment pathway identified in SEPP 44 must be followed.

Under SEPP 44, there is provision for preparation of plans of management which aim to protect areas of koala habitat and mitigate negative effects of a proposed development on resident koalas and their habitat. A Comprehensive Koala Plan of Management, such as this Plan, can be prepared for part of or the whole of an LGA. Individual Koala Plans of Management are prepared for specific land and developments. A DA on land that supports core or potential koala habitat cannot be approved by Council unless an approved Comprehensive or Individual Plan of Management is in place.

Recent advice has been issued to Council by the Department of Planning & Environment that limits the scope of what a Comprehensive Koala Plan of Management can include. Specifically, a Comprehensive KPOM is now seen as only applicable to land that is considered to be core koala habitat. Including the KPOM and other components within a Koala Management Strategy provides some of the benefits of the previous approach. The Strategy;

- facilitates a strategic and coordinated approach to management of koalas and their habitat
- reduces the resources required to process individual DAs
- facilitates further government, non-government and community involvement in koala conservation in the Bellingen LGA.

For applicants, the KPOM:

- removes the need to prepare an Individual Koala Plan of Management (if required)

- reduces the time taken to process a DA
- provides transparent procedures and guidelines for assessing a DA
- ensures that requirements to compensate the loss of preferred koala food trees, and preferred and core koala habitat are documented and transparent.

### **Bellingen Local Environmental Plan 2010 and Bellingen Development Control Plan**

The Bellingen LEP and the Bellingen Development Control Plan (Bellingen DCP) provide the planning framework for encouraging orderly development within Bellingen LGA while protecting the natural and built environments. The Bellingen LEP identifies land use zones for all land in the LGA. For each zone, the Bellingen LEP provides objectives and identifies what kinds of development that are permitted either with or without development consent from Council. For development that is permitted with consent, the Bellingen DCP supplements the *Bellingen LEP* by providing more detailed information and controls.

### **Threatened Species Conservation Act 1995**

Council is required to consider a range of environmental matters, including the actual or likely impact of a proposed development on threatened species, populations, ecological communities or their habitats listed in the *Threatened Species Conservation Act 1995* (TSC Act). The koala is listed as a 'vulnerable' threatened species in Schedule 2 of the Act.

### **Native Vegetation Act 2003**

In NSW, the *Native Vegetation Act 2003* regulates the clearing of native vegetation on Rural and Rural Residential lands, including Private Native Forestry. Urban areas and land in the conservation and forestry estates are not subject to the provisions of the NV Act. Clearing approvals via a Property Vegetation Plan (PVP) under the NV Act are determined by the Northern Rivers Local Land Services. PVP approvals for harvesting timber from native forests on private land come under the Private Native Forestry (PNF) Code of Practice. PNF PVP approvals are determined by the Environment Protection Authority (EPA).

The EPA have advised Council that the existing PNF Code of Practice states that forestry operations are not permitted within any area identified as "core koala habitat" within the meaning of SEPP 44, and that "core koala habitat" can be identified through an approved Comprehensive Koala Plan of Management or an LEP.

### **Environment Protection and Biodiversity Conservation Act 1999**

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation that provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. These entities are defined in the EPBC Act as 'matters of national environmental significance'. As at 2 May 2012, koala populations in NSW have been recognised as under threat from extinction and are listed as 'vulnerable' under the EPBC Act.



If a proposed development activity is likely to have a 'significant impact' on the koala, this activity must be referred to the federal environment minister through the Australian Government Department of Sustainability, Environment, Water, Population and Communities. However, it is the proponent's decision whether to refer the proposal in relation to the potential for a 'significant impact' on the koala or other matters of national environmental significance. Should a referred action be determined to have a 'significant impact', the action will be assessed under the provisions of the EPBC Act.

Note, at the time that this Plan was approved there was no bilateral agreement between the NSW State and Australian Governments that delegates responsibility for conducting environmental assessments and approvals under the EPBC Act to the State. Consequently, development applications that trigger both the TSC Act and EPBC Act are assessed under separate duplicate processes.

### **Crown Lands Act 1989**

Crown land is managed under the Act and in accordance with the objects and principles outlined by the Act to ensure that all Crown lands are managed for the benefit of the people of NSW. The KPOM is consistent with the principles of Crown Land Management as they relate to environmental protection and the conservation of natural resources.

The Bellingen Coast Regional Crown Reserve Plan of Management and the Bellinger Heads State Park Operational Plan adopted 5 May 2010 by the Minister for Lands are the key Crown Land planning instruments relevant to Crown lands within the KPOM area. These Plans place a high level of importance on the protection and conservation of the natural environment - in particular the conservation of high conservation value habitat, significant vegetation communities and threatened species. In progressing the KPOM it will be important for these plans to be considered and for council to engage with the Bellinger Heads State Park Trust in relation to the lands for which it has management responsibility.