Bellingen Shire Development Control Plan 2017

Chapter 16

Koala Habitat Protection

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Amendment	Date Adopted	Date Commenced
Minor review of DCP - DCP 2017 replaces DCP 2010	22 November 2017	6 December 2017

16.1 Aims

The general aims of this chapter are;

a) Manage the long-term sustainability and recovery of koalas and their habitat.

b) 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.

c) Minimise and manage threats affecting koalas and their habitat.

d) 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.

16.2 Where this Chapter Applies

The provisions of this Chapter apply to land within the Bellingen Shire Coastal Area Koala Planning Area (refer Appendix 16.1) that has an area of 0.4ha or more and has been identified as containing *preferred koala habitat* (refer Appendix 16.2).

The provisions of this Chapter do not apply to land identified as containing *core koala habitat* by the Bellingen Shire Council Coastal Area Comprehensive Koala Plan of Management (refer to Appendix 16.3) and that has an area in excess of 1ha. In such cases, the provisions of the CKOM apply in place of this Chapter.

The provisions of this Chapter also do not apply to land identified by an independent koala survey prepared in accordance with the requirements of State Environmental Planning Policy No. 44 – Koala Habitat Protection to contain *core koala habitat*. In this case, the provisions of SEPP 44 apply in place of this Chapter.

16.3 When This Chapter Applies

This Chapter applies when a development application for development on land that to which this Chapter applies is received by Council.

16.4 Definitions

Definitions of development are the same as those contained within Bellingen Local Environmental Plan 2010. Additional definitions relevant to this chapter are included below.

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.

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.

development application 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*.

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

koala food tree means a tree described in the definition of *Primary Koala Food Trees* or *Secondary Koala Food Trees* in this Section.

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. Note: A Koala habitat linkage area may include land mapped in Appendix 16.4 or land identified as such as part of the KHAR process.

preferred koala habitat means any area identified as either Primary, Secondary A or Secondary B koala habitat on the map within Appendix 16.2 to this Chapter.

primary koala food trees are Tallowwood (*Eucalyptus microcorys*), Swamp Mahogany (*Eucalyptus robusta*), Forest Red Gum (*Eucalyptus tereticornis*) and Small-fruited Grey Gum (*Eucalyptus propinqua).*

primary koala habitat means vegetation associations and/or communities wherein “primary” food tree species form >50% of the canopy.

secondary A koala habitat means vegetation associations and/or communities wherein;

- “primary” food tree species form 30-50% of the canopy, or
- “primary” and “secondary” species combine to form >50% of the canopy.

secondary B koala habitat means vegetation associations and/or communities wherein “secondary” food tree species form >50% of the canopy.

secondary koala food trees are Flooded Gum (*Eucalyptus grandis*), Sydney Blue Gum (*Eucalyptus saligna*). Note: These species should be considered as Primary Food Trees where they occur as a co-dominant canopy species with Tallowwood.

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.

tree is defined in this Chapter 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

16.5 Variations

Council may consider variations to the standards required of development in this chapter when the overall aims of this chapter and any specific aims that may be detailed for that particular standard can be achieved.

16.6 Information Requirements

16.6.1 If no clearing of vegetation is necessary

If the proposed development does not involve the removal of any *tree* in an area mapped as *preferred koala habitat* then a statement that demonstrates that any likely indirect impacts of the development on PKH or koala activity will be minimised will be required to be submitted with the development application. This can be demonstrated though compliance with 16.7.2 of this Chapter.

In determining whether the proposal would result in the removal of any *tree* within an area mapped as *preferred koala habitat*, all consequential clearing likely to be associated with the development must be considered. For example, a development application for 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.

16.6.2 If clearing of vegetation is necessary

If the proposed development involves the removal of a *tree* or trees in an area mapped as *preferred koala habitat*, a Koala Habitat Assessment Report (KHAR) must be undertaken. If the KHAR identifies that one or more *koala food trees* greater than or equal to 100 mm diameter at breast height over bark (dbhob) will be removed or isolated as a result of the development, a Koala Activity Report (KAR) must also prepared. These reports must be included in the documentation supporting the development application (DA).

1. KHAR (Koala Habitat Assessment Report) Requirements

The KHAR must include the following information:

a) an accurate plan and/or aerial photograph indicating the location of;

- the *development area*;
- the area of *preferred koala habitat* (if area >0.2Ha) or the number of koala food trees (if area <0.2Ha), including those that are proposed to be removed or isolated from koala use (e.g. fenced or isolated by a road);

b) a table detailing the area in hectares of *preferred koala habitat* classes being impacted;

c) a summary table detailing the number and size class (<100 mm dbhob, 100–300 mm dbhob and >300 mm dbhob) of *koala food trees* proposed to be removed or isolated from koala use.

d) Identification of likely indirect impacts on koalas, *preferred koala habitat* or *koala food trees*.

2. KAR (Koala Activity Report) Requirements

A KAR must be undertaken to determine the koala activity on the site where a development involves the removal of one or more *koala food trees* greater than or equal to 100 mm diameter at breast height over bark (dbhob)within an area mapped as *preferred koala habitat*. The documentation supporting the development application must be consistent with the following guidelines:

a) any *koala food tree* greater than or equal to 100 mm diameter at breast height over bark (dbhob) that occurs within the proposed development area must be assessed for evidence of koala activity in accordance with the Koala Habitat Survey Method in Appendix 16.5 and occur at the sampling intensities specified in Table 16.1;

b) the assessment must be undertaken by a *suitably qualified person*.

STEP 1

Table 16.1. Sampling intensities to determine appropriate site assessment

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

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 in Table 16.1;

- Use the grid-cell intersections to identify sampling points that fall upon areas of land containing woodland or forest with trees ≥3m and ≥100mm 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 Koalas (eg: heathland or treeless wetlands).

STEP 3

- Sampling is to be undertaken at each sampling point using the Koala Habitat Survey Method in Appendix 16.5;

- Resulting koala activity levels at each field site are then interpreted as either “Low” (less than 6%) or “High” (equal to or greater than 6%).

STEP 4

- Where “low” koala activity levels are documented on all field sites as part of the Koala Activity Report process, the completed KHAR and KAR may be submitted to Council as part of the development application, together with a statement that documents compliance or otherwise with Sections 16.7.1 and 16.6.2 of this Chapter.

- Where “high” koala activity levels are documented on any field site as part of the Koala Activity Report process, an updated KHAR must be prepared that meets those additional specifications documented in Appendix 16.6 and submitted to Council with the development application, together with the KAR and a statement that documents compliance or otherwise with Sections 16.7.1 and 16.6.2 of this Chapter.

16.7 Development Criteria

16.7.1 Measures to avoid or minimise direct impacts on Koala Habitat

This section applies to all developments that involve removal of *trees* on land mapped as being *preferred koala habitat.*

Aim

To ensure that potential direct impacts of development on koala habitat, koala linkage areas and koalas are minimised.

Criteria

1) The development shall be located, designed, constructed and managed to avoid adverse impacts on *koala food trees* and/or *preferred koala habitat*. 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 Chapter provides opportunities for habitat compensation as a Strategy for demonstrating compliance with this criterion. Refer Appendix 16.7 for the Habitat Compensation Policy;

2) The development shall maintain existing linkages between areas of *preferred koala habitat* across the *development area* and between areas;

3) The development shall not contribute to fragmentation and/or isolation of *preferred koala habitat* across the *development area*;

4) The development shall not impede safe koala movement across the development area;

5) The development shall consider the need and potential where appropriate to revegetate cleared land within koala movement corridors;

6) Proposed bushfire asset protection zone shall 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.

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.

16.7.2 Measures to avoid or reduce indirect impacts on Koala Habitat

This section applies to all development applications on land to which this Chapter applies.

In circumstances where direct impacts on koala habitat 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 koala habitat. The key indirect impacts on koala populations relate to fencing, swimming pools, domestic dogs and road design.

Aim

To ensure that potential indirect impacts of development on koalas are minimised.

Criteria

1) Any new internal lot boundary fencing on land adjacent to *preferred koala habitat* shall be constructed to exclude koalas from the development area. Fences that exclude koala movement include:

    i. steel sheet metal at a minimum of 1.8m high or;

    ii. 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.

    Note: 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) The installation of swimming pools on land containing or adjacent to *preferred koala habitat* shall comply with the following design criteria:

    i. notwithstanding the provisions of the Swimming Pools Act 1992, the pool fence shall exclude entry by koalas (eg. not be constructed of timber or have timber posts);

    ii. the pool design shall incorporate 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;

    iii. the landscaping plan shall exclude shrubs and/or trees within 1 metre of the pool fence so that koalas do not use these to climb over the fence.

3) Subdivision developments on land containing or immediately adjacent to *preferred koala habitat* must be designed and constructed to ensure that the movement of domestic dogs is restricted by lot boundary fences that effectively contain dogs within each property and exclude koala entry.

   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.

4) Subdivision developments on land containing or immediately adjacent to *preferred koala habitat* shall be designed to make provision for:

   i. 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;

   ii. installation of appropriate measures 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; and

   iii. the maintenance of any mitigation measures detailed in the above.

   Note: The specifications for road design standards, signage, koala exclusion fencing, underpasses and associated fencing, traffic calming devices and any other mitigation measures are to be included with the documentation supporting the application.

16.8 The Habitat Compensation Policy*Application*

The Bellingen Shire Council Coastal Area Koala Habitat Compensation Policy is included in Appendix 16.7 of this Chapter. 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.

1) 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.

2) Compensation for adverse impacts of a proposed development activity through the application of the Habitat Compensation Policy will 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; and

   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.

16.8.2 Receiving land for habitat compensation

1) For compensation works to be applied, Council requires that the:

   i. owners of the receiving land provide owners consent prior to the lodgement of the development application; and

   ii. receiving land is within and/or adjacent to the development area.

2) 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:

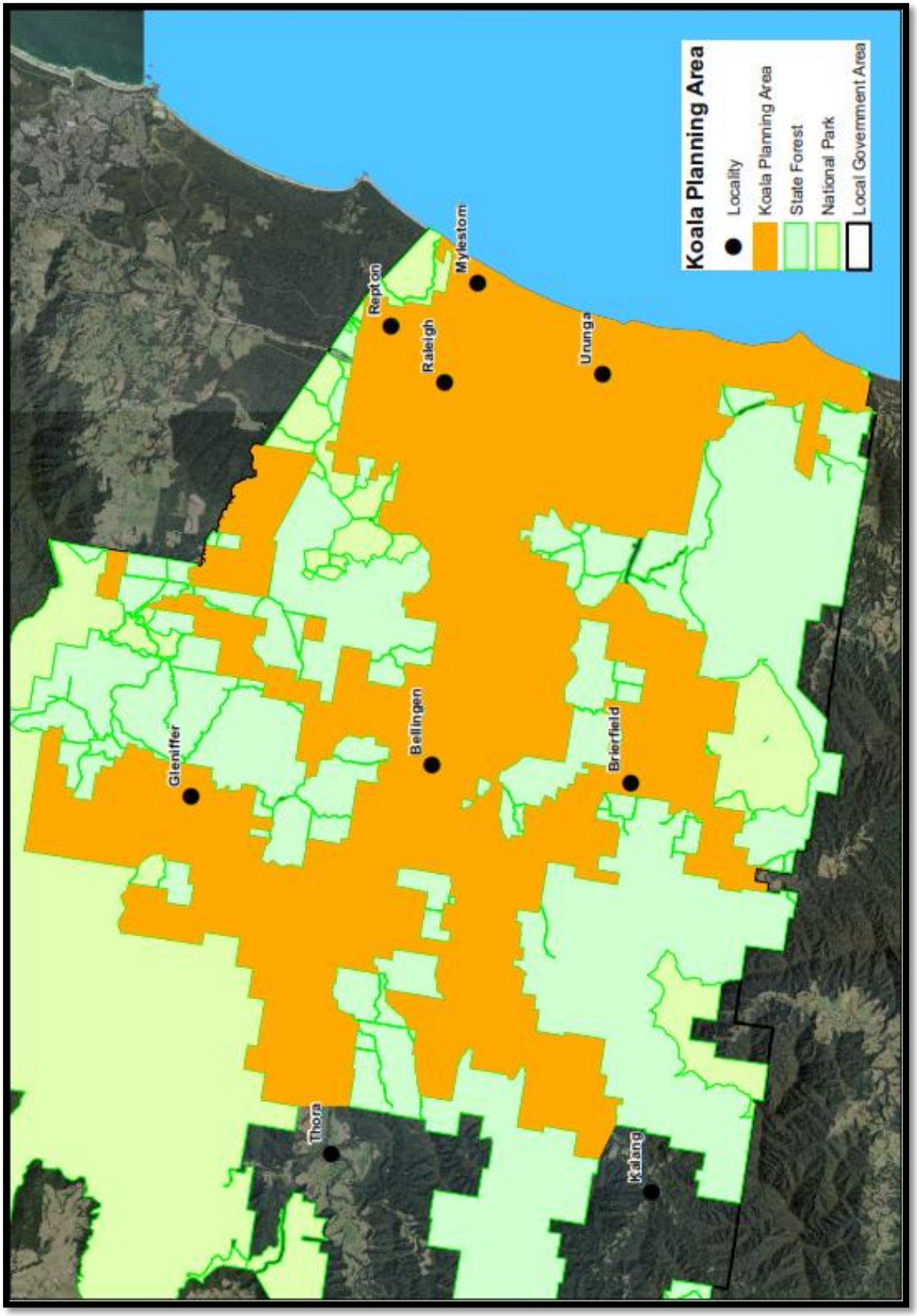
   - within gaps of contiguous *preferred koala habitat* or adjacent to preferred koala habitat;

   - on land determined to be a *koala linkage area*.

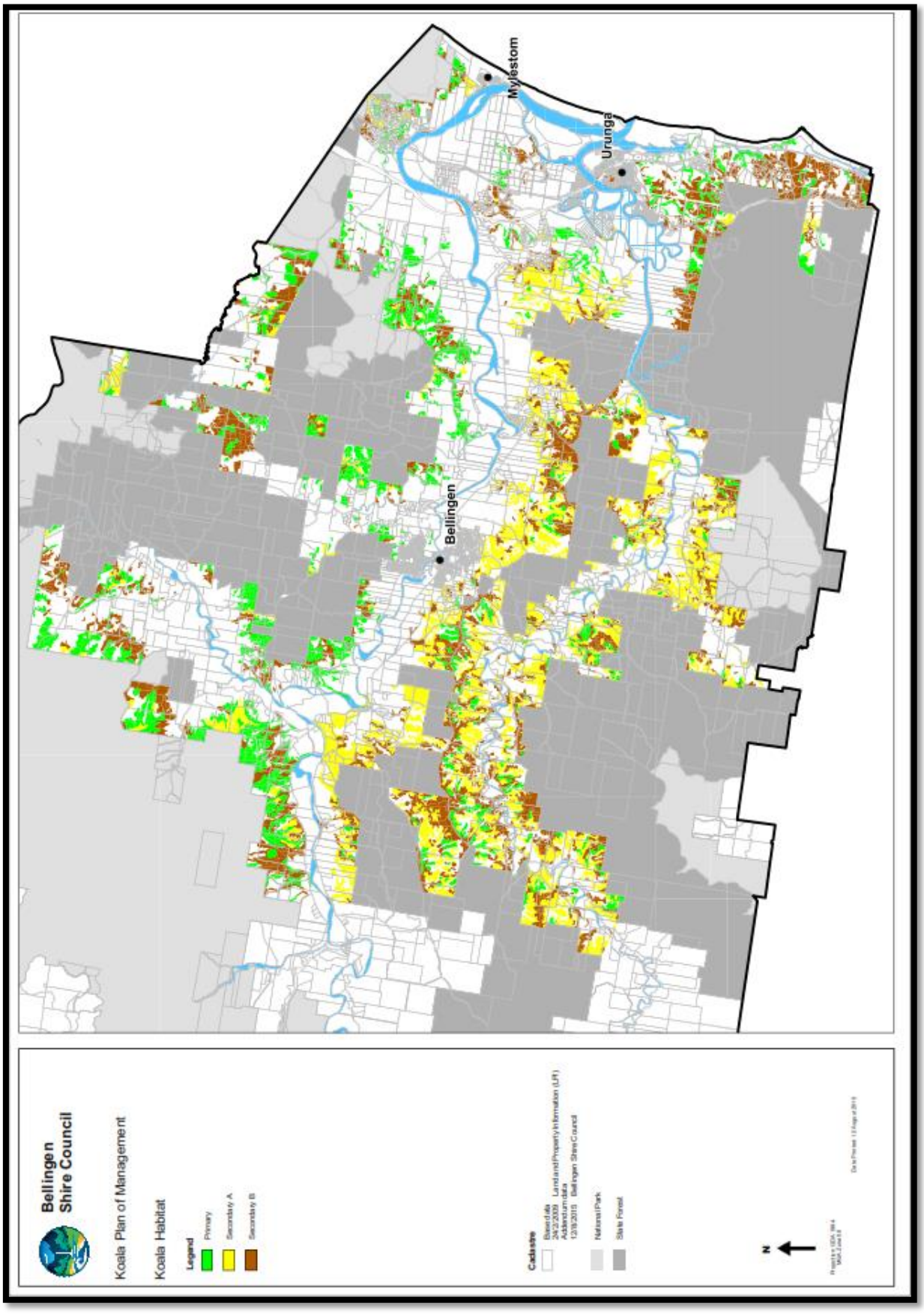
3) Where these are met and habitat establishment is proposed, an appropriate planting regime and mix of koala food trees and other local native plant species must be developed which mimics the structure and species mix of the surrounding native forest. This planting regime and mix of species is to be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

Appendices

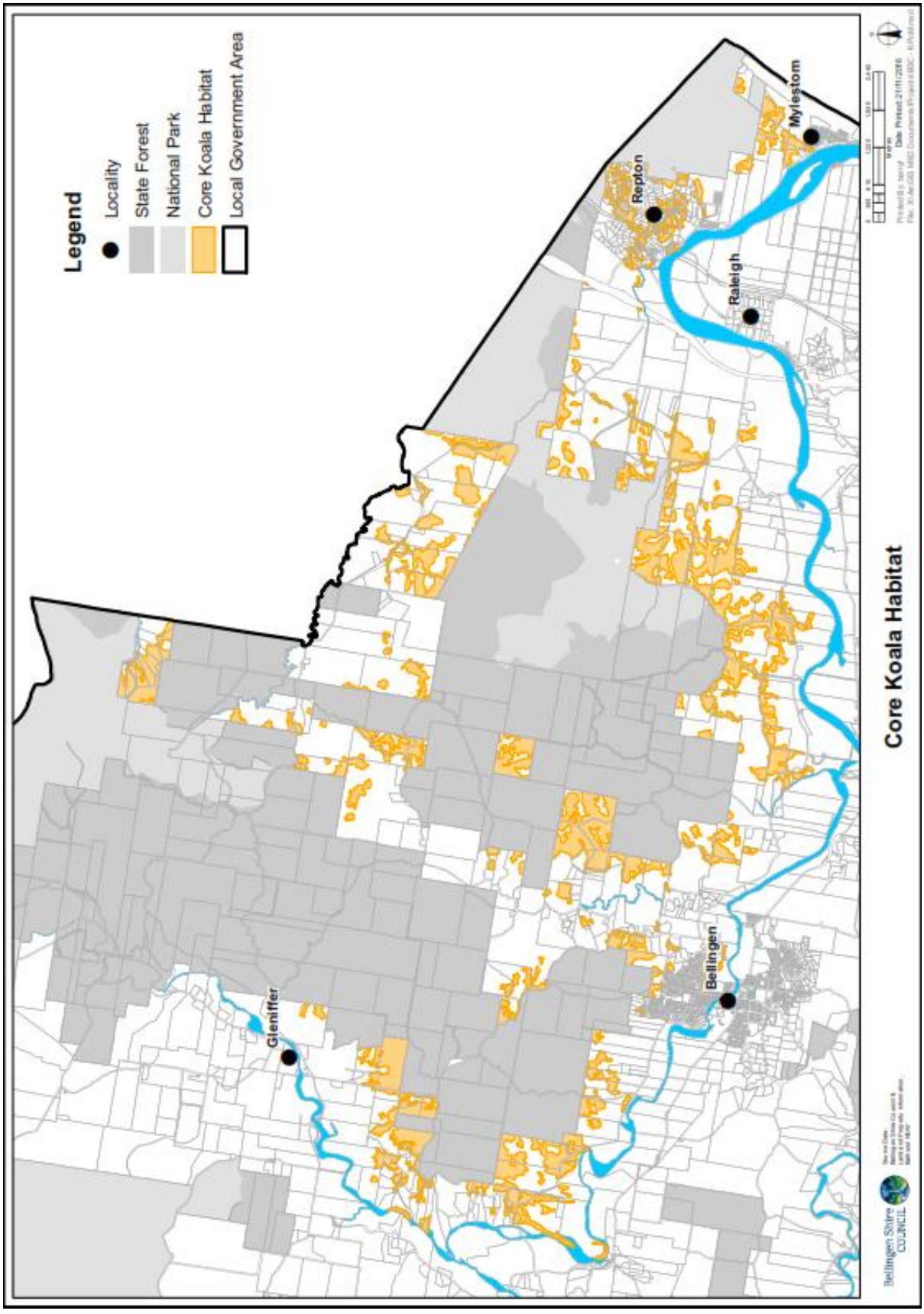
APPENDIX 16.1 – Bellingen Shire Coastal Planning Area (KPA)



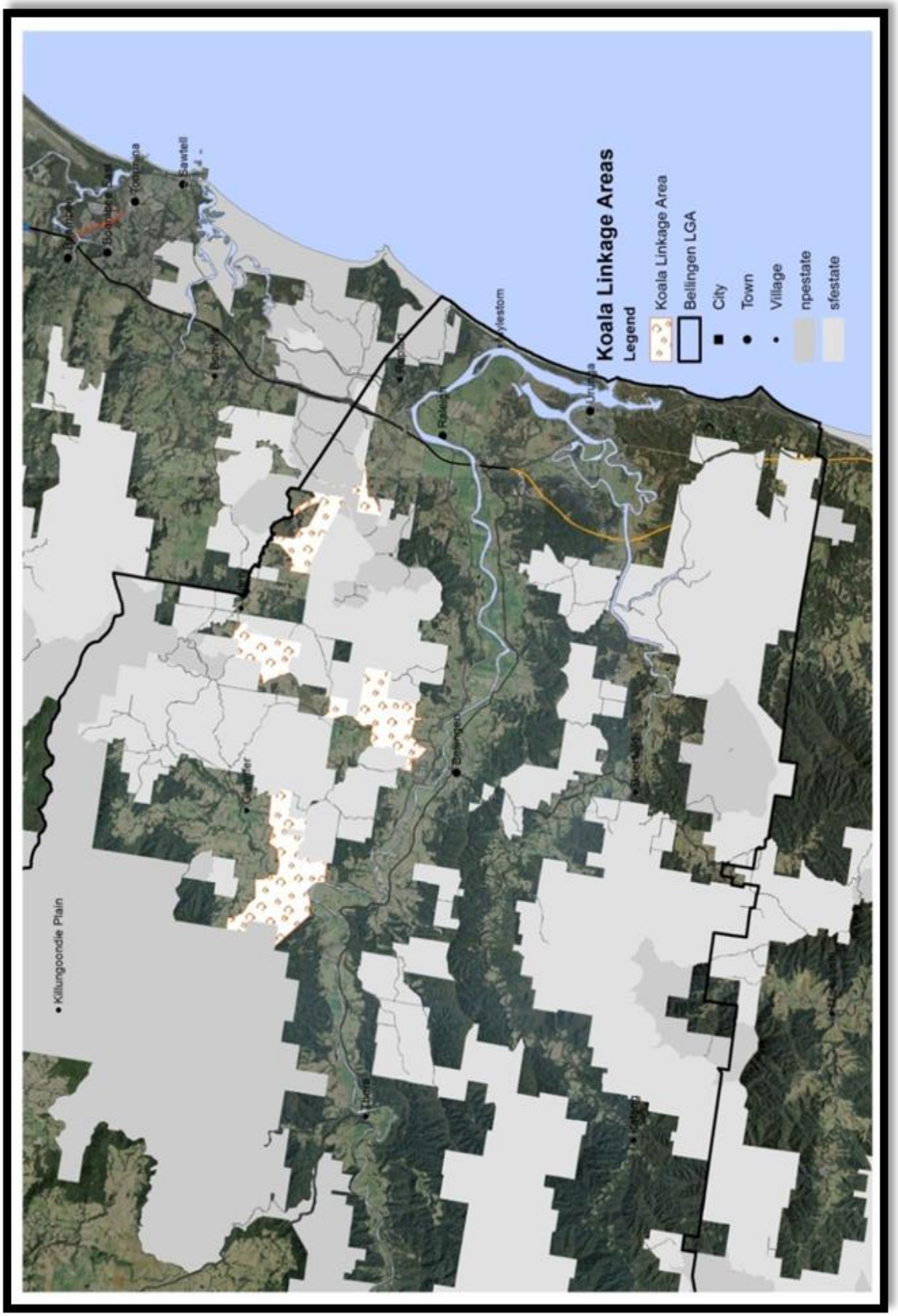
APPENDIX 16.2 – Preferred Koala Habitat Map



APPENDIX 16.3 – Core Koala Habitat Map



APPENDIX 16.4 – Koala Linkage Areas



APPENDIX 16.5 – 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 (≥3m and 100mm 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 16.6 KHAR requirements for sites with “high” koala activity levels

1. Background	
• Describe the nature of the proposed development.	□
• Identify the Bellingen LEP zoning(s) of the development area and adjacent areas.	□
2. Links to legislation, other plans and documents	
• Demonstrate how all required legislation, other plans and documents that relate to the proposed development have been addressed.	□
3. Study Area	
• 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.	□
• Describe the formation, extent and current condition of existing koala habitat at the development area.	□
• Describe the broader context of other vegetation in the adjoining landscape, including linkages.	□
• Detail any environmental constraints and any significant or sensitive environmental features of the development area.	□
4. Methods	
• Describe and provide justification for any variation in methodology to identify PKH classes or KFT within the development area.	□
5. Results	
• Include a map detailing the location of: ○ the proposed development and associated infrastructure and any requirement for an asset protection zone; ○ PKH classes and or KFT ○ any PKH *and or* KFT that are proposed to be directly and/or indirectly impacted, removed, regenerated and/or revegetated.	□
• 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;	□
6. References	
• Include a list of all references cited in the report.	□
7. Appendices	
• Include any additional information or supplementary material pertinent to the DA proposal.	□

APPENDIX 16.7 – Koala Habitat Compensation Policy

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.

Guiding principles

The principles that underpin this policy are:

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

1. protect,
2. rehabilitate or
3. 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:

1. avoid,
2. minimise and
3. 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.

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; and
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.

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 shown in Table 1 below.

Table 1: 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 ≥ 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 ≥50% of the canopy or wherein;
	Secondary B	Vegetation associations and/or communities wherein “secondary” food tree species form ≥ 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 2).

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.

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 2).

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 2: Potential protection mechanisms for each class of habitat compensation works

	Habitat Compensation Works		
	Protection	**Rehabilitation**	**Restoration**
Primary protection mechanisms			
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
Land use protection mechanism			
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
Management and funding mechanisms			
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).

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.

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.

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 5, 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.

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 5).

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 1 below)

- Multiple trees with overlapping canopy – outer edge of total canopy (see example for Area A in Figure 1 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 1: Example calculation of compensation areas

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 3, 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 3: 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 4

* 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 4: 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.

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 5 and is calculated by the following formula:

Compensation Multiplier = Conservation Value x Time/Risk Factor

Table 5: Compensation Multiplier values based on the formula

		Compensation Multiplier			Conservation Value1
		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	1 (low)	2 (medium)	3 (high)

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

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 5).

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 ha x 4

= 1.88 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 6: 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.

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