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2nd March 2017.

NPA SUBMISSION: WHOLE OF GOVERNMENT KOALA STRATEGY; SAVING OUR SPECIES DRAFT STRATEGY AND REVIEW OF STATE ENVIRONMENT PLANNING POLICY 44—KOALA HABITAT PROTECTION

Introduction

The National Parks Association of NSW (NPA), established in 1957, is a community-based organisation with over 20,000 supporters from rural, remote and urban areas across the state. NPA promotes nature conservation and evidence-based natural resource management. We have a particular interest in the protection of the State's biodiversity and supporting ecological processes, both within and outside of the formal conservation reserve system. NPA has a long history of engagement with both government and non-government organisations on issues of park management.

NPA appreciates the opportunity to comment on the whole of government koala strategy (the strategy), the Saving Our Species iconic koala project (the SOS project) and the Explanation of intended effect: State Environment and Planning Policy 44 (Koala Habitat Protection) (SEPP 44). Please note, NPA made a submission on SEPP 44 in late 2016 prior to the deadline being extended which we have reattached at the end of this document (Appendix 1). NPA was also consulted on the SOS programme in August 2016, which we greatly appreciated. We provided OEH with feedback on the programme at that time, which also contained an exploration of issues facing koalas, which we have reattached in Appendix 2.

NPA has had significant input to the development of the Stand Up For Nature (SUFN) submission to this consultation. We therefore support the points made and the recommendations contained within that document. To complement the SUFN submission NPA will focus mainly on reservations, identified by community groups and primarily located on the north coast of NSW, that the NSW government should consider in order to protect koala habitat. We will also address how private land conservation could occur in conjunction with reservations to maximise outcomes for koalas, and revisit previous correspondence to the NSW government on SEPP 44 (Appendices 1 and 2).

The need for new reserves

A Federal Government Senate Committee Inquiry in 2011[1] agreed on the need for early conservation action to save the koala in the wild. Immediate action, rather than allowing the koala to drift ever closer to extinction, would be more cost-effective and have a better chance of conservation success the Committee found. The inquiry also recommended that priority habitat for the species was mapped and that these maps subsequently be used to protect important habitats. The National Koala Conservation and Management Strategy 1998-2014[2] also recommended this action.

Large areas of the NSW coast currently contain suitable koala habitat outside of the protected area network. These coastal areas are likely to become more important to the persistence of the species in the face of climate change as inland areas become less suitable habitat and the distribution of food trees shifts[3,4]. Protection of remaining koala habitat is therefore vital, as acknowledged by a 2015 review of koala conservation, due to the relative cost-effectiveness in protecting habitat over restoring it[5].

Protection of koala habitat essentially delivers two key outcomes for koalas: it protects food and shelter trees and reduces disturbance. Given koalas select larger trees as preferred feeding habitat and mature forest age-classes with lower disturbance[6,7] protecting habitat is likely to deliver positive outcomes for koala conservation. Other threats to koalas such as vehicle strike, dog attack and disease occur as a consequence of habitat loss (koalas must spend more

time on the ground which makes them vulnerable) and associated stress. Therefore protecting habitat will also reduce these pressures.

NPA has presented our Blueprint for a Comprehensive Reserve System for Koalas (*Phascolarctos cinereus*) on the North Coast of New South Wales[8], created in partnership with several local environment groups, to the NSW government. We reiterate these (updated) proposals here, along with other current reserve proposals. Note, we have restricted our proposals to public land, though we are aware that there is much high quality koala habitat on private land. We address this issue in a later section of our submission.

The Great Koala National Park

Despite the global status of the koala as the second-most recognised animal in the world to the giant panda, the recent alarming population declines and ongoing threats, no nationally recognised reserve has yet been set aside in Australia to ensure the protection of the koala in the wild. By contrast, in China, reserves covering one million hectares of the panda's bamboo forest habitat have been established and are World Heritage listed[9]. Like the panda, koalas have highly specific food requirements[10,11] and eat exclusively low-nutrient leaves. This is likely a contributing factor to the vulnerability of koalas to human-driven land-use change.

The proposed Great Koala National Park (GKNP) is centred on two koala metapopulations on the Mid North Coast of New South Wales: the Coffs Harbour—Guy Fawkes metapopulation and the Bellinger—Nambucca—Macleay metapopulation (Figure 1). The metapopulations were identified by Scotts (2013)[12] based on a qualitative representation of likely habitat for koalas in the region. The proposed GKNP covers approximately 315,000 ha of public land and includes the all existing conservation reserves and state forests (no private land is identified in the proposal) within the defined metapopulation areas (Figure 2). Approximately 175,000 ha of State Forest would be added to the conservation estate (140,000 ha) to comprise the GKNP. The estimated koala population is up to 4,550 individuals making this by some distance the most important reserve koala reserve proposal in NSW. The GKNP also includes outstanding examples of other conservation features including extensive rainforests, World Heritage listed forests (the Gondwana Rainforests of Australia)[13] and other forests assessed for World Heritage listing[14]. The proposal includes extensive areas of eucalypt forests from a region recognized as having the most diverse tall eucalypt forests in the world. The eucalypt forests were accepted by the federal and NSW governments in the North East NSW Regional Forest Agreement 1999[15], for assessment for potential World Heritage listing.

The GKNP proposal closely matches areas that the NSW Office of Environment and Heritage (OEH) identified, with a high degree of confidence, as being most likely to contain koalas in northern NSW[16]. Because the Coffs Harbour population is described as stable to slowly declining, decisive action to protect habitat has a strong chance of recovering koala numbers in this area. Thus the GKNP is particularly important. The likely explanation for the stability of the Coffs Harbour population in the face of urban expansion and intensifying native forest logging is that Bongil Bongil National Park is a source of koalas to repopulate other areas[17]. This starkly highlights the conservation gains that can accrue via removing threats from high quality koala habitat (Bongil Bongil was once part of Pine Creek state forest and subject to logging). Because we know that even small changes in population structure can trigger population declines [18], it is vital that koala habitat is protected now to reduce threats.

The koala metapopulations within the GKNP proposal, and the regional koala populations identified within them, are described below. This information is summarised from Scotts (2013).

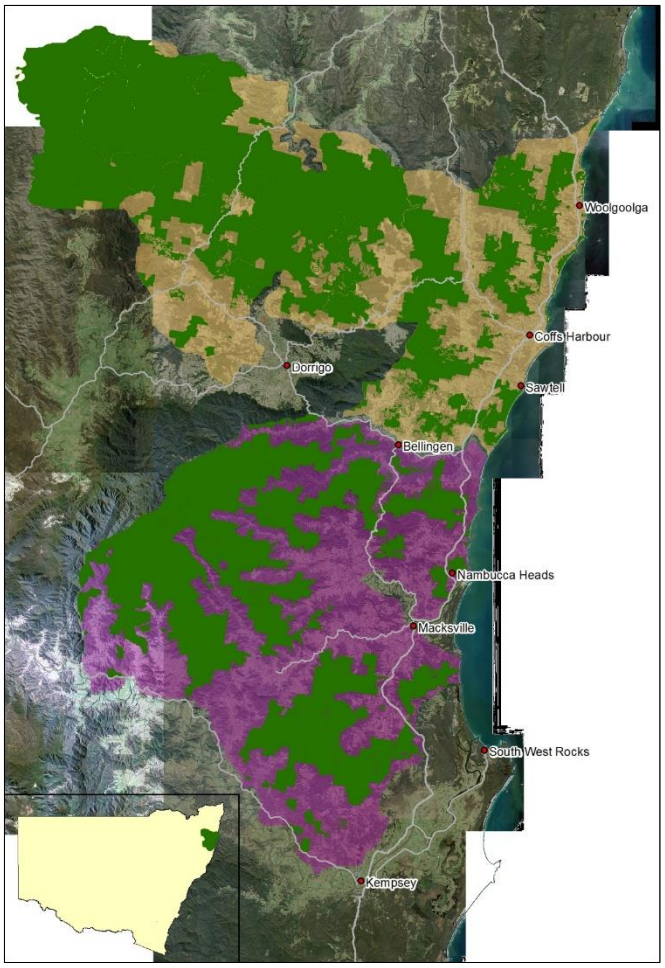

Figure 2: Geographical distribution of the Coffs Harbour—Guy Fawkes (yellow polygon) and the Bellenger—Nambucca—Macleay (purple polygon) koala metapopulations. The proposed Great Koala National Park is shown in green.

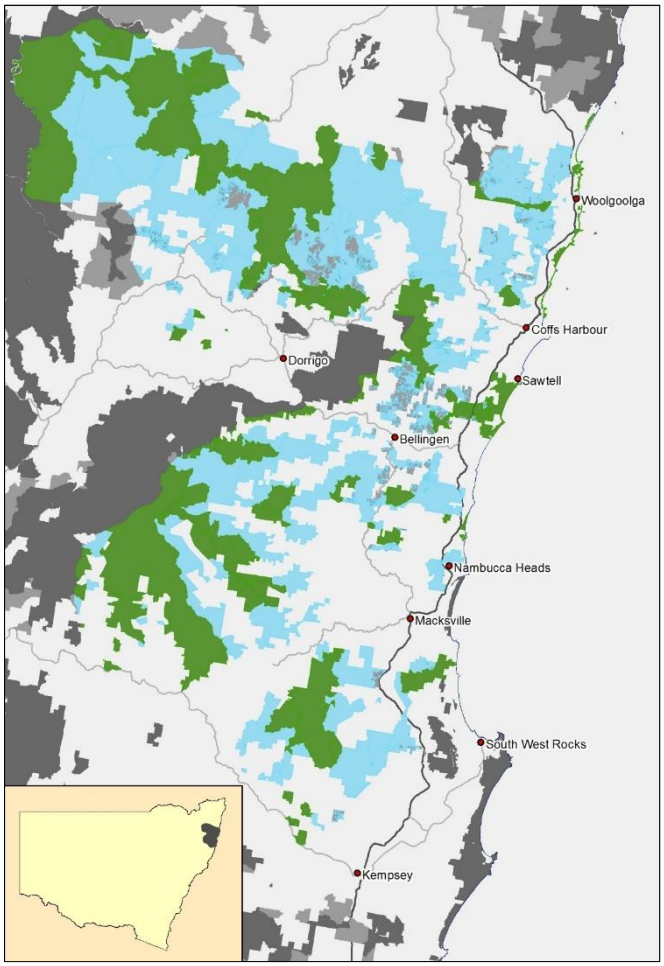

Figure 2: Map of the proposed Great Koala National Park (GKNP) boundaries (green and blue polygons). Green polygons are existing conservation reserves and blue polygons State Forests. Outside the proposed park dark grey polygons are conservation reserves, light grey State Forests and white private land. The total area of the proposed GKNP is 315,000 ha, of which approximately 175,000 ha is currently State Forest and 140,000 ha is conservation estate.

The Coffs Harbour—Guy Fawkes metapopulation

The Coffs Harbour—Guy Fawkes metapopulation includes the coastal plains and foothill forests of the Coffs Harbour and Bellingen LGAs extending inland to include the hinterland forests bounded to the north by the non-preferred sandstone-based forests and woodlands and to the south by the clearing associated with the Dorrigo plateau and unsuitable rainforest habitats. To the west it is bounded by the by rugged and lower fertility forests and woodlands of the Guy Fawkes valley. This metapopulation is comprised of three regional koala populations. Two of these three regional populations are comprised of two or more subpopulations. This is described below in the text and summarised in Table 1. These populations may further extend into the Guy Fawkes Wilderness Area. The regional populations comprising the Coffs Harbour—Guy Fawkes metapopulation are:

The Coffs Harbour—North Bellinger regional population

Includes the coastal plains and foothills forests of the Coffs Harbour and north-east Bellingen areas. Regional population boundaries are formed by sandstone-based habitats in the north, rainforest habitats to the southwest and cleared river valleys to the west and south that act as likely barriers to koala movement. This regional population supports the greatest koala numbers (>1000 individuals) and highest population densities in the region. However significant threats exist that are associated with the close proximity of human centres and infrastructure. This is the most important koala regional population on the Mid-North Coast and perhaps one of the most important in the nation.

The Coffs Harbour Hinterland regional population

This regional population is bounded to the north by non-preferred sandstone-based forests and woodlands, to the south by clearing associated with the eastern Dorrigo Plateau and non-preferred rainforest habitats, to the west by the rugged, steep gorges associated with the Nymboida River and to the east by clearing associated with the Orara Valley. This appears to be a critical koala regional population supporting in the order of 500 – 1000 individuals centred upon hinterland public forests, particularly state forests, but also including important private forests on the eastern Dorrigo Plateau. Some protected koala habitat is found on NPWS reserves.

The Chaelundi—Clouds Creek—West Dorrigo regional population

This regional population is bounded to south by clearing associated with the eastern Dorrigo Plateau and also non-preferred rainforest habitats, to the east by the rugged, steep gorges associated with the Nymboida River and to the west by rugged and lower fertility forests and woodlands of the Guy Fawkes River valley. To the north of the mapped regional population koala records become scarce (e.g. Marara, Dalmorton State Forests) and habitats may be less suitable. The Boyd River may also present a barrier or, at a minimum, a filter to koala movement.

This appears to be a critical koala regional population supporting in the order of 500 – 1000 individuals. The mapped area includes hinterland, escarpment and gorge public forests and some tracts of private forest west of Dorrigo. Some reasonably extensive potential koala habitats occur on NPWS reserves. Past surveys for koalas in this area have been largely restricted to state forests and koala records are widespread on that tenure. Two subpopulations (Table 3) have been identified within the Chaelundi—Clouds Creek regional population which are considered critically important in the context of long term koala conservation.

Table 1: Regional populations and sub populations that comprise the Coffs Harbour—Guy Fawkes metapopulation. The estimated population size of each subpopulation is included, along with status (stable, S, or declining, D) density (high, H, moderate, M, or low, L) and threat status (high, H, moderate, M, or low, L), an estimate of confidence in the assessment is included as is further information on the nature of the threats.

Regional population	Subpopulation	Subpop size	Status	Density	Threat	Confidence	Threat information and other comments
Coffs Harbour—North Bellinger	Bongil Bongil—Pine Creek	500-1000	S	H	L-M	Well known	Includes Bongil Bongil—Pine Creek core; logging, fire, vehicle strike
Coffs Harbour—North Bellinger	North Bellingen—Gleniffer	50-500	D	M	M	Largely unknown	Logging
Coffs Harbour—North Bellinger	Bonville	50-500	D	M	H	Well known	Targeted and increasing urban and rural residential development
Coffs Harbour—North Bellinger	Coffs Harbour—Toormina—Korora	<50	D	M	H	Well known	Habitat fragmentation, dogs, vehicle strike
Coffs Harbour—North Bellinger	Orara West—Boambee	50-500	D	M	M	Well known	Logging, fire
Coffs Harbour—North Bellinger	Coffs northern beaches	<50	D	L	H	Well known	Highway upgrade, urban and rural residential development, dogs
Coffs Harbour—North Bellinger	Lower Bucca—Orara East	<50	D	L	H	Well known	Logging, fire
Coffs Harbour—North Bellinger	Red Rock—Wedding Bells—Conglomerate	<50	D	L	M	Unknown	Logging, fire
Coffs Harbour Hinterland	Coffs Harbour Hinterland	500-1000	S	M	M	Largely unknown	Predominantly state forest. Can't distinguish subpopulations
Chaelundi—Clouds creek—West Dorrigo	Chaelundi—Clouds Creek	50-500	S	M	M	Largely unknown	Predominantly state forest & National Park
Chaelundi—Clouds creek—West Dorrigo	West Dorrigo	<50	D	L	M	Largely unknown	Fragmented and sparse population

The Bellinger—Nambucca—Macleay metapopulation

The Bellinger—Nambucca—Macleay metapopulation extends from the southern Bellingen LGA through the Nambucca LGA to the north of the Kempsey LGA and is comprised of a single regional koala population:

The South Bellinger—Nambucca—North Macleay regional population

Northern and southern boundaries of the regional population are formed by geographic barriers associated with the lower reaches of the Bellinger River (north) and Macleay River (south) including extensive clearing and urban and agricultural development. The north-western boundary is mapped but remains ill-defined with little knowledge relating to koala occurrence. Overall the South Bellinger—Nambucca—North Macleay regional koala population remains poorly understood. It may be comprised of an extensive, but likely sparse, population with a rough estimate between 130 – 1,550 individuals. The metapopulation is considered nationally important but a targeted program of koala habitat mapping and population characterisation is needed to further inform its relative conservation status. The three koala subpopulations identified within this regional population are shown in Table 2.

Table 2: Sub populations that comprise the South Bellinger—Nambucca—North Macleay regional population, itself part of the Bellinger—Nambucca—Macleay metapopulation. The estimated population size of each subpopulation is included, along with status (stable, S, or declining, D) density (high, H, moderate, M, or low, L) and threat status (high, H, moderate, M, or low, L). An estimate of confidence in the assessment is included as is further information on the nature of the threats.

Regional population	Subpopulation	Subpop size	Status	Density	Threat	Confidence	Threat information and other comments
South Bellinger—Nambucca—North Macleay	Southern Coastal	<50	D	L	H	Largely unknown	Urban and rural-residential development, dogs, road strike
South Bellinger—Nambucca—North Macleay	Southern Hinterland	50-500	S	L	M	Unknown	Stable but sparse; logging & fire
South Bellinger—Nambucca—North Macleay	Scotts Head – Ngambaa - Willawarrin	50-500	D	L	M	Largely unknown	Overall declined particularly on private lands; State Forests are potential strongholds but also declined; fire, logging

Sandy Creek National Park

This 2,100ha proposal comprises Carwong and part of Royal Camp state forests near Casino in far north NSW. The area is estimated to contain 50-200 koalas.

Tweed Coastal Range National Park

This reserve proposal would protect 2550ha of habitat for the endangered Tweed koala population of approximately 140 animals.

Port Macquarie to Camden Haven National Park

This proposal would add 1,855ha of state forest and crown land to existing reserves to protect approximately 2000 koalas.

Bulga—Comboyne—Landsdown—Taree National Park

This reserve would ensure connectivity between western koala populations in the Tapin Tops area and those at Mount Goonook and Landsdowne by adding 40,650ha of state forests to existing reserves and would protect approximately 500-1000 koalas.

Bowman National Park

Situated north-west of Gloucester, this proposal would add 15,750ha of Bowman and Barrington state forests to the protected area network to protect between 50-200 koalas.

Extensions to Wallingat National Park

Adjacent to Wallis Lake, this extension would add almost 4000ha of state forests (Wallingat and Bachelor) to the 6500ha Wallingat National Park to protect 200-500 koalas. This proposal would also greatly enhance connectivity between Booti and Myall Lakes National Parks.

Wang Wauk National Park

Adjacent to Buladelah, this reserve proposal consists of 33,700ha of Wang Wauk and Buladelah state forests and would protect between 250-700 koalas. This proposal would also link to Wallingat National Park to enhance landscape connectivity.

Western Border Ranges

NPA is in discussion with the Native Title holders as to the potential protection of 32,234 ha over 13 state forests in the Border Ranges. Areas include Beaury, Richmond Range, Mt Lindesay, Unumgar and Yabbra. These forests help link seven existing World Heritage properties and are components of a recognised biodiversity hotspot.

Port Stephens to Sydney

NPA has consulted with koala experts, carers, local conservationists and local government to refine the delimitation of koala populations between the Macleay River and Port Stephens. This will enable NPA to better identify priority areas for the conservation of koalas in that region. This research is currently being written up and NPA will make it available to the government when it is complete.

Great Southern Forest

The Great Southern Forest (GSF) proposal seeks the protection of public state forests in the Eden and Southern Regional Forest Agreement (RFA) regions following the expiry of the RFAs. Although not a koala reserve proposal *per se*, the GSF would support the goal of reversing declines in populations by providing for the long-term recovery of koala populations by connecting and restoring forests in the far south of the state. In the late 19th century, koalas were so numerous in the region so as to support a pelt industry. Since then land clearing for agriculture, intensive wood chipping of native forests and climate change have acted together to reduce the population to between 50 and 100[19]. The declaration of the Murrah Flora Reserves to protect the remaining koalas was welcome, but the reservation is clear evidence that native forest logging is not compatible with koala conservation.

Western Woodlands

NPA supports the extensive reserve proposals put forward by the Western Woodlands Alliance (WWA) that focused on protecting koala habitat west of the Great Dividing Range[20]. The methodology used by the WWA is broadly similar to that used by NPA east of the Great Divide. Therefore the two sets of reserve proposals can be readily integrated to produce a comprehensive reserve system for koalas throughout the state of NSW, including providing for habitat connectivity between western populations and the east coast that will be crucial to allowing koalas to respond to climate change.

Private land conservation

Given that much remaining high quality koala habitat occurs on private land, the $240 million allocated to private land conservation under the *Biodiversity Conservation Act* has the potential to complement new reservations if targeted appropriately. The NSW government could consider prioritising private land holdings that abut the GKNP, and prioritising key areas of private land that link coastal reserves with those on the hinterland to ensure east-west connectivity. The Great Eastern Ranges (GER) initiative is an example of a private land focused project that has been very successful in engaging landholders to enhance connectivity. The NSW government could consider directing further funding to GER to specifically target koala habitat. Given GER already has a significant support base and goodwill, this could be a good mechanism to rapidly make gains on private land.

Private Native Forestry

Please see Appendices 1 and 2 for discussion on Private Native Forestry.

Appendix 1: NPA submission to SEPP 44

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8th December 2016

NPA submission to the Explanation of Intended Effect State Environment Planning Policy No. 44—Koala Habitat Protection

Introduction
The NPA, established in 1957, is a community-based organisation with over 20,000 supporters from rural, remote and urban areas across the state. The NPA promotes nature conservation and evidence-based natural resource management. We have a particular interest in the protection of the State's biodiversity and supporting ecological processes, both within and outside of the formal conservation reserve system.

As you will likely be aware, NPA has an ongoing campaign to create the Great Koala National Park in the Coffs Harbour hinterland. This campaign, as well as our opposition to native forest logging on public land and efforts to prevent a return to broad-scale land clearing, interact with SEPP 44 and are very relevant to koala conservation. We will make this clear in our submission.

NPA appreciates the opportunity to comment on the Explanation of Intended Effect (the Explanation) and efforts made by DoPE to consult prior to the development of the Explanation. We hope that DoPE will consider incorporating our recommendations into the SEPP as we believe there are areas that could be strengthened and clarified.

We stress that without seeing the guidelines we cannot be sure as to the final application of the SEPP and therefore as to whether the revision increases its effectiveness. We reserve the right to change our view on elements of the Explanation when the guidelines are released and we can better evaluate the potential impacts.

1. **NSW Koala Strategy**

We note that the NSW Government has announced public consultation on the development of a new all of government Koala Strategy. The Chief Scientists' report includes a recommendation to begin, by December 2017, a review into the effectiveness of SEPP 44 as a planning tool and into the performance of CKPoMs as a means of protecting koala habitat. Given the findings of such a review would be integral to any revision of SEPP 44, we question whether undertaking this review pre-empts the findings of the Chief Scientists' recommendation. We are of the view that action urgently needs to be taken to protect koalas, but there is little point in undertaking a revision of SEPP 44 only to have to revise it again in 12-24 months. Nonetheless, we have made comment on several aspects of the SEPP below in anticipation that DoPE will continue the SEPP revision.

2. **Aim of the SEPP**

NPA believes that the aim (to protect koala habitat to ensure a permanent free-living population over the present range and reverse the current trend of koala population decline) is likely appropriate but requires clarification on the koala range. Range consists of two elements: extent of occurrence and area of occupancy. The former is always greater as it refers to the smallest polygon that can be fitted around the distribution of a species, not a species' habitat. Area of occupancy by contrast will be determined by habitat availability within the extent of occurrence.

Recommendation: ensure that the definition of 'range' in the SEPP refers to the extent of occurrence.

3. **Guidelines**

Without seeing the guidelines it is difficult to accurately assess how effective the SEPP can be, and the strength of the guidelines will be determined by the language and intent of the SEPP. Key questions that are outstanding are:

- Will the guidelines (and the SEPP) be enforceable by the Minister?

Recommendation: ensure that the intention of the SEPP (to protect koala habitat to ensure a permanent free-living population over the present range and reverse the current trend of koala population decline) can be met by giving the Minister the ability to enforce the SEPP and guidelines, rather than rely on voluntary compliance. In order to achieve this, the state government should set a maximum timeframe in which local governments must implement SEPP 44 and adequately resource them to do so.

- What will be the vegetation assessment process prior to a development application (DA) being submitted? NPA has recently written to Minister Speakman urging him to ensure that a state-wide map of koala habitat using segmentation mapping is not funded due to documented inaccuracies of the method. We would be concerned if such a map was used in the initial identification of koala habitat.

Recommendation: ensure that the guidelines state that digital aerial photographic interpretation is the only mapping method that can be used in the first instance to identify koala habitat, and that an on-ground ecological assessment is necessary to confirm koala habitat and determine koala presence or absence.

- Will the guidelines apply also to paddock trees? Paddock trees, including non-feed species, have been shown to be crucial habitat elements for koalas as refuges in times of heat. Research by the Office of Environment and Heritage in Wingecarribee Shire has shown koalas use paddock trees when moving between woodland patches in the landscape. Therefore a failure to ensure the protection of paddock trees will be undermine the aims of the SEPP.

Recommendation: ensure that the guidelines on surveys make particular reference to paddock trees and that paddock trees are assessed as to the presence of koalas regardless of whether they are a listed koala tree species.

- How will the guidelines 'support' the making of Comprehensive Koala Plans of Management (CKPoMs)?

Recommendation: ensure that the guidelines contain *requirements* to develop CKPoMs, not simply recommendations.

4. Zoning

Currently, core koala habitat identified under SEPP 44 should be incorporated into an environmental protection zone or have special provision to control development under Clause 15. However this requirement is to be removed and instead put into a Local Planning Direction (LPD) that will direct councils as to how they must protect koala habitat. It is unclear from the Explanation whether the requirements will be the same as at present.

Further, we are concerned both about how koala habitat is to be protected by zoning, and the interaction between the new environmental zoning approach on the north coast and the revised SEPP. The LPD, effective since 14th April 2016, 'Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEPs' has implications for the revised SEPP. This change to zoning meant that land could only be zoned environmental if conservation had been the primary function of that land for the prior two years. For example, any land over which a Private Native Forestry Property Vegetation Plan was granted prior to April 2014 would likely be ineligible for environmental zoning on the grounds that forestry was the primary land use. In northern NSW, this accounts for approximately 390,000ha (see section on PNF). This in effect removed the ability of local government to zone private land into an environmental protection zone—as supposedly required under SEPP 44.

It is unclear how the proposed koala habitat LPD will interact with the LPD on E2 and E3 zones, but there is nothing to suggest that it will replace or have legal authority over the LPD on E2 and E3. If that is the case then the revised SEPP essentially confers little extra protection for koalas as the north coast councils are those with the most extensive koala habitat and largest koala populations. Should the LPD on E2 and E3 zones be extended state-wide, then the confounding effect on local governments would also be manifested on koala populations elsewhere.

Recommendation: ensure that the new LPD gives local government the authority to effectively zone koala habitat into environmental protection zones, and that the 'Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEPs' LPD does not negate the revised SEPP.

5. List of tree species and local governments

NPA strongly supports the amended tree species list. It, alongside the broadened list of councils, means SEPP 44 could potentially be applied more broadly. However, Gwydir Shire Council (which includes Bingara and Yallaroi councils from

current list) is missing from the list. We also support the intent to treat non-listed tree species as koala habitat if a koala is present. The latter element is important as koalas are known to use non-feed species for shelter, and large shelter trees are very important as refuges in times of heat stress. For example, koalas are known to use *Eucalyptus pilularis* (Blackbutt), on the north coast. However we note that the changed tree species list, and therefore changed definition to koala habitat, will require local government to revise existing CKPoMs and re-map koala habitat.

Recommendation: include Gwydir Shire Council on the revised list of councils.

Recommendation: ensure that local government is resourced to undertake the necessary revised koala habitat mapping.

6. Koala habitat and occupancy assessments

NPA supports undertaking a habitat suitability and koala occupancy assessment *prior* to a DA being submitted. However, we have concerns about the fate of unoccupied koala habitat: given the huge declines in koala populations throughout NSW, most suitable habitat will be unoccupied. But if we are to have any chance of recovering koala populations (and therefore to meet the aims of the SEPP), it is vital that this unoccupied habitat be protected as if koalas were present. The Explanation does not clarify what happens if an assessment identifies unoccupied koala habitat, but suggests that a DA could still be submitted and that either a CKPoM or the guidelines will determine the local government response.

Recommendation: ensure that both the guidelines and CKPoMs are statutory documents that enable local governments to refuse DAs that pose an unacceptable risk to *occupied and unoccupied* koala habitat. We caution against developing guidelines that have a lower standard or which are less enforceable than CKPoMs as this will act as a disincentive to create a CKPoM.

7. Definitions

The proposed changes to the current koala habitat definitions ('core' and 'potential') have scope to strengthen the SEPP by ensuring that all identified tree species are considered habitat, and that non-listed species are deemed habitat if a koala is present. However, it is not possible to assess whether these changes to the definition will result in more protection to habitat as the definitions that will identify the plant communities have not been released. For example, what proportion of trees in a plant community will need to be a listed species for that community to be considered koala habitat? Which plant communities will therefore be defined as koala habitat? How will landholders or local governments identify the location of these plant communities? How will current CKPoMs be amended to include the new definitions and what will happen to identified core and potential koala habitat in the meantime?

Recommendation: ensure that the definition of koala habitat includes all plant communities that have >= 15% of one or more listed tree species in the upper or lower strata of the tree component, as well as all vegetation that contains koalas. On-ground surveys should be used to identify plant communities.

Recommendation: ensure that koala habitat currently identified under CKPoMs is not rendered unprotected as a result of the amended definitions.

Recommendation: ensure that local government is adequately resourced to incorporate the changes into existing CKPoMs within 12 months of the changes taking effect.

8. NSW Land Clearing Laws

The interaction between the proposed changes to the SEPP and the recently introduced *Local Land Services Amendment Act* (LLS Act) are not clear. The breadth of the codes under the LLS Act do not inspire confidence that koala habitat will be adequately protected, and WWF estimated that up to 2.2 million hectares of koala habitat could be cleared under the equity code alone*[1]. This does not count the areas of woodland and clumps of paddock trees that will be at risk through the efficiency codes*[2] and which are also very important for koalas (see above). Minister

*[1]Ecological Australia. NSW proposed Local Land Services Act. Potential Vegetation Clearing under the Equity Code - Analysis Paper. Prepared for WWF Australia. http://www.wwf.org.au/ArticleDocuments/353/pub-potential-vegetation-clearing-under-the-equity-code-14oct16.pdf.aspx?Embed=Y

*[2]Paddock trees: pest paradises or bastions of biodiversity?
https://d3n8a8pro7vhmx.cloudfront.net/natureorg/pages/144/attachments/original/1465507046/FACT_SHEET_-_Paddock_Trees_.pdf?1465507046

Speakman responded to WWFs concerns by stating that core koala habitat would be protected*[3], yet the new SEPP will remove the definition of core koala habitat. In any case, no exclusions from the codes besides critically endangered ecological communities and habitat for critically endangered species were included in the final legislation. Neither of these exclusions will protect koalas.

Recommendation: the Minister for Planning must ensure that the LLS Act and *Biodiversity Conservation Act* do not come into force before all local governments identified in the SEPP have identified and zoned koala habitat in an environmental protection zone.

9. Private Native Forestry

As NPA stated in our original letter to DoPE on this subject SEPP 44 interacts with Private Native Forestry (PNF) via the identification of core and potential koala habitat on private land and appropriate zoning of that land determining whether PNF can take place. Since 2007 2515 PNF Property Vegetation Plans (PVPs) for PNF covering 400,000 hectares of land have been approved in northern NSW (Figure 1). It is not possible to say what proportion of these licences have resulted in felling as this information is not readily available from the EPA.

In February 2015 in the Coffs Harbour LGA alone, 185 PNF licenses had been issued since 2007. Taking a conservative property size estimate of 40ha, this equates to 7,400ha, 6% of the LGA or 13% of all private land. In November 2015, NPA undertook an analysis of the number of PNF PVPs within 10km of the boundary of the proposed Great Koala National Park. There were 725 covering an area of 65,292ha.

The current Code of Practice for PNF*[4] states that 'Forest operations are not permitted within any area identified as 'core koala habitat' within the meaning of State Environmental Planning Policy No. 44 – Koala Habitat Protection.' It is beyond reasonable doubt that the lack of action in developing CKPoMs has resulted in PNF approvals having been granted where they should not have been, and the inclusion of the word 'core' immediately raises a question mark as to what happens when the definition of core koala habitat is removed as proposed.

Recommendation: ensure the PNF Code of Practice is amended to ensure forestry operations are not permitted in koala habitat as identified by the revised SEPP, and that no further granting of PNF licenses occurs until the Code of Practice has been aligned with the SEPP.

Recommendation: that the NSW government reverse the erroneous granting of PNF approvals in koala habitat as a result of poor implementation of the previous iteration of SEPP 44.

Although NPA does not oppose PNF *per se* we have deep reservations about the process for approving a PNF Property Vegetation Plan (PVP), the numbers of PVPs approved and the 15-year duration of PVPs. The responsibility for identifying threatened species lies entirely with the landholder with no site visit required by an ecologist, and the EPAs approval process is entirely desktop with no capacity to audit PVP compliance. In addition, it is clear that in many cases landholders are being approached by commercial loggers and offered financial incentives to obtain a PVP and permit industrial logging and there have been reports of PNF being used as a vehicle for 'clearance by stealth'.

Recommendation seven in the 'Review of Biodiversity Legislation in NSW' concerned reviewing PNF. Given the NSW government has dramatically weakened biodiversity legislation, we have no confidence that this review will improve environmental outcomes and expect that it will increase the ease and the scale with which PNF can be undertaken. For example we expect that PNF PVPs will be replaced with self-assessable codes.

Recommendation: ensure that the revised SEPP clearly outlines the interaction with PNF and that the SEPP has legal authority over any future self-assessable codes or other mechanisms of conducting PNF.

Conclusion

Revision of SEPP 44 is long overdue and some of the changes proposed here have the ability to improve outcomes for koalas. However SEPP 44 interacts with many other pieces of legislation, one of which, PNF, is due for review. Unless the revised SEPP—and the as yet unseen guidelines and definitions—effectively deal with these interactions and confer the ability of local governments to effectively protect koalas the revision will make little difference to the steep

*[3]Sydney Morning Herald 13th October 2016. http://www.smh.com.au/environment/conservation/prime-koala-habitat-threatened-under-land-clearing-proposal-wwf-20161013-gs1d9v.html

*[4]http://www.epa.nsw.gov.au/resources/pnf/130563PNFcdNth.pdf

declines in koala populations across NSW. In particular, changing the definition of 'core' koala habitat has far reaching implications for CKPoMs, koala habitat mapping and PNF and urgent consideration should be given as to how these implications are addressed. The release of the Chief Scientists' review into koala conservation in NSW is another element that adds considerable uncertainty as to the future form of SEPP 44.

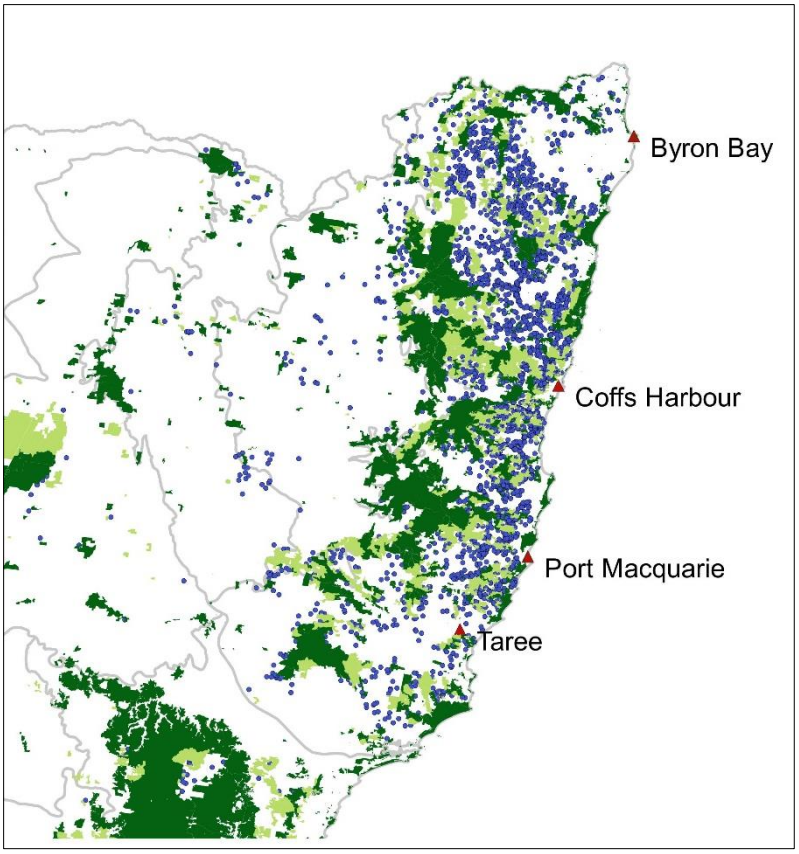

Figure 3: Map of northern NSW showing National Parks (dark green), State Forests (light green) and the centroids of PNF PVP approvals (blue dots). Source: NSW EPA

Appendix 2: Feedback to OEH on koala SOS strategy

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RE: Feedback to OEH on koala SOS strategy

August 5 2016

Dear Linda,

NPA greatly appreciates the SOS briefing provided by OEH on Monday 8th August. We understand that you have candidly shared documents with us and given us an opportunity to discuss the strategy with you. We would however point out that this form of consultation, where relevant NGOs have input to strategy, should be standard and occur in the early phase of project development and without the need for sustained effort on the part of NGOs. Participation by community groups is vital to ensure a 'social license' for government projects, and to ensure that community expectations are being met or, if not, to explain why this is the case in a transparent manner.

Before we provide feedback on the strategy itself, we would like make some over-arching comments on koala conservation in NSW. It is our view that the meagre budget ($800,000 for the entire state in year 1 of SOS) displays a continued lack of commitment to koala conservation by the NSW government. This suggests that the government is still not grasping the severity of the situation facing koalas—despite researchers stating last year that extinction of the koala in NSW is a real possibility if threats are not addressed[5].

Given the SOS koala strategy has identified $3.3 million worth of projects for year 1, the $800,000 government commitment means that barely more than one year's work will be achieved over the first five years of SOS. We find this to be an extraordinary lack of ambition, consistent with the fact that the NSW government has not had a plan of management for koalas since the expiry of the last plan in 2013. We strongly urge the NSW government to fully fund the identified program of works for year 1.

It is incumbent upon us to point out that the NSW government is currently in a mess in regards koala conservation. There are several large-scale, regulatory issues that mean the chances of success of SOS in achieving the goal of koala conservation are undermined before the program has been launched. These issues are:

1. Coastal development and SEPP 44: we have recently provided detailed comment on SEPP 44 to the Department of Planning and Environment (DoPE), which we have enclosed for your information. SEPP 44 has been entirely inadequate in protecting koala habitat, and in the 21 year life of the SEPP, only four statutory Comprehensive Koala Plans of Management (CKPoMS) have been produced. We understand that OEH, via John Turbill, is currently making efforts to encourage the development of CKPoMs. However, the information that we have received by DoPE is that the revisions to SEPP 44 will not go as far as to require councils to publish plans and will be more guidance than regulation. We see this as unlikely to achieve adequate outcomes. We will elaborate more on local government interactions with SOS later.
2. Native forest logging: current intensive native forest logging, where a high proportion of basal area is removed leaving primarily small-diameter stems is not compatible with koala persistence[21]. Hence native forest logging is a key threat to koalas—and other threatened species such as greater gliders[22] due to the loss of large trees and decreased connectivity. The pending end of the Regional Forest Agreements is an opportunity to end native forest logging before more species become extinct and to help reverse the decline in koala populations.
3. Private native forestry (PNF): Private Native Forestry (PNF) interacts with SEPP 44 via the identification of core and potential koala habitat on private land and appropriate zoning of that land. Since 2007 2515 PNF Property Vegetation Plans (PVPs) covering 400,000 hectares of land have been approved in northern NSW. It is not possible to say what proportion of these licences have resulted in felling as this information is not readily available from the EPA. It is clear that, in conjunction with logging on public land, PNF is potentially a large threat to koalas.

4. The lack of commitment to building the national parks network: national park establishment has decreased by 95% since 2011 under the coalition. Protecting habitat is the best means of protecting species for the long-term, which is why NPA proposed the Great Koala National Park—a project that was estimated to protect 20% of NSWs' koalas, and two of the most significant metapopulations in eastern Australia. A failure by the NSW government to recognise the need for urgent reservations to secure koala populations, reduce threats like logging and development and enhance connectivity, will see koala populations continue to decline. Protecting habitat is also more cost effective than having to restore it. We acknowledge that the establishment of the Murrah flora reserves has protected the remaining koalas on the far south coast, and the reserves are a clear indication that the NSW government does understand that protected areas are the best form of conservation. NPA has previously documented its concern with the management arrangements and we will not repeat those concerns here.
5. The biodiversity legislation: we know that the new legislation will increase land clearing and provides the means to return to broad-scale land clearing (via the equity code). Furthermore, the efficiency codes allow the clearing of 'islands' and 'peninsulas' of native vegetation as well as a larger range of paddock trees. Paddock trees are important refuges for koalas in times of heat stress[23], and koalas have been shown to use paddock trees and small woodland patches in Wingecarribee (OEH unpublished data). The pending legislation is therefore contrary to the needs of koalas.

1) The SOS Actions Toolbox

It is our view that the SOS strategy is OEH doing the best they it can in the current political climate. We are satisfied that the Actions Toolbox is thorough and accurately reflects the broad suite of actions necessary to conserve koalas, aside from those overarching threats mentioned previously.

a) Lack of knowledge

One of the greatest difficulties in koala conservation is a lack of knowledge of population sizes and trends. As we stated in our letter to DoPE, we believe that obtaining knowledge on the size and trends of populations is a vital first step. We note that the current project where OEH has worked with Wingecarribee Shire Council in tracking koalas has generated hundreds of new koala records and provided interesting information on movement patterns and home range sizes.

NPA is sceptical of the production of a state-wide map of koala habitat. We have not yet seen a modelling method that produces high-quality results, because it is not possible to accurately model past disturbances such as fire and logging and models cannot account for social behaviour. Therefore modelling using plant community type alone does not produce accurate maps. However, mapping on a local government scale using digital aerial photographic interpretation does appear to be a more accurate approach and we would suggest that this is the method used for mapping core and potential koala habitat. We note that OEH is developing a segmentation model map in Wingecarribee Shire. We have major concerns with the accuracy of segmentation mapping[24,25], although we have been informed that in the case of Wingecarribee OEH staff have been able to provide mappers with a significant amount of additional data and conduct validation of the maps which has dramatically improved accuracy.

b) Fire

In regards fire management, we would point out research that shows logging increases the susceptibility of moist forests to fire[26-29]. We therefore reiterate that logging is a key threat to koalas—particularly when considered alongside climate change that is predicted to increase temperatures, and droughts and decrease rainfall.

c) Climate change

As discussed at our meeting, climate change is a serious long-term threat to koala populations west of the Great Dividing Range. Research shows that koala populations and their food sources will move east as climate change progresses[3,4,30] and researchers have therefore stated that protecting habitat east of the dividing range is the best 'bang for buck' to ensure the persistence of koalas[31]. However, we are not suggesting that populations west of the Dividing Range be abandoned. To this end we strongly support the identification and protection of drought refuges as proposed in the Pilliga and Warrumbungles management area, and the restoration of koala habitat on fertile soils at Gunnedah, and the investigation of koala populations at Moree.

d) Koala carers

Koala carers are a dedicated group of people, but NPA understands that the standard of care is not consistent between carers. It is therefore positive that SOS identifies supporting carers and developing protocols. However, we recommend investigating whether there is a need for some carers to undertake professional training to ensure they have the skills necessary to care for a species that is difficult to keep in captivity.

e) Governance

We strongly suggest that each management area governance team contains a community representative. This would help the projects draw on existing networks—such as those established under the Great Eastern Ranges—and confer a greater sense of ownership on projects.

2) Prioritisation and Monitoring

In general we support the prioritisation as outlined in SOS in regards costs, benefits and likelihood of success, and the principles of prioritisation. We note however that SOS intends to distribute funding across the management areas. We can understand why this decision has been made, but we would encourage OEH to give the prioritisation factors (threats, benefits and likelihood of success) more weight than location.

We would also strongly encourage OEH to leverage the SOS funding as much as possible. For example, OEH has the opportunity to prioritise SOS funding to those LGAs who commit to the production of a Comprehensive Koala Plan of Management using the results of the project and any previous data. This would allow OEH to ensure that the benefits of the SOS funding outlive the program.

We would also support OEH prioritising those management areas that are at most immediate risk. In our view those areas include Wollondilly and Campbelltown (due to the expansion of Sydney); Port Stephens; Taree and Great Lakes; Port Macquarie and Kempsey; Coffs Harbour, Bellingen and Nambucca; Lismore and Byron and Tweed and Ballina. All of these populations are at risk from coastal development and logging.

3) Case study: Wingecarribee koala project

In a letter to DoPE dated 12th July 2016 we outlined what NPA believes to be a strong process to protect koalas on a local government scale. Having been recently briefed on the koala project being carried out between OEH and Wingecarribee Shire Council, we believe that this project closely aligns with our outlined ideal approach. Notwithstanding our concerns on the segmentation mapping method, the project has sought to identify the locations of koala populations and identify corridors linking them. Importantly, the project has also had a supportive council which has been willing to translate the results into a Koala Plan of Management, which has had money to invest in the program and which is willing to make zoning decisions based on the outcomes of the project.

Given the success of this project, and the likelihood of connectivity between Wingecarribee and Wollondilly, OEH has the potential to leverage the outcomes of the Wingecarribee project to deliver similar outcomes in Wollondilly and, potentially, Campbelltown. This would result in a large area with potentially connected populations being rigorously surveyed. We would urge OEH to ensure that it gets the best outcome possible for koalas by encouraging those LGAs to develop Comprehensive Koala Plans of Management.

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