TIMBER NSW

Submission to Senate Environment Communications legislation Committee

Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021 (the Bill)

Timber NSW's submission

Timber NSW is the largest association for native forestry operations within NSW. Its members (over 50 companies) utilise ~two-thirds of the timber that is harvested from NSW native forests.

Executive Summary

- The Bill is not supported.
- The Explanatory Memorandum says that the Bill's objective is to put a moratorium on land clearing that will have a significant impact on koala populations. The Bill fails to acknowledge however that there is a raft of existing legislation and policy that already controls land clearing activities.
- The Bill talks about land clearing however it is primarily aimed at the native forestry operation measures contained within the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999.
- At the national level, the Bill fails to properly consider:

    - The National Forest Policy Statement and Regional Forest Agreement (RFA) framework that is underpinned by a Comprehensive Adequate and Representative (CAR) reserve system,
    - The relationship between RFAs and the threatened species protection provisions under the EPBC Act.

    In relation to NSW there is no recognition of:

    - The threatened species protection provisions under the NSW Biodiversity Conservation Act 2016,
    - The various NSW Koala Habitat State Environmental Planning Policies,
    - The NSW Integrated Forestry Operation Approvals which apply to operations in public native forests and the Codes of Practice that apply to Private Native Forestry, and,
    - The Land Management Codes under the Local Land Services Act which regulate agricultural clearing activity.

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- The Bill contains errors in its understanding of subsection 38(1) of the EPBC Act. There is no exemption of the forestry industry, there is a conditional waiver. This in turn requires compliance with a regime of extensive environmental State legislation. This necessitates a detailed understanding of the Regional Forest Agreements Act, the bilateral RFA Agreements, the legislation and statutory instruments that operate within each State.
- The Bill's definition of what constitutes koala habitat and koala habitat trees is unduly broad. As written, the Bill captures nearly all the native forests that are the subject of NSW RFAs as well as many of those in western NSW.
- All native forestry operations are captured by the Bill and treated as land clearing activities (even though they are not). In practice native forestry operations are selective and infrequent giving the forests time to regenerate (with the regeneration often creating a valuable future koala feed resource). The way that native forestry operations are conducted and regulated ensures that there are no significant impacts on koala populations.
- The Bill with its very broad definition of koala habitat will encourage claims to be made to the Federal Minister (under the proposed section 42(ba) of the EPBC Act) that native forestry operations are causing a significant impact on koala populations. The Federal Minister will be obliged to place a moratorium on any operations which are the subject of such a claim while it investigates. Timber NSW is confident that the findings of any such investigation will show there are no significant impacts on koala populations. The time and resources required, however, for the government to complete such inquiries would likely take years. It is a fair conclusion that while this was occurring there would be a collapse in timber supply. Under such an operating environment it is doubtful that anyone would commercially underwrite this exercise, State or privately. It is a fair conclusion that the Bill seeks to shut down the native forestry industry within Australia and is not concerned primarily with increasing koala populations within Australia.
- If the Bill was 'Save the Koala' then the Bill would have substantially different measures. As wildfire poses the greatest threat to koala populations living in forests remote from human development, this is where any protection of koalas should begin. Best practice forest management can enhance koala habitat and mitigate the impact of wildfires. There is a highly complex and technical forest science that underpins best forest management practice. Management which only reacts in the event of wildfire emergencies does not meet the definition of best forest management practice.
- Sadly, the Bill can be viewed as a political exercise, rather than a carefully considered legislative package to aid koalas through more comprehensive understanding of their needs and the key threats to their habitat and wellbeing.
- Timber NSW would welcome constructive dialogue on this issue as it is in the interest of the native forest industry to ensure that all NSW native forests are subject to ecologically sustainable forest management.

Kind regards

[redacted]

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Part 1
Opening Proposition

The protection of native species, like the koala, is of critical importance. Effective koala conservation is more challenging and complex that for other species because koalas have such a widespread and extensive distribution. There is no easy way to protect koalas as their conservation is irrevocably intertwined with the conservation of native forests more generally. Koala conservation is therefore dependent upon improving the way forests are managed. Koala conservation must be considered in the broader context of ecologically sustainable forest management (ESFM)[1].

Any koala Bill which fails to consider how Australia's native forests are being managed will also fail the koala.

To get the best outcome for forests, and by default koalas, Australia law makers should be seeking a holistic and balanced approach to environmental protection and ecologically sustainable development. The ESFM principles underpinning this notion have been internationally agreed for nearly three decades and are comprehensively covered in a document called the Montréal Protocols - Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests to which Australia is a signatory. ESFM principles are also captured within Australia's National Forest Policy Statement to which the States and Commonwealth are a signatory.

Koalas are subject to many threats; land clearing is but one. The Bill is focused on putting a halt to land clearing and in doing so captures native forestry. This puts the native industry at risk. Native forestry is not a land clearing activity despite often being portrayed as such.

Native forestry operations only occur in regrowth forests and employ selective harvesting techniques. In NSW harvesting is infrequent and the forests are given time to regrow (with the regeneration often creating a valuable koala feed resource). In NSW native forestry is tightly constrained by Regional Forest Agreements and by the existence of a Comprehensive Adequate and Representative Reserve System. How native forestry operations are conducted is comprehensively regulated through Integrated Forestry Operations Approvals (IFOA) on public land and by Codes of Practice on private land. Together these factors ensure that native forest industry does not have a significant impact on koala populations.

The loss of Australia's native industry would see the importation of hardwood timber from under-developed countries where there are little or no environmental protections and where timber supply often comes at the detriment of biodiversity conservation. Enabling such an outcome would be irrational and selfish. Equally, to permit a forest industry to operate within Australia without regard for biodiversity conservation would be a dereliction of good policy.

The livelihood of those engaged in the NSW native forest industry (forest managers, landowners, ecologists, foresters, forest researchers, contract harvesters, log haulers, millers,

[1] ESFM is underpinned by peer reviewed forest science and considers all forest values

secondary wood processors and distributors) has and always will be dependent upon their ongoing commitment to the ecologically sustainable management of all forests.

Part II

Commentary

The Bill and Explanatory Memorandum

Commentary on Schedule 1 (in order of printing).

1. Section 18B

This proposed introduction materially alters the manner in which the Commonwealth regime operates regarding threatened species. Note that neither section 18 nor section 18A of the Environment Protection Biodiversity Conservation Act (EPBC Act) name any species. Section 18 is the prohibited conduct and section 18A is the offence provisions for breaching the terms of section 18.

Part 13 of the EPBC Act deals with 'species and communities'. Division 1 of this Part concerns the listing of threatened species and ecological communities.

Section 178 (1) states:

> The Minister must, by a legislative instrument, establish a list of threatened species divided into the following categories:
>
> (a) extinct,
> b) extinct in the wild,
> (c) critically endangered,
> (d) endangered,
> e) vulnerable,
> (f) conservation dependent.

These categories in section 18 of the EPBC Act are:

18(1) Species that are extinct in the wild,
18(2) Critically endangered species,
18(3) Endangered Species,
18(4) Vulnerable Species,
18(5)Critically endangered communities, and
18(6) Endangered communities

Section 181 states:

> The Minister must, by legislative instrument establish a list of threatened ecological communities

Section 183 states:

> The Minister, must, by legislative instrument establish a list of threatening processes that are key threatening processes.

Section 184 states:

> Subject to this subdivision, the Minister may, by legislative instrument, amend a list referred to in section 178, 181 or 183 by:

and, then a series of procedures are set out which include the Scientific Committee referred to in the EPBC Act.

The Australian Government's Department of Agriculture, Water and the Environment, Species Profile and Threats Database website under the page headed 'EPBC Act List of Threatened Fauna', in the section 'Vulnerable' under the section marked mammals shows an entry 'Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) (Koala (combined populations of Qld, NSW and the ACT).[2]

On the same website there is a page headed 'Listed Key Threatened Processes'[3]. A threatening process is defined as:

> A threatening process is defined as a key threatening process if it threatens or may threaten the survival, abundance or evolutionary development of a native species or ecological community. For example, incidental catch (or bycatch) of seabirds during oceanic longline fishing operations' is listed as a key threatening process as it threatens albatross, petrels and shearwaters in Australian waters where the fishing practice is undertaken.

Land Clearance was listed in April 2001[4]. The Description in the webpage is extracted:

> Description
>
> The description of land clearing is based on that provided in the nomination:
>
> Land clearing consists of the destruction of the above ground biomass of native vegetation and its substantial replacement by non-local species or by human artefacts. Native vegetation is defined as vegetation in which native species constitute more than 70% of the plant cover, or other vegetation containing populations of species listed under the EPBC Act. Substantial replacement by non-local species or

[2] https://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna (accessed 8 April 2021)

[3] https://www.environment.gov.au/cgi-bin/sprat/public/publicgetkeythreats.pl (accessed 8 April 2021)

[4] https://www.environment.gov.au/biodiversity/threatened/key-threatening-processes/land-clearance accessed 8 April 2021)

> human artefacts is defined as the achievement of more than 70% of the total cover by species or human artefacts that did not occur previously on the site.
>
> Land clearing includes clearance of native vegetation for crops, improved, pasture, plantations, gardens, houses, mines, buildings and roads. It also includes infilling of wetlands or dumping material on dry land native vegetation, and the drowning of vegetation through the construction of impoundments. It does not include silvicultural operations in native forests and manipulation of native vegetation composition and structure by grazing, burning or other means.

This material is set out as the Explanatory Memorandum to the Bill does not make any reference to or commentary it, seemingly choosing to ignore it. There is a structured scientific process at an administrative level to support all these legislative measures. None of this is mentioned or acknowledged.

The conclusion that can be drawn is this Bill is about redefining 'land clearance' which will be looked at below. Save to observe the Bill removed 70% of plant cover to 'one tree' or any 'vegetation'.

It is submitted if this proposal is supported by Government or a majority of Members and Senators, then the better way forward is to follow the existing legislative process contained within the EPBC Act.

2. Section 42(ba)

This proposed amendment is significant. The insertion is made into Part 4, "Cases in which environmental approvals are not needed", Division 4, Forestry operations in certain regions, of the EPBC Act.

The proposed subsection has the effect of removing the operation of subsection 3891) of the EPBC Act. It does so by overriding the purpose of subsection 38(1). This measure is inconsistent with subsection 38(1) and the Regional Forests Agreements Act (Cwlth) which has provisions leading to the insertion of subsection 38(1) in to the EPBC Act. The terms of subsection 38(1) of the EPBC Act need to be understood in light of what is stated the Explanatory Memorandum to the Bill to explain this amendment.

The principles of statutory interpretation apply when examining the headings of Parts or Divisions of an Act. The heading of Part 4 EPBC Act. Includes the words 'are not needed'. The relevant principle is that a heading will be disregarded if it conflicts with an otherwise unambiguous provision in the statute. (Pearce 2019). The Explanatory Memorandum of the Bill for the explanation of the proposed section 42(ba). It states:

> This item inserts a new paragraph (ba) into section 42 to remove the exemption of Regional Forest Agreements from the requirement of the EPBC Act where there is, may, or is likely to be a significant impact on koalas.

The Explanatory Memorandum is incorrect when it uses the word 'exemption' The so-called exemption sits within section 38(1) of the EPBA Act. It states:

38 Part 3 not to apply to certain RFA forestry operations

(1) Part 3 does not apply to an RFA forestry operation undertaken in accordance with an RFA.

(2) In this Division:

RFA or ***regional forest agreement*** has the same meaning as in the *Regional Forest Agreements Act 2002*.

RFA forestry operation has the same meaning as in the *Regional Forest Agreements Act 2002*.

Section 38(1) of the EPBC Act is a mechanism that removes dual consent for an RFA forestry operation. The dual consent under the EPBC Act is contained in Part 9 of that Act. This exemption from dual consent will operate if the RFA forestry operation complies with an 'RFA'. Section 38(2) defines 'RFA' to be a regional forest agreement under the Regional Forest Agreement Act 2002 (RFA Act).

This provision is not an exemption, it is a conditional waiver to compliance with the EPBC Act in respect to Part 3. This conditional waiver will fail where the RFA forestry operation has not complied with an RFA. The phrase in the subsection is 'undertaken in accordance' which is a term of compliance. The Explanatory Memorandum to the Bill is simply incorrect. The heading also should be ignored as it is in conflict with the section.

Then the focus moves to what is an RFA? It is a bilateral agreement reached with a State Government concerning the management of forests within an area of that State, a party to the Agreement. The agreement must accord with the Regional Forest Agreements Act (Cwlth) as this act authorises the Federal Government entering the bilateral agreement.

Timber NSW being a NSW State industry organisation primarily for the native hardwood sector is well-placed to make comments concerning NSW. We note the Explanatory Memorandum does not acknowledge the Federal nature of the RFA structure; the differing bilateral agreements and what is contained within these structures; and what underpins the agreements within each State. This detail is relevant to any arguments supporting or not supporting this Bill. This omission potentially reveals an ideological intent to seek a different outcome than achieving a listing or protection for *Phascolarctos cinereus* (koalas).

NSW and the Commonwealth have three RFAs: Eden Regional Forest Agreement, North East Regional Forest Agreement and the Southern NSW Regional Forest Agreement. These Agreements in November 2018 were renewed, and they have now been revised and extended until 2039.

NSW's legislation recognises three different types of forestry:

1. Public native forestry authorised under the *Forestry Act 2012* ,
2. Private native forestry authorised under Part 5B of the *Local Land Services Act,*
3. Plantation forestry authorised under the *Plantation and Reafforestation Act 1999* ,

Within native forest operations there is State operated forestry with Forest Corporation of NSW (FCNSW) and private native forestry (PNF).

The delegated instruments are the Coastal Integrated Forestry Operations Approval (Coastal IFOA) and the PNF Code of Practice of which there are four, 'North East', 'Southern', 'Red Gum' and 'Cypress and Western Hardwood'. The RFA Agreements (Variation 2018) refer to the Coastal IFOA and to the PNF Code of Practices under a heading 'Private Land'.

There are also the provisions of the Biodiversity Conservation Act 2016 which in legislative principle mirrors section 178 of the EPBC Act.

There is considerable detail in all these statutory instruments that sponsor the concept of ecological sustainable forest management as defined in the RFAs, which includes measures for animals including *Phascolarctos cinereus* (koala).

In Part IV commentary has been made about the use of the 'emotive phrase' land clearing in respect to forestry operations. In NSW true land clearing means the conversion of forest to a non-forest land-use. The two main categories are land clearing for agriculture and land clearing for infrastructure. Where forestry operations occur, the forest is required to be retained as forest, there is no change to the land-use.

In NSW land clearing activity is monitored using satellite imagery which is able to identify changes in the forest canopy. NSW government monitoring of canopy change captures the permanent canopy changes which can be attributed to agriculture or infrastructure as well as the temporary effects of forestry and fire. What the monitoring reveals is that temporary canopy removal attributable to native forestry affects less than 0.1% of NSW native forests annually (Figure 1).

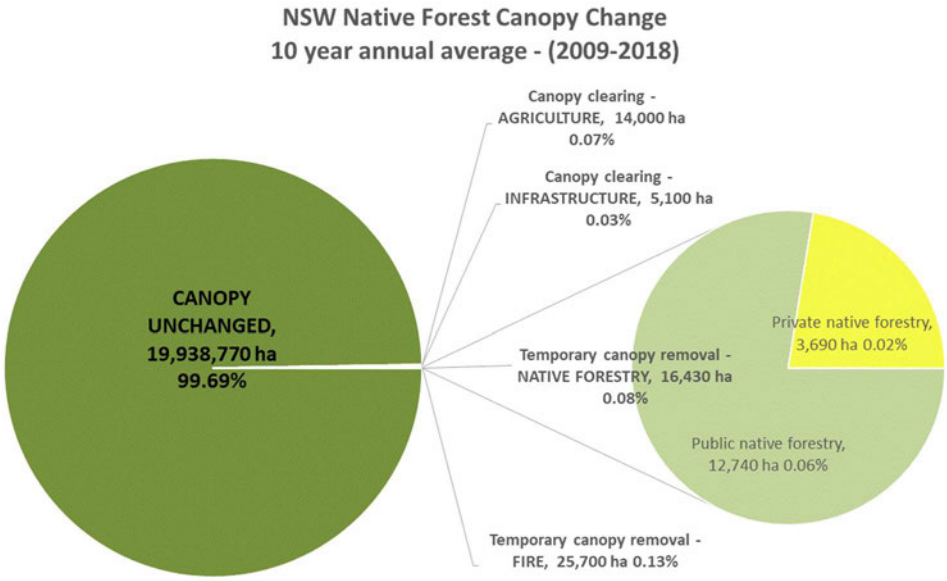

Figure 1 – Size and scale of land-use activities that result in temporary and permanent canopy change in NSW native forest (2009-2018 annual average) (data source: EES (2018) Results Woody Vegetation Change Statewide (SLATS) 2018.)

3. Note to section 42

This proposal is a drafting issue. It is not supported as it forms part of the Bill.

4. End of section 139.

This amendment provides that no approval under the Division can be obtained if there is an action in the approval that consists of or involving the clearing of koala habitat.

The decision for an approval arises out of section 18 of the EPBC Act. To put this amendment in context, these sections fall within Subdivision C of the EPBC Act which is about 'listed threatened species and communities' Section 18 prohibits 'without approval' actions with 'significant impact on listed threatened species or endangered communities'.

The interaction of section 139 of the EPBC Act with section 18 of the same Act is the former section falls within Part 9 of the Act where the Parliament has set out requirements for Decisions and Approvals. Section 139 falls within the Division concerning conditions for approvals. Section 139 provides the Minister must not act inconsistently with a range of listed matters. The Bill seeks to insert a new measure that provides that an action 'of or involving the clearing of koala habitat' becomes one of the actions with which any approval must not be inconsistent.

A koala habitat is defined in the Bill as being 'a tree' of certain genera. This means the removal of 'one ' tree will be inconsistent to any 'action'.

The Bill read as a whole, means if the action to be approved involves the removal of any tree that is a eucalyptus, then the Minister 'will act inconsistently' with proposed section 139(3).

Most areas within Australia have a eucalyptus tree located on it. If not ,then add to the list ',a tree of Corymbia, Melaleuca or Lophostemon' as set out in the definition of 'koala habitat'. This will capture all Australia which have a tree on them. One of these in all likelihood will be present if the area is 'in natural, agricultural, urban and peri-urban environments (see proposed amendment 5, section 527F, 'Definitions relating to koalas'.)

The ramifications of this are wide and would prevent any development.

5. At the end of Division 1 of Part 23 there is a new Subdivision G – Koalas.

This is a significant measure that contains debated material that is scientific and technical. The proposed measure is itself as a result also technical.

Section 527F, The definition of 'koala habitat'

> *koala habitat* means:
>
> (a) an area of vegetation in which koalas live and that includes a koala habitat tree; or
>
> (b) an area of vegetation that consists primarily of koala habitat trees and which is reasonably suitable for sustaining koalas (whether or not koalas live in that area); or

(c) a partially or completely cleared area used by koalas to cross from an area mentioned in paragraph (a) or (b) to another area mentioned in paragraph (a) or (b).

An area of vegetation can include forest, woodland and scattered tree landscape, and remnant and non-remnant vegetation in natural, agricultural, urban and peri-urban environments.

Koala habitat trees means
(a) a tree of the Corymbia, Melaleuca, Lophostemon or Eucalyptus genera that is edible by koalas, or any other species of tree that are known koala food trees; or

(b) a tree of a type typically used by koalas for shelter, including, for example, a tree of the Angophora genus.

Comments:

The Explanatory Memorandum consists of two lines regarding this material. Where is the scientific reference to the field work reports from areas across Australia that explain what exactly is meant by the word 'vegetation' and the definition for this word. According to this, 'lantana' and other exotic weeds can be defined as koala habitat. The Department of Environment in NSW which has produced some distorted conclusions of the available research on koala habitat has not formed such an unscientific and ill-defined provision that is to be placed into legislation or a statutory instrument.

The definition of a koala habitat tree is imprecise and a clumsy method of defining what is intended.

Part V of this submission is a copy of Schedule 2 of the NSW State Environmental Planning Policy (Koala Habitat Protection) 2019 – Feed tree species which is allegedly a list of koala feed tree species. One observation concerning this draft Bill and this list in Part V is the difference between the major tree species listed in the draft section 527F and the list in Part V.

It is helpful to understand how the list in Part V was established and the issues that have surrounded it. The Schedule published in December 2019 increased numbers of trees considered koala feed trees in the former NSW State Environmental Planning Policy (being Koala SEPP 44) from 10 trees to 123 trees across nine distinct regions of NSW. The increase occurred was explained in a NSW government report. However, the basis of the change was not scientifically robust. The NSW Government Report commissioned that identified koalas use trees for feeding, roosting and sleeping and that they moved throughout a territory. The report was considered a preliminary assessment. Instead, it seems it was adapted to turn all trees into feed trees. The data underpinning the Feed Tree Species has not been 'ground proven'. To take three tree species by their common name, the 'Wilga' tree, the White Cypress Pine tree and the 'Belah' tree (sometimes called she-oak trees), are captured but are certainly not koala feed trees.

The impact of the increase in feed tree species meant that about 10 million hectares of forests met the definition of core koala habitat under the SEPP 2019. However, such was the public outcry about the tree listing, the Department of Planning and Environment in NSW

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altered the use of the term 'feed trees' to 'koala trees' in the public messaging and then the new NSW Koala SEPP was issued in early 2021. In reality, the list of trees in Part V includes koala feed trees, roost trees, sleeping trees and simply any other trees.

Without ground truthing replacing desk audits using maps, the issue of koala tree identification will remain a contentious matter. This is not good public policy. Peer reviewed field research needs to be greatly expanded, instead of the publication of lists without scientific merit being placed in legislation or statutory instruments.

This is relevant to the terms of the draft Bill before the Senate. How can you define koala habitat by known koala food trees or a tree that might be used for shelter? The proposed definition means one tree constitutes a koala habitat. It might a be a solitary tree in a paddock. The Bill does not even require evidence of koala habitation in the trees at present or over any length of time. It is solitary tree based criteria and not koala habitat based criteria. Material on koalas and their habitats is present later in this submission.

This definition of koala habitat for the purpose of the application of the proposed addition to section 139, is at best an administrative nightmare. In reality, as most areas of Australia will have one of the trees somewhere, potentially the Minister will not be approving anything. In effect, the Bill is a deliberate 'lock up' or 'do nothing' Bill. It takes 'a tree', that is a single tree, to establish a koala habitat. . There is enough evidence within Australia that a koala cannot live in one tree alone. The drafting has no scientific basis.

Significant impact on koalas.

The proposed section reads:

> ### 527G Significant impact on koalas
>
> (1) This section applies regarding any listed threatened species that are koalas
>
> 2) For the purposes of a subsection of section 18 or 18A that applies regarding koalas, paragraph 42(ba) and any other provision of this Act that applies regarding koalas, a significant impact on koalas includes any substantial loss of genetic diversity, or any loss of connectivity or available koala habitat, of any population of koalas such that the population is placed at greater risk of extinction.

From an administrative perspective, how do you measure:

- substantial loss of genetic diversity, or
- any loss of connectivity or available koala habitat, of any population of koalas such that the population is placed at greater risk of extinction.?

These items are quite onerous to prove which, when simply asserted means, the alternative to show there is no loss of genetic diversity, or loss of connectivity or increased risk of extinction is also onerous and would be very expensive.

How does the genetic diversity of a koala population be determined without extensive scientific research that will take many years and maybe decades? How this works in practice would presumably come down to the application of the precautionary principle. The Explanatory Memorandum is silent on this. It is the very place that this matter should be raised.

Connectivity suggests koalas use the passage way of connectivity. How is this determined? Is it the case that dual consent will be introduced for forestry operations? This is what it means to NSW native forest operations.

Both proposed measures resemble a press release rather than a carefully considered legislative measure that has understood the issues thoroughly. It appears that the purpose is not to assist koala populations but instead achieve another ideological objective.

This proposed section 527G relates only to forestry operations. Its seeks to effectively remove the conditional waiver found in subsection 38(1) of the EPBC Act. The proposed section if legislated, through the wording of 'significant impact' will introduce dual consent for forestry operations across Australia. How is this so? The pathway for this transverses several sections.

Section 38(1) of the EPBC Act removes the need for Commonwealth Minister's consent or approval under Part 9 of the EPBC Act if a certain compliance issue is met. The proposed section 42(ba) removes this conditional waiver completely. This means that a forestry operation would be subject to the terms section 18 of the EPBC Act. Any of the actions set out in section 18 would require approval under the terms of Part 9 of the EPBC Act. So any promoter of a forestry operation would need to look to this to seek if Commonwealth consent was required.

As forestry operations are State based, the State legislation would need to be met. Consent is certainly required because, in part, to the operation of the Regional Forest Agreements Act (Cwlth). In NSW these requirements are extensive, prescriptive, some tape measure based compliance, and habitat sensitive.

If a proposed forestry operation has to show there is no significant impact on koalas under the EPBC Act the cost for this will be prohibitive, as it would be for any other development caught by this Bill.

To make it clear the Bill has a two pronged attack on forestry operations:

- The conditional waiver is removed. (proposed section 42(Ba).
- The insertion of koalas and significant impact into the prohibited actions without approval of the EPBC Act, (proposed section 18B), and
- In Part 9, the EPBC Act approval and conditions section, the Minister cannot be inconsistent in giving an approval where a tree that is a koala habitat tree is cleared. (proposed section 139(3)).

The person or company seeking to undertake the forestry operation will be required to undertake years of paid research to satisfy the Minister that the introduced section 42(ba) of the EPBC Act does not apply. This research will need to examine genetic diversity of koalas

within a given location and loss of connectivity between koala habitats. This literally means from tree to tree. These are the elements in the definition of 'significant impact.

In regard to the possible introduction of dual consent for forestry operations, it is relevant to note the measures within NSW that deal with koalas under the RFA Agreement and the NSW State legislation.

In NSW, the bi-lateral State Forest Agreements mention the Private Native Forest Code of Practice and the Coastal IFOA that governs the timber harvesting operations of Forestry Corporation NSW.

Extracts are reproduced to show that measures are already in place in NSW to manage properly defined and demonstrated koala habitats. Not that a tree being a koala feed tree or one that might be such a tree constitutes the koala habitat.

Extract from one NSW PNF Code of Practice:

Koala (*Phascolarctos cinereus*) Zones for application of prescription

Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro

Note: Koala populations are generally sparse or of low density in the South Coast, Central and Southern Tablelands and Western Koala Management Areas (Koala Management Areas 3, 5, 6 and 7; see Figure 6) and, as a result, scats are rarely encountered. Therefore, recording of any scat or a sighting of a koala in these areas should be considered significant.

Prescription

(a) 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*.

(b) Any tree containing a koala, or any tree beneath which 20 or more koala faecal pellets (scats) are found (or one or more koala faecal pellets in Koala Management Area 5) must be retained, and an exclusion zone of 20 metres (50 metres in Koala Management Area 5) must be implemented around each retained tree.

(c) Where there is a record of a koala within an area of forest operations or within 500 metres of an area of forest operations or a koala faecal pellet (scat) is found beneath the canopy of any primary or secondary koala food tree (see Table I below), the following must apply:

(i) A minimum of 10 primary koala food trees and 5 secondary koala food trees must be retained per hectare of net harvesting area (not including other exclusion or buffer zones), where available.

(ii) These trees should preferably be spread evenly across the net harvesting area, have leafy, broad crowns and be in a range of size classes with a minimum of 30 centimetres diameter at breast height over bark.

(iii) Damage to retained trees must be minimised by directional felling techniques.

(iv) Post-harvest burns must minimise damage to the trunks and foliage of retained trees.

Additional information

Generally, koala habitat comprises eucalypt forest and woodland containing primary and secondary food trees (see Table I). Koala droppings (faecal pellets or scats) are relatively distinctive, being cylindrical and pit-shaped. Colour varies between green–yellow to yellow– brown. Scats can remain under trees on or within the leaf litter for periods of several weeks to months. For further information on the identification of koala pellets or scats, contact OEH or refer to the OEH website – www.environment.nsw.gov.au.

For the operations of Forestry Corporation NSW it is controlled by the Coastal IFOA. In Division 3,
Item 65 Koala browse tree retention.

Extract

65. **Koala browse tree retention (*Upper North East Subregion* and *Lower North East Subregion*)** 65.1 The following trees must be retained for the duration, and at the ***completion*** of, each ***forestry operation*** in accordance with **Protocol 23: Tree retention**:

1. (a) a minimum of 10 ***Koala browse trees*** per hectare of ***net harvest area*** where ***Koala browse prescription 1*** applies;

2. (b) a minimum of five ***Koala browse trees*** per hectare of ***net harvest area*** where ***Koala browse prescription 2*** applies and in any (or remaining part of a) ***compartment*** where a ***contemporary koala record*** exists but is not otherwise attributed ***Koala browse prescription 1*** or ***2***; and

3. (c) all ***Koala browse trees*** in areas where the minimum coverage of ***Koala browse trees*** set out in conditions 65.1(a) and 65.1(b) does not exist in the ***net harvest area*** before the commencement of the ***forestry operation***.

*Note: For the purposes of determining the rate of tree retention in the **net harvest area** under condition 65.1(a) and 65.1(b), **Protocol 23: Tree retention** must be used.*

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Division 4 – Species -specific conditions for fauna,
Item 75 Koala

Extract

75. **Koala**

1. 75.1 A ***suitably qualified person*** must visually assess each tree for Koalas immediately prior to it being

   felled, where:

   1. (a) ***Koala browse prescription 1*** or ***Koala browse prescription 2*** applies; or
   2. (b) there is a ***contemporary Koala record*** in any ***operational areas*** in the ***Southern Subregion*** or ***Eden Subregion***.
2. 75.2 If a Koala is located in a tree, an ***exclusion zone*** with a radius of 25 metres or greater must be retained around the tree. The ***exclusion zone*** may be removed once the Koala moves from that tree.
3. 75.3 ***Koala browse prescription 2*** must be applied to the remainder of an ***operational area*** where ***evidence of Koala*** is detected during a ***harvesting operation*** in an area which is not identified in condition 75.1.
4. 75.4 ***FCNSW*** must maintain records, updated each week, in accordance with **Protocol 3: Operational tracking**, to demonstrate condition 75 of the ***approval*** has been applied.

Part III

General commentary concerning Phascolarctos cinereus' (koalas) within NSW.

(a) the status of koala populations and koala habitat in New South Wales, including trends, key threats, resource availability, adequacy of protections and areas for further research,

Koalas in New South Wales are widespread and occur naturally at low densities. Within New South Wales the koala is known to occur in over 750 different vegetation types (Office of Environment and Heritage - OEH, 2019a now known as EES) and is known to use137 different tree species (OEH, 2018a). Although widespread, the koala is difficult to detect.

At the time of European settlement, koalas were rare with few documented records (Gammage 2011; Jurskis 2015). Since European settlement, koala populations have fluctuated greatly in response to changes in the way that forests and woodlands have been managed. In contrast to current populations, *P. cinereus* populations then had many more episodes of high mortality, population size appears markedly more volatile and overall abundance was much higher (Gordon and Hrdina 2005).

Around 100 years after European settlement koalas became super abundant. The most plausible explanation for this change is the disruption of Aboriginal fire regimes which led to

mass eucalypt regeneration events and chronic decline of mature eucalypt trees in agricultural areas (Lunney and Leary 1988; Gammage 2011; Jurskis 2017). Eucalypt regrowth trees nutritious leaves in their expanding crowns[5], whereas declining mature trees continuously sprout and resprout nutritious and palatable epicormic[6] foliage (Jurskis 2017).

The harvest of koalas started in response to the great increase in abundance (Hrdina & Gordon 2004). At Bega in New South Wales, trade in koala skins was common from about 1870 through to possibly the early 1900s (Lunney and Leary 1988). Koalas were also commercially harvested in the Pilliga. The trade in koala and possum pelts was regulated through seasonal controls and the issue of permits which specified harvest numbers. By the early 1900s the abundance of koalas in New South Wales had reduced. Koala abundance remained high in Queensland well after it had declined in the southern states (Gordon and Hrdina 2005). In Queensland, legislation to regulate the trade was introduced in 1906. After this date, the koala take ranged from about 450,000 to nearly 1,000,000 skins per season (Hrdina & Gordon 2004).

Crashes in koala populations have been attributed to a combination of over exploitation and drought. In New South Wales commercial harvesting ceased over hundred years ago. Droughts continue to this day. The Millennium Drought reduced the koala population in the Pilliga by 79% (Lunney *et al.* 2017).

In New South Wales today increases in koala numbers are isolated and infrequent. Eucalypt forests in decline such as those with Bell Minor Associated Dieback (BMAD) found around Urbenville and Woodenbong produce flushes of epicormic growth that support elevated koala numbers.

Concern about koala population decline is mostly focused on peri-urban areas. Along the eastern seaboard three koala populations have been formally listed as threatened under the Biodiversity Conservation Act 2016 - koalas in the Pittwater LGA (determined in 1998), the koala population at Hawks Nest and Tea Gardens (determined in 1999), and the koala population between the Tweed River and Brunswick River east of the Pacific Highway (determined in 2016). The NSW Threatened Species Scientific Committee has rejected proposals for listing koala populations as threatened at Bega (determined in 2007) and Port Stephens (determined in 2018).

In 2016 in response to growing pressure from animal welfare agencies and environment organisations the NSW Government engaged the NSW Chief Scientist to chair a government review into the decline of koala populations in key areas of NSW. The committee engaged Dr Martin Predavec to prepare an independent report. Dr Martin Predavec summarised the findings of four previously reported case studies. The case studies were at Coffs Harbour LGA, Campbelltown LGA, Pilliga and South Coast. Dr Predavec's reported that Koala populations in the Coffs Harbour LGA were stable, increasing in the Campbelltown LGA and in decline in the Pilliga and South Coast. As was expected the report's findings were inconclusive stating that " *in terms of koala population trends, the patterns discussed in the case studies should only be taken to reflect what was thought to be occurring at the time that the studies were*

[5] The leafy part of the tree
[6] Leaves which sprout from buds on the trunk or limbs of a tree.

completed: It is well recognised that koala population trends can change within a relatively short period of time."

Knowledge gaps around the status of NSW koala populations in more remote forests were the trigger for new koala research. Law *et al.* (2017) developed a field validated koala habitat suitability model for 8.5 million hectares of north-eastern NSW. The published paper found that the largest determinant of koala habitat suitability was wildfire frequency (
Figure 2). Law *et al.*'s 2017 finding suggests that the proportion of suitable koala habitat in this region could be greatly increased through improved fire management (i.e. controlled cool burning).

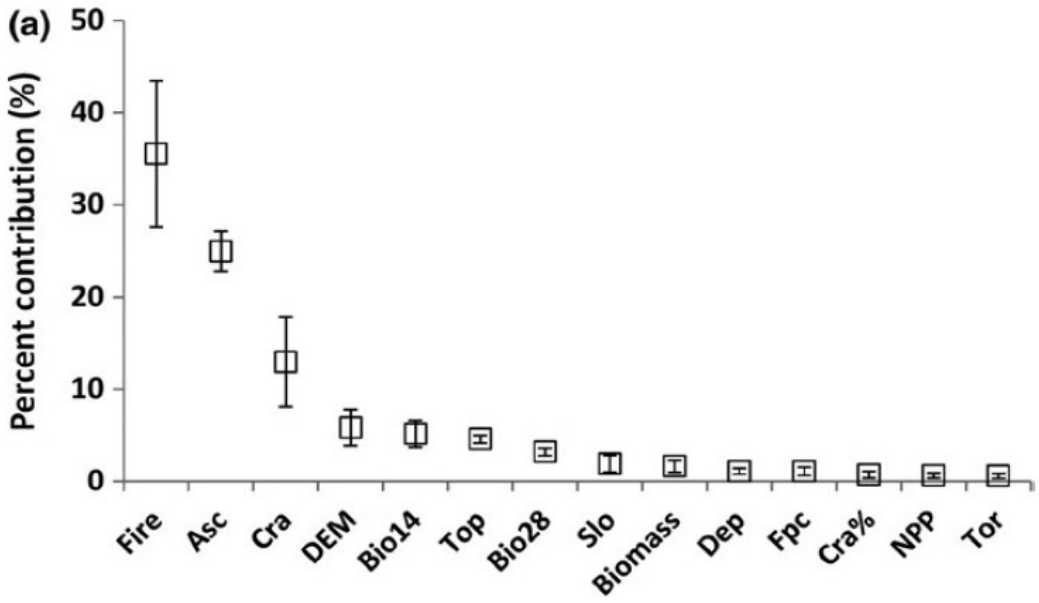

Figure 2 - Percent contribution of the 14 predictor variables – Fire (wildfire frequency), Asc (soil type), Cra (vegetation type) (Source: Law et al. 2017)

OEH is yet to acknowledge the significance of the wildfire frequency finding. This may be due to the poor wildfire record of the NSW National Parks & Wildlife Service (NPWS) (Figure 3).

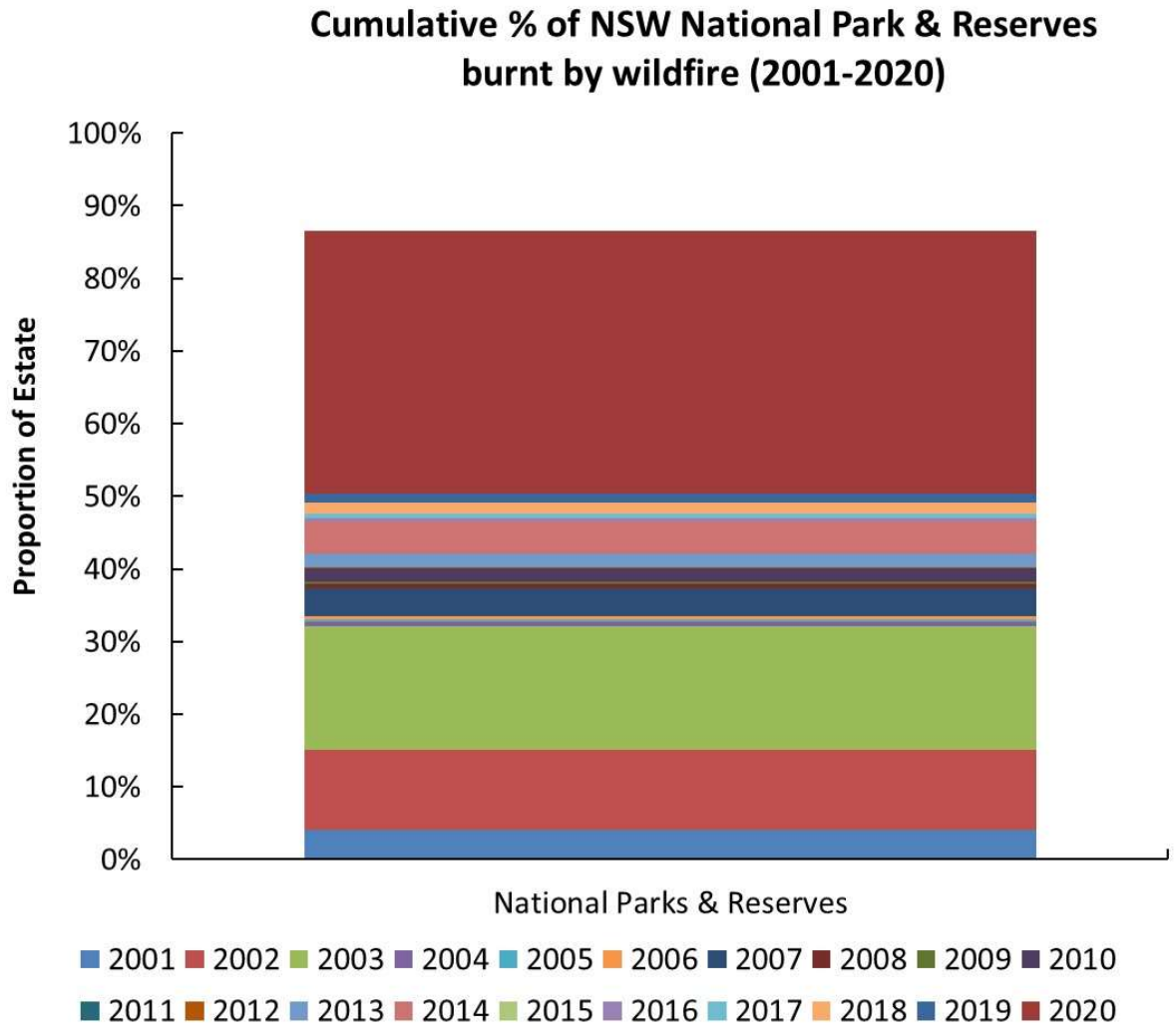

Figure 3 – Cumulate area of National Parks and Reserves burnt by wildfire in the last 20 years (1978-2017)

In the last twenty years alone around three million hectares of National Parks and reserves has been burnt in wildfire events, the more notable of these being the Great Divide fire (2003), Pilliga fires (2006 [Figure 4] and 2018), Warrumbungle fires (2013), and Blue Mountains fire (2013). OEH statistics (OEH 2019b) collected since 1989 show that canopy loss due to wildfire is more than double the canopy loss attributed to agricultural clearing. It should be noted that only intense wildfires consume tree canopies.

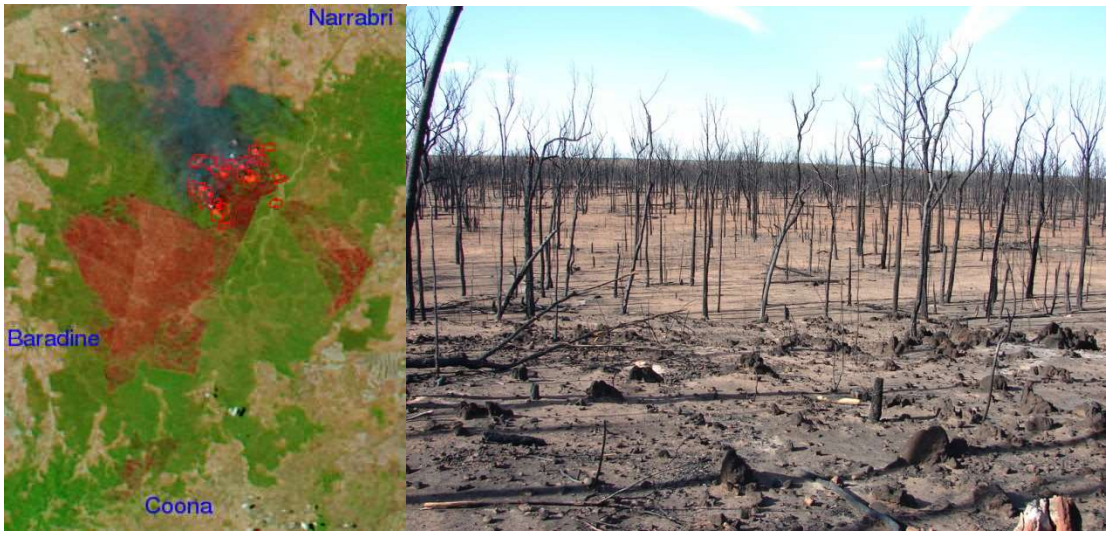

Figure 4 Satellite image showing extent of 2006 wildfire in the Pilliga (92,000 hectares) and photo of on-ground effect

Without more formal recognition of the threat which wildfires pose to koalas and their habitat, we anticipate that investment in koala conservation will continue to be misdirected.

The development of Law *et al.'s* (2017) habitat suitability model has been complemented with a koala occupancy survey (Law *et al.* 2018) in which 1.66 million hectares of forest classified as 'moderate-high' quality koala habitat was assessed. The survey of such a large area was possible through the novel use of acoustic recorders (Song Meters) and customised sound recognition software. The survey was conducted across 171 sites over three koala breeding seasons between 2015 and 2017. There were 2,513 validated koala bellows recorded at 106 (62%) sites and occupancy was found to be stable over the three breeding seasons. From these results Law *et al.* concluded that the hinterland forests of north-east NSW are supporting a widespread, though likely low density koala population that is considerably larger than previously estimated. We are aware that Dr Law has recently initiated a koala tracking program that will monitor where koalas go and how they are using their habitat.

More research of this type is needed to address community concern and guide conservation efforts. Occupancy surveys other NSW regions would advance scientific knowledge as would ongoing surveys in north-eastern NSW to monitor population stability.

Much of the concern about threats to koala populations and habitat is focused on forestry and land clearing. It is important to emphasise that forestry is not land clearing as it is regenerated or replanted. Evidence of the extent of these activities and their impact is frequently misrepresented or taken out of context.

In NSW there is 29 million hectares of land that supports native woody vegetation (OEH 2018c). In 2017-18 NSW woody vegetation change data (OEH 2019b) reveals that canopy removal from native forestry (selective timber harvesting) averages 8,930 hectares per year which equates to 0.03% of the NSW woody vegetation estate. Multiplied out over 30 years[7] total canopy removal equals 267,900 hectares which is still less than 1% of the NSW woody vegetation estate.

[7] 30 years being a common return interval for heavily harvested forest

Native forests regenerate following harvesting and this regrowth becomes a highly desirable food resource for koalas. Research by Kavanagh *et al.* (1995) found that koalas respond favourably to forestry being three times more frequent in heavily harvested than unharvested forests. Law *et al.* (2018) found no statistical difference in koala occupancy between State forests subject to heavy harvesting and unharvested forests in National Parks and reserves.

Unlike forestry, the impacts of agricultural clearing on koala habitat can be permanent. Fortunately, the scale of agricultural clearing relative to extent of NSW koala habitat is very small. In 2017-18 NSW woody vegetation change data (OEH 2019b) reveals that canopy removal from agricultural clearing (cropping, pasture, thinning) is averaging 10,500 hectares per year with an additional 6,043 hectares per year attributed to other routine agricultural management or allowable activities. This clearing equates to 0.06% of the NSW woody vegetation estate or 5.7% of the estate if continued at the same rate for the next 100 years. Not included in the statistics are the areas of agricultural cleared land that are being returned to forest cover (principally through natural regeneration). In many cases this regrowth is suitable koala habitat and is offsetting the impact of canopy losses.

Land clearing associated with infrastructure has the greatest impact as it results in permanent land-use change (i.e. from natural to man-made). Infrastructure clearing is averaging 4,200 hectares per year which if continued for 100 years will reduce the woody vegetation estate by 1.5%. The impacts of clearing for infrastructure on koala habitat are often greater than their size alone suggests, as much of this activity occurs east of the Pacific highway in forests which support higher density koala populations.

Trends in clearing activity (changes from one year to the next) are also commonly misrepresented. For example, in a recent opinion article (Daley 2019) it states that the clearing of native vegetation in NSW has escalated by 800%. What is not acknowledged is the change in the way that clearing is being measured.

Over the last ten years OEH has changed its assessment methodology four times (i.e. pre-2009 Landsat only; 2010-2015 Spot 5; 2016-2017 Sentinel and Spot 5; 2018 Sentinel only). Comparison of figures generated using different methods is not valid and can be very misleading. For example, the use of Sentinel 2 satellite imagery which was used in 2017-18 to quantify canopy removals generates much higher figures than the Spot 5 satellite imagery that was used prior to 2017.

In summary, koala conservation needs to take greater account of the koala's history pre and post European settlement and its capacity to expand and collapse in response to favourable and unfavourable conditions. Management of the key threats to koala populations and their habitat need to be based on science and statistical data, rather than exaggerated and misrepresented claims. The notion that koalas can be better protected in National Parks and Reserves than in State forests and on private land, has not been demonstrated and the evidence around wildfire history suggests that the reverse may be the case. The NSW Government should be sceptical when agencies and NGOs advocate that more parks and reserves are needed for koala conservation.

There is a significant opportunity to increase NSW koala populations by expanding the amount of suitable koala habitat. This can be achieved by the NSW Government altering its forest fire

management policies and practices so that forests become less prone to wildfire. Clearing of native vegetation for agriculture and infrastructure should continue to be carefully managed with acknowledgement that the vast majority of koala populations and koala habitat (> 90%) is not affected by this activity. Forestry activities including thinning can improve the suitability of koala habitat by promoting forest regeneration (of preferred species) and healthy regrowth forests.

(b) the impacts on koalas and koala habitat from:

(i) the Coastal Integrated Forestry Operations Approvals and Regional Forest Agreements,

As detailed in (a) above, the scale of native timber harvesting impacts is monitored by OEH through the analysis of satellite imagery. The monitoring shows that the extent of harvesting disturbance is small relative to area in which koalas are known to occur.

Koala research by Kavanagh *et al.* (1995) and Law *et al.* (2018) reveals that 'at worst' forestry has no impact on koala populations and at best it is highly favourable.

The NSW EPA independently regulates native forestry operations. This agency has developed a comprehensive set of operating rules that provide multiple layers of environmental safeguards, which protect native animals including koalas and their habitat. The safeguards for koalas include:

- A comprehensive network of reserve corridors and protected areas which limit the scale and intensity of harvesting. These reserves typically account for around half of the proposed harvesting area.
- Employment of a team of professional ecologists with specialist training in fauna and flora identification. These ecologists are required to undertake targeted (pre-operational) surveys.
- If koalas are known to live in a State forest but their habitat has not been mapped (e.g. in some Southern forests) the Ecologists are required to undertake targeted koala surveys. These surveys involve using acoustic recording devices or targeted searches for koala scats (faecal pellets). If koalas are found no operations can proceed until the NSW EPA has reviewed the survey results and issued a determination including site-specific conditions
- In the North East Region where koala habitat has been mapped, records of koalas trigger the application of stringent species-specific conditions. These include exclusion zones with a radius of 25 metres or greater around trees in which koalas are found. Preferred browse trees are retained (either 10 per hectare or 5 per hectare depending on circumstance). Tallowwood, Swamp Mahogany and Red Gums which are preferred browse tree species are prioritised for retention.
- If a koala is found its location is accurately reported.
- Detailed requirements which ensure that harvested forests are effectively regenerated, and natural species mixes retained.

(ii) the Private Native Forestry Code of Practice,

On private land the scale and intensity of native timber harvesting is much lower than on State forests. 2017-18 NSW woody vegetation change data (OEH 2019) reveals that canopy removal from private native forestry averages just 1,770 hectares per year which accounts for less than 0.02% of the native forest trees on NSW private land.

The PNF Code has similar levels of environmental protection to those which apply on State forests. Retention of old growth forest, rainforests, steep slopes and riparian habitat provide a network of connected reserves. Tree retention requirements ensure that harvesting is selective and that habitat and feed trees are retained.

Koala habitat suitability has been mapped on the north coast where 80% of PNF activity occurs. This map can assist landholders to manage their forests in a way that is sympathetic to the needs of koalas (i.e. by maintaining their regrowth forests in a healthy and productive growing state).

(iii) the old growth forest remapping and rezoning program,

The old growth forest remapping and rezoning program has no connection to koala conservation. There is no research that suggests that koalas favour mature or old growth forest. The remapping pilot study has identified areas of old growth currently not protected that should be and areas currently protected that are not old growth. This mapping should be subjected to upgraded technology at all times considering the levels of accuracy now achieved by satellite imagery and Lidar.

(iv) the 2016 land management reforms, including the Local Land Services Amendment Act 2016 and associated regulations and codes

Refer to comments made in relation to land clearing in (a) above.

(c) the effectiveness of State Environmental Planning Policy 44 - Koala Habitat Protection, the NSW Koala Strategy and the Biodiversity Conservation Act 2016, including the threatened species provisions and associated regulations, in protecting koala habitat and responding to key threats,

State Environmental Planning Policy (SEPP) 44 - Koala Habitat Protection was originally designed to minimise the impacts of land clearing (permanent land-use change) associated with urban expansion along the eastern seaboard. The way the policy has been implemented by Local Government has been inconsistent and ad-hoc. Private native forestry (PNF) has been inadvertently captured by SEPP 44. Focusing on the protection of 'core koala habitat' is a flaw in the design of SEPP 44. Koalas in New South Wales are widespread, occurring at low densities across millions of hectares of forest. Trying to map 'core koala habitat' over such a vast area is impractical, cost prohibitive and achieves little for scientific koala conservation.

Private native forestry (PNF) is subject to SEPP 44 but should not be. Forestry research (Kavanagh *et al.* 1995; Law *et al.* 2018) shows that native forestry is not detrimental to koalas

and may be favourable. The absence of any demonstrable impacts provides strong grounds for having PNF excised from the requirements of SEPP 44. When SEPP 44 came into force there were very few maps of koala habitat suitability. Today there is a management scale koala habitat suitability map covering the entire north coast where 80% of PNF activity occurs. The current review of PNF provides an opportunity for koala habitat management requirements to be wholly incorporated within the PNF Codes (as they are under the Coastal IFOA).

The NSW Koala Strategy (OEH 2018b) is a document that promotes the case for more reserves. The NSW Koala Strategy does not acknowledge or incorporate the findings of Law *et al.'s* 2018 koala occupancy study. It prominently states that *"Recent studies estimate a 26% decline in numbers over the past three generations (15–21 years)".* Timber NSW believes this statement is inaccurate and misleading. There is also no mention of Law *et al.*'s 2017 finding that wildfire is a major determinant of koala habitat suitability. We conclude that the findings of Law *et al.*'s 2017 and Law *et al.*'s 2018 have been omitted because they do not support the case for new reserves.

(d) identification of key areas of koala habitat on private and public land that should be protected, including areas currently at risk of logging or clearing, and the likely impacts of climate change on koalas and koala distribution,

Koalas occur at low densities over millions of hectares. It is not practicable or effective to try and conserve koalas using a reserve-based approach. Directing public monies into purchasing land for koala reserves reduces the funds which could be available for improving the suitability of forests as koala habitat. Creation of reserves can only be justified where high suitability koala habitat is at risk of being permanently lost. State forests do not fall into this category as timber harvesting and koala populations happily coexist (Kavanagh *et al.* 1995; Law *et al.* 2018).

(e) the environmental, social and economic impacts of establishing new protected areas to conserve koala habitat, including national parks, and

The creation of a Great Koala National Park (GKNP) on the NSW north coast was NSW Labor Party policy at the last State election and remains their policy. 175,000 hectares of the region's most productive and economically important State forests were identified for inclusion in the GKNP. The State forests on the NSW North Coast operate as a single wood supply zone. If the GKNP had been implemented as proposed or is in the future, it impacts the entire region's native forest sector and arguably will lead to complete collapse of the industry.

Ernst & Young was engaged by the Australian Forest Products Association to provide an assessment of the impact of the proposed Great Koala National Park. Ernst & Young (2019) found that a collapse of the industry on the north coast caused by the creation of GKNP would result in the loss of $757million in output, $292 million in value-added and 1,871 jobs.

Part IV

Schedule 2 of the State Environmental Planning Policy (Koala Habitat Protection) 2019

– Feed tree species

Published 20 December 2019

Schedule 2 Feed tree species

Central and Southern Tablelands koala management area

Scientific name	Common name(s)
Eucalyptus agglomerata	Blue-leaved Stringybark
Eucalyptus albens	White Box
Eucalyptus amplifolia	Cabbage Gum
Eucalyptus blakelyi	Blakely's Red Gum
Eucalyptus bosistoana	Coast Grey Box
Eucalyptus bridgesiana	Apple Box
Eucalyptus camaldulensis	River Red Gum
Eucalyptus conica	Fuzzy Box
Eucalyptus cypellocarpa	Monkey Gum
Eucalyptus dalrympleana	Mountain Gum
Eucalyptus dealbata	Tumbledown Red Gum
Eucalyptus dives	Broad-leaved Peppermint
Eucalyptus elata	River Peppermint
Eucalyptus eugenioides	Narrow-leaved Stringybark
Eucalyptus fibrosa	Broad-leaved Red Ironbark
Eucalyptus globoidea	White Stringybark
Eucalyptus goniocalyx	Bundy
Eucalyptus macrorhyncha	Red Stringybark
Eucalyptus maidenii	Maiden's Blue Gum
Eucalyptus mannifera	Brittle Gum
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Western Grey Box
Eucalyptus nortonii	Large-flowered Bundy
Eucalyptus obliqua	Messmate
Eucalyptus oblonga	Stringybark
Eucalyptus paniculata	Grey Ironbark
Eucalyptus pauciflora	White Sally, Snow Gum
Eucalyptus piperita	Sydney Peppermint
Eucalyptus polyanthemos	Red Box
Eucalyptus punctata	Grey Gum
Eucalyptus quadrangulata	White-topped Box
Eucalyptus radiata	Narrow leaved Peppermint
Eucalyptus rossii	Inland Scribbly Gum
Eucalyptus rubida	Candlebark
Eucalyptus sclerophylla	Hard-leaved Scribbly Gum
Eucalyptus sideroxylon	Mugga Ironbark
Eucalyptus sieberi	Silvertop Ash
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus viminalis	Ribbon Gum

Central Coast koala management area

Scientific name	Common name(s)
Allocasuarina littoralis	Black She-oak
Allocasuarina torulosa	Forest Oak
Angophora bakeri	Narrow-leaved Apple
Angophora costata	Smooth-barked Apple
Angophora floribunda	Rough-barked Apple
Casuarina glauca	Swamp Oak
Corymbia eximia	Yellow Bloodwood
Corymbia gummifera	Red Bloodwood
Corymbia maculata	Spotted Gum
Eucalyptus acmenoides	White Mahogany
Eucalyptus agglomerata	Blue-leaved Stringybark
Eucalyptus albens	White Box
Eucalyptus amplifolia	Cabbage Gum
Eucalyptus beyeriana	Beyer's Ironbark
Eucalyptus blakelyi	Blakely's Red Gum
Eucalyptus bosistoana	Coast Grey Box
Eucalyptus botryoides	Bangalay
Eucalyptus camaldulensis	River Red Gum
Eucalyptus camfieldii	Camfield's Stringybark
Eucalyptus canaliculata	Large-fruited Grey Gum
Eucalyptus capitellata	Brown Stringybark
Eucalyptus carnea	Thick-leaved Mahogany
Eucalyptus consideniana	Yertchuk
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus cypellocarpa	Monkey Gum
Eucalyptus deanei	Mountain Blue Gum
Eucalyptus eugenioides	Narrow-leaved Stringybark
Eucalyptus fibrosa	Broad-leaved Red Ironbark
Eucalyptus glaucina	Slaty Red Gum
Eucalyptus globoidea	White Stringybark
Eucalyptus grandis	Flooded Gum
Eucalyptus haemastoma	Broad-leaved Scribbly Gum
Eucalyptus imitans	Eucalyptus imitans
Eucalyptus largeana	Craven Grey Box
Eucalyptus longifolia	Woollybutt
Eucalyptus macrorhyncha	Red Stringybark
Eucalyptus melliodora	Yellow Box
Eucalyptus michaeliana	Brittle Gum
Eucalyptus microcorys	Tallowwood
Eucalyptus moluccana	Grey Box
Eucalyptus oblonga	Stringybark
Eucalyptus paniculata	Grey Ironbark
Eucalyptus parramattensis	Parramatta Red Gum
Eucalyptus pilularis	Blackbutt
Eucalyptus piperita	Sydney Peppermint
Eucalyptus propinqua	Small-fruited Grey
Eucalyptus punctata	Gum Grey Gum
Eucalyptus quadrangulata	White-topped Box
Eucalyptus racemosa	Narrow-leaved Scribbly Gum
Eucalyptus resinifera	Red Mahogany
Eucalyptus robusta	Swamp Mahogany
Eucalyptus saligna	Sydney Blue Gum
Eucalyptus scias	Large-fruited Red Mahogany
Eucalyptus sclerophylla	Hard-leaved Scribbly Gum
Eucalyptus siderophloia	Grey Ironbark
Eucalyptus sideroxylon	Mugga Ironbark
Eucalyptus sieberi	Silvertop Ash

Eucalyptus signata	Scribbly Gum
Eucalyptus sparsifolia	Narrow-leaved Stringybark
Eucalyptus squamosa	Scaly Bark
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus umbra	Bastard White Mahogany
Eucalyptus viminalis	Ribbon Gum
Melaleuca quinquenervia	Broad-leaved Paperbark
Syncarpia glomulifera	Turpentine

Darling Riverine Plains koala management area

Scientific name	
Callitris glaucophylla	White Cypress Pine
Eucalyptus albens	White Box
Eucalyptus camaldulensis	River Red Gum
Eucalyptus chloroclada	Dirty Gum
Eucalyptus conica	Fuzzy Box
Eucalyptus coolabah	Coolibah
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus dealbata	Tumbledown Red Gum
Eucalyptus dwyeri	Dwyer's Red Gum
Eucalyptus largiflorens	Black Box
Eucalyptus melanophloia	Silver-leaved Ironbark
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Western Grey Box
Eucalyptus pilligaensis	Narrow-leaved Grey Box
Eucalyptus populnea	Bimble Box, Poplar Box
Eucalyptus sideroxylon	Mugga Ironbark

Far West koala management area

Scientific name	Common name(s)
Angophora floribunda	Rough-barked Apple
Callitris glaucophylla	White Cypress Pine
Casuarina cristata	Belah
Eucalyptus albens	White Box
Eucalyptus blakelyi	Blakely's Red Gum
Eucalyptus camaldulensis	River Red Gum
Eucalyptus chloroclada	Dirty Gum
Eucalyptus coolabah	Coolibah
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus dealbata	Tumbledown Red Gum
Eucalyptus intertexta	Gum Coolibah
Eucalyptus largiflorens	Black Box
Eucalyptus melanophloia	Silver-leaved Ironbark
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Western Grey Box
Eucalyptus moluccana	Grey Box
Eucalyptus pilligaensis	Narrow-leaved Grey Box
Eucalyptus populnea	Bimble Box
Eucalyptus sideroxylon	Mugga Ironbark
Geijera parviflora	Wilga

North Coast koala management area

Scientific name	Common name(s)
Allocasuarina torulosa	Forest Oak
Angophora floribunda	Rough-barked Apple
Corymbia gummifera	Red Bloodwood
Corymbia henryi	Large-leaved Spotted Gum
Corymbia intermedia	Pink Bloodwood
Corymbia maculata	Spotted Gum
Eucalyptus acmenoides	White Mahogany
Eucalyptus amplifolia	Cabbage Gum
Eucalyptus bancroftii	Orange Gum
Eucalyptus biturbinata	Grey Gum
Eucalyptus campanulata	New England Blackbutt
Eucalyptus canaliculata	Large-fruited Grey Gum
Eucalyptus carnea	Thick-leaved Mahogany
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus eugenoides	Narrow-leaved stringybark
Eucalyptus fibrosa	Broad-leaved Red Ironbark
Eucalyptus glaucina	Slaty Red Gum
Eucalyptus globoidea	White Stringybark
Eucalyptus grandis	Flooded Gum
Eucalyptus laevopinea	Silver-top Stringybark
Eucalyptus largeana	Craven Grey Box
Eucalyptus microcorys	Tallowwood
Eucalyptus moluccana	Grey Box
Eucalyptus nobilis	Forest Ribbon Gum
Eucalyptus pilularis	Blackbutt
Eucalyptus placita	Grey Ironbark
Eucalyptus planchoniana	Bastard Tallowwood
Eucalyptus propinqua	Small-fruited Grey Gum
Eucalyptus psammitica	Bastard White Mahogany
Eucalyptus punctata	Grey Gum
Eucalyptus resinifera	Red Mahogany
Eucalyptus robusta	Swamp Mahogany
Eucalyptus rummeryi	Steel Box
Eucalyptus saligna	Sydney Blue Gum
Eucalyptus scias	Large-fruited Red Mahogany
Eucalyptus seeana	Narrow-leaved Red Gum
Eucalyptus siderophloia	Grey Ironbark
Eucalyptus signata/ Eucalyptus racemosa	Scribbly Gum/Narrow-leaved Scribbly Gum
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus tindaliae	Stringybark
Eucalyptus umbra	Bastard White Mahogany
Melaleuca quinquenervia	Broad-leaved Paperbark

Northwest Slopes koala management area

Scientific name	Common name(s)
Angophora floribunda	Rough-barked Apple
Callitris glaucophylla	White Cypress Pine
Casuarina cristata	Belah
Eucalyptus albens	White Box
Eucalyptus blakelyi	Blakely's Red Gum
Eucalyptus bridgesiana	Apple Box

Eucalyptus caleyi	Drooping Ironbark
Eucalyptus caliginosa	Broad-leaved Stringybark
Eucalyptus camaldulensis	River Red Gum
Eucalyptus canaliculata	Large-fruited Grey Gum
Eucalyptus chloroclada	Dirty Gum
Eucalyptus conica	Fuzzy Box
Eucalyptus coolabah	Coolibah
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus dalrympleana	Mountain Gum
Eucalyptus dealbata	Tumbledown Red Gum
Eucalyptus dwyeri	Dwyer's Red Gum
Eucalyptus exserta	Peppermint
Eucalyptus fibrosa	Broad-leaved Red Ironbark
Eucalyptus goniocalyx	Bundy
Eucalyptus laevopinea	Silver-top Stringybark
Eucalyptus largiflorens	Black Box
Eucalyptus macrorhyncha	Red Stringybark
Eucalyptus mannifera	Brittle Gum
Eucalyptus melanophloia	Silver-leaved Ironbark
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Western Grey Box
Eucalyptus moluccana	Grey Box
Eucalyptus nobilis	Forest Ribbon Gum
Eucalyptus parramattensis	Parramatta Red Gum
Eucalyptus pauciflora	White Sally, Snow Gum
Eucalyptus pilligaensis	Narrow-leaved Grey Box
Eucalyptus polyanthemos	Red Box
Eucalyptus populnea	Bimble Box/Poplar Box
Eucalyptus prava	Orange Gum
Eucalyptus punctata	Grey Gum
Eucalyptus quadrangulata	White-topped Box
Eucalyptus sideroxylon	Mugga Ironbark
Eucalyptus viminalis	Ribbon Gum

Northern Tablelands koala management area

Scientific name	**Common name(s)**
Allocasuarina littoralis	Black She-oak
Angophora floribunda	Rough-barked Apple
Callitris glaucophylla	White Cypress Pine
Eucalyptus acaciiformis	Wattle-leaved Peppermint
Eucalyptus albens	White Box
Eucalyptus amplifolia	Cabbage Gum
Eucalyptus biturbinata	Grey Gum
Eucalyptus blakelyi	Blakely's Red Gum
Eucalyptus bridgesiana	Apple Box
Eucalyptus brunnea	Mountain Blue Gum
Eucalyptus caleyi	Drooping Ironbark
Eucalyptus caliginosa	Broad-leaved Stringybark
Eucalyptus camaldulensis	River Red Gum
Eucalyptus campanulata	New England Blackbutt
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus dalrympleana	Mountain Gum
Eucalyptus dealbata	Tumbledown Red Gum
Eucalyptus eugenioides	Narrow-leaved Stringybark
Eucalyptus laevopinea	Silver-top Stringybark

Eucalyptus macrorhyncha	Red Stringybark
Eucalyptus melanophloia	Silver-leaved Ironbark
Eucalyptus melliodora	Yellow Box
Eucalyptus michaeliana	Brittle Gum
Eucalyptus microcorys	Tallowwood
Eucalyptus moluccana	Grey Box
Eucalyptus nicholii	Narrow-leaved Black Peppermint
Eucalyptus nobilis	Forest Ribbon Gum
Eucalyptus nova-anglica	New England Peppermint
Eucalyptus obliqua	Messmate
Eucalyptus pauciflora	White Sally, Snow Gum
Eucalyptus prava	Orange Gum
Eucalyptus radiata	Narrow leaved Peppermint
Eucalyptus saligna	Sydney Blue Gum
Eucalyptus sideroxylon	Mugga Ironbark
Eucalyptus stellulata	Black Sally
Eucalyptus subvelutina	Broad-leaved Apple
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus viminalis	Ribbon Gum
Eucalyptus williamsiana	Eucalyptus williamsiana
Eucalyptus youmanii	Youman's Stringybark

Riverina koala management area

Scientific name	**Common name(s)**
Callitris glaucophylla	White Cypress Pine
Casuarina cristata	Belah
Eucalyptus albens	White Box
Eucalyptus camaldulensis	River Red Gum
Eucalyptus intertexta	Gum Coolibah
Eucalyptus largiflorens	Black Box
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Western Grey Box
Eucalyptus populnea	Bimble Box

South Coast koala management area

Scientific name	**Common name(s)**
Allocasuarina littoralis	Black She-oak
Angophora floribunda	Rough-barked Apple
Corymbia gummifera	Red Bloodwood
Corymbia maculata	Spotted Gum
Eucalyptus agglomerata	Blue-leaved Stringybark
Eucalyptus baueriana	Blue Box
Eucalyptus bosistoana	Coast Grey Box
Eucalyptus consideniana	Yertchuk
Eucalyptus cypellocarpa	Monkey Gum
Eucalyptus elata	River Peppermint
Eucalyptus eugenioides	Narrow-leaved Stringybark
Eucalyptus fastigata	Brown Barrel
Eucalyptus globoidea	White Stringybark
Eucalyptus longifolia	Woollybutt

Eucalyptus maidenii	Maiden's Blue Gum
Eucalyptus muelleriana	Yellow Stringybark
Eucalyptus obliqua	Messmate
Eucalyptus paniculate	Grey Ironbark
Eucalyptus pilularis	Blackbutt
Eucalyptus piperita	Sydney Peppermint
Eucalyptus punctata	Grey Gum
Eucalyptus saligna	Sydney Blue Gum
Eucalyptus sclerophylla	Hard-leaved Scribbly Gum
Eucalyptus sieberi	Silvertop Ash
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus tricarpa	Mugga (Red) Ironbark
Eucalyptus viminalis	Ribbon Gum

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