

# North East Forest Alliance Submission to Private Native Forestry Review

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It is evident that Private Native Forestry has never been undertaken on an Ecologically Sustainable basis because of political interventions, lack of political will, opposition from some landholders, failure to adopt best practices, refusal to adopt science-based prescriptions and consider relevant environmental research, refusal to require pre-logging surveys and apply mitigation measures for threatened species, inadequate retention and recruitment of old trees, failure to undertake assessments to identify ecosystems and features requiring protection, inadequate protection of streams and riparian buffers, failure to take into account forest degradation and require rehabilitation, failure to monitor the effectiveness of prescriptions and apply adaptive management, failure to undertake effective regulation, secrecy surrounding PNF operations, and contempt for genuine community concerns.

Logging of native forests has no social licence. The NSW Government needs to overcome its obsession that logging is the only possible use of native forests and begin promoting forests for all their values, while encouraging and facilitating conservation measures.

NEFA considers that forests have numerous non timber values, such as flora and fauna habitat, carbon sequestration and storage, attracting rainfall, regulating stream flows, aesthetic, recreation and spiritual values, that should be considered as part of any assessment of forests. Any fair-dinkum assessment should consider these values and identify all opportunities for landholders, not just forestry, such as conservation covenants, funding for bush rehabilitation, funding for habitat protection (i.e. core Koala habitat), biobanking, stewardship payments, and the potential for carbon credits for avoided emissions.

The Government needs to consider stewardship payments, assistance for the protection of high conservation value areas and providing annual payments to landowners for the volumes of carbon stored in their forests.

The preparation of a Property Vegetation Plan should be regarded as an opportunity to undertake a full assessment of all environmental values and constraints, including undertaking surveys for threatened species, as well as identifying all potential management options. It is the opportunity for landowners to learn about the values of their properties, management options and opportunities for funding assistance.

This submission is made in the expectation that the Government will ignore our concerns (as they did with our RFA and IFOA submissions) due to their obsession with weakening and removing the grossly inadequate constraints on logging of private forests in NSW. There is no genuine commitment to Ecologically Sustainable Forest Management, it has become a meaningless platitude. Never-the-less we have taken the time to address a variety of issues, but not all, even though it is a waste of our time.

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## SUMMARY

### 1.1. A HISTORY OF LACK OF EFFECTIVE REGULATION OF PNF

Except for Protected Lands, token regulation of Private Native Forestry has always failed to identify and protect most environmental values. The case studies presented in Section 3 show that in practice Property Vegetation Plans and Forest Operation Plans required since 2007 are just simplistic desk-top approvals that fail to identify the presence of most areas and values requiring protection. It is clear that Government Agencies and many landowners still avoid taking necessary measures to avoid environmental harm. There are still no effective constraints in place to ensure Ecologically Sustainable Forest Management on private lands. Effective and meaningful regulation is required, not further exemptions based on their scale and intensity.

### 1.2 LOGGING OF THREATENED SPECIES

While there are a variety of prescriptions required to be applied to mitigate impacts of PNF on threatened species they are only required to be applied to known records. There are few records of threatened species on private lands and no requirements to undertake pre-logging surveys, which means that in practice the locations of threatened species are rarely identified and the prescriptions rarely applied. There is effectively no protection for threatened species applied in the vast majority of PNF operations,

Prescriptions intended to reduce impacts on threatened species have been theoretically applied on public lands for over 20 years and on private lands for 12 years, yet there has never been any attempt to assess their effectiveness. This is a fundamental breach of the core principles of ESFM.

From the partial monitoring of a few plant species (without prescriptions) it is evident that even under controlled conditions logging results in significant impacts on threatened plants. A precautionary approach would require that logging exclusion zones are placed around all threatened plant species potentially vulnerable to the range of impacts associated with logging (i.e. physical damage, soil disturbance, microclimate changes, hydrological changes, burning, weed invasion, logging dieback), with logging only allowed after independent trials have proven that logging impacts can be appropriately controlled. Though this requires pre-logging surveys by competent botanists.

### **1.2.1. KOALAS, AN EXAMPLE OF INEFFECTIVE MANAGEMENT**

Since SEPP 44 was introduced in 1995 with the objective of identifying and protecting core Koala habitat on private lands only 5 Comprehensive Koala Plans of Management have been prepared, and only 2 of these identify core Koala habitat across Local Government Areas. Despite the requirements of the PNF Code the EPA have continued to issue PNF approvals for core Koala habitat. It is clear that the NSW Recovery Plan's objective to *Conserve koalas in their existing habitat* by identifying and protecting 'core Koala habitat' in accordance with SEPP 44 and by LEP zoning has not been implemented. If there is any will to protect Koalas then it is essential that significant resources be put into mapping core Koala habitat across priority private lands and retaining the current requirement to exclude logging from core Koala habitat.

Regrettably it is clear that both the Conservation and Management Strategy and NSW Recovery Plan requirements relating to identifying and protecting important habitat areas, identifying improved and standardised survey methods, and monitoring and reviewing the effectiveness of mitigation measures, are not being complied with on private lands. In priority areas where core Koala habitat has not been identified it is essential to require pre-logging surveys for Koalas and to fully protect any core Koala habitat found, as well as any trees with evidence of use by Koalas (scats, scratches, sightings) and appropriate buffers.

The current requirement for the retention of *A minimum of 10 primary koala food trees and 5 secondary koala food trees* where evidence of Koalas is found needs to be retained. The current requirement that *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* also requires retention, though there needs to be greater emphasis on selecting trees from the range of size classes above 30cm diameter given Koalas preferences for larger trees.

### **1.3. LOGGING OF THREATENED ECOLOGICAL COMMUNITIES**

It is apparent that even obvious Threatened Ecological Communities (TECs) are not being recognised by the EPA or landholders in the preparation of PVPs and Forest Operation Plans, making it likely that TECs on private lands are routinely logged. If there is a genuine intent to protect TECs in PNF operations then it is essential that they are mapped in a similar expert process as was undertaken for State Forests.

#### **1.4. REMAPPING OLDGROWTH FOREST**

It is outrageous that the PNF criteria for remapping oldgrowth does not recognise that some forest types (particularly those dominated by Brush Box, Turpentine and some Angophoras) do not typically have senescent crowns (i.e. dead branches) when they reach ecological maturity. The exclusion of ecologically mature stands of such forest types from being identified as oldgrowth forest is a deliberate contravention of the national criteria. Similarly the application of criteria developed for application to 1:25,000 aerial photographs to ADS40 imagery where more regrowth is visible is an intentional rorting of the methodology.

There needs to be an independent and open expert process to review mapping criteria for oldgrowth forests taking into account the extent to which mature trees of different species display senescence and the increased visibility of regrowth trees with improved imagery. Given the evidence of incorrect re-mapping the review also needs to review the accuracy of current mapping.

#### **1.5. REMAPPING RAINFOREST**

It is clear that the delineation of rainforest in the PNF re-mapping process is not consistent with the methodology applied in the CRA as it excludes rainforest with emergent Brush Box and Turpentine. This limitation needs to be removed so as to be consistent with 2004 DEC/DIPNR Field Guide "Identification of Rainforest" by counting Brush Box and Blackwood as rainforest species, and removing the limitation that emergents of Brush Box and Turpentine preclude the identification of rainforest.

Of equal concern is that when the EPA were presented with detailed evidence that OEH nonsensical remapping of the State Endangered Lowland Rainforest and nationally Critically Endangered Lowland Rainforest of Subtropical Australia as cleared land and as part of the logging area they refused to investigate this blatant rorting of the mapping criteria. They also refused access to the relevant documents under a GI(PA) Act request. The remapping process is rotten.

#### **1.6. PROTECTING OLD TREES**

The retention of old trees for the hollows and increased browse, nectar and seeds they provide for wildlife is essential to maintain a range of forest dependent fauna, and thus is a key component of ESFM. To maintain and restore hollow bearing trees in perpetuity it is essential that all trees over 100cm diameter be retained and that as a minimum 10 healthy trees per hectare 60-100 cm diameter and 15 trees 20-60cm diameter be retained per hectare. Where these are not available the next largest trees should be retained.

#### **1.7. PROTECTING WATER VALUES**

The riparian buffer widths required by the current PNF Code are pathetic and do not have a shred of scientific credibility. The riparian buffer widths of 0-5m applied by the PNF Code for unmapped, 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order streams are significantly less than the 10-20m required by the EPL for public lands, the 30-50m identified by Munks (1996) for small streams, tributaries, gully and drainage lines in catchments less than 100 ha, or the 35-40m (up to 200m to improve terrestrial biodiversity) identified by Hansen *et. al.* (2010) for steep catchments and low order streams, or even the 20-30m for erosion control identified by Croke and Hairsine (1995) for temporary and small streams in catchments less than 100ha. Similarly the 20m buffers for wetlands are significantly less than the 10-40m buffers identified for public lands.

If there is an intent to implement the basic principle of ESFM to minimise environmental impacts then buffers need to be implemented on unmapped streams, and logging exclusion areas of at least 20m should be implemented on all unmapped, 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order streams, with these widths progressively increasing in steeper and more erosion prone country up to at least 40m.

The EPA response to repeat breaches has been found to be inadequate and ineffective. There is no disincentive for lawbreakers.

## **1.8. LOGGING DIEBACK**

Logging induced dieback, also known as Bell Miner Associate Dieback, is being initiated and aggravated by logging. It is ecosystem collapse and the antithesis of ESFM. All forests areas affected by or susceptible to dieback must be identified in PVPs, along with information on severity to allow ongoing monitoring. There needs to be a prohibition on logging affected forests and rehabilitation plans developed and implemented.

## **2.1. OBTAINING A SOCIAL LICENCE**

Despite the ESFM principle to "Ensure public participation, access to information, accountability and transparency in the delivery of ESFM", there is no accountability or transparency for PNF operations. This is partially responsible for PNF having no social licence. PNF operations must be subject to the same level of assessment and public scrutiny as all other developments on private land, including the preparation and public exhibition of a Development Application or equivalent assessment. When neighbours raise genuine concerns they must be dealt with fairly, openly and justly, rather than belligerently, if there is a genuine attempt to gain community acceptance. Though most importantly there needs to be a genuine attempt to manage forests on an Ecologically Sustainable basis that protects environment values, including threatened species and streams, and logs in a careful and selective manner.

## **2.2. MANAGEMENT FOR ALL VALUES**

It is considered that preparation of a Property Vegetation Plan should require a full assessment of all environmental values and constraints, including surveys for threatened species, as well as all potential management options, not just forestry, including funding for bush regeneration, assistance with habitat protection (i.e. core Koala habitat), stewardship payments, biobanking opportunities, funding for avoided carbon emissions, etc. The preparation of a PVP should be treated as an opportunity to inform land owners of the values of their properties and the range of management options, rather than a shoddy desk-top review aimed at promoting the single use of logging.

# 1. PROTECTING ENVIRONMENTAL VALUES

Regarding protecting environmental values relevant requirements of the review are:

- Support a socially, environmentally and economically sustainable forest industry in line with ecologically sustainable forest management.
- Improving silviculture, forest management and environmental practices of PNF
- Increase ... community confidence in PNF
- Develop PNF Codes of Practice that are clear and easier to use and support social, environmental and economic sustainability in line with ecological sustainable forest management
- Ensure environmental values are recognised and appropriately managed during PNF operations
- Enhancing landholder knowledge and community acceptance of ...The value of sensitive and important environmental assets

It is evident that Private Native Forestry has never been undertaken on an Ecologically Sustainable basis because of political interventions, lack of political will, opposition from some landholders, failure to adopt best practices, refusal to adopt science-based prescriptions and consider relevant environmental research, refusal to require pre-logging surveys and apply mitigation measures for threatened species, inadequate retention and recruitment of old trees, failure to undertake assessments to identify ecosystems and features requiring protection, inadequate protection of streams and riparian buffers, failure to monitor the effectiveness of prescriptions and apply adaptive management, failure to undertake effective regulation, secrecy surrounding PNF operations, and contempt for community concerns.

There is an obvious reluctance, and often outright hostility, on behalf of NSW Government agencies to identifying, and adopting effective measures to safeguard, environmental values in PNF operations.

NEFA has only undertaken assessments of two PNF operations at Whian Whian and Tyalgum, and these have been hampered by lack of access and the secrecy surrounding Property Vegetation Plans (PVPs), Forest Operational Plans (FOPs) and relevant documents. Despite these limitations our assessments have revealed a failure to assess and identify environmental values in planning processes and a refusal by the EPA to adequately and comprehensively investigate complaints and take effective regulatory action.

Our findings are reflected in the assessment of Stockyard Creek by John Edwards that also found widespread breaches of the PNF Code of Practice. We have also received numerous complaints from the community regarding PNF operations that verify that the problems we have encountered are common and widespread. We are therefore confident that our findings are representative of widespread problems.

Time constraints have only allowed some issues to be considered, and where possible these are considered in relation to specific cases.



## 1.1. A History of Lack of Effective Regulation of PNF

Some controls over logging of protected lands, steep lands and selected riparian areas, has existed since 1972, with areas outside these basically unregulated. It is apparent that the National Parks and Wildlife Act 1974 established the need for people undertaking activities likely to cause harm to species to obtain a licence. Though this was not clearly established to apply to PNF until the introduction of the Endangered Fauna (Interim Protection) Act 1991.

The Endangered Fauna (Interim Protection) Act put it beyond doubt in 1991 that threatened fauna were required to be protected in Private Native Forestry operations, there followed a long period of inaction on behalf of Government agencies while PNF continued unabated. When SEPP 46 was introduced in 1995 it included an exemption for PNF (outside 'protected lands') that was carried over into the Native Vegetation Conservation Act in 1997 and resulted in all PNF operations (outside 'protected lands') being undertaken without any constraints to protect threatened fauna because DLWC chose to ignore sustainability and threatened species (including Koala) requirements.

Prest (2003) found that from 1991-1995 only 9 PNF operations were licensed by the NPWS, and that from 1997-2000 only 3 s.91 licences were issued by NPWS.

In 1995 State Environmental Planning Policy No. 44, 'Koala Habitat Protection' (SEPP 44) was introduced. Also in 1995 SEPP No. 46: 'Protection and Management of Native Vegetation' was introduced as an interim measure to regulate clearing of private lands, it required landholders to seek development consent prior to logging or clearing though included a variety of exemptions from requiring development consent, including for 'authorises' plantation establishment and for PNF:

*Private Native Forestry. The clearance of native vegetation in a native forest in the course of its being selectively logged on a sustainable basis or managed for forestry purposes (timber production).*

SEPP 46 was replaced by the Native Vegetation Conservation Act in 1997 which carried on the PNF exemption. The poor wording of the PNF exemption effectively allowed any logging operation "for forestry purposes" to claim an exemption, and left it open for those "who wish to use an exemption to make a "self-assessment" as to its scope, and to lawfully commence clearing or logging under exemption without informing DLWC" (Prest 2003). While DLWC publicly tried to pretend that the exemption only applied to "sustainable" logging, Prest (2003) identifies that DLWC's (2000) internal 'Review of Exemptions' report stated

*the wording suggests that non-sustainable forestry is also permissible under this exemption ... Due to the location of "or" in the exemption there is no other interpretation possible ... This exemption in effect, allows any clearing of native forests without consent so long as timber is being produced.*

Prest (2003) considers it probable that the intent of the exemption was originally to encourage sustainable logging but that the alternative "managed for forestry purposes" "was added at the last minute following lobbying from rural and timber interests". One DLWC officer was later to complain "This exemption is so ... lacking in any definition that logging of non-protected lands is effectively unregulated by the NVCA. It would be absolutely impossible to convict anyone for alleged breaches that involve forestry" (Prest 2003).

As a result, irrespective of their nature, 100% of PNF operations outside 'protected lands' in the North Coast and Hunter regions claimed the PNF exemption (Prest 2003), and despite SEPP 44 nothing what-so-ever was required to be done to protect Koalas. Prest (2003) found:

*PNF was the most important cause of native vegetation "clearing" within the category of all types of approved vegetation clearing between 1999-2001 inclusive. If PNF logging under exemption were to be included ... it is abundantly clear that PNF would have been, by a considerable margin, the most important cause of native vegetation clearing in those regions.*

For example in 2002 PNF approvals for protected lands accounted for 81.2% of the area approved for clearing in the North Coast region, with the PNF exemption accounting for many times this (Prest 2003).

It is revealing that Prest (2003) found that while the DLWC North Coast and Hunter regions just told people wanting to undertake PNF to apply the exemption, at their worst "*turning a blind eye to the impact of logging under exemption*", in the Sydney-South Coast Region DLWC negotiated with landholders to obtain concessions relating to their logging operations in order to obtain the exemption. Similarly of all the applications for PNF on protected lands in the North Coast and Hunter regions from 1997-1999 not one was refused.

The Native Vegetation Conservation Act 1997 also allowed for the preparation of a Code of Practice (COP) as an exemption. Due to the broadness of the PNF exemption, it was recognised by some DLWC staff that a COP for PNF was required to at least provide some semblance of regulation.

In 1998 DLWC developed best management principles for logging which included a wide variety of habitat retention requirements and exclusion areas for biodiversity and threatened species, as well as limiting canopy removal as a key component of ecologically sustainable logging.

It is revealing that DLWC did not consider that any of the PNF applications they considered throughout NSW from 1997-2002 were likely to have a significant effect on any threatened species as no Species Impact Statements were required (Prest 2003).

In 2000 the North East NSW Regional Forest Agreement committed the State Government to producing a Code of Practice for timber harvesting of native forests on Private Lands by 2005, The Government gave the task to the Forestry Advisory Council. A consultancy report (Andrew Smith 2000) was prepared for DLWC which developed draft guidelines for ecologically sustainable forestry, though due to lobbying of the Minister and Director General by timber industry interests it was ignored.

DLWC then commissioned Bruce Cole Clarke to prepare a paper on operating standards for PNF. This paper was prepared in consultation with DLWC and timber industry representatives, conservation groups were excluded. In August 2000 DLWC released their "*Interim Guidelines, A Guide to Managing Private Native Forests in North-east NSW*" as a fait accompli.

The National Parks and Wildlife Service, who had been excluded from development of the draft Code, submitted (August 2002):

*NPWS is not supportive of the proposed exemption in its current form given the extent and level of harvesting proposed, the definition of old growth forest and rainforest, the inconsistency of prescriptions proposed from public land and private land, and the list of items in Schedule 1. In*



*particular, the proposed draft exemption and operating protocols are not considered to be of minimal environmental impact and are inconsistent with other definitions and prescriptions.*

*NPWS maintains its position that there should be consistency in protective measures for threatened species across all land tenures. The threatened species provisions of the IFOA reflect the negotiated outcomes of experts from within SFNSW and NPWS. These measures seek to provide a balance between conservation of threatened species and ecologically sustainable forest management. .... NPWS reiterates its view that the conditions of the IFOA should be applied across all land tenures with appropriate modification to certain aspects to reflect the intensity of the operation.*

At that time DLWC did have guidelines that required flora and fauna surveys where a PNF operation seeking consent (i.e. on protected lands) involved removal of more than 70% of the canopy or covered over 200ha. Otherwise existing records were relied upon.

Along with many others, NCC (Pugh 2001) also emphasised the need for surveys:

*As part of the planning process pre-logging surveys by a qualified fauna survey professional must be undertaken at the appropriate season and use methods which maximise the likelihood of locating those of the following species, nest, dens, roosts and high use areas that are likely to occur on the property;*

Prest (2003) points out that the requirement of Section 118D of the National Parks and Wildlife Act only makes it an offence to damage habitat of a threatened species "*if the person knows that the land concerned is habitat of that kind*", commenting that that this "*encourages private landowners and forestry operators working on private land to deliberately avoid investigation of threatened species issues prior to commencing work*". Ignorance is bliss.

Prest (2003) undertook a review of regulation of private forestry in NSW over the period 1997-2002, and concluded:

*It was found that PNF was infrequently regulated under the Native Vegetation Conservation Act, primarily due to a problematic exemption for specified types of PNF. In the North Coast and Hunter regions the exemption was claimed by 100% of PNF operations (on land tenures where it was available). PNF was found to be infrequently regulated by local government under Local Environment Plans (64.5% of 107 local governments did not regulate PNF in the main rural zone). The safety net mechanism of licensing under the Threatened Species Conservation Act was infrequently applied with only five licences granted for PNF. Regarding law enforcement, a low level of prosecution activity was found to have taken place.*

Prest (2003) considers:

*The findings support the proposition that in practice NSW law was inadequate to ensure ecologically sustainable forest management, due to the poorly designed and integrated statutory framework. They also provide some evidence to support the proposition that the applicable laws were generally implemented with a light touch, generally expressing a laissez faire approach to PNF in most regions (with some exceptions).*

On 25 July 2006, the Department of Natural Resources released for public exhibition a draft Code of Practice for Private Native Forestry. Following over 1500 submissions and extensive criticism from both conservationists and loggers the Minister intervened by withdrawing the draft and referring it to his Natural Resource Advisory Council with instructions to prepare a new code.

The Private Native Forestry Code was introduced by the NSW Government in August 2007 and sets the minimum operating standards for harvesting in private native forests. Under the Code, broadscale clearing for the purpose of private native forestry is taken to be “sustainable” and “improve or maintain” environmental outcomes (even when it causes extensive environmental degradation) if:

- it complies with the requirements of the PNF Code, and
- any area cleared in accordance with the Code is allowed to regenerate and is not subsequently cleared.

The regulation came into effect on 1<sup>st</sup> August 2007. The announcement included \$30 million restructuring funds for the timber industry. These were only meant to be an interim measure while the Government developed a new Act to regulate private native forestry over the next few years.

The Regulation requires that all logging operations on private land require a Property Vegetation Plan (PVP) or a development consent that complies with the Codes of Practice. A PVP could be approved for up to 15 years.

The Department of Environment and Climate Change was put in charge of the implementation of the Code of Practice. At the time NEFA were concerned that most of the important duties under the Code were given to ex-Department of Natural Resources staff within DECC who had a long history of promoting logging industry interests and being antagonistic towards conservation outcomes. These same staff and attitudes were later transferred to the EPA, and their roles in remapping oldgrowth for logging, remapping endangered rainforest for roading, identifying core Koala habitat for logging, and turning a blind eye while a road was pushed through exclusions areas for Koalas and threatened plants later (see 3.1. Case Study 1) confirmed NEFA's concerns that it remains a captured bureaucracy. Given the secrecy that surrounds this unit, we can only guess at the magnitude of their crimes,

Under the Native Vegetation Act 2003, harvesting and associated forestry operations conducted for the purposes of PNF require an approved PNF Property Vegetation Plan (PNF PVP) and Forest Operation Plan (FOP). PNF operations must be conducted in accordance with the PNF Code of Practice (the Code). The Code has been granted biodiversity certification under the Threatened Species Conservation Act 1995 (TSC Act). This means that once a PVP has been approved, landholders do not need to separately apply for a licence under the TSC Act. Yet they provide no meaningful protection for threatened species or Endangered Ecological Communities.

**Except for Protected Lands, token regulation of Private Native Forestry has always failed to identify and protect most environmental values. The case studies presented in Section 3 show that in practice Property Vegetation Plans and Forest Operation Plans required since 2007 are just simplistic desk-top approvals that fail to identify the presence of most areas and values requiring protection. It is clear that Government Agencies and many landowners still avoid taking necessary measures to avoid environmental harm. There are still no effective constraints in place to ensure Ecologically Sustainable Forest Management on private lands. Effective and meaningful regulation is required, not further exemptions based on their scale and intensity.**

## 1.2. Logging of Threatened Species

The Private Native Forestry (PNF) Code has a range of record-based prescriptions for nationally listed threatened species, though there are few existing records on private lands and no survey requirements. This means that threatened species and ecosystems are usually provided with no protection what-so-ever in private forestry. If you don't look you don't find, if you don't find you don't protect. Excusing logging operations on private lands from any obligations for threatened species or ecosystems under the EPBC Act, with virtually nothing done to mitigate impacts on them, is the single biggest rort of the North East NSW Regional Forest Agreement.

There is nothing in the EPA's guidelines relating to Private Native Forestry that require surveys for any threatened species. Rather the species-specific protections identified in the code only apply to a 'known record' on Wildlife Atlas or 'site evidence' where a landowner may incidentally come across evidence of a threatened species.

Most PNF logging operations are undertaken in areas where there have been no surveys for threatened species and thus there are no "known" records. Therefore the reliance is on incidental "site evidence" which is unlikely to be accidentally found for most threatened species, and even where evidence (such as quoll or Koala scats) may be found and identified by an experienced person, the landowner or contractor have a clear financial incentive not to admit to it. This means that while the PNF code has many potentially useful prescriptions for threatened species they are practically useless.

Clear examples of the failure to identify threatened species in PNF operations are provided in the Case Studies 3.1, 3.2 and 3.3 in this submission.

At Whian Whian (Case Study 3.1) the Forestry Corporation were undertaking the logging operation, using their same team that usually plan and execute logging operations on public lands in the region - meaning that they are meant to be fully trained in the identification of the relevant threatened species and species specific retention requirements. Because it was obviously suitable habitat, NEFA engaged an acknowledged expert to undertake a survey which located Masked Owl, Sooty Owl and Marbled Frogmouth on the property. Even then the Forestry Corporation refused to apply the required prescriptions, claiming the records didn't legally constitute a 'known record' as they were not on Wildlife Atlas. It wasn't until days later when a blockade by concerned locals stopped them leaving the forest until they committed to applying the required prescriptions that they very reluctantly agreed. This clearly demonstrates that there is no will on behalf of the Forestry Corporation to apply even minimal mitigations for threatened species unless made to by unequivocal legal requirements. That a Government Agency can display such contempt for threatened species is sad. Nothing better can be expected from untrained private logging contractors chasing a buck.

This contempt for threatened species was reinforced a couple of days later when NEFA (Case Study 1) found the route of a new road marked to pass within what should have been 20m buffers for 8 Koala high use trees (>20 scats), over 60 vulnerable Red Bopple Nut *Hicksbeachia pinnatifolia*, and 3 endangered Slender Marsdenia *Marsdenia longiloba*. This route was marked by Foresters who should have been familiar with these species but simply did not care because they hadn't been "recorded". After a prolonged process where the EPA refused to implement a Stop Work Order and turned a blind eye, the Forestry Corporation proceeded to construct an illegal track through what should have been 20m exclusion zones for 3 Koala high use trees, 7 endangered

Slender Marsdenia, 12 vulnerable Arrow-head Vines, and 8 vulnerable Red Bopple Nuts, most of which had been identified and tagged with pink tape (by either NEFA or the Forestry Corporation) prior to track construction. These breaches were done knowingly. Two Slender Marsdenia were killed, one injured and 3 are missing. One Arrow-head Vine later died.

At Whian Whian NEFA and the community engaged experts to undertake simple surveys that proved the presence of threatened species that required significant additional habitat retentions to reduce logging impacts on them. Prior to NEFA's intervention the Forestry Corporation had only identified two Koala High Use Trees. No action would have been taken to apply the necessary impact mitigation measures on these species unless NEFA had intervened. During the course of our investigations NEFA, and the community, proved the presence on the property of 6 TSC listed Vulnerable animals: Alberts Lyrebird, Marbled Frogmouth, Sooty Owl, Masked Owl, Koala and Pouched Frog. And 5 threatened plants: two TSC listed Endangered species (*Endiandra muelleri* ssp. *Bracteata*) and Slender Marsdenia (*Marsdenia longiloba*) and three TSC listed Vulnerable species Corokia (*Corokia whiteana*), Red Bopple Nut (*Hicksbeachia pinnatifolia*) and Arrow-head Vine (*Tinospora tinosporoides*). A number of other threatened fauna species are likely to occur.

Along with the community NEFA also identified the presence on the property of 16 Koala high use trees with 20 or more Koala scats beneath them. This large number of high use trees proves that there is an active breeding Koala colony on the property, with evidence of males, females and young, that largely escaped the attention of the Forestry Corporation. There can be no doubt that the property constituted high quality core Koala Habitat but the EPA didn't care.

In total NEFA identified 8 Koala high use trees, 10 Slender Marsdenia, 30 Arrow-head Vines, and 36 Red Bopple Nuts that had forestry operations within what should have been 20m exclusion zones around them had they first been identified. 3 Slender Marsdenia are missing, presumed dead, with another two confirmed dead and one injured. A Red Bopple Nut was injured and an Arrow-head Vine killed. Many more were presumably bulldozed out during road construction or buried under debris. There are also numerous Arrow-head Vines and Red Bopple Nuts within areas of mapped rainforest that were deleted and thus have had their protection removed. After the Community Survey logging was undertaken within what should have been an exclusion zone for at least 2 Slender Marsdenias and 1 Red Bopple Nut in an area adjacent to Nightcap National Park not covered in the Community Survey. A track was constructed within what should have been an exclusion zone for another Koala high use tree. This logging occurred after foresters had been shown these species nearby during the Community Survey and the FC should have been capable of identifying them by themselves.

The EPA issued the Forestry Corporation with two Penalty Notices (each with a fine of \$5,500) on the 11 September 2015 for constructing their track through what should have been 20m exclusion zones for a Koala High Use Tree and the Endangered vine Slender Marsdenia. They were also issued with an Official Caution for violating buffers of 4 Red Bopple Nuts, with violations of 6 Arrow-head Vine buffers noted. This is half the breaches documented by NEFA. Given that the EPA had almost used up their 2 years for legal action, the Forestry Corporation simply waited for the 2 years to expire before telling the EPA that they would not pay the fines. They got away scot free.

At Tyalgum (Case Study 3.2) the Forest Operational Plan failed to identify any threatened species. Once again, after logging was well advanced, NEFA and the community had to intervene to identify the presence of threatened species on the property, in one evening NEFA identified 2 Koala High Use trees, a Masked Owl and the presence of Marbled Frogmouth, all of which required species

specific surveys. A community inspection later identified 14 Vulnerable Durobby (*Syzygium moorei*) and a number of Endangered Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*), though while their report was provided to the EPA (with localities) because it was anonymous nothing will be done to protect these unless the EPA investigate it for themselves. These results were from limited assessments, it is likely that additional threatened species and Koala High Use Trees occur on the property.

At Stockyard Creek (Case Study 3.3) a Vulnerable Sandstone Rough-barked Apple (*Angophora robur*) was bulldozed over.

The fundamental question is whether, if applied, a prescription for a threatened species is effective in reducing logging impacts to an insignificant level, or even whether it has any beneficial effects. As with public lands, the NPWS, DLWC and EPA have been applying prescriptions for threatened species in a haphazard way since the inception of the Endangered Fauna (Interim Protection) Act 1991 on the premise that the prescriptions would avoid "a significant effect". Though, as far as we are aware, there has never been any attempt to assess the effectiveness of prescriptions - the agencies just don't care.

Adaptive Management is a key requirement of ESFM, most Recovery Plans and Conservation Advices, and Forestry management plans yet it is not applied in practice. From well before the RFA, and repeatedly since, NEFA have been asking for Government agencies to monitor the effectiveness of prescriptions intended to reduce environmental harm. This has been a requirement of numerous recovery plans, including the Northern Rivers Regional Biodiversity Management Plan (a national multi-species Recovery Plan), which has an action

*7.1.5. Develop appropriate criteria and indicators to review the effectiveness of threatened species protection measures currently employed in public and private native forestry activities. Strengthen threatened species protection measures where they are shown to be inadequate.*

The principle of monitoring a prescription and then using the results of that monitoring to improve the prescription is called adaptive management and is a basic tenet of ESFM. For example ESFM Principle 5 requires that "*ESFM would utilise the concept of adaptive management and continuous improvement based on best science and expert advice and targeted research on critical gaps in knowledge, monitoring or evaluation*".

For State Forests the current Threatened Species Licences for UNE and LNE identify 11 plants that require Monitoring Programs be prepared under condition 6.27 of the Threatened Species Licence for the Upper North East and Lower North East Regions of the Forest Agreement:

Rupp's Wattle *Acacia ruppii*,  
 Rusty Plum *Niemeyera* (previously *Amorpha*) *whitei*- Southern Metapopulation Unit  
 Sandstone Rough-barked Apple, *Angophora robur*  
 Long leaf wax flower. *Eriostemon myoporoides* ssp. *conduplicatus*  
 Slaty Red Gum *Eucalyptus glaucina* - Northern Metapopulation Unit  
 Narrow-leaf Finger Fern *Grammitis stenophylla*  
 Four-tailed Grevillea *Grevillea quadricauda*  
 Bordered Guinea Flower *Hibbertia marginata*  
 Grove's Paperbark *Melaleuca groveana*  
 Milky Silkpod *Parsonsia dorrigoensis*  
 Broad-leaved Pepperbush *Tasmannia purpurascens*



The Monitoring Programs allow logging to be undertaken in a species' habitat without any prescriptions required to be applied. It is not until monitoring is undertaken and the results considered that anything is intended to be done to modify prescriptions. The reality is that despite being in operation for 20 years monitoring is rarely done and there has been no improvement in protection for any species despite significant impacts being identified.

An informal GI(IP) Act request was submitted on 13 April 2017 for all relevant documents with a response provided by the EPA on 31/07/2017.

The most apparent problem with the limited monitoring undertaken is that the foresters supervising the operation (and likely the contractors) are aware they were logging in a trial area (with plots often marked on the ground) and thus needed to minimise damage, so the reported damage is likely significantly less than what would occur in a normal operation. Despite this damage to species was far higher than expected by the Forestry Corporation.

Of the 11 species identified for monitoring, the EPA (2017, pers. comm.) identified that:

1. Rupp's Wattle *Acacia ruppii* is claimed to be "*not known within 50m of FMZ4*" so the conditions were not triggered.
2. Long leaf wax flower *Eriostemon myoporoides* ssp. *conduplicatus* is claimed to be "*not known within 50m of FMZ4*" so the conditions were not triggered.
3. For Narrow-leaf Finger Fern *Grammitis stenophylla* the EPA identified "*Occurrence in harvesting operations unclear. No plan or report located*".
4. For Grove's Paperbark *Melaleuca groveana* (not federally listed) the EPA identify that "*Plan has not been required to be enacted*" though an undated Monitoring Plan was prepared for Kippara State Forest Compartments 6 and 7 and Kippara SF compartments 8, 12 and 13. Online plans identifies *Melaleuca groveana* within the net harvesting area of the 2016 Harvesting Plan for Kippara SF compartments 27, 28, 29, 30, 31 and 33.
5. Similarly there does not appear to have been any monitoring of Four-tailed Grevillea (*Grevillea quadricauda*) despite the Forestry Corporation preparing a Flora Monitoring Program and identifying significant numbers in an area they intended to log in 2009, with the EPA stating "*Plan has not been required to be enacted*".
6. For *Tasmannia purpurascens* (not federally listed) monitoring was started in 2011, with plots established, though the EPA claim to have no results.
7. The only monitoring report for Bordered Guinea Flower (*Hibbertia marginata*) was not reported until 2012 and the impacts were found to be far greater than anticipated, with 28% and 36% of plants killed or removed at two locations, often by soil disturbance or being smothered by dense logging debris, with many other plants damaged, yet despite changes to the licence since then the prescription was changed in 2018 to a 20m buffer.
8. The only monitoring report for Sandstone Rough-barked Apple (*Angophora robur*) was prepared in 2008 with just 35 trees assessed of which 23% suffered significant damage (5 killed).
9. The only monitoring report for Slaty Red Gum (*Eucalyptus glaucina*) was not prepared until 2012, finding 30% of trees up to 60 cm dbhob were damaged by logging (5 logged) and 3 years after logging there was a population decline.
10. Monitoring of Milky Silkpod (*Parsonsia dorrigoensis*) was not written up until 2009, up to 5 years after monitoring was complete. The monitoring covered 69 plants across 4 State Forests, finding "*Logging results in a large proportion (41-64%) of plants, or at least their above-ground parts, being damaged, destroyed or removed. Although all plants damaged by logging survived, a high proportion (19-41%) of plants is destroyed or removed*".
11. Monitoring of Rusty Plum (*Niemeyera whitei*) up to a year post-logging was reported on in 2008. Of the 40 trees monitored 12 trees (30%) were damaged by harvesting, with 6 of these "*subject to moderate to severe damage considered potentially capable of causing mortality*", though with one exception all damaged trees coppiced.



This means that over 20 years of the Threatened Species Licence the impacts of logging were only monitored and reported on for 5 species. Even then the monitoring was not commenced until long after the TSL came into effect, and often not reported on until years later. Even under the controlled monitoring programs, where monitored species were identified and presumably avoided, in all cases significant damage to the threatened species was recorded. Only one monitoring report for each species was undertaken, often despite claims that monitoring would be ongoing and the need to better identify the significance of impacts. None of the monitoring has so far resulted in any changes to prescriptions, with these species still subject to uncontrolled logging impacts.

The results do clearly show that any threatened species within logging areas is likely to be subject to significant impacts, even when identified prior to logging with efforts made to avoid impacts. It is also apparent that for many species post-logging burning greatly compounds logging impacts. The results also show that impacts are more significant than the agencies assume.

What is most concerning is that the existing monitoring has been undertaken under the current logging regimes, which the Flora Monitoring Programs place strong reliance upon to minimise impacts, yet future logging is proposed to be undertaken under a significantly increased intensity with reduced tree retention. Thus the impacts on threatened plant species will be far greater.

The concept of undertaking monitoring while indiscriminately logging habitat of threatened species over decades is a nonsense, and failing to introduce appropriate protection measures when significant impacts are found is a farce.

**While there are a variety of prescriptions required to be applied to mitigate impacts of PNF on threatened species they are only required to be applied to known records. There are few records of threatened species on private lands and no requirements to undertake pre-logging surveys, which means that in practice the locations of threatened species are rarely identified and the prescriptions rarely applied. There is effectively no protection for threatened species applied in the vast majority of PNF operations,**

**Prescriptions intended to reduce impacts on threatened species have been theoretically applied on public lands for over 20 years and on private lands for 12 years, yet there has never been any attempt to assess their effectiveness. This is a fundamental breach of the core principles of ESFM.**

**From the partial monitoring of a few plant species (without prescriptions) it is evident that even under controlled conditions logging results in significant impacts on threatened plants. A precautionary approach would require that logging exclusion zones are placed around all threatened plant species potentially vulnerable to the range of impacts associated with logging (i.e. physical damage, soil disturbance, microclimate changes, hydrological changes, burning, weed invasion, logging dieback), with logging only allowed after independent trials have proven that logging impacts can be appropriately controlled. Though this requires pre-logging surveys by competent botanists.**

### *1.2.1. Koalas, an Example of Ineffective Management*

Despite the existence of prescriptions for threatened fauna they are ineffective in minimising impacts on them, primarily because they are rarely applied. As an example the prescription for Koala is reviewed.

The Koala (*Phascolarctos cinereus*) (combined populations of Queensland, New South Wales and the Australian Capital Territory) is listed as 'Vulnerable' under the EPBC Act. There is no nationally adopted Recovery Plan, with one meant to be developed and "to commence following the expiration of the National Koala Conservation and Management Strategy in 2014". There is a 2012 'Approved Conservation Advice for *Phascolarctos cinereus* (combined populations in Queensland, New South Wales and the Australian Capital Territory)'. There is also a 2008 NSW Recovery Plan for the Koala.

The Conservation and Management Strategy identifies:

*Loss of habitat is the major threat to the koala in Queensland and New South Wales, and is the primary factor responsible for declining populations in those states....*

*Under the strategy it is a high priority to identify important habitat areas and protect them from clearing, through planning and legislative tools and other measures such as covenanting. ... It is important to consider that there is a significant lag-time before successfully replanted habitat can support koalas.*

*Degradation of habitat can result from: some logging regimes; thinning of timber during property development; destruction of undergrowth and mid-storey shelter trees; and other disturbances, such as regular burning, excessive nutrient input or the introduction of weeds. Degraded habitats are capable of supporting fewer koalas than undisturbed habitats.*

The Conservation and Management Strategy identifies as actions:

*Action 1.02 Assess, develop and implement options for protecting priority Koala habitat on public lands using legislation, covenants or agreements, or by new acquisition of koala habitat*

*Action 1.03 Assess, develop and implement options for protecting koala habitat on private lands.*

- Develop incentive-based mechanisms for koala conservation on private lands.*
- Implement incentive-based mechanisms for koala conservation on private lands.*
- Establish covenants over koala habitat via cooperation with local government, community and business.*

*Action 1.04 Prioritise conservation of populations under immediate pressure.*

- Workshop of experts to identify where existing koala populations are already experiencing significant loss of habitat and to identify immediate and short-term actions to secure their status.*

*Action 1.06 Develop standard monitoring/habitat assessment protocols.*

*There is some inconsistency and disagreement over how koala populations should be surveyed and mapped.*

- Develop consistent protocols that enable population numbers or density to be compared between the same place at different times and between different habitats.*

*Action 1.08 Establish or continue surveying and monitoring programs.*

*Monitoring fulfils two important functions: evaluating population status so that the relative need for management can be assessed; and evaluating population trends so that the efficacy of management actions can be assessed. The scale at which these are undertaken must be appropriate to the scale of management....*

In relation to 'Habitat Loss, Disturbance and Modification' the Conservation Advice includes:

- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Identify populations of high conservation priority.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for Crown and private land investigate and/or secure inclusion in reserve tenure if possible.
- Manage any other known, potential or emerging threats such as Bell Miner Associated Dieback or *Eucalyptus* rust.

The 2008 NSW [Recovery plan for the koala \(\*Phascolarctos cinereus\*\)](#) identifies:

*Smith and Andrews (1997) found that koala activity was greater in structurally diverse forest with the majority of trees 50–80 cm diameter at breast height (dbh). White (1999) found that koalas preferentially utilise trees between 25.5–80 cm dbh, with under-utilisation of trees less than 25.5 cm dbh. Lunney et al. (2000a) found that the koalas in the Coffs Harbour area favoured trees of 50–60 cm dbh and greater than 120 cm dbh. Some groundcover vegetation and other features such as hollow logs, are also useful to provide shelter while on the ground and refuge in extreme weather conditions, particularly in western KMAs (R. Kavanagh, State Forests NSW, pers. comm.).*

In the Comprehensive Regional Assessment, undertaken jointly between the Commonwealth and NSW Governments in north-east NSW, a significant threat to Koalas was identified (Environment Australia 1999) as “Logging that fails to retain stems in the 30-80 DBH size class”.

The NSW Recovery Plan includes as objectives and actions:

*Objective 1: Conserve koalas in their existing habitat*

*Specific objective 1a: Identify and conserve habitat important for koala conservation*

*Action 1.13*

*DECC will work with councils to assist in the preparation of Comprehensive Koala Plans of Management under SEPP 44.*

*Performance criterion 1.13*

*Number of Koala Recovery Plans completed.*

*Action 1.15*

*Consideration will be given to having a single definition of koala habitat, instead of ‘core’ and ‘potential’ habitat and to expanding the list of koala food trees.*

*Performance criterion 1.15*

*Tree species list amended for SEPP 44 and the definition of ‘koala habitat’ determined and disseminated.*

*Action 1.19*

*DECC, together with DoP, will work with councils and catchment management authorities to assist them in developing koala habitat protection measures for incorporation in relevant local environmental plans (LEPs), and regional natural resource and vegetation management plans.*

*Performance criterion 1.19*

*DECC initiated discussions with relevant CMAs and councils regarding adequate incorporation of protection measures for koalas into regional natural resource and vegetation management plans, including catchment action plans and LEPs where relevant.*

*Action 1.20*

*DECC will approach DoP to jointly develop and provide specific advice to local government about the incorporation of koala protection into their new LEPs, currently under development.*

*Performance criterion 1.20*

*DECC initiated discussions with DoP regarding adequate incorporation of koala protection into LEPs. Advice to local governments re incorporating koala protection measures into revised LEPs developed jointly by DECC and DoP.*

*Action 1.24*

*DECC will approach Forests NSW (DPI) to collaborate in developing policy and practice consistent with the NSW Koala Recovery Plan; exchange information, given that koalas move across tenure boundaries; and work within the context of agreed regional forest agreements.*

*Performance criterion 1.24*

*DECC initiated discussions with DPI on the basis of this recovery plan. An agreed policy produced for exchanging information between DECC and DPI, working across boundaries and contributing to a plan that covers a landscape cross-tenure.*

*Specific objective 1c: Integrate koala habitat conservation into local and state government planning processes*

*Objective 3: Develop a better understanding of the conservation biology of koalas*

*Action 3.6*

*Investigate the relative importance of different threats to koalas, how to ameliorate them and the effectiveness of mitigation measures.*

*Performance criterion 3.6*

*Research/study undertaken assessing the threats to koalas and their relative importance, the ameliorative measures for these threats and their effectiveness.*

*Results disseminated/published in standard scientific arenas.*

Regrettably both the Conservation and Management Strategy and NSW Recovery Plan have effectively expired and neither the NSW nor Commonwealth Governments have replaced them with contemporary plans. Never-the-less the relevant key requirements from both approaches can be considered to be:

- identify and protect important habitat areas (Conservation Strategy; Actions 1.02, 1.03, 1.04, 'Habitat Loss, Disturbance and Modification' actions, Recovery Plan; Objective 1)
- identify improved and standardised survey methods (Conservation Strategy; Action 1.06)
- monitor and review the effectiveness of mitigation measures (Conservation Strategy; Action 1.08, 'Habitat Loss, Disturbance and Modification' actions Recovery Plan Objective 3, Action 3.6)

The NSW Recovery Plan places significant emphasis on protecting Koala habitat on private land through SEPP 44 and Local Environment Plans (i.e. Actions 1.13, 1.15, 1.19, 1.20).

State Environmental Planning Policy No. 44 (Koala Habitat Protection) came into effect in 1995 with the aim to “encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline:

- by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and
- by encouraging the identification of areas of core koala habitat, and

- *by encouraging the inclusion of areas of core koala habitat in environment protection zones”.*

SEPP 44 identifies two classes of habitat:

**"core koala habitat"** means an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population.

**"potential koala habitat"** means areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.

Under the provisions of SEPP 44 local councils cannot approve development on lands greater than 1ha without an investigation of potential and core koala habitat. To this end SEPP 44 requires councils to address koala conservation through either Individual Koala Plans of Management (IKPoM) for a specific site/development, or Comprehensive Koala Plans of Management (CKPoM) that will apply to part or the whole of a Local Government Area.

SEPP 44 encourages Councils to systematically identify areas of 'core koala habitat, stating that councils "should" conduct koala surveys, and take the results regarding core koala habitat into account when making environmental protection zones and development control plans.

In the 23 years since SEPP 44 came into force five CKPoM plans have been adopted and approved by the Department of Planning and Environment, with two only for parts of Local Government Areas. Of the five Comprehensive Koala Plans of Management (CKPoM) approved the Coffs Harbour CKPoM and the recent Ballina CKPoM are the only ones to identify core Koala habitat across the LGAs, and the Kempsey CKPoM only identifies two very small areas.

In 2007 the NSW Government finally gazetted a set of weakened mandatory rules to control logging on private land in NSW as a Regulation under the Native Vegetation Act 2003, with four Codes of Practice for separate geographic regions. The regulation came into effect on 1<sup>st</sup> August 2007.

For koalas, the specific provisions for the PNF Code of Practice are:

*(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.*

Clause (a) is next to useless as the intent of SEPP 44 to identify core Koala habitat across private lands has not been implemented. Even where core Koala habitat has been identified it does not guarantee protection.

In 2011 the North Coast Environment Council identified that since 2007 the Private Native Forestry (PNF) Division of the NSW Department of Environment, Climate Change and Water (DECCW) had approved 60 separate logging applications covering almost 2,000 hectares of the 19,000 ha identified core koala habitat in the Coffs Harbour Local Government Area contrary to SEPP 44. It is probable that before then logging was being undertaken in core Koala habitat using the PNF exemption.

The Sydney Morning Herald (4 January 2011) reported:

*The department does not dispute the council's figures, but said the Coffs Harbour koala plan of management, which identifies the vulnerable species' local habitats, is not officially gazetted.*

*Because of this, the prohibition on logging that normally applies to important koala habitats under state environmental planning policies could not be enforced in that council area, the department's director of landscapes and ecosystems conservation, Tom Grosskopf, said.*

*"We're helping them to get their plan updated and get it going," he said.*

*But local environmentalists are appalled and have accused the department of playing word games. The environment council's vice-president, Susie Russell, said the department knew full well where the region's key koala areas were. It had been integral in mapping the habitats, but was ignoring the results and approving their destruction.*

The callous disregard of the Government agencies for Koalas is exemplified by the fact that it was NPWS (later incorporated into DECCW) who in 1999 identified core Koala habitat in the Coffs LGA in accordance with SEPP 44, then it was DECCW that in 2007 finalised the PNF Code of Practice that specifically excluded core koala habitat from logging, and it was DECCW that in 2007 began systematically approving logging of core Koala habitat in the Coffs Harbour LGA in contravention of the PNF Code, with 2,000 of the 19,000 ha of identified core Koala habitat approved for PNF by 2010.

Clauses (b) and (c), like all species specific provisions in the PNF Code of Practice, are triggered by either the existence of koala records in the Atlas of NSW Wildlife or the identification of the presence of koalas (or evidence of their presence) by the landholder and/or a logging operator. There are limited records in the Atlas of NSW Wildlife for forested private lands away from coastal towns, and they are by no means comprehensive. The PNF Code of Practice does not require pre-logging surveys for koalas or any other species, which means they are usually neither identified nor protected.



## Preference for Large Trees

Many studies have identified Koalas preference for larger trees (Hindell and Lee 1987, Lunney *et. al.* 1991, Sullivan *et. al.* 2002, Moore *et. al.* 2004b, Smith 2004, Moore and Foley 2005, EPA 2016). Tree size has been found to be the most significant variable after tree species in a number of studies.

Many studies have identified Koalas preference for larger trees (Hindell and Lee 1987, Lunney *et. al.* 1991, Sullivan *et. al.* 2002, Moore *et. al.* 2004b, Smith 2004, Moore and Foley 2005, EPA 2016). While this has been recognised for a long time it is often ignored as a variable in numerous studies. Tree size has been found to be the most significant variable after tree species in a number of studies, though this seems to be often ignored or downplayed for resource and political reasons.

The relationship between tree trunk diameter and foliage weight is logarithmic (Hindell and Lee 1987). From their 10 year study on Phillip Island Moore and Foley (2005) found that koalas used trees that were on average significantly larger than expected, which they considered "*represent larger food patches and account for a greater proportion of the foliar biomass available to koalas*".

From their study near Melbourne, aside from tree species Hindell and Lee (1987) only found a significant correlation with the relative proportion of large trees in each species, stating "*Our data also showed that koalas favoured large trees and forest in which large trees were most abundant, and also showed that large trees occurred where the tree density was lowest. This preference for large trees did not change with season and appeared to be independent of species*", and consider:

*There was a significant correlation between density of koalas and three of the structural components, the most significant of which was the negative relationship with tree density and small trees (7-19 m high). Thus the blocks with the highest densities of Koalas were those characterised by low tree densities and large trees.*

<b>Size class</b>	<b>Males</b>	<b>Females</b>	<b>Non-breeding females</b>	<b>Breeding females</b>	<b>TOTALS</b>
<b>0-50</b>	8.0	0.5	0.6	0.0	0.6
<b>51-100</b>	2.2	0.9	1.0	0.5	1.5
<b>101-150</b>	5.2	5.5	5.8	3.8	5.5
<b>151-200</b>	10.8	11.5	10.7	16.0	11.1
<b>201-250</b>	17.7	17.0	17.7	13.4	16.7
<b>251-300</b>	21.2	26.3	25.2	32.1	24.1
<b>301-1100</b>	41.9	38.0	34.2	39.0	40.4

**Table 8(b) from Hindell and Lee (1987): Preference indices of Koalas for each size class of tree (expressed in estimated dry weight of foliage, in kilograms) - by sex and female breeding state.**

Hindell and Lee (1987) consider:

*While the leaves of large trees may have different nutritional properties to the leaves of small trees, it seems more likely that large trees are chosen for some other reason. Large trees have more foliage and consequently may reduce the frequency with which koalas need to move between trees. However, koalas generally move two or three times a night, regardless of the size of the trees they are using (M.Hindell, personal observation). Alternatively, large trees may provide more shelter and greater security from predators. Koalas have few means of escaping adverse weather but sometimes seek out dense foliage such as clumps of mistletoe, and these are most frequent in large trees.*

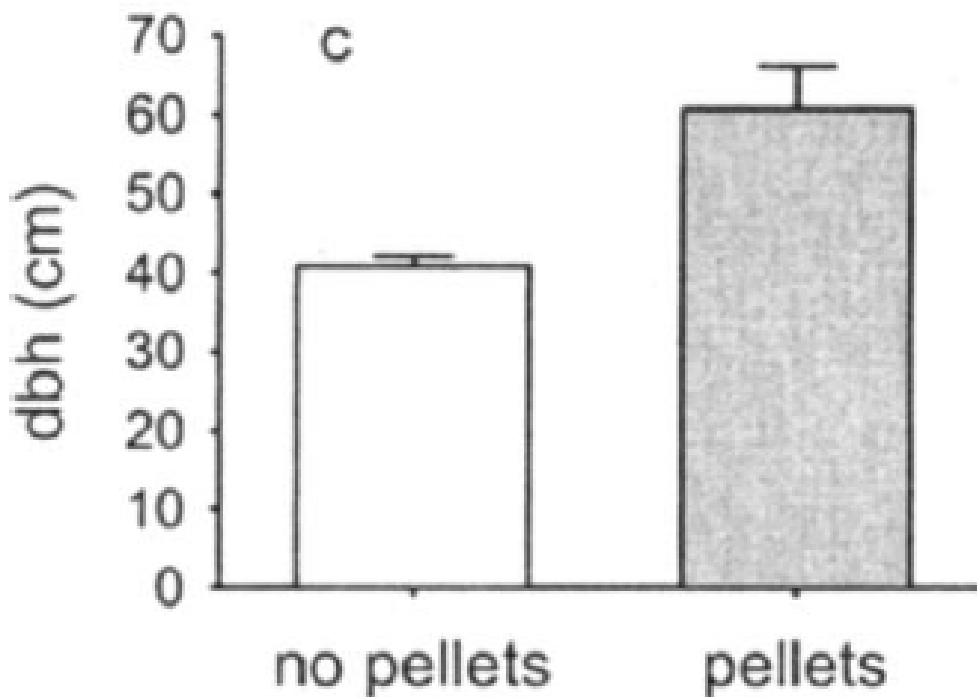
Handasyde and Martin (1991) comment:

*There is no scientific evidence that Koalas favour disturbed habitat or prefer to feed in eucalypt regrowth forest. The contrary is true. In all of the wild populations we have studied in the past 15 years, the animals have preferred to feed in large mature trees. In our experience koalas rarely feed in saplings or regrowth. When they do, it is usually when mature trees are scarce and the animals are nutritionally stressed.*

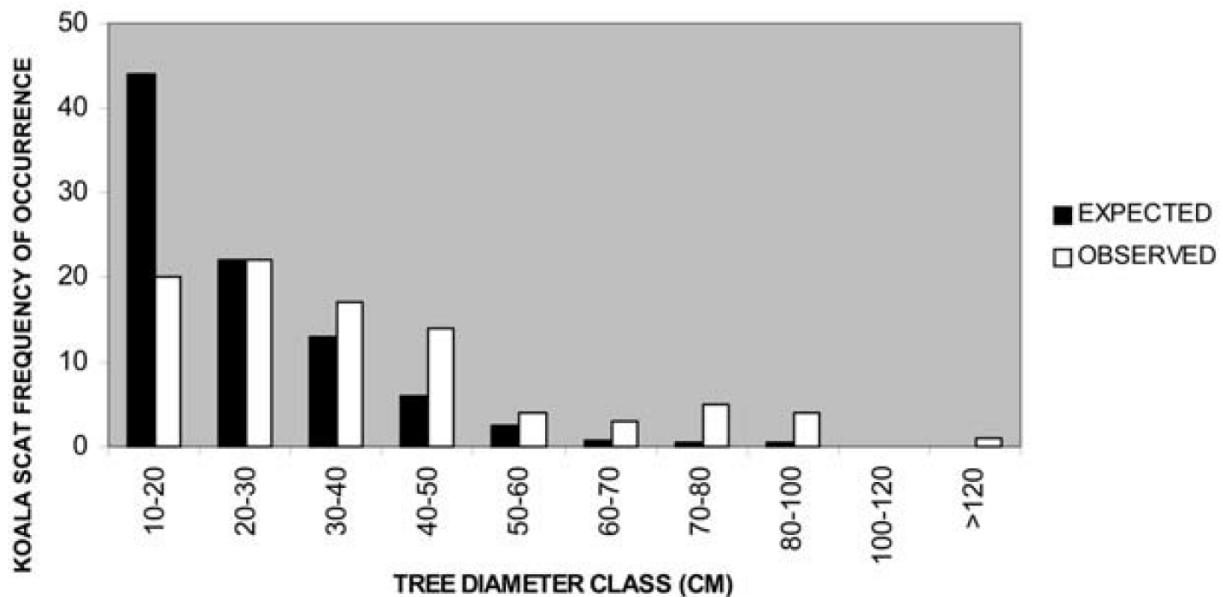
In 1999 the Comprehensive Regional Assessment, undertaken jointly between the Commonwealth and NSW Governments in north-east NSW (Environment Australia 1999), expert workshops unanimously identified a significant threat to Koalas as "Logging that fails to retain stems in the 30-80 DBH size class".

Sullivan *et. al.* (2002) note "Our data suggest that about 100 m<sup>2</sup> (Table 4) is a threshold above which tree use by koalas changes in comparison to trees with smaller canopy areas. On average, the length of tree visitation increases with an increase in tree girth, and this might be an attempt to reduce the energetic cost of moving between trees"

From their study of Tallowood in north-east NSW, Moore *et. al.* (2004b) found that tree diameter at breast height (dbh) was one of the best explanatory variables for the presence of koala pellets at a site, finding "koala pellets were more common under larger, less chemically defended trees" and noting "It is well known that free-ranging koalas prefer larger trees".



Extract from Fig. 12 in Moore *et. al.* (2004b) mean dbh for trees with and without koala pellets.



**Figure 3. from Smith (2004):** Observed frequency of occurrence of koala scats under trees of different sizes compared with expected frequency assuming that trees are selected in direct proportion to numbers present in the forest. It is worth noting that while Smith found no significant relationship with the largest trees because of their low numbers, there is an apparent increasing usage with size.

In his investigations of Koalas in Pine Creek State Forest near Coffs Harbour, Smith (2004) "identified forest structure to be a key predictor of koala scat density after food tree species and diversity", noting:

*Scat abundance differed most significantly ( $t$  test  $p=0.003$ ) between the structurally uniform regrowth groups (1-3) with a mean of 0.3 trees with scats/site and uneven-aged structurally diverse groups (4-6) with a mean of 1.3 trees with scats/site.,,*

*... The number of trees with scats was significantly correlated with the number of stems in the medium to large size classes (50-60 cm, 60-70 cm and 70-80 cm, Table 2).*

*There were no significant correlations with the number of stems in tree size classes less than 40 cm dbh or greater than 80 cm dbh.*

*Scats occurred more than expected at the base of trees over 30 cm dbh. Significant discrepancies (Chi-square test  $P < 0.05$ ) were apparent in the 40-50 cm and 10-20 cm dbh classes with the larger stems favoured and the smaller stems avoided. Stems of 60-70, 70-80 and 80-100 were also associated with scats more than expected but these differences could not be statistically validated because of small samples sizes.*

*... There was, however, a highly significant difference between the mean number of trees with scats in non plantation sites (average=1.23 trees per plot) and sites in plantations (average = 0.15 trees per plot)*

Smith (2004) conjectured that this preference for larger trees "may be at least partially related to the energetics of climbing ...koalas can be expected to select individual trees which are either easy to climb or closely spaced within jumping reach. Koalas may also prefer larger trees because they provide larger branches or forks for day and night time sleeping". He concludes:

*I suggest that dense uneven-aged forest structure enhances foraging efficiency by providing greater access to eucalypt foliage. Koalas are unable to support themselves on the fine*

outer branches of trees because of their large body mass and they must reach out and pull small, outer branches toward them while seated on a nearby larger branch or trunk. This mode of feeding should be favoured in uneven aged forests with a complex structure and multiple foliage layers between the ground and canopy levels. Plantations with small diameter trunks, fine outer branches and a single exterior foliage canopy layer, and recently logged forests with a low basal area offer the least efficient foraging structure.

The NSW Recovery Plan for the Koala (DECCW 2008) identifies that Koalas have been found to have a preference for larger mature trees of specific species, stating:

*Smith and Andrews (1997) found that koala activity was greater in structurally diverse forest with the majority of trees 50–80 cm diameter at breast height (dbh). White (1999) found that koalas preferentially utilise trees between 25.5–80 cm dbh, with under-utilisation of trees less than 25.5 cm dbh. Lunney et al. (2000a) found that the koalas in the Coffs Harbour area favoured trees of 50–60 cm dbh and greater than 120 cm dbh”.*

As part of a project to map Koala habitat, the EPA (2016) assessed the relationship between Koalas and key variables in 4 State Forests in north-east NSW known to have significant Koala populations. The found usage of preferred species increasing linearly with tree size, noting "the data demonstrates a strong positive relationship between size class and activity, with highest activity in the largest size class", concluding that for Koalas:

*Limited areas of higher koala activity corresponded with; a higher abundance and diversity of local koala feed trees, trees and forest structure of a more mature size class (>30 centimetres and mature forest structure), and areas of least disturbance.*

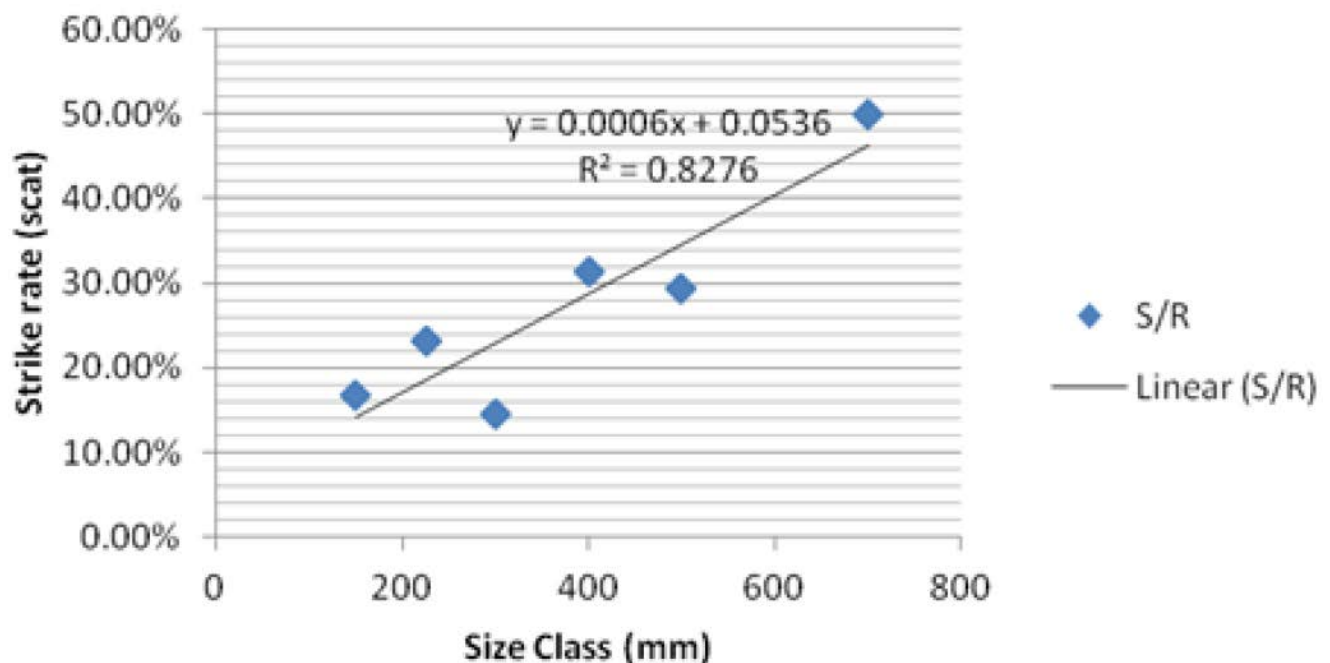


Figure 4 from EPA 2016: Size class of small-fruited grey gum versus scat strike rate

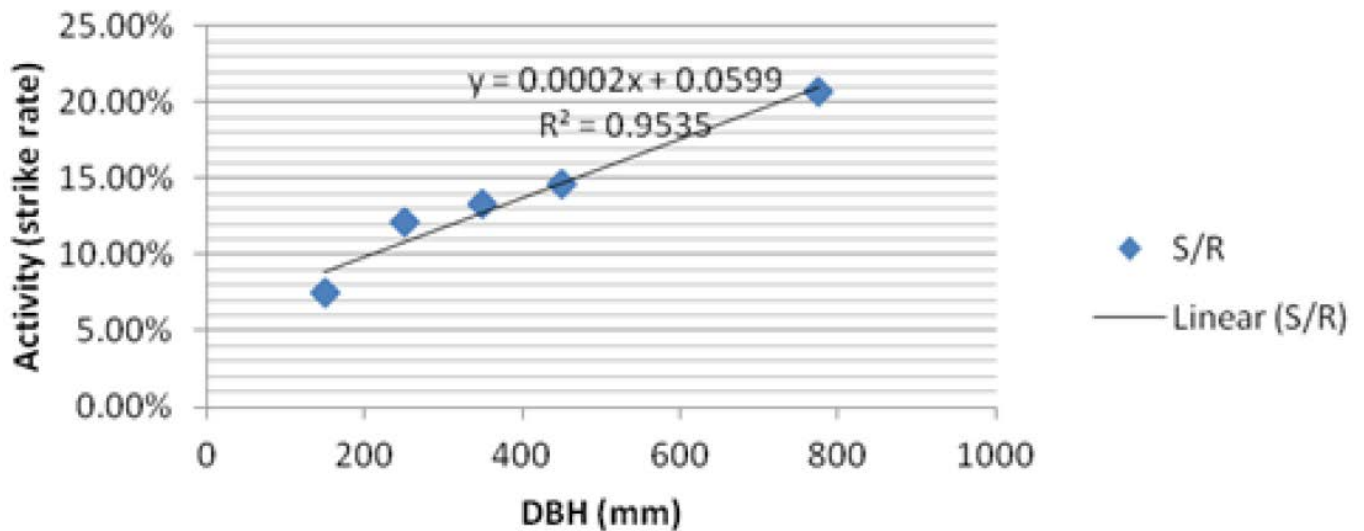


Figure 5 from EPA 2016: Size class of grey box versus scat strike rate

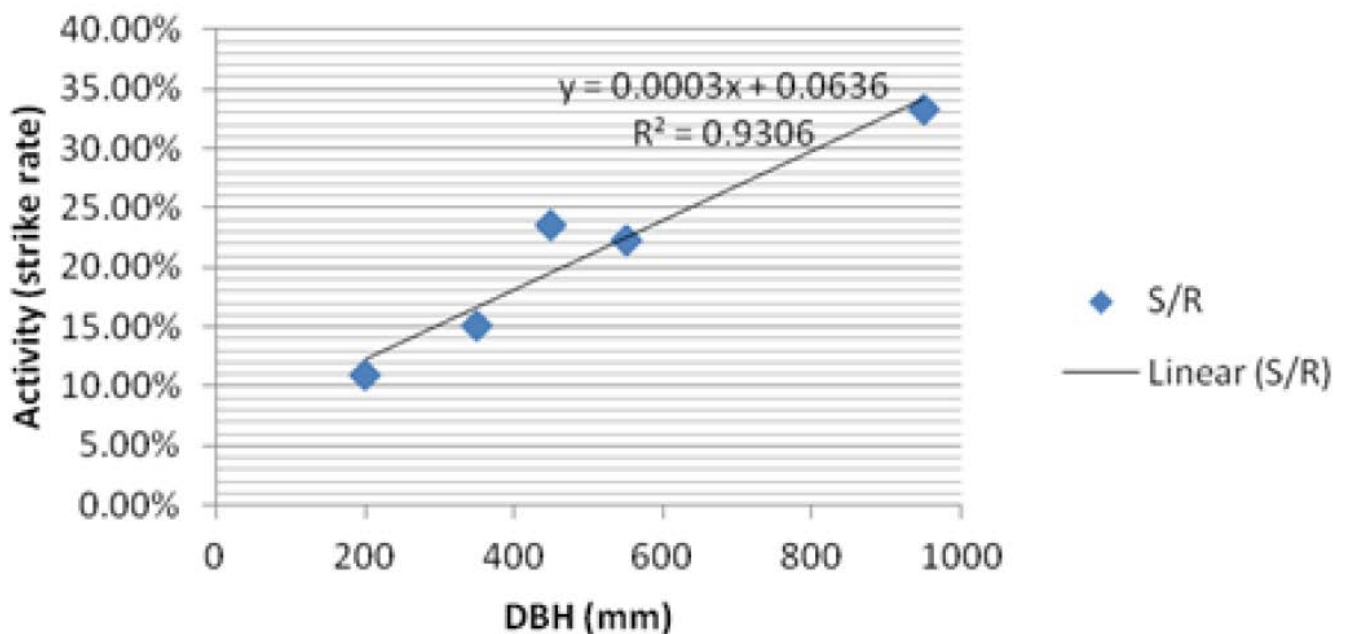
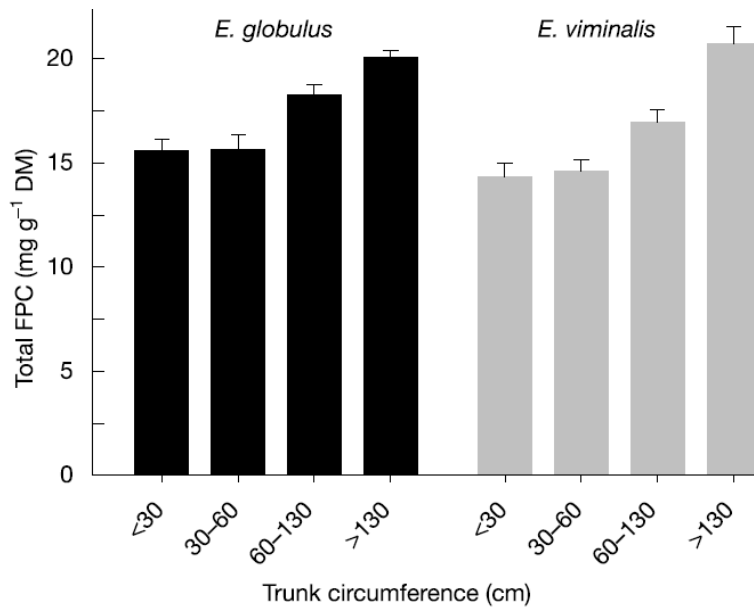


Figure 65 from EPA 2016: Size class of tallowwood versus scat strike rate

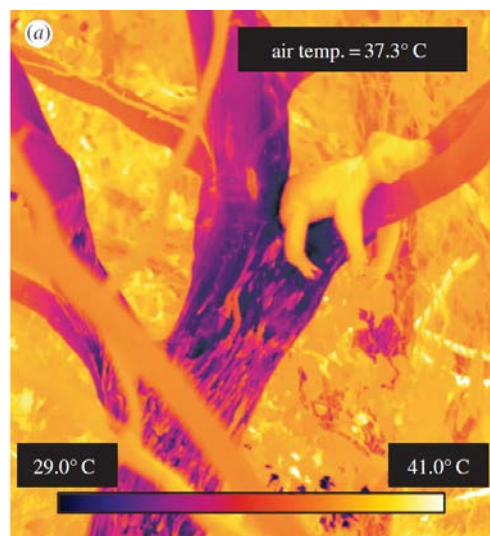
The fact that Koalas preferentially select larger trees despite their having increased leaf toxins emphasises that size does matter. Moore and Foley (2005) predicted that trees with high concentrations of the plant secondary metabolite 'formylated phloroglucinol compounds' (FPC) would receive low rates of koala visitation. They found that both Koalas and FPC concentration was positively correlated with tree size, stating "*so by biasing their visits towards larger-than-average trees, koalas were limiting their dietary choices to a subset of trees with higher-than-average FPC concentrations*".



**Figure 1 from Moore and Foley (2005): 'formylated phloroglucinol compounds' (FPC) concentrations in four tree size classes. Mean FPC concentrations (with one standard error) in each of four size classes of tree, for *E. globulus* (black bars) and *E. viminalis* (grey). DM, dry matter basis.**

Briscoe et. al. (2014) found that in hot weather Koalas use tree trunks to cool down, an effect that will be enhanced by tree size, particularly as the effect is related to the extent that the body is in contact with the tree surface, stating "*During hot weather, animals adopted postures with higher surface area exposed ... were more frequently observed with all limbs outstretched and oriented themselves so that they appeared to be hugging the trunks or large lower branches of trees*". They note:

*During hot weather, koalas enhanced conductive heat loss by seeking out and resting against tree trunks that were substantially cooler than ambient air temperature. Using a biophysical model of heat exchange, we show that this behaviour greatly reduces the amount of heat that must be lost via evaporative cooling, potentially increasing koala survival during extreme heat events. ... Our results highlight the important role of tree trunks as aboveground 'heat sinks', providing cool local microenvironments not only for koalas, but also for all tree-dwelling species.*



**Figure 2(a) from Briscoe et. al. (2014): Thermal image of a koala hugging the cool lower limb of a tree, illustrating a posture typically observed during hot weather**



The EPA (2016) also found Koalas had a clear preference for areas with >50% mature and over mature trees in vicinity (p.62) "*Seventy-four per cent (74%) of all activity resides in the high class of structural maturity*". This reinforces Koalas need for larger trees.

Table 30: Koala activity by structure

Row labels	Mature and over mature (>50% of polygon)	Mixed (50:50)	Regeneration (>50% of polygon)	Unassigned	Total
High activity	9	1		1	11
Normal activity	17	5	4	1	27
Low activity	17	2	1		20
Total	43	8	5	2	58
As a percentage	74%	14%	9%		

The EPA (2016) note (p85):

*The structural component of a forest comprises trees of different size classes, and both size and structural diversity of forests correlates with higher koala occupancy (Lunney et al. 1996; Phillips' 2013; Smith 2004). This study found koala activity correlated with larger tree size classes and mapped mature forest components of the pilot areas. Smith (2004) found forest structure to be a key predictor of koala scat density after food tree species diversity and abundance, where scat abundance was greatest under trees with a diameter at breast height (dbh) of 40–80 centimetres. Phillips' (2013) reports similar preferencing for trees >30 centimetres in low fertility areas.*

## EPA Inaction

NEFA (Pugh 2014, Case Study 3.1,) became involved with logging by the Forestry Corporation of a private property at Whian Whian (adjacent to the Nightcap National Park) when neighbours tried to have their concerns regarding Koalas addressed. Discussions with Forestry Corporation on 14 September 2013 revealed that they had found two Koala High Use Trees on the property and were thus applying the Private Native Forestry Code of Practice requirement to retain 10 primary koala food trees and 5 secondary koala food trees per hectare.

Concerns that this property is of exceptional value for Koalas and that Koala's were not being adequately protected were heightened when a brief assessment by NEFA of trees in the vicinity of the boundary located 5 Koala high use trees, none of which had apparently previously been searched. One of the Koala high use trees found had not been previously searched despite having a new road constructed right next to its base.

When NEFA (Pugh 2014) learned that the Forestry Corporation were proposing to construct a new road we surveyed the marked route and identified that it passed through and within 20m of 8 Koala high use trees (>20 scats). NEFA wrote to the EPA on the 22 September 2013 to request the immediate and urgent imposition of a Stop Work Order in accordance with Section 37 of the Native Vegetation Act 2003.

The EPA sent a team in to oversee the Forestry Corporation, though refused to stop work. They EPA did not bother to check NEFA's records, yet spent 2 days wandering around the proposed route with the Forestry Corporation while they identified a new route.

Three days after our request for a Stop Work Order the new track was constructed. Subsequent inspections by NEFA (with botanists) found that the track had been illegally constructed through what should have been 20m exclusion zones for 3 Koala high use trees. One of the Koala high use

trees that had been identified by the Forestry Corporation in the presence of the EPA had the track constructed within 15m and debris within 12m without its exclusion boundary being marked as required by the PNF Code, one 3.2m from the track had been checked by the Forestry Corporation in the presence of the EPA but had not been identified despite subsequent inspections showing abundant scats, and one had been identified by NEFA but could not be subsequently verified due to scats being removed (presumably by the Forestry Corporation).

Over the course of events NEFA (Pugh 2014) found and reported a total of 16 Koala high use trees with 20 or more Koala scats beneath them. The Community Surveys of the weekend of 27-29 September found an additional 10 Koala high use trees with limited searching, bringing the total to 26 such trees in an area where the Forestry Corporation had only identified 2. A total of 8 Koala high use trees (and numerous threatened plants) were found to have had roads and tracks constructed within 20m of them.

This large number of high use trees proves that there is an active breeding Koala colony on the property, with evidence of males, females and young, that largely escaped the attention of the Forestry Corporation. There can be no doubt that the property constituted high quality core Koala Habitat but the EPA didn't care.

There was a 2 year window of opportunity for the EPA to legally pursue this matter, and they used most of this time up before they issued the Forestry Corporation with two Penalty Notices (each with a fine of \$5,500) on the 11 September 2015 for constructing their track through what should have been 20m exclusion zones for a Koala High Use Tree and the Endangered vine Clear Milkvine.

The Forestry Corporation stated they intended to vigorously dispute the fines on the grounds that their intent *"was discussed with EPA staff on site during the operation"*. In other words, the EPA knew they were going to construct the illegal road and, at best, did nothing to stop them.

Given that the EPA had almost used up their 2 years for legal action, the Forestry Corporation simply bided their time before telling the EPA that they would not pay the fines and would rather dispute them in court. By then, the EPA claim, it was too late to defend the fines in court. Given the EPA's complicity in the construction of the illegal road it is no wonder they waited so long to take action so that they could avoid court.

Another example is provided by Tyalgum (Case Study 3.2.) Following complaints from locals NEFA (2017) decided to undertake an initial assessment on 9th September 2017 of a private property near Mount Warning from the Crown Road Reserve that runs through it. No threatened species had previously been identified on the property. From our brief inspection NEFA identified 2 Koala High Use Trees (one of which had a road constructed up to its base). The EPA (Bryce Gorham 14 February 2018) confirmed the presence of the Koala High Use Trees, though refused to require Koala surveys elsewhere on the property.

**Since SEPP 44 was introduced in 1995 with the objective of identifying and protecting core Koala habitat on private lands only 5 Comprehensive Koala Plans of Management have been prepared, and only 2 of these identify core Koala habitat across Local Government Areas. Despite the requirements of the PNF Code the EPA have continued to issue PNF approvals for core Koala habitat. It is clear that the NSW Recovery Plan's objective to *Conserve koalas in their existing habitat* by identifying and protecting 'core Koala habitat' in accordance with SEPP 44 and by LEP zoning has not been implemented. If there is any will to protect Koalas then it is essential that significant resources be put into mapping core Koala habitat across**

priority private lands and retaining the current requirement to exclude logging from core Koala habitat.

Regrettably it is clear that both the Conservation and Management Strategy and NSW Recovery Plan requirements relating to identifying and protecting important habitat areas, identifying improved and standardised survey methods, and monitoring and reviewing the effectiveness of mitigation measures, are not being complied with on private lands. In priority areas where core Koala habitat has not been identified it is essential to require pre-logging surveys for Koalas and to fully protect any core Koala habitat found, as well as any trees with evidence of use by Koalas (scats, scratches, sightings) and appropriate buffers.

The current requirement for the retention of *A minimum of 10 primary koala food trees and 5 secondary koala food trees* where evidence of Koalas is found needs to be retained. The current requirement that *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* also requires retention, though there needs to be greater emphasis on selecting trees from the range of size classes above 30cm diameter given Koalas preferences for larger trees.

### 1.3. Logging of Threatened Ecological Communities

One of the most controversial issues with logging of public lands has been the Forestry Corporation's frequent logging of Endangered Ecological Communities. To overcome this problem the EPA and Forestry Corporation jointly mapped the most common Threatened Ecological Communities, though failed to include private lands in the process.

It is evident from the case studies presented that the failure to identify and appropriately protect TECs on private lands is a major problem.

At Whian Whian (Case Study 3.1.) rainforest was mapped and had been previously identified as the nationally Critically Endangered Lowland Rainforest of Subtropical Australia. Given its location it was obviously the State Endangered Lowland Rainforest, Despite the logging being undertaken by the Forestry Corporation, and under the supervision of the EPA, neither agency recognised that it was a TEC. Extraordinarily they applied to OEH to remap the rainforest and they deleted obvious rainforest, reassigning it as cleared land and as part of the logging area. After a rainforest expert, Dr Robert Kooyman, recognised it for what it was, NEFA did a detailed assessment which proved that significant areas of rainforest qualifying as the TEC had been deleted in the remapping, and a road constructed through it and a number of threatened plants. Despite the detailed evidence of blatant mapping errors the EPA refused to investigate our complaint.

At Tyalgum (Case Study 3.2.) the rainforest was accepted as mapped, though once again the EPA failed to recognise that because of its location it was most likely to be the State Endangered Lowland Rainforest and it was not identified as such on the Forest Operation Plan. In this case there should have been a review of the EEC boundary because of the likelihood that boundaries differ because of the different criteria used to map the EEC compared to the CRA rainforest mapping, meaning that parts of the EEC may have been subject to logging.

**It is apparent that even obvious Threatened Ecological Communities (TECs) are not being recognised by the EPA or landholders in the preparation of PVPs and Forest Operation**

**Plans, making it likely that TECs on private lands are routinely logged. If there is a genuine intent to protect TECs in PNF operations then it is essential that they are mapped in a similar expert process as was undertaken for State Forests.**

#### 1.4. Remapping Oldgrowth Forest.

The National Forest Policy (1992) required that "*relevant State agencies will, as a matter of high priority, undertake assessments of forests for conservation values, including old-growth values*" and that a "*comprehensive, adequate and representative reservation system to protect old-growth forest and wilderness values will be in place by the end of 1995*". The NFPS defines old-growth forest as:

*Forest that is ecologically mature and has been subjected to negligible unnatural disturbance such as logging, roading and clearing. The definition focuses on forest in which the upper stratum or overstorey is in the late mature to over mature growth phases.*

The national forest reserve criteria (JANIS 1997) adopt the operational definition:

*Old-growth forest is ecologically mature forest where the effects of disturbances are now negligible.*

*In applying this interpretation to a forest ecosystem within a region, the following principles will apply:*

- *Ecological maturity is defined by the characteristics of the older growth stages*
- *If data are available on the structural, floristic, and functional qualities that would be expected to characterise an ecologically mature forest ecosystem, these data should be used in the assessment of the significance of disturbance effects.*
- *Negligible disturbance effects will be evident in most forests by a significant proportion of trees with age - related features and a species composition characteristic of the ecologically mature forest ecosystem.*

Under DECCW's Old Growth and Rainforest Private Native Forestry assessment protocols a private landowner can request a review of oldgrowth and rainforest as mapped in the CRA. A 2010 internal review of DECCW's (now OEH) methodology for remapping oldgrowth forest found it was fundamentally flawed and that a significant amount of the mapped oldgrowth was being wrongly deleted. [Webster \(2010\)](#) found that "*the protocol implementation is working very well for rainforest*", but that implementation for "*old-growth is highly variable and problematic and has apparently resulted in some areas of old-growth being potentially available for harvest*". Transect assessments resulted in PNF old-growth classification in 4 out of 5 areas that were not correctly identified by DECCW assessments as being old-growth, 80% of the time OEH were getting it wrong.

NEFA considered that by then over 8 thousand hectares of mapped oldgrowth forest were likely to have been remapped as not being oldgrowth, and thus been made available for logging, in numerous 15 year Property Vegetation Management Plans. The reviewer hoped that improved imagery and hardware, combined with fieldwork, and regular peer review would increase the accuracy and reliability of DECCWs remapping.

On behalf of NCC, John Edwards and myself attended an EPA workshop on oldgrowth delineation in the Private Native Forestry PVP process on 22 November 2012. It was aimed at showcasing how OEH had improved their oldgrowth field assessments, though it revealed a fundamentally flawed field assessment process that was strongly criticised by all stakeholders, as well as ongoing mapping problems. OEH had still not rectified the manifest deficiencies in their remapping.

It was alarming that OEH's Science Division (SD) were refusing to map oldgrowth of species not displaying senescent characteristics typical of Blackbutt. I reported to the EPA (Pugh 2012):

*Growth-staging is based on the typical growth stages of Blackbutt and the presence of dead branches and uneven crowns in senescent trees. These are what are used to define oldgrowth trees and thus oldgrowth forests. These characteristics are shown to varying degrees by eucalypts, but not by non-eucalypts such as Brush Box, Turpentine and some Angophoras. This has been identified as a key issue for over 20 years in the north-east forests. Despite this, SD still had no decision rules for identifying oldgrowth stands of these forest types. ...*

*...*

*Given that SD have no decision for forest types showing atypical growth forms there are real concerns that significant stands of oldgrowth forests, particularly those dominated by Brush Box and Turpentine, are being missed. It was recommended that decision rules to delineate the oldgrowth stage for these species be developed urgently.*

It is disgusting that the current rules still do not allow for species not displaying obvious signs of senescence in their canopies. This was the reason that the CRA adopted different API decision rules for different interpretability classes (which OEH seem not to understand). The refusal to rectify the decision rules all these years later displays a high level of antipathy towards protecting oldgrowth forest.

On the field inspection it was also concerning that "*The selection of field transects and plots for verification is extremely problematic as they are chosen subjectively and in at least one case (if not both) plots were located outside the mapped polygon. The assessment of significant disturbance appeared to have been wrongly assessed on one of the three plots inspected within mapped oldgrowth and another was dubious. Based on the small sample reviewed it is not considered that field verification is undertaken in a rigorous or objective manner*".

It also needs to be recognised that the decision rules relating to >10% senescence and <10% regrowth (tA and tB) were specifically derived for attributes visible on the 1:25,000 'wet film' aerial photographs available at that time. The high-resolution ADS40 imagery now being used allows for greater visibility of under-canopy trees, and thus far more regrowth trees are visible than is the case with 1:25,000 aerial photos. It is plainly wrong to use decision rules developed for 1:25,000 aerial photos for very different imagery that allows a higher proportion of regrowth to be viewed. New mapping rules need to be developed specifically for ADS40 imagery that allows for a higher threshold for regrowth.

The mapping unit of OEH has also come under strong criticism internally and externally for its secrecy and unreliable vegetation mapping (Campbell 2012, Hunter 2016, Benson 2016). Given their history, unreliability and unaccountability, NEFA has no confidence in the OEH remapping of oldgrowth forest or rainforest.



It is outrageous that the PNF criteria for remapping oldgrowth does not recognise that some forest types (particularly those dominated by Brush Box, Turpentine and some Angophoras) do not typically have senescent crowns (i.e. dead branches) when they reach ecological maturity. The exclusion of ecologically mature stands of such forest types from being identified as oldgrowth forest is a deliberate contravention of the national criteria. Similarly the application of criteria developed for application to 1:25,000 aerial photographs to ADS40 imagery where more regrowth is visible is an intentional rorting of the methodology.

There needs to be an independent and open expert process to review mapping criteria for oldgrowth forests taking into account the extent to which mature trees of different species display senescence and the increased visibility of regrowth trees with improved imagery. Given the evidence of incorrect re-mapping the review also needs to review the accuracy of current mapping.

## 1.5. Remapping Rainforest.

As part of the CRA process rainforest was mapped (CRAFTI mapping) by API using 1:25,000 colour aerial photographs. This map layer is taken to be rainforest for Property Vegetation Plans (PVPs) except where disputed by property owners. If the landowner is not happy with the CRA rainforest mapping on their property, the landholder can:

*apply to DECC for an evaluation of the area proposed for private native forest for new rainforest mapping and determination of rainforest. The landholder will need to identify the area in dispute and provide evidence to DECC officers that the area is not rainforest. Evidence could include photographic and logging records, or other disturbance history.*

The NRC (2018) identify that the PNF process uses a different definition of rainforest than what was applied in the CRA, with NRC noting:

*... the current definition of rainforest used in the PNF protocol differs from the one used to identify rainforest in the Comprehensive Regional Assessments (CRAs) undertaken for the RFAs. The primary difference is that the PNF definition excludes areas with emergent non-rainforest species that exceed 30 percent of the upper crown cover. The PNF definition currently uses the following definition of rainforest:*

*'Rainforest is tree-dominated vegetation where the tree stratum (over 3 metres in height) which has the greatest crown cover has rainforest species making up 50 percent or more of the crown cover, except where non-rainforest emergent species (including brushbox and turpentine) occur and exceed 30 percent or more of the upper stratum crown cover. Rainforest includes all areas of rainforest mappable at a 1:25,000 scale. Rainforest also includes areas exceeding 0.5 hectares as isolated clumps or linear strips of rainforest trees.'*

There is a simpler rainforest definition used for private properties that encompasses both rainforest (as defined in the RFA) and the EEC Lowland Rainforest. The 2004 DEC/DIPNR Field Guide "Identification of Rainforest" defines rainforest as:

*Rainforest is tree-dominated vegetation where the tree stratum with the greatest crown cover (not necessarily the tallest stratum) has rainforest species making up 50% or more of the crown cover. This stratum is usually, but not always, closed (with a projective foliage cover greater than 70%).*



The Field Guide also specifies that "*species such as Brush Box (Lophostemon confertus) and Blackwood (Acacia melanoxylon) are rainforest species*".

Though the problems with rainforest remapping are not limited to criteria. In 2013, on a private property at Whian Whian areas of CRA mapped rainforest were remapped at the request of the EPA and Forestry Corporation by the Office of Environment and Heritage (OEH) as not being rainforest. The OEH remapping did not make sense as it did not follow obvious vegetation boundaries, remapping clearly obvious rainforest as either cleared land or part of the logging area (see 3.1. Case Study 1).

NEFA engaged our own API expert and undertook transects which proved that significant areas of rainforest qualifying as the State Endangered Lowland Rainforest and nationally Critically Endangered Lowland Rainforest of Subtropical Australia had been deleted in the remapping, and a road constructed through it and a number of threatened plants. It is astounding that nowhere in the process of remapping the rainforest and constructing a road through it did the EPA, OEH or Forestry Corporation recognise that the rainforest they were dealing with is an Endangered Ecological Community.

Despite the comprehensive and detailed evidence we presented ([Pugh 2014](#)) the EPA refused to investigate our complaint about the erroneous rainforest remapping. When we submitted a freedom of information request (GI(PA) Act) both the EPA and OEH refused to provide any documents on their remapping on the grounds that there was "*a public interest consideration against disclosure of information*" because the remapping of public data by a public agency was "*personal information*" and its release may cause harm to a person.

**It is clear that the delineation of rainforest in the PNF re-mapping process is not consistent with the methodology applied in the CRA as it excludes rainforest with emergent Brush Box and Turpentine. This limitation needs to be removed so as to be consistent with 2004 DEC/DIPNR Field Guide "Identification of Rainforest" by counting Brush Box and Blackwood as rainforest species, and removing the limitation that emergents of Brush Box and Turpentine preclude the identification of rainforest.**

**Of equal concern is that when the EPA were presented with detailed evidence that OEH nonsensical remapping of the State Endangered Lowland Rainforest and nationally Critically Endangered Lowland Rainforest of Subtropical Australia as cleared land and as part of the logging area they refused to investigate this blatant rorting of the mapping criteria. They also refused access to the relevant documents under a GI(PA) Act request. The remapping process is rotten.**

## 1.6. Protecting Old Trees

The older a tree gets the more browse, nectar and seeds they provide for wildlife. Once eucalypts are over 120-180 years old they begin to provide the small hollows needed by a plethora of native wildlife for denning, nesting and shelter. Though it is not until they are over 220 years old that they provide the larger hollows required by species such as owls, cockatoos and gliders. They may live for 300-500 years, sometimes longer.

Old trees are the primary storehouses of carbon, provide essential hollows for animals to nest and den in, provide the most abundant nectar and seed, and are of the highest aesthetic appeal. These

values appreciate with age. Since European settlement most of our oldest trees have been lost, with only scattered old trees left across agricultural lands and within logged forests. Those surviving are of immense value.

Numerous Australian animals depend on the food and shelter provided by old trees for their survival. Lindenmayer *et. al.* (2014) consider “*The irreplaceable roles of large old trees make them a “keystone structure”—a disproportionately important provider of resources crucial for other species*”.

## Hollow-bearing Trees

A plethora of forest animals depend upon the trunk and branch hollows provided by big old trees for their survival. In NSW at least 46 mammals, 81 birds, 31 reptiles and 16 frogs, are reliant on tree hollows for shelter and nests, of these, 40 species are listed as threatened on Schedule 1 and Schedule 2 of the Threatened Species Conservation Act (NSW Scientific Committee 2007). Animal species that use tree hollows include most possums and gliders, numerous bats, various ducks, most owls, Australian Owlet-nightjar, tree creepers, tree martins, all cockatoos, most parrots, some kestrels and falcons, Laughing Kookaburras, some kingfishers, Dollarbirds, and various lizards and snakes.

Seventy species (28%) of vertebrates use hollows in north-east NSW (Gibbons & Lindenmayer 2002). The loss of the hollows provided by large old trees has been identified as a primary threat to a variety of priority species in north east NSW (Environment Australia 1999, Appendix 1); 4 mammals (non-flying), 20 bats, 3 birds, 2 frogs, 3 reptiles and 4 snakes. Numerous other species have been identified as threatened by the loss of other resources (i.e. seeds, nectar, nest sites) provided in greater abundance by older trees and many by the increased transpiration of young trees and consequent reductions in water availability (Environment Australia 1999).

Animals do not select hollows at random; factors such as entrance size and shape, depth, degree of insulation and location greatly affect the frequency and seasonality of hollow use. Many species use multiple hollows which they move between, for example a Brush-tailed Phascogale has been found to use 27-38 different hollows (Gibbons & Lindenmayer 2002). Brigham *et. al.* (1998) found that Owlet-nightjars move approximately 300m between roost sites every 9 days on average, with individuals using 2-6 different cavities over 1-4 months, noting “*our results suggest that birds may be loyal to a group of 2-6 trees in a relatively confined area*”.

A single hollow may be used by more than one species in a year, sometimes concurrently. Many species will exclude other individuals of the same species from the vicinity of their nesting hollows, some may only defend a few metres around their nest while others may defend a clump of trees (Gibbons & Lindenmayer 2002), and many are territorial with defended territories of a few hectares or hundreds of hectares. A few species prefer to nest colonially in clumps of trees (Gibbons & Lindenmayer 2002). Fewer arboreal marsupials have been recorded from sites where hollow-bearing trees are clumped compared to being evenly distributed, which has been attributed to social and territorial behaviour (Gibbons & Lindenmayer 2002).

Gibbons and Lindenmayer (2002) documented that relatively undisturbed woodlands contain 7–17 hollow-bearing trees per hectare, and undisturbed temperate and sub-tropical eucalypt forests 13–27 per hectare. Only some hollows have appropriate entrance sizes and depths for fauna, with only 43-57% of hollows found to be used by fauna, and 49-57% of hollow-bearing trees used (Gibbons and Lindenmayer 2002). Large dead trees are utilised by many animals, representing 18-19% of hollow-bearing trees on some sites (Gibbons and Lindenmayer 2002).

Based on a number of assumptions, various estimates of the numbers of hollow-bearing trees occupied by vertebrate fauna have been made, with 6-13 per hectare in north east NSW, 4.5-9 per ha in south-east Queensland, and 7-14 per ha in East Gippsland (Gibbons & Lindenmayer 2002). Based on their estimates Gibbons & Lindenmayer (2002) assumed that *“hollow-bearing trees in forests are likely to be occupied at a rate of around 6-15 per hectare”*.

Once the availability of hollows becomes limiting competition with more aggressive species, introduced birds (i.e. Common Myna and Common Starling) and the European Honey Bee can exclude the more vulnerable species. For example, the Greater Glider has been found to be absent from sites supporting less than 6 hollow-bearing trees per hectare (Gibbons & Lindenmayer 2002).

As noted by the NSW Scientific Committee (2007):

*The density of hollow-bearing trees required to sustain viable populations of vertebrates is a function of the diversity of competing fauna species at a site, population densities, number of hollows required by each individual over the long-term, and the number of hollows with suitable characteristics occurring in each tree. These factors vary spatially among habitats and temporally throughout the year with, for example, the demand for nests increasing greatly during the spring breeding season (Calder et al. 1983). Accurately estimating hollow requirements in a given habitat is currently difficult due to the lack of this baseline information,*

Losses of large old trees is a world-wide problem, as noted by Lindenmayer et. al. (2012) *“populations of large old trees are rapidly declining in many parts of the world, with serious implications for ecosystem integrity and biodiversity. ... Just as large-bodied animals such as elephants, tigers, and cetaceans have declined drastically in many parts of the world, a growing body of evidence suggests that large old trees could be equally imperilled”*.

The NSW Scientific Committee (2007) has identified *Loss of Hollow-bearing Trees* as a Key Threatening Process. The maintenance of large old hollow-bearing trees in perpetuity is the single most important requirement for the survival of the numerous animal species that rely on their hollows for denning, nesting or roosting.

## **Maintaining Hollow-bearing Trees in Perpetuity**

Natural forests are usually multi-aged with cohorts of different sized trees resulting from past disturbance events (usually wildfire). They thus allow for succession as existing hollow-bearing trees die and collapse. Logging targets many of the mature trees for removal, leaving a potential hiatus in replacement trees capable of providing tree-hollows when existing ones collapse or burn. As noted by Gibbons and Lindenmayer (2002):

*Hollow-bearing eucalypts are extremely long-lived ‘organisms’. Eucalypts typically have a life span of 300-500 years, and dead trees may provide hollows for a further 100 years. The age at which they ‘reproduce’ hollows (typically 150-250 years) represents one of the slowest ‘reproductive cycles’ for any organism. Failure to replace hollow-bearing trees as they are lost will result in prolonged temporal gaps in the resource that will not only reduce the area of suitable habitat for hollow-using fauna, but could also fragment populations of species unable to occupy areas lacking hollows. The dispersal of hollow using species also will be impaired”*.

Lindenmayer et. al. (2014) recognise that:

*... drivers of large old tree loss can create a “temporary extinction,” that is, a prolonged period between the loss of existing large old trees and the recruitment of new ones (Gibbons et al. 2010b). The length of a temporary extinction may vary (e.g., 50 to 300+ years) ... Temporary extinction has the potential to drive species strongly dependent on large old trees to permanent local or even global extinction. In other cases, existing large old trees may be doomed to eventual extinction because the animals that dispersed their seeds have disappeared”.*

*...*

*Policies must be implemented long before problems result from the loss of large old trees. This is because, unlike many other organisms with a shorter life history, once old trees are gone, it can take centuries to restore them.*

In natural forest there is a self thinning process that results in significant mortality as trees mature (Mackowski 1987, Smith 1999). Though there is also a high likelihood of mortality due to other factors. As noted by Mackowski (1987 p124) *“the frequent occurrence of fire in this site height blackbutt forest precludes a 100% chance of survival - a proportion will be damaged, or weakened, or burnt down by each fire. These trees are also subject to the risk of lightning and windstorm damage.”*

Logging significantly increases tree mortality. After logging the retained trees are more vulnerable to windthrow and post-logging burning (Saunders 1979, Recher, Rohan-Jones and Smith 1980, Mackowski 1987, Smith and Lindenmayer 1988, Milledge, Palmer and Nelson 1991, Smith 1991a, Gibbons and Lindenmayer 2002). Gibbons and Lindenmayer (2002) note *“studies consistently show that the number of hollow-bearing trees that occurs on logged sites is negatively associated with the number of harvesting events”, and “logging may result in a pulse of mortality among retained trees after each cutting event”.*

In all audits undertaken by NEFA on public lands some trees marked for retention as hollow-bearing trees and recruits have been found to have been damaged in the logging, had the soil compacted around their roots, or are already burnt out at the base and unlikely to remain standing for long. Many trees retained as recruits are found to be too young, deformed or suppressed and unlikely to develop into hollow-bearing trees. Logging debris are often left stacked against the bases of retained trees, forming funeral pyres for post-logging burns.

In Mountain Ash and Alpine Ash forests Gibbons and Lindenmayer (2002) identify that 18% of the total population of hollow-bearing trees collapsed over a 5 year period (3.6% per annum). Gibbons and Lindenmayer (2002) also report that *“14% and 37% of trees retained on logged sites were killed 2-5 years after low- and high-intensity slash burning respectively”,* and that the probability of a retained tree surviving after a single logging event was 0.63.

Parnaby et. al. (2010) assessed the impacts of a single low-intensity prescription burn in the Pilliga forests on hollow-bearing trees, finding mean collapse rates of 14% to 26%, noting *“The collapse of burnt, hollow-bearing trees on individual plots ranged from 0 to 50%, and exceeded 20% on 13, of the 29 plots”.*

On top of logging and prescribed burning induced mortality, natural disturbance regimes still apply, though these too are accentuated by logging impacts, for example in south-east NSW 87% of retained trees were killed following a wildfire (Gibbons and Lindenmayer 2002).

This problem is also recognised by the NSW Scientific Committee (2007):

*Trees retained during harvest are susceptible to damage from logging operations and post-harvest burning, or can suffer poor health owing to changes in abiotic conditions (Gibbons and Lindenmayer 2002). Consequently, retained trees are prone to early mortality, especially with repeated exposure to harvesting events over their lifespan. Prescriptions for forestry operations also stipulate that young trees are retained for long-term replacement of hollow-bearing trees, typically with one recruit for every hollow-bearing tree. The age structure in natural forests, where recruitment and loss of mature trees is at equilibrium, indicates that only a small proportion of younger trees survive to reach maturity. A ratio of one-to-one will be inadequate in itself to sustain the stipulated minimum densities of hollow-bearing trees in harvested areas*

To maintain habitat trees in perpetuity there is a necessity to account for natural and logging/burning induced tree-deaths when prescribing retention rates for both hollow-bearing trees and recruitments sufficient to maintain the prescribed number of habitat trees over long time frames (Recher, Rohan-Jones and Smith 1980, Mackowski 1984, 1987, Recher 1991, Scotts 1991, Traill 1991). Mackowski 1987 assessed the retention requirements for all age classes to maintain 3 hollow bearing trees per hectare in blackbutt forests after accounting for natural mortality, extrapolating from this, to maintain each hollow-bearing tree >100 cm dbh it is necessary to retain 5.2 trees 20-100 cm dbh to account for natural attrition.

**TABLE 4.5. COASTAL BLACKBUTT RETENTION RATES REQUIRED TO MAINTAIN 10 HABITAT TREES PER TWO HECTARES IN PERPETUITY.** The assumption is made that there will be 50% mortality of recruitment trees every 80 years. Adapted from Mackowski 1987.

Diameter (dbh) cm.	Age yrs	Time-span in size class yrs	Mackowski's requirements for 3 Habitat Trees per Hectare over 100cm	Requirements to retain 10 Hollow-bearing Trees per Two Hectares
20-60	16-68	52	11.5	38.3
60-100	68-144	76	4	13.3
100-140 <sup>A</sup>	144-224	80	2	6.6
140-180 <sup>B</sup>	224-304	80	1	3.3

A - stage at which hollows suitable for small wildlife form.

B - stage at which hollows suitable for large wildlife form.

Mackowski (1984) considered *"The general pattern of hollow formation in many gum type eucalypts, ironbarks, bloodwoods and stringybarks is similar to that described for Blackbutt. Tallowwood and Brushbox have similar crown architecture characteristics to Blackbutt but have substantially different suites of organisms involved in the succession towards hollows, leading probably to much older age at hollow formation."*

Many forests have been denuded of habitat trees. To enhance such forests for nature conservation and maintenance of ecosystem functioning they need to be managed for the return of adequate stockings of habitat trees (Mackowski 1987). Mackowski (1987 p134) states *"where adequate hollow trees have not been retained in the past, a greater proportion of larger recruits should be selected (rather than evenly distributed between 60 & 100 cm dbh) to facilitate the early return of hollow trees and the immigration of hollow dependant wildlife if it occurs nearby."*

Hollow-bearing trees, and with them hollow-dependent species, have already been decimated within vast tracts of forests. The problems such fauna are facing is expected to exponentially worsen as the few remaining large old hollow-bearing trees (in both forests and pastoral lands) die-



out without replacement trees being available. The full ramifications of irreversible changes already set in place will take a century or more to become fully manifest.

Lindenmayer *et. al.* (2014) warn *“Existing policies are failing. New policies and management actions are required to conserve existing large old trees, provide for their recruitment, and maintain an age structure for tree populations that ensures a perpetual supply of large old trees thereby sustaining the critical functional properties that such trees provide. Without urgent action this iconic growth stage and the biota and ecological functions associated with it are in danger of being seriously depleted or even lost in many ecosystems”*.

Trees over 100 years old have survived the worst ravages of the industrial logging and widespread clearfelling that has increasingly occurred since the 1950s. Such trees are in the stages of developing hollows and are a rare and valuable wildlife resource. As well as being important for sustaining populations of hollow-dependent fauna, such trees are part of our natural heritage and the relatively few that remain should be retained.

Lindenmayer *et. al.* (2014) consider *“A critical step in large old tree management is to stop felling them where they persist and begin restoring populations where they have been depleted”*.

## Nectar Feed Trees

Loyn (1985) considers species most reliant upon old growth to be those utilising old trees for feeding, such as some honeyeaters and mistletoebirds which feed on mistletoe nectar or fruit, some insectivorous birds which feed from old eucalypt bark or among canopy foliage and some arboreal mammals which feed on sap and invertebrates from large eucalypt trunks and branches or on canopy foliage in tall eucalypts.

Older trees produce significantly more flowers and seeds than young trees and thus are of particular importance to fauna relying on these food sources. For Mountain Ash trees Ashton (1975) found:

*The mature forest produced 2.15-15.5 times as many flowers as the pole stage trees, and 1.5-10 times as many as the spar stage forest. Estimates of the fruit set following the late autumn flowering of 1954 indicate that that of the mature forest was 1.6 times as great as that in the spar stage forest and 3.5 times as great as that in the pole stage forest.*

The abundance of flowers and seeds provided by trees directly affects their suitability for foraging by animals. For example, Kavanagh (1987) found that Yellow-bellied Gliders mainly used medium to large trees for feeding on flowers (as well as sap and honeydew) because they had the greatest number of flowers on which to forage for nectar. Similarly Koch (2003) found that south-eastern Red-tailed Black-Cockatoos preferentially selected stringybark trees with larger girth and canopy volume as these were correlated with crop size. He considered that the abundance of seed directly affected breeding success.

The need to retain nectar feed trees is important for a multitude of species, though of particular importance are the Regent Honeyeater and Swift Parrot. Researchers at Australia's Threatened Species Recovery Hub (Geyle *et. al.* 2018) recently identified that Regent Honeyeater has a 57% chance of extinction within the next 20 years and that Swift Parrot has a 31% chance of extinction within the next 20 years, ranking them the 7th and 13th most threatened birds in Australia.

Regent Honeyeater (*Anthochaera phrygia*, previously *Xanthomyza phrygia*) is listed as Critically Endangered under the EPBC Act. The 2016 National Recovery Plan for the Regent Honeyeater

identifies "It is important to identify and retain trees that produce relatively high levels of nectar. In some areas where there has been a history of removal of large trees, regent honeyeaters often select the largest available trees of the 'key' species".

The Swift Parrot *Lathamus discolor* is listed as 'Endangered' under the EPBC Act. The first national recovery plan was adopted in 2002. A revised recovery plan was made in 2011. The National Recovery Plan for the Swift Parrot *Lathamus discolor* (2011) states:

*Based on current knowledge of the ecology and distribution of the Swift Parrot the persistence of this species is mainly threatened by loss and alteration of habitat from forestry activities including firewood harvesting, clearing for residential, agricultural and industrial developments, attrition of old growth trees in the agricultural landscape, suppression of forest regeneration, and frequent fire. The species is also threatened by the effects of climate change, food and nest source competition, flight collision hazards, psittacine beak and feather disease, and illegal capture and trade.*

*Forestry activities, including firewood harvesting result in the loss and alteration of nesting and foraging habitat throughout the Swift Parrot's range ... The harvesting of mature box-ironbark woodlands of central Victoria and coastal forests of New South Wales for forestry reduces the suitability of these habitats for this species by removing mature trees which are preferred by Swift Parrots for foraging and that provide more reliable, as well as greater quantity and quality of food resources than younger trees (Wilson and Bennett 1999; Kennedy and Overs 2001; Kennedy and Tzaros 2005)*

## Setting Retention Requirements

The current PNF Code requires the retention of:

- 10 hollow bearing trees per 2 hectares, where available.
- One recruitment tree from the next cohort and representing the range of species in the forest before forest operations commenced must be retained for every hollow bearing tree.
- Where the total number of hollow bearing trees is less than 10 trees per 2 hectares, additional recruitment trees must be retained to bring the total number of retained hollow bearing and recruitment trees up to 20 trees per 2 hectares.
- Up to half of all required recruitment trees can be located in a riparian buffer zone where the subject 2-hectare area is within 200 metres of, and partly includes, that riparian buffer zone.
- A minimum of 6 feed trees per 2 hectares should be retained where available.
- All feed trees that have marks or 'V' notches from sap-feeding mammals must be retained.
- All roost, nest or food resource trees must be retained.

Retention of Hollow-bearing (H) trees and recruitment (R) trees (to grow into the hollow-bearing trees of the future) are key requirements of the PNF Code to mitigate logging impacts on an array of native animals in eucalypt forests (see [nefa.org.au/old\\_trees](http://nefa.org.au/old_trees)). For decades NEFA have been battling to get improved protection for large hollow-bearing trees and the recruitments needed to sustain them, and the vital hollows they provide, into the future. NEFA has identified poor and inadequate selection and protection of habitat trees as a problem in all our audits on public lands and the same problem is expected for PNF.

The current habitat tree retention rules per hectare are for the retention of 5 hollow-bearing trees (where they remain), and one of the next largest trees as recruitment trees for each hollow-bearing tree. Natural forests have 13–27 hollow-bearing trees per hectare so this is a major reduction in resources. The retention of just one recruitment tree for each hollow bearing tree means that not enough will survive to replace the hollow-bearing trees as they die. The current requirement that if there are less than 5 hollow-bearing trees per hectare then the next largest tree needs to be retained and counted as a hollow-bearing tree to make the numbers up to 5.

The Remake of the Coastal Integrated Forestry Operations Approvals Final Report Threatened Species Expert Panel Review reports the EPA representative Brian Tolhurst as stating:

*All trees greater than or equal to 100 cm dbh should be retained and protected as a matter of urgency. Not only do these provide the best opportunity to develop the large hollows required by many species they also provide more flowers, fruit, nectar and seed along with nesting opportunities for large birds such as raptors. At this stage of the harvesting cycles across coastal NSW all remaining large trees are part of a limited resource and are critical for many threatened species and populations to survive. There is known clear deficit of hollow bearing trees in the forested coastal landscapes of NSW.*

The most relevant action in the National Recovery Plan for the Swift Parrot *Lathamus discolor* (2011) is under **Manage and protect nesting and foraging habitat.**:

2.1b. *Provide recommendations for the revision and update of forestry prescriptions to reflect the most recent habitat information available in Victoria and New South Wales*

DSE and OEH are identified to provide recommendations for revision of prescriptions for Swift Parrots when forestry licence agreements are due for renewal in each state.

It is specified under **Management practices**:

*Where forestry operations continue to occur within foraging habitats on the mainland, logging prescriptions should include the retention of all trees 60cm DBH or greater, together with at least 5 trees per hectare from a mixture of other age classes (30-40cm, 40-50cm and 50-60cm DBH) to ensure continuity of food resources over time.*

The Recovery Plan states in relation to Action 4(c), 'Monitoring the effectiveness of management prescriptions in conserving habitat in production forests', that:

*In NSW detailed recommendations for improving prescription measures for Swift Parrot habitat have been provided repeatedly for inclusion during threatened species license reviews. However this information, including published scientific information, has not been accounted for in any prescriptions to date. Limited compliance monitoring of prescriptions is likely to be undertaken as part of a general audit process, however this does not include identifying inadequacies of the prescriptions.*

It is well recognised that it is essential to retain mature trees because of the abundant nectar they provide for a multitude of species, most notably the Critically Endangered Regent Honeyeater and nationally Endangered Swift Parrot, identified as the 7th and 13th most threatened birds in Australia.

The National Recovery Plan for the Swift Parrot *Lathamus discolor* (2011) identifies the loss of mature trees and the abundance of nectar they provide for the Swift Parrot as a major threat, recommending as a prescription "*the retention of all trees 60cm DBH or greater, together with at least 5 trees per hectare from a mixture of other age classes (30-40cm, 40-50cm and 50-60cm DBH) to ensure continuity of food resources over time*".

While largest old hollow-bearing trees are not of much interest to the industry, the recruitment trees and eucalypt feed trees are of the utmost interest as these constitute a high proportion of the remaining large high quality sawlogs. It is therefore not surprising that on public lands the most widespread and frequent breaches found by the EPA and NEFA are the logging of the large mature trees required to be retained as recruitment and/or nectar feed trees. Because these represent the best sawlogs the Forestry Corporation does everything they can to avoid protecting them, either by refusing to select any or by selecting trees that are too small, deformed or damaged to meet requirements. This is also likely to be the case on private lands.

Given the illegal removal of the tens of thousands of mature recruitment and nectar feed trees that has occurred over the past 2 decades, and the severe shortage of large mature trees throughout forests, the retention of all remaining mature trees over 60cm dbh is strongly supported.

**The retention of old trees for the hollows and increased browse, nectar and seeds they provide for wildlife is essential to maintain a range of forest dependent fauna, and thus is a key component of ESFM. To maintain and restore hollow bearing trees in perpetuity it is essential that all trees over 100cm diameter be retained and that as a minimum 10 healthy trees per hectare 60-100 cm diameter and 15 trees 20-60cm diameter be retained per hectare. Where these are not available the next largest trees should be retained.**

## 1.7. Protecting Water Values

Headwater streams are of overwhelming importance for catchment health as this is where most of the interaction between the terrestrial and aquatic realms occurs. The science is that we should be establishing buffers at least 30m wide around these headwater streams.

The riparian zone is the interface between a stream (and other waterbodies) and land through groundwater, subsurface flows and flooding. The riparian zone can be considered to encompass the entire extent of a stream's floodplain. Riparian vegetation has a direct influence on streams and is influenced by streams.

Hansen *et. al.* (2010) note:

*The riparian zone (riparia) is the interface between aquatic and terrestrial environments (Naiman and Décamps, 1997) and it mediates the flow of energy, and physical and biotic vectors between the two (Lake, 2005, Naiman et al., 2005). Consequently, riparia are often environments of exceptionally high diversity. The importance of intact riparian zones is universally acknowledged as critical to aquatic-terrestrial ecosystem function and ultimately, to waterway health.*

Riparian vegetation is enhanced by increased soil moisture, increased humidity and nutrients from flood events. They provide resources for a broad range of fauna, especially during droughts. Numerous species are primarily associated with riparian habitats for at least part of their life-cycles, this includes a multitude of plants and invertebrates, most frogs and tortoises, some lizards and birds, and a few mammals (i.e. Platypus, Water Rat and Fishing Bat). Riparian vegetation also regulates the health and functioning of aquatic ecosystems, is the basis of aquatic food chains in upper catchments, and provide the branches and logs that structure many instream habitats for numerous aquatic invertebrates and many fish.

The health of streams is directly related to the health and functioning of riparian vegetation. Riparian buffers serve several functions:

- shading of streams and minimising fluctuations in water temperatures
- reducing the volumes of overland flows entering streams
- trapping sediments and associated pollutants moving from upslope towards streams
- maintenance of stable stream banks and channels;
- providing wood, leaf litter, fruits, flowers, insects and other resource inputs to streams;
- maintenance of habitat requirements for many aquatic and terrestrial species; and,
- provide corridors for the movement of a suite of terrestrial species.

Price and Tubman (2007) identify that riparian vegetation provides many ecosystem services, including:

- ☐ *trap sediment, nutrients and other contaminants before they reach the waterway and reduce water quality for downstream users,*
- ☐ *lower water tables,*
- ☐ *reduce rates of bank erosion and loss of valuable land,*
- ☐ *control nuisance aquatic plants through shading,*
- ☐ *help ensure healthy stream ecosystems,*
- ☐ *provide a source of food and habitat for stream animals,*
- ☐ *provide an important location for conservation and movement of wildlife,*
- ☐ *help to maintain agricultural productivity and support mixed enterprises,*
- ☐ *provide recreation and maintain aesthetically pleasing landscapes, and*
- ☐ *provide cultural and spiritual enrichment for people.*

The key threatening process declaration under the *Fisheries Management Act 1994* for 'degradation of native riparian vegetation along New South Wales water courses' states:

*1. Riparian vegetation refers to the vegetation fringing water courses and can be defined as any vegetation on land which adjoins, directly influences, or is influenced by a body of water. Riparian habitats thus include land immediately alongside large and small creeks and rivers, including the river bank itself; gullies and dips that sometimes run with surface water; areas around lakes; wetlands on river floodplains that interact with the river in times of flood.*

...

- 4. Degradation of riparian vegetation has a major influence on stream ecosystems by;*
- *Increasing the amount of sediment and nutrients reaching streams as runoff, and increasing light penetration of the water body. These inputs have the combined effect of smothering benthic communities and increasing harmful algal growth.*
  - *Reducing the inputs of organic carbon, via leaves, twigs, and branches. Terrestrially derived carbon inputs are the major energy source in most stream ecosystems.*
  - *Reducing the amount of large woody debris entering the aquatic ecosystem and thereby negatively impacting on habitat and spawning sites of several vulnerable and endangered species listed under the Fisheries Management Act, 1994.*
  - *Destabilising river banks.*
  - *Reducing the amount of overhanging riparian vegetation resulting in a loss of shade and shelter for fish.*

Riparian land is „any land which adjoins, directly influences, or is influenced by a body of water“, where the body of water could be a stream (permanent or intermittent), river, lake, or wetland.

Price and Tubman (2007) recognise:

*Riparian land is important because it is often the most fertile and productive part of the landscape, in terms of both agricultural production and natural ecosystems. It often has deeper and better quality soils than the surrounding hill slopes due to past erosion and river*



*deposition and, because of its position lower in the landscape, often retains moisture over a longer period.*

Riparian vegetation only represents a small portion of the landscape, yet is of the utmost importance in maintaining terrestrial and aquatic biodiversity. Many species of plants and animals only occur, or are in far greater abundance, in riparian areas, with their importance increasing during dry periods (Belsky et. al. 1999, Burrows 2000, Jansen and Robertson 2001, Allan 2004, Price and Tubman 2007, Martin and McIntyre 2007, Martin 2010). As noted by Burrows (2000):

*Although they occupy only a relatively small percentage of land area, riparian zones play a disproportionately important role in the overall environment. Per unit area, riparian zones have considerably higher plant and animal biomass and diversity, are more structurally and floristically diverse, provide critical refuge habitats during dry periods and buffer waterways and downstream environments from the effects of surrounding environmental conditions and land uses.*

Price and Tubman (2007) also recognise that:

*... vegetation on riparian land regulates in-stream primary production through shading (reduced light and water temperature); supplies energy and nutrients (in the form of litter, fruits, terrestrial arthropods and other organic matter) essential to aquatic organisms; and provides essential aquatic habitat by way of large pieces of wood that fall into the stream and through root-protection of undercut banks.*

Kauffman and Krueger (1984) observe:

*Riparian vegetation produces the bulk of the detritus that provides up to 90% of the organic matter necessary to support headwater stream communities (Cummins and Spengler 1978). In these tributaries of forest ecosystems 99% of the stream energy input may be imported from bordering riparian vegetation (i.e., it is heterotrophic) and only 1% derived from stream photosynthesis by attached algae (periphyten) and mosses (Cummins 1974). Berner (in Kennedy 1977) found that even in large streams such as the Missouri River, 54% of the organic matter ingested by fish is of terrestrial origin.*

Belsky et. al. (1999) consider:

*Rooted streamside plants retard streambank erosion, filter sediments out of the water, build up and stabilize streambanks and streambeds, and provide shade, food, and nutrients for aquatic and riparian species ... Healthy riparian areas also act as giant sponges during flood events, raising water tables and maintaining a source of streamwater during dry seasons. The result is a more stable streamflow throughout the year...*

Burrows (2000) cites a study within the Burdekin catchment that found the riparian zones to contain twice as many bird species than adjacent woodlands, noting:

*Nearly one-third of the bird species were either found in greater abundance in the riparian systems or were only found in riparian systems. Several mammal and reptile species and most amphibian species were also dependent on the riparian zone, not being found in adjacent woodlands.*

As noted by Allan (2004) there have already been profound changes to hydrology of many catchments:

*Geomorphological changes brought about by multiple human activities likely have produced lasting, complex, and often unappreciated changes in physical structure and hydrology of*

river systems. Landscape changes that occurred within a few decades of European settlement of New South Wales, Australia, including clearance of riparian and floodplain vegetation and draining of swamps, have fundamentally altered river structure throughout virtually the entire Bega catchment (Brierley et al. 1999). Extensive habitat transformation has resulted, including channel widening and infilling of pools in lowland sections and incision of head-water channels owing to more efficient downstream water conveyance and down-stream export of sediments. Overall structural complexity has been reduced and lateral connectivity is largely lost in middle reaches but is now increased in the lowlands.

Hansen et. al. (2010) consider”

*Disturbance and modifications to catchments through clearing vegetation for agriculture and grazing of livestock have resulted in extensive degradation of riparian zones and their adjacent waterbodies. This is predominantly through increased transfer of nutrients, sediment and pollutants into streams, exacerbated bed and bank erosion, and loss of in-stream and terrestrial biodiversity via degradation of riparian and aquatic vegetation and loss of important habitat structure such as large wood.*

From their review of the importance of the riparian zone to freshwater fish, Pusey and Arthington (2003) note:

*Given the number and importance of links between riparian and lotic ecosystems, it is not surprising that spatial and temporal variation in fish assemblage composition and characteristics (i.e. species richness, abundance, biomass) have been linked to variation in riparian cover ... or that fish communities are adversely affected by riparian destruction and recover only when riparian integrity is re-established ...*

Pusey and Arthington (2003) identify a large variety of known and potential impacts on fish as a consequence of changes to riparian vegetation, summarising in part that:

*Impacts associated with changes in light quality range from increased egg and larval mortality due to increased ultraviolet (UV) B irradiation and a decreased ability to discriminate between potential mates to increased conspicuousness to predators. ... The interception of terrestrial sediments and nutrients by the riparian zone has important consequences for stream fish, maintaining habitat structure, water clarity and food-web structure. Coarse organic matter donated to the aquatic environment by the riparian zones has a large range of influences on stream habitat, which, in turn, affect biodiversity and a range of process, such as fish reproduction and predation. Terrestrial matter is also consumed directly by fish and may be a very important source of energy in some Australian systems and under certain circumstances.*

Martin (2010) identifies that:

*...local riparian habitat characteristics significantly affected the relative abundance of over 80% of bird species’ ... local riparian habitat condition as a result of grazing and tree clearing was the primary determinant of bird species composition and abundance. Restoring trees along cleared riparian habitat will result in a dramatic increase in bird species richness, relative abundance and composition.*

Allan (2004) summarises some of the consequences of the degradation and loss of riparian vegetation:

*Wherever agriculture or other anthropogenic activity extends to the stream margin and natural riparian forest is removed, streams are usually warmer during summer and receive*

*fewer energy inputs as leaf litter, and primary production usually increases (Quinn 2000). Bank stability may decrease, ... and the amount of large wood in the stream declines markedly (Johnson et al. 2003). Stable wood substrate in streams performs multiple functions, influencing channel features and local flow and habitat and providing cover for fish, perching habitat for invertebrates, and a substrate for biofilm and algal colonization (Gregory et al. 2003). Its absence can have a profound influence ...*

## Widths of Buffers

Hansen et. al. (2010) recognise “*Maximising lateral and longitudinal extent of intact riparian zones, starting in the headwaters, provides the best protection for the waterway*”. There is no maximum width for riparian buffers, though there are minimum widths below which the likelihood of significant impacts should be considered unacceptable.

Regrettably, while there have been a variety of studies that help inform the design of riparian buffers, there has been insufficient studies to assess the effectiveness of various buffer widths in protecting various values in Australia. From their review of the scientific literature Hansen et. al. (2010) concluded that research “*is inadequate and thus hinders development of meaningful management guidelines for maintaining or restoring aquatic-terrestrial ecosystems*”, lamenting “*the opportunities to gain new information from existing management programs are frequently overlooked*”. Given that NSW Government agencies espouse “adaptive management”, the failure to rigorously assess the effectiveness of buffer strips in over 40 years since the Standard Erosion Guidelines were first adopted is reprehensible.

Unfortunately, because logging has been constrained in riparian zones in the past they are now sought after for logging by the timber industry. Management of riparian zones is therefore a political issue. Ecological requirements are usually severely compromised by the quest for resources.

It is along the smallest streams and drainage lines where most of the interaction between terrestrial and aquatic environments occurs. Small headwater streams generally drain catchments smaller than two square kilometres and can constitute over 75% of the stream length in a drainage basin (Barmuta et. al. 2009).

Lowe and Likens (2005) consider:

*Everywhere on Earth, streams and rivers occur in hierarchical networks resembling the branching pattern of a tree, with smaller branches joining to form larger branches as water travels from uplands to lakes, estuaries, and seas. The finest branches of these networks, beginning where water flowing overland first coalesces to form a discernible channel, are called headwater streams. ... because of their small size, these streams are often missing from maps that guide the management of natural resources.*

...

*There is growing evidence that the water quality, biodiversity, and ecological health of freshwater systems depend on functions provided by headwater streams, which are similar in their importance to the fine branches of the human respiratory system in the lung.*

...

*Headwaters are a source of life. They are critical habitat for rare and endangered freshwater species, and guardians of many downstream resources and ecosystem services on which humans rely ...*

Small headwater streams are where most of the inputs of energy, sediments, nutrients and pollutants from the adjacent terrestrial environment occurs. These streams are often ephemeral or intermittently flow, yet they can harbour endemic invertebrates - many with highly restricted distributions (Barmuta et. al. 2009).

Barmuta et. al. (2009) consider:

*For forested headwaters in upland areas, the streams tend to be steep, with a stair-step longitudinal profile, and the catchments are subject to unpredictable land-slips or debris flows. Hydrologically, the permanent streams tend to derive a greater proportion of their modal flows from groundwater than downstream segments, and they tend to be shallow with slow water velocities (Gomi et al. 2002). Because of their small size and large contact with the adjacent terrestrial habitat, flows are responsive to runoff events ...*

...

*In forested areas, the riparian vegetation usually forms a closed canopy, and most of the energy for the in-stream food web is provided by allochthonously-derived inputs of leaf litter (often termed CPOM: coarse particulate organic matter), and leaching of this material yields large quantities of dissolved organic matter (DOM) which can be augmented by direct inputs from interflow, groundwater or overland flow. The DOM pool can be up to 10 times greater than the pool of particulate organic matter and it provides energy and nutrients to in-stream biofilms that form the basal food resource for many invertebrate consumers ...*

Hansen et. al. (2010) state:

*The best opportunity for mitigation of catchment-scale disturbances is by the protection or rehabilitation of headwater systems due to their demonstrated capacity for greatest regulation of water quality and highest contribution to regional biodiversity".*

...

*Erosion in headwater areas makes a disproportionately high contribution to waterway sedimentation and elevated nutrient levels (Lowe and Likens, 2005, Naiman et al., 2005). Ephemeral streams also contribute large amounts sediment and nutrients that are mobilised during storm events (Wenger, 1999, Fisher et al., 2004)*

Davies and Nelson (1993) note that "the role of first-order streams in sediment transport from hillslopes experiencing accelerated erosion has long been recognised". concluding that "enhanced fine sediment movement in streams as a result of logging is most likely to occur owing to disturbance of headwater stream channels".

Croke and Hairsine (1995) note "in general it is agreed that buffer strips should extend to the springhead or runoff confluence point of any sub-catchment and should be well upstream of any existing channel or streambed, since flow will occur at a higher point in the catchment once the forest has been cleared."

Despite the headwaters of catchments warranting the greatest protection, in current practice buffer strips along streams increase in size with stream size. Bren (1999) notes that the problem with this is that "compared to more rigorous methods this under-protects the stream head, but overprotects divergent areas downstream. A method based on a constant ratio of upslope contributing area to buffer area gave the widest buffers at the stream head and buffers of diminishing width as one moved downstream.". Bren notes that having relatively wider buffers for the smaller headwater streams "makes sense hydrologically but is probably politically unacceptable."

Munks (1996) reviewed the available literature to recommend buffer widths for various functions.

**Munks (1996) Recommended buffer widths for various functions of riparian vegetation**

Function of the Riparian Vegetation	Recommended Buffer Width (from edge of bank)
Water Quality, Sediment, Pollutants etc.	20-50m (streams) 40-100m (rivers)
Bank Stabilisation	10 m + (rivers and streams)
Provision of habitat for terrestrial animals	50-60 m (rivers)
Provision of food, habitat and protection of stream fauna	30-100 m (streams)

Based on her review Munks (1996) recommend minimum buffer widths for streams.

**Table 3.5. Munks (1996) recommended minimum buffer widths for streams:**

Type of River or Stream	Minimum width from stream bank*
Main Rivers	40 m
Creeks and streams from the point where their catchment exceeds 100 ha	30 m
Small streams with a catchment of 50 to 100 ha	30-50 m
Small streams, tributaries, gully and drainage lines which only carry surface water during periods of heavy rainfall	30 m

\* If the slope of adjacent land running down to the stream is greater than 10%, the recommended width is increased to 50m.

Munks (1996) also considers that “adequate widths of riparian vegetation for fauna protection needs to be species-specific.”

Hansen *et. al.* (2010) undertook a meta-analysis of >200 riparian studies and recommended riparian buffer widths of between 30 and 200 m dependant on land use intensity and the management objective. Hansen *et. al.* (2010) considered forestry operations and grazing at low stocking rates (<5 Dry Sheep Equivalents/ha/annum all stock) as being relatively low impact. Though the impacts of logging operations vary with the logging intensity, slopes and soils.

**Hansen *et. al.* (2010) Minimum width recommendations for Victorian riparian zones based upon available scientific literature and adjusted using expert opinion, where appropriate, to account for known differences between Victorian and international systems. All widths are in metres.**

Landscape context /Management Objective	Land Use Intensity High	Land Use Intensity Moderate	Land Use Intensity Low	Wetland/lowland floodplain/off-stream water bodies	Steep catchments/cleared hillslopes/low order streams
Improve water quality	60	45	30	120	40
Moderate stream temperatures	95	65	35	40	35
Provide food and resources	95	65	35	40	35
Improve in-stream biodiversity	100	70	40	Variable*	40



<b>Improve terrestrial biodiversity</b>	200	150	100	Variable*	200
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\* Variability in width is related to the lateral extent of hydrological connectivity and thus, any recommendation will be site specific.

In forestry planning stream buffers are usually applied to act as sediment and nutrient filters for subsurface and overland flows (i.e. Barling and Moore 1994). They are more effective for removing sediment than nutrients from the flow and are more effective at removing coarse rather than fine sediments (i.e. Barling and Moore 1994). They are also most effective when the flow is shallow, slow, and enters the strip uniformly along its length (i.e. Barling and Moore 1994). Barling and Moore (1994) note that *“in hilly terrain flow rapidly concentrates, producing higher flow velocities and larger flow depths that can rapidly submerge the vegetation and significantly reduce the effectiveness of the filter strip”*.

Croke and Hairsine (1995) categorised streamside buffers as Streamside Reserves (no logging or machinery disturbance) and Filter Strips (logging, but no machinery disturbance), and made recommendations for their minimum widths along streams and around wetlands based primarily on controlling overland flows of sediments. All their buffers are classed as Streamside Reserves except for those on drainage lines.

**Table 3.6. Croke and Hairsine’s (1995) recommended “Minimum Streamside Reserve and Filter Strip Widths according to stream type”**

Type of River or Stream	Minimum widths
Rivers, Lakes and Streams used for water supply	100 m
Creeks and streams from the point where their catchment exceeds 100 ha	40 m
Small streams with a catchment less than 100 ha	30 m
Temporary streams flowing more than 1 in 5 years and carries water for some time (weeks) after rainfall.	20 m
Drainage lines carrying water only during or immediately (hours, days) after rainfall	10 m
Permanent springs, swampy ground, wetlands and bodies of standing water	30 m

Croke and Hairsine (1995) note that Streamside Reserves must be:

*“extended beyond the minimum widths wherever necessary according to a field assessment of the size and flow of the stream or spring, the size and nature of the soak, swampy ground or body of standing water; the nature of the surrounding topography and soil type, the intensity and magnitude of the harvesting operation; the riparian habitat value; and the proximity and physical design of any water supply take-off and distribution system.”*

Croke and Hairsine consider that extensions of Streamside Reserve widths must *“be determined according to soil type, hazard class slope, and other climatic and geomorphic variables relevant to the region”*.

Croke and Hairsine (1995) also emphasise that *“It is crucial when defining buffer strips in the field that all sources of runoff generation are included within the buffer strip zone. It is essential to incorporate the ‘saturated zone’, which is the area along the stream or drainage line that is permanently saturated (e.g. swampy ground) or becomes saturated (e.g. seepage area) with the onset of rain”*. They

consider that “this is recognisable through the existence of saturated soil or presence of a vegetation associated with frequently saturated soil”.

The PNF Code gives the following buffers:

**Table F: Riparian exclusion and riparian buffer zones**

Drainage feature	Riparian exclusion zone distance from drainage feature	Riparian buffer zone distance beyond riparian exclusion zone
Mapped first-order streams	5 metres	10 metres
Mapped second-order streams	5 metres	20 metres
Mapped third-order or higher streams	5 metres	30 metres
Prescribed Streams	20 metres	15 metres

PNF logging operations are excluded from riparian exclusion zones, though modified logging is allowed in riparian buffer zones. Machinery exclusion zones must be applied to all unmapped drainage lines, though they can be fully logged. Forest operations must not occur in any wetland or within 20 metres of any wetland.

These requirements are vastly inferior to those applied to public lands in the Environment Protection Licence, which for the past 20 years has required logging to be excluded from filter strips, according to:

**EPL’s 1999 minimum filter strip width for mapped and unmapped drainage lines, prescribed streams and watercourses in public native forests (metres - measured along the ground surface).**

Stream Order	Inherent Hazard Level 1	Inherent Hazard Level 2	Inherent Hazard Level 3
Unmapped	10	10	15
1st order	10	15	20
2nd order	15	20	25
3rd order or greater	20	25	30

**EPL’s 1999 minimum filter strip width for mapped and unmapped wetlands and swamps in native forests (metres - measures along the ground surface).**

	Total Area of Wetlands or Swamps (ha)	
	0.01 - 0.5 ha	Greater than 0.5 ha
Wetlands or Swamps	10	40

In May 2004 the Forestry Corporation was successful in getting the Environment Protection Licence amended to have the effect of excluding “non-scheduled” forestry operations from requiring

licences. Since then the Forestry Corporation have been refusing to obtain licences for over 90% of their logging operations, meaning they are no longer subject to the EPLs. This was done particularly to allow riparian buffers to unmapped streams to be logged in most operations. Though the Forestry Corporations desires were increasingly frustrated by the Fisheries Licence requirement to maintain 10m buffers on unmapped streams within 100km upstream of threatened fish (Class 2 Aquatic Habitat).

For north east NSW the new rules are that most headwater streams in catchments less than 20ha will have buffers reduced from mostly 10m to 5m (except where it is Class 1 Aquatic Habitat ). Class 1 Aquatic habitat will be mapped - it is currently defined as having a threatened fish recorded within 2km upstream or 5km downstream of the site of the proposed works.

While the EPL riparian buffers are theoretically minimums, in practice they usually become maximums. There is never any attempt to expand them in particularly fragile and vulnerable catchments as identified as necessary by numerous authors (i.e. Croke and Hairsine 1995).

The riparian buffer widths of 0-5m applied by the PNF Code for unmapped, 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order streams are significantly less than the 10-20m required by the EPL for public lands, the 30-50m identified by Munks (1996) for small streams, tributaries, gully and drainage lines in catchments less than 100 ha, or the 35-40m (up to 200m to improve terrestrial biodiversity) identified by Hansen *et al.* (2010) for steep catchments and low order streams, or even the 20-30m for erosion control identified by Croke and Hairsine (1995) for temporary and small streams in catchments less than 100ha. Similarly the 20m buffers for wetlands are significantly less than the 10-40m buffers identified for public lands.

Stream mapping from aerial photographs does not identify many smaller streams, and some larger ones, particularly in steeper forested landscapes – these are the unmapped drainage lines referenced by the EPL. These constitute a significant proportion of the headwater streams identified as being particularly important for catchment health. The EPL requires the exclusion of logging from within 10 metres, and the exclusion of machinery from within 5 metres, of unmapped drainage lines. An additional 10 m wide protection zone is applied in which machinery disturbance is meant to be minimised. The Fisheries Licence also protects these in the vicinity of records of threatened fish, when Fisheries bother to report their presence to the Forestry Corporation. The PNF Codes failure to protect them is extremely poor practice.

## **EPA Inaction**

Not only are the protections for streams and wetlands on private lands pathetic, they are often poorly applied, as identified in PNF Case Studies 3.2 and 3.3.

At Tyalgum (Case Study 3.2) a neighbour first complained in September 2013 about clearing of riparian vegetation along a major creek (this was by the same owner but outside the PVP area). No action was taken. Within 2 months a first order stream had been filled in for a house site, and within the PVP area a steep undrained access road constructed without approval on a Crown Road Reserve and numerous other areas of riparian vegetation cleared before the Office of Water investigated and stopped works. By this time significant sedimentation of another first order stream, including on a neighbour's property, and pollution of a major creek was occurring.

It was left up to Tweed Shire Council to take regulatory action, issuing 2 x \$1500 PINs for filling the first order stream and polluting the creek, while also requiring remediation. In April 2015 the OoW

issued a Closeout Report, though the pollution continued. Councillors were told that they couldn't proceed with prosecution because the state agencies had signed off of the clean-up notices, causing the Tweed Mayor to state in frustration that *"any reasonable person"* could see the clean-up was inadequate as *"there's still a metre of mud there"*. exclaiming this developer *"is getting off scot free despite the destruction of the landscape, we're talking half a great big hillside he's moved and pushed into the creek"*.

For the second time in March 2017 the landowner cleared vegetation and constructed another undrained access road on a Crown Road Reserve to the north-west without consent and into the , PVP/FOP area. This time it caused pollution of another 3 neighbour's properties. Tweed Shire Council issued a stop work order on Wednesday 15th March 2017 after viewing significant erosion, though the works continued. Tweed Council is currently expecting criminal proceedings in the Land and Environment Court to be dealt with in the early part of 2019.

On the 9 May 2017 the EPA finally inspected the FOP area, commenting on the poor drainage and active erosion still occurring on the access road the OoW had signed off on 2 years earlier. This time issuing a Corrective Action for 2 undrained snig tracks from logging in 2016 (before the FOP was approved) and *"several road causeway crossings that were not stable and without approach drainage"*.

On 26 July 2017 the EPA again visited to provide regulatory extension advice. The inspection included an assessment of 300m of a new access road within the FOP area finding *"No drainage had been installed and there were four (4) crossings of drainage features, one a 1st order stream and the others unmapped. They were all considered unstable due to the amount of bladed soil present on the crossing surface or in the drainage feature"*. They also found that spoil from the road and 2 trees had been pushed into a riparian exclusion area. It was also noted that the snig tracks identified for rectification 2 months earlier still had not had the required drainage installed. So the EPA simply issued another Corrective Action, including rehabilitating and stabilising 4 stream crossings, installing effective road drainage, removing tree debris from riparian exclusion zone, and removing or stabilising soil deposits within riparian exclusion zone.

At the request of the neighbour NEFA visited the site on 9 September 2017 to ascertain the presence of threatened species by call playback from a road reserve. In the process we identified that there had been extensive unapproved works within Tweed Council's Environmental Zones and for the third time unapproved roadworks in a Crown Road Reserve. We also observed that there had been extensive works within unmapped streams, including pushing large amounts of fill into a stream for a crossing, that the main road had inadequate drainage and that a steep snig track had no drainage.

On 19 September 2017 the EPA inspected our complaints, though rather than assessing the extensive logging area they limited their assessment to the small area subject to NEFA's complaints. The breaches they identified included trees felled across streams in multiple locations, a log dump constructed too close to a stream, 5 inadequately drained snig tracks and some 1.2 km of the main access road inadequately drained. Yet again they only issued Corrective Actions, covering the small area they had inspected.

On 21 September 2017 Council unanimously resolved to seek legal advice for logging in the Environment Zones, *work with relevant State and Federal Government compliance agencies to seek a prosecution of the site owners*, and to make *representations in person to the state*

*government to revoke this Private Native Forestry licence including for "waterway pollution ... the unsuitability of the external road network, the significant costs of the extensive compliance actions required, the distress caused in the community, and the ongoing risks of further compliances breaches as evidenced by the significance and similarity of these repeat offences".*

A community assessment in December 2017 identified that significant erosion of the main access road, outside the area assessed by the EPA in September, was still occurring, polluting a creek through the EEC Lowland Rainforest. The EPA again decided not to take regulatory action and on the 23 February 2018 the EPA issued another Corrective Action Request requiring removing soil below a drain outlet and installing sediment control fencing, repair of two drains and the installation of an unspecified number of additional drains on a section of road "as soon as practicable". Once again the community had to do the EPA's job, unfortunately the road had been left to erode for a further 5 months because of the EPA's refusal to undertake a comprehensive assessment back in September. Even then the EPA saw no urgency to repair it.

The obvious problem is that the EPA's inconsequential responses time and time again obviously failed to act as a deterrent. It is apparent that had effective action been taken early on then most of the subsequent breaches could have been avoided. It is assumed that other roads and snig tracks outside the ambit of the EPA's limited assessment are still actively eroding. The EPA are asleep at the wheel.

At Stockyard Creek (Case Study 3.3) the assessment in August 2018 found that snig tracks had been constructed, and numerous trees logged within a wetland, without a buffer zone being applied or marked. Logging was also found to have occurred on the bank of one creek and within the buffer of a second order creek. Kilometres of roads were found to be inadequately drained and eroding. The new owner is still waiting for the EPA response.

**The riparian buffer widths required by the current PNF Code are pathetic and do not have a shred of scientific credibility. The riparian buffer widths of 0-5m applied by the PNF Code for unmapped, 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order streams are significantly less than the 10-20m required by the EPL for public lands, the 30-50m identified by Munks (1996) for small streams, tributaries, gully and drainage lines in catchments less than 100 ha, or the 35-40m (up to 200m to improve terrestrial biodiversity) identified by Hansen *et. al.* (2010) for steep catchments and low order streams, or even the 20-30m for erosion control identified by Croke and Hairsine (1995) for temporary and small streams in catchments less than 100ha. Similarly the 20m buffers for wetlands are significantly less than the 10-40m buffers identified for public lands.**

**If there is an intent to implement the basic principle of ESFM to minimise environmental impacts then buffers need to be implemented on unmapped streams, and logging exclusion areas of at least 20m should be implemented on all unmapped, 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order streams, with these widths progressively increasing in steeper and more erosion prone country up to at least 40m.**

**The EPA response to repeat breaches has been found to be inadequate and ineffective. There is no disincentive for lawbreakers.**



## 1.8. Logging Dieback

Logging Dieback is a growing problem in NSW's coastal forests. It is initiated and spread by logging and needs to be a principle consideration in PNF.

Logging opens up the forest canopy allowing increased light to reach the forest floor, which combined with soil disturbance can allow weeds to proliferate. Particular problems occur in eucalypt forests when lantana (and in some places native vines) proliferate and suppress regeneration, with the altered structure providing perfect habitat for the native bird Bell Miner to multiply and aggressively exclude most other native species. This facilitates outbreaks of sap-sucking insects called psyllids that literally drain the life out of the eucalypts. It is called Bell Miner Associated Dieback (BMAD), though is logging-induced ecosystem collapse.

It was first recognised in the 1940s in the Gosford area. Bird *et. al.* (1975) report Moore (1962) as finding that *"there were more than 150 separate occurrences of variable extent up to 1,500 ha."* For north-east NSW Stone *et. al.* (1995) reported *"More recently, District staff have reported that affected areas are increasing in size and that previously unaffected areas are developing symptoms."*, attributing it to *"the proportion of moist sclerophyll forest being exposed to selective logging is increasing throughout the State"*.

Jurskis and Walmsley (2012) identify the extent of the problem in southern NSW, noting:

*"In 2001 Jurskis and Turner ... recorded observations of eucalypt decline in each coastal drainage system within Bega Valley Shire. Six hours of helicopter survey in 2002 identified 10,000 hectares of declining forest in three coastal regions. In the Eden Region, Jagers (2004) estimated that roughly 20% of about a half a million hectares of forest appeared to be declining and a further 10% consisted of types that are prone to decline, in young stands that were below the age when decline becomes apparent. Limited sampling in the Batemans Bay Region during a drought in 2002 indicated that about 28% of State forests were stressed"*.

Wardell-Johnson *et. al.* (2006) state:

*The severity of the BMAD problem is such that tens of thousands of hectares in north-eastern NSW is currently affected with over 2.5 million hectares considered potentially vulnerable (Ron Billyard pers comm., Nov. 2004). ... BMAD occurs on both public and private land and the area affected is expanding rapidly. The severe impact of this form of forest canopy dieback has profound implications for the conservation of the internationally significant biodiversity of the region.*

In some State Forests over 60% of the eucalypt forests can be affected, for example a 2004 assessment of 23,700 ha of eucalypt forest on the Richmond Range in north-east NSW identified 37% as moderately to severely affected by BMAD and 25% as mildly affected (Stone *et.al.* 2005). At its worst the forest can be reduced to a sea of lantana overtopped by dead and dying eucalypts.

In 2008 the NSW Scientific Committee listed 'Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners' as a Key Threatening Process, noting:

*Broad-scale canopy dieback associated with psyllids and Bell Miners usually occurs in disturbed landscapes, and involves interactions between habitat fragmentation, logging, nutrient enrichment, altered fire regimes and weed-invasion (Wardell-Johnson *et al.* 2006). ... Over-abundant psyllid populations and Bell Miner colonies tend to be initiated in sites with*

*high soil moisture and suitable tree species where tree canopy cover has been reduced by 35 – 65 % and which contain a dense understorey, often of Lantana camara.*

Most recently DPI-Forestry (Silver and Carnegie 2017) used helicopter sketch-mapping to identify 44,777ha of BMAD north from Taree to the Queensland border. This is comprised of 17,005ha on State Forest, 12,822ha on National Park, 1,540 on Crown Land, 12,885ha on private property and 525ha on plantations. Though comparison with other mapping indicates that there is something like double this area affected. Whatever its extent, it is clear that it is a significant and growing problem on private properties.

Despite numerous studies confirming logging as the primary initiator of BMAD, the NSW Government remains in denial about causes and effects so that logging of affected and susceptible stands can continue. As the forests sicken and die so too does the habitat and food for Koalas.

The Forestry Corporation has recently abandoned 5 State Forests (Mt. Lindesay, Donaldson, Unumgar, Bald Knob and Woodenbong), comprising 11,000 ha around Woodenbong in north-east NSW for timber production because of the extent of BMAD and Endangered Ecological Communities (NRC 2016). Of the 7,740ha of eucalypt forests within these areas 35% was conservatively mapped by Silver and Carnegie (2017) as being affected by BMAD. There are 168 Koala records in these forests, of which 61% occur in mapped BMAD areas demonstrating that what was the best Koala habitat is the worst affected.

Monitoring of forest health following logging in 2007 in Mount Lindesay State Forest found that after 6 years logging and burning had increased lantana by 145% and Bell Miners by 104% compared to controls, with 10-20% declines in the canopy health of remaining Koala feed trees such as Grey Gum, Grey Box, and Flooded Gum (Forestry Corporation 2015). In Donaldson State Forest fire and mechanical treatments resulted in 420% increases in lantana and 460% increases in Bell Miners after 8 years (Forestry Corporation 2015).

**Logging induced dieback, also known as Bell Miner Associate Dieback, is being initiated and aggravated by logging. It is ecosystem collapse and the antithesis of ESFM. All forests areas affected by or susceptible to dieback must be identified in PVPs, along with information on severity to allow ongoing monitoring. There needs to be a prohibition on logging affected forests and rehabilitation plans developed and implemented.**

## 2. SOCIAL LICENCE AND MANAGEMENT

Relevant requirements are:

Increase landholder engagement and community confidence in PNF, including enhancing landholder and PNF industry understanding of silviculture and forest management, contemporary business practices and the PNF regulatory framework.

Enhancing landholder knowledge and community acceptance of the PNF industry, including

- The value of sensitive and important environmental assets
- The composition, size and value of the native timber industry and native timber products
- Landholders and the PNF industry awareness of best practice silviculture and forest management, contemporary business practices and the PNF regulatory framework through an effective and consistent extension program.

Logging of native forests has no social licence. The NSW Government needs to overcome its obsession that logging is the only possible use of native forests and begin promoting forests for all their values, while encouraging and facilitating conservation measures.

NEFA considers that forests have numerous non timber values, such as flora and fauna habitat, carbon sequestration and storage, attracting rainfall, regulating stream flows, recreation and spiritual values, that should be considered as part of any assessment of forests. Any fair-dinkum assessment should consider these values and identify all opportunities for landholders, not just forestry, such as conservation covenants, funding for bush rehabilitation, funding for habitat protection (i.e. core Koala habitat), biobanking, stewardship payments, and the potential for carbon credits for avoided emissions. The Government needs to consider stewardship payments and assistance for the protection of high conservation value areas.

The preparation of a Property Vegetation Plan should be regarded as an opportunity to undertake a full assessment of all environmental values and constraints, including undertaking surveys for threatened species, as well as identifying all potential management options. It is the opportunity for landowners to learn about the values of their properties, management options and opportunities for funding assistance.

### 2.1. Obtaining a Social Licence

The claim is made that the intent is to "*Support a socially ... sustainable forest industry in line with ecologically sustainable forest management*" and "*Enhancing ... community acceptance of the PNF industry*".

It is clear that the logging of private native forests has no social licence. The unpublished Forestry and Wood Products report "Community perceptions of Australia's forest, wood and paper industries: implications for social license to operate" surveyed 12,000 people from throughout Australia in 2016 and found.

- *Native forest logging was considered unacceptable by 65% of rural/regional and 70% of urban residents across Australia, and acceptable by 17% of rural and 10% of urban residents. Eleven per cent of rural/regional and 9% of urban residents found this neither*

acceptable or unacceptable, and 8% and 11% respectively were unsure whether it was acceptable.

- 45% felt the forest industry had negative impacts on attractiveness of the local landscape and only 22% that it had positive impacts; agriculture and tourism were viewed as having more positive impacts, and mining somewhat more negative impacts
- 53% felt the industry impacted negatively on local traffic (and 16% positively); similar proportions reported negative impacts on traffic from tourism and mining activities, and 30% from agriculture
- 58% felt the industry had negative impacts on local road quality while 16% felt it had positive impacts; mining was also viewed as having negative impacts, while agriculture and tourism were viewed as having slightly more positive impacts.

The report concludes:

*Views were very strong about unacceptability of native forest harvesting, with most of those who indicated it was unacceptable choosing the response of 'very unacceptable' rather than moderately or slightly unacceptable.*

*The activity of harvesting timber from native forests has very low levels of social license in Australia, both in regions where this activity occurs and in those where it doesn't. Even amongst the groups who have the highest levels of acceptance of this activity (farmers), and in the regions with highest acceptance (mostly those in which there is higher economic dependence on native forest logging), more people find this activity unacceptable than acceptable.*

...

*The activity of harvesting timber from native forests has very low levels of social license in Australia, both in regions where this activity occurs and in those where it doesn't. Even amongst the groups who have the highest levels of acceptance of this activity (farmers), and in the regions with highest acceptance (mostly those in which there is higher economic dependence on native forest logging), more people find this activity unacceptable than acceptable. The similarity of views about logging of native forest with views about mining activities suggests that it is viewed as an activity that is non-renewable or unsustainable, rather than as having some of the positive environmental attributes of actions such as establishing solar or wind farms. The strength of views of many people about native forest harvesting suggests potential that this activity is considered incompatible with values held by many people.*

...

*Native forest harvesting has very low social license, with very few people being at the 'acceptance' level. Many of those who do not find this activity acceptable are likely to be at the blocking or withheld level of social license, rather than the tolerance level, based on the strength of their negative response when asked about acceptability. Even amongst the groups and in the regions with the highest acceptance of this activity, less than 30% find it acceptable and the majority find it unacceptable. Planting trees on good agricultural land for wood and paper production, however, has higher levels of social license: 43% find timber plantations acceptable, and of the 29% who find it unacceptable most do not find it highly unacceptable (instead reporting slight or moderate unacceptability), indicating many are at the 'tolerance' level rather than withholding or blocking social license.*

This perception exists because it is a rapacious industry overseen by blind bureaucracies who just perpetuate and compound concerns by lack of meaningful constraints and poor regulation. The NSW Government agencies refuse to recognise and accept community concerns, instead labelling them as "negative views", "misguided hyperbole" and "fake news", as demonstrated by the NSW Department of Primary Industries (2018):

*The suggestion of government 'promotion of private native forestry' is a call to counter the negative views, 'fake news' and around sustainable native forestry, and promote the industry and timber products as a sustainable, ecologically beneficial and a carbon neutral material the public should use above all others.*

Social licence is something that needs to be earned, it can't be manufactured by a public relations campaign while the root causes are ignored, and often exasperated by further weakening of rules and regulations. One of the most basic problems is the secrecy and lack of public accountability for PNF. It is exempt from all the rules and public accountability applying to other developments on private lands.

The current secrecy surrounding PNF approvals are contrary to the one of the basic principles of ESFM that supposedly underpinning the new Forestry Act "(b) ensuring public participation, provision of information, accountability and transparency in relation to the carrying out of forestry operations". This secrecy has the perverse consequences of undermining the ESFM principle of c) providing incentives for voluntary compliance, capacity building and adoption of best-practice standards, as the only accountability is to the EPA and not affected communities.

The RFA definition of ESFM elaborates:

**Principle 2        Ensure public participation, access to information, accountability and transparency in the delivery of ESFM.**

- Ensure public participation in decision-making processes at local, regional and State and Federal levels.
- Ensure comprehensive, timely and reasonable public access to information.
- Ensure transparency, openness and accountability in decision making processes and performance.

It is clear from our experience that any claims that Private Native Forestry is adequately or competently regulated or that the PNF code achieves the principles of ESFM are plainly false. The minimum standards established by the PNF Code are too minimal to achieve ESFM, this is most apparent by their failure to provide any meaningful protection for threatened species or Endangered Ecological Communities. Theoretically they are meant to provide protection for mapped rainforest and oldgrowth forest, though these are open to review and the regulatory authorities have wrongly remapped significant areas of both. The lack of transparency hinders accountability.

It is abundantly clear that all aspects of PNF are undertaken in a secretive process where no information is publicly provided, even to Local Councils when they have over-lapping responsibilities, this is in direct contravention of 'Principle 2 Ensure public participation, access to information, accountability and transparency in the delivery of ESFM'.

One of the biggest problems NEFA encountered with private land logging at Whian Whian (Pugh 2014, Case Study 3.1) and Tyalgum (Case Study 3.2) was the total secrecy involved. Legally we were not allowed to trespass on private property once we were asked to leave, which created dilemmas at Whian Whian when we knew there were likely to be Koala High Use Trees and



threatened plants along the route of a road that the Forestry Corporation were intending to bulldoze the next day, and the EPA had made it clear they were going to do nothing to stop them. Our survey found 8 Koala High Use Trees, over 60 vulnerable plants and 3 endangered plants on the route.

Though the secrecy became most apparent when we found that the Office of Environment and Heritage, at the request of the Forestry Corporation and EPA, had remapped rainforest on the Whian Whian property to reclassify large areas of the nationally listed Critically Endangered Lowland Rainforest of Subtropical Australia as part of the logging area or cleared land to enable the Forestry Corporation to construct a road through it. We engaged an expert who proved from ground transects and Aerial Photographic Interpretation (API) that it had been wrongly remapped (Pugh 2014, Case Study 3.1.), with obvious major errors that should not have been made by a half-competent API practitioner.

Under DECCW's Old Growth and Rainforest Private Native Forestry assessment protocols a private landowner can request a review of oldgrowth and rainforest mapped in 1998 as part of the Comprehensive Regional Assessment process. A 2010 internal review of DECCW's (now OEH) methodology for remapping oldgrowth forest found it was fundamentally flawed and that a significant amount of the mapped oldgrowth was being wrongly deleted. Webster (2010) found that *"the protocol implementation is working very well for rainforest"*, but that implementation for *"old-growth is highly variable and problematic and has apparently resulted in some areas of old-growth being potentially available for harvest"*. Transect assessments resulted in PNF old-growth classification in 4 out of 5 areas that were not identified by DECCW assessments as being old-growth.

Whian Whian (Case Study 1, Section 3.1.) proved that OEH had still not rectified the manifest deficiencies in their remapping, and that to the contrary, even with state of the art imagery and equipment there was something fundamentally wrong. Despite the comprehensive and detailed evidence we presented (Pugh 2014) the EPA refused to investigate our complaint and when we submitted a freedom of information request (GI(PA) Act) both the EPA and OEH refused to provide any documents on their remapping on the grounds that there was *"a public interest consideration against disclosure of information"* because the remapping of public data by a public agency was *"personal information"* and its release may cause harm to a person.

The curtain of secrecy surrounding PNF is intended to hide what is going on from public view. There is no reason that PNF should not be subject to the same level of assessment and scrutiny applying to all other developments on private land through the Development Application (DA) processes. The lack of any independent scrutiny has enabled the EPA to become a captured agency and encouraged bad practices.

From his review of forestry self-regulation in Tasmania, Prest (2003) considered that it contained insufficient safeguards and *"insufficient measures to counteract the strong incentives to under-report threatened species matters"*, noting that when combined with secrecy provisions:

*the system of self-regulation can create an environment in which external review, evaluation and critique are unwelcome. In such a context, conditions are created in which it is possible, or even expected, for participants to turn a blind eye to breaches of the Act and Code.*

While we supposedly have an independent regulator in NSW, this seems to sum up the situation in NSW. Prest (2003) identifies that there is a danger when the regulator identifies those they are meant to regulate as their "customer" or "client". Our experience at Whian Whian was that the EPA

perceived their role being to facilitate the Forestry Corporation's activities (regardless of the consequences) while regarding the locals who were complaining as the problem. Prest (2003) suggests that *"the institutional solution is to separate roles and responsibilities between the regulator and the service provider, by creating an Office of the Forest Regulator separate to extension services"*.

Prest (2003) also identifies that that *"soft techniques for behaviour change, although vital, must take place within a context of the threat of coercive action to ensure compliance. Threats and inducements must be perceived as real, not a mere bluff"*. The EPA appear unwilling to regulate private forestry, they are a captured agency.

It is considered that as well as effective regulation there needs to be incentives in the form of stewardship payments to protect high conservation value areas (such as core Koala habitat) on private property. To improve regulation of PNF in NSW, Prest (2003) makes a number of recommendations, including:

*offering financial incentives and other inducements for biodiversity conservation and for positive land-management actions to private landholders, in order to overcome existing countervailing incentives to destroy biodiversity.*

NEFA have only taken two audits of private properties, once at Whian Whian in 2013 (Case Study 1, Section 3.1) and once at Tyalgum in 2017 (Case Study 2, Section 3.2), in addition there was an audit of a PNF operation by John Edwards (Case Study 3, Section 3.3), and NEFA has received numerous complaints regarding other PNF operations. The evidence is that there is no meaningful protection for environmental values in PNF operations and that the EPA are neither competent nor effective regulators.

The Forest Operational Plans seen by NEFA are simplistic documents, often just a basemap showing the boundary of the PNF area, with mapped streams, rainforest and oldgrowth provided by EPA (see Case Study 2 for an example). Despite the pretence, there is no identification or assessment of threatened species, Endangered Ecological Communities, highly erodible soils, unmapped streams, Aboriginal or European heritage, proposed roading, Council Environmental Zones, Crown Road Reserves etc. Their extremely poor standard is reflective of their secrecy and therefore lack of public accountability. This is a tokenistic sham assessment, and is not a standard that would be accepted for a Development Application (DA).

PNF operations can involve logging of hundreds of hectares, construction of numerous new roads, and numerous creek crossings, and yet all that is required is a "back-of-the-envelope" plan and a sign off by a then EPA, and now LLS employee. All other major developments on private lands requiring Council approval require a DA, Statement of Environmental Effects, assessments of threatened species and expert assessments where major earthworks are proposed. Most importantly they require public exhibition where affected and concerned people can scrutinize the documents and make submissions.

PNF is often of a far greater extent and of far greater impact than other developments on private land required to be assessed in open and transparent processes with opportunities for public scrutiny.

Currently the contents of PNF plans remain unknown to the public and even Crown Lands and local Government when they have legal responsibility for the protection and management of the lands

covered by the EPA's approval. The EPA don't even refer proposals to affected agencies for their comments.

This is clearly apparent for the Tyalgum property in the Tweed Local Government Area (see PNF Case Study 2) where a significant part of the area covered by both the PVP and PNF approval is identified in the Tweed LEP as Zone 7 (d) Environmental Protection (Scenic/Escarpment) and 7(l) Environmental Protection (Habitat). Though the EPA gave approval to the landowner to log these areas without bothering to consult Council as to the appropriateness of the works proposed or to find out whether Council required any modifications. The EPA refused to even provide Council with a copy of their approval. Similarly the EPA approved roads within the PVP area to be constructed on Crown Road reserves, and for Crown Road reserves to be used for access, without consulting Crown Lands.

The outcomes were that 3.5km of roads were constructed on Crown road reserves without the consent of Crown Lands (and with significant pollution problems and excessively steep sections), and some 18ha of environmental zones were logged without the consent of Council. And the EPA claim it is none of their responsibility. They should never have approved these works in their PVP and PNF approval.

At Whian Whian the Forestry Corporation's refusal to undertake surveys for threatened species and their refusal to voluntarily adopt prescriptions for those that were found, their heavy handed approach of trying to facilitate logging with force rather than dialogue, and the EPA's role in facilitating construction of an illegal road all created and fostered neighbour and community opposition to the operation. What was required was a breather, dialogue with the community and an attempt to achieve a negotiated outcome (all that would have been required was a commitment to undertake surveys and apply prescriptions). Most people involved were prepared to accept a negotiated outcome but instead the Forestry Corporation's belligerent responses inflamed community opposition. This has generated strong antagonism to PNF within the community.

At Tyalgum it was the failure of a range of Government agencies to step in and address what were clearly illegal activities that infuriated neighbours. That the landowner was then allowed to go on repeating similar offences time and time again without any consequences affected more neighbours and similarly inflamed community opposition. The Council was also put off-side by the agencies refusal to take effective action, causing them to develop strong opposition to PNF. An effective regulatory response after the first offence would have stopped the repeat offences and given the community some faith in Government processes.

No PR campaign will instil acceptance of PNF when neighbours and the community are kept in the dark about what is going on and treated with contempt when they raise valid concerns. There needs to be an open and transparent process where neighbours concerns are dealt with sympathetically rather than antagonistically if there is any real attempt to develop a social licence.

**Despite the ESFM principle to "Ensure public participation, access to information, accountability and transparency in the delivery of ESFM", there is no accountability or transparency for PNF operations. This is partially responsible for PNF having no social licence. PNF operations must be subject to the same level of assessment and public scrutiny as all other developments on private land, including the preparation of a Development Application or equivalent assessment. When neighbours raise genuine concerns they must be dealt with fairly, openly and justly, rather than belligerently, if there is a genuine attempt**

**to gain community acceptance. Though most importantly there needs to be a genuine attempt to manage forests on an Ecologically Sustainable basis that protects environment values, including threatened species and streams, and logs in a careful and selective manner.**

## 2.2. Management for All Values and Opportunities

There are problems with most landholder's understanding of the environmental values of the vegetation on their properties which is compounded by their desire to maximise income from their forest. From their survey of PNF contractors Jamax Forest Solutions (2017) found that *"67% of PNF harvesting contractors believed that the majority to vast majority of landowners were only interested in maximising the income from their forest", noting "The survey results highlight that the majority of landowners are not thinking beyond the current harvest and have little or no knowledge of sustainable forest management"*.

NEFA's experiences in dealing with landholders on the Native Vegetation Management Committees showed that for most landholders it was their lack of understanding of environmental values that was the principal problem, rather than antipathy to protecting them. We consider that if they are presented with information about values and rational justifications for why particular management responses are required then they are more likely to accept them.

While most landowners may be willing to learn there are some landowners and contractors who do not care and do not want to know, as shown in Case Studies 3.1 and 3.2. This is where effective regulatory control is essential, though a comprehensive assessment upfront would have dealt with many of the problems that later occurred.

NEFA considers that forests have numerous non timber values, such as flora and fauna habitat, carbon sequestration and storage, attracting rainfall, regulating stream flows, recreation and spiritual values, that should be considered as part of any assessment of forests. Any fair-dinkum assessment should consider these vales and identify all opportunities for landholders such as funding for bush rehabilitation, funding for habitat protection (i.e. core Koala habitat), biobanking, and the potential for carbon credits for avoided emissions.

NEFA considers that the first step in the preparation of a PVP and FOP should be the mapping of areas of environmental significance (i.e. rainforest, oldgrowth, Endangered Ecological Communities, wetlands, stream buffers, rock outcrops, caves and mines, areas of potential Aboriginal significance, heritage items), as well as environmental constraints (steep slopes, areas of mass movement, erodible soils, weed infestations, dieback etc). This needs to be undertaken using both available data, Aerial Photographic Interpretation, and site assessments. It is essential that this include targeted surveys for relevant species requiring prescriptions.

It is also important that it identifies areas proposed for logging, areas for rehabilitation, proposed roads, stream crossings, log dumps and the like.

The current simplistic desk-top process that only identifies mapped streams, oldgrowth and rainforest (i.e. see the FOP in 3.2) is next to useless as it provides no information on most of the values requiring protection. While such a simplistic assessment may help the EPA pretend they have done something it does not satisfy requirements, and does not help the landowner appreciate what it is they are meant to protect and why.

This needs to be a genuine attempt to assist the landowner to identify all areas and species of environmental significance. It needs to be part of a learning process for the landowner that delivers real outcomes. It is no wonder that after the current shoddy assessments that Jamax Forest Solutions (2017) found *"Even though 73% of PNF landowners already have a PNF PVP through the NSW EPA before they meet a harvesting contractor, 78% of landowners understand very little (0-20%) about the PNF requirements"*.

**It is considered that preparation of a Property Vegetation Plan should require a full assessment of all environmental values and constraints, including surveys for threatened species, as well as all potential management options, not just forestry, including funding for bush regeneration, assistance with habitat protection (i.e. core Koala habitat), stewardship payments, biobanking opportunities, funding for avoided carbon emissions, etc. The preparation of a PVP should be treated as an opportunity to inform land owners of the values of their properties and the range of management options, rather than a shoddy desk-top review aimed at promoting the single use of logging.**

### 3. CASE STUDIES

NEFA has only undertaken assessments of two PNF operations at Whian Whian and Tyalgum, and these have been hampered by lack of access and the secrecy surrounding Property Vegetation Plans (PVPs), Forest Operational Plans (FOPs) and relevant documents. Despite these limitations our assessments have revealed a failure to assess and identify environmental values in planning processes and a refusal by the EPA to adequately and comprehensively investigate complaints and take effective regulatory action.

Our findings are reflected in the assessment of Stockyard Creek by John Edwards that also found widespread breaches of the PNF Code of Practice. We have also received numerous complaints from the community regarding PNF operations that verify that the problems we have encountered are common and widespread. We are therefore confident that our findings are representative of widespread problems.

#### 3.1. Case Study 1: PNF Whian Whian Case Study.

NEFA (Pugh 2014) became involved with logging of a private property at Whian Whian (adjacent to the Nightcap National Park) when neighbours tried to have their concerns regarding Koalas addressed. The operation was undertaken by the same Forestry Corporation staff who oversaw logging operations in Royal Camp SF. The forester in charge of the operation, Matt Kinny, had previously accompanied EPA on their searches for Koala scats in August 2012 and July 2013 during EPA investigations of NEFA's reported Koala High Use Areas in compartments 15 and 13 of Royal Camp SF.

At that time logging of private lands is supposedly regulated by the provisions of the Native Vegetation Act 2003. This act prohibits the clearing (including logging) of native vegetation without either development consent or a property vegetation plan. A property vegetation plan was prepared for this property in 2012. A PVP is a voluntary, legally binding agreement between a landholder and the Local Land Services (Catchment Management Authority).



Discussions with Forestry Corporation on 14 September 2013 revealed that they had found evidence of Koalas on the property and were thus applying the Private Native Forestry Code of Practice requirement to retain 10 primary koala food trees and 5 secondary koala food trees per hectare. Forestry Corporation said that to achieve this they were basically excluding most Tallowwoods from logging, with only “a few” proposed for removal. They also stated that they had found 2 Koala high use trees (i.e. with  $\geq 20$  Koala scats under them). For Koala high use trees the Code requires:

*Any tree containing a koala, or any tree beneath which 20 or more koala faecal pellets (scats) are found must be retained, and an exclusion zone of 20 metres must be implemented around each retained tree.*



**Tree found to be Koala high use tree on 14 September (Tallowwood to left of rd), scats shown to FC and EPA, still not accepted as a high use tree and not buffered.**

Concerns that this property is of exceptional value for Koalas and that Koala's were not being adequately protected were highlighted by a brief assessment by NEFA for less than an hour of trees in the vicinity of the boundary on 14 September which located 5 Koala high use trees, none of which had apparently previously been searched. One of the Koala high use trees found had not been previously searched despite having a new road constructed right next to it. The scats at the base of the tree were shown to the Forestry Corporation on the day and to the EPA the next week, though both agencies refused to accept the evidence we showed them.

Aside from their incidental sighting of the 2 Koala high use trees, the Forestry Corporation had undertaken no survey for threatened plants or animals on the property despite it being in next to the Nightcap National Park in one of Australia's recognised biodiversity hotspots with numerous threatened species recorded in the vicinity. With all their experience the Forestry Corporation would have been well aware that there were a large variety of Threatened Species Conservation Act listed threatened plants and animals that were likely to occur on the property, just as NEFA were.

NEFA returned 4 days later to do nocturnal call-playback on the adjacent property, hearing Marbled Frogmouth responding from three valleys on the property, along with a Masked Owl and a Sooty Owl. None of these Vulnerable species had previously been identified by the Forestry Corporation. The PNF Code of Practice required establishment and marking of 20m exclusion areas on all streams in the area for Marbled Frogmouth and effectively increased retention of the largest trees

from 20 per 2 hectares to 30 for the owls. The Forest Operation Plan was required to be amended and the exclusion zones marked in the forest before logging resumed. In addition to the Koala a further 11 threatened fauna species and 3 threatened flora species were identified as likely to occur within the logging area that should also be surveyed for. NEFA wrote to the Ministers for the Environment and Primary Industries asking them to stop logging while surveys by flora and fauna experts were undertaken so all the required prescriptions could be applied.

The adjacent landowners, through whose property the Forestry Corporation had constructed their track and had "Permits to Enter", withdrew access permission. Concerned locals had gathered to force compliance with the landholder's decision. In negotiations to exit through the property, the Forestry Corporation admitted they had not implemented prescriptions for Marbled Frogmouth and forest owls and when forced by protectors to state whether they will in the future, they very reluctantly state "*following alleged identification of species have decided to implement a number of prescriptions*", but refuse to state which ones.

When NEFA (Pugh 2014) learned that the Forestry Corporation were proposing to construct a new road we surveyed the marked route and identified that it passed through, and within 20m of, 8 Koala high use trees (>20 scats), over 60 vulnerable Red Bopple Nut *Hicksbeachia pinnatifolia*, and 3 endangered Slender Marsdenia *Marsdenia longiloba*. Under the PNF code the Koala high use trees and the threatened plants all required 20m exclusion zones to be implemented and marked around them. NEFA wrote to the EPA on the 22 September 2013 to request the immediate and urgent imposition of a Stop Work Order in accordance with Section 37 of the Native Vegetation Act 2003.

The EPA sent a team (including a botanist) in to oversee the Forestry Corporation, work was stopped though the EPA refused to impose a Stop Work Order. They EPA did not bother to check NEFA's records, yet spent 2 days wandering around the proposed route with the Forestry Corporation while they identified a new route. The EPA then left the site to allow the Forestry Corporation to construct their new road.

The EPA team had been transferred from the North Coast Regional Office of DLWC that over a decade earlier Prest (2003) described as having a "*laissez-faire stance of allowing self-assessment ...At its worst, this involved turning a blind eye to the impact of logging under exemption*", which he likened to a "*scenario of 'negotiated non-compliance', a term invented ... to explain where regulator and regulatee come to an unspoken agreement not to apply the legislation to the letter*".

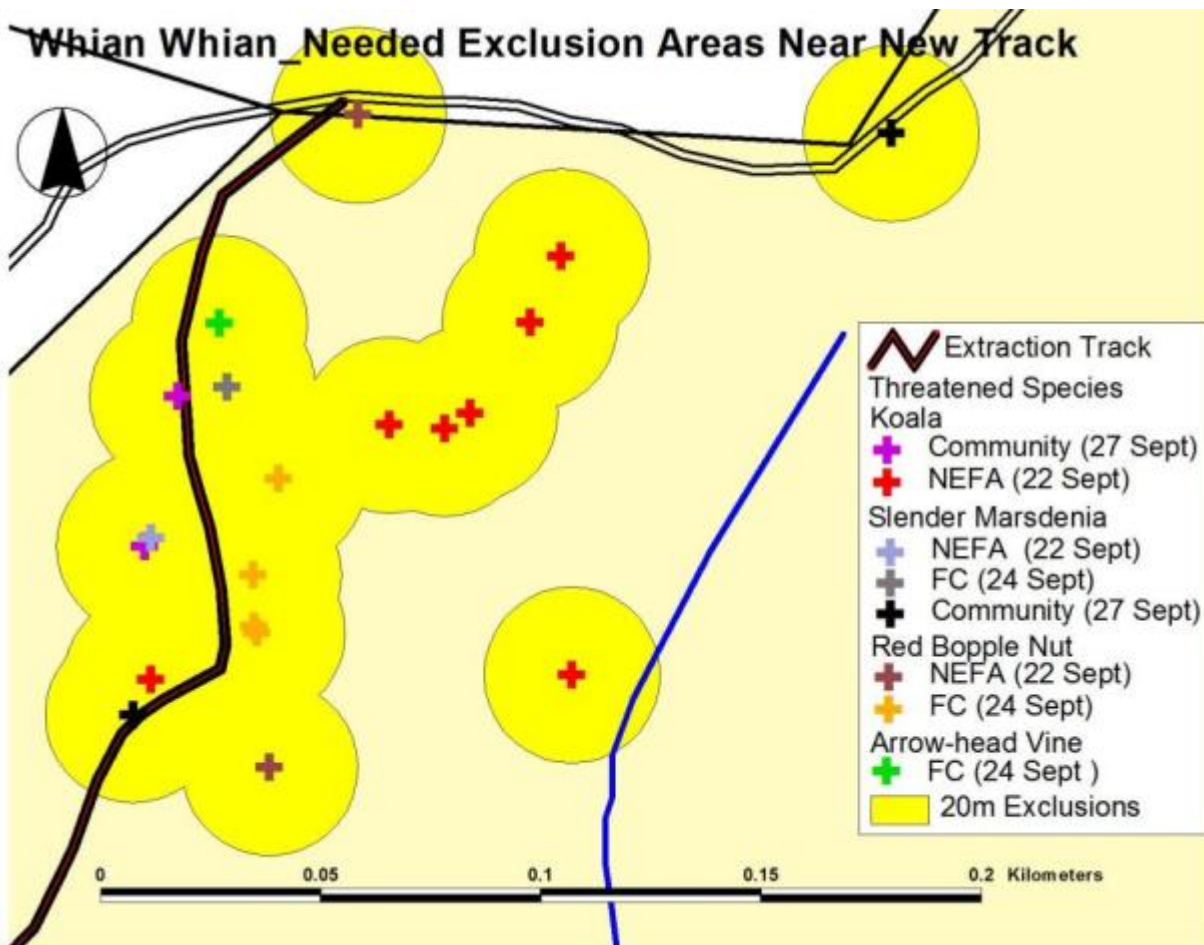
Three days after our request for a Stop Work Order the new track was constructed. Subsequent inspections by NEFA (with botanists) found that the track had been illegally constructed through what should have been 20m exclusion zones for 3 Koala high use trees, 7 endangered Slender Marsdenia, 12 vulnerable Arrow-head Vines, and 8 vulnerable Red Bopple Nuts, most of which had been identified and tagged with pink tape (by either NEFA or the Forestry Corporation) prior to track construction. One of the Koala high use trees that had been identified by the Forestry Corporation in the presence of the EPA had the track constructed within 15m and debris within 12m without its exclusion boundary being marked, one 3.2m from the track had been checked by the Forestry Corporation in the presence of the EPA but had not been identified despite subsequent inspections showing abundant scats, and one had been identified by NEFA but could not be subsequently verified due to scats being removed. Two Slender Marsdenia were killed, one injured and 3 are missing. One Arrow-head Vine later died.

As an outcome of negotiations with the landowners, three days later Community Surveys by community members and volunteer botanists (under the supervision of the FC) commenced, and continue intermittently (due to other commitments) over a weekend. The surveys revealed that the extraction track had passed through 3 endangered Slender Marsdenia (*Marsdenia longiloba*), killing two and leaving the last one injured, the buffer of a Koala high use tree marked by FC, and an unmarked Koala high use tree 4.5m from the extraction track. Across the property multiple records were made of 2 NSW TSC Act Endangered and 3 Vulnerable plant species, and an additional 10 Koala high use trees were located. On the weekend, rainforest expert Dr. Kooyman identified the nationally Critically Endangered “Lowland Rainforest of Subtropical Australia” as occurring in the identified logging area and subjected to roadworks.

During the course of our investigations NEFA, and the community, proved the presence on the property of 6 TSC listed Vulnerable animals: Alberts Lyrebird, Marbled Frogmouth, Sooty Owl, Masked Owl, Koala and Pouched Frog. And 5 threatened plants: two TSC listed Endangered species (*Endiandra muelleri* ssp. *Bracteata*) and Slender Marsdenia (*Marsdenia longiloba*) and three TSC listed Vulnerable species Corokia (*Corokia whiteana*), Red Bopple Nut (*Hicksbeachia pinnatifolia*) and Arrow-head Vine (*Tinospora tinosporoides*). A number of other threatened fauna species are likely to occur.

Along with the community NEFA also identified the presence on the property of 16 Koala high use trees with 20 or more Koala scats beneath them. This large number of high use trees proves that there is an active breeding Koala colony on the property, with evidence of males, females and young, that largely escaped the attention of the Forestry Corporation. There can be no doubt that the property constituted high quality core Koala Habitat but the EPA didn't care.

In total NEFA identified 8 Koala high use trees, 10 Slender Marsdenia, 30 Arrow-head Vines, and 36 Red Bopple Nuts that had forestry operations within what should have been 20m exclusion zones around them had they first been identified. 3 Slender Marsdenia are missing, presumed dead, with another two confirmed dead and one injured. A Red Bopple Nut was injured and an Arrow-head Vine killed. Many more were presumably bulldozed out during road construction or buried under debris. There are also numerous Arrow-head Vines and Red Bopple Nuts within areas of mapped rainforest that were deleted and thus have had their protection removed. After the Community Survey logging was undertaken within what should have been an exclusion zone for at least 2 Slender Marsdenias and 1 Red Bopple Nut in an area adjacent to Nightcap National Park not covered in the Community Survey. A track was constructed within what should have been an exclusion zone for another Koala high use tree. This logging occurred after foresters had been shown these species nearby during the Community Survey and the FC should have been capable of identifying them by themselves.



**MAP:** Threatened species reported by NEFA to EPA on 22 September, species tagged by NEFA on 22 September and/or subsequently tagged by FC on 23-5 September, and species identified in community survey of 27 September. The western Koala high use tree identified in the community survey was previously identified by FC and EPA on 24 September. Plant localities are often for multiple individuals. Included are indicative 20m buffers. Note that the extraction track was constructed through what should have been exclusion zones for many species.

The NSW Recovery Plan for Green-leaved Rose Walnut identifies that “To improve the consideration of the Green-leaved Rose Walnut and the Rusty Rose Walnut in environmental impact assessments for developments and activities:

*A standard minimum survey effort should be undertaken when determining if the Green-leaved Rose Walnut and the Rusty Rose Walnut are present in or near the area of a potential development or activity. The presence of either taxon should require implementation of effective mitigation measures to reduce the impact of any proposed development or activity.*

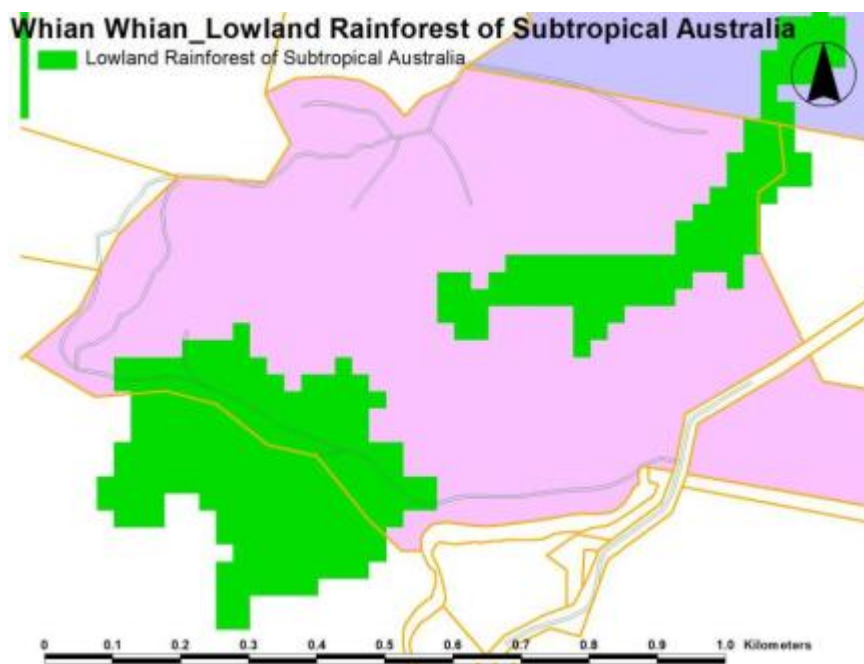
All these species (aside from Pouched Frog) are identified in the Private Native Forestry Code of Practice as requiring exclusion areas or increased tree retention. Disgustingly, the Forestry Corporation, a public entity, were taking advantage of the basic premise of the PNF Code that the prescriptions aimed at reducing logging impacts on select threatened species are only activated where there is a “record” or “site evidence” of the species. Given the PNF Code has no survey requirements the Forestry Corporation was operating on the basis that they would not look before they logged, presumably because they did not want to apply the required prescriptions to reduce impacts on threatened species.



Even after we engaged a recognised expert who identified 3 records of Marbled Frogmouth, and one each of Masked Owl and Sooty Owl on the property, and requested the Ministers to intervene, the Forestry Corporation refused to implement the required prescriptions until grudgingly forced to days later by a community blockade. The Forestry Corporation argued they did not have to implement the PNF prescriptions because our expert records were not on Wildlife Atlas and thus did not constitute a "record" in accordance with the PNF Code.

Similarly both the Forestry Corporation and the EPA refused to accept or recognise NEFA's records of Koala High Use trees, despite the fact that our previous records in Royal Camp SF had been verified by both agencies. The foresters we had exposed at Royal Camp were accusing us of moving Koala scats, from as far away as Coffs Harbour. It was plain to see, for anybody who bothered to look, that there were plenty of fresh scats and it was obviously high quality core Koala habitat.

NEFA review of rainforest mapping showed the road had been constructed through a 12.5ha stand of rainforest mapped in the NSW 1998 Comprehensive Regional Assessment (CRA), that extends across the boundary with the property to the south. The mapping by Flint and Cerese (2010) clearly identified this rainforest as Lowland Rainforest of Subtropical Australia under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). FC, EPA and OEH have no excuse for ignoring this evidence.



**Mapped Lowland Rainforest of Subtropical Australia (from Flint and Cerese 2010)**

The EPA website states:

An approval under the [Native Vegetation Act 2003](#) does not remove the obligation of landholders to obtain approval under the Commonwealth [Environment Protection and Biodiversity Conservation Act 1999](#) (EPBC Act), where necessary. 'Actions' that are likely to have a significant impact on a matter of national environmental significance, such as ... nationally listed threatened species and ecological communities, ... require approval under the EPBC Act. If a person proposing to take an action believes that it might have a significant impact on a matter of national environmental significance, they must refer the

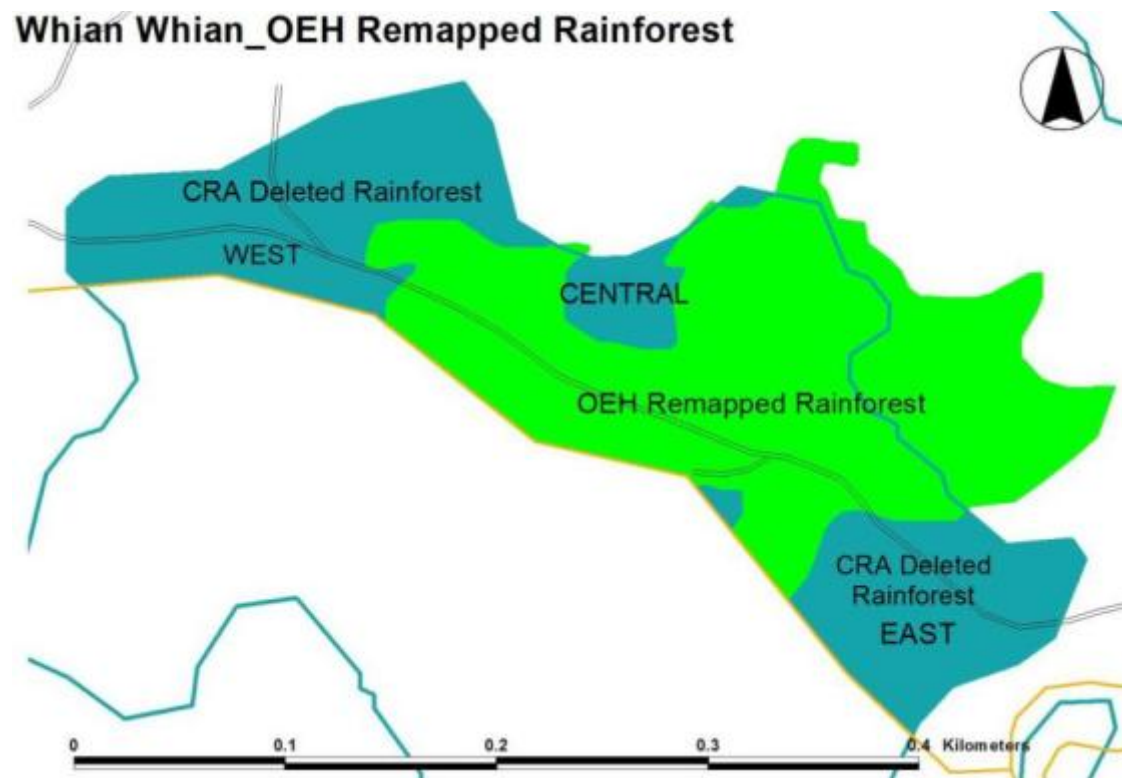


proposal to the Commonwealth [Department of Environment](#) to determine if an approval is required.

This CRA mapped rainforest is taken to be rainforest for Property Vegetation Plans (PVPs) except where disputed by property owners. If the landowner is not happy with the CRA rainforest mapping on their property, the landholder can:

*apply to DECC for an evaluation of the area proposed for private native forest for new rainforest mapping and determination of rainforest. The landholder will need to identify the area in dispute and provide evidence to DECC officers that the area is not rainforest. Evidence could include photographic and logging records, or other disturbance history.*

In May 2012 as part of the preparation of the PVP, the OEH, at the request of the EPA and Forestry Corporation, reviewed the rainforest mapping. In this process they redrew the rainforest boundary. The 4.9 hectares of rainforest mapped on the property in the stand along the road, was remapped as 3.3ha by OEH, with 2.5 ha deleted and 0.9ha added by an extension of the boundary to the north. The deleted rainforest was reassigned either to the loggable area or as cleared land. The FC constructed the main access road through this stand of rainforest for 520m, with this reducing to 250m with the remapping. This road was newly constructed through the deleted rainforest.



MAP: OEH remapping of the CRA mapped rainforest resulted in the deletion of a western, central and eastern patches. Note that most of the stand occurs on the adjacent property (outlined in blue).

In deleting these rainforest patches the Government agencies removed all protection from them and their inhabitants, reallocating the western and central stands for logging and the eastern stand as cleared land.



ABOVE Western patch of rainforest reclassified by OEH as part of the “TPA harvest area” (net logging area)



ABOVE: Central patch of rainforest reclassified by OEH as part of the “TPA harvest area” (net logging area)





ABOVE: Eastern patch of rainforest reclassified by OEH as “cleared”. Note the dominant Red Cedars







Part of a large open area dominated by lantana retained as rainforest by OEH, other areas dominated by weeds (including Camphor Laurel) and wattles appear to have been added as rainforest. The EPA's primary justification for the remapping is that while some mapped rainforest was deleted more was added, giving a net increase in mapped rainforest across the property. The quality of the "rainforest" appears irrelevant.

NEFA engaged an API expert and botanist to remap the rainforest in the vicinity of the access road using Aerial Photographic Interpretation (API). This was done by applying the definition in the PNF Code and the methodology specified in the "Identification of Rainforest, Field Guide" (NRM Field Assessment Guidelines: Rainforest Identification). In accordance with the Field Guide NEFA undertook transects to determine crown separation ratio using two "zig zag transects" (Field Guide 3.2).

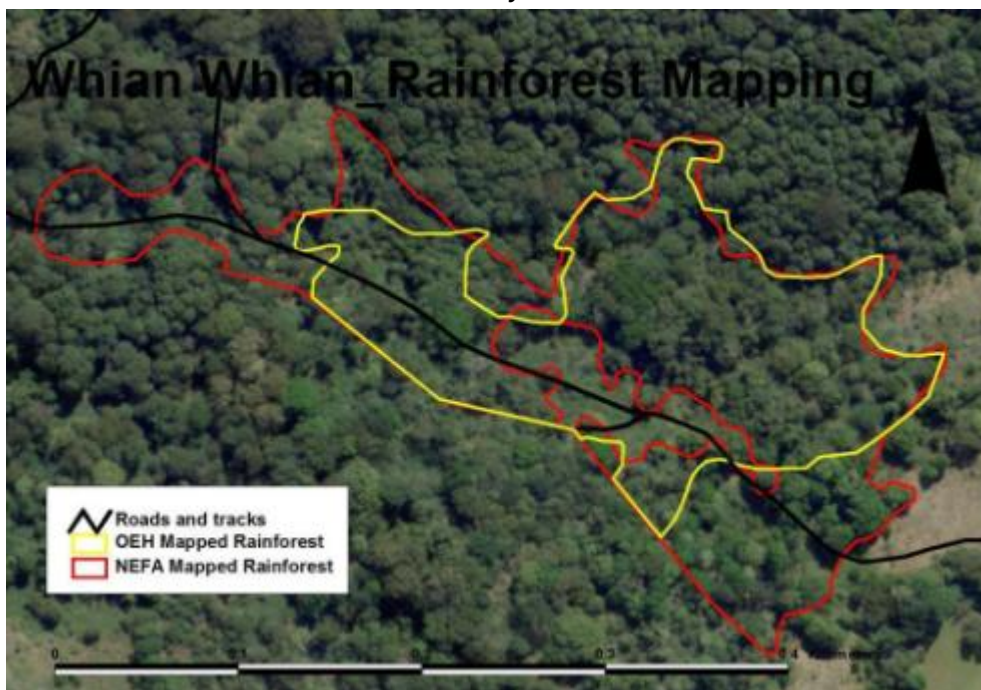
For the east patch a "zig zag transect" (Field Guide 3.2) sampling 12 trees was undertaken. All species on the transect were rainforest species, with 5 *Toona ciliata*, 3 *Grevillea robusta*, 1 *Alphitonia excelsa*, 1 *Elaeocarpus grandis*, 1 *Ficus coronata* and 1 *Acmena ingens*. Tree height varied from 20-30m, with an average of 27m. The mean crown gap is 0.14m and the mean crown width is 8.58m, giving a Crown Separation Ratio for this transect of 0.02. The Crown Cover is thus 78% for this transect.

For the west patch the transect was divided into two sections each side of the road, with "zig zag transects" (Field Guide 3.2) sampling 8 and 9 trees respectively. These were combined into one data set for analysis. All species on the transect were rainforest species, with 3 *Alphitonia excelsa*, 3 *Guioa semiglaucula*, 2 *Diploglottis australis*, 2 *Polyscias murrayi*, 2 *Bridelia excelata*, 1 *Polyscias elegans*, 1 *Endriana pubens*, 1 *Ficus coronata*, 1 *Cryptocarya glaucens* and 1 *Archontophoenix cunninghamiana*. Tree height varied from 15-28m, with an average of 21m. The mean crown gap is

-1.53m and the mean crown width is 7.59m, giving a Crown Separation Ratio for this transect of -0.20. The Crown Cover is thus 126% for this transect.

All three patches, as remapped, are without doubt rainforest and were deleted without justification by OEH. When they remapped this area OEH had state of the art ADS40 digital imagery and a 3D screen available to them. It is unbelievable that any assessment in accordance with the rules could result in such erroneous remapping, particularly as their delineation of the boundaries of mapping polygons and retention of heavily degraded patches does not make sense.

From this process, floristic assessments, and consideration of the criteria, it was clear the deleted rainforest qualified as both the Endangered Ecological Community (EEC) Lowland Rainforest in NSW North Coast and Sydney Basin Bioregion under the NSW Threatened Species Conservation Act, and the Critically Endangered Lowland Rainforest of Subtropical Australia under the *Environment Protection and Biodiversity Conservation Act 1999*.



**Mapping by OEH and NEFA overlaid on aerial photo, note the south eastern patch classed as “cleared” by OEH and the central lantana dominated area classed as non-rainforest by NEFA.**

NEFA presented our detailed evidence to the EPA as part of our audit (Pugh 2014). NEFA requested the PVP and documents relating to the rainforest remapping under the Government Information (Public Access) Act 2009 (GIPA) from both the EPA and OEH though they gave a blanket refusal of every document on the grounds they are “*personal information*” and that their release can “*reasonably be expected to*” “*expose a person to a risk of harm or of serious harassment or serious intimidation*”.

There was a 2 year window of opportunity for the EPA to legally pursue this matter, and they used most of this time up before they responded (Michael Hood 28 September 2015). The EPA refused to consider or investigate our rainforest complaint, instead referring back to the PVP remapping:

*The EPA engaged the Office of Environment and Heritage (OEH) to do an independent review of existing rainforest mapping of the property. This review was done using the agreed and documented rainforest re-mapping protocol and in accordance with the PNF Code*



*definition of rainforest. API and field site verification was completed during 2012. All mapped rainforest was excluded from the approved PNF PVP for the property.*

The EPA did take some action for a Koala high use tree and one endangered plant, noting:

**Two penalty notices issued for unlawful native vegetation clearing**

The most significant findings from our investigation resulted in the EPA issuing two penalty notices to the Forestry Corporation of NSW for breaches of the Private Native Forestry Code of Practice (PNF Code) and ultimately section 12 of the Act. The penalty notices were for \$5,500 each (i.e. \$11,000 total).

We have taken action for the unlawful clearing of native vegetation on two dates. On 25 September 2013 we found that FCNSW conducted forestry operations (snig track construction) in a 20 metre exclusion zone around an identified koala tree (a tree with 20 or more scats beneath it). We also found that on 3 October 2013, FCNSW conducted forestry operations within a 20 metre exclusion zone around a Slender Marsdenia (*Marsdenia longiloba*), an endangered plant species. Two brush box trees were felled within seven metres of the plant, as part of ongoing usage of the snig track.

The EPA had issued the Forestry Corporation with two Penalty Notices (each with a fine of \$5,500) on the 11 September 2015 for constructing their track through what should have been 20m exclusion zones for a Koala High Use Tree and the Endangered vine Slender Marsdenia. They were also issued with an Official Caution for violating buffers of 4 Red Bopple Nuts, with violations of 6 Arrow-head Vine buffers noted. This is half the breaches documented by NEFA.

The Forestry Corporation stated they intended to vigorously dispute the fines on the grounds that their intent *"was discussed with EPA staff on site during the operation"*. In other words, the EPA knew they were going to construct the illegal road and, at best, did nothing to stop them.

Given that the EPA had almost used up their 2 years for legal action, the Forestry Corporation simply bided their time before telling the EPA that they would not pay the fines and would rather dispute them in court. By then, the EPA claim, it was too late to defend the fines in court. Given the EPA's complicity in the construction of the illegal road it is no wonder they waited so long to take action so that they could avoid court.

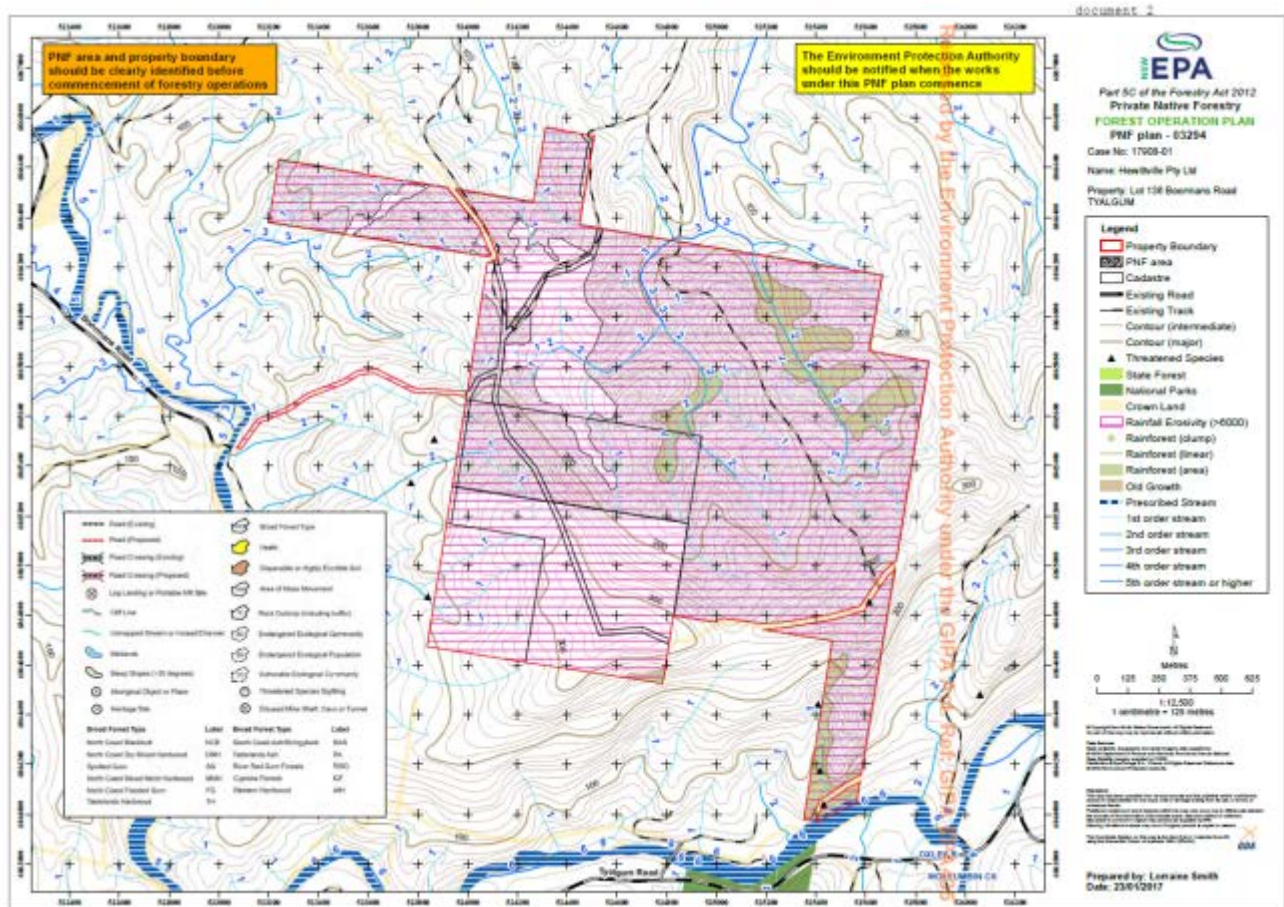
The same Forestry Corporation staff went on to bulldoze roads through the NSW EEC Lowland Rainforest and 26 Vulnerable Onion Cedars at Cherry Tree State Forest in 2015 (Pugh 2015) and the same EPA staff investigated and did not recognise it as Lowland Rainforest. This time mapping by the EPA and Forestry Corporation confirmed it as Lowland Rainforest, with 4.5ha of their mapped areas identified by NEFA as roaded or logged. Once again the EPA waited until the 2 years available for prosecution had almost expired before announcing they would take no action what-so-ever for the incursions into Lowland Rainforest they had mapped.

### 3.2. Case Study 2: PNF Tyalgum

The Environment Protection Authority issued a Property Vegetation Plan (PVP) for part of a property at Tyalgum on 29 April 2013. The contents of that plan and the subsequent Forest Operation Plan (FOP) were not made available to the public and Tweed Shire Council, as the EPA treat them as secret. Those parts of the property covered by the PVP and FOP are treated as confidential. The only information publicly available is the location of the property and the date the PVP was issued for some or all of it.

The Forest Operation Plan was recently obtained under a freedom of information request. It is revealing that it was prepared on 23 January 2017, though roading began in the PNF area in 2013, and logging began in 2016. The plan identifies the PVP property boundary (which includes the

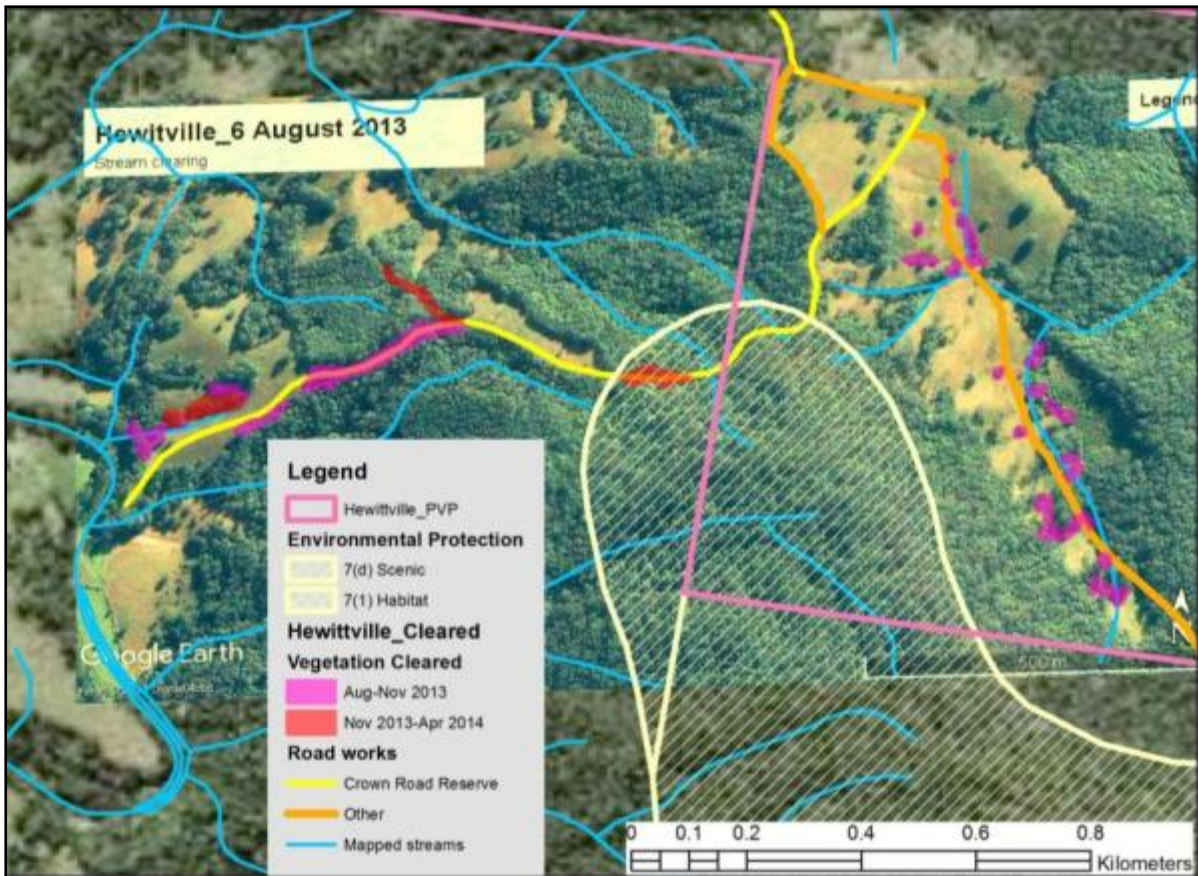
Boormans Road access) and the subset of the property that is covered by the FOP (black stippling). It is an inept and shoddy plan.



Forest Operation Plan (obtained under GI(PA) request). Note that the only identified features are mapped rainforest and stream orders. It is a token plan. It is revealing that while the key claims to identify Endangered Ecological Communities it fails to recognise that the rainforest is the Endangered Ecological Community Lowland Rainforest, which is likely to be more extensive than mapped. Also the key claims to identify proposed roads, proposed road crossings, log landings, broad forest types, Aboriginal objects or places, Heritage sites, areas of mass movement, dispersible or highly erodible soils, rock outcrops, threatened species records etc, though none are shown. It's not that they don't occur, but rather that the EPA didn't bother to identify them, even those readily identifiable from existing information. It is a total failure of process that even proposed roads and creek crossings are not identified, which had significant consequences. Similarly Tweed Shire Council's Environmental Zones are not delineated, which also had significant consequences. It is no wonder that the EPA want to keep their inept shoddy plans secret.

Road and clearing works began sometime after August 2013 in both the PVP area and other parts of the property. The Google Earth time series of landsat images were compared to identify subsequent land clearing that occurred. The works involved unauthorised clearing of native vegetation during construction of a road on a Crown Road Reserve within the identified property boundary and in part a Council 7(d) Environmental Protection Zone without consent, causing significant and ongoing pollution of a creek and Hopping Dicks Creek. At the same time clearing of riparian vegetation along 5 mapped streams and Hopping Dicks Creek was undertaken, including the filling of one stream for a house site.





**ABOVE:** Mapping of roads constructed and vegetation cleared from 6 August 2013 until 11 April 2014 on the Tyalgum property based on comparison of landsat images. This shows clearing of native forests for roadworks and the clearing of riparian vegetation on mapped streams (including in the PVP and FOP areas), the filling of a first order stream for a house site (outside the PVP area), and the apparent construction of a dam on another stream. The total area identified as cleared is 2.6ha. The access road was constructed for some 1.7 km through the Crown Road Reserve, into the PVP area (including 340 metres through the 7(d) zone).



**8 th August 2013**



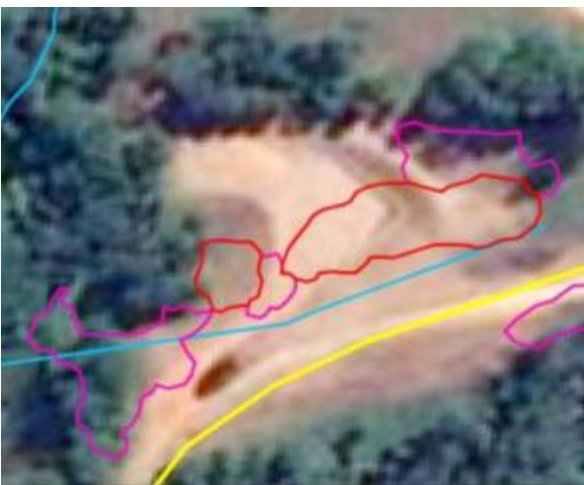


7 th November 2013



11 th April 2014

**ABOVE: Sequence of Google Earth landsat images showing progressive clearing of vegetation for roadworks and the filling of a mapped drainage line (note the actual drainage line is to the north of the mapped drainage line).**



**ABOVE LEFT: Detail of landsat image from 11 April 2014 showing clearing and filling of mapped 1<sup>st</sup> order drainage line outside the PVP area. RIGHT: Photo showing clearing of riparian vegetation at the juncture of first order stream and Hopping Dicks Creek, 14 September 2013.**

On 11 September 2013 the neighbour (Susie Header) reported clearing of the riparian zone of Hopping Dicks Creek by Hewittville to the EPA hotline, outside the PVP area. Which was also reported to NSW Office of Water on 19 September. No immediate action was taken. The landsats show that clearing and filling of a mapped drainage line and clearing for roadworks continued after this complaint.

It is apparent from Google Earth landsats that clearing of riparian vegetation along first and second order streams and for roadworks had also occurred by the 7 November 2013 within the PVP area, and to a lesser extent within the FOP area. On the 11 December 2013, two months after the complaint Office of Water (Andrew Mennel) visited the site, by which time there were many other problems. On 18 December the OOW claims to the neighbour to have issued a verbal stop work order and referred it to OE& H for follow up. There was no regulatory action or consequences.

On 17 March 2014 the neighbour (Susie Header) reported beginning of stream pollution due to runoff from the poorly constructed road to the Office of Water and Tweed Shire. On 20 March 2014 the neighbour reported extensive clearing for roadworks and other activities to EPA. On 24 March 2014 OEH (Alex Simpson) told her that the property is covered by PVP and misinformed her that Environment zones 7d and 7h are exempt from the PNF approval. Despite extensive clearing having been undertaken unlawfully within the Crown Road Reserve, a 7(d) Environmental Zone, and riparian buffers along mapped streams, investigations into clearing were closed on 7 May 2014 without the OEH having undertaken any regulatory action. The neighbour continued to complain about ongoing pollution to the EPA hotline.



**LEFT: 31.March 2014 sediment into Hopping Dicks Creek at bottom of 1st road at causeway RIGHT: 6 April 2014 pollution of Hopping Dicks Creek approx 400m downstream of causeway**

On 16 April 2014 Tweed Shire Council issued 2 x \$1500 PINs, one for filling in the stream and a dam for a house pad on lot 127 and one for pollution of Hopping Dicks Creek, and considered Class 5 proceedings in NSW Land and Environment Court. On the same day Tweed Shire Council issued Hewittville with a Clean Up Notice to remove sediment from a mapped stream, which extended onto the neighbour's property. On 22 August 2014 a second clean-up notice was issued. On 20 April 2015 OoW issued a Sediment Clean-up Notice Closeout Report.



The neighbour's attempts to get action to halt the clearing were frustrated by delays caused by bureaucratic buck-passing, inadequate and incomplete remedial works, a failure to hold the landowner to account and finally by the Government's sign-off foreclosing Council's attempts to take prosecution action.

On 7 August 2014 Tweed Shire Council voted in favour of taking legal action, though dropped the case in July 2015 on the grounds of staff advice that *"it was very difficult for council to revisit compliance actions against the developer given the state agencies had signed off of the clean-up notices"*. Mayor Bagnall was reported as stating *"any reasonable person"* could see the clean-up was inadequate as *"there's still a metre of mud there"*, *"This (developer) is getting off scot free despite the destruction of the landscape, we're talking half a great big hillside he's moved and pushed into the creek"*, and *"If I did that, council staff would be onto me in five minutes, yet this guy just walks scot free, despite those works going on for six months"*.



**LEFT: 9 December 2014 Hopping Dicks Creek approx 250 metres downstream from causeway RIGHT: Sediment entering Hopping Dicks Creek, 13 February 2015.**

For the second time in March 2017 the landowner cleared vegetation and constructed another access road on a Crown Road Reserve to the north-west without consent, this time through 3 neighbour's properties as well as into the PVP/FOP area.

The roadworks and vegetation clearing were reported to Council on Monday 13th March 2017. Crown lands advised that no current permit had been issued and that a prior permit to do light grading and pothole filling expired in November 2016. Tweed Shire Council gave a stop work order on Wednesday 15th March after viewing significant erosion. Despite Council and the Department of Lands attempting to stop works, they apparently continued. The neighbours are still waiting to find out what the Government will do, if anything, but are hopeful that Council will take legal action on their behalf.

In a belated response to neighbour's ongoing complaints on the 9 May 2017 an EPA inspection (Kel Christiansen 4 August 2017) found that the primary access road (Boormans Road) had poor drainage *"and there was evidence of recent soil erosion and sediment movement on the road surface"*, and within the PNF area recorded as breaches *"two (2) short sections of snig tracks that were undrained and several road causeway crossings that were not stable and without approach drainage"* from a small area logged in 2016. A requirement to rectify them was issued on 24 May 2017.

On 26 July 2017 an EPA visit was to provide regulatory extension advice (Kel Christiansen 4 August 2017). The inspection included an assessment of 300m of a new access road within the FOP area finding:

*"No drainage had been installed and there were four (4) crossings of drainage features, one a 1st order stream and the others unmapped. They were all considered unstable due to the amount of bladed soil present on the crossing surface or in the drainage feature. As the road ran parallel to a 1st order stream some of the bladed soil was placed on the stream bank and was considered by EPA officers to be a potential pollution source. Two (2) heads of trees that had been pushed were partly within the 1st order stream".*

It was also noted that the snig tracks identified for rectification 2 months earlier still had not had the required drainage installed. On the 4 August 2017 the EPA issued another Corrective Action Request requiring installing drainage on snig tracks, rehabilitating and stabilising 4 stream crossings, installing effective road drainage, removing tree debris from riparian exclusion zone, and removing or stabilising soil deposits within riparian exclusion zone. Works were to be completed by 18 August. It is noted *"EPA has decided not to take enforcement action ... EPA reserves the right to pursue enforcement action in regard to this matter if the corrective actions are not satisfactorily completed"*.

Following requests from locals NEFA decided to undertake an initial assessment of the property from the Crown Road Reserve that runs through it. We engaged the services of ecologist David Milledge to assess the presence of owls and Marbled Frogmouths on the property through playback of their calls from the road reserve. The assessment occurred on the evening of Saturday 9th September 2017.

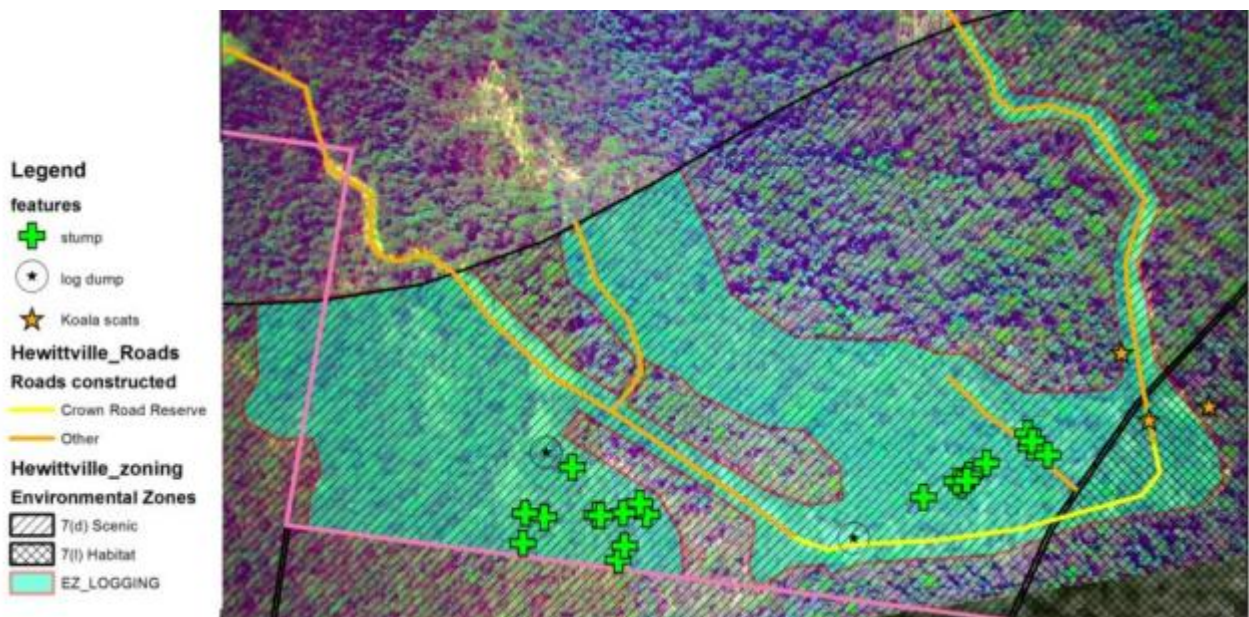


**Tallowwood with 23 scats beneath it from mother and baby subject to roadworks, such trees are meant to be protected by 20m buffers, but only if they are found. As there is no requirement to look before they log there is effectively no protection for such key feed trees.**



NEFA identified 2 Koala High Use Trees and detected the presence of two Marbled Frogmouths and one Masked Owl. For these species the PNF Code requires stream exclusions to be increased by 10m on first and second order streams for Marbled Frogmouths throughout the logging area, for an additional 10 of the largest trees to be retained per 2 hectares within 1km of the Masked Owl, retention of 10 primary Koala food trees and 5 secondary Koala food trees per hectare, and 20m buffers to be placed around the 2 Koala high use trees we identified (from our tiny sample).

None of the roadworks inspected by NEFA appeared to be appropriately drained in contravention of the PNF Code. For example the 250m road from a stream crossing to the top of the slope only had one side drain and yet soil has been bulldozed into a bank preventing water egress. A snig track on a 23° slope was observed to have no cross banks.



**NEFA preliminary mapping of the extent of logging and roadworks within the 7(d) and 7(l) Environmental Protection zones on the Hewittville property. Note that only a small portion of the logged area was inspected and that this mapping is only approximate and requires ground truthing.**

During the course of the assessment it became obvious that extensive logging and roadworks had been undertaken in the Tweed Shire Council's Zone 7(d) Environmental Protection (Scenic/Escarpment) and 7(l) Environmental Protection (Habitat), despite the landholder having no consent to do so. Subsequent assessment of aerial photographs identified that some 18ha of the 7(d) and 7(l) Environmental Zones had been logged, with the main road constructed for 1.3km through 7(d) and (l) zones. Some 400m of the road (and one log dump) were constructed on the Crown road reserve (again without permission). There were also significant other roads, snig tracks and 2 log dumps constructed in the 7(d) zone

On 19 September 2017 the EPA (Lewin 20 September 2017) undertook an inspection but limited it to the specific area assessed by NEFA, despite NEFA only investigating a small part of the logged area within the Environment Zones. This meant that most of the logged area, snig tracks and a significant section of the main access track were not assessed, and likely not remediated. This refusal by the EPA to fully assess logging areas where NEFA have identified numerous breaches in small samples is standard practice.

The EPA did identify "alleged" breaches of 5 conditions of the PNF Code with trees felled across streams in multiple locations, a log dump constructed too close to a stream, 5 inadequately drained

snig tracks and some 1.2 km of the main access road inadequately drained. They failed to provide any details as to the number of breaches. Though they outrageously and unjustifiably claimed that "*there was no harm to the environment*" and only gave "*formal warning*" letters to the landowner and contractor.

The EPA also confirmed the two Koala high use trees and said the records of Marbled Frogmouth and Masked Owl would be taken into account in the future. Though as they were not "known" at the time of the logging no enforcement action was taken or possible.

On 20 September 2017 the EPA again decided not to take regulatory action, instead issuing another Corrective Action Request requiring installing crossbanks on approach to a drainage line, reconstructing and draining a section of the access road, removing soil from the drainage line and installing sediment fencing, installing cross banks on 5 snig tracks, installing drainage on snig track crossings of drainage lines, removing trees and debris from drainage lines, and remove log dump from within buffer of drainage line.

At its meeting of 21 September 2017 Council unanimously resolved that:

1. *Council engages its solicitors to provide advice regarding the unauthorised forestry and road works within that portion of Lot 136 DP DP755724 Boormans Road, Tyalgum affected by Tweed Local Environmental Plan 2000 environmental zones, as identified in this report, and that a further report be submitted to Council providing preferred options for prosecution of the site owners, and best options to impose a statutory stop work order under the Environmental Planning and Assessment Act 1979 and a **Clean Up Notice** under the Protection of the Environment Operations Act 1997;*
2. *Council endorse that a systematic site assessment be undertaken to inform any investigation and compliance action including:*
  - a. *Survey all constructed roads via vehicle traverse with differential GPS;*
  - b. *Survey the aerial extent and location of all areas of vegetation clearing;*
  - c. *Assessment by a suitably qualified ecologist to quantify the vegetation classification of areas impacted by vegetation clearing; and*
  - d. *Assessment by a suitably qualified ecologist of the quantified extent of vegetation clearing in relation to the impacts of the clearing on threatened species and threatened species habitat.*
3. *Council officers continue to work with relevant State and Federal Government compliance agencies to seek a prosecution of the site owners under their legislation and appropriate site management.*
4. *Subject to the advice in 1 above the Stop Work Notice and the Clean Up Notice may be issued by the General Manager or delegate without the need for a further report to Council.*
5. *Council requests in the strongest terms and makes representations in person to the state government to revoke this Private Native Forestry licence due to the significant impacts for Tweed's World Heritage values, threatened species, waterway pollution, safety issues with the instability of the works for compliance officers and on site workers, the unsuitability of the external road network, the significant costs of the extensive compliance actions required, the distress caused in the community, and the ongoing risks of further compliances breaches as evidenced by the significance and similarity of these repeat offences.*

At our meeting with the EPA on 4 October 2017 we were informed that the EPA had not inspected the environmental zones prior to NEFA's complaint. The EPA's failure to inspect the active logging and roading in the environmental zones on their visit a few days before NEFA shows lax supervision. The EPA seemed blithely unaware that every time they visited the site they use a road constructed without consent through the 7(d) Environmental Zone, including in the PVP and FOP area, and past cleared riparian areas.

On 4 October the EPA said they had told the landowner 4 times that he needed permission for forestry activities in the Environmental Zones. Tweed Shire Council (21 September 2017) also advises "*The owners of the subject site have been provided with an extensive briefing of these LEP consent requirements on multiple occasions*". The landowner's failure to seek the required approval despite 4 reminders from the EPA and multiple advices from Council indicates that the breach was made knowingly.

Despite having approved a PVP and subsequent Forest Operation Plan that proposed logging of the Environmental Zones (without identifying them), and refusing to provide their approved PVP and FOP to Tweed Shire Council, the EPA (Bryce Gorham 14 February 2018) denied any responsibility for the logging and roading in the Environmental Zones, stating:

The EPA is aware that Tweed Shire Council is considering matters relating to the requirements of the Environmental Protection Zone (EPZ) on the property. As previously advised, the EPA has no jurisdiction in relation to such matters. Similarly, the EPA has no jurisdiction on Crown road reserves, these are administered by Department of Primary Industries - Lands. Our investigation has not considered any allegations related to the EPZ or Crown roads.

A community assessment in December 2017 identified a rainforest stand as qualifying as the Endangered Ecological Community Lowland Rainforest, with 14 Vulnerable Durobby (*Syzygium moorei*) and a number of Endangered Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*) within or near it. While their report was provided to the EPA (with localities) because it was anonymous nothing will be done to protect these unless the EPA investigate it for themselves.

Most concerning, some 3 months after NEFA's complaints, they identified that the required drainage had still not been adequately implemented on part of the main access road and that significant erosion was occurring, polluting the creek through the rainforest.





Erosion of main access track identified by the community 3 months after the EPA inspection failed to identify any problems in this area, it took the EPA another 2 months to request remediation and even then there was no timeline identified.

The EPA again decided not to take regulatory action and on the 23 February 2018 the EPA (Lewin 23 February 2018) issued another Corrective Action Request for an area they did not bother to check on September 2017, this time requiring removing soil below a drain outlet and installing sediment control fencing, repair of two drains and the installation of an unspecified number of additional drains on a section of road. These works only had to be done "*as soon as practicable*".

This was the main access road through the PNF area that had begun being constructed in 2013 without adequate drainage and where on 26 July 2017 the EPA identified inadequate drainage and stream crossings on a new section. It was the same road that a bit further along on 9 September 2017 NEFA had identified inadequate drainage and soil pushed into a stream crossing, that the EPA subsequently confirmed. The trouble was that at that time the EPA had not bothered to go that little bit further to see how bad the rest of the road was.

Once again the community had to do the EPA's job, unfortunately the road had been left to erode for a further 5 months because of the EPA's refusal to undertake a comprehensive assessment back in September. Even then the EPA saw no urgency to repair it.

The obvious problem is that the EPA's inconsequential responses time and time again obviously failed to act as a deterrent. It is apparent that had effective action been taken early on then most of the subsequent breaches could have been avoided. The EPA are asleep at the wheel.

### 3.2. Case Study 2: PNF Stockyard Creek

Following is an audit of Stockyard Creek Private Property by John Edwards of the Clarence Environment Centre

#### **Logging Audit DP848467 - Lot 14, Stockyard Creek Road**

##### **Introduction.**

An audit was undertaken on the above property in Late August, 2018, mostly on foot as much of the harvesting has occurred in steep inaccessible Country. Therefore the audit is not comprehensive, but nevertheless, I feel the following observations would be representative of the whole.

It is clear that logging has been ongoing on the property for years, latterly to feed a bush sawmill on the property. It also appears that prior to selling the property in August, the previous owners, or their logging contractor, have done a hasty 'whip' around to harvest every last millable tree, often with scant regard to the regulations set down in the 2013 PNF Code of Practice.

In the audit we collected evidence of:

- **Widespread logging of rocky outcrops**  
In a landscape dominated by Kangaroo Creek Sandstone ridges, there are large areas that fit the the description of 'rocky outcrops' (the page 51 definition not withstanding) where, according to Table C, "Forest operations must not occur *on any rocky outcrop or within 20 metres of a rocky outcrop*".

The tree, at right, that had been felled in this particular case was a listed threatened species, Sandstone Mahogany (*Eucalyptus psamitica*). However, we acknowledge that under the PNF code of practice, logging operations are not required to search for threatened species, a major short-coming in our opinion. Below are just two of many such cases recorded in the survey.



While on the subject of threatened species, some ridge-tops where this logging of rocky outcrops took place, support a very rare ecological community, the Brown Bloodwood (*Corymbia trachyphloia*) – Sandstone Mahogany association, which is only known to occur at two locations in the Clarence Valley, and nowhere else in the world. It's uniqueness was first recorded through the mid 1990s NRAC surveys, and in about 2003 the community received an preliminary listing as an Endangered Ecological Community. While no final determination was ever made, the community is significant, but again, the PNF Code does not require for pre-logging assessments, so threatened species are rarely protected.



- **Hollow-bearing trees being logged while retained habitat and recruitment trees regularly fell well below the required numbers, with many retained trees sporting serious basal damage from fire, meaning they will be unlikely to survive another fire event.**

There has been no marking of habitat or recruitment trees, which prompts the question, How can the requirements of Table D be fulfilled? Many of the retained old-growth trees are so damaged that there appears to have been no consideration of Section 4.2.5, which stipulates *"Preference should be given to trees with well developed spreading crowns and minimal butt damage."*

The log at right is one of many lying adjacent to the log dumps, indicating old-growth trees have been harvested, the useless hollowed out or rotted lower section discarded to salvage a few meagre metres of log from the upper trunk. Also its girth was greater than any other standing tree within sight,

Among those discarded logs we noted Bloodwoods and Needlebarks, trees not valued for their timber, so these would have represented very low quality timber.



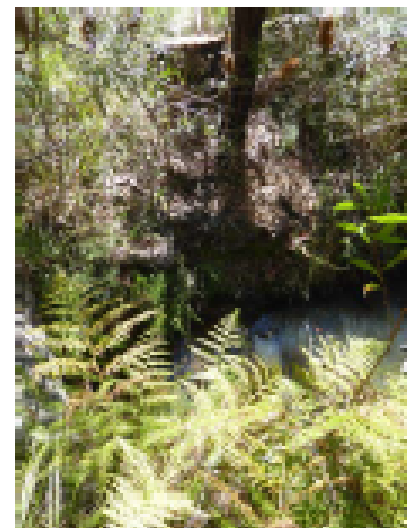
- **Tracking through swamps with heavy machinery and illegal harvesting of trees within the swamp**



The Table C clause that states: *"Forest operations must not occur in any wetland or within 20 metres of any wetland, except that existing roads may be maintained"*, means that numerous trees, such as those above, and the tracking to get to them was done illegally.

Not only have trees been logged from within the wetland, but no buffer zone was made as is stipulated under "General Conditions", page 20.

- **Logging on the bank of a mapped creek.** If the Code's Clause 4.4.1 is considered, which states: *"Forest operations must not occur in riparian exclusion zones"*, the harvesting of other trees such as the recently cut stump at right, standing directly above, and just one meter from the clearly visible creek is also illegal (GPS 481966 -6740641).



- **Widespread destruction of bush rock.** While the removal or destruction of bush-rock is a listed Key Threatening Process under the Threatened Species Conservation Act, it is unclear how this is applied to PNF, and the code makes no mention of bush-rock.

Nevertheless, the code does specify (Table C) that: *"Forest operations must not occur on any rocky outcrop or within 20 metres of a rocky outcrop, except that:*

- existing roads may be maintained*
- existing snig tracks may be used.*



In this instance we found kilometres of newly formed tracks made by heavy logging machinery, seemingly wandering aimlessly up and down steep slopes and across rocky outcrops, in a vain search for trees which, in many cases, weren't there. The ecological damage caused in the process has been significant.

- **Logging on overly steep slopes**  
The image at right doesn't truly show how dangerously positioned these logged trees were. The slope clearly exceeded regulations and perched down-slope on the top of crumbling cliff. We doubt any Workplace Health and Safety inspector would approve.

This particular logging broke almost every rule, overly steep slope, rocky outcrop, cliff-top, riparian buffer incursion (the second order stream is in a ravine, some 15 to 20m directly below).

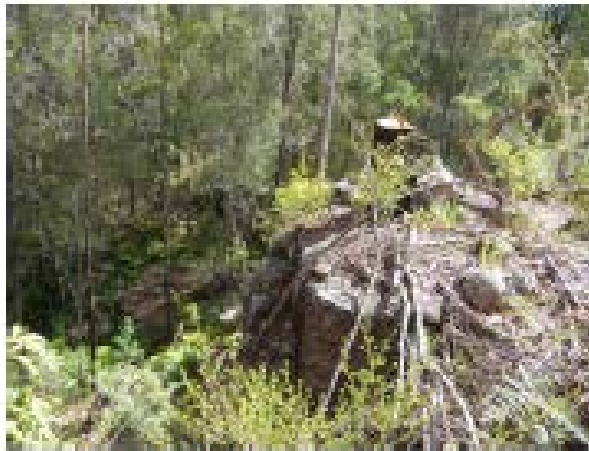


At right, another case of logging on excessively steep land, closer to 40 degree than the allowable 30 degrees. In this case the breach is compounded by the fact that hundreds of metres of snig track across rocky outcrops on a sandstone ridge was required to reach just 4 trees, all bearing hollows (i.e. old-growth) and all on rocky outcrops.





- **Logging within 10 metres of cliffs:** The images below are examples, two of many recorded during the audit.



- **Failure to leave roads in a fit state.** Heavy use by logging machinery and trucks has no doubt resulted in the current state of all roads and tracks in the property. The table C section under *"Dispersible and highly erodible soils"*, which are evident in the image below, states: *"Measures must be taken to immediately stabilise any erosion of roads or snig tracks."*



Kilometres of road, which have clearly been impacted by logging traffic, have been left in a highly erodible state, mostly with no side drains or other means of diverting water from the road surface. The above erosion was the result of very meagre rainfall that fell across the district at the end of August.

- **Logging of Old-growth forest:**

There are several hectares of sandstone cliffs and gullies surrounding GPS 479393 – 6741011 which have been logged. An inspection of the logged 'crowns' found that a majority of those contained limbs with hollows which, as explained under S42 of the code - *"Protection of habitat and biodiversity"*, *"must be retained in accordance with Table D"*, i.e. 10 per 2 hectares etc. We have commented on the fact that the number of retained habitat trees across most of the logging area falls well short of that required. However, in this particular area, numerous old-growth trees remain, and that, coupled with an absence of old stumps, or other evidence of historical logging, suggests this area constituted an old-growth forest, in which, according to Table C, *"Forest operations must not occur ..."*.

We do not know how S4.1.2, which states: *"Old growth will be identified according to the protocol approved by the Minister and available at [www.epa.nsw.gov.au/pnf](http://www.epa.nsw.gov.au/pnf)"*, affects the legality of this logging. However, the fact that almost all felled trees were in breach of the rocky outcrop, or steep slope, protocols described above, simply compounds the overall illegality of the operations.



**Minimum log size.** We noted a high number of stumps from recently logged trees that measured less than 40cm in diameter (see at right). This appears to be a ridiculously small log. Is there a minimum size that can be logged under a PVP (note: nowhere did we find land where thinning would be a recommendation).





**Then there is waste,**

The property is littered with whole logs, trees cut down and discarded because, presumably, they are not good enough. While this does occur during any harvesting event, the sheer number in this case suggests either a 'cowboy' approach to tree selection, or a high level of operator incompetence

**And Finally, straight out vandalism:**

We noted along some tracks, evidence of destruction of track-side vegetation. There was no reason for this, and despite S4.3 which covers the subject of "*Minimising damage to retained trees and native vegetation*" a machine operator has driven along knocking over and uprooting trees, including numbers of at least one threatened species, listed in Table J – *Angophora robur*, and trees that are supposed to be protected under S4.2, *Allocasuarina torulosa*.



I have highlighted the alleged breaches on the table below

Private Native Forestry Code of Practice for Northern NSW & Table C: Requirements for protecting landscape features Landscape feature	Operational conditions
Endangered ecological communities listed in the <i>Threatened Species Conservation Act 1995</i> at the date the private native forestry PVP is approved by the Minister	Forest operations may only occur in endangered ecological communities as part of an approved Ecological Harvesting Plan approved by the Chief Environmental Regulator of the Environment Protection Authority, except that existing roads may be maintained.
Endangered populations listed in the <i>Threatened Species Conservation Act 1995</i> at the date the private native forestry PVP is approved by the Minister	Forest operations must not result in any harm to an animal that is part of an endangered population, or result in the picking of any plant that is part of an endangered population, except that existing roads may be maintained.
Vulnerable ecological communities listed in the <i>Threatened Species Conservation Act 1995</i> at the date the private native forestry PVP is approved by the Minister	Forest operations must not occur in vulnerable ecological communities, except that existing roads may be maintained.
Rainforest	Forest operations must not occur within rainforest, except that existing roads may be maintained.
Old growth forest	Forest operations must not occur within old growth forest.

	except that existing roads may be maintained.
Wetlands	Forest operations must not occur in any wetland or within 20 metres of any wetland, except that existing roads may be maintained.
Heathland	Forest operations must not occur in any heathland or within 20 metres of heathland, except that existing roads may be maintained.
Rocky outcrops	Forest operations must not occur on any rocky outcrop or within 20 metres of a rocky outcrop, except that: existing roads may be maintained existing snig tracks may be used.
Cliffs, caves, tunnels and disused mineshafts (excluding open pits less than 3 metres deep)	Forest operations must not occur within 10 metres of cliffs, caves, tunnels or disused mineshafts, except that existing roads may be maintained.
Steep slopes	Forest operations must not occur on slopes greater than 30 degrees, except that: existing roads and tracks may be maintained new roads and tracks may be constructed subject to conditions in clause 5.1(18) of the Code.
Aboriginal object or place as defined in the <i>National Parks and Wildlife Act 1974</i>	Forest operations must not occur: within 50 metres of a known burial site within 20 metres of an Aboriginal scarred or carved tree within 10 metres of a known Aboriginal object or place (this requirement does not apply to Aboriginal objects or places that may lawfully be destroyed).
Areas containing items identified as heritage items in an environmental planning instrument	Forest operations must not occur within 10 metres of a listed heritage site.
Areas of existing mass movement	Harvesting operations which create canopy openings must not occur within the area. Harvesting machinery must not enter the area. Existing roads may be maintained. New roads must not be constructed.
Dispersible and highly erodible soils	Existing roads may be maintained. Drainage feature crossings must be armoured with erosion-resistant material. Road batters and table drains must be stabilised using erosion-resistant material, vegetation or slash. Log landings must be stabilised using erosion-resistant

Landscape feature Operational conditions material, vegetation or slash at the completion of forestry operations.

Measures must be taken to immediately stabilise any erosion of roads or snig tracks.



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