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Submission to the New South Wales Regional Forest Agreement (RFA) 10 and 15-year reviews and RFA extension

National Parks Association of NSW (NPA) and Nature Conservation Council of NSW (NCC) appreciate the opportunity to comment on the 10 and 15-year implementation reviews of the performance of NSW Regional Forest Agreements (RFAs) and to make our case as to why the RFAs are a failed model for forest management. This document forms our submission to the 10 and 15 year reviews (the responsibility of the Environment Protection Authority (EPA)) and to the Department of Primary Industries consultation on extension of NSW RFAs.

NPA was formed in 1957 to promote the concept of a network of national parks in NSW under specialist national parks and wildlife legislation managed by a professional agency. This goal was achieved with the passing of the *National Parks and Wildlife Act 1974* and the establishment of the National Parks and Wildlife Service (NPWS). Today, in our 60th year, NPA continues to build on this work through a network of 16 branches and over 20,000 members and supporters. NPA promotes nature conservation and sound natural resource management. We have a particular interest in the protection of biodiversity and it's supporting ecological processes, both within and outside of the formal conservation reserve system.

NCC and the 150 environment groups we represent have been winning protections for nature in NSW for more than 60 years. We've been at the centre of many of the state's iconic conservation battles, and have notched up countless wins for nature and local communities. Today, we are focused on cleaning up the state's dirty electricity system, ending unsustainable tree clearing on farms and in our forests, bringing our rivers back to health, and giving the marine life in our coastal waters the protection it deserves.

Overarching recommendation

That the NSW and Commonwealth Governments terminate the current review and renewal processes, replacing it with the following process:

- (1) An independent scientific review of the performance of RFA (10 and 15-year reviews) against their stated objectives with a decision on whether to renew RFAs to follow public consultation on the outcomes of the review. This should include a credible scientific analysis of the impact of the current RFAs on non-timber forest values.

- (2) The preparation and public release of a full socioeconomic assessment of all land-use options over the next 20 years and beyond with:
 - (a) any RFA renewal option to include information on the intended purposes for which state forests would be logged over the next 20 years
 - (b) all options to be founded on credible science on the potential impacts of climate change on forests and the connected environmental values
 - (c) all options to include an independent analysis of the potential to reduce Green House Gas emissions associated with logging and of the carbon sequestration potential from allowing forests to recover their natural carbon stocks
- (3) Subject to the outcome of (1) and (2), a formal negotiation process on the renewal of RFAs with balanced representation of all interest groups moderated by a credible independent party as was the case for the Comprehensive Regional Assessment (CRA) that preceded the current RFAs in the late 1990s and including a commitment to undertaking the required studies to update and complete the data collected in the CRA.
- (4) Elements (1) to (3) to be carried out sequentially and not concurrently.
- (5) Consultation processes that genuinely and effectively engage stakeholders and the community in the independent review of RFAs, assessment of options for the future use of state forests, and their renewal (if any), with criteria for benchmarking and monitoring the consultation process to be set up in advance and reported on publicly.
- (6) Free and timely sharing of all data and appropriate data and analytical support.
- (7) A commitment that no pre-emptive decisions (e.g. no new Wood Supply Contracts) will be taken before the end of the process.

Recommendations in relation to 10 and 15-year performance review

- (1) That the independent reviewer seek and be provided with detailed government and independent scientific data and information against each sustainability indicator for each NSW RFA region.
- (2) That the independent reviewer meet with recognised independent scientists with expertise in forests to discuss and determine the availability, validity and reliability of information and data presented for each sustainability indicator in the *Progress Report* to ensure accuracy in the findings and conclusions of the performance review.
- (3) That the independent reviewer visit state forests in NSW to see first-hand how logging is managed and its impacts. The independent reviewer should be accompanied by recognised independent scientists and environmental organisations with knowledge of the impact of logging on biodiversity, forest ecosystems and ecological services.

Section 1: Introductory remarks

We are extremely disappointed that the Commonwealth and NSW Governments have committed to extending the RFAs without conducting a scientifically-based review as to their effectiveness and without equal consideration of alternative options for public forest use and management. We believe that both Governments risk locking citizens into what we consider to be failed agreements, with insufficient consultation and the risk of future liabilities. We are particularly concerned that extension of RFAs will lead to further destruction of forests and forest species and the loss of a

highly effective form of carbon sequestration in an era of climate change. This concern is exacerbated by recent proposals to burn forest biomass in wood-fired power stations. If proceeded with, this proposal appears likely to result in a further increase in logging intensity as the so-called 'residue' to be burnt would include trees less than 10 cm in diameter at the thin end to produce an energy form whose emissions reduction potential has been discredited (Brack 2017).

We are strongly of the view that the *NSW Regional Forest Agreements: A report on progress with implementation of the New South Wales Regional Forest Agreements, Second and third five-yearly reviews, July 2004-June 2014 (the Progress Report)* is not fit for purpose because in our view it provides little information that permits a reader to accurately assess the functioning of the RFAs either globally or at the individual agreement level. 'Evidence' presented on many of the sustainability indicators contains no data whatsoever, and elements of reports which provide pertinent evidence are overlooked (e.g. NSW State of Environment 2015 and the Independent Review of Bell-Miner Associated Dieback). The *Progress Report* also includes many statements that are not backed up with data. For example, no spatial data is provided to assess the change in forest growth stage over the life of the RFAs, and no data is provided to assess the proportion of each forest ecosystem protected. We have made more detailed comment on the indicators in Table 1 of this submission.

We are firmly of the view that with over 1,000 threatened species and 100 threatened ecological communities in NSW and the increasing effects of climate change, it is incumbent on the NSW and Commonwealth Governments to conduct a transparent and independent scientific appraisal of the effectiveness of RFAs. This is necessary to ask the question as to whether it is possible to undertake industrial logging in forests of global biodiversity significance without compromising their natural values, or whether the Australian public must choose between logging and forest wildlife. To make that choice for citizens prior to a thorough appraisal of a model that was designed to reconcile conservation and timber extraction is inappropriate and does not adhere to principles of good policy making.

This *Progress Report* does not facilitate such an analysis, because there is no discussion as to the success and failures of the RFAs in meeting their key aims: conservation of forest ecosystems and biodiversity; creation of a stable timber industry; implementing Ecologically Sustainable Forest Management (ESFM) and resolving social conflict over forests. We fear that the NSW and Commonwealth Governments risk repeating the mistakes of the past, creating liabilities for citizens and future Governments, despite ample evidence upon which to make a sound decision about forest management.

Although the initial RFA process resulted in some good conservation outcomes, and can be interpreted as a genuine attempt to reconcile timber extraction and conservation, we have no confidence that this RFA process is founded in similar intent. In contrast, the apparent lack of interest of the NSW and Commonwealth Governments in assessing the environmental performance of RFAs through a scientific review, or to reassess the ecological attributes assessed during the Comprehensive Regional Assessments to ascertain change, strongly suggests that the intention is to minimise the importance of the environmental protection element of RFAs. Any future RFA looks set to entrench the prioritisation of timber extraction over forest conservation, in turn entrenching conflict and division.

We urge the independent reviewer to seriously consider and function in the public interest and in the interests of future generations by objectively evaluating the performance of the RFAs. We note that citizens under the age of 30 years were children when the RFAs were signed and are unlikely to

have a good knowledge of their existence and implications. This means moving beyond a 'review of the reviews' and instead accessing independent scientific advice and evidence on the performance of each individual RFA to establish a holistic, integrated position on the effectiveness of the RFA model. We also strongly urge the independent reviewer to visit forests throughout the three RFA regions with environmental organisations with a strong understanding of the history and performance of the RFAs in their area. In essence, we believe the reviewer must ask the question as to whether the RFAs have been an optimal model for forest management and therefore whether they should be renewed.

We note that there is a wealth of independent scientists who have produced research on forests throughout the life of the RFAs and who can provide impartial advice to the reviewer.

In order to adequately assess the effectiveness of the RFAs; the degree of implementation of ESFM; the degree to which the RFAs have resulted in an economically stable timber industry; and the social and economic performance of the RFAs, the following questions (among many others) must be asked; adequate data presented and analysed and a decision on future forest management based on the outcome.

Forest species and ecosystems

- (1) What are the population estimates of threatened forest species (e.g. large forest owls; spotted-tail quolls; greater and yellow-bellied gliders; pygmy possums; koalas) in production forests now compared to immediately after the Comprehensive Regional Assessments?
- (2) How have the threat listings for forest species changed over the life of the RFAs?
- (3) Has the accreditation of logging via the Commonwealth *Environment Protection and Biodiversity Conservation Act* (EPBC Act) resulted in equivalent protection for threatened species?
- (4) What is the extent of bell-miner associated dieback in NSW's forests and how can it be rectified?
- (5) What proportion of the CAR reserve network of Forest Ecosystems is still outstanding; what is the condition of these areas and how much funding is required to complete the network?
- (6) What has been the change in tree hollow density in production forests over the life of the RFAs?
- (7) What has been the change in forest age structure in production forests over the life of the RFAs?

Non-timber forest products

- (1) What has been the change in carbon stocks and flows in production forests over the life of the RFAs?
- (2) What is the economic value of the carbon stores and water provided by forests, compared to the value of the available timber?
- (3) What has been the change in economic value of the production forest estate across the life of the RFAs?

Timber

- (1) How much sawlog timber is available in production forests compared to the outset of the RFAs?
- (2) Were timber quotas (particularly sawlogs) met in each year of the RFAs?
- (3) What proportion of NSW's timber needs are met from plantations now as compared to the onset of the RFAs?

Jobs

- (1) What has been the change in employment in native forest logging (disaggregated from the plantation industry) during the life of the RFAs?
- (2) How many native timber mills exist now as compared to the commencement of the RFAs?
- (3) How much sawlog timber do existing mills process compared to the commencement of the RFAs?
- (4) What proportion of timber mills are small businesses?

Subsidies

- (1) How much has the NSW Government spent on the Community Service Obligation throughout the life of the RFAs, and how has the effectiveness of this spending been monitored?
- (2) What has been the value of the revenue foregone by local councils as a result of the exemption of Forestry Corporation from the payment of rates during the life of RFAs?
- (3) What has been the cost to Local Government ratepayers to upkeep road infrastructure over the life of the RFAs?
- (4) How much money has been spent by State and Commonwealth Governments on threatened forest species recovery throughout the life of the RFAs?
- (5) What other hidden subsidies exist for the native forest logging industry, and how do these affect the competitiveness of the plantation industry?
- (6) What is the total value of the dividends received by the NSW Government from native forest logging throughout the life of the RFAs (as distinct from the balance of dividends following the cross-subsidy of the native sector by the plantation sector)?

The future

- (1) What Government incentives are required to maximise the opportunities to use alternative fibres and technologies to offset the need for timber from native forests?
- (2) What cost-benefit analysis has the Government done on the native forest logging industry?
- (3) What alternatives do we have to logging public native forests?

We have assessed the degree to which the information presented in the *Progress Report* on each of the individual sustainability indicators can be used to assess implementation as detailed in Table 1. At the same time, we have made detailed comment about the functioning of the RFAs in Section 3. Section 2 outlines key elements we believe the independent review must consider to ensure that the outcome of this RFA performance review is in the public interest and the interest of future generations.

Section 2. Key elements to be considered by the independent reviewer

We are strongly of the view that, almost 20 years after the RFAs were signed, there is extensive evidence that they have failed to result in ESFM, failed to result in an economically sound timber industry, and the CAR reserve network of forest ecosystems has not been delivered—contrary to assertions in the 10 and 15-year reports. Our position has been established following a detailed review of the NSW RFAs against their higher level aims conducted by NPA in 2016 (Sweeney 2016). We have included excerpts of the review in this submission. A full copy of the review can be

accessed at npansw.org.au, and a copy is also attached to our submission. That said, there are several core issues that we believe the independent review must consider in order to assess the performance of the RFAs as outlined below.

Ecologically Sustainable Forest Management (see also Section 3)

The number of threatened forest species has continued to rise during the RFAs, with iconic species like koalas and gliders now either absent or experiencing population declines in many parts of NSW (Lindenmayer et al. 2011, McAlpine et al. 2015, Adams-Hosking et al. 2016, Australian Government Department of Environment 2016). Logging is identified as a key threat to many forest species, because logging drives Key Threatening Processes including the loss of hollow-bearing trees (NSW Scientific Committee 2007, Australian Government Department of Environment 2016) and bell-miner associated dieback (NSW Scientific Committee 2008, Silver and Carnegie 2017).

Logging kills forest animals (Braithwaite et al. 1984) and clear-fell logging eliminates arboreal animals (Recher et al. 1980). Logging is therefore an important animal welfare issue, as well as an ecological one. Welfare is not adequately considered in the RFAs.

There are many forested areas in the three RFA regions that should be protected in the reserve network. For example, the forests of northern NSW are one of just 36 global Biodiversity Hotspots (Williams et al. 2011), there are forested areas throughout NSW that should be World Heritage and there are many habitat links that should be protected to ensure connectivity for forest wildlife in the face of climate change.

In 2009, eight years after the RFA was signed, the NSW Auditor General stated that “to meet wood supply commitments, the native forests managed by Forests NSW (now Forestry Corporation) on the north coast is being cut faster than it is growing back” (Audit Office of New South Wales 2009). It is difficult to understand how that finding be reconciled with the correct application of ESFM.

In our view, it is not credible for the NSW Government to ‘reaffirm’ that it is committed to the principles of ESFM in the absence of any evidence to demonstrate this commitment, and in the presence of extensive evidence as to the failure to implement the principles of ESFM via RFAs.

ESFM Case Study: Carbon and climate change

The correct application of ESFM should result in no disruption of the carbon cycle in production forests. Climate was not a priority consideration in the RFAs, but is now the largest social, economic and environmental challenge we face. It is recognised that deforestation and forest degradation produce a significant portion of global emissions (Putt and Graham 2015). In Australia, approximately 44% of carbon stocks have already been lost from temperate forests (Wardell-Johnson et al. 2011), and logged forests store approximately 60% of their maximum carbon stocks (Roxburgh et al. 2006).

The NSW Forest Industry Roadmap states that ‘sustainably managed forests have the capacity to absorb greenhouse gases as they grow, which contributes to a healthy environment’, and cites ‘Department of Primary Industries research’ as the source of this information. The source of this statement appears to be the 2007 (and now outdated) 4th IPCC assessment. However, high quality, peer-reviewed research does not accord with this statement. Mature forests have higher carbon stocks than regrowth forests (Dean and Wardell-Johnson 2010). Carbon stores in old growth (pre-logged) forests can be extremely high as a result of living trees and coarse woody debris, with large-diameter trees particularly important contributors (Dean et al. 2012). Besides the direct removal of large amounts of biomass, logging shifts the age-class distribution to smaller-diameter trees (Lunney and Matthews 2004), which will therefore reduce carbon stores by reducing large trees.

Research in the Victorian Central Highlands and in southern NSW demonstrates that managing forests for conservation rather than timber extraction results in ‘an immediate and substantial reduction in net emissions relative to a reference case of commercial harvesting’ (Keith et al. 2015), primarily because the vast majority (>90%) of forest products are short-lived and logged carbon is therefore rapidly returned to the atmosphere (Keith et al. 2014, Keith et al. 2015). This finding is supported by other research (Mackey et al. 2008, Keith et al. 2014, Macintosh et al. 2015) and Australian temperate eucalypt forests are some of the most carbon-dense on earth (Keith et al. 2009). Carbon credits arising from the conservation of native forests could be a source of income for forest management (Macintosh 2013b, Perkins and Macintosh 2013). The Australian Government appears to accept that logging reduces the carbon stores of forests (Australian Bureau of Agricultural and Resource Economics and Science (ABARES) 2017), and carbon transfer away from forests is increasing (Montreal Process Implementation Group for Australia and National Forest Inventory Steering Committee 2013).

Against this body of evidence, it is both surprising and disappointing that the NSW Forest Industry Roadmap adopts the position it does. In our view it is reckless to commit to new RFAs and entrench logging when we know it reduces carbon stores of forests, at a time when we urgently need to maximise carbon sequestration. This demonstrated disruption is also a clear contravention of ESFM, both in its abiotic impact on carbon, but also in the area of intergenerational equity.

Legal failings of the RFAs

The RFAs removed public oversight of logging by excluding ‘third parties’ from taking legal action on logging breaches. This has resulted in a lack of transparency and has favoured industry over the public interest. The draft *Native Forestry Bill* on which we were consulted in late 2017 proposed to retain the exclusion of third party oversight. We are firmly of a view that if the RFAs were operating

effectively and Forestry Corporation of NSW were complying with its requirements that there would be nothing to fear from giving legal voice to third parties concerned about breaches.

Forestry Corporation (and its previous iterations) has committed scores of breaches of license conditions (Hammond-Deakin and Higginson 2011) and regulation by the EPA has been inadequate and ineffective as highlighted by the Royal Camp case study in Legislative Committee inquiry into the performance of the EPA in 2015 (New South Wales Parliament 2015). These breaches have resulted in ongoing conflict, and have resulted in extraordinary comments from the Land and Environment Court when the NSW Department of Environment, Climate Change and Water took the (then) Forestry Commission of NSW to court in 2011: “the number of convictions suggests either a pattern of continuing disobedience in respect of environmental laws generally or, at the very least, a cavalier attitude to compliance with such laws”.

The accreditation or ‘licensing’ (as the Hawke review described it) of logging under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) has reduced protections for threatened species (Feehely et al. 2013). Effective Commonwealth oversight of public native forest management must be restored in an effort to prevent further population declines.

Other options for forests

There are alternative options for forest management other than logging. NPA has developed a plan ([Forests For All](#)) to protect public native forests and use them to increase public access for health and economic benefits. We have also proposed the establishment of the [Great Koala National Park](#) in the Coffs Harbour hinterland. We are confident that both proposals would result in greater economic activity than the ailing timber industry, particularly when the economic value of non-timber forest benefits are accounted for. The value of ecosystem services (e.g. carbon and water) and tourism from forests can be much greater than that of timber (Keith et al. 2017).

Economic failings of logging

Over the life of the RFAs approximately \$12.9 million has been paid by the NSW Government, the majority to a multi-national corporation, to purchase non-existent timber as a result of over-estimated timber volumes at the outset of the RFAs and industry renegotiated Wood Supply Agreements beyond the life of the RFAs and prior to any public consultation (Pugh 2016a). Renegotiating contracts beyond the time period in which legal access to forests is granted is overreach and perverts the normal process of community consultation on matters of public interest. It also means that a future government that recognises the failure of the RFAs and wishes to exit logging is left with a significant financial liability at the taxpayers’ expense.

Buy-backs are just one of a series of subsidies that the logging industry receives. There are also hidden infrastructure damage and rates exemptions paid for by Local Government ratepayers (Deloitte Access Economics 2013). These subsidies alone are likely to be worth well over \$20 million per year. Were these properly accounted for, alongside the value of lost carbon and water, the economic performance of native forest logging would be significantly worse than it is.

However, even with the costs of such ‘externalities’ being met by citizens, the economic performance of the native forest logging industry has been dismal over the life of the RFAs, and evidence as to this failure exists in NSW (Campbell and McKeon 2015), Victoria (PricewaterhouseCooper 2016), Tasmania (Macintosh 2013b) and Western Australia (Swann and Brown 2016). Between 2009 and 2012 the Forestry Corporation of NSW (Forestry Corporation) lost \$85 million in native forest logging operations (Macintosh 2013a) and the NSW Auditor General

identified Forestry Corporation as having lost \$14.4 million in 2007-8 alone (Audit Office of New South Wales 2009). A 2015 report showed that between 2005 and 2014 Forestry Corporation made, on average, \$20 million per year. However, this was combined native and plantation sectors: the native forest sector lost on average \$13 million per year or \$78 million between 2009 and 2014 and was subsidised by revenue associated with plantation forests. This cross-subsidisation by the plantation sector results in lower dividend payments and therefore a loss to the citizens of NSW. Since 2005, Forestry Corporation of NSW has received \$137 million from NSW Treasury in the form of a Community Service Obligation (CSO)—\$9 million more than it paid in dividends (Campbell and McKeon 2015). A PricewaterhouseCoopers report (PricewaterhouseCooper 2016) on logging in Victoria found that \$5 million of investment on roads, machinery and equipment was required for the creation of every native timber job—approximately 12 times more investment than for other industries and almost 10 times greater than the plantation sector. For every \$1 invested, just 14 cents in both direct and indirect benefits were delivered to the economy. The Victorian Central Highlands RFA region, upon which the report was based, is one of the most profitable in Australia due to the size and growth rate of the mountain ash trees. Figures are therefore likely to be worse in NSW.

Minimum standards for renewed RFAs

We do not support the 20-year rolling renewal of NSW RFAs as we believe that NSW should transition out of public native forest logging given our assessment that they have failed to achieve their stated aims. As the Commonwealth and NSW governments have however both committed to the extension of and commenced renegotiation of NSW RFAs we are compelled to make the following recommendations:

- (1) That logging under RFAs be subject of the Commonwealth *EPBC Act*.
- (2) That independent Comprehensive Regional Assessments be undertaken prior to the finalisation and approval of NSW RFAs by the NSW and Commonwealth governments, as undertaken for the current RFAs.
- (3) That the extended RFAs include clauses that allow for their immediate termination following a five-year review or when significant information arises/circumstances change warranting their termination (e.g. the impacts of climate change, effects on biodiversity, continuing failure of Forestry Corporation of NSW to comply with requirements etc). Amendments may also be required to the compensation provisions of the Commonwealth *Regional Forest Agreements Acts 2002* to limit the financial risks to the state resulting from these clauses.
- (4) That the extended RFAs provide that wood supply agreements can only be entered into by or on behalf of NSW government for five-year periods aligned with the proposed five-yearly reviews. Such a provision will minimise the financial compensation risks to the Crown should (1) the NSW and/or Commonwealth government deem it necessary to terminate the agreements outside the five-year review cycle; (2) the NSW government be unable to meet the wood supply agreements due to the impacts of climate change (e.g. fires or other event resulting in the loss of supply); or other reasons.
- (5) That third-party rights be restored in the interests of transparency.
- (6) That the draft RFAs are subject to public consultation prior to any recommendation to the NSW and Commonwealth governments on their approval and signing.

Section 3: Failings of the RFAs

In this section we outline some of the key failings of the RFAs we have identified when measured against their high-level aims. The information is drawn from two NPA documents: [Regional Forest Agreements in NSW: have they achieved their aims](#) (2016) and [Forests For All](#) (2017). A full reference list is contained in both documents and omitted here for brevity.

The RFAs were designed to provide for multiple use of native forests including nature conservation, timber extraction and recreation. When the RFA aims are evaluated in light of the available evidence, it becomes clear that, in all cases, the RFAs have failed to meet their goals either wholly or in part. The process of RFA development was flawed and subsequent governance in regards to changes to the RFAs and timely reporting has not been to a sufficient standard. The RFA model has therefore failed to deliver effective management of public native forests.

Rather than perpetuate the RFAs, efforts should begin immediately to ensure a just transition of those employed in logging to other industries and to capitalise on the potential for native forests to provide opportunities for growing coastal populations, provide valuable ecosystem services, underpin efforts to tackle climate change and reverse the declines in iconic wildlife species.

Aim 1: a Comprehensive, Adequate and Representative reserve system

The Comprehensive, Adequate and Representative (CAR) reserve system was key to efforts to ensure that the RFA process provided adequate protection for forest ecosystems and threatened species. In the North East RFA region of NSW (the only region for which adequate data could be obtained by NPA) a CAR reserve system has not been achieved. This failure is a key reason as to why there is continued social unrest over native forest logging. Current reserves in the region are biased towards steep or infertile land and do not protect those ecosystems most vulnerable to clearing or which are already most compromised. The lack of a strategic methodology to determine reserve placement during the RFAs has resulted in a fragmented reserve system which is unable to meet the habitat needs of many forest species.

Aim 2: provide for the ecologically sustainable management and use of forested areas

There is an inherent contradiction between managing forests under the principles of ESFM and maximising wood production and profits, because efforts to protect the environment add costs and reduce timber yields. Arguably, this has led to multiple documented license breaches.

Examples of how logging is not consistent with ESFM include the predicted ecosystem collapse of mountain ash forests in the Central Highlands RFA region in Victoria; loss of tree hollows in logged forests; the contribution of logging to bell-miner associated dieback; altered fire regimes via logging and soil and water impacts.

Provision of water supplies of adequate quantity and quality is one of the key functions of forested catchments. In light of the impacts of logging on water quantity, water quality and fire regimes and of climate change predictions of increasing temperatures, more frequent droughts and decreased rainfall in south eastern Australia, ensuring forested catchments are protected should be a priority for government.

Aim 3: provide for the long-term stability of forests and forest industries

The accreditation or 'licensing' (as the Hawke independent review of the EPBC Act described it) of public native forest logging under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) via the RFA process was designed to provide long-term security for forest industries. Yet the value of Australia's native timber stocks declined by 30% to \$2 billion between 2005 and 2015, and hardwood sawn-wood production declined by 44% over a similar period. In contrast plantation stocks increased in value to \$10 billion and softwood sawn-wood production increased by 10%.

The production of forest biomass from native forests for power through burning is an emerging market for the logging industry. However, biomass has resulted in perverse outcomes in Europe as it is now driving deforestation in Europe, Russia and North America. As a result, it is more carbon intensive than burning coal (Brack 2017) and damaging to the natural values of forests. The NSW DPI has proposed burning forest 'residues', but residues are in fact defined as smaller-diameter trees (10cm diameter at the thin end) (NSW Department of Primary Industries 2017a). If pursued the removal of biomass from forests may result in an increase in logging intensity and is not an appropriate use of native forests.

Forestry Corporation has not met its reporting requirements with respect to the extent and growth stage of forest ecosystems. For this reason, it is not possible to accurately assess the stability of these elements of the public forest estate.

Aim 4: have regard to studies and projects carried out in regards to:

(i) Environmental values, including old-growth, wilderness, endangered species, National Estate values and World Heritage values

The RFA model has not facilitated the adoption and implementation of research on environmental values. Two RFA regions are now incorporated in global biodiversity hotspots, 40% of Australia's forest and woodland cover has been lost and 70% of remaining forests have been degraded by logging.

There have been several documented incidences of logging of old-growth forests in NSW since the RFAs, and in Tasmania logging old-growth is a major reason why Forest Stewardship Certification is not achievable.

Although protected wilderness doubled between 1997 and 2007 the prevention of wilderness declaration under the IFOAs has hindered wilderness reservation since the RFA signing. There are still outstanding areas of wilderness throughout coastal NSW.

The RFAs have failed to attain reservation targets for threatened species and weakened protection for threatened species as compared to the *EPBC Act*. The concept of the 'extinction debt' means that the full impacts of logging on native species may not be seen until it is too late to prevent extinction. For this reason, evidence of declines should be acted upon immediately. The direct impact of logging on native fauna is evident via research that used counts of dead animals by logging crews to determine distributions.

There are World Heritage values in the North East RFA region and the Southern and Eden RFA regions of NSW that should be considered for nomination. Very few of the committed-to World Heritage assessments and nominations have been completed over the life of the RFAs.

(ii) Indigenous heritage values

The RFA process failed to facilitate Aboriginal involvement to any more than a marginal degree and only addressed cultural significance, not economic needs or legal rights. The 20-year nature of the RFAs has effectively suspended native title claims for their duration. The ‘Tasmanian Wilderness’ World Heritage area is the only World Heritage area in an RFA region that considers Indigenous values alongside natural values. Mumbulla mountain, on the south coast of NSW is an example of where well-documented Indigenous values failed to prevent logging operations from being conducted. The Bundian Way, an ancient Aboriginal pathway, may meet world heritage criteria ‘Complex persistence of a hunting-and-gathering society on a single continent’.

(iii) Economic values of forested areas and forest industries

Both Forestry Tasmania and Forestry Corporation of NSW sustained substantial losses in native forest logging operations between 2009 and 2012 (\$64 million and \$85 million respectively). Projections from the Eden and Southern RFA regions predict a loss of between \$40 and \$70 million between 2014 and 2033. New Zealand, which ceased native forest logging in the late 1980s exported \$3.4 billion worth of wood in 2012 and is an example of how a shift from native forest logging to plantations can be an economically sound decision. Current valuations of forested areas only consider timber and do not include ecosystem services or nature. Control of erosion and water flows by protected areas in Australia was estimated to be worth \$1.5 and \$2.4 billion respectively in 2012. New research shows that the values of water and carbon substantially outweigh those of timber and that logging reduces these values (Keith et al. 2017). Carbon credits could deliver an estimated \$222 million for the Eden and Southern RFA regions between 2014 and 2022.

(iv) Social values (including community needs)

Although recreation activities are permitted in state forests the infrastructure is often of poor quality as providing for recreation is a secondary function of Forestry Corporation. Research suggests that there are significant health benefits, and therefore potentially savings to the state through contact with nature. It is well established that exercise is good for us, so promoting public access to forests for a diverse range of activities rather than logging will help ensure that our growing coastal populations have opportunities to get outdoors in natural areas and stay physically fit. But besides physical fitness there is also an ever-increasing body of evidence that contact with nature is vital for our mental wellbeing and can help increase productivity and creativity. A recent study in Australia showed that the magnitude of this benefit was linked to dose—how often people engaged with nature—and that such benefits could reduce the medical costs of depression alone by \$800 million per year. For children, outdoor learning and contact with nature can benefit a range of skills, such as reasoning, but can also improve concentration, calmness, empathy and self-esteem. Parks Victoria estimates that avoided healthcare costs in Victoria from physical activity being undertaken in National Parks is up to \$200 million per year. In order to maximise these benefits of public native forests, a transition away from logging is imperative.

Regional jobs provided by logging are now very few (as Table 47 in the *Progress Report* suggests). Options to increase employment opportunities exist via appropriate development of the plantation industry and growing regional employment by managing state forests for carbon storage and increasing funding for the NPWS in accordance with the role of natural areas as the key driver of regional tourism.

(v) Principles of Ecologically Sustainable Forest Management

Disruption of the carbon cycle in logged forests (see case study) clearly contravenes the principles of ESFM.

While it is difficult to demonstrate a reduction in biological diversity due to logging, the number of forest-dependent species assessed as threatened is increasing and some species have experienced rapid declines. Logging is a key threatening process seen as an influence on this decline and any related 'extinction debt' (delay between a threatening process and subsequent extinctions) means past logging may continue to influence species declines for some time. This makes the precautionary principle imperative yet this is not being adhered to in current management.

Desiccation of forests due to logging makes logged areas more susceptible to fire while also diminishing the capacity of forests to provide water for human use.

Logging is not an optimal use of forests because it jeopardises natural values which are the primary drivers of tourism—the most important industry for regional Australia and a key strategic concern of the NSW government—and the cost of lost carbon storage and water are likely to outweigh the value of timber. In contrast, protected areas provide documented economic benefits to regional communities in a variety of areas.

Section 4: The 10 and 15-year reviews

The joint statement from the NSW and Australian Government's states that "the RFA review will provide a full appraisal of the RFAs"

(https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0019/750430/overview-extending-regional-forest-agreements.pdf)

It is our view that the *Progress Report* does not provide a full appraisal. A full appraisal of the performance of the RFAs would include detailed presentation and analysis of data pertaining to the sustainability indicators and key aims of the RFAs at the individual RFA and aggregate level. The reviews do not ask the key questions that must be addressed at this juncture: have the RFAs been a successful model for forest management, and therefore should they be renewed?

In fact, page 7 (Section 2.1) of the review, states that "the Parties hold a shared intent for an ongoing role for NSW RFAs, and will consider this within the process for conducting the review". Given this it is apparent that the current review is not intended to critique the RFAs but rather is a necessary requirement to facilitate the extension of RFAs contrary to evidence-based decision-making.

The 10-year review is between 5 and 8 and years late. Given this, it is difficult to see how this review can function to meet the aim of giving the community confidence in the RFAs. This outcome could only be achieved if conducted within the timeframe set in the RFAs.

We are strongly of the view that the reviews should include much more widespread consultation in the form of briefings and community sessions. This is important as anyone under the age of 30 is unlikely to be aware of the RFAs.

Functioning of the agreements

Endangered species protections

We do not believe that the Commonwealth Government has adequately promoted endangered species protections via the RFAs. There are two species that highlight this assertion: koalas and greater gliders. Greater gliders have undergone sharp declines in many areas since the signing of the RFAs (Lindenmayer et al. 2011). They were listed as vulnerable under the EPBC Act in May 2016, with the conservation advice highlighting the loss of hollow bearing trees and fragmentation of habitat via logging as key threats. The Threatened Species Scientific Committee recommended that a recovery plan be made to guide recovery, but this has not happened. See case study on page 19 of this submission.

World Heritage (p.10)

We note the disappointing statement that there have been no World Heritage nominations within the three NSW RFA regions within the three five-year periods, and express our disappointment that the State and Commonwealth Governments are failing to recognise the extraordinary global significance of our State. The lack of pride in our natural environment, and ambition to protect it for future generations, will surely be a source of future regret. NPA supports the review of World Heritage failings written by Dailan Pugh of the North East Forest Alliance

The expert panel report lists several areas under a variety of themes that could be progressed as World Heritage, including Alps to Sea and Moonee-Bindery area. We do not believe that World Heritage discussions should take place independently of the RFA process as asserted, because the RFAs have a significant bearing on World Heritage—including degrading areas that are of World Heritage significance. Rather, consideration should be given to the economic and environmental performance of World Heritage areas as compared to that of native forest logging based on the evidence accrued throughout the life of the RFAs in order to evaluate whether logging is indeed the most appropriate use of areas that are of outstanding global conservation value.

Five-yearly review

The reviews have not been timely, and therefore logging under the RFAs has not been consistent with the RFAs. In our view, this should be grounds to terminate the RFAs. We note that part (c) of this milestone invites public comment on the performance of the agreements. As will become clear from our submission, the data contained within the review does not enable any analysis of the performance of the RFAs as a model for forest management.

Ecologically Sustainable Forest Management (ESFM)

The five principles of ESFM to which the NSW Government states it is committed have been contravened to the point of being redundant as evidenced below. This evidence clearly demonstrates the failure of the RFA model and undermines the NSW Government's position on ESFM.

Case study: koala declines over the life of the RFAs

Few species illustrate the problem with logging as neatly as the koala. Koalas were once so abundant in eastern NSW that two million koala pelts were exported from eastern Australia in 1924 (Ford 2014). The Eden area is known to have had a koala population large enough to support a pelt trade in the late 19th century (Lunney and Leary 1988). Koalas were not listed as threatened when the RFAs were signed. In 2012 they were listed as vulnerable under the Commonwealth EPBC Act, but this has translated into little effective protection in the course of logging operations. Since the 1990s, koala populations have declined sharply in many parts of NSW. They are almost extinct in the Eden RFA region and have undergone 50% population declines in northern NSW in the last 20 years (Adams-Hosking et al. 2016). The once-large Pilliga population has crashed. The Commonwealth Government has allowed its National Koala Conservation and Management Strategy 2009-2014 to lapse, meaning that there has been no Commonwealth guidance for three years. NSW has loosened land clearing restrictions and has been consulting on a whole of Government koala strategy and State Environment Planning Policy 44 (Koala Habitat Protection) for almost a year.

In 2016 the NSW EPA koala habitat mapping pilot found (NSW Environment Protection Authority 2016) that “koala activity correlated with larger tree size classes and mapped mature forest”, that koalas “prefer areas of least disturbance” and that the probability of koala occurrence increased with tree size. This supports independent research highlighting the strong positive relationship between koala occurrence and tree size (Moore and Foley 2005). Because logging shifts the age-class distribution of trees to younger, smaller ones, (Lunney and Matthews 2004) logging is reducing habitat quality for koalas. Since 2006, logging has been occurring in State forests that has been described by the EPA as “*not consistent with the definition and intent of Single Tree Selection*”, and which has been removing between 40 and 100% of trees. This is described in the 10 and 15-year reports as ‘highly interpretable’. Of 74,906 hectares of forest subject to this unlawful logging in the Lower North East of NSW, 23,742ha (32%) was high quality koala habitat (Pugh 2016b). A Forestry Commission study from 1980 (Recher et al. 1980) stated that “clearfelling eliminates arboreal mammals from the logged area” and removal of a large proportion of basal area is not compatible with koala persistence (Smith 2004). It is therefore beyond reasonable doubt that the intensification of logging is having a serious impact on koalas. The NSW Chief Scientist, in her report into koala declines (NSW Chief Scientist and Engineer 2016) recognised that intensive logging may have negative impacts on koalas, and noted that “little data is available to assess the effectiveness of [logging] prescriptions in mitigating impacts on koala populations”.

The Chief Scientist also stated that “based on the precautionary principle, which is defined under the Protection of the Environment Administration Act (1991), if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation”. Unfortunately, Forestry Corporation chooses to cite this lack of data as a lack of evidence as to impacts of logging on koalas—a perversion of the precautionary principle.

Industry has recently claimed that the detection of koalas via song meters in logged areas proves that there are large, hitherto undetected koala populations (Vukovic 2017). Examination of the report reveals that bellows were detected on just 10% of nights (46 of 441), at just 29% of locations (18 of 63) and just five locations accounted for 70% of bellows (193 of 276). Coupled with findings of just one or two faecal pellets (genuine evidence of occupancy) at just 17% of those locations (11 of 63) (Law et al. 2016) suggests low population densities and patchy distribution, not thriving koala populations.

Principle 1: Maintain or increase the suite of forest values for present and future generations.

The number of forest species listed as threatened has increased over the life of the RFAs (Montreal Process Implementation Group for Australia and National Forest Inventory Steering Committee 2013, Australian Government Department of Environment 2016); koalas are becoming more and more scarce in RFA regions (Lunney et al. 2014, Adams-Hosking et al. 2016); logging reduces carbon stores from forests (Keith et al. 2009, Keith et al. 2014, Keith et al. 2015, Macintosh et al. 2015); logging reduces water supplies from forests (Vertessy et al. 2001, Australian Conservation Foundation 2009) and logging has resulted in the reduction of timber volumes in forests (NSW Department of Primary Industries 2017b) through forests being over-cut (Audit Office of New South Wales 2009).

Principle 2: Ensure public participation, access to information, accountability and transparency in the delivery of EFSM

Crucial datasets are not available to the public to assess the implementation of EFSM. For example, there is no publicly available spatial dataset showing the location, time, spatial area and volume harvested from individual logging operations over the life of the RFAs and there is no publicly available spatial dataset to show the change in forest age-structure over the life of the RFAs—a key measure of biodiversity values, carbon stores and water provision. The lack of timely reviews, and the lack of data contained within those reviews, has contributed to a lack of public accountability. The lack of third-party rights to hold Forestry Corporation to account has meant that breaches of licenses (and therefore of EFSM) have been numerous, and the EPA has been either unable or unwilling to act on behalf of the public.

Principle 3: Ensure legislation, policies, institutional framework etc provide incentives for EFSM

Instead of incentivising EFSM, the institutional framework encourages the contravention of EFSM. This is because the public cannot hold Forestry Corporation to account, and the legal recourse available to the EPA results in little more than a slap on the wrist. It is unclear why the NSW and Commonwealth Governments are failing to investigate the potential for generating revenue for carbon stores from native forests. This would provide income to employ people to manage forests, as well as allowing alternative uses such as recreation and nature-based tourism to flourish. This would provide a strong institutional framework to incentivise EFSM.

What appears to be a refusal of the Government to recognise the growing body of high-quality, peer-reviewed literature on the impacts of logging on carbon stores means that EFSM cannot be achieved.

Principle 4: Apply precautionary principles for prevention of environmental degradation

The precautionary principle was defined by the NSW Chief Scientist in 2016 (NSW Chief Scientist and Engineer 2016) as “if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation”. No long-term study has been conducted by the Forestry Corporation of NSW on the impacts of logging on koalas and the NSW Chief Scientist has cited this lack of data as an impediment in assessing the effectiveness of logging prescriptions in protecting the species, the correct application of the precautionary principle in the face of declining koala populations would be to immediately halt logging in koala habitat. Instead, Forestry Corporation use the lack of data to claim no evidence of logging impacts on koalas which is a perversion of the precautionary principle.

Principle 5: Apply best available knowledge and adaptive management

Knowledge on threatened species, forest ecosystems and the impacts of logging have become increasingly clear throughout the life of the RFAs. There are literally hundreds of scientific papers that have highlighted serious problems with logging and which have not resulted in change to practices.

We have made comment on the individual indicators in Table 1 below.

We would appreciate the opportunity to meet with the independent reviewer to discuss our submission as soon as possible.

Yours sincerely



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Chief Executive Officer
National Parks Association of NSW



Kate Smolski
Chief Executive Officer
Nature Conservation Council of NSW

Table 1: Comments on individual indicators

Criterion	Section	Indicator	Comments
1. Conservation of biological diversity	1.1. Ecosystem diversity	1.1.a. Cover	Partially satisfactory. Missing from the evidence on this indicator is an assessment of condition. We know that logging results in serious weed infestations, which in turn contributes to problems like bell-miner associated dieback.
		1.1.b. Growth stage	Unsatisfactory: Growth stage is an important predictor of many forest attributes such as the volume of carbon stored in forests, biodiversity value and water provision. No data is presented to allow the public to assess what the change in growth stage in production forests has been throughout the life of the RFAs, and therefore to what degree logging has conformed to ESFM. It is hard to believe that in the near 20-years of the RFAs Forestry Corporation has not developed a spatial layer available to the public that details the location, method and frequency of individual logging events.
		1.1.c. Protected areas	Unsatisfactory: Informal reserves and areas protected by prescription make up 9% of Eden, 20% of NE and 8% of Southern RFA regions. It is difficult for the public to have confidence in the integrity of these informal reserves due to the repeated breaches by Forestry Corporation. Missing is a table showing each Forest Ecosystem, the percentage reserved in each reserve type and the percentage still outstanding. No data is presented as to the success of prescriptions in protecting forest values, and informal reserves are not a genuine protected area category.
		1.1.d. Fragmentation	Unsatisfactory: A lack of data. The report highlights that native vegetation condition is declining throughout NSW, which in itself is a measure of how the RFAs have failed. While the <i>2015 State of Environment</i> is cited, the <i>Progress Report</i> fails to address Table 13.1 in <i>2015 State of Environment Report</i> that shows logging to be, by a long way, the largest driver of canopy cover loss in NSW on an annual basis. Greater glider conservation advice (Australian Government Department of Environment 2016) highlights that logging is fragmenting habitat. The report cites land clearing as a Key Threatening Process (KTP), but fails to recognise the loss of hollow-bearing trees as a KTP that is

Criterion	Section	Indicator	Comments
			driven by logging and drives fragmentation. No data presented as to the contribution of logging to fragmentation.
	1.2. Species diversity	1.2.a. Forest-dwelling species	Unsatisfactory: This indicator cites non-ecological data almost exclusively from NPWS's WildCount program. This gives us no information on the success of the RFAs to protect threatened species, as logging does not occur on NPWS land. The only conclusion that a reader can judge from this indicator is the Forestry Corporation is doing no work to increase knowledge of habitat, disturbance and life history info, and is not collecting any data to track changes in species over time.
		1.2.b. Forest-dwelling species at risk	Unsatisfactory: No effort is made to assess the change in conservation status of forest species or ecosystems over the life of the RFAs, and therefore there is inadequate information to allow an assessment of the performance of the RFAs. Threatened species sightings enable no assessment of trends as no measure of effort is given. Environmental ecosystem accounts in the Victoria Central Highlands region, show that species have moved into higher threat categories. This is also the case in NSW where koalas have become threatened over the life of the RFAs, as have greater gliders and yellow-bellied gliders. All of these species are threatened by logging operations. http://www.environment.nsw.gov.au/research-and-publications/publications-search/recovery-plan-for-the-yellow-bellied-glider-petaurus-australis It is not possible to accurately report on the trends of forest species if no effort is made to survey them.
		1.2.c. Representative species monitored.	Unsatisfactory: We are told that there are many monitoring efforts underway by FC (Table 21), but there is no data to allow the reader to assess population trends of the monitored species and therefore to assess whether the RFAs have been effective in their protection. Monitoring requires information on change over time. It would appear that little effort is being made to effectively monitor species in State forests. The koala habitat mapping and threatened ecological community (TEC) mapping although useful are not monitoring, they provide a snapshot. Monitoring conducted on NPWS land by NPWS gives no direct

Criterion	Section	Indicator	Comments
			information as to the success of the RFAs in protecting forest species as logging does not occur on NPWS land. We highlight the fact that Forestry Corporation has failed to undertake any long-term monitoring of koalas and the impact of logging on them. Because of this, the NSW Chief Scientist stated that “little data is available to assess the effectiveness of these prescriptions in mitigating impacts on koala populations”. The apparent lack of monitoring by Forestry Corporation means that it is not possible for the public to assess the effectiveness of the RFAs in protecting forest species and therefore the precautionary principle should prevail and logging cease in threatened species habitat.
	1.3 Genetic diversity	1.3.a. Forest species at risk of isolation	Unsatisfactory: Logging increases the degree of isolation of forest patches for many forest-dependent species by reducing key habitat features. The greater glider is one example (Australian Government Department of Environment 2016). There is no data provided as to the success of prescriptions in permitting the dispersal of species through production forest.
		1.3.b. Genetic resource conservation	Unsatisfactory: No data is presented. We are concerned that a single species, blackbutt, is favoured over other species which may decrease the genetic diversity in production forests over time.
2. Maintenance of productive capacity		2.1.a. Available forests and area harvested	Unsatisfactory: Repeated failures to meet Wood Supply Agreement (WSAs) means that the NSW taxpayer has spent approximately \$12 million buying-back non-existent timber (Pugh 2016a). No data is provided to demonstrate how the Forest Industry Roadmap goal of maintaining wood supply without eroding environmental values can be met. No reference is made to the review of WSAs that showed widespread dissatisfaction of smaller millers at preferential treatment of Boral; referenced the need for millers in southern NSW to develop equipment to process ‘super-small’ log sizes and cited over-harvesting of the more accessible coastal forests (NSW Department of Primary Industries 2017b). We note that Table 24 indicates that the harvestable area has increased slightly over the life of the RFAs, in contradiction of the oft-expressed view that reservations have reduced harvestable area.

Criterion	Section	Indicator	Comments
		2.1.b. Plantations	Unsatisfactory: Although reference is made to the ABARES data, this section would benefit from some discussion as to the trends in plantations over time and the interaction between the plantation and native sectors.
		2.1.c. Removal of wood products	Unsatisfactory: A key element of this indicator is 'the level determined to be sustainable'. The data provided gives no information as to this level. In contrast, there is extensive evidence that logging is impacting on a range of different species; on carbon stores and water; and that the size of trees in production forests is getting smaller over time (particularly in southern NSW).
		2.1.d. Removal of non-wood products	Unsatisfactory: A key element of this indicator is 'the level determined to be sustainable'. The data provided gives no information as to this level, and therefore no assessment can be made as to whether the figures in Table 35 reflect sustainable use.
		2.1.e. Area harvested and proportion regenerated	Partially satisfactory: Data is provided as to the regeneration of forests. However, the average proportion regenerated is 79.5%, and in some years considerably less. It is not clear from the data what areas are failing to regenerate. Using the figure of 2%, or 23,807ha, of the estate harvested in a single year (cited under indicator 2.1a) this indicator suggests that approximately 0.4%, or 95 hectares, of native forest is lost every year through a failure to regenerate. Over the 20-life of the RFAs this would equate to 1,900 hectares effectively cleared. No interpretation of how this is consistent with ESFM is given.
3. Ecosystem health and vitality		3.1.a. Scale and impact of agents and processes affecting forest health	Unsatisfactory: Figure 3 in the 2017 independent review into bell-miner associated dieback (BMAD) identifies activities that increase light to the under or mid-storey as pushing healthy forests towards a BMAD affected forest. The report stated (page 20) that "the single greatest factor in increasing understorey density was the increase in light availability to the forest floor, with increasing biomass removal resulting in greater light availability and increased lantana invasion success". This led to a recommendation (page 76) of "For any activity (definition includes logging) that disturbs susceptible vegetation communities disturbance of the canopy should be minimised where possible" (Silver and Carnegie 2017). In short, logging should not take place in

Criterion	Section	Indicator	Comments
			susceptible forests. By referencing low intensity fire and ignoring canopy removal, the 10 and 15 year reviews appear to be cherry-picking. Failing to recognise the influence of logging on BMAD does not just have a poor environmental outcome, it has economic implications too: BMAD can kill forests and therefore reduce timber stocks. The report fails to make any analysis of soil impacts of logging.
		3.1.b.	Partially satisfactory. It would be useful to have a breakdown of how much State Forest has been burnt, including proportions, and what impact this has had on timber stocks.
4. Conservation and maintenance of soil and water		4.1.a. Area managed for protective functions	Unsatisfactory: This indicator requires graphic information on the locations of open and closed catchments and an explanation as to why the areas protected change over time, and whether locations also change over time. No data is provided as to the compliance of Forestry Corporation under the EPL and the success of the EPL in protecting soils and water. As a result this indicator is largely meaningless.
		4.1.b. Management of the risk of soil erosion	Unsatisfactory: No data is provided to allow the public to assess the degree to which soil erosion has been avoided. In contrast, audits frequently reveal exposed soils on steep slopes which suggests erosion is likely to be widespread.
		4.1.c. Management of the risk of soil physical properties	Unsatisfactory: No data is presented. The statement that “the extraction of logs is to be carried out in a manner and by methods that do not result in significant soil disturbance” and that this mitigates damage must be evaluated. A cursory visit to log dumps and harvest areas strongly suggests that this is not being adhered to.
		4.1.d. Management of the risks of water quantity	Unsatisfactory: Although it is clear that patterns of water yields broadly similar to those described for the mountain ash forests of the Victorian Central Highlands (the Kuczera curve) do not uniformly occur in NSW, it is also clear from the literature cited that logging does have significant impacts on water supplies. The EPA has not performed consistently well as a regulator and it is therefore difficult to have confidence that water catchments are being well-managed. Spatial information on the spatial and temporal occurrence of logging operations would help in this regard, as would better presentation of

Criterion	Section	Indicator	Comments
			the Forestry Corporation data that is cited (e.g. changes in stream flow over time; changes in sediment loads etc).
5. Maintenance of forest contribution to global carbon cycles		5.1.a. Contribution of forest ecosystems and forest industries to greenhouse gas balance	Unsatisfactory: Unfortunately, the report has chosen to represent the industry viewpoint on forest carbon cycles without citing the research of independent scientists that presents alternative findings (see case study). We urge the regulator to take an evidence-based approach to carbon stocks.
6. Maintenance and enhancement of multiple benefits		6.1.a. Value and volume of wood and wood products	Unsatisfactory: It would be more useful to separate public and private native forest volumes. This would allow the public to better assess harvests over time on public property. Explanation as to the decline in harvest over time in native hardwood is not offered. This is important information as one of the aims of the RFAs was to ensure a sustainable industry. Taken with evidence of job declines, this suggests that the RFAs have not maintained the timber industry, and therefore have failed economically.
		6.1.b. Non-wood forest products	Partially satisfactory: Because the indicator includes data outside RFA regions it is not possible to assess patterns in state forests.
		6.1.c. Value of forest-based services	Unsatisfactory: Well-developed markets exist for water, carbon and tourism. The discussion of biobanking is irrelevant to analysis of performance under the indicator. The field of ecosystem service valuation has advanced immeasurably since the RFAs were signed, yet there is no discussion of this. Ecosystem accounts have been developed for the Victorian Central Highlands (Keith et al. 2016), along with information on trade-offs between timber, water and carbon (Keith et al. 2016). A similar assessment for NSW RFA regions is imperative prior to rolling over RFAs so that the public can base a decision on forest management in full knowledge of the trade-offs. Table 36 contains no data as to the visitation rate to State Forests, and therefore it is not possible to assess the performance of Forestry Corporation in providing for visitation.
		6.1.d. Consumption	Unsatisfactory: No data presented. No discussion as to what the drivers of declining consumption of hardwoods are, nor implications for RFAs.
		6.1.e. Degree of recycling	Partially satisfactory: Although some data are presented there is no discussion of targets.

Criterion	Section	Indicator	Comments
	1.2. Investment in the forest sector	6.2.a. Investment in forest management	Partially satisfactory: No data is given on Community Services Obligation spending.
		6.2.b. R & D	Satisfactory.
	6.3. Recreation and tourism	6.3.a. Public recreation	Satisfactory: Although 99% of State Forests are available for recreation (Table 40) only 0.002% of the forest estate is managed primarily for recreation (Table 41). This clearly highlights the primacy of timber extraction over other forest uses.
		6.3.b. Range and use of recreation/tourism	Partially satisfactory: No measure of user satisfaction is presented. This is important as logging recreation areas frequently causes conflict. The number of most facilities has steadily declined over time (Table 43) which clearly highlights that the focus of forest management is not on recreation.
	6.4. Cultural, social, spiritual needs	6.4.a Area to which Aboriginal people have use and rights	Unknown: 1,370 hectares, or 0.0007% of the State Forest estate managed for Aboriginal cultural heritage seems very low.
		6.4.b. Registered places	Unknown.
		6.4.c. Protection of values	Unknown.
		6.4.d. Importance of forests to people	Unsatisfactory: This statement conflates a perception of sustainable management with actual sustainable management. Although we concur with the importance of forests for carbon storage we would again point out that logging forests reduces carbon stores and is therefore driving climate change. Polling conducted in late 2017 in the north coast NSW electorates of Ballina and Lismore found almost 90% of people supported protecting forests for wildlife, carbon stores, water provision and recreation. Under 10% supported logging for timber and woodchips and just 2% supported burning forests for power generation. The results of this polling can be provided upon request.
	6.5. Employment and	6.5.a. Direct and indirect employment	Unsatisfactory: This statement fails to disentangle the native and plantation sectors. The 2011 census figures show that forestry and logging and associated services (excluding log processing and product manufacture) directly employ

Criterion	Section	Indicator	Comments
	community needs		2,131 people in NSW (NSW Department of Industry 2016). This was a fall from the 2,522 recorded in the previous census (NSW Department of Industry and Investment 2010). The employment figure of 2,131 accounts for 0.02% of all primary industries employment in NSW. In regional NSW (NSW less Sydney, Newcastle, Wollongong and the Central Coast) primary industries provide 11.3% of total employment which means forestry and logging and associated services provide 0.2% of regional employment. Note that these figures aggregate native forest logging and plantation forestry: native forest logging is now estimated to employ approximately 600 people throughout NSW (Campbell and McKeon 2015), or 0.006% of all primary industries employment. Forestry Corporation has seen a steady decline in staff numbers from 803 in 2011 (Sweeney 2016) to 463 in 2016 ¹ . The Australian reported a 62% decline in forestry and logging jobs between the 2011 and 2016 censuses.
		6.5.b. Wage rates and injuries	Unknown.
		6.5.c. Resilience of forest communities	Unsatisfactory: As the text states, this indicator does not give much information as to the resilience of communities. It is interesting that the communities where forestry is a significant employer (>10%) are all plantation-based. This again highlights the importance of disaggregating the native and plantation sectors so that the public can better understand the job contributions and trade-offs.
		6.5.d. Resilience of Indigenous communities	Unknown: Total employment of Aboriginal people is extremely low, and forestry accounts for a small proportion of Aboriginal employment. This suggests economic opportunities for the Aboriginal community are minimal.
7. Legal, institutional and economic framework		7.1.a. Extent to which legal framework supports conservation and sustainable management	Instead of incentivising ESFM, the institutional framework encourages the contravention of ESFM. There is no transparency or public participation in the legal system in regards logging: citizens cannot challenge logging breaches due to the removal of 'third party' rights, and the EPA often inexplicably fails to act on what look like egregious breaches of environmental licenses. The

¹See response to question 77 in: <https://www.parliament.nsw.gov.au/committees/DBAssets/InquiryOther/Transcript/10303/GPSC%205%20-%20ASQ%20-%20Primary%20Industries%2c%20Land%20and%20Water.pdf>

Criterion	Section	Indicator	Comments
			accreditation of NSW law under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act</i> has reduced protections for threatened species (Feehely et al. 2013). We note that Forestry Corporation as a State-owned corporation has a responsibility to be a model litigant and we question whether this responsibility is being met.
		7.1.b. Extent to which institutional framework supports conservation and sustainable management	Our view is that logging has been poorly regulated during the life of the RFAs and therefore the institutional framework does not support ESFM. The 2015 recommendations pertaining to forestry arising from the Legislative Council inquiry into the performance of the EPA have not been implemented. We are deeply concerned that the failings of logging are not being recognised through Forest Learning. For example, the module on Australia's amazing mountain ash fails to cite research showing how the combination of logging and fire has pushed the ecosystem to the brink of collapse (Burns et al. 2015), and does not recognise that only a small percentage of wood harvested from mountain ash forests ends up as long-lived products (Keith et al. 2014). Forest Learning is an online resource designed to serve school teachers and educators, children, and the public with information on Australian forests and forest-based products, and provision and access to forestry teaching resources.
		7.1.c. Extent to which economic framework supports sustainable management of forests	Unsatisfactory: There is no recognition in this indicator of the range and level of Government subsidies received by the industry (e.g. the Community Services obligation and rate-free access to timber). The biobanking reference is not relevant to this indicator.
		7.1.d. Capacity to measure and monitor changes	Unsatisfactory: Citing the five-yearly reviews as a mechanism for reporting on ESFM is extraordinary considering how late the reviews are. Many of the programs referred to are not monitoring programs, because they have not been set up to be repeatable. No data is presented, and the NSW Chief Scientist has previously noted that there was inadequate data to determine whether logging prescriptions were effective in protecting koalas.
		7.1.e. Capacity to conduct and apply research	Unsatisfactory: The evidence on species declines, key threatening processes and carbon cycles of forests does not bear out the assertion that 'a scientific

Criterion	Section	Indicator	Comments
			understanding of the characteristics and functions of forest ecosystems underpins their sustainable management in NSW'.

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