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NSW Natural Resources Commission
GPO Box 4206,
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Subject: Comments regarding the Draft Report – Active and adaptive cypress management in the Brigalow and Nandewar State Conservation Areas

Dear Sir/Madam

Thank you for the opportunity to comment on this report and cypress management in State Conservation Areas (SCAs). I am a resident of Inverell, in northern NSW, and a consultant Ecologist with over 20 years experience in the assessment of flora and fauna habitat in central and north western NSW, including work within a number of the SCA areas. I was part of the Community Trust that managed Goonoowigall SCA for 30 years prior to the *Brigalow and Nandewar Community Conservation Areas Act 2005* and the handing over to OEH. I was also a member of the Border Rivers Gwydir Community Conservation Advisory Committee and I currently sit on the OEH Northern Tablelands Regional Advisory Council.

I support the use of adaptive management in our conservation areas for improved biodiversity outcomes. I also know, based on my experience, that adaptive management is a tool already used within these reserves, its use restrained only by resourcing and funding limitations within OEH. To imply as this document does that adaptive management is not being utilised within the reserve system is incorrect and misleading.

I am also pleased the document recognises the importance of landscape linkages, in particular the critical role Travelling Stock Routes and Crown reserves play in providing habitat and movement corridors between many of our reserves west of the Great Dividing Range.

I am however disappointed to find the science used in this document to justify ecological thinning and livestock grazing for the promotion of biodiversity severely flawed. What is clear from this document is that science has been 'shoe-horned' to fit a predetermined conclusion. If implemented, as presented, the actions proposed in this draft report will result in perverse outcomes for biodiversity.

Consistency in management between private lands and conservation reserves

The argument tendered in his report that thinning, grazing and prescribed burning are all actions consistent with management on private land and therefore should be permitted within SCAs makes no ecological sense. The application of these actions on private land has and does lead to significant biodiversity losses across that landscape, because the primary driver of land management on private property is understandably financial profit. The primary role of SCAs is conservation with multiple human use, it does not and should not include commercial activities that require guaranteed on-going supplies of biological material for their operation.

Identification of white cypress pine in SCAs

Contrary to its title, the focus of this draft report is solely on the thinning the white cypress pine (*Callitris glaucophylla)* and its secondary commercial benefits. However, the method used to identify areas of white cypress pine within the SCAs does not appear to differentiate between white cypress pine and black cypress pine (*Callitris endlicheri*). For example, and based on my knowledge and experience, it is unlikely the areas identified within Goonoowigall, Gwydir River or Tingha Plateau SCAs support any significant stands of white cypress. In these reserves, the areas identified as dense white cypress pine are much more likely to support black cypress pine, a non-commercial timber.

Additionally, by the report's own admission (Attachment 3, p3) the method also does not readily differentiate between white cypress, buloke (*Allocasuarina luehmannii*), rough-barked apple (*Angophora floribunda*) (presumably regeneration) and *Acacia* spp, none of which have any commercial value. The inability to differentiate between commercial and non-commercial species is a serious flaw in the method. It indicates the extent of dense white cypress regrowth within the Brigalow and Nandewar SCAs has been overestimated, and consequently the potential timber resource available for commercial purposes overstated.

Should thinning occur within these reserves for commercial purposes as proposed, then I believe the government will be severely embarrassed when the area identified for thinning/logging fails to supply the timber resource postulated in this report.

Identification of appropriate vegetation condition

The report presents a State and Transition model for white cypress communities showing three condition states. This is a over-simplified model given the range of

vegetation communities that white cypress occurs in, and consequently has a number of short-falls including:

- Failure to acknowledge the importance of regeneration, or presence of more than one age class, as indicators of condition.
- Dependence on an abundance of hollows as a criterion of condition. Hollow numbers in any vegetation type not only depend upon the presence of Eucalypts but more importantly the type of Eucalypt present. Some Eucalypt species form hollows more readily than others (ie ironbarks vs red gums), consequently the lack of hollows in a given community may be a more an indicator of Eucalypt species present rather that any impact resulting from white cypress pine density.
- Failure to quantify habitat elements, ie Condition 1 requires 'more' woody debris. The question is 'more' that what?
- Failure to adequately account for condition states of grassy woodlands/open forests supporting white cypress pine. It is ecologically unsound to discount the condition of grassy systems because they fail to have shrub cover or have a low diversity of shrubs, as proposed in this State and Transition model.
- It is unclear where an area would fit in the model if weeds are not at high densities as indicated in Condition II. In my experience, most areas of dense cypress (white or black) rarely have high weed densities. The only evidence given in this document in support of high weed densities in cypress pine is purely anecdotal, and further is not supported by the NRCs own survey data.
- Failure to acknowledge that some vegetation types can naturally be dominated by only one or two species and still be in good condition ie white box/white cypress pine grassy woodland.
- Failure to acknowledge available research that indicates many other factors including grazing intensity, trampling, soil compaction and fire management might be the precursors to soil erosion in dense regrowth stands, rather than the presence of dense cypress alone (Eldridge DJ, Wilson BR and Oliver I (2003) *Regrowth and Soil Erosion in Semi-Arid Woodlands of NSW.* Center for Natural Resources, Department of Land and Water Conservation pub).

Inappropriate cypress canopy densities

The canopy density classes represented in the report indicate that any cypress areas with a canopy cover of greater than 11% and a patch size greater than 1 hectare should be available for thinning/logging. As per the standard text for vegetation description (Walker and Hopkins 1990) a canopy cover of 11% is an open woodland (Walker J and Hopkins MS (1990) Vegetation In *Australian Soil and Land Survey Field Handbook*. 2nd Ed. McDonald RC, Isbell RF, Speight JG, Walker J and Hopkins MS. Inkata Press, Melbourne). Trees in open woodland are well separated not dense (Walker and Hopkins 1990). Further, an open woodland structure does not inhibit Eucalypt regeneration, or the

growth of a dense grassy sward therefore this threshold is totally inappropriate and suggests the report author has little knowledge of vegetation structure or its drivers.

Similarly, it is unclear why 1ha has been selected as an extent threshold. A single hectare of dense regeneration within a larger remnant of mixed age woodland/forest is unlikely to have any negative impact on flora and fauna. It fact such areas are probably adding to the heterogeneity of the remnant and providing important habitat for fauna species requiring the protection of dense cover for nesting or roosting, and for ground flora such as orchids, lichen and mosses. I believe there is a 1ha threshold under the Property Vegetation Planning tool but it must be remembered that this tool is aimed at increasing primary production while maintaining existing biodiversity. It is NOT designed for improving and/or ensuring conservation outcomes.

Given the focus of this report is improving the biodiversity of dense cypress stands, it is difficult to reconcile either of these thresholds. Conducting logging/thinning in open woodlands or on patch sizes less than 1ha will potentially lead to losses in biodiversity by further reducing canopy cover in already open systems and/or reducing remnant heterogeneity and it begs the question as to what the scientific basis for these recommendations?

The cynical amongst us would postulate that these areas are those more likely to support trees suitable for saw logs so that this threshold has been designed to ensure commercial rather than biodiversity outcomes.

What appears to have been forgotten in this report is that white cypress pine at various densities is a natural and important component of many ecosystems. If this report is serious about thinning dense cypress stands for biodiversity benefits then it should focus on extensive stands (ie greater than 500ha) with a canopy cover of cypress greater than 70% (ie closed forest).

Livestock grazing

It is unclear in the document how targetted grazing will assist in increasing biodiversity in SCAs, especially given that grazing is known to have contributed to the 'cypress problem' and biodiversity losses across the landscape. Overgrazing by livestock and rabbits reducing competition in the ground layer, has in the past, been one of the factors that facilitated dense white cypress regeneration. Additionally, cattle rarely if ever graze cypress seedlings and sheep will only graze cypress as a last resort when little other feed remains (ie when that area is already overgrazed). It is therefore unlikely livestock grazing will have any thinning effect on stand structure, but is likely to have a significant and detrimental impact on the ground layer diversity and fauna habitat values. So it is difficult to reconcile why is grazing proposed as a solution, or part thereof, to a perceived loss in biodiversity in dense cypress pine stands.

It is of concern that there is no recognition or consideration in the report of the negative impacts on biodiversity from even targetted grazing. Contrary to what appears in the document these include; introducing and/or spreading of weeds, trampling ground flora

and the nests of ground dwelling birds, soil compaction, reducing diversity by selective grazing of more palatable species and loss food resources (seeds, tubers), ground cover and litter important for fauna habitat (invertebrates, reptiles, small mammals and birds).

Selective or targetted grazing for 'weed control' requires large numbers of stock on small areas, extensive areas of fencing (which will require clearing), additional watering points (see discussion below) and intensive management, as stock need to be moved every day or few days if any improvement in ground layer cover is to be achieved. Livestock will generally only be effective for weed control when forced to eat weeds, ie when there is little else left to eat.

No references are given for the grazing prescriptions provided, but grazing in the warmer months as suggested is likely to have a negative effect on biodiversity, as this is the main flowering and seed set period for the majority of native grasses and forbs. Further, a rest from grazing every three years as suggested is unlikely to offset the detrimental impacts accrued over the previous years. Rather than facilitating any improvement in biodiversity, it appears these prescriptions are focused on fire hazard reduction.

Inappropriate suggestion to increase in watering points

I am very disappointed and concerned that this report suggests installing additional watering points to facilitate grazing in SCAs. This action is ecologically unsound. Most cypress forests are dry ecosystems, generally with very little permanent surface water. Introducing more artificial watering points (because some already exist) into these systems will not only change the suite of natural flora and fauna within these woodlands and forests, but will also facilitate an increased grazing by native herbivores and increased occurrence of feral pests including; pigs, cats, foxes, goats and deer. If this report was serious about improving biodiversity it would be suggesting the removal of artificial watering points from SCAs.

An indication of the perversity of this suggested action in relation to biodiversity is the Commonwealth government consideration of listing; *'Biodiversity decline and habitat degradation in the arid and semi-arid Australian rangelands due to the proliferation, placement and management of artificial watering points',* as a key threatening process under the EPBC Act in 2014.

Extrapolation from river red gum trials and US management

It is extremely poor science to use 'trials' in the river red gum communities of southern NSW as justification for any of the draft report's recommendations. Firstly, because these trials are yet to commence, or have just commenced, so as yet there are no results. At very least these 'trials' should allowed to run their course and then be evaluated as to their success or otherwise. Secondly and the above notwithstanding, the ecological processes that drive river red gum communities and support their intrinsic biodiversity are in no way directly comparable to those of cypress communities.

These two communities occur on different soil types, inhabit different landscape elements, support a different suite of flora and fauna and require vastly different surface, soil and ground water hydrological regimes for their component species regeneration.

Even if extrapolating thinning/logging results from cypress forests in southern NSW to those in central and northern NSW caution must be exercised. The reason is that as you move south to north, a winter rainfall dominated climate becomes a summer rainfall dominated climate. Consequently, the ecological drivers within white cypress stands will vary significantly from one part of the state to another. These are critical considerations if, as stated, the primary objective of undertaking thinning/logging is improved biodiversity outcomes, but disappointingly are not acknowledged or mentioned in the report.

More than once this document states that 'ecological thinning' is used in the US to manage reserves as a justification for why it should occur in NSW SCAs. Apart from the obvious problems that may arise directly extrapolating results from such vastly different ecosystems (see discussion above), it is simply not true. As indicated later in the report and in the references, 'ecological thinning' is not used by US national parks as a management tool within their conservation reserves but rather by US forestry in their forest reserves, where the primary objective is timber production not biodiversity conservation. The use of the US example is therefore misleading.

Incomplete acknowledgement or assessment of potentially detrimental impacts

The report fails to acknowledge or assess the likely detrimental impacts of the activities proposed on the existing biodiversity and aesthetic values within SCAs. These include but are not limited to;

- increased weed invasion through the movement of machinery/vehicles, people, vehicles, livestock and contaminated livestock feed
- increased noise, lights, vibration and human activity from logging/thinning activities reducing the value of the habitat within SCAs for a range of fauna species and for people undertaking passive recreation activities (bushwalking, bird watching, picnicking, visiting cultural heritage sites)
- soil compaction from livestock trampling and machinery/vehicles movement
- native vegetation clearing for fencelines (grazing), roading, log dumps and watering points
- removal of native biomass and their component nutrients, minerals and carbon
- loss of habitat heterogeneity ie removing small blocks of dense cypress within a larger mosaic of woodland and open forest types
- increased artificial watering points, changing the existing suite of flora and fauna within these systems, increasing/concentrating grazing by livestock and

native/non-native herbivores and increasing populations of feral pests (goats, deer, foxes, cats)

- loss for habitat (fallen logs and litter) and nests of ground dwelling fauna through trampling by livestock and/or machinery/vehicle movement
- impacts on state and commonwealth threatened species, populations and ecological communities and their habitat.

Threatened flora and fauna estimates

The document provides estimates of exclusion areas based on existing threatened species records. The report fails to acknowledge that most SCAs have not had systematic fauna surveys and only limited flora surveys. Consequently, the records within the Atlas of NSW Wildlife are often only opportunistic records and not a realistic indication of the occurrence of threatened species within these reserves. Similarly, the report only considers the presence of one threatened ecological community (TEC) box gum woodland. However, there are a number of other TECs within these reserves that will potentially be impacted by the activities proposed, if not directly by thinning/logging, then indirectly by; increased roading, noise, vibration, human activity, grazing, trampling, soil compaction, weed invasion and edge effects. These communities include; Myall Woodlands, Coolibah/Black Box Woodlands, Fuzzy Box Woodlands and New England Blackbutt Open Forest. Consequently, the exclusion area for threatened flora and fauna presented within the report are gross underestimates.

Costs of baseline surveys and on-going monitoring

The costs presented in the report of implementing the activities proposed lack any consideration of the cost of baseline flora and fauna surveys and on-going monitoring for the various management methods. Baseline surveys and on-going monitoring are critical to an adaptive management model, as they provide the data necessary for determining the success or otherwise of the actions on biodiversity. An adaptive management model without this data is a nonsense, because there can be no adaption of management and therefore no certainty of biodiversity outcomes.

Commercial offsets for biodiversity management

I think it is very dangerous to create a commercial market for actions undertaken for conservation that are likely to be limited in area and number. As indicated in the report a market only currently exists for production saw logs. It is however unlikely that thinning dense cypress stands will result in many saw logs. Disappointingly, the report suggests skewing the thinning operations to ensure ratios of production logs offset non-production thinning. If implemented it is likely logging, not thinning, will occur in areas outside dense cypress stands detrimentally impacting on flora and fauna through increased disturbance, roading, weeds, noise, vibration and human activity across the wider remnant area. It is difficult to reconcile how this suggestion fits with an adaptive management model for SCAs with a primary objective of improving biodiversity.

Similarly dangerous and/or naive, is the suggested sale of trimmings for biofuel. No biofuel generator currently exists in the region. Any commercial operator contemplating building such a generator will require a guaranteed source supply of fuel before investing. Thinning cypress within SCAs cannot guarantee an on-going biofuel supply, because activities primarily undertaken for biodiversity improvement are likely to be intermittent with long monitoring periods between actions. Creating and guaranteeing supply of timber products to a commercial market from SCAs will result in perverse outcomes for biodiversity, as the commercial imperative will no doubt over-ride the ecological restrictions necessary for improved biodiversity.

Activity oversight in SCAs

The report suggests periodic audits by OEH staff of commercial operators within SCA areas as a method of reducing costs of the proposed actions. Periodic audits will only work where the outcomes of an activity are already known and/or proven. Consequently, periodic audits are completely inappropriate for a trial where the outcomes are yet to be determined.

While periodic audits may save money, it is very unlikely they will to lead to good biodiversity outcomes because of the commercial imperative. Commercial operators by necessity are interested in profits not improved biodiversity. Consequently, there will be continual pressure to take more and more production saw logs for less and less non-commercial thinning. Furthermore, if an adaptive management model is to be used then it is essential OEH staff control the process so that they know where, when and how the thinning/logging has been undertaken. Without this data, there can be no assessment of activity methods/intensity or their success or otherwise in relation to the desired biodiversity outcomes. Failure to have OEH oversight of any commercial activities within SCAs will again make a nonsense of the adaptive management model proposed in the report.

Conclusion

The information provided above represents but a sample of the short falls of this report, but it clearly indicates the science presented and the conclusions drawn are severely flawed. As stated in the report 90% of NSW is subject to clearing, thinning and livestock under the NV Act 2003. SCAs are some of the very few areas where flora and fauna habitat is protected from these constant and often destructive disturbances. If the actions proposed in this draft report are to be implemented then much more work needs to be undertaken to ensure the potential detrimental impacts are minimised. If implemented as presented here the government will be creating markets for biological products that even in the short-term they will be unable to supply due to inaccurate resource assessment, and contrary to the stated outcome there will be perverse outcomes for biodiversity.