



25 August 2006

Submission to the Natural Resources Commission on the Review of the Invasive Native Scrub Assessment Methodology and Decision Support Tool of the Property Vegetation Plan Developer under the *Native Vegetation Act 2003*

Introduction and summary

The recommendations of the review:

- Are inconsistent with the NSW Premier's comment to end the broadscale clearing of remnant native vegetation unless it improves or maintains environmental outcomes;
- Are inconsistent with the Native Vegetation Act because they propose to allow the broadscale clearing of remnant native vegetation (ie. so-called Invasive Native Scrub) in circumstances where there is evidence that such clearing will be detrimental to the environment. This would fail the improve or maintain test set by the NSW legislation.
- Are so poorly expressed that they would be unenforceable if embodied in legislation;
- Are so poorly expressed that they would impose unreasonable demands on landholders because their meaning is so unclear.

A number of scientific reports do not support the assumptions which appear to be underlying the report. These include:

- Fensham, R.J., Fairfax, R.J., and Archer, R. 2005. Rainfall, land use and woody vegetation cover change in semi-arid Australian savanna. *Journal of Ecology* **93**, 596-606.
- Benson, J.S. and Redpath, P.A. 1997. The nature of pre-European native vegetation in south-eastern Australia. *Cunninghamia* **5**, 285-328.
- Witt, G.B., Luly, J. and Fairfax, R.J. 2006. How the west was once: vegetation change in south-west Queensland from 1930 to 1995. *Journal of Biogeography*, **33**, 1585-1596.
- Croft, M., Goldney, D. and Cardale, S. 1997. Forest and woodland cover in the central western region of New South Wales prior to European settlement in *Conservation and outside nature reserves*. Eds Hale, P., and Lamb, D. Centre for Conservation Biology, University of Queensland.

- Lunt, I, Jones, N., Spooner, P., and Petrow, M. 2006. Effects of European colonization on indigenous ecosystems: post-settlement changes in tree stand structures in *Eucalyptus–Callitris* woodlands in central New South Wales, Australia. *Journal of Biogeography*, **33**: 1102-1115

We submit that no further step be taken in developing an Invasive Native Scrub module until:

1. The report has been subject to peer review;
2. Legal advice has been obtained from the Office of Parliamentary Counsel in relation to the terms presently used, and proposed to be used in the future, in the module.

Body of submission - detailed comments

We note the following more detailed comments.

1. Report’s findings inconsistent with legislation

We believe the report's findings do not comply with the fundamental requirement of the Native Vegetation Act 2003 that broadscale clearing (which includes the clearing of so called Invasive Native Scrub (INS)) must improve or maintain environmental outcomes.

We note that the Environmental Outcomes Assessment Methodology (EOAM) is a methodology created by the Native Vegetation Regulation 2003. The Act requires this methodology to be used when determining whether environmental outcomes will be improved or maintained by a clearing proposal. (ss. 14, 27; regs 24, 26) The sole purpose of the EOAM is to provide a methodology for assessing and determining whether proposed broadscale clearing (which includes the clearing of INS) will improve or maintain environmental outcomes (reg 24). Any amendment to the EOAM must therefore be concerned with the improvement or maintenance of environmental outcomes.

The current regulations fail to achieve maintenance or improvement, and the amendments proposed by the report would exacerbate the situation.

2. Need for ‘maintain or improve’ test for biodiversity

The key underlying issue in relation to the clearing/thinning of thickening native scrub is that there is currently no written and agreed standard for what constitutes improving or maintaining biodiversity. This means that any debate about whether a particular activity passes the test quickly degenerates into a matter of non-scientific opinion.

The current approach is to assume that as long as an occurrence of thickening scrub falls within the prescriptions for “dense” regeneration and the retention rules for different

clearing techniques are proposed to be met, then a clearing activity will satisfy the “improve or maintain” test. However, this approach fails to assess the proposed prescriptions for their environmental impact on individual species, natural communities, and ecological processes. It also fails to consider whether as a matter of fact biodiversity and other environmental outcomes would actually be improved or maintained by the proposed clearing. For example, simply stating that retention of a number of saplings per hectare meets a maintain or improve test for biodiversity fails to address the real issue which is that there must be some reasonably credible scientific evidence that the broadscale clearing of INS will actually improve or maintain environmental outcomes.

In our view no further step should be taken in this process until a written standard for “improve or maintain” in relation to clearing thickened scrub has been prepared and provided to stakeholders for comment. This should not take any particularly lengthy period of time because all the scientific literature for preparing such a standard has already been gathered.

3. Assumptions on thickening scrub

Implicit in the report are the assumptions that:

- thickening scrub is pervasive and substantial across the very large parts of NSW;
- thickening scrub has a negative impact on biodiversity in all cases; and
- creating a ‘mosaic’ of cleared paddocks and bushland will be environmentally positive in all types of bushland where thickened scrub may occur.

These assumptions are highly contentious and do not accord with a number of peer reviewed studies. A small sample of such studies include the following.

- Fensham, R.J., Fairfax, R.J., and Archer, R. 2005. Rainfall, land use and woody vegetation cover change in semi-arid Australian savanna. *Journal of Ecology* **93**, 596-606.
- Benson, J.S. and Redpath, P.A. 1997. The nature of pre-European native vegetation in south-eastern Australia. *Cunninghamia* **5**, 285-328.
- Witt, G.B., Luly, J. and Fairfax, R.J. 2006. How the west was once: vegetation change in south-west Queensland from 1930 to 1995. *Journal of Biogeography*, **33**, 1585-1596.
- Croft, M., Goldney, D. and Cardale, S. 1997. Forest and woodland cover in the central western region of New South Wales prior to European settlement. In Conservation and outside nature reserves. Eds Hale, P., and Lamb, D. Centre for Conservation Biology, University of Queensland.
- Lunt, I, Jones, N., Spooner, P., and Petrow, M. 2006. Effects of European colonization on indigenous ecosystems: post-settlement changes in tree stand structures in *Eucalyptus–Callitris* woodlands in central New South Wales, Australia. *Journal of Biogeography*, **33**: 1102-1115

4. Flawed definition of thickening

The definition “thickening” (which triggers the possibility of clearing INS) is open to an extreme range of interpretations. There is no attempt to define a threshold for what constitutes a ‘change in structure and/or composition of a vegetation community’. *Any* regeneration of *any* plant species in NSW at *any* time has the potential to meet this definition. Hence any regeneration, for example eucalypts in wet-sclerophyll forests regenerating after a wildfire, or Red Gums and Lignum regenerating following a once in 50 year flood event on the lower Darling, could be quite reasonably defined as ‘invasive native scrub’ under this definition.

The inclusion in the report of species such as Lignum and Belah, to be classified as ‘invasive native shrubs’, indicates how broad and meaningless the definition has become. These species have not been included in previous literature on proliferating native shrubs,

In our view no further step should be taken in this process until a reasonably precise written definition of what a thickening scrub event has been developed.

5. Inability to enforce compliance

The structure and wording of the INS Assessment chapter of the EOAM is too complicated and ambiguous to allow effective compliance. These complications and ambiguities also place an unreasonable burden on users expected to comply with the requirements.

By way of a sample only, we note the following.

- Key terms are not defined. For example, methods of clearing native vegetation are listed but not defined. We have already commented on the lack of a standard for the “improving or maintaining” biodiversity.
- The language of a number of criteria is unclear and extremely complicated. We cite criterion 17 d) as one example.
- Provisions are often vague and ambiguous. For example, criterion 18 does not require any particular shape for the “envelopes” of retained vegetation. These envelopes can arguably be drawn in any configuration. By contrast, a requirement that retention rates be reflected in a specified block size (ie that any 50m x 50 m block must reflect a specified retention rate) is much easier to enforce.

6. Inappropriateness of cropping

First, we are strongly opposed to the report’s acceptance of cropping as a method for managing thickening scrub until documented scientific evidence can be provided that the clearing of thickened scrub for cropping does satisfy a clearly established “improve or maintain” test.

The clearing of understorey and consequent cropping greatly reduces the diversity and richness of native species. This is one of the reasons why broadscale alienation of land for cropping has been prohibited under the NSW native vegetation legislation.

We are particularly concerned by the report's assumption that the clearing of land followed by cropping up to three times in a 15-year period will produce native grasslands and that this will be environmentally positive or neutral. No evidence is presented to justify this belief beyond the assertion that 'mosaics' of different vegetation structure are environmentally positive – an assertion that we believe is strongly challengeable on scientific grounds.

Secondly, our understanding of the prescription proposed by the report for cropping is that it will allow the removal of all under storey vegetation, fallen timber logs, leaf litter, soil encrusting organisms such as lichen, and other ground cover, over a 90 hectare area. In effect, only mature trees will be retained, surrounded by ploughed ground. The report also recommends that crops of the non-native, perennial plant, Lucerne, can be sown and associated fertilizers and herbicides may be used. The report justifies this recommendation on the basis that retaining understorey on a per hectare basis was 'undesirable ecologically' and that the aim of the tool is to create a 'mosaic of open and densely wooded areas'.

We are strongly of the view that these conclusions are not scientifically substantiated and have the potential to debase, rather than improve or maintain, environmental outcomes. From discussions with a range of independent scientists the effects of cropping on this scale for different types of flora and fauna will be:

- Bats - A likely reduction in insect food, and loss of foraging substrates for species which feed under the canopy. This potentially includes some threatened species.
- Macropods - Grazing species such as Eastern Grey Kangaroo will benefit. These are not of conservation concern. Browsing species such as Black Wallaby will lose food and shelter.
- Small ground mammals - Loss of food and shelter will reduce habitat for nearly all species. This includes some threatened species.
- Reptiles and amphibians - Major reduction in habitat through loss of food and shelter, probably for *all* reptile species in a treated area. Reptiles and amphibians have relatively small territories and are highly dependent on microhabitats associated with logs and other cover.
- Birds – Complete loss of habitat of all but possibly one of the known threatened and declining species and likely decline in species richness and abundance. The configuration of habitat remaining after such treatment is ideal for invasion of dominating Noisy Miners, which then aggressively exclude most other species. A

few common and adaptable species which favour paddocks such as Magpies and Galahs would benefit.

- Invertebrates - The impacts will be highly diverse and too complex to generalize, though with the gross simplification of habitat major reductions in diversity are highly likely.
- Native shrubs – Would be removed from the cropped areas
- Native grasses - Probably increase, however this will depend on weed invasion and herbicide and fertiliser use. Only species which can re-colonise an area following cropping would return
- Native herbs and forbs - Some winners and some losers. The effects will depend on individual species' responses to ploughing, cropping and associated herbicide and fertiliser use, and whether there is weed invasion (ie of real weeds- non native species).
- Ecological functions and processes - these will be highly variable and too disparate to attempt to list or evaluate. A serious change we would note is that the loss of ground cover, soil encrusting lichens and logs over extensive areas is likely to radically alter nutrient cycling in the soil, with likely long term deleterious affects for the whole natural community.

In addition, dependent on soil types and rainfall, there is a major risk of weed invasion by alien species, potentially leading to permanent, or at least long term loss of native ground cover.

6. Weakening of requirements in relation to eucalypts

Prescriptions on retention of tree and saplings

First, we are greatly concerned by the treatment of eucalypt regeneration as thickening scrub. Eucalypts in drier woodland areas usually regenerate well following good rainfall years and/or floods. These events are sporadic in the western regions. After such years regeneration can be quite dense but thins out as it matures. In some areas changed flood patterns have meant that eucalypt regeneration varies greatly spatially. These are normal dynamic fluctuations in vegetation patterns. Treating such eucalypt regeneration as thickening scrub is inappropriate. Such treatment has the potential to alter the vital long term ecological process and compromise the replacement of mature trees in landscapes.

Secondly, it would appear that the density requirements contained within the report's recommended Table 1 can be entirely circumvented wherever vegetation is determined, at the discretion of the relevant CMA, to be a "derived vegetation community" (see

criteria 17A a). Determining the vegetation history of a site is difficult and we do not believe that CMA staff will possess the necessary skills or time to make assessments of what is or isn't a 'derived' community.

Of further concern is that the stem retention requirement of 20 stems per hectare stated in criterion 17A b) is dangerously understated and is grossly inconsistent with scientific studies of relevant landscapes by an entire order of magnitude. (For example, Lunt *et al.* 2006).

Removal of all medium aged and young trees at the paddock scale

The report also recommends that the maximum sizes of trees allowed to be removed should be increased to 30 cm diameter at breast height for Poplar Box. The verbal advice we have received from Dr. Ian Lunt of Charles Sturt University (see Lunt et al 2006 below) is that Poplar Box of such a size are likely to be on average around 80 years of age, the exact age depending on the site and the degree of surrounding competing vegetation. We do not believe that 80 year old trees can reasonably be regarded or treated ecologically as 'invasive native scrub'.

Further, the current cropping option put forward in the report allows for all trees below this size range of 30 cm diameter to be removed from paddocks of up to 90 hectares in size, with cropping allowed for another 15 year period, during which time any regrowth will be destroyed.

The combined effect of this is to remove an entire cohort of eucalypts of around 95 years from a 90 hectare paddock (all trees of 80 years old and less to be removed during initial 'thinning' to allow cropping to take place, followed by 15 more years in which any regrowth is destroyed).

We do not believe that in any eucalypt woodland in NSW such an outcome could not be regarded as remotely meeting an improve or maintain test for biodiversity.

7. Additional species listed

We strongly oppose the inclusion of Belah and Lignum in the list of 'invasive native scrub' species. Belah is a small tree which has spasmodic regeneration. There is no evidence provided that it regenerates in a similar way to known proliferating scrub species such as some of the *Eremophillas*.

Lignum is an important plant of seasonal wetlands. It is often the only dense cover in seasonally flooded areas and is extremely important as wildlife habitat. It also has spasmodic regeneration following flood events. Again there is no evidence provided that it acts in similar ways to proliferating scrub species.

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