22 Oct 2009

Forests Assessment
Natural Resources Commission
GPO Box 4206, Sydney NSW 2001
Email: forests@nrc.nsw.gov.au

Dear Commissioner,

Re: Riverina Bioregion Regional Forest Assessment on
River Red Gum & Other Woodland Forests, Preliminary Assessment Report

I am pleased that the Natural Resources Commission of NSW is conducting an independent assessment of the Riverina Bioregion River Red Gum and other woodland forests and I appreciate the opportunity to make this submission.

I understand that the primary purpose of the Preliminary Assessment is to set down the economic, social and scientific knowledge that is available about these forests and their current management. And in addition, that Terms of Reference 1 requires the NRC to "Assess the environment and heritage values (including Indigenous heritage), economic and social values, ecologically sustainable forest management, timber resources, and otherwise meet the assessment requirements of the *Environment Protection and Biodiversity Conservation Act 1999 (C'th)* as determined in discussion with DEWHA."

The concerns I wish to highlight in this submission relate mainly to the assessment of ecologically sustainable forest management (ESFM). I note that Forests NSW have a suite of policies, management plans, operational guidelines and prescriptions aimed at fulfilling objectives in key areas of forest management relating to natural heritage, nature conservation, forest health, sustainable timber supply, forestry operations and consultation, monitoring and reporting (Forests NSW 2008). However, I believe there are important outstanding issues which warrant closer scrutiny. In essence, these concerns relate to the:

a) implementation of protected area networks within the Riverina State Forest estate
b) adequacy of and compliance with measures and prescriptions for protecting and maintaining nature conservation, threatened species, populations or endangered ecological communities
c) assessment of sustainable timber yields and
d) management of the Central Murray State Forest (CMSF) Ramsar site

These issues of concern are described in detail below.

1. Implementation of a "protected area network that recognizes international, national, state and regional conventions" (Forests NSW 2008, p. 5)

As I understand it, the Forest Management Zoning (FMZ) system is a fundamental tool/measure in Forests NSW's strategy for nature/biodiversity conservation (Forests NSW 2008). FMZ is supposed to establish a protected area network that comprises dedicated reserves, informal reserves and environmental values protected by prescription (including protecting habitat for particular threatened species). Under the FMZ system, only native forest areas zoned as FMZ 3b (Special prescriptions) and FMZ 4 (General management) are available for harvesting. I am concerned that there seems to be large discrepancies in Forests NSW's own assessments of Forest Management Zoning in the Riverina region as shown in the table compiled below:

	ESFM-Riverina Region **(Forests NSW 2008, Table 4.2, p.27)** **Area (ha)**	**EIS *Harvesting & associated road work operations in south-western NSW* (Forests NSW 2009, Table 9.2, p.92)** **Area (ha)**	**Difference (Col3 – Col2)** **Area (ha)**
FMZ 1 Special protection	3,607	4,010	403
FMZ 2 Special management	0	0	0
FMZ 3a Harvesting exclusion	98,713	61,650	**-37,063**
FMZ 3b Harvesting with special prescription	11,738	21,338	**9,600**
FMZ 4 General management	294,706	225,214	**-69,492**
FMZ 5 Hardwood plantations	151	151	0
FMZ 6 Softwood plantations	114	198	84
FMZ 7 Non-forestry use	314	248	-66
FMZ 8 Areas for further assessment	1,399	0	-1,399
			0
Total	**410,742**	**312,809**	**-97,933**

The following points are evident from this side-by-side comparison of FMZ assessments in the *ESFM-Riverina Region* (Forests NSW 2008) and the *EIS Harvesting* (Forests NSW 2009):

a) In the *EIS Harvesting* (Forests NSW 2009), there has been a substantial downward adjustment to the area zoned as FMZ 3a (an approximately 38% decrease, amounting to about 37,000 ha).

b) In the *EIS Harvesting* (Forests NSW 2009), the area zoned as FMZ 3b has been revised upwards by about 80% (which amounts to about 9,600 ha).
c) In the *EIS Harvesting* (Forests NSW 2009), the area zoned as FMZ 4 has been revised downwards by about 24% (amounting to almost 70,000 ha).
d) There is a very large discrepancy between the final total areas reported in each key document (a difference of almost 98,000 ha).
e) Despite point (d), *EIS Harvesting* (Forests NSW 2009) reports a smaller value for the harvest exclusion FMZ 3a area and a larger value for the (harvest with special prescription) FMZ 3b area.

Given the primacy of FMZ system in providing "confidence that the nominated management intentions will continue in perpetuity" (Forests NSW 2009, p.27), these discrepancies in FMZ areal estimates raises questions about the basic implementation and/or administration of the FMZ system in the Riverina region. I submit that these discrepancies are a valid cause for concern and warrant further investigation.

2. Adequacy of and compliance with measures and prescriptions for protecting and maintaining nature conservation, threatened species, populations or endangered ecological communities.

As I understand it, nominated watercourses and wetlands (large permanent or semi-permanent waterbodies) are protected by a minimum 20 m wide harvest exclusion zone. In addition, "a modified harvesting zone, a minimum of 30 m wide must be established around and adjacent to each exclusion zone, in which at least 5 Habitat trees and 5 Recruitment trees must be retained per hectare. Where insufficient Habitat trees exist to achieve this level, all existing Habitat trees must be retained and Recruitment trees must be retained in sufficient numbers to ensure a level of at least 10 retained Habitat/Recruitment trees per hectare" (Forests NSW 2009, p.106).

River Red Gums attain their best development along watercourses and reliable sources of water supply, so these are important measures for ensuring the retention of high quality vegetation for nature/biodiversity conservation purposes.

Further to these measures are special prescriptions that apply under license conditions issued under the *Threatened Species Conservation Act 1995*. The license issued by the NSW Department of Environment and Climate Change includes special prescriptions for individual threatened species. An example for the Squirrel Glider (*Petaurus norfolcensis*) was provided in Table 9.3, p.105 in Forests NSW (2009) and reproduced as Figure 18 in the NRC Preliminary Assessment Report (NRC 2009, p.63). As I understand it, prescriptions vary with the species in question, but often pertain to nest and roost trees, exclusion zones around nest/den sites and cutting diameter limits.

The point I wish to make from the foregoing discussion, is that the list of measures and prescriptions can be numerous and sometimes rather subtle. (And I note that the list of

measures and prescriptions I outlined is incomplete and only a subset of what may be applicable.) When all applicable measures and prescriptions are layered one over the other, the management and operating situations can become quite complex. I believe that a rigorous assessment of ESFM by NRC needs to consider if there are:

a) adequate systems and procedures in place for ensuring correct application of measures and prescriptions in both planning and field harvest operation stages;
b) adequate systems for assessing compliance performance with respect to general, forest-wide prescriptions as well special prescriptions for individual threatened species; and
c) adequate processes for updating/reviewing measures and prescriptions (for instance, if ecological characteristics of the forest change, or if new information becomes available, or if scientific understanding of threatened species requirements change and so on.)

With all due respect to the NRC, I do not believe the Preliminary Assessment Report (produced as it has been, under extreme time constraints) addresses these issues at all. I wish to stress that these issues are not academic. As *The Age* reported on 6 Aug 2005, failure to explicitly record the protection zone for Superb Parrot nesting colonies in Barmah forest, followed by subsequent failure to check the necessary maps, led to the logging of "almost 6,000 tonnes of River Red Gums in about 60% of one of the largest Superb Parrot nest colonies in the forest" (Minchin, 2005).

This error occurred in the Victorian River Red Gum forests managed by the Victorian Department of Sustainability and Environment (DSE). However, given the complexities of the measures, prescriptions and processes described above, it is unlikely that forest managers using comparable systems are immune to the sorts of mistakes made by DSE. Below, I outline an example directly related to Forests NSW.

As Forests NSW (2009) notes, the "Harvesting Plan is the key control document for each timber harvesting operation and is utilised by licensed timber contractors, operators, and Forests NSW field supervisors and foresters. Each plan is subject to internal and external audits as part of Forests NSW ISO14001 certified EMS". An example of a Harvesting Plan is shown in Map 9.1 of the *ESFM-Riverina Region* (Forests NSW 2008, p.57). This Harvest Plan relates to Perricoota State Forest, compartments 15, 16 and 17 in the Deniliquin Management Area.

Careful examination of Map 9.1 (Forests NSW 2008, p.57) shows that the waterbody/wetland protection areas around the major watercourse and other waterbodies in the compartments which ***should be*** a '**Harvesting Exclusion**' zone is ***wrongly symbolized*** on the Operational Harvest Plan as a '**Modified Harvest Area'**. I note that the prescription in question is a basic, so-called "Tier 1 prescription" that applies generally, on a forest-wide basis and is "designed to protect key habitat across the landscape" (Forests NSW, p.103). This is a fundamental error of the kind with potential to lead to adverse

outcomes for soil and biodiversity conservation and threatened species and ecological communities management. The fact that this type of error in the "key control document" for timber harvesting operations went undetected in *the blueprint* for ecologically sustainable forest management of native forests in the Riverina region is cause for concern. It certainly does not engender confidence in the planning and management process. I further note that the Harvest Plan in question was produced in May 2005 - how widespread (i.e. spatially across all operational areas) was this sort of error? Have important environmental impacts occurred as a result of such errors? Do such basic errors continue to arise in harvest planning? What systems (if any) are in place to prevent or detect and correct such errors?

While the process for developing the Harvesting Plan and the staged approval of the Harvesting Plan seems to be thorough, I believe the example above validates concerns about how well the internal and external audit systems actually work. One possible solution to prevent cascading and compounding errors is to design and implement a comprehensive, automated system of checks and balances to minimize errors at the various stages of Harvest Planning.

In any case, I urge the NRC to please give serious consideration to issues 2(a)-2(c).

3. Assessment of sustainable timber yields

Firstly, I note that Forests NSW (2009, p.vi) acknowledges that "In the case of River Red Gums, the forests have been heavily affected by river regulation and ongoing drought. Collectively, these factors have profoundly influenced the character of the study area and resulted in the generally poor and declining condition of the River Red Gum forests." The recent poor condition of River Red Gum forests in the Riverina has also been well-documented by NRC (2009) and numerous references therein.

River Red Gum forest productivity and growth rates across the area of interest can be expected to vary both spatially and temporally with site quality as well as the interaction of site quality with the variable flood/watering regime. To justify claims of ecologically sustainable forest management and indeed, adaptive management (Forests NSW 2008, 2009), harvesting practice should be attentive and responsive to both forest and environmental conditions. This in turn implies a rigorous management cycle incorporating regular field measurement, up-to-date estimation of forest resource inventory using validated models and operational review incorporating timely feedback from appropriate monitoring processes. On the basis of publicly available documents, this is manifestly not the case in current forest management.

NRC (2009, p.56) reported that "Estimated timber volumes to be allocated for harvesting are developed using Forests NSW strategic forest inventory, historic yield data for the forest area, and a visual assessment." I note that there is little publicly available information on Forests NSW's "strategic forest inventory" for River Red Gum forests in

the Riverina – how many plots are measured? What is the distribution of inventory and growth plots across the different vegetation types? (Is sampling across the different vegetation types adequate?) How often are the inventory plots measured and the data in the strategic forest inventory updated and made available for planning harvest operations?

The *Ecologically Sustainable Forest Management Plan for Native Forests - Riverina Region* (Forests NSW 2008), was approved as operative from 1 Feb 2008 and is supposed to guide forest management from 2008 to 2013. At the time of its publication, a review of long-term yields across all State forested lands in the Riverina region was in process. Pending the results of the review (using the Forest Resource and Management Evaluation System, FRAMES), the *ESFM-Riverina Region* stated that the annual yield of high-quality sawlogs prescribed in the *1982 Mildura Management Area Plan* and the *1985 Murray Management Area Plan* will continue to apply (Forests NSW 2008, p.35). This point was also confirmed by NRC (2009, p.103).

Is it really appropriate for present-day timber allocation to be based on yield estimates computed well over two decades ago, under substantively different climatic and hydrological conditions? Is a >20 year lag in reviewing long-term yields across the Riverina State Forest estate sufficiently responsive and consistent with "optimizing" sustainable timber supply? In what sense are such management practices compatible with ecologically sustainable forest management?

Given the severe alteration of the hydrological regime, prolonged drought and poor, declining condition of the River Red Gum forests, it seems very unlikely that timber yield estimates developed in the 1980s provide an appropriate guide for current practice. Some lines of evidence in support of this assertion are as follows:

a) In 2005, Forests NSW carried out an interim review of long-term yield of high-quality sawlogs from the Murrumbidgee-Narrandera Management areas. As a result of this review, they initiated a reduction in the long-term yield to 2000 m^3 per annum by 2009. Forests NSW (2009) commented that this was "based on the likelihood that growth rates had declined through reduced flooding of the productive areas". This reduction in annual long-term yield represents a 50% reduction in annual long-term yield from the 4000 m^3 prescribed in the *Management Plan for the Murrumbidgee Area* (Forestry Commission of NSW 1986).

b) On the other side of the river in Victoria, the Victorian Environmental Assessment Council (VEAC), drawing on data from Continuous Forest Inventory plot measurements in Barmah and Gunbower forests (obtained from DSE) reported that growth rates between 1998 and 2005 were only 60% of rates recorded in previous periods. This decrease was attributed to the recent drought and lack of flooding over the last ten years (VEAC 2008). It seems reasonable to expect that growth rates in the corresponding NSW forests of Millewa and Koondrook-Perricoota have also

been negatively affected. I note as well that VEAC (2008, p.68) made recommendations for substantial (>70%) downward revisions from the 2006-2007 estimates of sustainable sawlog yields from Victorian River Red Gum forests. Importantly as well, VEAC (2008, p.68) made their estimates of sustainable yield ***conditional on the adequacy of environmental watering***.

c) NRC (2009, p.103) notes that Forests NSW are currently updating the data used to calibrate FRAMES to include an apparent 50% decline in growth rates and doubling of mortality due to drought conditions over the past decade.

NRC (2009, p.103) also reports that "FRAMES is a useful tool for estimating long term yields under relatively stable climate conditions. However, the empirical nature of the model means that it is unable to accurately predict the impacts of step change climate scenarios on long term wood flow volumes. FRAMES utilises estimates of standing inventory from strategic inventory plots and from CFI and PGP plots to model forward the impacts of growth, mortality and harvesting on total standing volumes of timber. In doing so, it implicitly assumes that future flooding conditions will be similar to past conditions." And on p.103-104, "Insufficient data is available to predict the likely trend in growth and mortality without flooding events to 'recharge' groundwater sources and 'reinvigorate' the red gums."

In other words, FRAMES is incapable of producing reliable estimates of long-term yield under altered flooding regimes (already being experienced) and plausible climate change scenarios. The immediate implication is how should the results of the pending FRAMES review of long-term yield for the Riverina region be interpreted? Should the projections be considered an appropriate basis for continuing timber allocations? It also begs the question of exactly how this gap in capability will be filled. Have credible, alternative models been developed? If not, how does Forests NSW propose to support ecologically sustainable yield management in the Riverina region under the range of projected climate change?

In light of the points discussed above, I submit that there are genuine and well-founded reasons for concern about harvesting and yield sustainability in the Riverina region River Red Gum forests. I believe they need to be taken into account in a rigorous, credible assessment of ecologically sustainable forest management as required under Terms of Reference 1.

4. Management of the Central Murray State Forest (CMSF) RAMSAR site

A point that doesn't seem to be completely clear in Section 2.2 of the Preliminary Assessment Report is which institution is responsible for management of the CMSF Ramsar site. According to DEC (2006, p.9), Forests NSW are the managers of the CMSF Ramsar site, as well as the state-nominated Icon Site Managers for the Barmah-Millewa and Gunbower-Koondrook-Perriccota Icon Sites under *The Living Murray* program (MDBC

2006a, b). As such, Forests NSW have primary responsibility for developing and implementing appropriate environmental water management plans. It would be valuable to stakeholders if the NRC could incorporate in its assessment, an account of Forests NSW performance in discharging these obligations. I note that although the CMSF Ramsar site was designated in 2003, it has taken until 2009 for a Draft Ecological Character Description of the site to be produced.

I appreciate that the task of first, securing water allocations and then, delivering adequate and appropriate watering regimes to the various Water Management Units and their associated forest stands is not only technically and logistically complex but also fraught with uncertainty, particularly in a time of climate change (NRC 2009). Nevertheless, this is vital if Australia is serious about fulfilling its commitment to maintaining the values and long-term viability of the CMSF, as RAMSAR-listing implies.

I understand that Terms of Reference 3 relates directly to recommending "water management and flooding requirements to sustain the forests and identified values and uses under the range of projected impacts of climate change". I look forward to seeing a much greater emphasis on the critical issues of securing water allocations and delivering adequate and appropriate watering regimes in the NRC's Recommendations Report to be delivered on 30th Nov 2009.

Thank you very much for your attention, time and effort.

Yours Sincerely,

DR YUNG EN CHEE

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