LANDCARE SOUTHERN NEW ENGLAND

Southern New England Landcare Ltd

ACN 099 357 454

Resourcing Landcare in our region

PO Box 75A, Armidale NSW 2350
Tel 6772 9123, Fax 6771 2656
sonia@snelcc.org.au
www.snelandcare.orga.au

Mr. Dick Adams, Chairman
Standing Committee on Primary Industries and Resources
PO Box 6021
House of Representatives
Parliament House
CANBERRA ACT 2600
AUSTRALIA

6th July 2009

Dear Dick,

On behalf of Southern New England Landcare, I would like to thank the Committee and parliamentary staff for including us in your tour of farming operations in the Tamworth NSW area on Thursday 2 July 2009, and for the opportunity to meet with you and show 'on the ground' some of the issues that were covered in our submission to the Committee.

To recap for those who were there, and to outline to those members of the Committee who were unable to join the field tour, I have summarised what we presented on the day, and attached extra copies of the handouts from the day. As discussed, I have also attached the paper by David Thompson, which models the carbon emissions and financial impact of the CPRS on a typical grazing property in our area.

Summary of points raised

A visit to an Engineered Woodlands Project demonstration site at Jim and Marie Hombsch's property at Duri near Tamworth, overviewed the concept of an engineered woodland. We discussed what the landholders and organisations responsible for designing and delivering the project – the Northern Inland Forestry Investment Group and Southern New England Landcare – hoped to achieve.

David Thompson from the Northern Inland Forestry Investment Group , presented the committee with information on the role of Private Forestry Development Committees (PFDCs) in assisting farmers to grow commercial trees on their farms. At present, trees are the only carbon sequestration mechanism recognised under Kyoto that agriculture can use to offset emissions, should it be included in the CPRS. It is perplexing that the Federal Government should cease the PFDC program, dissipating over 10 years of region-specific forestry knowledge in 19 national key tree-growing regions. It should also be noted that PFDCs are listed as key implementing agents for 10 of the 16 actions outlined in the national plantation strategy – *Plantations for Australia: The 2020 Vision* – a strategy that still has 11 years to run.

The attached paper 'Engineered Woodlands and Farm Carbon Emissions' indicates that extensive areas of some farms may need to be planted at considerable cost to offset all emissions. Moreover, if farms are required to purchase most or all of their emission permits, the costs could be of business terminating proportions.

Shane Andrews, Engineered Woodlands Project Officer, discussed the design, establishment, and function of an engineered woodland and the potential for carbon sequestration. In particular, he pointed out how an engineered woodland could act as a forest carbon sink without displacing the agriculture or the farmer from the landscape, unlike a traditional dense timber plantation. This information is covered in depth in the project Information Sheets (attached).

Karen Zirkler (Director, Southern New England Landcare) and Sonia Williams, (Executive Officer, Southern New England Landcare) used the example of the Engineered Woodlands Project to highlight how local, established organisations could respond to needs identified by the local community, and assist with a quick roll-out of innovative projects. The short time frame, from project inception to on-the ground results, was possible because the project utilised the landholder trust the organisation had established by over many years of operation. The key message was that utilising and supporting the decades of corporate knowledge within existing *local* networks, where trust is already established, is a time and cost-efficient mechanism for program delivery. The booklet *Southern New England Landcare – a Review of Achievements 2004/05 to 2007/08* (attached) was handed out to highlight the scope and level of program adoption that can occur by investing in local organisations.

Again, we thank you for taking the time to come out to the field and meet with us and for the feedback and genuine interest shown by yourself, Sid and Tony. We believe there is great scope for this inquiry to look at the effect of climate change and the CPRS on agriculture; as well as how the community asset built up over the past 20 years, such as Private Forestry Development Committees and local Landcare Networks, can be supported and utilised in assisting farmers adapt to climate change.

We would be only too happy to travel to Canberra to meet further with the Committee to expand on any points covered.

Yours sincerely,

Peter Lytton-Hitchins
President,
Southern New England Landcare Ltd

Yours sincerely,

Sonia Williams
Executive Officer,
Southern New England Landcare Ltd

cc: Mr Sid Sidebottom MP
Mr Tony Windsor MP
Mr Alby Schultz MP
Mr James Bidgood MP
Mr Nick Champion MP
Mr John Forrest MP
Mr Barry Haase MP
Ms Kirsten Livermore MP
Mr Graham Perrett MP
Mr Bill Pender PIR Secretariat
Ms Julia Morris PIR Secretariat
Georgie Oakeshott About the House - Producer

Engineered Woodlands & Farm Carbon Emissions

By David Thompson, Northern Inland Forestry Investment Group
Armidale NSW

Background

- Planted farm forestry (as opposed to forestry from native forests on farms) has been promoted for decades

- The level of uptake has been small – only 8% of the 1.9 million hectare Australian plantation estate is classified as 'farm forestry' and even this includes part leasing of farms by MIS companies.

- The impending introduction of a carbon price signal through an Emissions Trading Scheme has resulted in some agencies (eg ABARE) predicting millions of hectares of new plantations for carbon.

- This has raised concerns in some rural communities about loss of agricultural land.

- Although the ABARE predictions make some rather bold assumptions (eg. most of the plantings will be environmental plantings entirely for carbon and there will be no on-going management costs for these plantings), the fact remain trees are one of the few offset mechanisms available to farmers.

Engineered Woodlands

- The key reasons farmers have not adopted farm forestry are establishment costs, uncertain returns and the opportunity cost of replacing a large area of annual agricultural income with a long term uncertain income from trees.

- The engineered woodlands model overcomes this via:

    - Using a whole paddock to eliminate/minimise fencing costs (one of the major costs);
    - Use wide spaced belts of trees to re-introduce agriculture quickly between the belts;
    - Use the best local species and establishment/management techniques to maximise tree growth and re-introduce agriculture quickly;
    - Stage the plantings so total livestock carrying capacity over the entire farm may maintained (ie. no opportunity cost).

- Financial modelling for a typical New England grazing property has shown that:

    - Planting 25% of the farm to engineered woodlands (where there was previously minimal shelter) can increase net farm income by more than $20,000 per annum with additional income as follows:

- Around 70% of the income benefit comes from stock shelter if it is assumed lambing rates increase from 80 to 90%, sheep death rates fall by 50% and cattle sale weights increase 5%;

- Around 28% of the income benefit comes from carbon credit sales (@ $25/tonne) for the first 21 yrs;

- The remaining 1-2% of income benefit comes from timber sales after year 30.

Carbon Footprint and Cost Impact of an Emissions Trading Scheme

The carbon footprint for a Merino fine wool producing enterprise was recently estimated by Eady and Ridoutt (2009).

The key characteristics of this farm and the associated carbon emissions are provided in Table 1.

Table 1. Carbon emissions from a New England Fine Wool Enterprise (831 hectares)

Emissions source	No. of livestock[1]	Mean[1] emissions tonnes CO2e/year (SD)
Sheep enterprise		
Methane enteric		718.5 (50.3)
Nitrous oxide – fertiliser	5,600 head (7,003 DSE)	1.7 (0.4)
Nitrous oxide – indirect		81.6 (5.8)
Nitrous oxide – dung, urine		125.1 (8.8)
Total sheep emissions		**926.9 (65.1**
Cattle enterprise		
Methane enteric		160.3 (24.9)
Nitrous oxide – fertiliser	120 head (1,204 DSE)	0.3 (0.04)
Nitrous oxide – indirect		7.8 (1.2)
Nitrous oxide – dung, urine		8.6 (1.3)
Total cattle emissions		177.1 (27.4)
Total livestock emissions		**1103.9 (26.6)**

1. Average over 5 years from 2003/4 to 2007/8

The case study figures provide some guidance on the level of greenhouse gas emissions which a farm in the region may have to account for if agriculture is covered by the ETS. This allows estimation of the potential financial impacts of the ETS on the farm business.

While it is likely that initially, most industries would be allocated some annual emission permits free of charge, the expectation is that these would be phased out over time, arriving at a point where all emission permits are purchased at the market price (CIE 2009). This approach would provide incentives for emitters to modify their production activities to reduce emission levels, if the cost of doing so were less than the cost of buying permits.

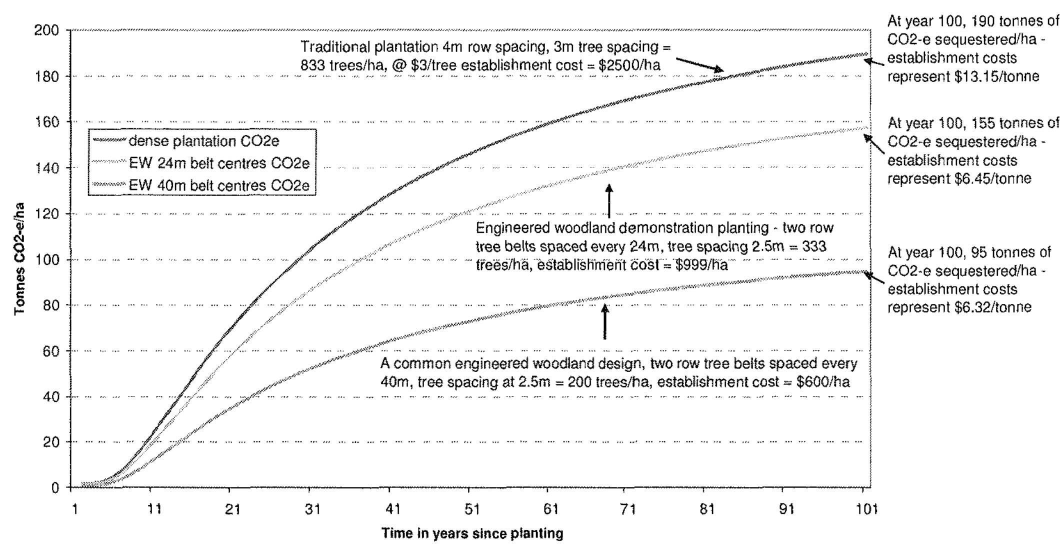
Using the CIE (2009) permit prices levels ($93-107 per tonne of $CO_{2\text{-}e}$ by 2030 and $241-272 by 2050), and assuming no free permits were available to the case study farm by 2030 and that no emission mitigation strategies had been implemented, this would translate to annual emissions costs under the ETS of around:

- $103,000 – 118,000 per annum by 2030;
- $266,000 - $300,000 per annum by 2050.

Clearly, this level of cost impost would be likely to render the farm unviable, given that current whole-farm gross margin levels are around $162,000 (based upon NSW DPI gross margins for trade steers and 19 micron Merino ewes – see http://www.dpi.nsw.gov.au/agriculture/farm-business/budgets/livestock).

Planting trees to sequester carbon to offset farm emissions is one of very few options that grazing enterprises currently have to reduce or avoid the cost of purchasing permits. Output from the Australian Department of Climate Change FullCAM carbon accounting model (Richards *et al* 2005) provides the following carbon sequestration profiles for three types of tree planting configurations in the case study farm region (Figure 2).

Figure 2. Carbon Accumulation from Various Tree Planting Configurations – Northern Tablelands of NSW



However, results using the model can vary significantly between geographically close locations, so actual measurements on the farm of some older corridor plantings have revised the sequestration rate for a traditional plantation up to an average of 6 tonnes CO2-e/ha/year.

The important point illustrated in Figure 2 is that, if tree planting is used as a carbon offset, the annual level of carbon sequestration is initially rapid over the first 30 years, then begins to taper off. This suggests that tree planting will only be a short-medium term solution, unless a profitable system of harvesting and replanting can be used. Moreover, potential displacement of agricultural income with trees will have to be considered with dense tree planting configurations.

Based upon the average annual sequestration rates for these plantations and actual measurements on the farm which indicate average sequestration rates in a plantation are likely to be around 6, Table 2 indicates that large areas of the farm that would need to be planted to trees to offset annual emissions if no other mitigation measures are put in place.

Table 2. Tree Planting Needed to Offset Emissions on New England Case Study Farm.

Tree configuration	Average annual CO2-e sequestration over first 30 years	Area of trees required (ha) to offset 1,104 tonnes of CO_2-e annually	Tree planting as % of total farm area	Total establishment cost ($)
Plantation 833 trees/ha	6.00	184	22	460,000
Engineered woodland[1] 333 trees/ha	2.96	373	45	372,627
Engineered woodland 200 trees/ha	1.78	620	74	372,000

1. An engineered woodland is a wide spaced agroforestry option, where belts of trees are planted across an entire paddock. This minimises/eliminates fencing costs and allows agricultural activities to operate between the tree belts, unlike with a solid plantation.

It also indicates substantial tree planting costs which the majority of grazing enterprises in the region would find difficult to finance. Even a staged planting regime may be beyond the financial capacity of many farms, though research in the region has indicated that the livestock shelter benefits on some farms may justify the investment in tree shelter belts across parts of a farm (Thompson *et al* 2009).

References

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Thompson, D., Bowe, J. and Zirkler, K. (2009), Engineered Woodlands Information Sheet 4, Economic Aspects, Northern Inland Forestry Investment Group, available at http://www.snelandcare.org.au/linkedfiles/EWInformationSheet4web.pdf