29th August 29, 2003

Submission to the Productivity Commission on:

Native Vegetation and Biodiversity Regulations.

Respondent:

Dixie Nott , MSc.(ANU), Grazier , Agro forester, student CQU.

Background information:

Our family farming enterprise is conducted on a 8500 hectare(ha) property in Connors Range area of Central Queensland. This land is between 1550 and 2000 feet above sea level along the intermountain plateau of the southern end of the Connors Range system. It is part of the Central Coastal Bioregion and has rung bark areas (40% property area) which were treated under Queensland Government requirements in the 1920 and 1930s as part of the legal requirements applying to Leasehold properties.

The leasehold requirements also included that landholders keep the resulting areas free of regrowth, as a condition of lease, but this was never enforced on landowners subsequent to the 1930s. All vegetation is now classed “remanent” on present Regional Ecosystem maps.

My family owned this land from 1956 to 1966 and our family partnership repurchased the property in 1989.

In 2000 we purchased freehold title from the Queensland Government for two reasons.

1. To establish a 4500ha Nature Refuge on Wildness areas of gorges and ranges to protect their inherent natural features and ecosystems.
2. To diversify our income streams and include Native Forest Harvest and Silviculture in property activities.

Carrying Capacity changes:

Conversations with previous owners of the land have disclosed that after ringbarking, the first owners carried a total of **1800** branded cattle. (1930s)

The cattle numbers in my parent's ownership were **1200** head of branded cattle. (1960s)

We carry **900** head branded cattle. (2003)

The decreased carrying capacity directly parallels the increased timber cover due to thickening of unrungbarked (remnant) vegetation and the regrowth of seedlings in rungbarked areas.

Stem /hectare (ha) counts show remnant stands in ungrazed, undisturbed eucalypt forest on neighbouring land are commonly **130** stems / ha compared to **900** to **1300** stems/ha only 50 meters (m) through the fence on our grazed, rungbarked country.

My studies at the moment aim to further characterize these changes of woodland structure and document the effect on faunal elements as well as the flora, soil and hydrology of the catchments.

My submission covers local considerations and areas which are concerning scientists worldwide who are studying the evidence of structural changes in woodlands. This is a global phenomena and is reported mainly as encroachment or thickening of savanna woodlands. (Archer, 1994; Van Auken, 2000; Scholes and Archer,1997) Savanna covers 11% global land surface and accounts for approximately 30% net terrestrial primary production (Field et al, 1998) while in Queensland the importance of scientifically based, management of its 60 million ha of forested grazing lands is paramount to ensure sustainability of grazing and forest enterprises.

A Brief Background to Woodland Thickening.

Thickening has potentially enormous consequences on water, carbon and nutrient cycles of grazed woodlands in Queensland. (Burrows et al, 2002; Jackson et al, 2002)

Carbon:

The work by Queensland Department of Primary Industries (QDPI) at permanent, long term, monitoring sites (some 20 years old) suggest that thickening at present rates could account for carbon sequestration amounts equal to 25% of the total Carbon emissions for Australia.(Burrows et al 2002)

Water:
Scientists studying the effects of thickening agree ground flow recharge and over land stream flow are altered but have yet to reach consensus on the variation of consequence with land type/climate zone, change and depending on scale of catchments study. (Wilcox and Kreuter, 2003)

Arguments are many between those supporting the retention of trees in productive grazing systems and those highlighting the inherent competitive relationship which exists between trees and grass. (Every Regional Vegetation Management Plan discussion group I have been part of since 1997)

The competition between trees and grass has been studied by scientists in Queensland for many years and these studies have yielded hard data on the reasons and outcomes of this process. (Beale, 1973; Scanlan and Burrows 1990; Scanlan, 2002 and Burrows, 2002)

Area of Qld.	**Species**	**Basal area m2/ha of trees**	**Pasture Yield kgms/ha**
Theodore	Brigalow	0	2900
Theodore	Brigalow	10	300
Dingo	Poplar Box	0	1900
Dingo	Poplar Box	10	750
Duaringa	Narrow Leaf Ironbark	0	2200
Duaringa	Narrow Leaf Ironbark	10	500

Figure 1. Tree grass relationships for a range of woodland sites in Central Queensland. (From Burrows, 2002)

The notion that trees are basically benign elements of woodland landscapes fails to take account of the many layers of effect that trees, especially thickened trees, have on soils when ecosystems are confronted with fire, drought and flood, all of which are common in Australian environments.

For example:

- Infiltration. Accumulation of litter under tree canopies aids infiltration of rainfall but tree canopies absorb precipitation hence less hits the ground while raindrops off leaves are larger and more erosive than uninterrupted raindrops.
- Less grass between tree canopies in thickened woodlands decreases the potential infiltration in these zones.

- Fire destroys dry litter slowly and heats the ground to higher temperatures than fire through grass, thus deep litter layers under thickened vegetation have potential to alter the subsurface faunal elements and soil chemistry markedly in woodland which evolved with grassy understory. Healthy eucalypt woodlands depend on vast networks of subsurface mycorrhiza to maintain nutrient processes in a leached landmass such as Australia.(Florence,1996)
- Litter layers take at least 3 years to accumulate maximum surface area to protect against erosion where grass regrows immediately after rain. (Personal observation)
- Transpiration rates increase under thickened vegetation allowing little aquifer recharge. (In arid areas in America around Austin, Texas, authorities are presently grappling with the best ways to get landholder co operation to thin the woodlands to restore catchment water balances due to thickening by woody growth. Detailed in Wilcox and Kreuter, 2003.)

IMPLICATIONS OF THICKENING ON OUR PROPERTY.

1. Carrying capacity.

The impact of thickened regrowth on our property, as detailed on Page 1 has in present day terms and considered relative to our present use of this land as breeder land, reduced our potential yearly earnings from cattle from:

1930s: 1800 head (1000 breeders + replacement hefs. @ 66% calving rate)
660 head per year for sale @ $ 350 hd**.** **$ 231,000**

2003: 900 head (500 breeders + replacement hefs @ 66% calving rate)
330 head per year for sale @ $ 350 hd **$ 115,500**

Projecting the future earning capacity of our land while it is classified "Remnant" under Regional Vegetation Mapping and factoring the measured Annual Grow Increment measured by Burrows et al, 2002, of (1.06 m2/ha + 1/3 due to higher rainfall conditions in our coastal environment) = Annual Growth Increment of 1.41m2/ha.

Average Stand Basal area in above (Burrows et al,2002) = 11.86 m2/ha

Therefore Predicted Stand density in 10 years my land = (11.86 + 10.6) m2/ha
=22.46 m2/ha

Measured Stand Density (ungrazed) Woodland Connors Range, 2003 (personal observation) = 8m2/ha

2. Environmental Duty of Care considerations.

Stand density that is greater than that exhibited by undisturbed land is also in excess of any “environmental duty of care optimum stand stocking rate” as the woodland species represented have evolved over centuries at lower undisturbed stocking rates.

Any improvements in catchment water yield that may have resulted from earlier clearing would also appear to be “improvements” for the exclusive possession of the landowner. Any compulsory action like preventing regrowth control that will reduce water yield would appear to be a “taking” of an interest in the land. The State would therefore appear to have a liability to both the landowner and any downstream users who may have their water supply reduced.

To ignore the detrimental impacts of thickening and regrowth on ground and stream water flows, once the matter has been brought to the attention of the relevant authorities, may in the future constitute negligence. Any such negligence could also constitute a breach of the *general environmental duty of care* to take all reasonable and practical steps to prevent serious environmental harm under Queensland’s *Environmental Protection Act 1994.*

3. Conversion of Rungbark Land to Thickened Regrowth.

It could be argued that the early, fully documented requirement to clear and maintain in a cleared condition , is capable of establishing that all subsequent regrowth falls within the definition of “ improvements” which, under both freehold and leasehold law, are the property for the exclusive discretionary enjoyment or disposal of the lease/land holder. However, even if this was not established yet, regrowth thickening is most certainly a relevant consideration which must be taken into account if any exercise of power is to avoid falling within the definition of “inappropriate exercise of power” under judicial review. *Sec.5 (2)(b)* of the Commonwealth's *Administrative Decisions (Judicial Review) Act 1977, and corresponding State legislation, specifically lists "failure to take a relevant consideration into account in the exercise of a power" as an inappropriate exercise of power.* **www.austlii.edu.au** has the full copy of the Act which lists a number of actions that constitute inappropriate exercise of power.

4. “Material Change of use Consideration”

If in relevant considerations, the regrowth phenomenon is an existing attribute of the existing lawful use for grazing purposes and any measures to control regrowth, provided they are within the scale and intensity of previously demonstrated control measures, could not constitute a “material change of use”

ie. Requiring development consent. (See Maroochy Shire Council vs Barnes 2001)
Uncontrolled regrowth is capable of subordinating the “dominant use” (grazing) to a previously subordinate use (as habitat or carbon sink). So any planning instrument that prohibits control measures under such circumstances is imposing a “material change of use” on the landowner. This would no longer qualify as a regulation but, rather be, a “taking” of an interest in land, ie, a use to which the land may lawfully be put. It would be an “exercise of power for a purpose other than the purpose for which the power was conferred”. (Sec. 5, 2, c Administrative Decisions, Judicial Review, Act 1977 CWLTH)

IN CONCLUSION:

The effect of the 3 fold increase in stand density in thickened woodlands on my property would on the evidence in Figure 1 result in no grass and no grazing enterprise. Environmentally there would be a reversion of woodland to closed forest and massive potential for hot destructive forest fires and erosion.

There was no culture of “clearing” in the rural landholders before “trees” became an easy target for media attention applied by conservation groups to such good effect. Eg. landholders before and including my father who actively ignored the order to keep rungbark lands clear on leasehold country aided by the Lands Department staff. An examination of State Land and Tree Cover Clearing Rate Data compared to announcements by the Queensland Government timing and frequency on impending legislation changes would show that media coverage has had a large effect on the annual clearing rate in Queensland.

There are many as yet undemonstrated spin-offs to increasing legislation and persecution of landholder clearing/ management activities none of which will benefit the environment as landholders have to become more vigilant in their efforts to control regrowth before it reaches densities and heights which change the stand status.

The only way we can continue to derive an income from our land is to continue to maintain an open woodland structure to our forested areas the maintenance of which is financed by grazing and agro forestry derived income. We also need to be able to maintain our open areas in that treeless state and be able to explore future and present options for pasture improvements on intensively managed lands.

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