Submission No. 591

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29 April 2016

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Research Director
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Dear Director,

I am submitting this commentary on the Queensland Vegetation Management (Reinstatement) and Other Legislation Amendment Bill 2016 (referred hereafter in this submission as the Vegetation Amendment Bill) as a private citizen but informed by my research on the vegetation clearing developments actual and proposed, in the Einasleigh and Gilbert River Catchment. I have reviewed the EIS for Strathmore Station clearing of vegetation and the CSIRO extensive reports on development of irrigation in those catchments including the extent of the command areas from dams built on either of the two rivers and the soils involved and their potential productivity and crops that could be economically grown. I am an Honorary Associate Professor with a background in Soil Science and Plant Production at the University of Queensland having undertaken research for many International Agencies on agricultural systems and environmental management over the last 56 years in 23 countries. I am currently involved in research aiming to protect mangroves and coastal ecosystems from destruction by shrimp farm development in Kalimantan, Indonesia and on the effects of climate change and dam building on the lower Mekong Delta ecosystems especially related to coastal integrity and agricultural production, and the management of the Kien Giang Biosphere Reserve in Vietnam.

When Queensland introduced the Vegetation Management Bill in 1999 and subsequent introduction of a new framework activated to end broadscale clearing in 2004 and operational from December 2006, it led Australia in vegetation management and the reduction in tree clearing and consequent reduction in carbon dioxide emissions from land use change from forestry. This resulted in Australia being able to meet its Kyoto Agreement obligations, a truly game changing outcome for both Queensland forest ecosystems, the GoA and the planet. Not surprisingly it was lauded by both Liberal and Labour politicians including John Paul Langbroek now Deputy Leader of the Queensland Parliament LNP Opposition party stating in Hansard 2004 pp 296-297 (http://www.parliament.qld.gov.au/documents/hansard/2004/040421HA.PDF) "I am inclined to support this bill in principle….. this policy is the best policy for a sustainable triple bottom line in Queensland…..it is necessary for the proposed changes to occur. ….One of the positive outcomes …is the massive reduction in greenhouse gas emissions…..we will also be watching closely to ensure that the government continues to live up to its commitment to protect remnant vegetation." Emissions in Queensland did indeed fall.

The Vegetation Amendment Bill 2016 is important as it rescinds the Newman Government Vegetation Management Framework Amendment Act 2013 which allowed the subsequent massive

tree clearing for high value agriculture (HVA poorly defined in the current Act) with minimal regulation and Government involvement and oversight resulting in approval of clearing in 112,400 ha for HVA (Public Briefing of the Agriculture and Environment Committee 22 March 2016, re the Vegetation Amendment Bill 2016 Transcript of Proceedings) and

- significant losses of carbon through land use change / forestry, equating to *c.* 9 million tonnes of emissions more than half the amount that the Federal Government Emission Reduction Fund will deliver of 17m tonnes at a cost of $205million
- loss of significant biodiversity which Australia including Queensland has liabilities to protect and enhance, especially including the coastal regions and sea ecosystems in the Gulf and the Great Barrier Reef,
- loss of wetland and riverine protection in the Burnett Mary, Eastern Cape York and Fitzroy GBR Catchments,
- climate change which will have severe effects on the Queensland economy not to mention the people living there.

The amendment of the Vegetation Management Bill in 2013 by the LNP Newman Government which allowed clearing of both leasehold and freehold land for high value agricultural crops and whose oversight was managed by Mr Andrew Cripps Minister for Natural Resources and Mines, resulted in drastic increases in vegetation clearing in sensitive ecosystems including a massive clearing permission of more than 330 km^2 equivalent to an of an area 3km wide stretching from Brisbane to the NSW border 100km away. (>30,000ha) at Olive Vale Pastoral Station in a Cape York catchment directly feeding sediment into water ways feeding into the Barrier Reef. This was more than matched by the two earlier approvals/permission for Strathmore Station and one for Kingvale to clear more than an estimated 53,524 ha there are of forest land around the junction of the Einasleigh and Gilbert Rivers, which flow into a large wetland that is connected to the Gulf waters, a major capture fishery site in Australian waters.

Such was the public protest about the Olive Vale clearing permission that it led to Federal Minister of Environment The Honourable Greg Hunt to reluctantly respond under the EPBC Act to rule that the clearing might endanger the rare buff-breasted button-quail along with 17 other listed EPBC species requiring protection and hence should not be permitted to proceed until the clearing activity plan was presented to the Department by Olive Vale Station for approval and ruling by the Minister (http://www.abc.net.au/news/2015-06-04/queensland-government-steps-in-to-stop-olive-vale-land-clearing/6521928 ;http://www.abc.net.au/news/2015-11-23/federal-investigation-launched-into-gulf-country-land-clearing/6966336 . This matter indicates a weakness in the LNP amendments to the Vegetation Management Bill in that the land clearing permits they allowed were not contingent on submitting the plans to the EPBC for a ruling on protection of biodiversity matters, a flaw in the EIS process that presumably preceded the permission granted for the tree clearing by the Newman Government (http://www.abc.net.au/news/2015-11-22/land-clearing-investigated-for-legal-breaches-environment-damage/6961108). In the case of Strathmore EIS which I have seen there was no mention of ecosystems or species of plant or animal that would be endangered by such large scale clearing although the area is the “home” of the nationally listed Red Goshawk.

In both cases the EIS were passed with scant review of the financial support required if the cleared land was to be actually cropped to sorghum. These are enormous areas to manage and require considerable finance for equipment to manage the farming not to mention expertise management of the crop and the necessary large scale equipment. The areas believed to be already cleared at Strathmore and proposed for Olive Vale are more than twice the size of the largest wheat crop single

farm enterprise planting area of 10,800ha in Western Australia, the state with the largest wheat farm sizes and these WA enterprises evolved gradually in size over time. Mr Harris the "owner" of Strathmore Station last year told the Grains Research and Development Corporation that the medium term plan was "to expand cropping to 10,000ha in keeping with the environmental guidelines for cropping in the region" (https://grdc.com.au/Media-Centre/Ground-Cover/Ground-Cover-Issue-116-May-June-2015/Sorghum-venture-tests-northern-promise). So why was there a need to clear more than an estimated 50,000ha when only a small proportion would be cropped. This is hardly clearing for High Value Agriculture when patently the land is not going to be cropped regularly and hence able to fall into the HVA category as required under the legislation. Such developments need to be phased properly in order to maintain cash flow and to not fail financially. There is no detail for these projections in the EIS and in the case of Olive Vale were claimed to be sustainable from year 2 of the clearing until its end 8 years later. However the rate of clearing at both Olive Vale and Strathmore was as rapid as machinery availability and season would allow and not at all related to the farming development that would need phasing in to fulfil the financial plan.

A major flaw in the process of granting permission by the Department of Natural Resources and Mines for the tree clearing on Strathmore and Olive Vale Stations, was the assessment of soil suitability for high value cropping. The surveys conducted by Pinnacle Pocket Consulting by Peter Spies were quite inadequate to assess the suitability of such large areas, effectively being at the 1:250,000 scale rather than 1:100,000 which even then is only one site evaluation per several hundred hectares. There are very few actual on the ground assessments of soils in the areas designated to be cleared and much of the mapping is done by kriging or a computer modelling/interpolation exercise from the few on the ground assessments and other mapping considerations such as digital elevation modelling and soil depth which affects plant available water calculations. The recent CSIRO mapping of the area of the Gilbert and Einasleigh catchments which includes Strathmore Station had very few on the ground sites near the areas destined to be cleared (Petheram et al Chr 3 Physical Environment of the Gilbert Catchment In Petheram C, Watson I and Stone P (eds) Agricultural Assessment of the Gilbert Catchment www.csiro.au/FGARA and Strathmore Station Soil Tests CSIRO 2013 Southern Section Map Appendix 1 attached)

The major problem with the permissions granted for these large clearing exercises is that the DNRM guidelines for determining high-value and irrigated high value agriculture and for Land Suitability and Financial Viability Requirements for High-Value and Irrigated High Value Agriculture (DNRM 20130 were not followed adequately by the Department (WP Thompson Independent Review: Olive Vale Fairview Station Natural Resource Review, Land Resource Assessment Management P/L 2015). If the guidelines are not adhered to by the proponents for vegetation clearing permits, then there is "no process in the guidelines for conditions to be imposed that ensures that the indicated use is carried out in a sustainable fashion or indeed is carried out at all post clearing" (Thompson 2015). In the case of Olive Vale the Queensland Country Life of 27th April 2016 reports that 150ha of forage sorghum was sown as a trial which is not a High Value Crop and is not equivalent to high value grain sorghum or sugar cane which was initially proposed to be grown.

Because the Vegetation Management Framework Amendment Act 2013 has insufficient conditions attached to clearing permits, it has led to very large areas of Queensland being cleared of trees often in contradiction of the requirements of the EPBC Act which is concerned with obligations regarding biodiversity conservation under Australia's International Agreements. Furthermore the rate of clearing particularly on Strathmore Station is quite inimical to developing a sustainable agricultural production system. It is highly unlikely that the very large cleared area will be cropped at any substantial level in the next few seasons as substantial farming equipment and facilities for grain

handling and usage take time to develop and are a large financial cost. The soils are generally poor in nutrients with limited water holding capacity resulting in the need for fertiliser addition or rotation cropping with fodder legumes (not a high value cropping system) in order to maintain organic matter and Nitrogen content sufficient to support high value crop yields that are economically viable. There will be seasons of low rainfall which CSIRO estimated would limit a viable grain crop yield to 3 to 4 years out of 10 in the Gilbert Catchment. The areas are within the semi arid tropics with an annual rainfall of around 700mm but with large annual variability. This means that for a reliable production system to operate there will be a need to build dams for water storage. This is an extra cost for the production system and water allocation from the Rivers or waterways needs to be regulated. Such water rights permission if already granted has not been made public as far as can ascertain. Sorghum yields in newly cleared soils (claimed to range up to 5tgrain/ha but with an average of 2.5t/ha which means there was much of the crop that was on the margins for profitability and hence only useful as forage for cattle at Strathmore https://grdc.com.au/Media-Centre/Ground-Cover/Ground-Cover-Issue-116-May-June-2015/Sorghum-venture-tests-northern-promise) are unlikely to be sustained as the organic matter status of the newly cleared soil will continue to decline with cropping and require large amounts of fertiliser and water to maintain such relatively good yields.

The Integrated Food and Energy Developments (IFED) Project (Etheridge Integrated Agricultural Project) plans to clear and irrigate 50,000ha and source 550,000megalitres per annum from the Upper Gilbert River. Other agricultural enterprises with access to the Rivers in the catchment are also wanting to take water from the rivers for crop irrigation. The IFED project will take around 20% of the current flow at the gauging weir on the confluence of the Gilbert and Einasleigh but only 10% of the flow to the Gulf. However the river feeds a very large wetland which under the RAMSI agreement, Australia is charged with protecting, and any reduction in flow to the Gulf or of water to the wetland will affect animal populations particularly of resident and migratory birds, and fish and shrimp populations in the Gulf. To date no modelling appears to have been carried out on the effect of water allocation from Gilbert and Einasleigh Rivers on the floodplains downstream from their confluence. The proposed development and others in north Queensland will also need to consult adequately with Indigenous Elders of the three groups involved and reinforces the need for collaborative governance arrangements so that needs and rights of people living in the catchments, biodiversity and development are harmonised.

Unless the Vegetation Amendment Bill 2016 is passed there are likely to be many more assaults on Queensland Biodiversity as described above. Recent clearing for example has reduced koala habitat by more than 20% endangering the sustainability of populations, reduced old growth forest, caused loss of High Value Regrowth, loss of threatened species and habitat, loss of ecosystems such as dry scrubland. There are 778 species listed as “Vulnerable” or Endangered” in Queensland and loss of habitat is the major threat to most of them. Land clearing threatens the continued existence of 45% of Queensland’s ecosystems (Maron et al 18 March, 2015 “Land Clearing in Queensland Triples after Policy Ping Pong.” The Conversation https://theconversation.com/land-clearing-in-queensland-triples-after-policy-ping-pong-38279). Furthermore such tree clearing will make it extremely difficult for Australia to reach the targets signed up to in Paris Agreement signed by Australia on 22nd April 2016 at the UN Headquarters with the current GoA scheme in place for Direct Action for Carbon Pollution Reduction. Today 27th April 2016 the news is reporting that Minister Hunt is recorded as putting reforestation and reduction of deforestation as a major way to reduce greenhouse gas emissions.

Tree clearing on a large scale can affect the weather patterns and temperature and with record high temperatures in the last 15 years and low rainfall in Queensland and 2016 surpassing those, we can ill afford to exacerbate the temperature increase in Queensland by wanton tree clearing (see University of Queensland research Deo et al. Impact of historical land cover change on daily indices of climate including droughts in eastern Australia. Geophysical Research Letters 36, L08705, doi:10.1029/2009GL037666, 2009). UQ and the Queensland Government Departments have considerable expertise in the area of vegetation management and assessment of current status using satellite imaging and GIS, and this will provide excellent support to regulating the activities undertaken as allowed by the Vegetation Amendment Bill 2016 once it is passed including PMAV applications.

Appropriate management of tree clearing is particularly important for riverine/riparian areas and there is a need for the 50 to 100m embargo on tree clearing around waterways, essential to prevent sediment and nutrient flow from the land to the sea particularly to the Great Barrier Reef. The riparian laws were not changed by the Newman Government. Agriculture, particularly sugar cane farming systems are already having a large effect on nutrient flows especially of nitrogen into the GAB waters with dire consequences and the voluntary BMP Smart Cane only has 50% of the relevant production area covered and is currently having little impact on these flows in coastal Queensland. Vegetated riparian zones have a large effect on recovery from floods as they reduce waterway bank collapse and erosion.

The Vegetation Amendment Bill 2016 will restore the requirement for environmental offsets where there is to be **any** residual impact of a regulated tree clearing event, not just for significant impacts as at present. However it is also now the right time to re-examine the legislation around the Property Map of Assessable Vegetation (PMAVs) and the designation of category X which is allowed to be cleared by the land owner without restriction. There are 22m ha of locked in PMAV Xs (28% of Queensland's forested area) but of this, 13m ha PMAVs has not yet been converted to developments, sown pastures or crops, and could recover spontaneously if left uncleared. Regulations and mapping for PMAVs need to be appropriately and consistently applied by the relevant officers of the Department of Environment and Heritage Protection. Queensland Department of Science, Information Technology and Innovation (DSITI) has excellent mapping capability and up to date maps of Queensland Vegetation with the update to 2015 due shortly for release. So vegetation requiring protection in a PMAV can be very precisely mapped and monitored. Reinstatement of the "reversal of the onus of proof" will reinforce the requirement to manage vegetation appropriately and in accordance with the law.

It is also the right time to re-examine the starting date (baseline) for defining High Value Regrowth, now set for some years at 1989. This was for trees regrowing over a period of 15years in 2004 when the Vegetation Management Bill new framework was passed to be actuated in 2016 when the regrowth was over 17 years. I suggest the baseline year needs to be periodically reviewed and updated to take account of the rapid growth of trees in some Queensland Ecosystems which would place some revegetation since 1989 into the HVR category.

While this committee's deliberations are currently focussed on the Vegetation Amendment Bill, there are other issues for vegetation management in Queensland that need to be urgently addressed in order to conserve/protect its ecosystems namely

- Koala Habitat Mapping especially in SE Queensland, Rehabilitation Areas map, Essential Habitats
- Protection for Urban Remnant Vegetation

- Coastal wetland, vegetation and remnant sites and Reconfiguring a Lot Transfers effects on biodiversity hotspots which still need to be mapped
- Climate change refugia, biodiversity green corridors,
- Greenspace strategy for Queensland
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29 April 2016

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