I provide my submission against aspects of the Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill 2019

My overriding issue with the Bill is that its introduction in the Queensland Parliament on 8th March represents yet another variation to the Vegetation Management Framework, which has been amended over 18 times since its introduction in 1999. This constant change in legislation severely impacts on the ability of farm managers to plan and implement effective long-term property and business management decisions. Ecological processes work in much longer timeframes and can be severely compromised when mismatching, constantly changing regulations are enforced. Farmers have long called for certainty with the vegetation management regulatory framework. With the Bill being introduced when farmers are on their knees with much of Queensland still in drought conditions, or recovering from drought and flood, it should come as no surprise that I am totally opposed to continued uncertainty and attacks on the viability of myself, the long-term sustainability of my business as well as attacks on fellow farmers.

Key provisions of the proposed legislation which I oppose are:

1. I oppose the proposed Reef Protection regulations in the Bill. The Bill does not include details of proposed minimum practice standards and farm design standards for proposed Reef Regulations. It is hard for affected producers to provide feedback to the Bill without becoming agitated & concerned (as they have not seen proposed standards). Many remember ERMP contents for grazing. Grain growers are concerned as many have no idea what is proposed & are concerned that innovation will be stifled.

2. Bill Consultation period is extremely short and is being rushed to presumably meet the next sitting of Parliament, without due public consideration to provide input to minimum practices & farm design standards. Drafts of standards were previously made available to stakeholders, including Agforce during 2018. This included the draft standards for sugarcane cultivation, banana cultivation, cattle grazing, and farm design standards for new cropping. These are subject to ongoing consultation and hence potential changes. Proposed standards could still change, esp. at the whim of the Minister (Government) and his department. Drafts of the standards for horticulture and grains are not available at this stage.

3. I object to the fact that Offsets, under this proposed Bill, do not apply to agricultural new developments. Offsets only apply to resource and industrial activities, sewerage works, etc releasing sediment or nutrient. No agricultural offsets.I wonder who will get offset $$$ for rehabilitating a degraded riverbank – the Green Collar broker or the landholder providing the offset work site? Interesting considering Reef Credit process for water quality offsets being offered through GreenCollar/Terrain/NQ Dry Tropics agreement, you may be interested in reading Submission 140 (https://www.parliament.qld.gov.au/documents/committees/ITDEC/2019/16EnvProGBRPM/submissions/140.pdf & also attached). This consortium is ready to negotiate Reef credits for new prescribed & resource ERA developments requiring offsets. This is clearly inequitable and lacks fairness. Possibly as farmers don't pay levies like resource companies or contribute to the coffers of the ALP?

4. Protecting the Great Barrier Reef requires a whole community, collective and collaborative approach for management and risks to Reef health. Queensland producers

across Reef regions are proud to be part of the co-operative solution towards Reef health. The impost of proposing further regulations on agriculture challenges community trust placed in farmers demonstrating good land management. Rather than the big stick approach of regulations, I would recommend the State Government work co-operatively alongside farmers to achieve the best outcomes for Reef water quality and agricultural communities. Emerging Reef science has confirmed the major risks to Reef health are:-

- climate change
- extreme weather events
- sediment resuspension
- warming ocean temperatures

The proposed regulations for agricultural land use do not address any of these major risks. There is insufficient evidence that existing Reef regulations imposed by *Great Barrier Reef Protection Amendment Act 2009*[1] through amendments to the *Environmental Protection Act 1994* and *Chemical Usage (Agricultural and Veterinary) Control Act 1988* since 2010 have had any effect on water quality targets within the Reef 2050 Plan. No data from the previously Reef regulations (Environmental Risk Management Plans ERMP's), from 2010 to 2018, has been used for Paddock to Reef modelling, Reef Report Cards or measuring practice change. Existing legislative instruments such as the *Land Act 1994*, *Vegetation Management Act 1999* and *Soil Conservation Act 1986* protect land condition, conserve soil and prevent environmental degradation across Reef catchments and the entire state of Queensland. There are 26 pieces of existing legislation and regulations for environmental management and planning which are used across agricultural land in Queensland. Queensland Government needs to utilise existing legislation before proposing more regulation through this Bill. There is no basis or valid cause-effect argument to conclude the rate of progress towards water quality targets will be achieved through broadening regulation.

5. The attribution of risk and allocation of resources - Requiring a high level of accreditation / regulation across all of the catchments and all of the producers in each of the catchments fails to consider the risk level of individual producers and their contribution to reef water quality. For example only 3% of the Burdekin Catchment is mapped with a high or very high risk of gully erosion - (the main identified source of sediment and organic nutrient loads) yet the legislation would put significant cost onto the other 97% of producers. Not to mention who is going to audit this and pay for audits?

6. I believe there needs to be recognition of the adoption rate for agricultural best practice, which is higher than reported by annual Reef Report Cards. The Reef Report Card and Paddock to Reef Modelling only count practice change. There is no consideration of producers already at best practice or not involved in Reef grants.

7. There needs to be a focus on high risk areas for sediment and nutrient runoff rather than blanket Reef regulations over the entire 33.7M ha of grazing and grain cropping land use.

8. The Government should concentrate on the promotion of innovation through an incentives scheme rather than minimum practice standards.

9. There should be effective consultation with the grains industry on grains minimum practice standards. There is no scientific evidence that nutrient application to grain paddocks contributes to nutrient runoff into watercourses. Furthermore, there is no evidence that runoff water from remote, inland grain growing areas ever enters the Great Barrier Reef lagoon. It has been argued strongly by industry that opting for 'the lowest common denominator' of government regulation will stifle creativity. Minimum practice standards stifle innovation of new techniques and there is no provision for field trials of new techniques, such as using nitrogen stabilisers as used in the Incitec Pivot product Entech. Grain growers are active contributors to a highly innovative industry. Grain growers from Central Queensland have expressed concern their trials for a new fertilising method will need to cease as this new innovative method is outside the scope of existing "best practice" methods for cropping. The business of the innovative consultant adviser is also at risk, if prescribed grains minimum practice standards are introduced.

10. There needs to be appropriate farm design standards for new cropping areas that are designed to enable Northern Australian agricultural development. Much new Agriculture has previously been assessed under the Vegetation Management Act's High Value Agriculture land suitability and had to meet the codes. This appears the Government now has invented a new mechanism requiring re-assessment through this Bill/legislation/policy.

11. Risks of using voluntary BMP programs as an alternative pathway to regulations for minimum practice standards.

12. Lack of correlation of fertilizer records from advisors and fertilizer resellers to actual in farm use. The scary part for me is that the legislation is set up with the future capacity to make things really difficult, I think they will likely commence fairly softly but then continue a ramp up with the one set of legislation.

13. One of the actions that have been given to UNESCO is that all producers are accredited. One of the key challenges I faced in putting forward a submission is the fact that the legislation we are already operating under was already quite onerous, but wasn't being enforced. (ERMP's etc.) I think practicality of enforcement is the key, these catchments are huge, the satellites don't tell the story (particularly with veg cover) and they simply don't have enough people and resources to enact what they are proposing.

14. The attribution of risk and allocation of resources - Requiring a high level of accreditation / regulation across all of the catchments and all of the producers in each of the catchments fails to consider the risk level of individual producers and their contribution to reef water quality. For example only 3% of the Burdekin Catchment is mapped with a high or very high risk of gully erosion - (the main identified source of sediment and organic nutrient loads) yet the legislation would put significant cost onto the other 97% of producers. Not to mention who is going to audit this and pay for audits?

15. The Reef 2050 plan and the scientific consensus report that sit behind it are pretty scary docs - they suggest that forage utilization by grazing of 10-30% should be the aim. - They are focused on "old" and somewhat disproven methodologies of exclusion and lower stocking rates - rather than improved grazing management like time-control grazing focused on spelling and livestock being nature's recyclers. By contrast a lot of the work in the regenerative space is looking at under grazing being a problem as well as over grazing. An action like blade ploughing a paddock of suckers would have a great outcome for the reef, capturing more run off etc. but could you imagine the uproar if it was a proposed mitigating activity?

16. The proposed land classifications will be based on the ABCD framework. If you google that, in reality most of our lots have some A, some B, some C and some D land. The proposals that have been spoken about have no percentages, basically if you have one tiny piece of D land you are a D. To qualify as a C for instance you would only need to have evidence of one piece of historic erosion. The ground cover expectations exceed most of the capacity of the inland and drier areas in the catchment. (>70% ground cover in September) Therefore it is likely that, followed to the letter, almost every one of us would be captured.

17. The legislation is designed to deal with only anthropogenic (or human induced) water quality issues but the proposed regulations fail to differentiate - they don't allow for natural events (fire, extended drought, and flood or storm damage) and its impact on land.

18. The legislation seeks to allow producers accredited with BMP and other accreditation programs to be "compliant". However it includes big powers for the Minister to change what "BMP" is at any point. Note - it will only be those fully accredited and audited that are deemed compliant. (I think there is only 100 or so producers at this level ATM) All records also become the property of the Govt. Whilst I haven't had anything to do with BMP my feedback would be that it incorporates a lot of material that is well outside of grazing management, in many instances duplicates other programs (e.g. LPA - animal welfare) and seeks to set a bar that is excessive from a "minimum required" standard for reef health. My comment would be that ERMP's were probably a walk in the park compared with BMP accreditation!

19. The legislation sets up an offset framework, so while we will be busy trying to work out how to fill in every gully and get 70% ground over in September every year, the mines will continue to pump what they like down the rivers but they'll just pay the Govt a fee for doing that.

20. Any new proposed farmed paddock would be captured under an intense and costly planning and potential offset framework.

21. Utilization of ground cover as the metric for erosion control flies in the face of the VMA changes and in particular the 50m watercourse retention provisions. There seems to be no recognition or provision for the vegetation management restrictions and the increased competition with ground cover. Also the restrictions on remedial activities that can be undertaken within the watercourses will not help.

22. There is no onus on Govt to ensure that they meet the standards on Govt owned land (road verges or national parks etc.).

23. There is no measurement proposed. All of the results are based on "modelling" rather than physical measurement of sediment, erosion or water quality. The model works on land areas, so because grazing takes up a large area it is a large contributor. For example the greatest source of contaminants in the FNQ streams is "Nature Conservation" because the greatest area is national park. The modelling on stream erosion is very poor with very little accurate mapping having been undertaken. There are only 6 water quality monitoring points in the entire Burdekin catchment and most of the data is post 2009.

24. The proposed Bill does not utilise current Reef science outcomes to enable cost-effective targeting on high risk areas for suspended sediment and nitrogen runoff near coastal areas along the Great Barrier Reef Lagoon. Dam structures such as the Burdekin Dam trap 50 to 85 per cent of coarse sediment. Other dams such as Faust Dam near Proserpine, and Boondooma and Paradise Dams in the Burnett trap all runoff from upstream agricultural land except during exceptional wet years, with negligible discharge of suspended sediment. High-risk erodible soils contribute most of the suspended sediment including sodic soils, duplex soils and other dispersive soils. Targeted areas can be ascertained from the erodible soil maps for Burdekin and Fitzroy properties, available from Queensland Government. Sediment tracing in catchments such as the Burdekin confirmed all coarse sediment particles (>16microns) and 80 per cent of particulate nutrients are deposited within 10km of the river mouth. Only a portion of the fine suspended sediment (<16 microns) forms turbid flocs which may impact on the inner shore Reefs within 60km of the coastline. The 2017 Scientific Consensus Statement states 90 per cent of fine sediment runoff is from subsoil erosion from gullies, banks and deep rills. Government voluntary and regulatory measures should only focus on these high risk, erodible hotspots. Regulations on agricultural practices across the entire Reef catchment defy Reef science outcomes, create extra reporting burden for producers and pose a high compliance cost for Queensland Government to uphold.

25. Sediment tracing monitoring by the TropWater unit from James Cook University JCU is helping pin-point weather events and sediment sources of high risk to Reef water quality. During 2015 to 2018, there was no catchment-wide flow events from the Burdekin catchment into the Reef lagoon. Tropical Cyclone Debbie in 2017 resulted in a flow, below the Burdekin Dam wall, from the Bowen-Broken-Bogie catchments. In the Fitzroy catchment, geochemical tracing indicates the basalt soils of the Nogoa, Comet Rivers and Theresa Creek are the main source of suspended sediment whereas Reef modelling indicates the Isaac, Connor and Dawson Rivers as the main source of suspended sediment. Queensland Government should focus efforts on pin-pointing the main sources of sediment and nutrient rather than regulating everyone in the Reef catchment, regardless of their runoff risk and remote distance to the Great Barrier Reef Lagoon. For example, it is not feasible for runoff water from a property near Alpha to travel 886 km along the entire length of the Burdekin River to reach the Reef lagoon. There needs to be better use of government investment in Reef science to inform and focus on hotspots for reducing suspended sediment and nutrient runoff.

26. The proposed penalties for contravening regulations and practice standards are excessive in the extreme in relation to the practice, and out of proportion, when considering

average farm earnings. These could potentially put an enterprise into bankruptcy (possibly that is the intent of the Government).

27. The devil is in the detail of regulations and policy. From what was previously written as 'draft' standards, it was wholly idealistic written by some bureaucrat/s in George Street. For example the Farm Design Standards - Cropping and Horticulture development under ESC1 - refers to " A permanent bed system with dedicated traffic pathways is in place for all field operations e.g., bed forming, planting, spraying/fertilising, and harvesting"... i.e. controlled traffic farming. I was a soil conservationist in Clermont in the late 90's till 2000. The thing is about Controlled Traffic farming (CTF) is that it is ONE WAY to achieve an outcome, of less erosion, but NOT the ONLY WAY. Zero tillage, minimum till can also achieve this and length of slope, soil type, cover etc. all must be considered. In some cases, i.e. higher rainfall events, CTF can concentrate sheet flow and channel it into rows causing accelerated erosion, into possibly a contour, instead of spreading it over a wider area. CTF also presents an issue in the permanent rows. They act like a long fallow, are heavily compacted, and soil biology is killed as the macro and micropores of soils heavily compacted (squished) not allowing infiltration. They are prone to erosion.

28. As I say, wholly idealistic - based on one (of presumably the writer/s) preferred system. Many farmers realise sometimes soil needs a till to incorporate green manuring, excess stubble etc. and this would also consider timing. Also for reasons of managing plant disease in combination with crop rotations. This policy stifles innovation without presenting policy/codes as a desired performance outcome, suitably written, and allowing for other solutions, rather than a prescribed approach/solution. In short, it is highly idealistic and does not consider all land types, soils and farming systems.

Background

1. This Act is really about "Reducing the size of the Paddock" and will cause farmers and graziers an inordinate amount of stress and worry.

2. Bill Consultation period is extremely short and is being rushed to presumably meet the next sitting of Parliament, without due public consideration to provide input to minimum practices & farm design standards. Drafts of standards were previously made available to stakeholders, including Agforce during 2018. This included the draft standards for sugarcane cultivation, banana cultivation, cattle grazing, and farm design standards for new cropping. These are subject to ongoing consultation and hence potential changes. Proposed standards could still change, esp. at the whim of the Minister (Government) and his department.

3. As noted online and as advised during the Department's ongoing consultation with stakeholders, the horticulture and grains standards will be developed over the next two years in consultation with industry. This approach takes into account that these industries (horticulture and grains) represent a lower risk to Reef water quality and also, the complexity of developing standards for these activities. These industries will also be regulated at a later date; within three years of commencement of the legislation.

4. I didn't think it would be possible for the divine separation of water where agricultural runoff makes it to the reef and other pollution does not make it over the dam wall

5. The most important message that rural landholders can convey to people in other industries and their urban cousins is that the business they are in is agricultural production – the production of food and fibre for Australian and international markets. It is not conservation. If the two can be combined while not limiting the sustainable agricultural production potential of a property - well and good. But conservation superimposed on agricultural land use can (intentionally or not) restrict responsible development and management of woodland resources and so impact the viability of the rural enterprise. For example, it is made very clear in the documentation of most grazing homestead perpetual leases (GHPL) that the Purpose of the Lease is for 'grazing and agriculture'. This of course applies to agricultural land in general.

6. Premier Palaszczuk said when she was first elected she wanted to create 55,000 new jobs – where is this to come from with mining and tourism in downturn? This is just bad policy.

7. The biggest cause of environmental degradation is not tree-clearing – it is poverty. Any proposed changes to the Vegetation Management Framework will deny people, indigenous and non-indigenous – social and economic opportunity.

8. Most suspended sediment comes from gullies... like Springvale in the Normanby catchment to Princess Charlotte Bay, and the Burdekin and BBB catchments. Not necessarily anthropogenic, but off sodic, highly erodible soils. Been happening for centuries as we have old sediments... how else have the deltas like Burdekin, Herbert floodplain and Fitzroy been formed?

9. Science - Increase in Woody Vegetation. The State Government has been 'cherry-picking' the science. Vegetation regrowth data has been largely ignored in their own report. The fact of the matter is that the actual percentage wooded vegetation cover remaining over Queensland has increased, even with the rise in annual clearing rates reported in the SLATS Report 2012-2014. This report shows that while 296,000ha were cleared, tree coverage increased 437,000ha from 2012-2014 (Table 1). Almost twice the size of the ACT in just three years. In fact tree coverage increased in 51 of 77 council areas across Queensland. The biggest increases in tree coverage came in far north and northwest Queensland, especially in Cook Shire (up 237,000ha), Carpentaria (up 229,000ha), Burke (up 85,000ha), and Mareeba (up 40,000ha). The fact is that trees grow, and right now they are regrowing at a much faster rate than they are being managed. Anyone who enjoys a backyard garden in this bountiful state will appreciate this phenomenon only too well. Woody vegetation is dynamic. Establishment and growth of woody vegetation is greater during episodic wet years (e.g. 2010/11) and natural tree death can occur during prolonged droughts. The Main change in clearing rates from 2012 to 2013/14 is in southwestern Queensland where mulga was being pushed to keep cattle alive in the drought. Most clearing happened in Paroo Shire, Barcoo and Boulia, the report shows. Even with increased clearing rates, the actual wooded vegetation cover across regions increased in all but 5 regions between 2011-12 and 2012-13, and all but 4 regions between 2012-13 and 2013-14 (Table 1).

Table 1.

		2011-12		2012-13			2013-14		
NRM Region	**Total area** (,000 ha)	**Rate of clearing** (,000 ha)	**% wooded vegetation cover**	**Rate of clearing** (,000 ha)	**% wooded vegetation cover**	**△¹**	**Rate of clearing** (,000 ha**)**	**% wooded vegetation cover**	**△²**
Burnett Mary	5595	11.794	69.175	14.138	69.77	↑	15.240	73.12	↑
Cape York	13685	2.115	92.219	2.204	92.29	↑	2.811	94.43	↑
Condamine	2544	4.935	39.182	8.164	39.82	↑	5.959	40.44	↑
Desert Channels	51000	8.814	20.216	17.667	20.01	↓	19.896	19.04	↓
Fitzroy	15725	41.605	55.594	54.747	55.96	↑	58.617	57.77	↑
Northern Gulf	19410	1.675	88.107	1.385	87.94	↓	2.466	89.10	↑
Burdekin	14090	18.900	64.821	38.655	65.09	↑	29.818	65.49	↑
Border Rivers/ Maranoa Balonne	10176	57.570	42.550	57.521	42.76	↑	35.769	42.60	↓
Mackay Whitsunday	934	0.961	67.706	1.038	67.71	↑	0.775	69.67	↓
South East Queensland	2368	3.120	66.740	3.120	67.15	↑	4.577	70.21	↑
South West Queensland	18711	29.051	47.334	63.171	47.89	↑	116.997	44.49	↓
Southern Gulf	19460	1.801	49.179	3.337	49.08	↓	2.019	50.84	↑
Wet Tropics	2224	1.406	84.337	1.211	84.20	↓	1.466	85.46	↑
Torres Strait	85	0.000	70.113	0.000	69.98	↓	0.000	87.97	↑

△¹ = Increase (↑) or decrease (↓) in percentage cover between 2011-12 and 2012-13
△² = = Increase (↑) or decrease (↓) in percentage cover between 2012-13 and 2013-14

10. Many Farmers are still in the grip of Queensland's most widespread drought or in recovery. This proposed Bill further "kicks the can" at farmers and graziers, when they can least afford it with very heavy fines (designed to drive them broke) and adopting a "legislation/compliance approach rather than through good education and communication

11. <u>Thickening Regrowth and Maintaining Current Productivity</u>

Science shows thickened tree cover can increase runoff, adversely affect regional ecosystem functioning, and reduce biodiversity. The work conducted by Bill Burrows, over 40 years in DPI, showed that our Eucalypt woodlands are actively thickening. Queensland's tree/shrub cover increased its aboveground biomass and carbon content over the 20 year period 1993 – 2012. This is despite the fact that this timeframe coincided with a period of active broad scale tree clearing. This conclusion is based on satellite sensor measurements, with the findings strongly supported by a large number of complementary studies employing many different monitoring techniques. The data presented here shows that this State is a net sink for CO2 overall. Queensland is more than pulling its weight today, both nationally and internationally, in ameliorating CO2 build-up in the atmosphere. Restricting tree/shrub clearing to simply further increase carbon sequestration on land assigned for agricultural purposes seems to be an unnecessary impost, devoid of fairness to the landholder.

As tree basal area increases, potential pasture yield declines (Back et. al 2009). This means that removal of woody plant competition can increase pasture production and hence livestock carrying capacity by 2-4 times, depending on the pasture, land type and location. Only a small increase in woody plant basal area (regrowth) after clearing will quickly negate the pasture production benefits of that clearing (Burrows 2002). Thinning and follow up management, can restore landscape to a functioning regional ecosystem. Regrowth needs to

be controlled to maintain productivity. Comments by Dr Bill Burrows[1], formerly Australia's leading Woodland Ecologist specialising in tree-grass interactions. "*If you work on a basal area increment of 1% per year and 8% start tree basal area converts to c.12% in 40 years. (Very grass competitive - but still well below 70% canopy cover).Watch out Qld. These are ball park TRAPS averages for Qld's so called "remnant" grazed woodlands - 72 M ha. Forget about the grazing industry; just wait to see what that does to our urban water supplies…*"

- Different satellite based sensors can now reliably detect changes in the aboveground biomass of vegetation, as well as carbon dioxide (CO2) levels in the air column above the earth's land mass and oceans (Burrows 2016).
- Aboveground biomass increased in Queensland over a 20 year observation period (1993-2012), even though this also coincided with different years of either well below or well above average rainfall, along with years of extensive ('panic') clearing – in the highly publicised lead up to the passing of the State's Vegetation Management Act 1999.
- The satellite sensor observations are validated by a myriad of ground based and aerial photo interpretation studies. This research confirms that uncleared woody vegetation is "thickening" (increasing in stem density, stem size/basal area and/or canopy cover) on the State's rural landholdings. This results in increased woody plant biomass and carbon storage, as well as providing strong competition that limits the growth of associated pasture.
- Independent sensors on Japan's IBUKI and NASA's OCO-2 satellites now both show Queensland is a net annual sink for CO2. In other words vegetation is currently removing more CO2 from the air (atmosphere) above this State than is being added to it from the combined impacts of land clearing, plant respiration, fire, fossil fuel use, adjacent ocean outgassing etc.
- It is concluded that arguments for the reintroduction of strict tree/shrub clearing control bans on this State's rural landholdings are not supported by the evidence. Our 'intact' woody vegetation is not static, but on a definite 'thickening' trend overall. This trend threatens the viability of many rural enterprises. Reintroducing strict restraints on the clearance of trees/shrubs from the rural landscape will only exacerbate this problem.
- A review of research literature provides further support for these conclusions.

<u>Reef and Runoff</u>

The Reef is an outstanding natural asset – nobody can dispute that. Soil management plays a vital role in keeping soils on the paddock, out of waterways and out of the Reef lagoon. Ground cover, not tree cover, determines runoff and erosion risk. This is a well-known soil

[1] [1] Bill Burrows has a Master of Agricultural Science degree from the University of Queensland and a PhD from the Department of Environmental Biology in the Research School of Biological Sciences, Australian National University. He is a Fellow of the Australian Academy of Technological Sciences & Engineering. He was also elected a Fellow of the Tropical Grassland Society of Australia and The Australian Institute of Agricultural Science and Technology. He is a past recipient of the Cattleman's Union of Australia, Research Medal and was awarded a Centenary Medal in 2002 for 'contributions to Australian society in the field of ecology'. Bill retired from his position as Senior Principal Scientist in the Queensland Department of Primary Industries & Fisheries (now DAF) in 2004, after a 40 year career researching the ecology and management of Queensland's grazed woodlands. He is a past president of both the Australian Rangeland Society and the Tropical Grassland Society of Australia, and has authored or co-authored over 100 research and technical papers published in national and international scientific literature.

conservation principle[2] , outlined in the 2015 Soil Conservation Guidelines for Queensland[3] and many other soil conservation studies. Industry is concerned Queensland Government has recently considered woody vegetation management as an erosion issue in Great Barrier Reef catchments. There is generally less ground cover under trees than in cleared areas, due to competition for water and nutrient. Grazing management practices, pasture cover and fire regimes, rather than tree clearing, determine runoff and erosion risk. For example, the Queensland Government website for soil erosion management[4] states "*Trees are often considered to be the universal answer to control soil erosion. Tree roots help prevent landslides on steep slopes and stream bank erosion but they don't stop erosion on moderately sloping hillslopes*".

Published reef science on suspended sediment runoff to the Reef focus on main causes such as amount of ground cover and location / extent of bare areas in erodible soils such as gullies (Wilkinson *et al* 2012, Bartley et al 2012). There is NO mention of tree cover, tree basal area or trees contributing or reducing sediment runoff. Ground cover NOT tree cover determines sediment runoff.

A study of how ground cover and extent/location of gullies & scalds affects runoff and erosion was conducted over 10 years (Bartley 2014) within eucalypt savannah woodland within the Upper Burdekin at Virginia Park Station, Charters Towers. It measured suspended sediment runoff from flumes across an Indian couch dominant pasture on goldfield soils. The study looked at grazing strategies to improve grazing land condition. Native woody vegetation was Eucalypt savanna woodland (narrow leaved ironbark, bloodwood, currant bush, false sandalwood). Increased ground cover of Indian couch and pasture reduced runoff; however sediment yields were mostly affected by the position of scald, gully and bank erosion areas in the landscape. The amount, distribution and persistence of areas with < 10% ground cover affected the amount of soil erosion. Increased ground cover (> 70%) and rainfall intensity reduced early wet season runoff.

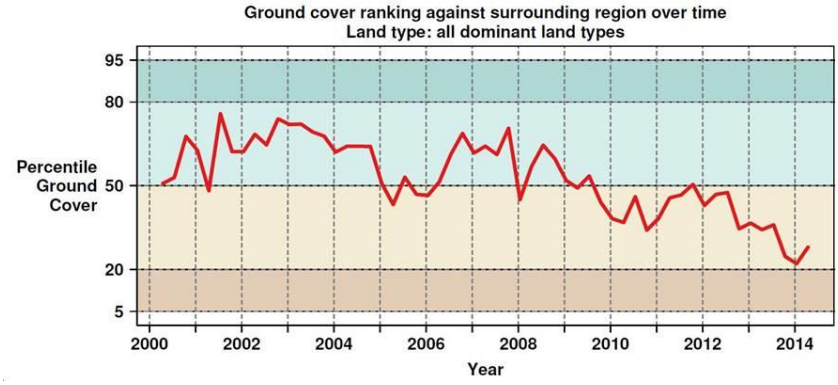
Increasing the abundance of deep-rooted perennial grasses will help reduce runoff from hillslopes which in turn helps to reduce gully and bank erosion in lower sections of the landscape. Riparian vegetation including trees, shrubs and grasses is important in maintaining healthy waterways. Roots help stabilise the banks. Vegetation also helps improve water infiltration, slows down water velocity and provides the last barrier for filtering out sediment and nutrients. However, in cropping and pastoral systems, ground cover will determine the erosion and runoff risk.

The science now proves that it is ground cover, through grasses and crop stubble, which determines runoff and erosion risk and protects the soil - not tree cover. What we hear from the Environmental groups saying tree clearing affects water quality on the reef is not backed by science. There is generally less ground cover under trees than in cleared areas due to competition for water and nutrient.

[2] Scanlan JS and Turner EJ, 1995. The production, economic and environmental impacts of tree clearing in Queensland. Report to the working group of the Ministerial Consultative Committee on tree clearing

[3] Queensland Government – Soil Conservation Guidelines for Queensland 2015 http://www.qld.gov.au/environment/land/soil/erosion/guidelines/

[4] Queensland Government – Preventing and managing erosion http://www.qld.gov.au/environment/land/soil/erosion/management/



A report by Megan Star & Peter Donaghy (QDAF) on economic modelling of Burdekin & Fitzroy grazing systems clearly outlines how tree basal area can increase sediment runoff for same level of pasture utilisation (compared to cleared country) across a range of grazing land types. If you compare the graphs from page 24 onwards, you will see the tonnes of sediment exported are always greater where tree – studded landscapes compared to cleared landscapes (where tree basal area = 0). Grazing land types included here are:-

- Goldfield red soils (TBA 0 and 3.5 m^2/ha)
- Silver leaf ironbark (TBA 0 and 7.5m^2/ha)
- Silver leaf ironbark on duplex (TBA 0 and 5m^2/ha)
- Spotted gum ridges (TBA 0 and 11m^2 /ha)

In February 2015, the Queensland Government slipped in Water Quality Action number EHA20 to the Reef 2050 Long Term Sustainability Plan[5] to "*Strengthen the Queensland Government's vegetation management legislation to protect remnant and high value regrowth native vegetation, including in riparian zones*". **All previous reef science and soil conservation studies link ground cover impacts to runoff, not woody vegetation cover.** Streambank stabilisation is achieved through a combination of both woody vegetation and grass-ground cover. There was no opportunity for the Reef Partnership Committee to review these inserted actions before the draft Reef 2050 LTSP went to UNESCO – World Heritage Committee. In June 2015 the Queensland Audit Office report on '*Managing water quality in GBR catchments*' stated a 229% increase in land clearing in reef catchments from 2008/09 [31,000ha] to 2013/14 [102,000ha]. No Government information is available to demonstrate if these clearing rates increased the risk of sediment runoff. Long Paddock FORAGE reports show how ground cover on a property compares to regional grazing land types. Ground cover falling below the 50 per cent percentile indicates there is a risk of degrading land condition.

Conclusion

Unquestionably, economic development and environmental protection must go together, however the Government must shift from approaches that place economic development and environment at loggerheads. The science now proves that it is ground cover, through grasses and crop stubble, which determines runoff and erosion risk and protects the soil - not tree cover. What we hear from the Environmental groups saying tree clearing affects water quality on the reef is not backed by science. There is generally less ground cover under trees than in cleared areas due to competition for water and nutrient.

[5] The Reef 2050 Plan http://www.environment.gov.au/marine/gbr/long-term-sustainability-plan

My thoughts on an alternate solution: There are 3 key areas of "pollution" from AG - nutrient (inorganic fertiliser), sediment (primarily from gully erosion) and pesticides and other pollutants.

1. If you apply inorganic fertiliser you have a management plan (and you and the seller maintain records by lot #).
2. If you apply broad scale herbicide or pesticide (including Grasslan) you require a management plan
3. Government undertakes annual, on the ground monitoring, of gullies in mapped high or very high risk erosion area (remember only 3% of burdekin catchment). The focus of catchment groups / Govt is on one on one extension with every producer in those regions. The catchment group as a whole or individual properties within those regions undertake remediation activities on active, growing gullies (these activities should focus on active management, like active grazing management, leaky weirs / slowing water etc, mechanical intervention - rather than reductionist or permanent exclusion type activities - just fence and forget). Producers within these regions will have a manadatory requirement to be engaged and participating with the program if the annual monitoring shows erosion growing on their land. Ideally funding for those activities must be at least on a $ for $ basis.
4. A simple NRM survey is developed that allows landholders to identify any NRM activities that are undertaken each year. This will be to assist the Govt to meet their reporting requirements under UNESCO.

The legislation fails to pick up any activities being undertaken by producers not captured within BMP or NRM / Govt funded activities. The reality is most of us are undertaking projects every day that add to reef quality (like additional fencing & additional water points to spread grazing pressure, increasing percentages of our country spelled and spelling intervals, like planting improved perennials and legumes, like putting in a whoa-boy on a road to divert water, like treating an eroded gully or a scalded area, like introducing a water couch to the edge of your dam..... the list goes on and the more ideas we can include to write down and demonstrate that there are multiple ways to skin this cat the better) The survey shouldn't be a check list or be trying to gather more information, it should simply have one box - what activities did you undertake this year to improve water quality on your lot?

Voluntary initiatives and innovation like in the Bowen-Broken-Bogie landholders driving change project rather than coercion have the best chance of success. Good land management goes hand in hand with profitability.

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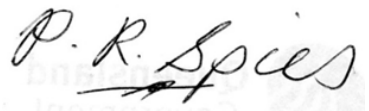
Signed:-



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