Senate Inquiry into: Identification of leading practices in ensuring evidence-based regulation of farm practices that impact water quality outcomes in the Great Barrier Reef

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And

Greenshirts Australia

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GBR Senate Inquiry Terms of Reference and Submission

Identification of leading practices in ensuring evidence-based regulation of farm practices that impact water quality outcomes in the Great Barrier Reef

https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/GreatBarrierReef

Submissions close on **8 November 2019**.

The identification of leading practices in ensuring evidence-based regulation of farm practices that impact water quality outcomes in the Great Barrier Reef, with particular reference to:

a. the existing evidence-base on the impact of farm water runoff on the health of the Great Barrier Reef and catchment areas;

b. the connectivity of farm practices throughout the Great Barrier Reef catchment areas to water quality outcomes in the Great Barrier Reef Marine Park;

c. relevant legislation and regulation, including in relation to impacts of water quality, farm management and soil runoff;

d. proposed changes to regulations that would impact on farm productivity and the potential benefits and costs of such proposed regulation;

e. the wider economic and social impact of proposed regulations to restrict farm practices; and

f. any related matters.

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About Property Rights Australia

Property Rights Australia (PRA) was formed in 2003 to protect the property rights of those unfairly targeted by the Vegetation Management Act 1999. We are a non-profit organisation of primary producers and small businesspeople mostly from rural and regional Queensland who are concerned about continuing encroachments on the rights of private property owners. The organisation was formed to seek recognition and protection of the rights of private property owners in the development, introduction and administration of policies and legislation relating to the management of land, water and other natural resources. Set up in South West Queensland in January 2003, PRA's membership now extends across most states and all major rural industries. PRA is not affiliated with any political party.

SUMMARY

To describe the inner fringing reefs which contain less than 1% of the coral off the Queensland coast as the Great Barrier Reef is a fraud.

1998 a worldwide bleaching event allowed WWF to raise significant funds internationally to "Save the Great Barrier Reef".

WWF opened an office in Brisbane in 1999 and decided on a strategy to target sugarcane and cattle grazing as a danger to the reef.

2001 WWF publishes a "Great Barrier Reef Pollution Report Card." The principal conclusion was that 750 inshore reefs were at risk from agricultural run-off. No credible evidence was offered to substantiate these claims. The Cairns and Far North

Environment Centre, which ran an established reef monitoring program dismissed the WWF allegations as based on anecdotal evidence. Both state and federal governments responded to the document with a flurry of activity.

2002 Reef Protection Taskforce was set up in response to WWF pressure. The scientists on the taskforce originally found little to no damage to the reef.

At the insistence of the WWF representative, Imogen Zethoven, presently the Director of Strategy at the Australian Marine Conservation Society, the committee rewrote the report in a more negative light alleging some damage to inner fringing reefs. No supporting papers were available.

After they were requested, the small number presented were dismissed as irrelevant.

In 2003, the Australian Commonwealth and Queensland State governments introduced a Reef Water Quality Protection Plan, which aimed to "improve" water quality in river catchments adjacent to the Great Barrier Reef (GBR) and in nearby coastal waters. The Plan was introduced in the absence of any substantive evidence for regional degradation of GBR water quality.[1] Professor Bob Carter

2005 WWF has presented the Australian government with a Gift to the Earth — the global conservation organization's highest accolade - for the design and implementation of the Great Barrier Reef Marine Park zoning plan.[2] This meant that all commercial and recreational fishing was banned.

"Protecting and restoring the **resilience of the Great Barrier Reef** is the most important goal for its future," said Leape [WWF]. "The network of strictly protected areas outlined in the zoning plan will make a significant contribution to this goal."

"Resilience of the Great Barrier Reef" has a familiar ring and has been widely used in the present campaign, this time against agriculture.

2009 baseline report cards are issued for every catchment with estimates of natural and anthropogenic sediment N and P based on modelling.

2010 A Masters Jacob Report commissioned by the Queensland Government concludes that to improve water quality it was cheaper to target farmers than retrofit our urban development.

2012 *Professor Terry Hughes from James Cook University, said while critical issues remained he now believed rising temperatures were unlikely to mean the end of the coral reef. ''The good news is that, rather than experiencing wholesale destruction, many coral reefs will survive climate change by changing the mix of coral species as the ocean warms and becomes more acidic,''* [3]

26th October 2018 The ABC "*Great Barrier Reef likely to be hit with another mass bleaching this summer, forecast shows''. According to NOAA the entire Great Barrier*

[1] https://www.jstor.org/stable/44397261?seq=1#page_scan_tab_contents
[2] https://wwf.panda.org/_/gifts_to_the_earth/full_listing/?24055/Plan-to-protect-the-Great-Barrier-Reef-recognized-as-a-Gift-to-the-Earth
[3] https://www.heraldsun.com.au/blogs/andrew-bolt/reefs-going-going-staying/news-story/be073342e07dd5a974d2410fb8b7f289

Reef had a 60% chance of suffering a severe bleaching event by March 2019. This did not happen.[4]

14th August 2019 **The Australian** *The Great Barrier Reef is not dead, is not dying and is not even on life support, federal Environment Minister Sussan Ley has declared after her first official visit to the World Heritage-listed site.*[5]

30th August 2019 **The Australian** *The long term outlook for the Great Barrier Reef has been downgraded from poor to very poor by the Great Barrier Reef Marine Park Authority.*[6] *Minister Sussan Ley was very quick to agree with this assessment.*

19th September The Queensland government passes The Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Act 2019. The legislation was to appease UNESCO and to make agriculture a water quality scapegoat.

September 2019 The Great Barrier Reef is declared dead in multiple Sri Lankan social media posts. This follows on from similar pronouncements all over the world which has caused overseas visitors to stay away in droves expecting there to be nothing to see based on the dire predictions of government funded reef science and environmental groups.[7]

22nd October 2019 **The Australian** Just days after the Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill was safely passed in the Queensland parliament the reputational recovery action has started.

> *The Great Barrier Reef Marine Park Authority has supported Environment Minister Sussan Ley's appraisal that the reef is ''good'' and has ''a vibrant future''.*
>
> *A Senate estimates committee hearing on Monday heard a downgrading of the reef condition from poor to very poor was a long-term forecast based on no action being taken on climate change. GBRMPA chief executive Joshua Thomas said the outlook report was an assessment of the likely condition of the reef if a series of issues were not addressed. These included reducing global greenhouse gas emissions along with improving reef water quality,*

[4] https://www.abc.net.au/news/2018-10-26/great-barrier-reef-likely-hit-by-another-bleaching-this-summer/10428298

[5] https://www.theaustralian.com.au/nation/politics/great-barrier-reef-is-better-than-expected-ley/news-story/6eef71906c6553453cde8575a6cca0ad

[6] https://www.theaustralian.com.au/nation/great-barrier-reef-long-term-outlook-downgraded-to-very-poor/news-story/0fca6fece4de8e263d719196acad3911

[7] https://factcheck.afp.com/great-barrier-reef-officially-announced-dead-september-2019?fbclid=IwAR0wq1cmqsRJgAmNbsTXBRwLnfCx-R_6Bz0wuQDXEdY1G2_u2NTIxyWb4Jk

> *better marine park compliance, controlling crown of thorns starfish and reducing marine debris.*
>
> *The authority's chief scientist, David Wachenfeld, told Senate estimates the outlook report was evidence-based. He said the downgrade from poor to very poor was the long-term outlook for the reef that was largely a consideration of the impacts of climate change on current greenhouse gas emissions trajectories.*

Farmers have borne the brunt of climate change measures for decades. Not only can Australia not control climate change, Australian farmers certainly cannot. Just as commercial fishermen were drummed out of the Great Barrier Reef Marine Park in the name of "resilience", the same has now happened to farmers.[8]

There are some very serious questions to be answered by the Queensland government and the organisations which advise them.

Are the multiple levels of modelling associated with Barrier Reef science and the interconnection with agriculture, and the potential for incorrect assumptions and errors to be made on every level, sufficient evidence on which to base legislation such as The Vegetation Management Act and the Environmental Protection (Great Barrier Reef Protection Measures) and Other legislation Amendment Act 2019 with such widespread costs and consequences?

Has a causative link been established between agriculture and farming and grazing practices and damage to the Great Barrier Reef?

Has a causative link been established between tree clearing and damage to the Great Barrier Reef? Is there any empirical, independent peer reviewed science to establish such a link?

Is the precautionary principle sufficient justification for legislation such as the Great Barrier Reef Protection Measures, based on the assumption that if the temperature rises by 1.5 to 2 degrees C, better water quality may, and may is the word that has been used, assist the reef to recover from more frequent bleaching events?

Is the necessity to convince UNESCO that we are looking after the Great Barrier Reef sufficient reason to scapegoat farmers with legislation which is not based on empirical and repeatable peer reviewed science?

Who is advising UNESCO that it is agriculture which is causing damage the iconic reef? What hard science other than the fragile arguments used in the parliamentary debate do they have to back up the claims?

[8] https://www.theaustralian.com.au/nation/politics/great-barrier-reef-has-vibrant-future-authority-agrees/news-story/ca3e2351e7ebd2f3e75427e69ff108a8

CONCLUSIONS

It is obvious that sugarcane and grazing have been targeted for many years by a concerted international campaign of demonization, vilification, deception and finally, legislation. It is evident that the major claims on which this campaign is based are not and have never been based on science. There is no peer reviewed science to back up claims that land clearing exacerbates sedimentation. Many other claims made against landowners are similarly fragile.

(a) the existing evidence-base on the impact of farm water runoff on the health of the Great Barrier Reef and catchment areas;

Many of us have followed the carefully constructed campaign of demonization of agriculture for damage to the Great Barrier Reef since the late 1990's. In 1998 there was a significant world-wide bleaching event and WWF raised significant funds in the US to "Save the Great Barrier Reef".

> *In 1999, it established headquarters in Brisbane and a simple media strategy was developed whereby the Reef would be portrayed as a victim of industry, in particular the grazing and sugarcane industries.*[9]

By 2001 political machinations resulted in various reports and committees. WWF campaigned for a Reef Protection Taskforce but evidence of harm was scant and some members of the taskforce noted that no credible evidence of damage was provided. That the first draft of the statement did not highlight damage to the reef was a concern of the WWF representative Imogen Zethoven.

> "*The upshot is that the members of the taskforce who were unaware of damage to the reef caved into the demands of* In *the WWF representative and the document was redrafted with a much more pessimistic tone.* "[10]

The small number of papers provided on request, ultimately did not show evidence of damage to the reef.

> *In the view of Dr Marohasy, and Professor Bob Carter, Marine Geophysical Laboratory, James Cook University, none of these papers provide evidence that agriculture or other land-based sources of run-off are having an adverse impact on the Reef. George Rayment, Principal Scientist, Queensland Department of Natural Resources and Mines, and an author of the first and second science statements, has indicated at least three of the papers provide no evidence that agriculture is having an impact on the Reef. Dr Piers Larcombe of the Marine Geophysical Laboratory at James Cook*

[9] WWF Says 'Jump!', Governments Ask 'How High?' Dr. Jennifer Marohasy and Gary Johns p3 https://ipa.org.au/wp-content/uploads/archive/1214881670_document_review54-1.pdf
[10] WWF Says 'Jump!', Governments Ask 'How High?' Dr. Jennifer Marohasy and Gary Johns https://ipa.org.au/wp-content/uploads/archive/1214881670_document_review54-1.pdf

> *University has advised that of the three papers he has read, none provides any evidence of land-based run-off impacting on the reef. Dr David Williams subsequently withdrew one of the papers as evidence.*[11]

The same article outlined how WWF's campaign was at the expense of community regard for the sugarcane and beef cattle industries. However, it also impacted on the reputation of science itself.

> *The Reef Campaign has also come at the price of undermining scientific integrity. According to Professor Carter of James Cook University, 'one of the relatively new problems that faces us is that governments are increasingly basing their actions on advice provided by unnamed consultants, or on unrefereed reports from government agencies, some of which are not even released into the public domain. This is a recipe for disaster.'*[12]
>
> *Good science operates on a consensus basis, using material that has been subjected to rigorous peer review and published in journals of international standing. It is therefore at their own peril that democratic governments attempt to ''control'' the scientific process for political ends.*
>
> *It is a dereliction of duty for governments to devise standards for water quality and run-off regimes without direct studies of impact. That some scientists would play along with them suggests that politics and science are no strangers. The issues could have been resolved if governments had been prepared to scrutinize the evidence in the published scientific literature. Governments, however, appear increasingly reluctant to assess information independently. Instead, they hand the referee's whistle to self-interested aggrandizers such as WWF.*[13]

It has been evident for at least two decades that the Science of the Great Barrier Reef and its interaction with agriculture has been highly politicised with this politicisation increasing over time with the view to implementing funding agendas and legislative agendas which are often the ambitions of external stakeholders.

That these agendas were not recognised early and dealt with early has left agriculture divided and on the back foot. Federal Governments have been unwitting contributors in the promulgation of these agendas.

Meanwhile groups like WWF have needed no proof to convince the world that agriculture had killed the reef doing damage to both the agricultural community and

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[11] WWF Says 'Jump!', Governments Ask 'How High?' Dr. Jennifer Marohasy and Gary Johns p3 https://ipa.org.au/wp-content/uploads/archive/1214881670_document_review54-1.pdf
[12] WWF Says 'Jump!', Governments Ask 'How High?' Dr. Jennifer Marohasy and Gary Johns p5 https://ipa.org.au/wp-content/uploads/archive/1214881670_document_review54-1.pdf
[13] WWF Says 'Jump!', Governments Ask 'How High?' Dr. Jennifer Marohasy and Gary Johns p5 https://ipa.org.au/wp-content/uploads/archive/1214881670_document_review54-1.pdf

to reef tourism. Language was emotive with sediment and the natural elements which come with it called "pollution", a word used frequently by the anti-farmer politicians who have bought into the whole WWF argument. From the other side, attempted public shaming by a voiceless agriculture has mostly made no dent in their hyperbole.

As an example, WWF has a campaign which features a photograph of a clearly dead reef. It is identified as Bait Reef, Whitsundays but is undated and with no explanation of what caused the damage. The name of the article however is, "Tree-clearing impact ignored in the Reef report card". The clear association that is to be made is that tree clearing killed the reef.[14]

The damage was in fact caused by a cyclone.

It is very easy to find modern videos of Bait Reef that show very healthy coral and teeming fish life.

Please note that their cumulative clearing figures do not include regrowth which is a nett increase.

By 2009 when the first Reef Report Card was produced, it had been common practice to attribute any and all damage including inshore fringing reefs, as damage

to the Great Barrier Reef. This trend was always evident in the publications of environmental groups which made overblown claims and filled their coffers.

Actual evidence of harm to the Great Barrier Reef from agriculture does not exist. Many groups have tried to establish damage to the inner fringing reefs but even that has been largely exaggerated.

When the hard evidence of damage to the GBR has been challenged, great lengths have been gone to, to silence detractors.

I do not need to elaborate on the case of Dr. (formerly Professor) Peter Ridd of JCU.

The Continuing Campaign to Blame Beef Cattle Grazing and Land Clearing for Damage to the Great Barrier Reef

That evidence that cattle grazing and sugarcane were harming the reef was lacking did not stop WWF from pursuing their campaign goals.

Their 1999 strategy was enacted relentlessly. No science could sway them from vigorously pursuing a goal of putting a stop to land clearing by alleging that it was increasing sedimentation and that the cattle industry was almost entirely responsible. Once again, the allegation, based on no credible evidence, was made so

[14] https://www.wwf.org.au/news/news/2017/tree-clearing-impact-ignored-in-the-reef-report-card#gs.esrj2s

often that the community universally believes that tree clearing causes excess sedimentation. The vilification of the grazing industry complete and on target.

At the Cairns parliamentary hearing into The Vegetation Management and Other Legislation Amendment Bill 2019 Dr. Jon Brodie on behalf of the Great Barrier Reef stated that,

> *It is essential, given the increase in damage due to climate change, that we do everything we can to reduce water quality pressure. This legislation, which I support,* ***will help reduce erosion by reducing vegetation clearing, which leads directly to increased erosion.*** *If it is not passed we see this increase in tree clearing at the moment if you like undoing that large amount of money that is spent every year on trying to protect the catchment through erosion.*[15]

In answer to a question Dr. Brodie was also of the opinion that,

> *Essentially grasses are not very good at bank protection, except on very small order 1 streams. You can imagine the tiny streams in small catchments where grass swales, for instances in sugarcane where you have wide spoon drains that are grass swaled. They are okay. If we are talking about natural streams, trees provide much better bank holding protection than grass because of their deep roots. Once you get down to order 5 streams on the main course of the Tully River near Tully then even trees do not do anything really. The banks are too high. It depends so much on the stream type. Only on very tiny streams would grass have any effect on bank erosion.*[16]

It should be noted that Dr. Brodie is a Barrier Reef scientist, not a rangeland scientist which would not matter except that he has clearly been reading only one side of the debate, reports produced by the environmental organisations.

The minimum environmental standards (ERA) which only became available after the parliamentary debate recognise groundcover as a major element of erosion control.[17]

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15 https://www.parliament.qld.gov.au/documents/committees/SDNRAIDC/2018/5VegManagOLAB2018/trns-ph-13Apr2018.pdf p12

16 https://www.parliament.qld.gov.au/documents/committees/SDNRAIDC/2018/5VegManagOLAB2018/trns-ph-13Apr2018.pdf p13

17 https://www.qld.gov.au/__data/assets/pdf_file/0022/107563/draft-grazing-agricultural-era-standard.pdf

Measures such as reducing stocking rates, spelling paddocks and preferential grazing are not in the minimum standards because the trees are harmed. It is because grass cover is recognised to control erosion.[18]

State governments including Qld and NSW recognize pasture as a viable means of controlling erosion and publish material to that effect. The Qld government advice states that,

> *Surface cover is a major factor to control erosion because it reduces the impact of raindrops falling on bare soils and wind removing soil particles. It also reduces the speed of water flowing over the land.*
>
> *Erosion risk is significantly reduced when there is more than 30% soil cover. Total cover is achievable for many grazing and cropping systems.*
>
> *Runoff concentrates as it flows downslope. By the time rivers draining large catchments reach the coast, they are usually just a few hundred meters wide. Even though surface cover encourages runoff to spread, runoff concentration is inevitable.*[19]

The NSW government has similar advice.

> *Managing pastures to maintain adequate levels of groundcover is the most effective way to minimise run-off and erosion. By reducing run-off, more water is made available for plant growth. By reducing erosion, soil, nutrients and organic matter are retained in place and siltation problems are minimised.*[20]

Dr. Bill Burrows[21] has written many papers and prepared many submissions on the tree grass balance. In his 2016 submission to the Vegetation Management (Reinstatement) Bill he writes to the parliamentary committee that,

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[18] https://www.qld.gov.au/__data/assets/pdf_file/0022/107563/draft-grazing-agricultural-era-standard.pdf p3

[19] https://www.qld.gov.au/environment/land/management/soil/erosion/management

[20] https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0018/162306/groundcover-for-pastures.pdf

[21] 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.

> *It is fashionable, more than factual, to associate GBR health with sediment loads which supposedly increased as a result of tree clearing activities.*[22]

In other words, there is no weight of peer reviewed evidence to support the contention that sedimentation has increased as a result of tree clearing. This lack of evidence is ignored and has been for decades by the environmental organisations who have put great resources into establishing and cementing their own agenda. The goal was to stop tree clearing and nothing was going to stand in the way of it. A few decades of peer reviewed papers are but a minor impediment to their publicity machine.

Tree thickening impacts on Pasture Production

QDPI work documented the tree grass balance over forty years or longer. We have already established that none is ever recognised by the cohort who denigrate grass cover as an impediment to erosion.

> *Tree thickening impacts on Pasture Production The effect increasing woody plant cover exerts on potential pasture production has been widely studied in*
>
> *Queensland (see Burrows 2002 and references therein). The relationship*
>
> *between pasture yield and any expression of woody plant competition follows a negative exponential pattern. This means that even small numbers of woody plants (excluding fodder trees with palatable leaves) present in a pasture can have a significant depressing effect on potential pasture production*[23]

[22] https://www.parliament.qld.gov.au/documents/committees/AEC/2016/rpt19-11-VegetationMangt/submissions/214.pdf p36
[23] https://www.parliament.qld.gov.au/documents/committees/AEC/2016/rpt19-11-VegetationMangt/submissions/214.pdf p27

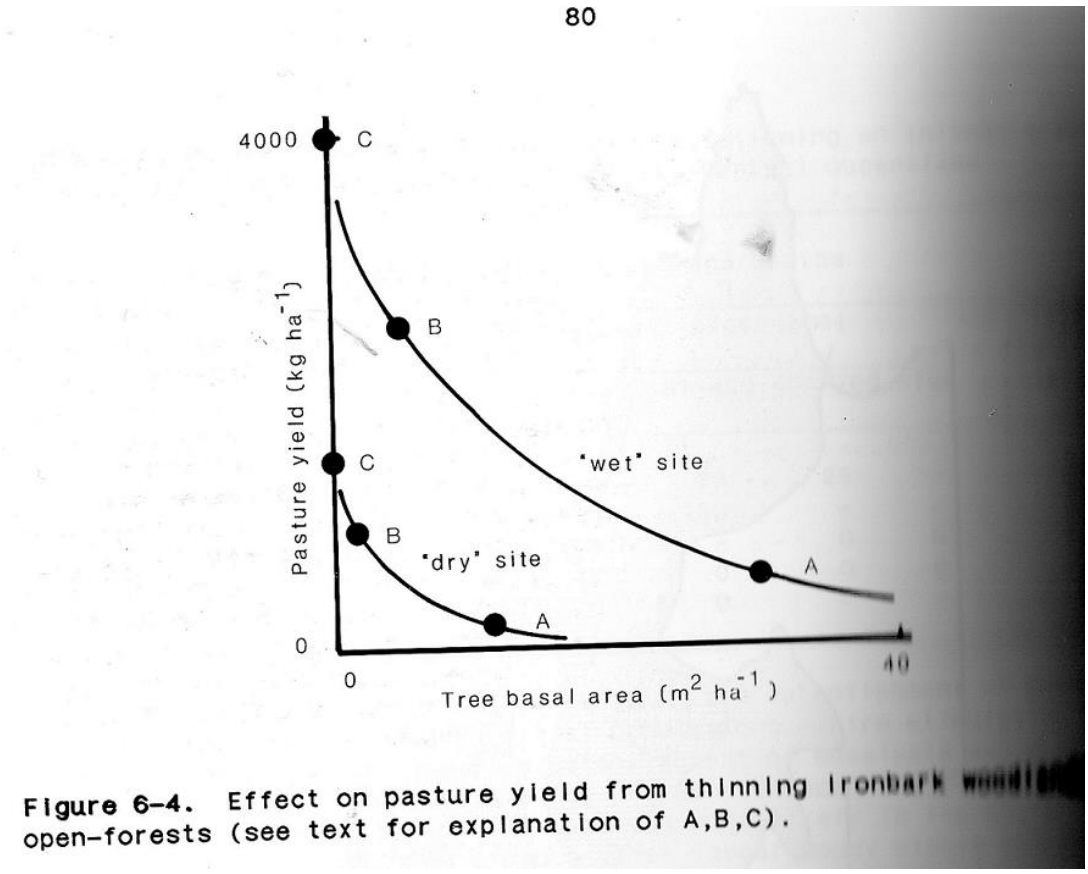

Figure 6-4. Effect on pasture yield from thinning ironbark woodl
open-forests (see text for explanation of A,B,C).

***Yu* et al *2013 published the study, Land use and water quality trends of the Fitzroy River, Australia*[24]** which canvassed the "risk factors" for sedimentation, such as a high percentage of land clearing and a rapid rate of land clearing find no significant increase since the 1960s.

> *However, annual flows, sediment discharge, and flow-weighted mean annual TSS concentrations have so far shown no sign of an increasing trend over the past 44 years (1964–2008) (Table 3 and Fig. 4). Linear regression analysis shows that the flow, sediment discharge and the mean TSS concentration, in fact, have all decreased slightly;*

[24] https://www.researchgate.net/publication/274007589_Land_use_and_water_quality_trends_of_the_Fitzroy_River_Australia BOFU YU1, MARIANNA JOO2 & CHRIS CARROLL3
1 School of Engineering, Griffith University, Nathan, Queensland 4111, Australia
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Queensland 4102, Australia

CONCLUSION (YU et al)

It is well documented that nearly 70% of the Fitzroy Basin was cleared for development in the 1960s and 1970s, and the rate of clearing then decreased from the mid-1980s. Associated with the land clearing and land use change, there is evidence to indicate that along the lower Fitzroy River, the total suspended sediment concentration has significantly increased in recent years at a given flow rate. However, annual freshwater and sediment discharge to the Great Barrier Reef lagoon has not significantly increased since the mid-1960s. In fact, flow and sediment discharge have decreased, and decreased significantly for certain 30-year periods. This apparent contradiction can be attributed to recent decrease in rainfall in parts of the basin, the variable runoff-generating area, and the high natural variability of the flow which limits change detectability.[25]

Although it is welcome that the conclusions are that sediment flow to the Great Barrier Reef Lagoon have not increased and may have decreased, we believe that not all hypotheses as to why have been canvassed. Consideration should be given to the fact the intact forest would have been lacking in groundcover. The cleared land had very close attention paid to seeding with strong, thick layers of useful grasses.

The Campaign Against Cattle Grazing Continues

An August 2019 report (not a paper) by The Wilderness Society (TWS), **"Drivers of Deforestation and Land Clearing in Queensland"** tries to make the case that so-called deforestation is causing damage to the Great Barrier Reef. To make this case they rely on exactly the same estimates, modelling and assumptions as the Outlook Report with references 18 and 19 in the paragraph below being The Great Barrier Reef Outlook Report 2014 and references 20 and 21 being from the Commonwealth of Australia (2015), Reef 2050 Long-Term Sustainability Plan.

Deforestation and land clearing in Great Barrier Reef catchments also leads to erosion and run-off of sediment into the Great Barrier Reef World Heritage Area.18 This run-off reduces sunlight to seagrasses and smothers coral and other reef organisms. Agricultural activity often intensifies after land is cleared, driving additional chemical run-off into Reef waters on top of the existing chemical loads. The Great Barrier Reef Marine Park Authority has explained that 'The decline in coral cover and lack of recovery coincides with degraded water quality as a result of land clearing, land use changes and agricultural use of the catchment.'19 For this reason, the Australian and Queensland governments committed to a number of actions under the Reef 2050 Plan relevant to controlling deforestation and tree clearing in Reef catchments.20 The Reef 2050 Plan was submitted to the UNESCO World Heritage Committee as part of

[25] https://www.researchgate.net/publication/274007589_Land_use_and_water_quality_trends_of_the_Fitzroy_River_Australia

> *Australia's bid to avoid having the Reef placed on the 'In Danger' list in 2015. One key action included was to 'Strengthen the Queensland Government's vegetation management legislation to protect remnant and high value regrowth native vegetation, including in riparian zones.'21*

That scientific organisations such as GBRMPA and AIMS have taken on the spin of the environmental groups such as WWF and TWS that land management increases sedimentation runoff, as opposed to forty years of QDPI peer reviewed science that tree basal area severely impacts grass cover at very low rates and can result on zero pasture cover at quite a low rate depending on bioregion is unprofessional to say the least.

In the words of Dr. Walter Starck,

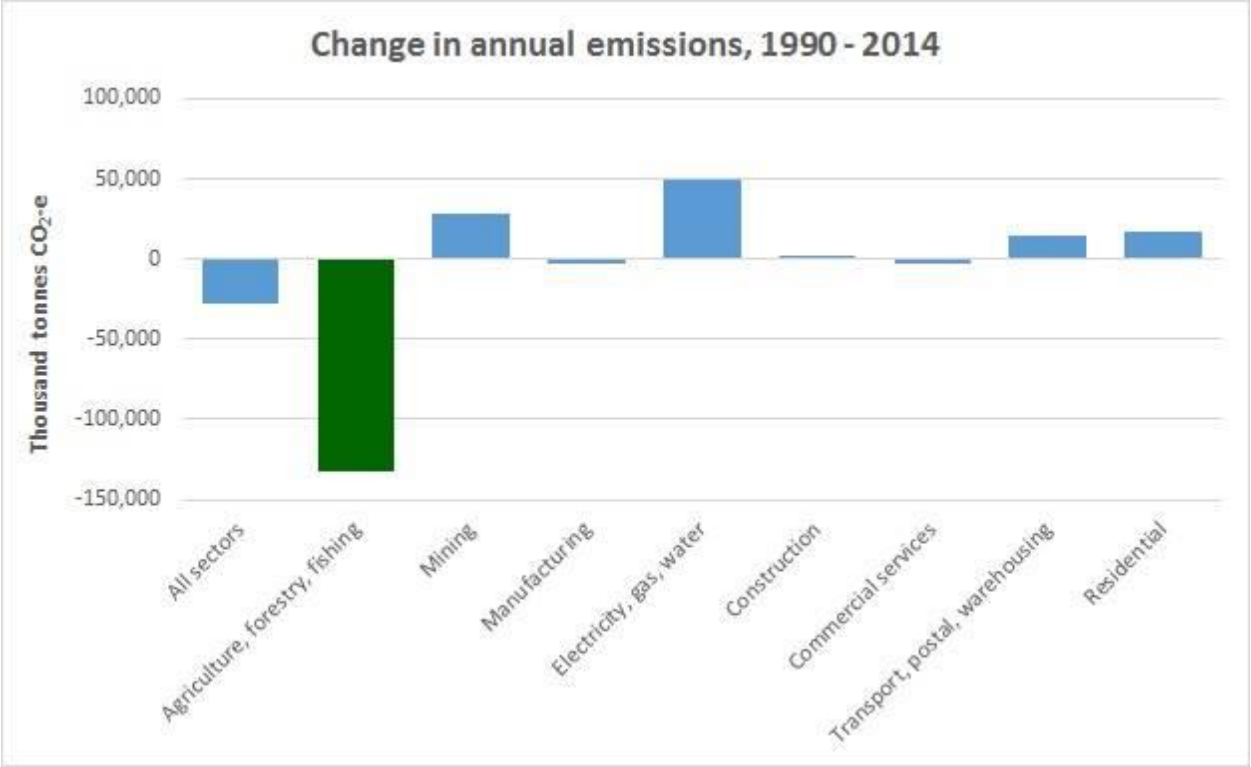
> *Establishment of government policy in response to activist campaigns and media accounts of research claims with no critical assessment of the underlying research amounts to malfeasance and needs to be recognised as such.*[26]

This acceptance has resulted in ill-informed and damaging legislation which in some cases will achieve result diametrically opposite to what was aimed for.

The balance of the report by the Wilderness Society (TWS) is a litany of blame directed at the beef cattle industry for damage to the Great Barrier Reef from land clearing and increases in CO2. This latter accusation thoroughly ignores evidence that agriculture has been doing the heavy lifting in meeting Kyoto carbon reduction targets[27] and that it is the only reason that we have met targets so far with agriculture and a pause in mining due to poor world prices being the only sectors to reduce emissions.

[26] https://quadrant.org.au/opinion/doomed-planet/2019/09/reef-alarmists-find-what-they-need-to-find/?fbclid=IwAR0paTywWZuiFqsBDqqd4BQbYzF6klpYdhI2s0NWcEBcWGBUJd-jpmgyGgo

[27] Australian Farm Institute



Graph from the Australian Farm Institute

It is well studied and observed that on the whole, woodland thickening is outpacing clearing and will lead to a decrease in production as a result of reduction in pasture[28]. For the purpose of the Great Barrier Reef rather than reduction in pasture read "reduction in erosion mitigation".

Dr. Burrows points out that,

> *There would have been no 'Carbon Farming Initiative' or 'Direct Action Plan' activities in the woodlands of NW NSW and SW Qld if past and present Australian governments had not in effect acknowledged with these programs that our grazed woodlands are thickening up.*[29]

Dr. Burrows also makes a very strong case that Queensland and Australia is in fact a greenhouse sink.

> *A recent scientific paper published in Nature Climate Change (Liu et al. 2015)1 reveals that the woodlands of northern Australia (predominantly in Queensland) are continuing to increase in biomass (i.e. ''thicken up'' = increase in stem number, stem*

[28] Dr. W Burrows
file:///D:/Data_Folders/Downloads/Sub%2014_Dr%20Bill%20Burrows_24%20January%202019.pdf

[29] Ibid. p1

> *size or crown cover). In fact, the study indicates (Figure 1) that aboveground biomass has increased by c.1200*
>
> *kg/ha/yr over a 20-year observation period (1993-2012). This result was obtained from passive microwave observations made with calibrated satellite sensors. It is net of any concurrent losses in biomass due to tree clearing, woody plant deaths and fires occurring during the monitoring period. The result is in close agreement with detailed ground-*based *measurements (c.1060 kg/ha/yr increase in aboveground biomass) over the same general area and for analogous and overlapping time frames.*[30]

That there is such belief in tree clearing and so-called deforestation driving sedimentation on the reef is entirely as a result of a concerted campaign by groups such as WWF and TWS. As evidence, they cite their own reports. It has been frequency of assertion which has promulgated this misinformation rather than long consistent and well documented science. This is not the case with the forty years of work done by Dr. Bill Burrows and the QDPI where pasture production is recognised as the mitigant of erosion.

In his submission on the Vegetation Management (Reinstatement) Bill, Dr, Burrows notes that,

> *A Geoscience Australia study concluded (Bostock et al. 2006) that the Fitzroy River has deposited an average of 136, 000 tonnes of mud and fine sediment into Keppel Bay per year, for the past 6000 - 7000 years! This contributes to constant levels of turbidity, promoted by the shallowness of the Bay and the regular sediment inputs, which are mobilised by advective transport whenever winds exceed 15-20 knots.*[31]

The invalid contention that land clearing causes sedimentation has not only resulted in the vilification, demonization and defamation of cattle grazing but continuous tranches of legislation including vegetation management legislation but now even more costly and damaging reef regulation. It is also evident that the increased regulation under amendments to the Vegetation Management Act 1999 in 2018 was in response to commitments to the UNESCO committee under the Federal government's Reef 2050 Plan.

As a result of this invalid contention TWS outlines the "business risk" of companies such as McDonalds, Coles, Woolworths Aldi and JBS avoiding such deforestation on "ethical" grounds in their supply chains. Who would be the judge, jury and executioner of this "ethical" judgment is not, at this stage, clear.

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[30] Dr. W Burrows Notes for MPs

[31] https://www.parliament.qld.gov.au/documents/committees/AEC/2016/rpt19-11-VegetationMangt/submissions/214.pdf p36

The greater "business risk" is that there will be no abundant Australian supply chain as there has been in the past. There is no static state in pasture production but a constant battle with regrowth and encroachment which leads to exponentially decreased pasture production and financial loss. Ironically, decreased pasture production is also the factor most likely to result in extra sedimentation in river catchments.

I am absolutely certain that for the large environmental organisations this is a triumph for their agendas. However, they have drawn into their outcomes businesses which do very nicely out of our industry and are now in danger of severely damaging their supply chains.

(b) the connectivity of farm practices throughout the Great Barrier Reef catchment areas to water quality outcomes in the Great Barrier Reef Marine Park;

Modelling and Methodology

It is obvious from the report cards, starting with the baseline report cards in 2009 that much if not most of the data are estimates. This is not always obvious in the lexicon of politicians and green groups who state all hypotheses as truths. That, ten years on from 2009, using Best Management Practice participation (under different parameters) as a proxy for real data is unacceptable. That legislation is based on it is abominable.

One has to wonder what dearth of empirical evidence existed that leaps being made to decide that the major methodology on which the Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Act 2019 would be the percentage of fully certified participants in a part government funded, not designed for purpose scheme, and that they would be the ONLY people to be deemed to be "doing the right thing".

This use of full certification was clearly designed to cause the most demonization of agriculture and is a denial of adult education principles that adults learn what they need to know when they need to know it (Dr. Richard Clark, personal communication).

Clearly the government did not expect to be called out at any level.

In her second reading speech, the Hon. Leanne Enoch claimed that, "under the previous Grazing Best Management Practice Program only 73 farmers in reef catchments were accredited. This represented only one per cent of all graziers across reef catchments, or 2.7 per cent of grazing land. Similarly, only 11 per cent of Queensland's sugarcane farmers are accredited under the current voluntary

program. This represents just 23 per cent—less than a quarter—of the total cane farming area."[32]

The Fitzroy catchment 2009 baseline report stated that, "Fifty-three percent of graziers are using practices that are likely to maintain land in good to very good condition, or improve land in lesser condition."[33] These practices are described in the baseline reports as "Cutting–edge practices" A and "Best practices" B.

Collectively in Burdekin and Fitzroy, the only catchments for which figures were available for the 2009 baseline, 50% of graziers were deemed to have A or B practices and this would be an underestimation.

In 2009 the percentage of A and B practices was unavailable for the Burnett-Mary Region as no Best Management Practices figure was available (again BMP used as a proxy for real data). That did not stop the report card from categorically stating that grazing was responsible for most of the 2.8 million tonnes of anthropogenic suspended solids of 3.1 million tonnes of total suspended solids in that catchment. As is usual in this discussion this contention is based on estimates and modelling.

Most measures covering all industries in 2009 were in the double-digit percentages of A and B practices with late dry season groundcover at 83-93% in the Fitzroy and Burdekin catchments. Others were unavailable.

Ten years later, with many hundreds of millions of government dollars, both State and Federal spent, millions of landowner dollars spent and many landowner man hours expended, what political decisions to change methodology have occurred for Hon. Leanne Enoch to declare in her second reading speech that only one percent of all graziers had acceptable management practices[34] and were "doing the right thing"? The perception is of a significant drop in participation. Why would the government go to such lengths to perpetuate the myth?

Methodology clearly does not reflect on-ground practices nor the required political agenda.

The only motivation can be to stitch up agriculture.

Clearly, ten years on from the 2009 baseline report card when the reliance on modelling should have faded into the background and actual measurement should have been at the fore with a good story to tell, the political imperative to put farmers in yet another straight jacket was so intense, the major argument the government had to sell was that a mere 1% of the grazing industry were "doing the right thing", down from 53% in 2009.

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[32] https://www.parliament.qld.gov.au/documents/hansard/2019/2019_09_17_WEEKLY.pdf p2830

[33] https://www.reefplan.qld.gov.au/__data/assets/pdf_file/0021/46128/reef-plan-fact-sheet-fitzroy.pdf

[34] https://www.parliament.qld.gov.au/documents/hansard/2019/2019_09_17_WEEKLY.pdf p2830

However, agriculture has been burdened with this heavy-hitting legislation about which Member for Burdekin, Dale Last made the bold but self-evident prediction that, "Some of our farmers are going to go to the wall because of this legislation and that's a bloody sad day for Queensland when that happens."

The modelling purports to estimate the proportion of sediment and Nitrogen which is "natural" and that which is "anthropogenic" No evidence is offered for these estimates. The assumptions on which this modelling is based are also the result of an array of models. These models have names such as HowLeaky, APSIM, RUSLE, Sednet and many more. To get to the bottom of all of them is difficult to near impossible. (For the given list of assumptions see Appendix A)

However, one stands out.

Cape York is entirely modelled as little data is available. No estimates for sedimentation are given. However, the yearly estimate for Nitrogen is 14000T of which 11000T is modelled to be anthropogenic (mostly blamed on cattle grazing) with 3000t as natural. The model is purporting that in the most undeveloped, unpopulated, low grazing density region with a reliable rainfall (so good groundcover) in the state, N runoff is estimated to have increased by more than four and one half times the "natural" level with most of it attributable to cattle grazing.

This would appear highly unlikely and calls into question the accuracy of the baseline modelling on which the government is still reliant.

This brings us to why the government has relied on unreliable modelling and a "course" or "program" which was never intended as a reef management plan. As the name of the program suggests it is a farm "management" program.

> *The idea of increased sedimentation since European settlement is entirely based on speculation and computer modelling. By way of contrast, it is easily observed that heavy wet season runoff from cropland and improved pasturage is usually clearer than runoff from either rainforest or other natural vegetation, both of which tend to provide less groundcover. Real-world observation actually suggests that, if anything, there may well be less sediment runoff now than before European settlement. Dr. Walter Starck* [35]

> Dr, Starck is not alone with Professor Robert Carter in "Great News for the Great Barrier Reef: Tully River Water Quality" dispatches the idea that sediment, nutrients or farm chemicals are doing damage to the Great Barrier Reef.

[35] https://quadrant.org.au/opinion/doomed-planet/2019/09/reef-alarmists-find-what-they-need-to-find/?fbclid=IwAR0paTywWZuiFqsBDqqd4BQbYzF6klpYdhI2s0NWcEBcWGBUJd-jpmgyGgo

> *No evidence is cited, nor exists to date, that the concentration of nutrients, in modern GBR coastal river plumes exceed pre-European natural concentrations. Furthermore, particulate nutrients undergo similar dispersal to terrigenous sediments which, over longer periods of time, are advanced shorewards to accrete within the shore connected sediment prism.*[36]

Clearly empirical evidence does not support the idea that agriculture is causing damage to the Great Barrier Reef. However, this does not suit a government who is bound to do the bidding of environmental groups who have had agricultural industries in their sights for decades whether evidence based or not.

The reliance on a management plan as a proxy for damage, and extensive modelling based on multiple assumption and multiple other models, as offered by the proponents of this legislation is decidedly scant against the extensive portfolio of hard research as offered by Dr. Peter Ridd and others. (Appendix B-highly abridged)

(c) relevant legislation and regulation, including in relation to impacts of water quality, farm management and soil runoff;

Legislation where at least part of it is to "Save the Great Barrier Reef" includes not just the Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Act 2019 but the Vegetation Management Act 1999 including the 2018 amendments. There are other Acts, but they are more specialised and others will no doubt deal with them.

Some major aspects have already been dealt with or will be dealt with in other sections. The case that thickening of woody vegetation and result exponential decrease in pasture production and therefore erosion control has already been made. This will lead to an increase in sedimentation and soil runoff not a decrease.

The Environment Protection Measures (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill 2019 and the 2018 amendments to the Vegetation Management Act were both influenced by environmental organisations and commitments made to UNESCO that measures would be put in place to protect the reef.

Whether the reef needed the extra protection as provided or not, and whether it was based on solid science or not seems to be beside the point. Other agendas are at play and as long as they are being achieved, agriculture is always an easy scapegoat.

[36] https://www.jstor.org/stable/44397261?read-now=1&seq=1#page_scan_tab_contents p536

(d) proposed changes to regulations that would impact on farm productivity and the potential benefits and costs of such proposed regulation;

Vegetation Management Act 1999 with Amendments

The costs to landowners of the Vegetation Management Act have been well canvassed and are considerable. Over time the costs would be in the billions of dollars with productivity of all industries but particularly the beef industry, well and truly curtailed. This also includes opportunity for the processors and packers of various agricultural product to increase throughput and productivity.

The already occurring woodland thickening and consequent exponential pasture loss has already been outlined.

Starting with an Inquiry by the Productivity Commission in 2004, various attempts have been made to quantify the costs. This is however in contrast to the Qld. Government which, in the leadup to the 2018 amendments to the Vegetation Management Act, made no attempt at a cost-benefit analysis. Many, many landowners outlined how the legislation would negatively affect them only to be told at the end by the Chair of the parliamentary committee Chris Whiting and the Premier that they had presented no evidence.[37]

The Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Act

The Cost-Benefit analysis has been revised down since the original consultation RIS. In both the consultation RIS and the decision RIS costs over ten years exceed benefits over ten years.

Costs over ten year at present value $609,857,252

Benefits over ten years at present value $285,817,474[38].

The monetised value of the reef including social, economic and iconic value of the reef is $56 billion. A large part of this valuation is its iconic value as its economic value from fishing and tourism is $3.9 billion.

[37] https://www.queenslandcountrylife.com.au/story/5376320/farmers-you-did-not-present-any-real-evidence/

[38] https://www.qld.gov.au/__data/assets/pdf_file/0028/94636/broadening-enhancing-reef-protection-decision-ris.pdf p9 p43

It is this iconic status which is used as justification for regulation where costs substantially exceed benefits.[39]

The actual estimated costs for agriculture, Industry (including bananas and sewerage), and government are different.

> *The present value costs are estimated to be $610 million over 10 years, $94 million per year to government, agricultural producers and industry (banana industry and sewage treatment plant operators). To limit the impact of grazing minimum standards on graziers with land in good to fair condition, the grazing standards are now outcome based, rather than the more prescriptive approach originally proposed. Graziers will be required to maintain land in good to fair condition, and meet certain requirements where the land is in a poor or degraded condition. This improved flexibility should help reduce regulatory costs and burden for graziers as they will only be required to act if land condition is poor, and will be able to choose the most appropriate path to improve outcomes for affected areas of their property. Further research has not identified alternative costings data that can be extrapolated across the whole Reef region to that presented in the Consultation RIS at this time to quantify this. The standards for graziers promote matching stocking rates to available forage and maintaining land condition for pasture and business resilience. The costing assumes that this may result in lower stocking rates for improved land condition. Various economic assessments suggest that long-term profitability and sustainability for grazing enterprises is maximised by low to moderate stocking rates across most land types (Moravek et al, 2016). This is due to the subsequent higher pasture production, higher market premiums for animals in better condition, and lower costs of production. Sediment run-off is also reduced under a lower stocking rate. While these benefits are likely to be realised outside of the 10-year timeframe for the Consultation RIS assessment, it is still likely that graziers will benefit and face lower ongoing costs, in the medium-long term.*[40]

For areas to return to fair or good condition may be difficult after drought or other natural disaster. These will be judged by the department on a case by case basis.

This hardly provides certainty or fairness and does not lay out any framework for how judgments are likely to be made, in other words legislative uncertainty.

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[39] https://www.qld.gov.au/__data/assets/pdf_file/0028/94636/broadening-enhancing-reef-protection-decision-ris.pdf p9

[40] Ibid. p10

That "Sediment run-off is also reduced under a lower stocking rate" is characterised as an absolute as are presumed premiums under a lower stocking rate when both are conditional. If pasture cover is sufficient there will be little change to erosion and studies showing higher returns at a lower stocking rate usually concentrate on kilos turned off with the assumption that prices remain the same. Of course, this is a nonsense and playing the price game is every bit as much of a cattle enterprise as the kilos turned off.

The RIS is also at pains to stress that there are possible benefits to the minimum management standards, but they are likely to be realised outside the ten-year timeframe. Trying to sell this as a benefit to any industry outside agriculture would be nonsensical and would not even be attempted in most other industries where return on expenditure is expected to occur in a reasonable timeframe.

Consultation RIS for costs-directed from decision RIS

Costs for moving from D to C are in the consultation RIS and do not include capital costs.[41]

> *For grazing, the new minimum standards most closely align with the B class management practices. Graziers currently in class D are assumed to move first to class C, and then they are included in the costs of moving from C to B. The total cost over five years of moving graziers from class D to class C is $6.8 million or $5,600 per property. There are no capital costs included in this estimate, which is likely to be an under-estimate. The total cost of moving from C to B is $148 million in capital costs and then an ongoing $32.5 million per year. This ranges from $5.54-$27 per hectare for capital costs (depending on the region), with an assumed 10% cost in annual maintenance, and ongoing costs of $0.6 to $3 per hectare in reduced profits.*

As for graziers likely seeing benefits outside the ten-year timeframe, the RIS acknowledges that this could be patchy depending on a multitude of factors including topography.

> *However, achieving no net decline in water quality from new development is still a desirable objective to support progress toward the Reef water quality targets. Any additional loads will add more pressure on existing businesses to achieve nutrient and sediment reductions and would also likely be at the expense of government to fund reductions.*[42]

That existing businesses, mostly agriculture, who do not have access to offsets, will have to take up the slack to reduce sediment and nutrient loads is unacceptable.

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[41] https://www.qld.gov.au/__data/assets/pdf_file/0032/67883/enhancing-reef-protection-regulations-ris.pdf p29

[42] https://www.qld.gov.au/__data/assets/pdf_file/0028/94636/broadening-enhancing-reef-protection-decision-ris.pdf pp 22-23

Why should any business suffer as a result of the actions of a third party? In our capitalist system where businesses are owned by individuals or companies being openly penalised for another company's development is outside our free market system. This legislation views the socialization of the sediment as acceptable.

Once again the "conservation sector" is showing its undue influence with self-assessment ruled out, a (expensive with costs not available to opposition at the time of parliamentary debate) permitting system implemented and in their words, "An assessment approach will also allow unsustainable cropping proposals to be identified and refused from a water quality perspective."

This is yet another example of green groups influencing legislation which impacts drought preparedness where Queensland government policy is for "self-reliance". Cropping as part of a drought strategy or whole of management plan for single or multiple site management plans may not always look viable on paper (how do you value drought preparedness?) but may make an operation more sustainable.

Regardless, it is entirely unacceptable to have a bureaucrat decide that a project is "unsustainable" and be given carte blanche to reject any and all proposals on the grounds of water quality. This will be yet another means to stymie agriculture or any other development for that matter.

The cost of new development, including agricultural development will be considerable although not estimated.

As with the Consultation RIS, the costs of farm design standards have not been estimated as the variability between farms both within and across industries is too great. P 38

Grazing, most likely costs of minimum regulatory standards for an average property to move from D to B class management practice

Region	Average size (ha)	Total ($ one-off)	Total (ongoing $/year)
Cape York	20,000	112,379	29,082
Wet Tropics	2,000	55,579	11,995
Burdekin	20,000	112,379	29,075
Mackay Whitsunday	2,000	55,579	17,395
Fitzroy	7,000	40,359	14,080
Burnett Mary	5,000	136,579	21,502

The ongoing grazing costs are based on the value of stock removed to reduce grazing pressure.

(e) the wider economic and social impact of proposed regulations to restrict farm practices;

Community Wide Economic Effects

It is easily observable that every event that takes money out of agriculture also hollows out rural and regional communities.

The costs have already been outlined with limited benefits to agriculture inside the ten-year timeframe. They do not account for the cost of capital works which an early Regulatory Impact Study concluded would be unaffordable for the cattle industry in particular and that there could be amalgamations. One of the undervalued commodities in the community is the intellectual property tied up in the collective of our experienced farmers and graziers.

Included in the costs are the costs of destocking if land is in C or D condition. One of the reasons that this legislation will be unable to be complied with is that land condition is based on groundcover. No allowance is made for drought or catastrophic floods as happened in North Queensland recently.

More insidious is the well-researched and well documented decrease in pasture as the result of encroachment.

Dr. Bill Burrows records that grazed woodlands or savannas only have two stable states, all trees or all grass. Intermediate states can only be maintained by ongoing management interventions. Once a system has "flipped" towards a greater tree population the trend becomes unidirectional towards woody plant dominance. This means less groundcover and exactly where our ill-informed vegetation management laws are leading us.

Pasture production, which decreases exponentially with basal stem area increase, can tail off to almost nothing at as little as 20 sq m woody plant stem basal area per ha.

Without changes to legislation, carrying capacity will be reduced and carried to its end point could lead to closure of processing plants and loss of jobs.

Social Implications

This legislation has damaged the reputation of farmers, agriculture and cattle grazing in Barrier Reef catchments. It has followed a long campaign, not only from environmental groups which we have come to expect, but government and government funded groups, primarily science groups, appear to have responded to these activist campaigns. It is regrettable that their claims and the legislation that arose from them were not based on empirical evidence.

Essentially, almost all Queensland agriculture is export orientated and increasingly such export relies on reputation and integrity. This used to be universally accepted in our first world country with first world standards.

The constant campaigns by environmental organisations which far too many of our governments and statutory organisations have responded to have resulted to reputational damage which will in the very near future require us to present our environmental credentials, often based on poor science or no science and quite likely with little accountability or access to an appeals process. This has been the aim of environmental groups all along but others who should be accountable do themselves no credit by responding to their shrill assertions.

The Reef 2050 plan even commissioned the CSIRO to investigate "social" reasons why farmers have a low uptake of what they regard as "environmental stewardship" programs. Their assumptions are laughable including the assumption that if a farmer is not recorded and certified in their system their practices are unacceptable and they assumed to have no positive attitude to environmental stewardship.

Considerations such as drought, low commodity prices, shortage of labour or even conscientious objection to some of the bodies involved in designing or raising the funds for programs do not seem to have been considered.

The Precautionary Principle on Steroids

Now that the legislation is safely in place the Great Barrier Reef Marine Park Authority (GRMPA) has given a very concise evaluation which says that the Great Barrier Reef has a "vibrant future".

> *A Senate estimates committee hearing on Monday heard a downgrading of the reef condition from poor to very poor was a long-term forecast based on no action being taken on climate change. GBRMPA chief executive Joshua Thomas said the outlook report was an assessment of the likely condition of the reef if a series of issues were not addressed. These included reducing global greenhouse gas emissions along with improving reef water quality, better marine park compliance, controlling crown of thorns starfish and reducing marine debris. "The reef is a vast estate and many areas remain vibrant and ecologically robust," he said. "It continues to be an extraordinary experience for visitors to the region, supporting beautiful corals and abundant marine life."*[43]

If the temperature rises 1.5 to 2 degrees as a result of climate change better water quality **may** allow it to recover more readily. It is stated in some literature that this may not work.

> *The authority's chief scientist, David Wachenfeld, told Senate estimates the outlook report was evidence-based. He said the downgrade from poor to very poor was the long-term outlook for the reef that was largely a consideration*

[43] https://www.theaustralian.com.au/nation/politics/great-barrier-reef-has-vibrant-future-authority-agrees/news-story/ca3e2351e7ebd2f3e75427e69ff108a8

of the impacts of climate change on current greenhouse gas emissions trajectories.

For how long and to what value must agriculture pay for climate measures without compensation or recognition and not based on any balanced and reasonable science?

(f) any related matters

UNESCO

During her second reading speech on the Great Barrier Reef Protection Measures, Minister Leanne Enoch stated that, [44]

> *In December this year the federal government must report back to UNESCO on the state of the conservation of the Great Barrier Reef and the actions we are taking to safeguard its World Heritage status. In its last consideration of the reef in 2017, the World Heritage committee asked Australia to accelerate its efforts to meet the targets of the Reef 2050 Plan, particularly for water quality. The bill we are debating here today is critical action to do just that. Queensland, in partnership with the federal government, will be doing its part to protect the reef.*

This was followed by Mrs. Gilbert Labor, Member for Mackay who said that,

> *When UNESCO last considered the Great Barrier Reef in July 2017 it acknowledged the Queensland government's progress in enforcing existing reef regulations and identified the need for accelerated effort to meet water quality targets. The next report will be submitted to the World Heritage Centre by 1 December and considered at UNESCO's meeting in mid-2020. We as a government must do something because farmers do not know what UNESCO will impose upon them. We must report that we have implemented the reef regulations to demonstrate that we are making every effort to meet our obligations to avoid the Great Barrier Reef being listed as in danger.*[45]

Many Labor members made reference to UNESCO and what conditions they may impose on us if the government was perceived as not doing enough to protect the reef. The Queensland agricultural community could be forgiven for believing that they have been made scapegoats in order to impress the UNESCO inspectors. Many,

[44] https://www.parliament.qld.gov.au/documents/hansard/2019/2019_09_17_WEEKLY.pdfp2829

[45] https://www.parliament.qld.gov.au/documents/hansard/2019/2019_09_18_WEEKLY.pdf p2925

quite reasonably, are asking why UNESCO has any sovereignty over Australia and our regulation.

It is also clear that the Vegetation Management Act, at least in part, is pitched at UNESCO as in this Wilderness Society report.

> *The Great Barrier Reef Marine Park Authority has explained that 'The decline in coral cover and lack of recovery coincides with degraded water quality as a result of land clearing, land use changes and agricultural use of the catchment.'19 For this reason, the Australian and Queensland governments committed to a number of actions under the Reef 2050 Plan relevant to controlling deforestation and tree clearing in Reef catchments.20 The Reef 2050 Plan was submitted to the UNESCO World Heritage Committee as part of Australia's bid to avoid having the Reef placed on the 'In Danger' list in 2015. One key action included was to 'Strengthen the Queensland Government's vegetation management legislation to protect remnant and high value regrowth native vegetation, including in riparian zones.'*[46]

Once again, we see in the quote above that GRRMPA has turned a hypothesis into a definite where degraded water quality is equated with land clearing, an assertion for which no evidence exists.

Queensland landowners are in almost universal agreement that we should not be beholden to UNESCO and that legislation should not be enacted to appease them. This is particularly the case where it is unscientific and based on activist campaigns.

Landowners and their supporters have done a very good job of presenting both economic and scientific evidence to parliamentary committees for both the Reef Measures and the Vegetation Management Act amendments in 2018. All of it has been ignored in favour of activist spin.

Consultation

One of the objections to the Great Barrier Reef Protection Measures was that the environmental standards (which were not available to the opposition for the debate) could be changed by the Chief Executive.

The opposition wished to move an amendment which would require that any changes needed to be passed by parliament. The government (under instructions from WWF and TWS) rejected all amendments, as also happened with respect to the Vegetation Management Act, so the Minister gave an undertaking that no changes would be made for 5 years without extensive public consultation.

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[46] https://www.wilderness.org.au//images/resources/The_Drivers_of_Deforestation_Land-clearing_Qld_Report.pdf p5

What is the history of this "extensive" consultation?

Queensland has a unicameral system where the parliamentary committee is supposed to perform the function of a second house of review.

The Queensland government's record on this consultation is very poor. They have made a mockery of our democracy.

Submissions to the Vegetation Management and Other Legislation Amendment Bill 2018 were in record numbers. Attendance at parliamentary hearings was also in record numbers where landowners put their heart and soul into presentations.

The rushed hearings, hastily cobbled together, by the time they got to North Queensland were allowing few questions by parliamentarians and were trying to refuse people who had spent days travelling through floods an opportunity to speak.

At the conclusion, the chair of the committee and Premier declared that landowners had presented no evidence.

In the case of the Barrier reef Protection Measures the disrespect for agriculture seemed even more pronounced with no intention to have any hearings outside Brisbane in the first instance when agriculture up and down the coast right to Cape York were the targets of the legislation. After an outcry, some brief hearings were organised in regional centres but with inadequate time for either parliamentarians or witnesses.

After the travesty that passed for consultation for these two bills, Minister Enoch tried to assure the parliament that there would be consultation if any changes were made to standards. She also mentioned the necessity for a cost-benefit analysis. I am not sure how this is meant to reassure Queensland landowners as the cost-benefit analyses in both the Consultation RIS and the Decision RIS for reef regulation showed more costs than benefits over a ten-year period.

> *There have been concerns raised by industry and stakeholders that standards in this legislation could be easily changed. The Palaszczuk government has always been a consultative government and one that listens to the people of Queensland. It is for this reason that I make the commitment to industry that these minimum standards will not be substantially further amended for at least five years once they are finalised later this year. If they are significantly amended after that time, the law requires that this would only be done after public consultation and consideration of the costs and benefits of the change.*[47]

[47] https://www.parliament.qld.gov.au/documents/hansard/2019/2019_09_17_WEEKLY.pdf p2831

The reality of five-year commitment was verbalised by Member for Broadwater, David Cresafulli who contended that, "there will be no change to the legislation that provides the power to the unelected bureaucrat to change these rules every day of the week."

I alluded earlier to the fact that opposition members did not have access to the minimum environmental standards prior to the debate so they did not actually know the detail of what they were debating. This is another blow to our democratic system. Several Members made reference to the fact that they were denied these standards which is duly recorded in Hansard. These Members included, but are not limited to, the Member for Broadwater, the Member for Callide the Member for Gregory, the Member for scenic Rim and the Member for Warrego.

The same sorts of comments applied to fees and taxes that would be passed on to primary producers which were unavailable at the time of the debate.

Property Rights Australia and Greenshirts Australia will be available to provide any extra information and attend parliamentary hearings.

Prepared and signed by

Joanne Rea

on behalf of

Property Rights Australia (Chair)

and

Greenshirts Movement Australia

(Management Committee Member)

Signed by

Martin Bella

Convenor

Greenshirts Movement Australia

APPENDIX A

Modelling assumptions

https://www.reefplan.qld.gov.au/__data/assets/pdf_file/0029/82919/report-card-2017-2018-methods-catchment-loads-modelling.pdf p6

Yellow highlights indicate at how many points multiple assumptions are made and/or assumptions made via proxy measures eg BMP.

• Loads reported for each report card reflect the relative change in modelled average annual loads for the specified model run period (1986 to 2014).

• Land use areas in the model are static over the model run period and are based on the latest available QLUMP data.

• Paddock model runs that are used to populate the catchment models, represent 'typical' management practices for a given management class and do not reflect the actual array of management practices that occur year-to-year across the GBR catchments.

• Paddock model simulations represent the reported management practice adoption water quality risk frameworks as a set suite of practices.

• Application rates of pesticides and fertilisers that are used to populate the paddock models are derived through consultation with relevant industry groups and regional NRM bodies.

• Management practice adoption areas represented in the model are applied at the spatial scale of the data supplied by the delivery organisations and collated in the Paddock to Reef Agricultural Management Practice Adoption program area.

• The water quality benefits from adopting a management practice change are assigned in the year that on-ground works were implemented, so time lags that may occur in the system are not accounted for.

• It is important to note that these modelled load reductions are based on improved land management adoption data supplied by organisations that receive funding from Reef 2050 WQIP programs. Results are therefore indicative of the likely long-term water quality response due to adoption of improved land management practices for a given scenario, rather than a measured reduction in load.

Linking paddock and catchment models

The publicly available version of the eWater Source Catchments was modified to incorporate hillslope constituent generation from the most appropriate paddock models for cropping, sugarcane and sugarcane areas, and the Revised Universal Soil Loss Equation (RUSLE) for grazing. Gully and streambank erosion and floodplain, channel and reservoir deposition processes added to the model were based on the SedNet/ANNEX approach (Wilkinson et al. 2014). A detailed description can be found in Ellis and Searle (2013) and Ellis (2017). The spatial and temporal representation of

gully, streambank and in-stream erosion processes were incorporated to better represent the erosion processes observed in the summer-dominant rainfall areas of northern Australia.

Two approaches were used to represent improved land management practices in the Source Catchments model depending on the land-use of interest. In the first approach, for sugarcane, bananas and cropping, the constituent time-series (e.g. load per day per unit area) for the given land-use was supplied from a paddock model. Unique combinations of climate, soil type and defined management practices within each land use were identified and represented spatially in the paddock model simulations used to inform the catchment models. For cropping (grain cereal crops) and bananas, the HowLeaky model was used (Rattray et al. 2004). For sugarcane modelling, the Agricultural Production Systems sIMulator (APSIM) (Holzworth et al. 2014) was used. For load reduction representation, the defined management practice for a particular land-use segment was altered between scenarios.

In the second approach, the RUSLE model was written into the Source Catchments model to model hillslope soil erosion in grazing lands. The cover term (C-factor) in the model is generated from remotely sensed ground cover satellite imagery seasonally (four scenes per year). The paddock-scale model GRASP (McKeon et al. 1990) was used to provide scaling algorithms for each scenario to account for changes in management in each identified land type; for example, shifting areas from moderate risk to moderate–low risk. These scaling algorithms were applied at the pixel scale to each ground cover satellite image for the modelling period. This is applied according to a spatial representation of areas of defined management practices as provided annually by regional NRM bodies. Calculations were performed pixel by pixel, with results accumulated to a single land-use representation in each sub-catchment. All loads generated for each land use represented within a sub-catchment were then aggregated at the sub-catchment scale and routed through the stream network Total load. The total baseline load is the load modelled within each GBR catchment using the 2016 management practice benchmark. A pre-development land-use map was also developed and modelled. The model was then run for a 28-year period to establish an average annual load for this period; the pre-development load. The anthropogenic load was calculated as the total baseline load less the pre-development load.

Load reductions

To reflect investment in improved management practices since 2016, the model was then rerun in each year for the same climate period using the proportions of lowest risk to high risk management practice areas in that year. The relative change in pollutant loads from the anthropogenic baseline after investment reflects the load reduction due to changes in management practices (Figure 2).

Modelling improvements

In response to the independent external review of the program in 2015 by the Queensland Audit Office and the Great Barrier Reef Water Science Taskforce (GBRWST, 2016), improvements have been implemented in this program area in the last two years.

These include:

• A desktop and field gully mapping program continues to improve the spatial representation of gully density and geometry in the models. Updated gully maps have been incorporated for selected areas within the Burdekin and Fitzroy regions and all of the Wet Tropics and Burnett Mary regions.

• Annual monitoring/modelling validation workshops are held to compare model performance against monitoring data.

• Updated land-use mapping incorporated for Wet Tropics, Fitzroy and Mackay Whitsunday regions.

• Modifications to the calculation of the cover factor in the hillslope erosion modelling to improve erosion estimates in steep, densely forested catchments.

• Updates to sewage treatment plant contributions.

• Improved alignment between modelled and actual stream location, and steam length and width.

• Updated datasets for riparian vegetation extent, streambank erodibility, floodplain area. Query-what assumptions are made about these parameters such as riparian vegetation extent.? Considering the declarations about grass v trees by some scientists and contrary information from woodland scientists (Burrows et al) assumptions are very likely to be inaccurate.

• Research into parameter sensitivity/uncertainty in modelled inputs and outputs is continuing to guide future data collection.

Qualitative confidence ranking

A multi-criteria analysis was used to qualitatively score the confidence in each indicator used in the report card, from low to high. The approach combined expert opinion and direct measures of error for program components where available. Catchment loads modelling received a three-bar [of 5 bars] confidence ranking. P9

Glossary

ANNEX: Annual Network Nutrient Export model is a static model that predicts the average annual loads of phosphorus and nitrogen in each link in a river network.

APSIM: Agricultural Production Systems Simulator Agricultural Management Practice Adoption program area: A program area of the Paddock to Reef Integrated Monitoring, Modelling and Reporting program which develops rigorous estimates of management practice adoption and annual management practice change for the major agricultural industries of the Great Barrier Reef catchments—sugarcane, grazing, horticulture, grains and bananas.

Sediment: Sediments in water include clay, silt, sand and coarser particulate material, and are referred to 'total suspended solids' (this is how they are measured in the water column) or 'total suspended sediment'. Sediments are characterised by different particle sizes. Not all sediment or particle size fractions present the same risk to the Great Barrier Reef, with fine (<20μm) sediment moving furthest into the marine environment, leading to increased turbidity and reduced light, and therefore posing the greatest risk.
GRASP: Soil water pasture growth model
HowLeaky: Agricultural system water balance and crop growth model based on PERFECT
USLE: Universal Soil Loss Equation
C-factor: cover management factor (C) in the USLE that represents effects of vegetation and other land covers
SedNet: Sediment River Network Model used to determine catchment sediment yields and sediment source

APPENDIX B

Brief Notes on the Great Barrier Reef Science

Some landowner representative groups have been highly suspicious of the undue emphasis on modelling for some time. This has led to some investigation into what the major causes of damage to the reef really have been.

The Great Barrier Reef proper is situated 40 to 100 km from shore and is a huge living, breathing organism with parts damaged and deteriorating and other parts recovering and regenerating as is normal for any organic organism. Many of the causes of damage are natural weather events, other natural events such as Crown of Thorns outbreaks, freshwater flooding, or accidents. Almost none can be, or are, impacted by agricultural practice.

Sediment almost never makes it past the inner fringing reefs. The same applies to Nitrogen, Phosphorus, and even farm chemical. It should also be noted that agriculture is not the only industry emptying products into the waterways with mining and industrial chemicals, including arsenic, regularly given government permits to release waste in times of high flow.

One of our early discoveries was the volume of water exchange between the Reef Lagoon and the Pacific Ocean which makes accusations of farmers polluting the Reef ludicrous. Land based contributions remain quite close to the coast and do not flow to the Great Barrier Reef.

> *The mixing is enormous and means that pesticides cannot build-up to dangerous concentrations for the GBR.*

> *This result has been proven using five different methods using temperature gradients, salinity, radio-nuclides, satellite tracked drifters and hydrodynamic modelling.*
>
> *But it is conveniently ignored in the 2017 Consensus Statement and the 2019 outlook report. -Dr. Peter Ridd*

The water in the Lagoon undergoes a total flush in a month or less. More water exchanges in eight hours than comes from all river catchment discharges in a year.

> *The diagram shows why there is minimal pollution in the GBR. The paths are from drifters that entered the GBR and ended up running aground on the coast. Note that it generally only takes a few days to a couple of weeks to go from the outer reef to shore.*[48] *Somewhere else, and precisely where needs to be investigated, there is water leaving the GBR. This means that absolutely huge volumes of water that totally dwarf what comes in from the rivers is flushing through the system keeping the water quality as pure and clear as the Pacific Ocean.*
>
> *As I have said before, as much water comes into and out of the GBR in 8 hours as from all the rivers on the coast in a year.*
> *Farmers are not killing the GBR.*
>
> *Although this work is mentioned in the 2019 Outlook report, the significance is not recognised at all in terms of the effect on pollution. This is typical of these documents. They are very selective in what they say, and avoid interpretations that contradict the hypothesis that the GBR is damaged by farmers.* [49]

Professor Bob Carter made us aware that the inner reefs were well adapted to sediment and that wind and wave action had been bathing them in sediment accumulated over thousands of years.

The most severe coral bleaching events occur in shallow, still water in high temperatures.

Most damage to the reef is caused by cyclones, high temperatures, Crown of Thorn Starfish (COTS) and sometimes freshwater in times of high flow.

Attempts have been made to link outbreaks of COTS to agricultural fertiliser. COTS are a native pest and core sampling shows that there have always been outbreaks. Some even believe that they may perform some beneficial function in attacking large and vigorous corals allowing more delicate ones to flourish. Science has put a great

[48] Choukroun et al. (2010) https://doi.org/10.1029/2009JC005761
[49] Dr. Peter Ridd

deal of effort into trying to prove a link between fertilizer runoff and outbreaks. So far, they have been unsuccessful and the question remains unresolved.

That has never stopped environmental groups and politicians from categorically stating that agricultural fertilizer is the cause of outbreaks.