Bundaberg CANEGROWERS Ltd | CANEGROWERS ISIS | CANEGROWERS Maryborough District

15 March 2019

Wide Bay Burnett CANEGROWERS submission to Innovation, Tourism Development and Environment Committee

The Wide Bay and Burnett sugar cane farmers and the three respective CANEGROWERS organisations have been more than willing to do everything necessary to modify farming practices to avoid any significant impact on the Great Barrier Reef (GBR).

The key to improved management practices is having a sound scientific basis for decisions.

Unfortunately, it has become apparent in recent years that much of the 'science" that has been used for decisions is not as well quality checked as would be ideal and thus there are some doubts if legislation and remediation funds are being most appropriately directed to maximise the benefit for the GBR. It is possible that some restrictive legislation, which may significantly affect the viability of our agribusiness ventures, may not have a significant affect on GBR health.

Bundaberg, Isis and Maryborough CANEGROWERS support measures to support the integrity of GBR science and in the short term we request that the government delay implementation of this legislation in the Burnett and Southern Catchments until a thorough independent audit of the science has been conducted.

Extension of Legislation to Burnett and Southern Catchments
No justification has been given to extend legislation to the southern catchments.

This became apparent at a meeting between departmental managers and cane farmers in Bundaberg on 20 September 2018 for which the following points are relevant. The departmental managers were led by Scott Robinson, Director Reef Programs/Office of the Great Barrier Reef Department of Environment and Science.

(a) It was notable that although much time was spent by the presenters talking about end-of-river loads and concentrations, at no stage was the effect of the discharge from the Burnett (or other rivers) on the Great Barrier Reef (GBR) discussed. In the end, the environmental reason why improvements in land use practice are being required is to affect water quality on the GBR not the end of catchment. For example, where are the predictions that show what the drop in the concentrations of sediment on the corals of the GBR will be if the regulations are adopted? The reason that this information is not given is because the affect would be negligible and below the levels of detection. In any case this information needs to be given to justify the regulations.

(b) It was stated by the management and science representatives that the Capricorn-Bunkers, the nearest GBR reefs to the Burnett are in good shape and unaffected by pesticides, sediment, or nutrients from the Burnett. This is a remarkable statement and effectively means that these southern catchments are irrelevant to the GBR.

(c) An attempt to justify the extension of regulations was made by referring to data presented at the meeting by management and scientists supposedly indicating that the seagrass cover had declined in Hervey Bay over the last few years. However, the data in fact showed that seagrass cover are now at record high levels raising considerable doubts that the seagrasses are in decline. If anything, one would assume that the increased nutrient loads since European settlement would improve seagrass coverage and an example of this from Green Island was quoted by one of the speakers. It seems contradictory that the nitrogen fertilizer that is used by the farmers to make their grass (sugar cane) grow more vigorously, quickly becomes poisonous when it enters the marine environment and supposedly adversely affects the sea grass. A proper scientific case needs to be presented on why the nutrient loads from the rivers are adversely affecting seagrasses.

(d) Loss and regrowth of seagrasses from river floods, often by freshwater (not silt or nutrients) is a well-known phenomenon and no evidence was presented that indicated that anything is amiss in the Burnett region.

(e) The admission that the GBR will be unaffected, and the focus instead shifting to ecosystems that are not the GBR, is very significant in terms of the reason why the new regulations are required. The focus is to protect the GBR. The world has been told that the GBR is being killed by runoff, and other stressors, and the world understands the GBR to mean the corals of the GBR, not a small patch-reef close to the shore, or a seagrass bed in Hervey Bay that are far from the GBR. These non-GBR environments are no more significant than a seagrass bed in Western Australia or patch-reef in Moreton Bay. If the GBR is not being affected, then the Burnett and other southern catchments should be treated like any other river in Australia. For those rivers, current Federal and State legislation already apply, and no additional GBR-related regulations are necessary.

(f) Seagrasses are important ecosystems in their own right, but scientists often claim that the seagrass beds are important ecosystems to the GBR, i.e. if the seagrasses die 100km away (for the case of the Hervey Bay seagrass) then somehow the GBR will lose coral and fish. This implies an extreme fragility of the GBR that is contrary to scientific evidence. In fact, the history of the GBR demonstrates extreme robustness of the GBR. For example, the GBR started to reform around 18,000 years ago when the sea level started its 100m rise and flooded the GBR shelf, which was then dry land. When the water was 25m lower than today, the GBR was growing very rapidly but Hervey Bay and its seagrasses did not exist at that time. Thus, they are not crucial to the GBR. In addition, during this period of sea-level rise, there would have been massive erosion of the shoreline as the sea flooded the land.

This erosion caused retreat of the coastline of up to 50m per year in some parts of the GBR causing massive release of sediment. This demonstrates far greater robustness than is implied by the concern that extremely distant ecosystems can affect the GBR.

It should also be remembered that there are many oceanic reefs where there are no seagrasses close by also questioning the importance of seagrass systems to distant coral.

(g) No new information was presented that gave any credible explanation why a change in policy regarding the regulation of the Burnett and southern catchments was necessary other than the presenters were "*sure that there must be some bad farmers in the region*" and that they need to be stopped. No cost benefit analysis was done to support the argument that the environmental improvement would be worth the cost to the government, let alone to the cost of red-tape to farmers.

(h) One of the presenters stated that they "*work with the best information we have*". We accept this intention but request the proponents undertake quality checking of their information and the original scientific papers from which they draw their information. In the light of the well documented *Replication Crisis* where it is now well accepted that around 50% of peer reviewed journal papers are flawed, and the fact that the Scientific Consensus Statement did not use more rigorous Quality Assurance than peer review, one can only conclude that much of the information being used is unreliable. The biggest problem is that we do not know which half is unreliable.

Summary of Concerns

In other areas of science, such as the biomedical sciences, it is now well recognised that around 50% of peer reviewed scientific literature is flawed, a phenomenon known as the "Replication Crisis". The "Replication Crisis" is a topic of considerable discussion in many of the esteemed scientific institutions with considerable debate about how it should be addressed. The question thus arises, if there are problems in other areas of science, is it possible that some of the GBR science is similarly afflicted with unreliability. It would seem prudent to undertake independent checks rather than rely on the assurances of the organisations responsible for the GBR science in the first place.

In addition to this broader Replication Crisis, some prime-facie evidence of why there are doubts about GBR science is given below. It is a small fraction of the full list of concerns.

Mud from farms: It is claimed that sediment (mud) from farms that is washed down rivers is supposed to be smothering the GBR. However, the extra sediment eroded from farms and cattle grazing carried by rivers, never reaches the GBR in quantities that could have any adverse impact on the coral (Larcombe and Ridd, 2015). There is almost zero terrigenous sediment on the GBR (i.e the offshore barrier matrix of reefs) and river plumes only occasionally reach even a few of the 3,000 reefs of the barrier reefs. So for these reefs, which are 99% of the coral of the Marine Park, it is completely impossible for farms to be having any effect. Some of the inner fringing reefs close to the coast, which would at most represent 1% of the coral in the Marine Park, have a lot of sediment surrounding them that is resuspended by wave action during periods of high wind. Wave resuspension of sediment on these inshore corals produces concentrations roughly ten times higher than for river plumes and for periods that are ten times longer. The sediment around these reefs was deposited over the last few thousand years and the extra sediment since European settlement has only negligibly added to the quantity. These inshore reefs have thus been minimally affected by runoff from farms and in addition represent a tiny fraction of the coral.

The hypothesis that sediment from farms is smothering the reefs is thus disproved for the GBR (offshore reefs) and is highly doubtful for the small fraction of the coral on the small inshore reefs.

Farm fertilizer: It is claimed that farm fertilizers, mainly in the form of the nutrients Nitrogen and Phosphorous, are the cause of starfish plagues. However, these nutrients almost never reach the GBR in significant quantities from rivers. The link between starfish plagues and fertilizers is extremely weak and disputed by many experts, although their work has not been included in the Scientific Consensus Statements. There is also roughly 100 times more natural movement of the nutrients across the seabed than come down the rivers. In addition, there is a massive flow of water into and out of the GBR from the Pacific Ocean that rapidly dilutes any increased nutrients from the coast. In fact, as much water comes into and out of the GBR from the ocean in 8 hours as comes down all the rivers combined in a whole year. It is impossible for farms to significantly pollute the GBR due to the dilution effect of the inflow from the Pacific Ocean and the water quality of 99% of the corals in the marine park (the barrier reefs) is completely dominated by the rivers of pristine water flowing into and out of the region from the ocean, not by the trivial rivers flowing into the lagoon from the coast.

The inshore fringing reefs that represent 1% of the coral are affected by river plumes carrying nutrients but the remobilisations of the enormous quantities of nutrients in the seabed by wave action is far greater than caused by the river plumes.

Very recent work seems to indicate that the natural fluxes of nutrients and sediment from pristine environments such as rainforest environments have been underestimated. For example, for the Johnstone River catchment, it is doubtful that even if agriculture was stopped altogether and the land returned to rainforest, the reduction in sediment and nutrient yields would still fail to reach the required mandatory government targets.

The hypothesis that nutrients from farms are killing the reefs thus seems highly doubtful and worthy of an independent audit.

Pesticides from Farms: Pesticides are never found in elevated concentrations on the GBR. Most of the time pesticides are completely undetectable even with the most sensitive equipment. Most of the measurements of pesticides have not even attempted to measure pesticides on the 99% of the reefs on the barrier reefs because it is well recognised that they are effectively unmeasurably small. Occasionally pesticides are detected close to the shore, well away from the GBR, and the concentrations never even approach accepted safe limits. Pesticides are an irrelevance to the GBR.

Request

We invite you and any key advisors that you wish to bring to participate in an on-ground tour of the Bundaberg / Isis / Maryborough region to showcase some of the many voluntary programs that we have implemented to improve the environmental, social and economic sustainability of our sugar cane based agribusiness industry.

This will demonstrate why legislation is not required in this region.

We request that the Southern Region continue to be exempted as the legislation will only result in punishing individuals and an industry that has demonstrably done the right thing.

We have attached further evidence that demonstrates that regulation is not needed in the Wide Bay Burnett region as Appendix 1.

Yours Faithfully

Jeff Atkinson
Chairman
Maryborough CANEGROWERS

Mark Mammino
Chairman
Isis CANEGROWERS

Allan Dingle
Chairman
Bundaberg CANEGROWERS

cc: The Hon. Leeanne Enoch MP, Minister for Environment and the Great Barrier Reef
Stephen Bennett MP, Member for Burnett
David Batt MP, Member for Bundaberg
Bruce Saunders MP, Member for Maryborough

Appendix 1

Other evidence regulations are not required in the Burnett Mary

Bundaberg CANEGROWERS represents members which are in the Burnett Mary Catchments and specifically in the Baffle, Kolan, Burnett and Burrum sub-catchments which are outside the southern end of the Great Barrier Reef Marine Park. As mentioned by AIMS the coral cover in the central and southern parts of the GBR had increased from 2012 to 2015. Specifically, in the southern region of the GBR, AIMS recorded in October 2015 "Coral cover for the area has more than doubled since being dramatically reduced during severe storms in 2008 and Tropical Cyclone Hamish in 2009[1]."

Research by AIMS stated "In 2012, the Australian Institute of Marine Science reported that average coral cover on the GBR had fallen by half over the preceding 27 years[2]." And the cause was identified as "The decline of coral cover on the mid-shelf and offshore reefs from 1985 to 2012 was caused by the cumulative impacts of severe tropical cyclones, damage by the predatory crown-of-thorns starfish (COTS) and the previous two mass bleaching events in 1998 and 2002[3].

Additional environmental pressures such as reduced water quality and increased water temperatures further reduce reef resilience[4], i.e. all affecting the ability of coral reefs to recover from acute disturbance events such as such as cyclones and storms." This states that the decline in coral cover on the mid shelf and offshore reefs was from the cumulative impacts of severe tropical cyclones, damage from Crown of thorns starfish and previous bleaching events, none of which are directly correlated to water quality. It goes on to say that reduced water quality and increased water temperature reduce reef resilience, affecting the ability of coral reefs to recover from acute disturbances events such as cyclones and storms. Given that the Coral cover for the Southern section of the GBR has more than doubled since being dramatically reduced during severe storms in 2008 and Tropical Cyclone Hamish in 2009 in the southern region it could hardly be said that water quality was poor and had impacted on the ability of the reef to recover from severe natural events such as storms and cyclones[5]. This is further evidence that regulation is not required in the Burnett Mary region.

There seems to be a single focus on increased nutrient levels in waters of the GBR increasing the ability of COTS to survive and create outbreaks. While this makes it easy to target farming as the cause of COTS outbreaks it significantly ignores research from Dr Sven Uthicke of AIMS that demonstrated that increased water temperature increased the numbers of COTS larvae surviving to create an outbreak, which was further increased when additional nutrients were present. Research using the National Sea Simulator at AIMS found "Warmer sea temperatures were found in this study to enhance COTS survival along with other, cumulative pressures on the reef," said report author and AIMS scientist, Dr Sven Uthicke[6]. Uthicke explained that a 2º C increase in sea temperature can increase the probability of survival of COTS by 240% under certain conditions.

[1] https://www.aims.gov.au/docs/media/news2009/20090820.html
https://www.aims.gov.au/docs/media/latest-news/-/asset_publisher/EnA5gMcJvXjd/content/08-december-latest-field-survey-results-show-strong-coral-recovery-in-the-southern-reefs-of-the-gbr
[2] https://www.pnas.org/content/109/44/17995
[3] https://www.aims.gov.au/documents/30301/2107350/State+of+the+GBR.pdf/cf4b474b-32c4-4733-bf8e-27457cd40835
[4] https://www.aims.gov.au/documents/30301/2107350/Water+quality.pdf/3185f923-3ceb-4146-a1e8-e9d30f84ba45
[5] https://www.aims.gov.au/docs/media/news2009/20090820.html
[6] https://www.aims.gov.au/our-people/Dr-Sven-Uthicke

"Recognising the role of synergistic effects of increased nutrient flows and sea surface temperatures on COTS survival better enables scientists to understand the science behind outbreaks," said Uthicke.

"Given that the most moderate climate change scenarios predict a 1-2º C increase in average sea temperatures, the present study further demonstrates the value of taking a holistic, multi-variable approach to understand better how cumulative factors affect the survival of species such as COTS[7]," Dr Uthicke concluded.

[8]COTS outbreaks are not a regular occurrence in the southern end of the Southern section of the GBR. AIMS state that COTS outbreaks that begin around Lizard Island regularly stall in the Mackay Whitsunday region which is a long way from the Burnett Mary catchment. In fact the occasional COTS outbreak in the bottom of the GBR tend to start at the Swains Reef which is due east of Yeppoon and it has been recognised that these outbreaks occur independently of the water quality coming from the Burnett Mary catchments with the most likely caused by upwelling of nutrients from the deep ocean on the eastern side of the outer GBR.

Failure of State Government to follow recommendation of the Great Barrier Reef Water Science Taskforce report 2016.

The bringing in of the regulations as per the Great Barrier Reef Water Science Taskforce Report May 2016 was recommendation 5 of ten (10) recommendations. While the government has said that changes were not happening quickly enough it appears as if the state government has not allowed several of the other recommendations enough time to be implemented as they were always designed to be recommendations with a lag time to demonstrate the benefits.

Recommendation 2 – Communication, collaboration and stakeholder engagement. This program requires time to enable the work as it take more time than the two years from the recommendation being made and the beginning of the regulation process. The process of regulation also takes away any goodwill shown by farmers and reduces the amount of collaboration of farmers with the state government.

Recommendation 3 – Extension and education. These are always longer term programs that take more time than the two years from the recommendation being made and the beginning of the regulation process.

Recommendation 4 – Incentives. There does not seem to be any significant incentives provided by the state government. For example in Bundaberg, $250K per 50 hectares will provide enough finance to improve the irrigation infrastructure or purchase additional water to remove it as a constraint and improve farm yield by 20-30% so that yields are close to or above District Yield Potential.

Recommendation 7 – Monitoring, Modelling, evaluation and reporting. As part of this it says more monitoring is required. That is definitely required in the Burnett Mary Catchments as there has been historically been few monitoring sites. Before regulation is

[7] https://www.aims.gov.au/docs/media/latest-releases/-/asset_publisher/8Kfw/content/12-february-crown-of-thorns-thriving-as-ocean-temperatures-rise

[8] https://www.aims.gov.au/docs/media/latest-releases/-/asset_publisher/8Kfw/content/12-february-crown-of-thorns-thriving-as-ocean-temperatures-rise

implemented in the Burnett Mary catchments more monitoring sites need to be installed to provide more data.

Broadening and Enhancing Reef Protection regulations – Decision Regulatory Impact Statement

The Broadening and Enhancing Reef Protection regulations – Decision Regulatory Impact Statement shows proof as to why the regulations should not be implemented in the Burnett Mary catchments.

On page 5 it states that "The latest 2016 Reef Report Card (State of Queensland, 2017) as well as the 2017 Scientific Consensus Statement show that the uptake of improved land management practices is too slow, not widespread enough and the present trajectory of pollutant reduction will not meet the Reef water quality targets (Waterhouse et al 2017b)."

This statement fails to take into account the main method of practice change recorded by the Reef Report Card is the reporting of funded projects with changes made independently of government funded not recorded. It also ignores Table 1 page 11 of the Consultation Regulatory Impact Statement which shows that by meeting the minimum standards for DIN in the Burnett Mary Catchments for sugarcane will only result in 16% reduction in overall DIN load per catchment. With the new individual catchment loads for the sub catchments of the Burnett Mary varying from 50-70% on the 2013 baseline data this shows that even with regulations catchment targets will not be met.

This is backed up by page 8 of the Decision Regulatory Impact Statement where it states that regulation with extension and incentives by 37% which is only 61% of the 2025 targets. This again shows that the targets set by government would never be met and were designed for agriculture to fail to achieve.

There seems to be an extraordinary cost to the Queensland economy by the imposition of these regulations over the next 10 years. Table 3 page 9 of the Decision Regulatory Impact Statement states the total financial benefits to agriculture and government is $285,817,474. Table 4 states the total costs for agriculture, industry and government is $609,857,252. This means there is a cost to the Queensland economy of 324,039,778 over the next 10 years because of the implementation of these regulations. The impact in the Burnett Mary catchment where agriculture is 13% of the GDP compared to the state average of 3% and unemployment is already at 10%, means that regulations in the Burnett Mary Catchments will have a disproportionately high impact on the local economy – an economy which cannot afford this impost.

Emphasising the impact to employment in the sugar cane industry, with the added impost of compliance there will be a move away from farming or significant tightening on operations resulting in job losses. In a region already under pressure with extremely high youth unemployment and general unemployment the logic that this move to extend regulations to the southern districts of sugar cane production would seem to oppose labour union desires to support opportunities for employment in the regional areas.