

**Submission to Senate Inquiry  
Adj./Prof Colin Creighton AM**

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

Congratulations on holding this Inquiry. It is certainly timely for the Australian Parliament to re-assess its policy support for primary industries. Much was done under the Decade of Landcare and related initiatives but much more needs to be done to ensure profitable and sustainable natural resource based industries of agriculture, grazing, fishing and forestry.

Most importantly, Australia-wide policy initiatives can build a more profitable and resilient rural Australia, contributing much needed jobs, food and export income to the Australian economy.

Key points include:

- Substantial Australian Government investment over many years has fostered profitable and sustainable practices for much of rural Australia;
- The research - incentives – extension – awareness approach has been successful in many instances and Australia has world leading farmers contributing substantially to the Australian economy and meeting community expectations of social responsibility
- Alas there is a small cohort of land users [I hesitate to call them farmers] that have not adopted smart more profitable practices. This cohort is continuing to degrade our natural resources, their own profit base and negatively impact on key downstream uses such as wild fishing.
- There are also wide ranging negative implications including impacts on town water quality and Council water treatment costs, tourism, biodiversity and indeed community attitude to our farmers, unfortunately many urban dwellers painting all farmers with the same brush of lacking social responsibility.
- It is timely for this Inquiry to recommend Australia-wide legislation, similar to parts of the US Farm Bills. The outcome - 100% uptake of profitable sustainable practices, all Australian rural industries.
- Transitional funding towards a better rural Australia with the resulting increased employment and related benefits could be a large part of the proposed \$7B drought policy, morphing this policy into a visionary framework for a world leading, resilient, profitable and sustainable rural Australia.

Following I provide summary notes on each of your Terms of Reference. More information can be supplied at an Inquiry hearing.

Adj/Prof Colin Creighton AM

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

**Mea culpa I** – The first and probably one of the best ever assessments of sediment and nutrient runoff was done under my direction as Executive Director, **National Land and Water Resources Audit**. The research was led by CSIRO [Drs Ian Prosser and Chris Moran]. Not only was the work peer reviewed across the science community but also it was fully approved by the then 2002 Ministers for Agriculture and Environment [Howard Government - Minister Truss and Senator Hill]

The Audit report, along with all others in the series is deposited within the National and State Libraries plus the APH Library. **Volumes 5 [part i) and ii)** detail Australia's soil health issues. Electronically it is available on:  
<http://nrmonline.nrm.gov.au/>

Incidentally 1 - the Audit was highly regarded by groups such as the Australian National Audit Office and always held up as an example of one of the highest quality investments under the Natural Heritage Trust.

Incidentally 2 – other regions such as northern NSW had similar profiles of sediment and nutrient dumping into our rivers, estuaries and ocean because of poor agricultural and grazing practices.

To give a further example of the respect within which Audit science was held, one of the outcomes of the sediment and nutrient work was the inclusion of the Fitzroy and Burdekin catchments in the **\$1.4B National Action Plan for Salinity and Water Quality**. In developing this National Action Plan Prof Peter Cullen and myself worked directly to Prime Minister John Howard.

There have been no other landscape scale Australia-wide assessments of sediment and nutrient export since the Audit. Various researchers have refined segments within the Reef catchments and elsewhere. The bottom lines remain the same:

- Agriculture and grazing are the key contributors to sediment and nutrient export to the Reef and our coasts generally
- Hill slope and gully erosion along with river bank erosion dominate in the larger extensive grazing catchments, poor grazing land management and uncontrolled cattle access to our waterways being the key poor practices;
- Smart practices like stubble mulching [e.g. green cane] markedly reduce sediment and nutrient loss off agricultural lands

**NOTE 1:** It is timely to strengthen the Regulations for the GBR and indeed develop similar Australia-wide – a good start would be restricting cattle access by fencing, watering points and hard facing for all first, second and third order streams. Simple, effective and smarter more profitable stock management

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

**Mea culpa II** – The Audit included an assessment of Australia’s rivers and inshore areas / estuaries. While of course floodplains did form naturally over the Holocene, the level of sediment and nutrient export caused by agriculture and grazing and the destruction of fisheries and marine environments has been substantial. Details are within the Audit’s Volume 7 – **Catchments, Rivers and Estuaries**.

Indeed, all our floodplains have lost the majority of their natural functions of sinusoidal inflows, nutrient assimilation and nursery areas for Australia’s fish and prawns. Wetlands drained, mud dumped, seagrasses, shellfish beds and sandy spits smothered, and excessive eutrophication to name a few of the issues. Remember in excess of 75% of our fish and prawn species – the healthiest protein, spend part of their lifecycle within estuaries.

Indeed agricultural practices have decimated our wild fisheries Australia-wide and the GBR is no exception. Think the majority of the Fitzroy River no longer available for fish, ponded pastures that have trashed prawn habitat and the 5000+ barriers to fish movement just on the Burdekin floodplain.

To understand the level of losses due to agriculture and grazing and what we are attempting to repair of our wild fisheries refer to **Revitalising Australia’s Estuaries** – available on the FRDC website and electronic copies and further science papers available if required.

You will note I have not here referred to the “eye candy” of pretty coral reefs that leads to many emotive comments from our media. Suffice it to say sediments smothering corals and nutrients fostering algal growth have resulted in a change, probably hysteresis for all our inshore reefs. Evidence is as far back as the 1800’s when Banfield in “Confessions of a Beachcomber” noted the loss of corals from floods and sediment on Dunk island.

And the bottom lines:

- in excess of 80% of the GBR fisheries and prawn productivity has been lost because of agriculture and grazing
- wild fishing is the best source of protein for the Australian community – no fertiliser or cultivation required
- wild fishing provides much needed unskilled and semi-skilled jobs in rural and regional Australia
- our pilot repair investments show nature can rapidly re-create fisheries and prawns – think an equivalent of \$14,000 per hectare of salt marsh recovered just in additional prawn catch each and every year forever

**NOTE 2: Its timely for a \$2B Australian Government investment in repair of fish and prawn habitat Australia-wide – repairing from the destruction agriculture and grazing have wrought the few remaining wetland and tidal opportunities, providing jobs and healthy food forever**

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

Alas, there is limited relevant legislation.

We have had:

- ✓ over a Decade of Landcare,
- ✓ Acts in many States initiating catchment management [Total Catchment Management in NSW and Integrated Catchment Management in Qld],
- ✓ the formation of various groups such as Natural Resources Management agencies,
- ✓ Water Management Plans,
- ✓ Vegetation Management Plans, and
- ✓ multiple extension programs to foster drought resilience, smarter more profitable practices, soil testing and water management.

Alas all have been voluntary and the uptake has been less than optimum. Indeed any audit of Australian and State Government investment would demonstrate that it's timely to move to Regulation – the voluntary approach simply has not delivered for that small proportion of land uses causing the majority of the problems.

Alas, any choose to rot the system knowing that agriculture and grazing are essentially “sacred cows” [excuse the pun]. Examples include:

- roting of drought subsidies for stock movement;
- water theft;
- destruction of riparian vegetation;
- unauthorised / illegal use of banned chemicals;
- illegal land clearing;
- mis-treatment of livestock;
- fertiliser use without soil testing and understanding the needs of soil health; and
- lighting fires in total fire bans.....and the subsequent huge cost to agencies in fire control.....just to name a few.

Farmers organisations call for a social licence. This essentially is a call from the lowest common denominator of poor practice and knowing that advocacy will bring Government hand-outs.

The responsible farmers and graziers, and there are many, already demonstrate how profitability increases with smart sustainable practices. It is time we shifted the paradigm. It's time for **social responsibility** with all landholders as stewards of Australia's valuable natural resources. Time we supported our leading farmers, our champions for a profitable and sustainable agricultural industry. These leading farmers are not concerned about the Reef regulations. Like my farm management, and myself these leading farmers are already well exceeding the requirements of the Reef Regulations.

**NOTE 3: Let's support our leading farmers not our laggards. Let's demonstrate that the Australian Government truly cares for farmers and their profitability by putting in place Australia-wide a suite of Policy and Regulatory initiatives to foster more profitable and sustainable agriculture and grazing.**

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

Mea culpa III – As CEO of Mackay Whitsunday Natural Resources Management Group in 2006/07 I and my team of very competent staff developed a suite of more profitable and more sustainable practices for sugar cane, grazing and horticulture industries. These are essentially a microcosm for what is required Australia-wide to foster a resilient profitable suite of rural industries.

[As an aside, simultaneously I was working with leading grain growers in WA and SA to foster controlled traffic, stubble mulching and direct drilling – essentially enhancing soil health, carbon stores, soil biodiversity and water holding capacity. The parallel incentives program that we set up in WA was for soil sampling, especially addressing the issues of soil acidity and ensuring that fertiliser and liming regimes matched soil and plant needs. It was also very successful and with the high input costs of broad acre cereals the uptake is now I understand close to 100%]

Strong support across the board from Canegrowers, Qld farmers, AgForce etc. led to representations to the then Environment Minister [Minister Turnbull] and the then Opposition [Kevin Rudd]. The result was election commitment and the \$200M Reef Rescue I.

The argument we collectively put apolitically was that it was timely to foster more profitable agriculture and grazing. Those smart practices that were both more profitable and more sustainable were well proven. Further, to expedite the uptake of these smarter practices, incentives were required.

While there were some differences in delivery across the NRM groups and Industry partners, Reef Rescue I was an outstanding success. Of course initially it was the farmer leaders that took advantage of the incentives to be more profitable. Generally, in addition to these early adopters, other farmers started to take up the opportunities for more profitable enterprises and less off farm impact. Success builds success.

The program was universally regarded as leading the path towards better rural industries and resilient rural economies and subsequently I and others assisted the agencies in developing Reef Rescue II [set at about \$168M and including, as an innovation, the repair of wetland and riparian landscapes].

Alas, even with 10 years of incentives available to develop more profitable practices there were still the laggards, perhaps too lazy or simply without the sufficient skills to embrace change and profitability improvement. It is within this context of a significant cohort being slow to adopt more profitable practices that Regulations became a needed extra tool towards more profitable agriculture and grazing and concurrent reduced water quality impacts on our rivers, estuaries, fisheries and Reef.

I personally regard onerous Regulations as stifling innovation. However in this case, the regulations that the Qld Govt. has put in place have been carefully designed as a broad baseline for minimum standard industry practice. Innovation will still occur with our leading farmers. Indeed the majority of our farmers will not be bothered by the Regulations because their practices are already well beyond the standards required by the Regulations.

In summary the Regulations:

- ✓ will assist resilience and higher profitability in the Reef's agriculture and grazing industries by fostering action by all to be well above the standards required by the Regulations; and

- ✓ provide a microcosm of what is required Australia-wide, building increased profitability in our rural sectors so that external pressures such as flood, drought and increasing input costs can be accommodated.

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

Given the Regulations simply set a baseline standard for enhanced profitability the vast majority of economic and social impacts will be positive.

With enhanced profitability so too comes less reliance on hand outs such as less reliance on support in times of drought or flood. The positive impacts include:

- ✓ the freeing up of public investments from continually supporting businesses that lack the smarts of profitability;
- ✓ the potential to apply the public funds so saved to innovation, preferably through the Rural Industry Research & Development Corporations
- ✓ the potential to apply public funds to repair what we can of our waterways, estuaries and wetlands for a more productive wild fishing industry – protein and unskilled and semi-skilled jobs forever
- ✓ more buoyant rural and regional economies
- ✓ enhanced social wellbeing with flow-on benefits to health, families, education and cultural activities.

Using the GBR catchments as a microcosm, there are substantial benefits for Australia through implementing a suite of policies and incentive initiatives towards smarter more profitable and sustainable rural practices.

All in all, such a platform would benefit those of us that call rural Australia our home across all spheres of our lifestyles.

*f. any related matters.*

Using the proposed \$7B Australian Government Drought Fund as an estimate of likely Australian Govt. investment over the next 5 years following are my proposed investment streams that would have a strong policy platform and with incentives to foster the transition to a more profitable rural Australia:

**1. Agricultural soil health** - say \$1B

**Incentives and actions** - policy and regulatory underpinning towards 100% crop residue mulching [e.g. green cane, cereals stubble]; routine soil testing, GPS based fertiliser and liming applications, controlled traffic and related well-proven practices.

**Key research needs** - include cheaper slow release fertilisers and smart following systems for enhanced profitability;

**Outcomes** – healthy soils – physical, biological and chemical with flow on productivity benefits [e.g. water holding capacity] and profitability benefits [e.g. reduced input costs with fertiliser and liming geo-referenced and applied to match plant needs];

**2. Grazing soil health through smart pasture management** - say \$2B

**Incentives and actions** – policy and regulatory underpinning towards maintaining 80% perennials cover, all grazing lands; crash grazing systems and fencing for smart stock management; re-purposing and/or acquisition of lands unable to meet the 80% cover requirement;

**Key research needs** – bioregion based profitability assessments to assist farmers in their transition to smarter pasture practices and as a guide for their stocking rates and financial planning;

**Outcomes** – productivity benefits [e.g. markedly reduced soil erosion, enhanced pasture palatability and nutrition, increased water holding capacity and resilience, less drought relief reliance and profitability benefits [e.g. healthy increased weight gain stock, faster turnoff]

**3. Waterway repair** – say \$2B

**Incentives and actions** – policy and regulatory underpinning towards hard facing for stream crossings; fencing off from uncontrolled access all first, second and third order streams, watering points and other stock watering facilities

**Key research needs** – nil, all readily demonstrated

**Outcomes** – productivity benefits [e.g. stock management, no stock losses from bogging or water stress] and profitability benefits [e.g. biodiverse riparian lands, fish, Council water treatment costs, reduced sediment dumping in estuaries and oceans thereby healthier fisheries]

**4. Fisheries productivity** – say \$2B

**Incentives and actions** – works for re-connection of tidal flows and tidal volume while maintaining other objectives such as flood water management, re-instatement of salt marsh and tidal wetlands and as necessary acquisition and repair of major wetlands

**Key Research Needs** – development of Business Cases, key estuary by estuary as the basis for strong community support to repair fish and prawn productivity

**Outcomes** – productivity benefits [fish, prawns, birds and biodiversity generally] and profitability benefits [commercial fishing, recreational fishing, estuary and ocean amenity for our coastal lifestyles].

**ADDENDUM** – a note on the author

Colin Creighton's citation for his Australian Medal starts with:

***For significant service, leadership and innovation in environmental science and natural resource management, especially marine biodiversity, coastal ecology, fisheries and sustainable agriculture.***

***Leading teams and advocacy towards more profitable & sustainable agriculture, fisheries and forestry through positions including.....:***

Colin Creighton now focuses principally on repairing Australia's fisheries productivity and various volunteer international assignments.

This includes:

- ✓ leading Fisheries Productivity and Habitat Repair R&D for Fisheries RDC [e.g. Clarence estuary; Marine Biodiversity Hub; Shellfish Reef repair]
- ✓ member of the Australian Governments "Blue Carbon" working group
- ✓ corresponding member, Technical Working Group, Bonsucro International Standard for Sugar Cane production
- ✓ Qld Reef Ministerial Task Force

Colin practices what he preaches on *Silky Oaks* – a 200 acre farm on the Eungella Tableland incorporating the Lex Creek Nature Refuge [rainforest]; 8 x 4ha paddocks with all creek lines fenced; a pasture focused crash grazing regime, up to 100 beasts; creek lines revegetated and sequestering carbon; hard faced watering points in all paddocks; about 10,000 Hoop Pine planted plantation [a native high value timber] and occasional opportunity irrigated cropping e.g. garlic – in other words a demonstration farm that has hosted many field days and discussions on profitability and sustainability.

Colin's 2 most recent volunteer assignments were:

\* **Vietnamese Sugar Industry profitability and sustainability** [done over many visits in last 4 years]

\* **Marine Action Plan for Pollution and Plastics** – Pacific island Countries and Territories [a regional plan now being rolled out across the Pacific and the first UNEP approved plan for combatting marine pollution].

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