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Coral Reef Studies

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RE: ARC Centre of Excellence for Coral Reef Studies submission to *Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill* 2019

The ARC Centre of Excellence for Coral Reef Studies, headquartered at James Cook University (JCU), comprises multiple nodes at JCU, The Australian National University, University of Queensland, University of Western Australia, in partnership with the Australian Institute of Marine Science, The Great Barrier Reef Marine Park Authority, UNESCO, Stanford University, and other international collaborators. In response to the Queensland Government's request for submissions on *the Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill 2019,* the ARC Centre provides the following comments.

1. Need for water quality management. Adverse effects of poor water quality are known, with a high degree of certainty, to be one of the two primary causes of current largescale degradation of Great Barrier Reef (GBR) ecosystems (the other being climate change) (GBRMPA 2014; Hughes et al. 2015). Coastal ecosystems, including seagrasses and their associated species (e.g. dugongs and green turtles) and inshore reefs, are particularly vulnerable to the effects of poor water quality (GBRMPA 2014). This critical issue was highlighted in the 2017 Scientific Consensus Statement (Waterhouse et al. 2017), which stated:

"Key Great Barrier Reef ecosystems continue to be in poor condition. This is largely due to the collective impact of land run-off associated with past and ongoing catchment development, coastal development activities, extreme weather events and climate change impacts such as the 2016 and 2017 coral bleaching events.

Current initiatives will not meet the water quality targets. To accelerate the change in on-ground management, improvements to governance, program design, delivery and evaluation systems are urgently needed. This will require greater incorporation of social and economic factors, better targeting and prioritisation, exploration of alternative management options and increased support and resources."

2. Current management actions will not meet the water quality targets. Revised targets have recently been developed for inclusion in the water quality element (the *Reef 2050 Water Quality Improvement Plan*) of the *Reef 2050 Long-Term Sustainability Plan* (Brodie et al. 2017). Targets have now been set for the 35 individual catchments of the GBR, and for the whole of the GBR (Queensland Government 2018). The current rate of progress towards the new targets (Queensland Government 2017; Waterhouse et al. 2017; Eberhard et al. 2017; Brodie et al. 2019) is inadequate to meet the targets by 2025 (including a 25% aggregated reef wide reduction target for fine suspended sediment and a 60% reduction target of dissolved inorganic nitrogen). The Australian and Queensland government's investment of $763 million from 2013–2022 to improve water quality entering the reef (Queensland Government 2018), has been inadequate to reach the 2050 Plan targets. It is also known that long time lags, following management interventions, will unfold before sediment and nutrient loads are reduced from river discharge points. This time-frame is a serious issue in erosion management in the rangelands, where gully and streambank repair may take

decades to become effective (Bartley et al. 2014a,b). However, the Queensland regulatory proposals will substantially improve the likelihood that the 2025 Reef wide reduction targets will be met by providing a pathway to eliminate high risk practices attributed as the main source of poor water quality in the GBR.

3. Voluntary management regimes alone are not sufficient to meet water quality targets. A system of voluntary "Best Management Practice (BMP)" was introduced as the centrepoint of the Queensland Government's 2012 – 2015 strategy to boost agricultural productivity and help protect the GBR e.g. the *Smartcane System* for cane cultivation. This strategy was funded to the extent of $13 million over this period but with limited uptake by farmers. While progress towards accreditation has been slow, accreditation in sugarcane has increased from 5% of the cane area in 2017 to 13% in 2018 to 21% in 2019 (Deane et al. 2018; Queensland Government 2019). Accreditation requires independent assessment of compliance and the completion of three critical modules, (a) Soil health and nutrient management; (b) Irrigation and drainage management; and (c) Weed, pest and disease management.

Across the globe, management approaches that have resulted in measurable reductions in agricultural pollution to coastal ecosystems and an improvement of the marine ecosystem at risk have all taken integrated approaches, inclusive of a strong regulatory component (Brodie et al. 2019). Thus, it is likely that voluntary approaches alone will not be sufficient to achieve the required targeted reductions in pollutant loads to GBR marine waters (Kroon et al., 2014, 2016). A strong regulatory component will be required for the 2050 Plan targets to be achieved (Brodie and Pearson, 2016; Kroon et al., 2014, 2016). The Queensland Government's regulatory proposals fill this gap in the current governance and management of GBR water quality.

4. Alternative pathway for producers to meet regulatory requirements through accreditation against a recognized BMP program is viable. Runoff from agriculture in Queensland is inadequately regulated. All other industries in Queensland that discharge wastewater to aquatic systems are regulated. These include, for example, ports, sugar mills, aquaculture, sewage treatment plants and metal refineries. Although these discharges are primarily point sources, drainage from many cropping systems (e.g. sugarcane) also drain to a single discharge point, and hence could also be similarly regulated. However, regulating small farming enterprises does present significant socio-economic and cultural repercussions for communities in GBR catchments. To allow for these issues, the Bill provides an alternative pathway for producers to meet regulatory requirements through accreditation against a recognized BMP program.

Currently, in the major industries of sugarcane cultivation and rangeland grazing, a large majority of farmers are still using Moderate and High risk practice categories (Queensland Government 2018). In sugarcane cultivation, only 18% are in the Low and Moderate risk categories. Farmers using High and Moderate-High risk practices are the least likely to be involved in non-regulatory programs such as those using incentives, extension and education. This is partly due to the size and profitability of the farm. It is estimated that 70% of cane farms are less than 125 hectares in size, and account for 30% of total production. Rates of return on capital (excluding capital gains) for the smallest 25% of farms are around a negative 9% (Hamman and Deane 2018). Under these conditions, many farmers cannot afford to participate in, for example, incentive programs, where a co-contribution from the farmer is required to match the government grant. The Queensland Government's regulatory proposals provide the "backstop" to compel high risk farmers to convert to lower risk practices, while also allowing for the widely differing socio-economic circumstances of farmers. The Bill achieves this by providing an avenue for customized development of programs through the "alternative pathway for meeting regulatory requirements through accreditation against a recognized BMP program (or like program)".

5. Financial support, and a regulatory component, are essential. The current Bill is an excellent step towards protecting the GBR by providing the necessary regulatory component to meet the 2050 targets. Adequate funding is also a key requirement for successful management of fine sediment, nutrients and pesticide discharge to the GBR. The funding required to bring all farms up to low or moderate risk practice status and to meet the targets is approximately 10 billion dollars over ten

years (Alluvium 2016). This funding is of particular importance in reducing erosion in the rangelands, where improving on-farm practices in beef grazing will not immediately reduce gully erosion. Only direct works on gullies, which involve engineering and large scale funding, are effective in the short term (Wilkinson et al. 2018). Thus, not only is a mix of management approaches, including regulation, necessary but also large scale investment.

Given the prime importance of climate change impacting on GBR ecosystems, the Bill must be combined with strong action to reduce greenhouse gas emissions in Australia and globally to achieve adequate protection of the GBR (Hughes et al. 2015).

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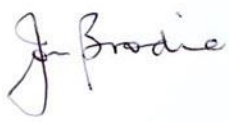

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