

## Science-based policy plan for the Great Barrier Reef Discussion: Advancing Climate Action in Queensland

1st September 2016

To the honourable members of the Queensland Government,

On behalf of the Australian Coral Reef Society, please consider the following comments, endorsements and recommendations in relation to the Queensland Government's discussion paper, entitled '*Advancing Queensland Climate: Making the transition to a low carbon future*'<sup>(1)</sup>.

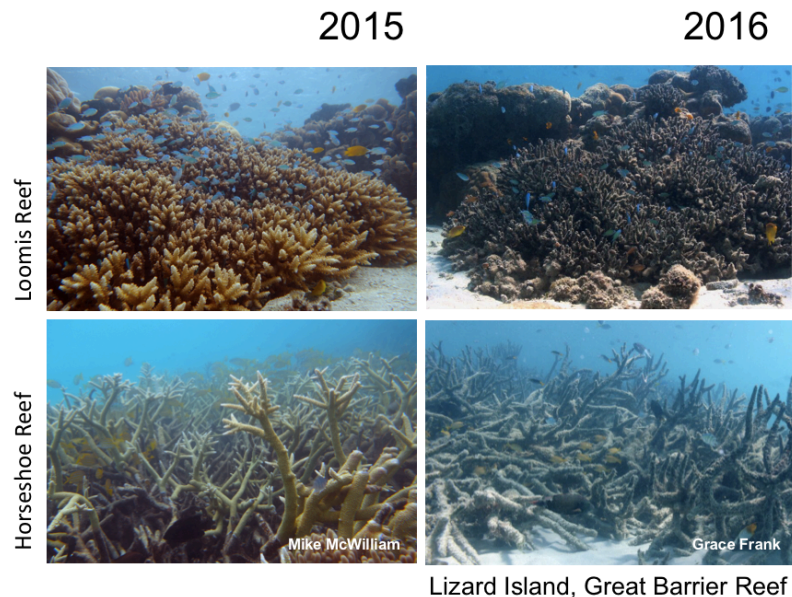
The global temperature rise of  $\sim 1^{\circ}\text{C}$  over the last two centuries<sup>(2)</sup> has driven the Great Barrier Reef into a new era of recurrent **mass bleaching events**. During each abnormally warm year, corals and other organisms are pushed beyond their **thermal limits**, leading to **widespread mortality**<sup>(3)</sup>. Mass bleaching has occurred on the Great Barrier Reef three times in the last eighteen years, significantly **altering** the historic pattern of **reef growth**<sup>(4)</sup>. Since corals take decades to grow to their normal size, the **regularity** of bleaching is causing **permanent damage**, as reefs are not given enough **time to recover** between events<sup>(5)</sup>. These dramatic changes are unfolding alongside **long-term** climate-forced shifts in the **survival of reef species**, not only driven by increasing temperatures, but also increasing ocean acidification and storm intensity<sup>(6)</sup>. These changes, in conjunction with compounding **local stressors**<sup>(7,8)</sup>, constitute a **severe threat** to the foundations of the reef, including its unique biodiversity, and multi-billion-dollar industries<sup>(9)</sup>.

Queensland's proximity to this iconic, valuable, and climate-sensitive ecosystem gives us a unique responsibility in climate change mitigation, both in Australia, and worldwide. Given the observed damage caused by a temperature increase of  $\sim 1^{\circ}\text{C}$  above pre-industrial levels, we urge all possible actions to keep future warming below the  $1.5^{\circ}\text{C}$  target set by the Paris Agreement<sup>(1)</sup>. The following proposed initiatives will act to reduce the severity of climate-inflicted damage on reefs, helping to avoid total ecological collapse<sup>(10)</sup>.

### The ACRS strongly supports the following proposed actions:

- A commitment to more ambitious targets to reduce Queensland's greenhouse gas emissions. We support the Independent Climate Change Authorities proposed target of a 45 - 63% reduction of 2005 emission levels by 2030<sup>(11)</sup>, double the current national target<sup>(12)</sup>.

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- A transition to a clean-energy, low-carbon economy, with the long-term aim of 100% renewable energy by 2050. We support the proposed initiatives that transform the energy, housing, transport and land-use industries towards a more sustainable, decarbonised future <sup>(1)</sup>.
- To be the second Australian state to sign the 'Under 2 MOU,' put forward by the subnational global climate leadership memorandum of understanding <sup>(13)</sup>. We hope the agreement will promote ambitious climate actions within Queensland, and commit our state to the **under 2°C** warming target.
- Given the inevitability of future climate-related impacts to the Great Barrier Reef, we support the innovation and additional funding required for improving water quality <sup>(14)</sup>. We also urge a complete stop to port expansions, and a ban on capital and maintenance dredge dumping <sup>(8,15)</sup>. Each of these acts will increase the resilience of the reef to future climatic disturbances <sup>(16)</sup>.

**Furthermore, we propose the following additional actions:**

- We emphasise that by extracting and exporting fossil fuels to be burnt elsewhere, Queensland must take responsibility for climate-inflicted damage to its coral reefs. We support a move towards a "*keep it in the ground*" policy for fossil fuels, without giving credence to the proposed notion that if we do not trade it, someone else will <sup>(1)</sup>. This applies to thermal coal, including the Galilee Basin mines, for which the associated emissions and infrastructure will cause irreversible damage <sup>(7)</sup>. This also applies to the expanding industry of extracting and burning shale and coal seam gas, which carries a carbon footprint comparable to that of thermal coal <sup>(17)</sup>.

Kind Regards,



**Dr Andrew Hoey**

President, Australian Coral Reef Society

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**References:**

1. Advancing Queensland Climate: Making the transition to a low carbon future (2016), Queensland Government (viewed August 2016) <https://www.getinvolved.qld.gov.au/gi/consultation/3000/view.html>
2. IPCC, 2014: Climate Change 2014: Synthesis Report. [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5\\_SYR\\_FINAL\\_SPM.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf)
3. Williams, Ernest H., and Lucy Bunkley-Williams (1990). "The world-wide coral reef bleaching cycle and related sources of coral mortality." <http://www.sil.si.edu/DigitalCollections/atollresearchbulletin/issues/00335.pdf>
4. Lough, Janice M., and Neal E. Cantin (2014). "Perspectives on massive coral growth rates in a changing ocean." <http://www.biolbull.org/content/226/3/187.full>
5. Johns, K. A., K. O. Osborne, and M. Logan (2014). "Contrasting rates of coral recovery and reassembly in coral communities on the Great Barrier Reef." <http://link.springer.com/article/10.1007/s00338-014-1148-z>
6. Great Barrier Reef Marine Park Authority (2012). "Climate Change Adaptation: Outcomes from the Great Barrier Reef Climate Change Action Plan 2007–2012" <http://hdl.handle.net/11017/1139>
7. Hughes, Terry P., Jon C. Day, and Jon Brodie. "Securing the future of the Great Barrier Reef." <http://www.nature.com/nclimate/journal/v5/n6/full/nclimate2604.html>
8. ACRS (2016), Science-based policy plan for Australia's Coral Reefs <http://www.australiancoralreefsociety.org/submissions>
9. Stoekl et. al. (2016). A new approach to the problem of overlapping values: A case study in Australia's Great Barrier Reef. <http://www.sciencedirect.com/science/article/pii/S2212041614001077>
10. Hoegh-Guldberg, Ove, et al (2007). "Coral reefs under rapid climate change and ocean acidification." <http://science.sciencemag.org/content/318/5857/1737>
11. Climate Change Authority (2015), Some Observations on Australia's Post 2020 Emissions Reduction Target (viewed August 2016) <http://www.climatechangeauthority.gov.au/sites/prod.climatechangeauthority.gov.au/files/files/CFI/CCA-statement-on-Australias-2030-target.pdf>
12. Australian Government (2016), The Australian Government's Action On Climate Change (viewed August 2016), <https://www.environment.gov.au/climate-change/publications/fact-sheet-australian-governments-action-climate-change>
13. Subnational Global Climate Leadership Memorandum of Understanding (2015) Under2MOU (viewed August 2016), <http://under2mou.org/>
14. Brodie & Pearson (2016) Ecosystem health of the Great Barrier Reef: Time for effective management action based on evidence. <http://www.sciencedirect.com/science/article/pii/S0272771416301469>
15. ACRS (2016), Science-based policy plan for the Great Barrier Reef: Comments on reef policy plans in the 2016 election <http://www.australiancoralreefsociety.org/submissions>
16. Hughes, Terry P., et al (2003) "Climate change, human impacts, and the resilience of coral reefs." <http://science.sciencemag.org/content/301/5635/929>
17. Howarth, Robert W., Renee Santoro, and Anthony Ingraffea. "Methane and the greenhouse-gas footprint of natural gas from shale formations." <http://link.springer.com/article/10.1007/s10584-011-0061-5>