



Australian Academy of Science Submission on the Great Barrier Reef Coastal Ecosystems Position Statement

The Australian Academy of Science welcomes the opportunity to comment on the draft Great Barrier Reef Coastal Ecosystem Position Statement (the Position Statement). The Academy promotes scientific excellence, disseminates scientific knowledge, and provides scientific advice for the benefit of Australia and the world. The Academy has drawn on the expertise of its distinguished Fellows with expertise in coral reef science, environmental policy, and conservation planning to prepare this submission. The Academy would be pleased to provide further information or explanation of this submission.

The Great Barrier Reef Marine Park Authority has released the Position Statement for public consultation. The purpose of the Position Statement is to raise awareness of the role coastal ecosystems play in maintaining the health of the Great Barrier Reef; to establish principles for protecting, managing and restoring coastal ecosystems for the purpose of improving the health of the Great Barrier Reef; and to promote the use of specific decision-support tools to inform catchment management to improve outcomes for coastal ecosystems. The Position Statement provides context and principles for maintaining and improving the capacity of coastal ecosystems to support the health of the Great Barrier Reef, and the social and economic benefits derived from a healthy Reef. The Academy welcomes the intent and thrust of the Position Statement, and the goal of improving the health of the Great Barrier Reef.

General comments

The long-term goal of Great Barrier Reef management, previously expressed in the *2050 Reef Sustainability Plan*,¹ is to improve the Outstanding Universal Value of the Reef every decade between now and 2050. The Academy considers this vision may no longer be possible given the bleaching of two-thirds of the shallow-water corals in the central and northern Great Barrier Reef. The Academy is concerned the Great Barrier Reef may no longer be able to return to its condition of 1981, when it was inscribed as a World Heritage Area.² The goal therefore should be to sustain a functioning Reef into the future, recognising that the Great Barrier Reef in a warmer world will likely be different from the recent past.³ The Position Statement should reflect this reality.

¹ The Reef 2050 Plan. <http://www.environment.gov.au/marine/gbr/long-term-sustainability-plan> (Accessed November 2017)

² Reef 2050 Plan, Independent Expert Panel – Communiqué 5 May 2017. <http://www.environment.gov.au/system/files/pages/abff0d5e-b94d-4495-b79b-90dc52274f69/files/expert-panel-communication-5may2017.pdf> (Accessed November 2017)

³ See: Hughes, TP, JT Kerry, M Álvarez-Noriega, JG Álvarez-Romero, KD Anderson, AH Baird, RC Babcock, et al. 2017. "Global warming and recurrent mass bleaching of corals." *Nature* 543 (7645): 373-377. doi:10.1038/nature21707; Hoegh-Golberg, Ove. 2012. "The adaptation of coral reefs to climate change: Is the Red Queen being outpaced?" *Scientia Marina*. doi:10.3989/scimar.03660.29A..

In addition, it must be noted that reef scientists regard climate change as an active threat to the health of the Great Barrier Reef and its supporting ecosystems, that is currently unfolding.

The Position Statement needs to be clear on the scope of the definition of “coastal ecosystems”. It is not clear from the Position Statement (a) how much of the Great Barrier Reef World Heritage Area or of the Great Barrier Reef Marine Park are regarded as coastal, (b) how far inland the terrestrial (coastal) ecosystems extend, or (c) whether the definition of coastal ecosystems includes or excludes coastal urban areas and ports. The Academy prefers a broader, descriptive definition akin to the one used at the Great Barrier Reef Marine Park website,⁴ which distinguishes 14 components of coastal ecosystems:

“There are 14 coastal ecosystems that are important to the function of the Reef: coral reefs, lagoon floors, islands, open water, seagrass, coastline, estuaries, freshwater wetlands, forested floodplains, heath and shrublands, grass and sedgeland, woodlands, forests, and rainforests.”

It would also be useful to provide a map of the areas considered to be within the scope for the Position Statement.

The Position Statement should also be clear on the ongoing nature of stressors on the Great Barrier Reef. While the draft Policy Statement acknowledges many of the ongoing stressors to coastal ecosystems (e.g. land clearing, coastal development), additional stressors should be identified. For example, the impacts on the Great Barrier Reef World Heritage Area of port development, reclamation of shallow-water habitat, recreational and commercial fishing, dredging, dumping of maintenance dredge spoil, ship anchoring, and many other impacts of escalating shipping – are not referred to in the draft document. Furthermore, the aforementioned impact of the recent unprecedented marine heatwaves on coastal ecosystems should be identified as an ongoing stressor.

The Academy recognises the concerns about reclamation of shallow coastal waters, in and adjoining the Great Barrier Reef World Heritage Area, raised by the Reactive Monitoring Mission conducted by IUCN and the World Heritage Centre in 2012. The IUCN wrote “...continued reclamation is a specific concern in relation to integrity”, and “...a number of reclamations...are substantial, and clearly impact directly attributes of Outstanding Universal Value”.⁵

The Position Statement is inconsistent in its use of the terms “ecosystem function” and “ecosystem services”. The concept of ecosystem services in the scientific literature refers to the benefits of reefs to people, such as fisheries, the tourism industry, dilution of pollution, or coastal protection. This is distinct from ecosystem processes, which are processes the ecosystem performs by its nature. The definition used at the coastal systems website:

*Coastal ecosystems provide a range of ecological services that support the Reef, including water distribution, food and habitat, and nutrient and chemical cycling.*²

⁴ Great Barrier Reef coastal ecosystems. <http://www.gbrmpa.gov.au/about-the-reef/great-barrier-reef-coastal-ecosystems>

⁵ Reactive Monitoring Mission to the Great Barrier Reef World Heritage property (Australia). <http://whc.unesco.org/en/decisions/4418> (Accessed November 2017)

...is more properly a description of ecosystem processes than ecosystem services. This confusion between definitions risks obscuring the Position Statement, by introducing a lack of clarity.

Specific Recommendations:

- Point 3 refers to climate change as *“the greatest long-term threat to the health of the Great Barrier Reef”*. This wording understates the contemporary impact of global warming, following coral bleaching events in 1998, 2002, 2016 and 2017. Climate change is a clear and present challenge to the ongoing health of the Great Barrier Reef.
- Review terms that refer to *“history”* and *“legacy”*, to better acknowledge that almost all stressors to the Great Barrier Reef remain today, and most of them continue to escalate—for example, land clearing, maintenance dredging, ship anchoring, and coastal recreational fishing pressure. Point 4 acknowledges coastal development is *“still causing losses”*, but this statement is contradicted elsewhere (e.g. Point 5). The Position Statement should acknowledge that intensive, costly efforts to reduce pollution loads from the Catchment to the Reef have had limited success.⁶
- Consider rephrasing Point 8, which states that in the Northern Great Barrier Reef *“coastal ecosystems”* are in better condition than elsewhere. Assuming *“coastal”* includes fringing reefs and nearshore coral habitats, these ecosystems include areas that were seriously damaged by coral bleaching in 2016 and 2017.
- In Point 10, acknowledge the goal of the 2050 Plan to restore the Outstanding Universal Values of the Great Barrier Reef decade by decade is no longer tenable following back-to-back bleaching events.
- In the General Principles section, add a point to the effect that prevention is better than cure, consistent with the Great Barrier Reef Marine Park Act.
- Point 18 should be modified to acknowledge the option of avoiding environmental damage through better management of stressors, rather than the current emphasis on *“repair”* of damage that has occurred through poor regulation. The text should reflect the clear hierarchy of the Great Barrier Reef Marine Park Act, which prioritises *“the long term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region”*, and then, *“so far as is consistent with the main object”*, allows for other objectives including *“the ecologically sustainable use of the Great Barrier Reef Region”*.
- Distinguish clearly between *“ecosystem services”* and *“ecosystem functions”* throughout the document. In particular, clarify Point 25, where the substitution of *“ecosystem services”* for *“ecosystem functions”* is particularly confusing. With respect to Point 25b, it is not a goal of the Great Barrier Reef Marine Park Act to *“maintain economic profitability”*.
- In Point 25f, the Academy suggests that monitoring of drivers or stressors, including so-called *“legacy”* drivers, should be included as a subject of research and management.

⁶ Reef 2050 Water Quality Improvement Plan, Report Card 2016. <http://www.reefplan.qld.gov.au/measuring-success/report-cards/2016/> (Accessed November 2017).

- Add a map of the inner Great Barrier Reef and the coastal terrestrial system to the Policy Statement, identifying the geographic location of the ecosystem types referred to, and identifying which areas are covered by the Position Statement
- If any further coastal reclamation is proposed, such as the port of Townsville, the Academy strongly recommends adhering to the requirements of sections 163, 164 and 165 of the UNESCO Operational Guidelines for the Implementation of the World Heritage Convention⁷ which requires prior notification and approval of any modifications to the boundaries of a World Heritage property.

For further information on anything in this submission, please contact Dr Stuart Barrow, Senior Policy Analyst, at stuart.barrow@science.org.au.

⁷ The Operational Guidelines for the Implementation of the World Heritage Convention. <http://whc.unesco.org/en/guidelines/> (Accessed November 2017)