Statement of concern to the Australian Government, Director of National Parks: Feedback on the draft management plan for Australian Marine Parks

10 September 2017

Ms Sally Barnes
Director of National Parks
Australian Marine Parks Management Planning Comments Department of the Environment and Energy Reply Paid 787
Canberra ACT 2601
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Dear Ms Barnes,

Thank you for the opportunity to provide feedback on the management of Australian Marine Parks for the subsequent decade. As an emerging graduate of Environmental and Marine Science and Management majoring in Fisheries[1], I am concerned with the balance between environmental protection and areas allocated for fishing proposed in the draft management plan. Here, I address issues associated with a) decreasing high protection, no-take (green) zones, and b) increasing multiple use (yellow) zones. Further discussion will be made on the major stressors projected to impact our coastal environment over the forthcoming decade, and the interplay of these stressors with the proposed new zoning.

In the Australian 2016 State of the Environment report, the major drivers of environmental change were attributed to population and economic growth coupled with climate change (Jackson et al. 2017). These stressors, exasperated over time, necessitate management strategies and forward planning that will uphold the integrity of the Australian marine environment now and into the future.

> ***"Healthy coast and sea managed for the greatest wellbeing of the community, now and into the future" – MEMA vision***

[1] National Marine Science Centre – Coffs Harbour NSW
Affiliated with Southern Cross University – Lismore NSW

Economic and social benefits depend on healthy coastal and marine ecosystems (GBRMPA 2014). Reducing high-level protection zones will have a direct impact on these systems, detract from our international reputation as leaders in marine management, and create a precedent that will be extremely hard for future managers of our marine parks to change.

Reducing the spatial extent of 401 008 km^2 of no-take marine reserves (NTMR) fails to align with the principals of Comprehensive, Adequate, and Representative (CAR) protection – the framework in which ensures sufficient biodiversity and conservation is achieved and maintained. The benefits between NTMR and multiple use zones differ considerably and should therefore not be overlooked. At minimum, NTMRs facilitate biodiversity conservation and protection by maximising representation of species and habitats; protect threatened species and habitats (Fernandes et al. 2005); and increase habitat resilience, thus have quicker rates of recovery against cumulative impacts such as climate change (Bates et al. 2014). After tropical cyclone Hamish passed through the GBR and damaged large areas of coral reef habitat, significantly higher coral trout biomass were found in NTMRs compared to fished areas (Emslie et al. 2015). These findings have important implications on the role of NTMRs and their ability to assist in the recovery of fish stocks after major disturbance events.

Advantages of NTMRs surpass the spatial boundaries we place upon them. A large body of scientific research demonstrates multiple flow-on-effects from harvest refuge within NTMRs by increasing fish stocks within boundaries; providing adult spill-over into fished areas; and supplying a source of recruits that sustain fisheries (Halpern et al. 2009; Sciberras et al. 2015). The commercially exploited coral trout fishery on the Great Barrier Reef demonstrates the economic benefit of NTMZs, where during a six-year period populations declined by 41 % on reefs open to fishing. Conversely, stocks were maintained in NTMRs (Miller et al. 2012). Economic payoffs of NTMRs to fisheries are largely attributed to the high levels of resilience during disturbance events. Moreover, the payoff benefits of NTMR parallel the size and frequency of the disturbance (Grafton et al, 2006). Therefore, resilience is an extremely important feature of NTMRs in the face of climate change, in which the frequency and intensity of weather events are expected to increase over time (Keywood 2017).

Comparable to the offshore oil and gas industry total of $ 30 226.3m, marine tourism and recreational activities contribute $28 054.3m to economic output among marine resource activities and industries – almost six times the contribution of total fishing activities[2] (AIMS 2016). A large component of the marine tourism industry focuses on natural habitats and biodiversity, therefore is considered a key stakeholder group for NTMRs. Not only do NTMRs act as a focal point for marine tourism, they are a tool for increasing public awareness and education.

The proposed loss of NTMRs appears to be the consequence of a 19% increase of areas whereby fishing activities are allowed, making 97 % of our total near-shore (within 100 km) waters are open to recreational fishing. Although the assumption single fishers are low in impact, the cumulative effect of millions of fishers is immense, and can exploit larger catch quantities then commercial fishing (West et al. 2015). During the DPI fishing survey of 2013/2015 in NSW alone, recreational catches exceeded commercial landings for 5 of the 10 key species examined[3] (West et al. 2015). Unlike commercial catch data, recreational catch data are challenging and costly. Therefore, the extent of recreational landings is likely to be underestimated. Additional impacts from recreational fishing include changes in ecosystem trophic cascades, habitat modification, wildlife disturbance, nutrient inputs, marine pollution and loss of fishing gear (Lewin W-C et al. 2006).

Given the proposed zoning is to be implemented over a ten-year time frame, it is absolutely essential to consider how the major stressors projected to impact our marine environment will change during this time. Australia's population is estimated to surpass 28 million by the year 2030 – equivalent to an 18.8 % increase in 15 years (UN DESA, 2015). The greatest impact on the function and services of our natural resources is anthropogenic-associated pressures. Thus, the ability of marine ecosystems to withstand these pressures depends on how we manage our population.

Climate change is driving significant uncertainty in ocean health. What *is* certain, is demonstrated through massive coral bleaching events; tropicalisation processes, changing

[2] Total of $4662.5m including marine-based aquaculture; commercial wild capture fisheries; and recreational fishing

[3] 71% of the total harvest of Dusky Flathead; 67% for Sand Flathead; 63% for both Mulloway and Tailor; and 52% for Yellowtail Kingfish. The recreational catches of bream, Sand Whiting and Snapper were slightly lower than commercial landings (ranging from 40-49% of the total harvest).

the distribution of species; sea-level rise, drowning wetlands, coral reefs and seagrass meadows; and ocean acidification (Hughes et al. 2003). The significantly higher resilience of marine ecosystems within NTMRs is therefore crucial in the face of climate change. Moreover, this resilience has social and economic benefits, such as the replenishment of fish stocks and tourism focal points.

No take marine reserves are the best protection we can provide for our marine environment. Over temporal scales, increased pressures necessitates increased resilience, thus it is essential that adequate NTMRs be instilled into our marine reserve framework, for the greatest wellbeing of the community, now and into the future.

Best regards,

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References

Australian Institute of Marine Science (AIMS) (2016) The AIMS index of marine industry. Australian Government. http://www.aims.gov.au/documents/30301/0/AIMS+Index+of+Marine+Industry+2016/f2f7f8f3-6ae3-4094-b8d4-cb8aa90f5ae1. Accessed 9 September 2017

Bates AE, Barrett NS, Stuart-Smith RD, Holbrook NJ, Thompson PA, Edgar GJ (2014) Resilience and signatures of tropicalization in protected reef fish communities. Nat Clim Change 4: 62-67

Emslie MJ, Logan M, Williamson DH, Ayling AM, MacNeil MA, Ceccarelli D, Miller IR, et al. (2015) Expectations and outcomes of reserve network performance following re-zoning of the Great Barrier Reef Marine Park. Curr Biol 25(8), 983-992

Fernandes L, Day JON, Lewis A, Slegers S, Kerrigan B, Breen DAN, Innes J, et al. (2005) Establishing representative no-take areas in the Great Barrier Reef: large-scale implementation of theory on marine protected areas. Conserv Biol 19(6), 1733-1744

Grafton RQ, Kompas T, Van HP (2006) The economic payoffs from marine reserves: resource rents in a stochastic environment. Econ Rec 82(259), 469-480

Great Barrier Reef Marine Park Authority (GBRMPA) (2014) Great Barrier Reef Outlook Report 2014. GBRMPA Townsville. http://hdl.handle.net/11017/2855. Accessed 9 September 2017

Halpern BS, Lester SE, Kellner JB (2009) Spillover from marine reserves and the replenishment of fished stocks. Environ Conserv 36(4), 268-276

Hughes TP, Baird AH, Bellwood DR, Card M, et al. (2003) Climate change, human impacts, and the resilience of coral reefs. Science 301: 929-933

Jackson W, Argent R, Bax N, Clark G, Coleman S, Cresswell I (2017) Australia: State of the Environment 2016: Overview, independent report to the Australian Government

Minister for the Environment and Energy. Australian Government Department of Environment and Energy, Canberra https://soe.environment.gov.au/sites/g/files/net806/f/soe2016-overview-launch-version328feb17.pdf?v=1488792535. Accessed 9 September 2017

Keywood M, Hibberd M, Emmerson K (2017) Australia state of the environment 2016: atmosphere, independent report to the Australian Government Minister for the Environment and Energy. Commonwealth of Australia. https://soe.environment.gov.au/sites/g/files/net806/f/soe2016-atmosphere-final-web-v3.pdf?v=1499655757 Accessed 9 September 2017

Miller I, Cheal AJ, Emslie MJ, Logan M, Sweatman H (2012) Ongoing effects of no-take marine reserves on commercially exploited coral trout populations on the Great Barrier Reef. Mar Environ Res 79, 167-170

Sciberras M, Jenkins SR, Mant R, Kaiser MJ, Hawkins SJ, Pullin AS (2015) Evaluating the relative conservation value of fully and partially protected marine areas. Fish Fish 16(1), 58-77

United Nations, Department of Economic and Social Affairs Population Division (UN DESA) (2015) World Population Prospects: The 2015 Revision, Key Findings and Advance Tables. https://esa.un.org/unpd/wpp/publications/files/key_findings_wpp_2015.pdf Accessed 9 September 2017

West LD, Stark KE, Murphy JJ, Lyle JM, Ochwada-Doyle FA (2015) Survey of recreational fishing in New South Wales and the ACT, 2013/14. http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0011/598628/West-et-al-Survey-of-rec-fishing-in-NSW-ACT-2013-14-2016_03_02.pdf Accessed 9 September 2017

Lewin W-C, Arlinghaus R, Mehner T (2006) Documented and Potential Biological Impacts of Recreational Fishing: Insights for Management and Conservation. Rev Fish Sci 14: 305-367