



July 2020

Australian Coral Reef Society (ACRS) comments on the Draft Policy on Great Barrier Reef Interventions (dated 8th November, 2019).

The ACRS is the world's oldest coral reef society with a membership of over 250 coral reef scientists and managers. The ACRS has been at the forefront of coral reef research since 1922 and contributed significantly to our understanding of Australia's coral reefs, bringing conservation issues and solutions to the attention of governments and the general public. The Australian coral reef science community has a wide range of opinions on the subject of interventions and, as such, the ACRS welcomes the opportunity to comment on the Draft Policy on Great Barrier Reef Interventions.

We acknowledge that the health of the Great Barrier Reef (GBR) is in decline and that interventions can potentially support and build resilience by maintaining key functions, habitats and species of this ecosystem. Given the pace of environmental change and the rapid adoption of restoration-based interventions to maintain or improve the condition of other habitats (including reef connected systems such as mangroves and terrestrial catchments), we agree that an informed policy to help guide the need to explore – and potentially implement – what approaches can work at different scales is much needed and extremely timely.

Our submission begins by raising some broad principles regarding interventions before specifically addressing some of the numbered points raised in the draft policy.

Principles:

We broadly support the draft policy and largely agree with the rationale for the perceived need for interventions. We agree that restoration activities can provide benefits to the GBR, particularly for areas of the reef that have been degraded. Where restoration is feasible, possible and unlikely to result in any unintended consequences, we believe that a restored reef is preferable to a degraded one. Nevertheless, we emphasise that in some places, the GBR is still in good condition in terms of the population size of its hard coral communities and associated biological diversity. In such places, the coral communities show adequate capacity for recovery and it therefore follows that most interventions are likely unnecessary at this stage. Given the risk and cost of many interventions, caution must be taken when intervening with this iconic reef system, a globally renowned World Heritage Site.

We would like to draw attention to the precautionary principle regarding the application of technological innovations in natural environments that can potentially causing harm to nature when extensive scientific knowledge on the matter is lacking. The principle emphasizes caution, pausing and review before leaping into new innovations that may prove disastrous. There is a need for decision-makers (in this case, GBRMPA and possible others) to anticipate harm before it occurs. We strongly suggest that it should be the responsibility of those proposing an intervention (i.e. the



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activity proponent) to establish that the proposed activity will not, or is very unlikely to, result in significant unintended and potentially harmful outcomes or side-effects to the GBR. Harmful activities might include those that result in declines in biodiversity and/or biomass on the reef. The risk of potential harm posed to the GBR should be weighed against any benefits to be gained from a proposed intervention action.

We feel it critical to ensure transparency within the policy on the details of who will make decisions on which intervention activities will be allowed to go ahead, and therefore suggest that the policy provides further details about the identity of key decision makers. Whilst we understand that GBRMPA permit system is overseen by various staff members, including those that may be tasked exclusively with handling many complex restoration-type permits, it is critical that decision making is consistent and implements suitable evidence-based risk analyses, where appropriate, through inclusion of external experts. As well as requesting clarity within the policy on how intervention permit applications are decided, we recommend that an unbiased, external academic expert panel should be established to decide on permitting interventions. Such a panel would benefit from the inclusion of experts from more established restoration fields. Of particular concern is the danger that an unforeseen consequence might occur from an intervention that received approval, but that had potentially foreseeable damaging consequences that were not identified in the risk assessment process.

We are concerned that research may be driven with the desire to ‘test’ interventions that are unfeasible to implement, either in an economic or a logistic sense, particularly given the enormous geographic footprint of the GBR (in instances where interventions are intended for wide application). While some interventions may prove ‘successful’ as a proof of concept, this does not ensure the feasibility of their widespread application. For example, if a proposed modification to a hard coral community is intended to increase the resilience of a population, it must be demonstrated that the modification has an effect on the overall population. This is difficult to establish and unlikely to occur in a well-connected system like the GBR.

We would further recommend that the consideration of any permit applications includes longer-term feasibility as a measure of risk analysis. Throughout the document, we suggest that further transparency is needed in the use of terms referring to time-frames, e.g. provide approximate time ranges to define “short term” and “long term” and , where necessary, use these to further explain aspects of the policy.

The use of small-scale pilot studies for interventions is mentioned several times in the draft policy. However, it would be useful to specify what is classified or considered as a “small-scale pilot study”. Some interventions – even at a small scale – may result in irreversible and large-scale changes that simply cannot be contained. For example, once new genetic material is released into a population, if it remains in the gene pool, this represents an irreversible change to the inheritable genetic material of the population. All proposed interventions that take the form of genetic manipulations may ultimately need to be treated separately from the other more mechanical interventions, like shading.



We note that the impacts the GBR is facing are often not limited to the GBR, but have been observed and managed on other Australian reefs, as well as global reefs further afield. Notwithstanding the unique physical, biological and environmental processes that shape the GBR in its locality, we believe that there is much to learn from international reef restoration or rehabilitation efforts. This is particularly the case with respect to proof of concept, which may make a profitable distinction between concepts that have been established elsewhere and newly initiated projects in terms of associated risk and costs. There is much to learn from challenges faced, and solutions implemented, in other bioregions and seeking advice from global coordination bodies for reef restoration – notably the Coral Restoration Consortium – may support policy optimisation and implementation

Similarly, we suggest that the policy should incorporate some of the long-standing intervention principles that have been established for restoration work in other ecosystems. There is a good framework developed by the Society for Ecological Restoration that clearly outlines underpinning principles and concepts for guiding best practice in restoration (McDonald et al., 2016). For example, in terrestrial ecology, restoration is usually attempted relative to a reference ecosystem that acts as a baseline against which restoration progress can be monitored. Similarly, potentially harmful impacts of any intervention should be evaluated relative to a reference ecosystem. In both cases having a clearly defined reference system helps to determine whether change (positive or negative) is indeed due to the manipulation, or instead to some other factor. Other principles include identifying target system's key attributes, assisting natural recovery, drawing on relevant knowledge sources and encouraging stakeholder engagement throughout the process. There is limited engagement with these widely applicable intervention principles in the policy, which could be profitably improved from the incorporation of principles and concepts detailed above.

Throughout the document, the focus seems to be on the implementation of restoration and adaptation interventions themselves, as opposed to the scientific research required to assess the cost and effectiveness of the interventions. We feel that the policy document would benefit from a making a clear distinction between doing the science to facilitate intervention development and the implementation of the intervention itself.

Specific points

Below, we respond to the points as numbered in the draft policy:

Point 1: (and throughout) Use of the word “restoration” is unclear. As we understand it, the term means to ‘return the system back to its original state’, although the term can be defined in many ways, often with imprecision. Use of the term in the Policy must be clarified with reference to a proposed context (e.g. Martin, 2017). Recovering earlier ecological states for many reefs is not likely possible whilst the primary stressor (e.g. climate change) remains in place. This is usually (but not always) the goal of the actual activities proposed. Such ambiguity in key foundational terms could lead to misunderstandings relating to intervention activities between the scientific and management community. We suggest that further adding the term ‘rehabilitation’, alongside restoration and adaptation, and providing a clear definition for each, may help to make the policy



clearer. Use of language beyond restoration would be consistent with other fields employing interventions, e.g. in plant and forestry communities.

Point 5: We agree that human-induced climate change is the major source of disturbances that are compromising the GBR's future. We strongly encourage action to curb carbon emissions thereby relieving the immediate major stress on the reef, ahead of restoration following deterioration from impacts such as coral bleaching.

Point 6: The claim that investigating a strategic interventionist approach is now imperative is the central justification for the policy. This is a strong claim and we suggest that it needs to be tempered for a more realistic approach. For example, **Point 55** later on in the policy document acknowledges that it may be difficult to return sites to pre-disturbance levels.

Point 9 states that the role of the Authority is to, among other things, “potentially undertake restoration and adaptation interventions” and in **Point 34** states that “The Authority can undertake restoration and adaptation interventions as management activities”. In the event that GBRMPA takes on the role of an implementing agency, as well as the decision making Agency on intervention activity permits, we foresee a conflict of interest. A situation might arise in which GBRMPA is effectively granting their own permission. We therefore recommend oversight from an external scientific panel.

Points 12, 13 and 27: It is unclear how risk is fully evaluated – the need for this is recognised and seems to be assessed on a case-by-case basis, based on existing evidence and/or new pilot studies. The key concern at present is how longer-term ecological impacts (and associated ecosystem services) can be gauged as communities are manipulated. The policy states that in evaluating risk “measurable goals and concerns” are required (**point 32**) and so ensuring projects (and permits) are designed to capture risks fully over ecological scales. Clearly, the full details of how risk will be assessed are difficult to capture in a succinct policy document but links to a more expansive web resource detailing how this is achieved (and against what criteria) – and whether any specific consistent panels for assessing risk are in place – would be useful.

Point 12 mentions that interventions will be “open to public scrutiny”. How will the prescribed intervention be scientifically scrutinised? Will this be undertaken in a process that is separate or together with the public scrutiny? Overall, details on how the scientific community and experts will be engaged through these processes are lacking.

Point 18c states that “the Authority will provide strategic guidance and oversight [to guide] what interventions are deployed where and when” and “will determine when to start, modify and stop an intervention activity for the purposes of management” (**Point 16**). It is unclear how the authority plans to provide this guidance and whether a scientific expert advisory panel would be engaged.

Point 18.e and 54: These points, amongst other sections, mention “cost” but no detail is provided about how cost will be evaluated. Will GBRMPA require a version of a cost-benefit analysis for proposed projects at initial stages, or following small-scale pilot studies? Following on from our principle outlined above regarding feasibility of interventions, we suggest that a full scale cost



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benefit analysis should be undertaken early on in the process. Some recent intervention pilot studies (Doropoulos et al. 2019) demonstrate that proof of concept can be established, however, the cost-effectiveness of the intervention, in combination with the required scalability (Randall et al. 2020), may exceed the likely benefit.

Point 21: The policy states that the GBR is still resilient, and that GBRMPA recognises that this provides an opportunity to develop new interventions that are designed to help retain and facilitate this resilience. Again, we emphasise that the existing, remaining resilience of the reef also provides a strong argument to refrain from interventions to maintain resilience and ensure rapid natural recovery from disturbance events.

Points 33 onward and particularly 36 and 39: We agree that restoration/conservation efforts deemed essential or a priority should not be hindered by the GBR management zoning status. In particular, Point 39 is necessary to keep in this policy to ensure the success of restoration and conservation efforts, and we would request stronger wording around the need for adaptive GBR zones in regard to the changing health and conservation needs of the Reef.

Point 38b: We feel that the policy needs greater transparency around potential commercial benefits to be gained from interventions. The box states that coral nurseries and/ or gardening cannot be for commercial aquaculture; however, no mention is made of such activities for purely commercial gain (e.g. where justification of benefit at site is outweighed by benefits to businesses simply seen to be engaging in intervention activities). **Point 42** later adds to this confusion by stating that 'secondary commercial benefits' may be permissible.

Sincerely,

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