Sydney, 19th September 2018

NSW Marine Estate Management Authority
NSW Department of Primary Industries
Locked Bag 1
Nelson Bay NSW 2315

RE: Proposed Marine Park in Hawkesbury Shelf Marine Bioregion

The NSW branch of the Australian Marine Sciences Association (AMSA) appreciates the opportunity to comment on the proposed new marine park in the Hawkesbury Shelf Marine Bioregion (referred to below as the Sydney Marine Park). We also note, however, the recent announcement by the NSW Minister for Primary Industries Niall Blair of taking no-take sanctuary zones “off the table” as a management option in the proposed marine park.

We are disappointed and frustrated that this decision has been made before the end of the consultation period on Sept 27th, in what appears to be a response to the loudest voices in the community – fishers that oppose sanctuary zones – without giving due consideration to the wider community and submissions such as ours, representing the views and evidence from the scientific community.

AMSA is a professional society of over 800 members nationwide and over 200 in NSW. Our members are from universities and government agencies and have expertise spanning all disciplines related to marine science, with many having a particular focus on coastal or marine biodiversity and fisheries.

The following items summarise evidence-based views in relation to the design of a marine park that protects our marine resources while also securing fishing opportunities for future generations in the Hawkesbury Shelf bioregion, the most populated coastline in Australia.

In particular, the items below are based on recent scientific results from high profile Australian studies published in prestigious peer-reviewed journals including Nature and Science that are of direct relevance to the proposed Sydney Marine Park. These studies (listed below) all show clear and consistent beneficial impacts of establishing sanctuary zones.
1. There is clear evidence for fishing impacts in NSW and Australia

In shallow reefs, large fish species are declining globally around Australia and in NSW. A recent study shows that exploited fish populations in Australia have declined by an average of 33% between 2005 and 2015 (Edgar et al. 2018). In contrast, the same species have *increased* by an average of 25% in sanctuary zones, strongly suggesting that this downward trend is due to fishing. The spatial pattern of fishing impacts is strongest in NSW in the Sydney region (Stuart-Smith et al 2017)

In NSW *recreational fishing appears to have equally substantial impacts as commercial fishing*, as demonstrated in a recent study done to evaluate fishing in NSW and ACT commissioned by the NSW Department of Primary Industries (West et al. 2015). This study shows that for 10 species of direct interest to both recreational and commercial fishers (including bream, flathead, mulloway, tailor and others), the recreational sector took 49-71% of the total catch.

2. To manage the threats derived from fishing impacts, AMSA NSW strongly supports the establishment of a marine park that incorporates substantial no-take sanctuary zones in the Hawkesbury Shelf bioregion.

We understand the first proposal struck a compromise on the mix of sanctuary zones, special purpose zones and area outside the marine park. The initial proposal effectively reserved 2.4% for conservation of biodiversity, and 97.6% to be managed for fisheries outcomes. Including conservation zones made it 4.6% for conservation and 95.4% for fisheries management. Whilst the proposed percentage of sanctuary zones was a much needed and welcome improvement and a good start, it was too low to adequately conserve biodiversity in the bioregion.

We now find it difficult to comment on the new proposal, as it is unclear, and all the initial documents have been invalidated by the minister’s announcement this week. Nonetheless, it appears the new proposal effectively assigns 100% of the bioregion to fisheries management and 0% to the conservation of biodiversity. As scientists, and as part of the wider community, we struggle to comprehend such a prioritization.

Our support for the establishment of a network of no-take sanctuary zones is based on solid scientific studies that consistently show clear positive effects of well designed, enforced, no-take marine protected areas, which globally lead to greater fish biomass (Edgar et al. 2014).

One of the most consistent effects of sanctuary zones is an increase in the abundance of large individual fish. Globally, sanctuary zones increase the size of fish by 28% (Lester et al. 2009). Evidence from NSW shows how the abundance and size of snapper increased after protection from fishing in both the Port Stephens Great Lakes Marine Park (Harasti et al. 2018a) and in the Solitary Islands Marine Park (Malcolm et al. 2018) and there have been increases in fish size within sanctuary zones across all NSW marine protected areas in general (Coleman et al. 2015).

A study published in the prestigious journal *Science* earlier this year showed that the reproductive output of these larger fish is disproportionally greater than that of smaller fish (Barneche et al. 2018). This means sanctuary zones can provide great benefits to fish populations by providing a refuge for bigger mothers that reproduce more, benefiting not only protected reefs, but also the surrounding areas.
These studies are consistent with strong spill-over benefits of no-take zones, which have also been demonstrated using genetic tools in both temperate reef and tropical reserves (Harrison et al. 2012; Port et al. 2017).

*These studies show that well designed sanctuary zones contribute to healthier marine communities and more abundant fish populations and offer potential to contribute to neighboring areas, thereby benefiting all recreational users, including swimmers, snorkelers, divers and fishers, in the future.*

3. Partially protected areas are an inadequate alternative to sanctuary protection

AMSA understands that Minister Blair intends to continue the development of the marine park without the inclusion of any additional sanctuary zones. The implication here is that management objectives will be met using zones of partial protection. Unfortunately, partial protection from fishing (e.g. allowing certain types of fishing or allowing extraction of some species) is widely acknowledged in the scientific literature as an inadequate alternative to sanctuary protection, even when combined with fisheries management, producing inferior ecological outcomes in terms of biodiversity and in terms of abundance, biomass and body size of fish (Edgar et al. 2014, Costello & Ballantine 2015, Giakoumi et al. 2017). This has also been shown within NSW marine parks (Kelaher et al. 2014).

Of particular relevance to the Sydney region, a study has shown that although some small reserves are effective at protecting biodiversity (e.g. Cabbage Tree Bay Aquatic Reserve), most aquatic reserves in Sydney are undistinguishable from nearby unprotected areas due to their small size and partial protection, even though some have been in place for over 30 years (Turnbull et al. 2018). Minister Blair’s revised proposal threatens to perpetuate a legacy of failed reserves in the bioregion for years to come.

4. Marine reserves are not just about reducing harvest

The utility of spatial strategies like marine parks to manage a multitude of complex and interacting stressors facing coastal marine ecosystems was identified very early in the Marine Estate Management (MEMA) process, including in the Independent Scientific Audit of Marine Parks in NSW (Beeton et al. 2012).

The recommendation of this report, that existing research in this area supports the use of spatial management to mitigate multiple stressors (Section 2.3.2, pp 26), was adopted in the development of the proposed Sydney Marine Park which was designed to address 10 of the 32 priority threats to environmental assets within the bioregion (Table 2 of Hawkesbury Shelf Discussion Paper 1).

The Audit report highlights research suggesting biological communities contained within sanctuary zones have increased resilience to threats such as climate change, as demonstrated by recent studies (Bates et al. 2014). Climate change is ranked 7th in the Hawkesbury Shelf Priority threats list and was listed as one of the top four threats that can affect environmental, social and economic value by participants in the Marine Estate Community Survey (2014).

*To not consider sanctuary areas as part of the proposed marine park therefore undermines the management effort to deal with the realities of a multi-stressor world, and represents an abandonment of the principles of evidence-based policy upon which the MEMA process is based.*
5. There is wide support among the community for marine parks with sanctuary zones

In a study published earlier this year, Navarro et al. (2018) quantified social support from recreational fishers for sanctuary marine reserves, surveying fishers from ten Australian marine parks including the proposed Sydney Marine Park. Support for sanctuary marine reserves among recreational fishers was more than three times the opposition in all marine park regions except Sydney. **Australia-wide, most (63%) recreational fishers who fish in established marine parks support sanctuary zones, with only 18% opposing them.**

This pattern of support, however, depends on the age of reserves: the older the marine park, the stronger the level of support. On average, support for no-take zones increased from 42% to 71% over 15 years, with the most rapid change occurring in the first 5 years after establishment. This study therefore suggests that although there is currently opposition among some Sydney fishers for the establishment of no-take zones, this is unlikely to be long-lasting, especially as beneficial effects become apparent.

AMSA is concerned that the current public dialogue regarding the proposal is dominated by a minority of the stakeholders. Research currently underway in the bioregion and extending to Port Stephens and Jervis Bay, indicates the majority of marine coastal users are **non-extractive**. The research (Turnbull et al. in prep) has currently completed 111 depth interviews of coastal users, analysing values, attitudes, norms and behaviours. Researchers recorded the following relative levels of activity (figures do not add to 100% as participants report multiple activities at a site; fishing activity % has been adjusted to exclude people in sanctuary zones):

<table>
<thead>
<tr>
<th>Activity</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>53%</td>
</tr>
<tr>
<td>Swimming</td>
<td>47%</td>
</tr>
<tr>
<td>Relaxing/sunbathing</td>
<td>29%</td>
</tr>
<tr>
<td>Snorkelling</td>
<td>24%</td>
</tr>
<tr>
<td>SCUBA</td>
<td>22%</td>
</tr>
<tr>
<td>Fishing</td>
<td>17%</td>
</tr>
<tr>
<td>Exercising</td>
<td>12%</td>
</tr>
<tr>
<td>Boarding</td>
<td>5%</td>
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</tbody>
</table>

Whilst the sample is currently small, **90% of participants indicate agreement or strong agreement with fishing restrictions in the context of marine reserves.**

*We urge the government to properly consult with and consider a representative sample of marine estate users before making a decision regarding the marine park proposal.*

Please do not hesitate to contact me should you require any additional information or clarifications of any of the points made above.

Sincerely,

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REFERENCES CITED:


