

Sydney, October 21 2016

To the Environment Panel of the Greater Sydney Commission,

RE: Comments on Summary of the Environment Panel's Key Environmental Issues for Sydney

Following from the recent workshop with the Environment Panel of the Greater Sydney Commission, we include below a series of comments on the '**Summary of Key Environmental Issues for Sydney**' document on behalf of the NSW Branch of the Australian Marine Sciences Association.

While the summary document covered most of the pressing issues and solutions for estuarine and marine environments, we would like to highlight the fact that Topic 2 (Biodiversity) was only focussed on terrestrial environments and did not reflect the biodiversity-related environmental issues of estuarine and marine environments. We would also recommend on focussing on the ecosystem functioning and services provided by biota in addition to biodiversity *per se*. In terms of solutions, for at least sections 1 and 2, there are some alternative strategies to the main one proposed (restoration), which include the creation of natural reserves when possible, and remediation and rehabilitation (for both waterways and terrestrial environments). Restoration and green infrastructure should also be considered as solutions for sections 10 (Climate Change) and 13 (Natural Hazards). Finally, we believe that the solutions to pollution of waterways by stormwater discharges should be more detailed, focussing in three fundamental points, detailed below.

Detailed comments to the summary

- 1) **Summary of the issue:** Some marine habitats have been in decline, affecting biodiversity and ecosystem function and services, such as productivity, foreshore protection against natural hazards, climate change amelioration, cultural values, etc.

Evidence:

- Seagrasses, mudflats and saltmarshes have declined significantly since European colonisation (Mayer-Pinto et al 2015, DOI: 10.1071/MF15159).
- The crayweed *Phyllospora comosa* has become locally extinct along the urbanised area of Sydney (Coleman et al 2008, DOI: 10.1111/j.1529-8817.2008.00541.x).
- Several marine and estuarine species from the Greater Sydney area are listed in the IUCN red list of Threatened Species, such as a number of fish species, turtles and mangrove species.

Solutions: If natural habitats are in healthy condition, the creation of natural reserves can be an excellent management strategy to conserve biodiversity and ecosystem function and services (Halpern 2003, DOI: 10.1890/1051-0761(2003)013[0117:TIOMRD]2.0.CO;2). The application of this is, however, limited to the availability of habitat to conserve. When ecosystems are already degraded, intervention is necessary. In cases where pollution and human disturbances are low, managed retreat and restoration of natural habitats (with the aim of returning to historical ecosystem status) can be done. These can be effective strategies to protect the foreshore (for e.g. Townend and Pethick 2002, DOI: 10.1098/rsta.2002.1011) and to enhance productivity (for e.g. Marzinelli et al 2013, DOI: 10.1007/s10811-013-0158-5). In polluted and stressed environments where return to historical conditions cannot be done, rehabilitation and remediation strategies are appropriate, such as soft engineering (construction using leaving organisms, French 2006,

DOI: 10.1016/j.ecss.2005.11.035) and green infrastructure (Dafforn et al 2015, DOI: 10.1890/140050). These, are, however, rare (but see Barangaroo and Claydon Reserve Environmentally Friendly Seawall developments), due to relatively high costs and a lack of regulation.

2) **Summary of issue:** Waterways in the Great Sydney area are highly polluted and under constant stress.

Evidence: Traditional storm water management contributes to the degradation of waterways (Brown 2005, DOI: 10.1007/s00267-004-0217-4). Stormwater discharge and sewage overflow are responsible for high concentrations of heavy-metals in sediment to 50 times above background (Birch et al 1996, DOI: 10.1007/s002540050090).

Solutions: Stormwater management should be improved in three ways (Brown 2005, DOI: 10.1007/s00267-004-0217-4):

- 1) Reduction in stormwater discharge volume (flood reduction) by increasing permeability on land and retention of rain water and reuse.
- 2) Reduction in pollution content by filtering and cleaning stormwater before reaching the waterways
- 3) Reduction of sewage overflow into stormwater drains

The barriers to these are costs and little regulation for stormwater management.

We believe these points highlight pressing environmental issues and solutions that should be considered in environmental planning and we hope you can incorporate these comments in the final summary documents.

Please, do not hesitate to contact us if you require any additional information or clarification.

Yours truthfully,

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