



National Marine
Science Centre

The Councillors,
Gold Coast City Council

25th May 2007

Dear Councillors,

I am writing this letter in support of the proposal by Keith Douglas to establish a system of artificial reefs on the Gold Coast. In my opinion, and as explained below, such a system will increase the amenity of nearshore waters to a wide range of users, reduce the pressure on the natural reefs within the area and, if designed and placed appropriately, help to manage the major issue of erosion along the coast.

Despite being based at the National Marine Science Centre at Coffs Harbour, NSW, I have considerable experience researching reefs offshore from the Gold Coast and have found that they support an important suite of organisms that are both diverse and different to those from reefs only slightly further south. Indeed, in my current nearshore reef research programme, which has generated data across 600 km of coast over the past four years, Gold Coast reefs were consistently found to support high biodiversity and Kirra Reef (prior to its current smothering by sand) had the highest diversity of fish.

Our research has also shown that these local reefs are under ever increasing levels of pressure from an expanding population. Debris, from both land and sea, is common on reefs and activities such as beach nourishment have the potential to substantially reduce reef area, as has already occurred at Kirra Reef. Impacts on these reefs will lead not only to reduced biodiversity and function, but also to a loss of amenity for users. Artificial reefs provide strong potential to mitigate this loss. I will use Narrowneck Reef as an example.

In 2003, we conducted extensive biological surveys of Narrowneck Reef and found that, despite the fact that enhancement of local biodiversity was not an original objective of the project, it supported well-developed marine communities, and especially of fish. This was only three years after the deployment of the final sand-filled containers, a short period in the development of communities on artificial reefs. Indeed, we found that the abundance of pelagic fish on Narrowneck Reef was exceptionally high and almost 10 times that on some of the natural reefs. This fact is not lost of local fishers who regularly fish the site. While the biodiversity of attached communities and bottom-associated fish was lower than natural reefs, this could be explained by the age of the reef, the materials from which it is constructed (which make it difficult for some organisms, such as corals, to become established) and the lack of complexity (large, flat, horizontal surfaces predominate). There is little doubt

that modifications to the structure of this reef, to address some of these issues, would provide a habitat favourable to a more diverse suite of organisms. Indeed, with judicious additions, directed by appropriate research and development, modifications could be made which specifically target a chosen group of animals (e.g. crayfish, corals, cryptic reef fish).

Compared to other regions of Australia's subtropical coastline, there are relatively few accessible reefs on the Gold Coast and this further concentrates pressure across a range of user-groups. A system of artificial reefs would help to spread this pressure and may ultimately prove to be an ideal solution to balancing the demands of a diversity of user-groups into the future. With careful planning, it is not unreasonable to suggest that a system of artificial reefs would provide major opportunities for fishers, snorkellers, divers and researchers, to name but a few, and that these activities would add substantially to existing tourism opportunities. If such a system was also linked to conservation measures on natural reefs, the Gold Coast City Council and collaborators would be the leaders in this type of approach to sustainable management of these important marine habitats.

I am happy to provide copies of reports and scientific papers resulting from our work and also to provide any further information, if requested.

Yours faithfully,



Dr. Stephen D. A. Smith
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